

Evolution and Biodiversity in the Antarctic: The Response of Life to Change (EBA)

Report for SCAR SRP Performance Review March 2008

1. Rationale

Evolution and Biodiversity in the Antarctic: the Response of Life to Change (EBA) was endorsed by SCAR in October 2004 and became operational from January 2006.

The overall aim of the EBA programme is to understand the evolution and diversity of life in the Antarctic, to determine how these have influenced the properties and dynamics of present Antarctic and Southern Ocean ecosystems, and to make predictions on how organisms and communities will respond to current and future environmental change.

This programme involves an explicit integration of work on marine, terrestrial and limnetic ecosystems. The science in this programme thus extends over an entire biome on Earth. By comparing the outcome of parallel evolutionary processes over the range of Antarctic environments, fundamental insights can be obtained into evolution and the ways in which life responds to change, from the molecular to the whole organism level and ultimately to biome level. Most national programmes individually cannot attempt a study on such a bold scale, whereas the collaborative spirit of the Antarctic science community provides a mechanism for achieving outstanding scientific success.

EBA has established five Working Packages to cover the intended areas of research:

- Work Package 1: Evolutionary history of Antarctic organisms
- Work Package 2: Evolutionary adaptation to the Antarctic environment
- Work Package 3: Patterns of gene flow and consequences for population dynamics: Isolation as a driving force
- Work Package 4: Patterns and diversity of organisms, ecosystems and habitats in the Antarctic, and controlling processes
- Work Package 5: Impact of past, current and predicted future environmental change on biodiversity and ecosystem function

2. Overview of Progress

Since 2006, the development of the EBA has not quite followed the intended path as outlined in the EBA Implementation Plan (2005). Whereas pre-2006, SCAR supported separate marine and terrestrial biological programmes, EBA brought these disciplines under one umbrella. This has meant a significant increase in the number of groups that contribute to the one SCAR programme of EBA. From the outset, the EBA Co-Chairs and the SSG-LG representative have had challenges identifying the numerous and disparate groups that contribute to the aims of the EBA. Two work package leaders (one marine and one terrestrial) for each work package have been identified (see Section 5), with the aim of them keeping in touch with the community working on topics within their work package, but there remain challenges in maintaining contact with these members and getting information from them regarding the wider biological community.

However, it is clear that there are a large number of projects/programmes and individuals who are undertaking research towards the goals of EBA, within very diverse areas of biology. Those with which we have positive interactions are summarised in Appendix 1. It remains likely that more will be identified. EBA's role, as is appropriate for a non-science-funding umbrella or facilitator, has quickly developed into one of connection, and encouragement of various initiatives.

The committee will need to remain vigilant in convening workshops before 2013 in order to answer the questions that it poses in its Science Plan (2004).

Information regarding the outputs and inputs specifically concerning the EBA programme and its undertakings are provided in the summary format requested by SCAR below. However, also appended to this report are the submissions from many projects/programmes that contribute to EBA in a broader sense

(Appendix 3). This highlights not only the high level, diversity and connectivity of research that contributes to EBA, but also the challenge that EBA has in keeping a track of these widely distributed groups.

3. Major Tasks and Timeframe

Year	Task outlined in 2005 Implementation Timeline	Comments
2005	Planning meeting in Cambridge in March to draft Implementation Plan	Completed
	SCAR Biology Symposium “Evolution and Biodiversity in the Antarctic”, Curitiba, Brazil.	Completed
	International workshop on EBA where work package sub-committees will be appointed and specific milestones detailed.	Completed as part of Curitiba meeting
	IPY advanced planning, database construction and integration	Falls within individual IPY programme remit, not EBA
	Circulation of questionnaire about planned and anticipated research activities that will contribute to the aims of EBA in order to collect feedback from potential participants.	Completed
2006	SCAR Open Science Meeting, Hobart. EBA begins. Workshop: Factors driving evolution in the Antarctic.	Decision made to encourage smaller community-led ‘targeted’ workshops, e.g. within WPs, rather than single large and centralized meetings
2007	Second workshop: World View of Evolution. Miraflores, Spain.	As above, this was removed from planning programme
2008	SCAR Open Science Meeting, St. Petersburg. Evolutionary Biology-Biodiversity Joint Session.	P.Convey is on the Scientific Organising Committee for this meeting; there will be various EBA-linked workshops and contributions; the overall session structure is different to the working assumption at time of inauguration of EBA
2009	SCAR Biology Symposium, possibly in Japan or Korea. Major EBA session and third workshop (integrative) one. Also mid-program review.	Symposium planned for Sapporo, Japan; 26 - 31 July 2009
2010	EBA-IPY activities: will be the SCAR Open Science Meeting where we will devote to IPY results.	Oslo, June 2010
2011	last field season	
2012	SCAR Open Science Meeting	July 2012, but no venue yet
2013	SCAR Biology Symposium – wrap-up of results and last year of program	

4. Deliverables

The EBA Implementation plan (2005) outlined that the main output from the EBA programme would be a significant step forward in our understanding of the Antarctic biota and its evolution. There would also be important contributions to fundamental understanding in a number of disciplines. Specific outputs do and will include the following (as demonstrated in the following sections):

- Primary literature publications and books
- Conference proceedings and publications from workshops
- Programme reports
- Website
- Input to databases
- Advisory reports to ATCM and others (e.g., CEP, CCAMLR, COMNAP)
- Input to, and feedback from, international programmes
- Synergies with other SCAR programmes (e.g., ACE, AGCS, SALE)
- Trained PhD graduates and post-doctoral research fellows
- Capacity development of students and members from developing Antarctic nations
- Outreach via National Programmes and in coordination with proposed SCAR Outreach Committee

5. EBA Committee

Name	Role	Gender	Country	Term From
Dr Peter Convey	<i>Co-Chair</i>	Male	United Kingdom	2005
Prof Guido di Prisco	<i>Co-Chair</i>	Male	Italy	2005
Shulamit Gordon	<i>Secretary & JCADM Representative</i>	Female	New Zealand	July 2007
Dr Dana Bergstrom	Secretary (past 05-07)/Member	Female	Australia	2005
Prof Angelika Brandt	Member	Female	Germany	2005
Dr Marc Lebouvier	<i>Member (conservation matters)</i>	Male	France	2005
Dr Ad H.L. Huiskes	<i>CO LSSSG (ex officio)</i>	Male	The Netherlands	2005
Dr Michael Stoddart	<i>Census of Antarctic Marine Life</i>	Male	Australia	2005
Dr Brigitte Hilbig	Work Package 1 leader	Female	Germany	2005
Dr Dominic A. Hodgson	Work Package 1 leader	Male	United Kingdom	2005
Prof Daniel P. Costa	Work Package 2 leader	Male	United States	2005
Prof Takeshi Naganuma	Work Package 2 leader	Male	Japan	2005
Prof Antonio Mateo Solé-Cava	Work Package 3 leader	Male	Brazil	Stepped Down February 2008
Dr Elie Poulin	Work Package 3 leader	Male	Chile	March 2008
Dr Ian D. Hogg	Work Package 3 leader	Male	New Zealand	2005
Dr Julian Gutt	Work Package 4 leader	Male	Germany	2005
Dr Satoshi Imura	Work Package 4 leader	Male	Japan	2005
Dr Edith S. E. Fanta	Work Package 5 leader	Female	Brazil	2005
Prof Thomas A. (Tad) Day	Work Package 5 leader	Male	United States	Stepped Down December 2007
Dr David Renault	Work Package 5 leader	Male	France	March 2008

6. Outputs

a. Key achievements

I. *Publications*: Section 6c below demonstrates that at least 155 peer-reviewed papers were published by groups contributing to EBA in 2006 and 159 in 2007. Key publications of note are:

- A Paper to be submitted to the upcoming ATCM meeting in Kiev resulting from the joint ATS-EBA workshop that was held in South Africa in October 2006 (see appendix 2).
- IX SCAR International Biology Symposium Evolution and Biodiversity in Antarctica *Antarctic Science Special Edition Volume 19(2) 2007*. Eds E. Fanta, W. Arntz, W. Detrich, H. Kawall
- Antarctic Ecology: From Genes to Ecosystems. Part 1. Rogers, A.D, Murphy, E., Clarke, A., Johnston, N. (eds). *Philosophical Transactions of the Royal Society B*. Vol. 363(1477), 2007.
- Antarctic Ecology: From Genes to Ecosystems. Part 2. Rogers, A.D, Murphy, E., Clarke, A., Johnston, N. (eds). *Philosophical Transactions of the Royal Society B*. 2007.
- Convey, P., Gibson, J. A. E., Hillenbrand, C.-D., Hodgson, D. A., Pugh, P. J. A., Smellie, J. L., and Stevens, M. I. (In press). Antarctic terrestrial life - challenging the history of the frozen continent? *Biological Reviews*.
- Frenot Y., Chown S.L., Whinam J., Selkirk P.M., Convey P., Skotnicki M.L. & Bergstrom D.M. 2005. Biological invasions in the Antarctic: extent, impacts and implications. *Biological Reviews of the Cambridge Philosophical Society*, 80, 45-72.
- Convey, P. 2007. Non-native species in the Antarctic terrestrial environment: presence, sources, impacts and predictions. "Non-native species in the Antarctic" *Workshop Proceedings, Gateway Antarctica, Christchurch, New Zealand*. de Poorter, M., Gilbert, N., Storey, B., and Rogan-Finnemore, M. (Eds.)

- Frenot, Y., Convey, P., Lebouvier, M., Chown, S.L., Whinam, J., Selkirk, P.M., Skotnicki, M. & Bergstrom, D.M. 2007. Biological invasions in the Antarctic: extent, impacts and implications. “*Non-native species in the Antarctic*” *Workshop Proceedings, Gateway Antarctica, Christchurch, New Zealand*. de Poorter, M., Gilbert, N., Storey, B., and Rogan-Finnemore, M. (Eds.)
 - Latitudinal Gradient Project (LGP) *Antarctic Science* Special Edition Volume 18(4) 2006. Eds. M.R. Balks, V. Cummings, T.G.A. Green, C. Howard-Williams, D. Peterson and J.G. Webster-Brown.
 - Convey P, Stevens MI. 2007. Antarctic Biodiversity. *Science* 317(5846): 1877-1878.
 - Verde C, Parisi E, di Prisco G. 2006. Non-Antarctic primitive and modern notothenioid fish species: tracking the adaptive evolution in the structure, function and molecular phylogeny of haemoglobin. *Deep Sea Research* 53: 1105-1114.
 - Verde C, Parisi E, di Prisco G. 2006. The evolution of thermal adaptation in polar fish. *Gene* 385: 137-145.
- II. *Workshop Sponsorship*: As the role of EBA has developed several workshops have been sponsored to encourage communication among scientists particularly to foster new ideas and cross-discipline discussions. Appendix 2 lists the various workshops that EBA has sponsored or has been involved in. Of note is the upcoming Antarctic Gradients invited workshop to be held at BAS in May 2008. Sixteen participants from UK, South Africa, Spain, New Zealand, Australia, US and Italy will be attending. This workshop came out of discussions from the Latitudinal Gradient Project community in New Zealand with input from the US’ McMurdo Long Term Ecological Research project. This is a prime example of how EBA can facilitate work in new areas of research.
- III. *EBA Website*: A new EBA website was launched in July 2007 to help promote the cause of EBA and bring to the fore the various groups that contribute to EBA. See www.eba.aq
- IV. *EBA Newsletter*: An inaugural EBA Newsletter was distributed in March 2008 to give recent news of the various parts of EBA. We hope that these initiatives will increase the communication of EBA-related news and activities around the Antarctic biological community and the greater Antarctic community. This newsletter is attached to this review (Appendix 5) and also available on the EBA website.
- V. *Links with the Antarctic Master Directory*: EBA’s JCADM representative (who is also the EBA Secretary) has created an EBA portal in the Antarctic Master Directory where information about Antarctic data is stored. This enables us to easily search for all types of data that contribute to EBA outcomes.

b. Contributions to IPY Programmes:

Besides being a SCAR programme, EBA has also been endorsed by the IPY Committee (Project # 137, coordinated by Guido di Prisco). Although the two EBA’s have a lot in common, they have some differences:

- Teams that joined EBA-SCAR did so through a specific procedure, which involved filling a questionnaire. Teams that joined EBA-IPY have applied through the EoI sent to the national organizations. Although the two procedures were different, the teams often coincide.
- Within national programmes, participation in EBA-SCAR takes place within a longer time span (corresponding to the length of EBA-SCAR 2006-2013) than participation in EBA-IPY (2007-2009). This will affect the provision of funding according to the procedures by each nation.

Some of the EBA-IPY projects that contribute to EBA are identified in Appendix 1.

Several other projects that contribute to EBA are themselves IPY endorsed projects such as CAML, SCAR-MarBIN, Aliens, TARANTELLA and ICED. These are listed in Appendix 1.

c. Publications in peer reviewed literature

As highlighted, EBA as it stands does not publish, however the many projects and programmes that contribute to EBA do. Individual publications from these groups can be seen in Appendix 3, but we have also compiled all publications into one list, including the project name (Appendix 4). This highlights that many publications are co-written by members of more than one project.

Number of peer reviewed publications that contribute to EBA (as at completion date of this report)

Year	Number of Publications
2006	155
2007	159
2008	10
In Press	35

d. Other publications

Please see individual project/programme submissions for details on other publications. Note that particularly significant EBA-related publications have been picked up effectively by the media arms of author parent organizations.

An inaugural EBA Newsletter was circulated in March 2008 to the EBA listserver, the Joint Committee on Antarctic Data Management listserver and the general SCAR community. This can be found on the EBA website in the Publications and Reports section [here](#) and is also appended for your information (See Appendix 5).

e. Brochures, posters, press/media articles and similar PR material

None directly, although this is an integral element of several of the component programmes, research groups, and national organizations.

f. Web site details and number of hits to this site if data is available

A new EBA website (www.eba.aq) was designed and came into use in July 2007. This replaced a web page that had been hosted by the Netherlands' polar programme.

The new website contains pages on:

- Current EBA News
- Work Package information
- Publications and Reports
- Information about data
- Conferences and Meetings
- Links to other EBA related projects
- EBA Contacts

Statistics of the new EBA Website since its release in July 2007

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul 2007	97	154	861	17022	43.50 MB
Aug 2007	159	196	754	15089	41.67 MB
Sep 2007	340	375	874	11412	28.09 MB
Oct 2007	640	765	1440	14696	33.57 MB
Nov 2007	643	937	1758	7368	18.02 MB
Dec 2007	668	853	1374	8149	20.72 MB
Jan 2008	473	584	1119	7175	17.88 MB
Feb 2008	386	528	1342	15211	42.72 MB
Total	3226	4140	8853	86239	217.81 MB

g. Project Databases**Biodiversity Database**

The Australian Antarctic Data Centre (AADC) hosts and maintains a Biodiversity Database (<http://data.aad.gov.au/aadc/biodiversity/>) which contains data on Antarctic and sub-Antarctic flora and fauna. This started through EBA's predecessor, RiSCC, and is EBA's main database. This database contains as many collections of data that we are aware of in the public domain (see <http://data.aad.gov.au/aadc/biodiversity/collections.cfm>). The samples and/or observations from each collection are classified into one of three possible habitat domains - terrestrial, limnetic or marine (see table below).

Number of Observations and Collections Currently in the Biodiversity Database (as of 19/2/08)

Habitat Domain	Number of Observations	Number of Collections
Terrestrial	96687	28
Marine	248650	39
Limnetic	3926	7

The terrestrial and limnetic data are from as many accessible data sources as possible. They are dominated by a copy of the Antarctic Plant Database from BAS. Copies of other databases are privately held and could be made public with permission of the data custodians. The Australian data is published to GBIF for inclusion in their global catalogue. The marine component in this database is restricted to data from the Australian programme and, once it becomes public, it is published via webservices directly to SCAR-MarBIN (www.scarmarbin.be) and to GBIF and OBIS.

Over the last year, in conjunction with the improvements and growth of external databases such as the Catalogue of Life, Dave Watts (AAD) has been validating higher level taxa so that the database has a relatively consistent taxa system, with as many species containing authorities as is possible. There are also plans to improve the on-line mapping tools and utilise the Antarctic Digital Database for background topography. A list of terrestrial and limnetic bioregions contains links to the relevant collections or maps.

Web statistics for this database (as of 19/2/08) are:

39,314 page views in 2007 of which 5,000 were internal to AAD and 34,165 external to AAD.

Other Databases

There are also other databases that are coordinated by several of the individual projects/programmes that contribute to EBA. See: SCAR-MarBIN, MERGE, SO-CPR.

The Antarctic Master Directory

The [Antarctic Master Directory \(AMD\)](#) is a central directory system housed by NASA's Global Change Master Directory that contains information about Antarctic data (metadata). Through the Joint Committee on Antarctic Data Management, Antarctic nations are encouraged to submit their metadata to the AMD so that a record of what data have been collected and where it was collected can be kept.

EBA has set up a portal within the AMD, which gives access to metadata submitted since EBA was established and metadata submitted before EBA was established, but that contribute to EBA's aims. This portal can be accessed [here](#). Groups who associate their work with EBA are encouraged to enter their metadata into the AMD and link it to the EBA programme under 'Projects'. Note that metadata can be linked to more than one project.

This means that if EBA wants to see what data has been collected that relate to EBA, this can be done through a simple search function on the AMD. EBA is the only one of the SCAR SRPs that has set up such a portal, though others may be under construction. However, in order for this to be effective, data centres do need to tag their metadata with the EBA project.

h. Number and type of education/training and other capacity building activities

None

i. Notes on new technology/model developments

None

VI. Inputs

a. Number, gender and country of participating scientists in your project

See summary table (Appendix 1) for individual projects/programmes that contribute to EBA.

b. Meetings and workshops

Several meetings and workshops have been, and are planned to be, sponsored by EBA, and many have been linked to EBA. These can be found in Appendix 2.

c. Links to other SCAR SRPs or SCAR Action or Expert Groups

The Southern Ocean Continuous Plankton Recorder Survey (SO-CPR Survey) has identified itself as a project that contributes to EBA and this is currently an LS-SSG Action Group.

Links have been made with ACE and AGCS through the SCAR inter-programme leaders group.

d. Links to other ICSU bodies or to other scientific groups

None directly. These links happen at the component programme level, e.g. CAML links to CoML, and thereby into Diversitas. There is an indirect link to CCAMLR through SCAR's observer to CCAMLR.

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Compiled by: Shulamit Gordon, Pete Convey, Guido di Prisco.

Appendix 1: Projects/Programmes that contribute to the EBA Programme

Project Name	Lead Contact	Lead Contact Country	Discipline	IPY Project	Website	Ref'd Pubs (06-08)	Other Countries involved	Number of Participants
Aliens in Antarctica [Aliens]	Dana Bergstrom	Australia	Terrestrial	#170	www.aliensinantarctica.aq	None	9 Countries with scientists involved: Australia, Belgium, France, Japan, New Zealand, Poland, South Africa, The Netherlands, United Kingdom	23 (43% female)
Anemonies Database	Daphne G. Fautin	U.S.A.	Marine	No				
ANtarctic benthic DEEP-sea biodiversity: colonisation history and recent community patterns – SYSTEM Coupling [ANDEEP-SYSTCO]	Angelika Brandt & Brigitte Ebbe	Germany	Marine	#66	http://www.cedamar.org/	None. 1 st field season just complete.	8 countries out of: USA, United Kingdom, Belgium, Italy, France, Norway, Spain, Switzerland, Russia, Argentina, Australia	53 participants. 43% female
Automatic Monitoring of Penguin Populations [AMPPoP]	Yvon LE MAHO	France	Combined	#251	Under Construction	1	France, Japan, USA, UK, Australia, Italy, New Zealand	13 (30% female)
Biodiversity-Change in the formerly ice shelf-covered Larsen A/B area	Julian Gutt	Germany	Marine	Under CAML	-	1	14 countries including: Germany, Canada, Czech Republic, Spain, Russian Federation, Belgium, Italy, Ukraine, USA, UK, France, Chile	48 (54% female)
Biodiversity, Function, Limits and Adaptation from Molecules to Ecosystems [BIOFLAME]	Peter Convey	U.K.	Marine/Terr estrial	No	www.antarctica.ac.uk	~110 since 2006	UK, Germany, Australia	14 UK (36% female)
Biodiversity of three representative groups of the Antarctic Zoobenthos - Coping with Change [BIANZO II]	Chantal de Ridder	Belgium	Marine	No				
Census of Antarctic Marine Life [CAML]	Michael Stoddart	Australia	Marine	#53	www.caml.aq	-	20 countries	200
Climate change, human activities and biodiversity in subantarctic terrestrial ecosystems [Ecobio]	Marc Lebourvier	France	Terrestrial	Under ALIENS and TARANTELLA	Under Construction	8	France, Australia, Belgium, New Zealand, Poland	12 (25% female)
Collaborative Research: Relevance of planktonic larval dispersal to endemism and biogeography of Antarctic benthic invertebrates	Ken Halanych	U.S.A.	Marine	No				

Comparative Biologic and Monitoring Research of Gentoo (<i>Pygoscelis papua</i>) in Terms of its Conservation as a Living Resource	Roumiana Metcheva	Bulgaria	Marine/Terr estrial	No				
Comparative Studies of Gentoo Populations [GOSGEN]	Volodymyr Bezrukov	Ukraine	Marine/Terr estrial	No				
Cool Plants 9Group of projects)	Sharon Robinson	Australia	Terrestrial	No	http://www.uow.edu.au/science/biol/staff/sharonr/sr_coolplants.html	4	Australian, German, Austrian, Czech Rep, Italian, USA	21 (62% female)
Did Antarctic octopuses colonise the deep sea?	Louise Allcock	U.K.	Marine	No				
Discovery 2010: Integrating Southern ocean Ecosystems into the Earth System [Discovery 2010]	Eugene Murphy	U.K.	Marine	No				
Ecology and Evolution of Antarctic Invertebrates	Sven Thatje	U.K.	Marine	No	-	24	UK, Germany, US, Argentina, New Zealand	5 in UK
Evolution and Biodiversity in the Antarctic [EBA-IPY]	Guido di Prisco	Italy	Marine/Terr estrial/Aqua tic	#173	www.eba.aq	19	All SCAR Nations.	
Health of Arctic and Antarctic bird populations [BIRDHEALTH]	Maarten Loonen	The Netherlands	Terrestrial	#172				
Holocene climate variability and ecosystem changes in the coastal East and Maritime Antarctica [HOLANT]	Wim Vyverman	Belgium	Terrestrial	Under MERGE	www.HOLANT.Ugent.be	3	Belgium, UK	11 (36% female)
Impact of CLimate induced glacial melting on marine and terrestrial COastal communities on a gradient along the Western Antarctic PENinsula [ClicOPEN]	Doris Abele	Germany	Marine/Terr estrial	#34				
Integrated circumpolar studies of Antarctic marine ecosystems to the conservation of living resources [AMES]	Svein Iversen	Norway	Marine	#131	www.imr.no	None. 1 st field season still underway.	Germany, USA, China, Brazil, Norway	20 Total participants. 25% female
Integrating Climate and Ecosystem Dynamics in the Southern Ocean [ICED]	Rachel Cavanagh	U.K.	Marine	#92	http://www.iced.ac.uk	None	20 countries	~100 scientists (~25% female)

International Collaborative Expedition to collect and study Fish Indigenous to Sub-Antarctic Habitats [ICEFISH]	Cinzia Verde	Italy	Marine	#93	www.icefish.neu.edu	7	Italy, France, New Zealand, USA, Germany, Australia, Brazil, U.K. South Africa	12
Internationally coordinated studies on Antarctic environmental status, biodiversity and ecosystems. (Environmental, Biological, and Ecological Studies in Antarctica) [EBESA]	Roberto Bargagli	Italy	Terrestrial	Under EBA-IPY	-	6 Italian	Italy, Czech, Ukraine Republic	28 (42% female)
Latitudinal Gradient Project [LGP]	Shulamit Gordon	New Zealand	Marine/Terrestrial/Aquatic	Under MERGE and EBA-IPY	www.lgp.aq	51 (some will overlap with others listed here)	New Zealand, Italy, USA.	24
McMurdo Dry Valleys Long term Ecological Research Project [MCM-LTER]	Berry Lyons	U.S.A.	Terrestrial/Aquatic	No	www.mcmlter.org	30	USA, Canada, New Zealand, Australia, UK, Czech Republic, Japan	PIs: 7 Total=7 (2 female); Current Formal Collaborators: Total=6 (2 female);
Microbiological and Ecological Responses to Global Environmental Changes in Polar Regions [MERGE]	Takeshi Naganuma and Annick Wilmotte	Japan and Belgium	Terrestrial	#55	Not one central one for MERGE. Some sub-projects have websites.	7 Publications -Some overlap with other projects	Japan, New Zealand, Brazil, Malaysia, Poland, Spain, Belgium, UK	At least 48 participants (30% female)
Natural climate variability - extending the Americas palaeoclimate transect through the Antarctic Peninsula to the pole [CACHE-PEP]	Dominic Hodgson	U.K.	Marine/Terrestrial	Under MERGE	http://www.antarctica.ac.uk/bas_research/current_programmes/cache/pep/index.php	18 (some will overlap with others listed here)	UK and Belgium are main partner	
Polar Aquatic Microbial Ecology [PAME]	Gunnar Bratbak	Norway	Aquatic	#71	http://www.uib.no/pame/	0	Norway and France	14 (36% female)
Response of Polar, Tropical and Temperate Microalgae to Global Warming and Increased UV Radiation	Phang Siew Moi	Malaysia		No				
Retrospective and Prospective Vegetation Change in the Polar Regions: Back to the Future [BTF]	Terry Callaghan	Sweden	Terrestrial	#214				
SCAR-Marine Biodiversity Information Network [SCAR-MarBIN]	Claude de Broyer	Belgium	Marine	#83	http://www.scarmarbin.be	See: http://www.scarmarbin.be/imis.php?module		International Scientific Steering Committee: 16 participants from 8 countries

						<u>=dataset&show=search</u>		
Scratching The Surface [IMARES-SUIT]	Jan Andries van Franeker	The Netherlands	Marine	No	http://www.pooljaar.nl/poolijs www.jafweb.nl	4	Netherlands, Belgium, Germany and Canada	8 Male
Sex and Variation in Antarctic Lichens	Paul Dyer	U.K.	Terrestrial	No	-	4	UK	3 male
Southern Ocean Continuous Plankton Recorder Survey [SO-CPR]	Graham Hosie	Australia	Marine	No	http://data.aad.gov.au/aadc/cpr/index.cfm	7 from 2006	Australia, Japan, Germany, New Zealand, UK, USA and Russian.	25 (32% female)
Structural-functional characteristics of microbe cenoses in Antarctica. The investigation of microorganisms role in biogeochemical cycles	Oleksandr Tashyrev	Ukraine	?	Under EBA-IPY	-	?	Ukraine	5
Terrestrial ecosystems in Arctic and Antarctic: effects of UV light, liquefying ice, and ascending temperatures [TARANTELLA]	Ad Huiskes	The Netherlands	Terrestrial	#59	www.tarantella.aq	None	The Netherlands, Czech Republic, United Kingdom, Norway, Belgium, USA, Canada, Japan, France, Spain	24 (21% female)
TRophic Ecology of the Nearshore Zone [TRENZ]	Jonathan Stark	Australia	Marine	No				
Understanding, valuing and protecting Antarctica's unique terrestrial ecosystems: Predicting biocomplexity in Dry Valley ecosystems	Allan Green	New Zealand	Terrestrial	No				
Vulnerability of native communities to invasive insects and climate change in sub-Antarctic islands [Evince]	David Renault	France	Terrestrial	No				

Appendix 2: Workshops/Meetings Supported by EBA or linked to EBA

Title	Venue	Date	Report/Supported Personnel	Attendees/Supported
2005				
IX SCAR Biology Symposium	Curitiba, Brazil	25-29 July 2005	<u>Antarctic Science Special Edition Volume 19(2) 2007</u> . Eds E. Fanta, W. Arntz, W. Detrich, H. Kawall	
2006				
EBA Core Steering Committee Meeting	Hobart, Australia	8 July 2006	<u>Minutes</u>	6 Attended (3 female); NZ, UK, Italy, France, Korea
EBA Work Package Leader Meeting	Hobart, Australia	10 July 2006	<u>Minutes</u>	10 attended (2 female); UK, Italy, France, Japan, NZ, Brazil, Germany
LGP International Workshop	Hobart, Australia	10 July 2006	<u>Final Report</u>	~40 attended (17 female). Argentina, US, UK, NZ, Belgium, Canada, Germany, Australia, Malaysia, Poland, China, Spain, France
CAML Workshop	Hobart, Australia	11 July 2006		
EBA Open Meeting	Hobart, Australia	12 July 2006	<u>Minutes</u>	38 attended (15 female); Argentina, NZ, UK, Malaysia, Brazil, France, The Netherlands, Japan, Poland, Chile, China, Australia, Germany, India
Aliens Workshop	Hobart, Australia	15 July 2006	<u>Minutes</u>	11 attended (3 female); South Africa, UK, Poland, France, The Netherlands, Japan, Germany
SYSTCO-IPY Workshop	Bremerhaven, Germany	September 2006		
TARANTELLA – IPY Implementation Workshop	Rilland, The Netherlands	9-11 October 2006		24 attended (5 female); The Netherlands, Czech Republic, United Kingdom, Norway, Belgium, USA, Canada, Japan, France, Spain
Workshop on Terrestrial biodiversity in the Antarctic: Microbial, Macroscopic, Indigenous and Alien	Stellenbosch, South Africa	18-20 October 2006	<u>Report</u>	21 attended; Australia, France, Japan, The Netherlands, NZ, South Africa, USA, UK
SCAR Cross-Linkages Workshop	Rome, Italy	6-8 November 2006	<u>Report</u>	15 attended (2 female) Italy, UK, The Netherlands, Finland, USA, Sweden
SCAR-MarBIN Workshop: Evolution of Marine Organisms of the Southern Ocean	Leuven, Belgium	December 2006		
2007				
SCAR-MarBIN Workshop	Bialowieza, Poland	2-8 June 2007		32 attended; Supported personnel: Vanhoorne, Segers, Ramm
International Workshop on Antarctic Biology: Critical Issues and Research	Follonica, Italy	7-9 June 2007	Abstract booklet produced.	48 attended from Italy, NZ, UK, Germany, Korea, Bulgaria, India, USA, Spain, Czech Republic; 30 invited presentations; partially supported (not by SCAR funds).

Priorities for IPY (2007-2009)				
<u>International Conference on Cryogenic Resources of Polar Regions</u>	Selekhard City, West Siberia, Russia	17-21 June 2007	Joint EBA-MERGE session.	Supported personnel: Roberto Bargagli (Italy), Takeshi Naganuma (Japan), two Malaysian microbiologists.
Latitudinal Gradient project Workshop	Wellington, New Zealand	2 July 2007	<u>Minutes</u>	~50 attended; NZ, UK, Australia, Italy. Supported personnel: Diana Wall (female US), Berry Lyons (US), Peter Convey (UK)
<u>10th International Symposium on Antarctic Earth Sciences (ISAES-2007)</u>	Santa Barbara, CA, USA	26 August - 1 September 2007	Joint EBA-ACE session giving a bioperspective.	Supported personnel: Pete Convey, Jan Strugnell (female, UK), Bettine van Vuuren (female SA)
The Southern Ocean Observing System (SOOS) Workshop	Bremen, Germany	1-3 October 2007	<u>Interim Report</u>	32 Attended. Dan Costa and Edith Fanta EBA WP leaders attended.
Upcoming in 2008				
Dynamics in the Southern Ocean (ICED) programme - first model development workshop, Old Dominion	University, Virginia, USA	16 - 18 April 2008		Subsidising 4 key participants
<u>Polar and Alpine Microbiology</u>	Banff, Alberta, Canada	11-15 May 2008		Subsidising 3 key participants (Korea, USA, India)
Antarctic Gradients – Invited Workshop	BAS, U.K.	19-21 May 2008		16 Invited participants. Some expenses will be covered.
International workshop "The polar and alpine environments: molecular and evolutionary adaptations in prokaryotic and eukaryotic organisms"	Naples, Italy	May 29th--30th, 2008	Special Issue in <i>Gene</i> .	18 invited presentations from Italy, UK, USA, Germany, Belgium, France, Austria; partially supported (not by SCAR funds).
Antarctic Gradients Open Workshop	St Petersburg, Russia	5 July 2008		
<u>Extremophiles 2008</u>	Cape Town, South Africa	7-11 September 2008		Subsidising 2-3 key participants, specific conference session
Upcoming in 2009				
Xth SCAR International Biology Symposium	Sapporo, Japan	26 - 31 July 2009		

Appendix 3: Review Responses from Projects/Programmes that contribute to EBA

Project Name	Acronym	Key Contact	Discipline	IPY Project ?	Review Attached	In AMD
Aliens in Antarctica	Aliens	Dana Bergstrom	Terrestrial	#170	Yes	Yes
Anemonies Database	-	Daphne G. Fautin	Marine	No	No	No
ANtarctic benthic DEEP-sea biodiversity: colonisation history and recent community patterns – SYSTem Coupling	ANDEEP-SYSTCO	Angelika Brandt & Brigitte Ebbe	Marine	#66	Yes	Yes
Automatic Monitoring of Penguin Populations	AMPPoP	Yvon LE MAHO	Combined	#251	Yes	Yes
Biodiversity, Function, Limits and Adaptation from Molecules to Ecosystems	BIOFLAME	Peter Convey	Marine/Terrestrial	No	Yes	No
Biodiversity of three representative groups of the Antarctic Zoobenthos - Coping with Change	BIANZO II	Chantal de Ridder	Marine	No	No	?
Biodiversity-Change in the formerly ice shelf-covered Larsen A/B area	-	Julian Gutt	Marine	No	Yes	No
Census of Antarctic Marine Life	CAML	Michael Stoddart	Marine	#53	Yes with some sub-projects	Yes
Climate change, human activities and biodiversity in subantarctic terrestrial ecosystems	Ecobio	Marc Lebouvier	Terrestrial	No	Yes	No
Collaborative Research: Relevance of planktonic larval dispersal to endemism and biogeography of Antarctic benthic invertebrates	-	Ken Halanych	Marine	No	No	No
Comparative Biologic and Monitoring Research of Gentoo (Pygoscelis papua) in Terms of its Conservation as a Living Resource	-	Roumiana Metcheva	Marine/Terrestrial	No	No	No
Comparative Studies of Gentoo Populations	GOSGEN	Volodymyr Bezrukov	Marine/Terrestrial	No	No	No
Cool Plants (group of projects)		Sharon Robinson	Terrestrial	No	Yes	No
Did Antarctic octopuses colonise the deep sea?	-	Louise Allcock	Marine	No	No	No
Discovery 2010: Integrating Southern ocean Ecosystems into the Earth System	Discovery 2010	Eugene Murphy	Marine	No	No	No
Ecology and Evolution of Antarctic invertebrates	-	Sven Thatje	Marine	No	Yes	No
Evolution and Biodiversity in the Antarctic	EBA-IPY	Guido di Prisco	Marine/Terrestrial/	#173	No.	Yes as

Project Name	Acronym	Key Contact	Discipline	IPY Project ?	Review Attached	In AMD
			Aquatic			EBA
Health of Arctic and Antarctic bird populations	BIRDHEALTH	Maarten Loonen	Terrestrial	#172	No	Yes
Holocene climate variability and ecosystem changes in the coastal East and Maritime Antarctica	HOLANT	Wim Vyverman	Terrestrial	No	Yes	No
Impact of CLimate induced glacial melting on marine and terrestrial COastal communities on a gradient along the Western Antarctic PENinsula	ClicOPEN	Doris Abele	Marine/Terrestrial	#34	No	Yes
Integrated circumpolar studies of Antarctic marine ecosystems to the conservation of living resources	AMES	Svein Iversen	Marine	#131	Yes	Yes
Integrating Climate and Ecosystem Dynamics in the Southern Ocean	ICED	Rachel Cavanagh	Marine	#92	Yes	Yes
International Collaborative Expedition to collect and study Fish Indigenous to Sub-Antarctic Habitats	ICEFISH	Cinzia Verde	Marine	#93	Yes	Yes
Internationally coordinated studies on Antarctic environmental status, biodiversity and ecosystems. (Environmental, Biological, and Ecological Studies in Antarctica)	EBESA	Roberto Bargagli	Terrestrial	No	Yes	No
Latitudinal Gradient Project	LGP	Shulamit Gordon	Marine/Terrestrial/Aquatic	No	Yes	Yes
McMurdo Dry Valleys Long term Ecological Research Project	MCM-LTER	Berry Lyons	Terrestrial/Aquatic	No	Yes	Yes
Microbiological and Ecological Responses to Global Environmental Changes in Polar Regions	MERGE	Takeshi Naganuma and Annick Wilmotte	Terrestrial	#55	Yes (with multiple sub-projects)	Yes
Natural climate variability - extending the Americas palaeoclimate transect through the Antarctic Peninsula to the pole	CACHE-PEP	Dominic Hodgson	Marine/Terrestrial	No	Yes	No
Polar Aquatic Microbial Ecology	PAME	Gunnar Bratbak	Aquatic	#71	Yes	Yes
Response of Polar, Tropical and Temperate Microalgae to Global Warming and Increased UV Radiation	-	Phang Siew Moi		No	No	No
Retrospective and Prospective Vegetation Change in the Polar Regions: Back to the Future	BTF	Terry Callaghan	Terrestrial	#214	No	Yes

Project Name	Acronym	Key Contact	Discipline	IPY Project ?	Review Attached	In AMD
SCAR-Marine Biodiversity Information Network	SCAR-MarBIN	Claude de Broyer	Marine	#83	Yes	Yes
Scratching The Surface	IMARES-SUIT	Jan Andries van Franeker	Marine	No	Yes	No
Sex and Variation in Antarctic Lichens	-	Paul Dyer	Terrestrial	No	Yes	No
Southern Ocean Continuous Plankton Recorder Survey	SO-CPR	Graham Hosie	Marine	No	Yes	No
Structural-functional characteristics of microbe cenoses in Antarctica. The investigation of microorganisms role in biogeochemical cycles	-	Oleksandr Tashyrev	?	No	No	No
Terrestrial ecosystems in Arctic and Antarctic: effects of UV light, liquefying ice, and ascending temperatures	TARANTELLA	Ad Huiskes	Terrestrial	#59	Yes	Yes
Trophic Ecology of the Nearshore Zone	TRENZ	Jonathan Stark	Marine	No	No	No
Understanding, valuing and protecting Antarctica's unique terrestrial ecosystems: Predicting biocomplexity in Dry Valley ecosystems	-	Allan Green	Terrestrial	No	No	No
Vulnerability of native communities to invasive insects and climate change in sub-Antarctic islands	Evince	David Renault	Terrestrial	No	No	No

Your Name:	Dana Bergstrom
Your Project Name:	Aliens in Antarctica
Outputs	<p>Aim of the project:</p> <p>This project is examining the extent to which people from many nations unintentionally carry propagules of alien species into the Antarctic region. We are focusing on what is called the 'transport barrier' which is the most significant hurdle for species colonisation in the Antarctic and the one alien species are jumping by hitch-hiking on our journeys/ travels south. Also assessment of the propagule loads and pathways will allow us to develop realistic prevention and amelioration measures to better protect Antarctica. This project will be the <i>first</i> time that an assessment of the extent of transfer of alien species into an entire biome has ever been made.</p> <p>The project's main data collecting season was the austral summer 07/08</p>
Key achievements (provide a short paragraph on each)	<p>Antarctic national support 24 COMNAP member nations and the majority of IAATO tour companies agreed to participate in the project.</p> <p>Data collection Many countries/ tourist operations have participated in the data collection component of the project.</p>
Is this project an IPY project?	Yes #170
Publications in peer reviewed literature	None to date
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>Bergstrom, D.M. and Chown, S.L. (2007) IPY Aliens in Antarctica, (Australia and SCAR submission) XXX ATCM, CEP X Information Paper Agenda Item: ATCM 10, CEP 5, 1-5p</p> <p>Bergstrom (2007) IPY – Aliens in Antarctica, IAATO summer Newsletter</p>
Brochures, posters, press/media articles and similar PR material	<p>Poster and brochures associated with collecting - IPY Aliens in Antarctica</p> <p>Many press stories eg: Reuters -Antarctica on alert for alien invaders, Mon Jan 28, 2008</p>
Web site details and number of hits to this site if data is available	www.aliensinantarctica.aq
Information on project database(s)	Not established
Number and type of education/training and other capacity building activities	some postgraduate student involvement
Notes on new technology/model developments	None
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Nine core countries with scientists (Australia, Belgium, France, Japan, New Zealand, Poland, South Africa, The Netherlands, United Kingdom)

	<p>23 scientists (including 3 postgrads) 10 women – 13 men</p> <p>– 27 CONAMP nations - Argentina, Australia, Belgium, Bulgaria, Chile, Ecuador, Finland, France, Germany, India, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Peru, Poland, Russia, South Africa, Spain, Sweden, United Kingdom, United States of America, Uruguay</p>
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<p>Planning workshop – Stellenbosch University South Africa - October 2006</p> <p>Implementation workshop – Netherlands Institute of Ecology- Yerseke Netherlands</p> <p>First post- data gathering workshop – SCAR St Petersburg</p>
Links to other SCAR SRPs or SCAR Action or Expert Groups	Link To SCAR Antarctic Treaty committee
Links to other ICSU bodies or to other scientific groups	

Your Name:	Angelika Brandt
Your Project Name:	(SYSTem COupling) System Coupling in the deep Southern Ocean ANDEEP-SYSTCO
Outputs	
Key achievements (provide a short paragraph on each)	<p>Expedition with RV Polarstern just finished. Some interesting achievements of the ANDEEP-SYSTCO project are:</p> <p>General</p> <ul style="list-style-type: none"> • First biogeochemical <i>in situ</i> measurement repeated after 7 weeks, to investigate the effect of a phytoplankton bloom on benthos and how surface productivity is linked to the seafloor • First biogeochemical sampling of deep-sea stations 12 nm apart in order to look at small-scale heterogeneity in the sediment • Worldwide southernmost <i>in situ</i> benthic flux measurement at 69°40.4'S (Polynia station) • First sampling through the entire water column in the Southern Ocean from surface and ice flora and fauna down to bathyal or abyssal depths (5 stations, partly incomplete) • First sediment profiles measured simultaneously with the complete benthic community, including epibenthos and infauna • 52° SPF is characterised by low diversity and abundance in the macrofauna, even after a slight plankton bloom in spring (revisit of stations after 7 weeks) • Eastern Weddell Sea and Lazarev Sea are generally poorer in species and abundance of organisms in the deep sea • Maud Rise (seamount) differs completely in taxon composition from the abyssal stations, perhaps due to the unique physical oceanographic conditions including the Taylor column influencing localised entrainment of larvae. Brooders, on the contrary, occur only as a minor fraction in the macrobenthic sample <p>Fauna</p> <ul style="list-style-type: none"> • Discovery of the rare Monoplacophora <i>Laevipilina antarctica</i> close to Neumayer (northern pier) which will help to elucidate the phylogenetic position of this taxon • High numbers of Bivalvia at Maud Rise (52% of the macrofauna) possibly indicating high particle availability for filter feeders • High biomass of Holothuria (in total about 15 kg, with the largest holothurian [70cm] of 3.6 kg, possibly indicating that these mud-feeding animals have much organic matter available • High biodiversity of Gastropoda (higher than at northernmost stations) providing interesting result for deep-sea latitudinal gradients! • Sampling of a high number of small calcareous Porifera at northern pier and of a large carnivorous sponge (70°S Lazarev Sea in 2100 m) • Finding symbioses; parasitic gastropods on holothurians and crinoids, many parasitic copepods on a scale worm and on fishes • Sampling of more than 10 specimens of Haplomunnidae, a very rare deep-sea isopod family, at Maud Rise <p>Methods</p> <ul style="list-style-type: none"> • An experimental approach to the meiobenthic food-web study in the Southern Ocean deep sea to uncover the microbial carbon contribution to the diet of Nematoda



	<ul style="list-style-type: none"> • About 750 samples for biochemistry for food-web analysis (fatty acids and stable isotopes) which is essential for the analysis of the trophic structure • About 500 samples for isopod barcoding and 350 extractions for genetics, important for population genetics and phylogenetic analyses of selected taxa • Many samples for genetics of polychaetes and other taxa (same background as isopods) • Fixation of <i>Laevipilina</i> for genetics in order to solve the phylogenetic relationship of Monoplacophora • Five deployments (4xSYSTCO) of free-falling Lander equipped with <i>in situ</i> microprofiler for high resolution pore water oxygen profiles • Laboratory oxygen porewater profiles measured at 5 stations <i>ex situ</i> in MUC and GKG samples. Complementing sampling for porosity, Chlorophyll-a and organic carbon content to be determined at the institute.
Is this project an IPY project?	Yes - #66
Publications in peer reviewed literature	Nothing yet, we returned from the Southern Ocean on MONDAY!
Other publications	-
Brochures, posters, press/media articles and similar PR material	Yes, leaflet and Science Plan
Web site details and number of hits to this site if data is available	<p>CeDAMar webpage: http://www.cedamar.org/ See daily log on CeDAMar homepage about the SYSTCO project (E & O)</p> <p>AWI: http://www.awi.de/en/news/press_releases/detail/item/der_klimawandel_und_das_leben_im_suedlichen_ozean_forschungsschiff_polarstern_startet_antarktische/</p> <p>Zoological Museum University of Hamburg, Invertebrates II</p>
Information on project database(s)	Data will go to SCAR-MarBIN
Number and type of education/training and other capacity building activities	Teaching at university and E & O from the vessel Polarstern via Vicky Wadley (CAML) and Brigitte Ebbe (CeDAMar)
Notes on new technology	-
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	53 participants, 23 females
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	8 nations participated in the expedition

Links to other SCAR SRPs or SCAR Action or Expert Groups	
Links to other ICSU bodies or to other scientific groups	

Your Name:	Yvon LE MAHO, Yan ROPERT-COUDERT
Your Project Name:	AMPPOP: Automatic Monitoring of Penguin Populations
Outputs	
Key achievements (provide a short paragraph on each)	Despite a lack of fundings, the group, upon its first meeting, has agreed to launch a web site, which would compile guidelines for field studies on penguins using automatic identification systems and bio-logging approaches, as well as results obtained by the participants to the project (populations trends, data obtained during the course of automatic identification systems and/or bio-logging studies). While search for other funding opportunities are ongoing in order to conduct circumpolar-scale investigations of the breeding and foraging activity of penguins, collaborations have intensified between groups with for example, some technological exchanges between the French and Australian partners.
Is this project an IPY project?	YES #251
Publications in peer reviewed literature (including articles "in press") [Please append]	Céline Le Bohec, Joël M Durant, Michel Gauthier-Clerc, Nils C Stenseth, Young-Hyang Park, Roger Pradel, David Grémillet, Jean-Paul Gendner, Yvon Le Maho (2008) King penguin population threatened by Southern Ocean warming. Proceedings of the National Academy of Sciences, 10.1073/pnas.0712031105
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	Ropert-Coudert Y, Ainley D, Ballard G, Kato A, Lyver P, Olmastroni S, Southwell C, Takahashi A, Trathan P, Wilson P, Le Maho Y (2007) Automatic Monitoring of Penguin PoPulation (AMPPOP): Circumpolar monitoring of the biology of key-species in relation to environmental changes. Asian Collaboration in IPY2007-2008 (ed. M Shiobara), proceedings of the IPY Symposium, Asian Collaboration in IPY2007-2008, Tokyo, March 1 2007
Brochures, posters, press/media articles and similar PR material	Posters of AMPPOP have been presented at the following international meetings: <ul style="list-style-type: none"> • VI Penguin Conference, Hobart, Australia, 3-7 September 2007 • IPY Symposium, Asian Collaboration in IPY2007-2008, Tokyo, Japan, 1 March 2007
Web site details	A website is actually under construction
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	See above for the main online database. AMPPOP, via its participants, has also participated or established links with the following databases: <ul style="list-style-type: none"> • The Penguinness Book http://polaris.nipr.ac.jp/~penguin/penguinness/index.html • SCAR-marBIN http://www.scarmarbin.be/
Number and type of education/training and other capacity building activities	None
Notes on new technology/model developments	The group is actively searching for funds so as to develop technological tools in common. In the meantime each member of the consortium depends on its own fundings to develop and maintain automatic identification systems and bio-loggers.
Inputs	
Number, gender and country of participating scientists in your project [to	<ul style="list-style-type: none"> • Yvon Le Maho, Male, France • Yan Ropert-Coudert, Male, France • Céline Le Bohec, Female, France

the best of your ability]	<ul style="list-style-type: none"> • Akiko Kato, Female, Japan • Akinori Takahashi, Male, Japan • Grant G Ballard, Male, USA • David G Ainley, Male, USA • Phil N Trathan, Male, UK • Colin Southwell, Male, Australia • Louise Emerson, Female, Australia • Silvia Olmastroni, Female, Italy • Phil Lyver, Male, New Zealand • Peter R Wilson, Male, New Zealand
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<ul style="list-style-type: none"> • 1st AMPPOP meeting group, Hobart 2007 (workshop), 12 attendees, 7 countries • 6th International Penguin Conference, Hobart 2007 (conference), 11 attendees, 7 countries
Links to other SCAR SRPs or SCAR Action or Expert Groups	Links with SCAR-marBIN
Links to other ICSU bodies or to other scientific groups	Links with the Census of Antarctic Marine Life CAML and the Census of Marine Life,

Your Name:	Peter Convey
Your Project Name:	Biodiversity, Functions, Limits and Adaptation from Molecules to Ecosystems (BIOFLAME)
Outputs	
<p>Key achievements (provide a short paragraph on each)</p> <p>This is a selection from our current annual output monitoring.</p>	<p><i>Climate change and temperature tolerances of Antarctic marine invertebrates</i></p> <p>The ability to predict the consequences of climate change on marine organisms using laboratory experimentation is contentious, as the timescales of laboratory experiments, climate change effects and evolutionary time are all very different. However, we have been able to prove that by taking a systematic approach using different speeds of thermal ramping and progressively longer temperature acclimation times that survival temperature and rate of warming are curvilinear i.e. animals that survive to high temperatures over short timescales cannot acclimate to similar temperatures over a period of months. The survival temperatures over a longer timescale are much lower. From a study of 14 species in Antarctica, the maximum temperature an average species could survive for a year would be just +2.4°C. We were also able to show that bigger animals (the reproductive stock) fail first compared to juveniles and also that more active animals survive longer. Hence the effects of temperature change are complex: affecting not only organism survival, but also population reproductive capacity and food webs, especially in terms of predator-prey relationships, where more active predators appear more resistant to elevated temperature.</p> <p><i>Arctic springtails and genetic control of over-wintering ability</i></p> <p>Ice, snow and temperatures of -14°C are conditions which most animals would find difficult, if not impossible, to survive in. However this exactly describes the Arctic winter, and the Arctic springtail <i>Onychiurus arcticus</i> regularly survives these extreme conditions by almost completely drying out (a process called "protective dehydration") and re-emerges in the spring. We have sequenced almost 20,000 gene tags from this animal and been able to identify candidate genes involved in this process, such as aquaporins, which are involved in cellular water transport. This sequencing project significantly increases the number of gene sequences in the public databases for a non-model insect species. We have also made a gene chip to study in more detail the genetic processes which underlie the ability to almost completely dry out, yet survive. This data is currently being analysed.</p> <p><i>Disturbance in the Antarctic marine environment:</i></p> <p>In addition to well-documented physiological challenges, the Antarctic marine benthos faces the disturbance and destruction from floating ice, with the impacts occurring across a range of physical scales – from small pieces of brash ice affecting the intertidal zone, to vast icebergs scouring trenches at hundreds of</p>

	<p>metres depth. We have provided the first clear quantification of these impacts in different Antarctic marine habitats, along with studies of community response, and post-disturbance colonisation processes and community development, and</p> <p>Southern Ocean biodiversity and biogeography: Both within BIOFLAME, and in conjunction with a wide group of collaborators, this year has seen major advances in understanding in this field, with the publication of key papers amongst other things documenting (a) deep sea diversity in the Atlantic sector of the Southern Ocean (Nature), (b) biogeographic patterns in gastropod and bivalve molluscs, (c) biodiversity and biogeography of southern temperate and polar bryozoans, (d) abundance patterns and complexity across the continental slope and deep sea, and (e) contributions to the publication in 2008 Barnes of a special issue of Antarctic Science focussing on marine diversity and richness patterns</p> <p>Ancient terrestrial biogeography Again with collaborators within EBA, BIOFLAME research has been instrumental in developing a major paradigm shift in the understanding of Antarctic terrestrial biogeography. Combining evidence from classical biogeographical and new molecular biological and phylogeographical approaches, we have generated a new synthesis of knowledge. This demonstrates that most of the major components of Antarctic terrestrial diversity have an ancient and continuous history in Antarctica, predating both Pleistocene and in several cases Miocene episodes of glaciation. This long history provides a completely novel constraint with the potential to contribute to improving the accuracy of glaciological reconstruction of Antarctica's history, and hence the continent's influence on global climate. The work is described in publications in Science and Biological Reviews.</p>
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	Linked with IPY projects 'Aliens in Antarctica', 'CAML' 'Tarantella' and 'EBA'
Publications in peer reviewed literature (including articles "in press")	2007: Approx 60 2006: Approx 50 See full EBA publications list which includes BIOFLAME publications.
Other publications	2007 Approx 5 2006 Approx 10
Brochures, posters, press/media articles and similar PR material	Many BIOFLAME staff are regular contributors or interviewees for multiple media outlets
Web site details and number of hits to this site if data is available	www.antarctica.ac.uk
Information on project database(s)	Organised centrally through BAS (www.antarctica.ac.uk). Biodiversity elements of programme contribute to EBA terrestrial (RISCC) and marine (MarBIN) database efforts

Number and type of education/training and other capacity building activities	At least 16 PhD students and one Master's student currently linked with BIOFLAME (within BAS, with UK and non-UK universities – the latter including institutions/students in the Netherlands, Germany, Portugal, Belgium, Sweden, Serbia, New Zealand, Canada, Malaysia). Several programme staff give lecture courses at UK universities (Cambridge, Birmingham, Sunderland, St. Andrews), and regularly examine theses for UK and overseas Universities. Programme staff members contribute to international reviews of, or act as international expert consultants for, the Antarctic programmes of at least South Africa, Chile, Malaysia, Belgium, Czech Republic, as well as being regular science proposal reviewers for several more (at least, Australia, New Zealand, NSF, Poland, Czech Republic, France)
Notes on new technology/model developments	Geologist in programme responsible for design and development of new state of the art digital geological mapping instrument for field use
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Core BIOFLAME staff are by definition UK employees, but include several nationalities (UK, Germany, Australia; linked research students as above). Not all staff are 100% allocated to programme, but core staffing includes major contribution from approximately 14 staff 9 of which are male and 5 female (the latter including both project leaders within the programme)
Title, place and type of meetings/workshops	-
Links to other SCAR SRPs or SCAR Action or Expert Groups	Biogeographical work links to geological community in ACE (presentation session at 2007 ISAES, multi-author papers involved three programme staff) Ecophysiological and colonisation related work links to AGCS, through biological input to refining application of climate models
Links to other ICSU bodies or to other scientific groups	

Your Name:	Julian Gutt
Your Project Name:	Biodiversity-Change in the formerly ice shelf-covered Larsen A/B area
Outputs	Data sets on: 1) physical oceanography, 2) sedimentation, 3) sediment parameters, 4) benthic microorganisms and biogeochemical processes, 5) meiobenthos, 6) makrobenhtos, 7) megabenthos, 8) apex predators, 9) fish,
Key achievements (provide a short paragraph on each)	<ul style="list-style-type: none"> Describe and understand the ice shelf- covered ecosystem Describe and understand the biodiversity-change after the ice shelf-disintegration
Is this project an IPY project?	Yes (contribution to EBA and CAML)
If this project is not an IPY project, what contributions has it made to other IPY projects?	
Publications in peer reviewed literature (including articles "in press")	Helge Niemann, David Fischer, Americo Montiel, Olaf Heilmayer, Kerstin Pfeiffer, Sabine Kasten, Gerd Bohrmann, Antje Boetius, Julian Gutt (submitted) A low-activity cold seep in the Larsen B area, western Weddell Sea, Antarctica. Biogeosciences.
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	Gutt, J. (2008) The Expedition ANTARKTIS-XXIII/8 of the Research Vessel "Polarstern" in 2006/2007. Berichte zur Polar- und Meeresforschung 569
Brochures, posters, press/media articles and similar PR material	<ul style="list-style-type: none"> 31 news agencies messaged the expedition results 28 contributions in radio and television were sent 141 articles in newspapers appeared More than 360 articles were published online in 33 countries and 9 languages. IPY web blog national and International
Web site details and number of hits to this site if data is available	Impossible to count
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	Data to be provided (when analyzed/postprocessed) in PANGAEA, OBIS/SCARMarBin, IWC, CCAMLR
Number and type of education/training and other capacity building activities	various
Notes on new technology/model developments	various
Inputs	
Number, gender and country of participating scientists in your project	Scientific personnel: 31 males, 17 females, 14 countries Germany, Canada, Czech Republic, Spain, Russian Federation, Belgium, Italy, Ukraine, USA, UK, France, Chile
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	CAML Data evaluation workshop, Sept 2007 Barcelona, participants: 5 females, 7 males, 5 countries
Links to other SCAR SRPs or SCAR Action or Expert Groups	CCAMLR
Links to other ICSU bodies or to	IWC

other scientific groups	
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Your Name:	Michael Stoddart
Your Project Name:	Census of Antarctic Marine Life (CAML)
Outputs	
Key achievements (provide a short paragraph on each)	<p>CAML has developed sampling and data handling protocols which are being used by all participants in the Census. The data are entered into the Oceans Biogeographic Information System via an Antarctic portal – SCAR’s Marine Biodiversity Information Network (SCAR-MarBIN).</p> <p>It is actively rescuing Antarctic marine biodiversity data which might soon be lost from a number of institutions around the world and depositing it in SCAR-MarBIN.</p> <p>Many unidentified species are thought to be new to science.</p> <p>In South America it has established Latin-America CAML to coordinate South American research activities and the use of shared logistics.</p> <p>It is supporting the publication of keys to marine crustacea and taxonomic workshops. It will publish a “Status of Marine Biodiversity” for the use of the CEP, CCAMLR and Treaty Parties.</p>
Is this project an IPY project?	Yes - #53
Publications in peer reviewed literature (including articles “in press”) [Please append]	All CAML publications are listed on the SCAR-MarBIN website (www.scarmarbin.be)
Other publications	There have been many articles in the popular press in many countries.
Brochures, posters, press/media articles and similar PR material	<p>Following the return of a German CAML voyage in March 2007 there were 75 media reports, as counted by the Census of Marine Life (CoML) outreach consultant.</p> <p>No figures are available yet regarding media reports from research voyages being completed during the 2007/08 Antarctic season.</p>
Web site details and number of hits to this site if data is available	<p>www.caml.aq</p> <p>Number of hits not known</p>
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	Database for CAML is at SCAR’s Marine Biodiversity Information Network (www.scarmarbin.be). It currently contains 48 separate databases and 9 million species records in a fully searchable, geo-referenced format. It lists 8,000 taxa of marine organisms from Antarctic waters. A group of taxonomic editors verify the data prior to its lodgement in the database. Number of hits not known.
Number and type of education/training and other capacity building activities	All CAML major research voyages have carried dedicated Education and Outreach specialists. There have been dedicated websites on German CAML voyages in 2006/07 and 2007/08; a joint Australian/Japanese/French series of voyages in 2008; and a New Zealand voyage in 2008. These sites have addressed the needs of schools and young students and have made use of video material.

Notes on new technology/model developments	Much use has been made of high definition underwater video and still photography. These have been remotely operated devices or attached to trawl sampling equipment. Barcode of Life technology is being applied to many groups and samples.
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	About 200 scientists of both sexes from about 20 countries are participating in CAML activities. The numbers of both will rise in the future as more taxonomic specialists participate in species identification.
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	Presentations on CAML have been given at All-Program meetings of the Census of Marine Life in Frankfurt 2005 and Auckland 2007. About 150 scientists from around the world attended. CAML will participate in the next All-Program meeting in 2009 (Long Beach, Ca) and at the final CoML meeting in London in 2010. CAML will hold an international workshop for up to 50 specialists in June 2009 in Genoa.
Links to other SCAR SRPs or SCAR Action or Expert Groups	CAML has strong links with SCAR's Action Group on Southern Ocean Continuous Plankton Recording (SO-CPR), and with ANDEEP.
Links to other ICSU bodies or to other scientific groups	Major linkage to Census of Marine Life (www.coml.org) and many of its field projects (e.g. Arctic Ocean Diversity; Chemosynthetic Ecosystems; Seamounts; Census of Marine Plankton etc). Links also with Scientific Committee of CCAMLR and other international Southern Ocean marine programs.

Your Name:	Marc LÉBOUVIER
Your Project Name:	ECOBIO (IPEV 136)
Outputs	
Key achievements (provide a short paragraph on each)	<p>Biodiversity : study of the bryological flora (2006-2007 summer expedition)</p> <p>This study was conducted together with R. Ochyra, international specialist of the Antarctic and subantarctic bryophyte species. The large number of places visited in Crozet and Kerguelen enabled him to collect a great number of samples species from various habitats. During his stay in Crozet (9-11 November 2006), he collected, altogether, 235 specimens of mosses and liverworts. Of these, ten were proved to be new in this archipelago. The main field work was carried out on Kerguelen Islands, between 17 November 2006 and 5 January 2007. 136 collecting sites were examined. Altogether 4321 specimens of bryophytes were collected and it is apparently the largest bryophyte collection ever made on the archipelago. It comprises 101 species of the 115 species which have hitherto been reported from the archipelago. In addition, no less than 30 species were recorded for the first time from the archipelago. Detailed analysis of the collection may increase this number for additional 3-4 species. Samples were also collected during stopover in Amsterdam and St Paul. Both bryophyte taxonomy and bryophyte lists from the French subantarctic islands will be updated (R. Ochyra et al.).</p> <p>Impact of water deficits on plant community dynamics at Kerguelen Islands (2006-2007 summer expedition)</p> <p>Since the early 1990s, summer droughts are more and more frequent in the eastern part of Kerguelen archipelago and the vegetation cover is greatly impacted. A spectacular decrease of the <i>Acaena magellanica</i> cover has been recorded and introduced plant species, mainly <i>Taraxacum officinale</i>, have become largely dominant. In order to understand such dynamics, the consequences of droughts on <i>Acaena</i> and <i>Taraxacum</i> are followed since the 2006-2007 summer season from 5 sites at Ile Guillou. This sites are characterized by soils with contrasted depths and water contents. Several parameters have been monthly recorded: soil water content, water saturation capacity of the leaves of <i>Acaena</i> and <i>Taraxacum</i>, phenology, reproductive capacity. Significant results are expected after two or three summer seasons.</p> <p>Biology, dispersal and impact of the introduced carabid <i>Oopterus soledadinus</i> at Kerguelen Islands (2006-2007 and 2007-2008 summer expeditions)</p> <p>Predator insects are uncommon in the subantarctic. At Kerguelen Islands, <i>Oopterus soledadinus</i>, a flightless Carabidae Coleoptera, was accidentally introduced in 1913 from the Falkland Islands. This alien species is a very rare example of the introduction in a subantarctic island of a species which is originating from another subantarctic island, with similar climatic conditions. Ninety years after its arrival at Kerguelen at the site of sheep farm, Port-Couvreux, <i>O. soledadinus</i> has been</p>

	<p>colonising the coastal areas around its introduction point, and it has been accidentally spread by Man in several other sites. This Carabidae spectacularly affects the native insect fauna, as demonstrated, for example, by the absence at Port-Couvreux and its surrounding of <i>Anatalanta aptera</i>, a native wingless fly usually very abundant in such habitats.</p> <p>Studies in course :</p> <ul style="list-style-type: none"> - dispersal processes, habitats and spatial dynamics of <i>O. soledadinus</i> - morphometric approach to inform on its phenotypic plasticity according to the quality and the quantity of available trophic resources in the colonized sites. - genetic diversity (use of microsatellite loci) of the populations coming from distinct localities. <p>2007-2008 summer expedition at Amsterdam Island</p> <ul style="list-style-type: none"> - long-term changes in plant communities after eradication of cattle at Amsterdam Island in 1988 - biodiversity and response to climate change (<i>Sphagnum</i> mires, diatoms, rotifera, lichens, introduced aphids)
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	<p>IPY Activity N° 170 Aliens in Antarctica Sampling of propagules in passengers equipment on board Marion-Dufresne and sampling of fresh produce at Kerguelen and Amsterdam Islands (november 2007)</p> <p>IPY Activity N°59 Tarantella Monitoring of vegetation and diatoms communities in Open Top Chambers at Possession Island, Crozet archipelago (in course since 2005).</p> <p>IPY Activity N° 137 Evolution and biodiversity in the Antarctic : the Response of Life to Change.</p>
<p>Publications in peer reviewed literature (including articles "in press") [Please append]</p> <p>2007 references Bold : acknowledges its links with SCAR EBA (or RiSCC) in the acknowledgements</p>	<p>Frenot, Y., Convey, P., Lebouvier, M., Chown, S.L., Whinam, J., Selkirk, P.M., Skotnicki, M. and Bergstrom, D.M. (in press): Antarctic Biological Invasions: Sources, extents, impacts and implications. In Gilbert N., de Poorter M. & Storey B. (eds) Adventive Fauna and Flora in Antarctic & Southern Ocean Regions. Gateway Antarctica Special Publication Series</p> <p>Davies, L., Bouvet, S. and Vernon, P., 2007: All-year reproduction and possible thermal melanism in <i>Amblystogenium pacificum</i> (Coleoptera: Carabidae) on the sub-Antarctic Ile de la Possession (Iles Crozet). <i>Polar Biology</i>, 30 : 253-260.</p> <p>Gremmen, N.J.M., Van de Vijver, B., Frenot, Y. and Lebouvier, M., 2007: Distribution of moss-inhabiting diatoms along an altitudinal gradient at sub-Antarctic Îles Kerguelen. <i>Antarctic Science</i>, 19 : 17-24.</p> <p>Frenot, Y., 2007 : Research activities in the Sub-Antarctic. <i>Papers and Proceedings of the Royal Society of Tasmania</i>, 141 : 111-114.</p> <p>Lebouvier, M and Frenot, Y., 2007 : Conservation and management in the French sub-Antarctic islands and surrounding seas. <i>Papers and Proceedings of the Royal Society of Tasmania</i>, 141 : 23-28.</p> <p>Madec, L. and Bellido, A., 2007 : Spatial variation of shell</p>

	<p>morphometrics in the subantarctic land snail <i>Notodiscus hookeri</i> from Crozet and Kerguelen Islands. <i>Polar Biology</i>, 30 : 1571-1578.</p> <p>Schermann-Legionnet A., Hennion F., Vernon P. and Atlan A-G. 2007 : Breeding system of the subantarctic plant species <i>Pringlea antiscorbutica</i> R. Br. and search for potential insect pollinators in the Kerguelen Islands. <i>Polar Biology</i>, 30 : 1183-1193.</p> <p>Wagstaff, S.J. and Hennion, F., 2007 : Evolution and biogeography of <i>Lyallia</i> and <i>Hectorella</i> (Portulacaceae), geographically isolated sisters from the Southern Hemisphere. <i>Antarctic Science</i>, 19 : 417-426.</p>
Other publications	-

Brochures, posters, press/media articles and similar PR material 2007 Books or scientific review for the general public	Frenot ,Y., 2007 : Régions polaires : les enjeux. Le Pommier / Cité des Sciences et de l'Industrie : 125 p. Frenot, Y., 2007 : L'Antarctique, terre de paix et de science. <i>In</i> Les Pôles. Travaux et Documents pour la Classe, 942 : 18-19. Lebouvier, M., 2007 : Des espèces dans la tourmente. <i>In</i> Les Pôles. Travaux et Documents pour la Classe. 942 : 22-24 + 6 conferences for general public in relationship with IPY
Web site details	Under construction
Information on project database	
Number and type of education/training and other capacity building activities	
Notes on new technology/model developments	
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	2006-2007 and 2007-2008 seasons France Maryvonne CHARRIER, Yves FRENOT, Françoise HENNION, Marc LÉBOUVIER, David RENAULT, Philippe VERNON (CNRS – University of Rennes 1) Jean-Louis CHAPUIS (Museum National d'Histoire Naturelle, Paris) Maurice HULLE (Institut National de la Recherche Agronomique, Le Rheu) Australia Jennie WHINAM (Biodiversity Conservation Branch, Department of Primary Industries & Water, Hobart) [2007-2008 summer expedition at Amsterdam Island] Belgium Bart VAN DE VIJVER (National Botanic Garden of Belgium, Meise) [2007-2008 summer expedition at Amsterdam Island] New-Zealand Steven WAGSTAFF (Allan Herbarium, Landcare Research, Lincoln) Poland Ryszard OCHYRA (Institute of Botany, Polish Academy of Sciences, Kraków) [2006-2007 summer expedition at Kerguelen Islands]
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	Ilèmes Rencontres Francophones, Invasions Biologiques et Traits d'Histoire de Vie, Rennes, France, 14-16/11/2007 Hennion F., Gauthier C., Fournier M., Brumbt C. & Prinzing A. - Espèces invasives et espèces endémiques: peut-on montrer des différences dans leurs flexibilités métaboliques vis-à-vis du climat ? (oral) Lalouette L., Laparie M., Lebouvier M. Vernon P. & Renault D. - Le carabe introduit <i>Oopterus soledadinus</i> dans les Iles Kerguelen : les raisons d'un succès (oral) International Multidisciplinary Workshop on Southern South American Dust, Puerto Madryn, Argentine, 03-05/10/2007 Dulac F., Losno R., Bergametti G., Wagener T., Guieu C. &

	Lebouvier, M. - Example of aeolian erosion in a south mid-latitude desert: Kerguelen Islands (49°S, 70°E). (poster)
Links to other SCAR SRPs or SCAR Action or Expert Groups	
Links to other ICSU bodies or to other scientific groups	

Your Name:	Sharon Robinson
Your Project Name:	Cool Plants – includes: Genetic variation in <i>Ceratodon purpureus</i> . (Sharon Robinson & David Ayre) Antarctic State of the Environment, Indicator 72: How is the Windmill Islands' terrestrial vegetation responding to climate change? (Sharon Robinson & Jane Wasley) Climate change and carbon gain in Antarctic mosses (Marilyn Ball, Marcus Shortemeyer, Sharon Robinson) Identifying the chemicals which promote survival of mosses in extreme environments (Sharon Robinson et al) Satellite imagery for change detection in the sub-Antarctic: using Heard Island as a proof of concept (Arko Lucieer et al)
Outputs	
Key achievements	See papers
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	Fundamental research on climate change, biodiversity and imaging of terrestrial vegetation
Publications in peer reviewed literature (including articles "in press") [Please append]	<ol style="list-style-type: none"> 1. Clarke, L.J., Robinson, S.A., Ayre, D.J. (2008) Somatic mutation and the Antarctic ozone hole Journal of Ecology 96 378-385. Editor's choice article for March 2008. 2. Dunn, J.L. Robinson, S.A. (2006) UV-B screening potential is higher in two cosmopolitan moss species than in a co-occurring Antarctic endemic moss – implications of continuing ozone depletion. Global Change Biology 12 2282-2296. 3. Wasley, J., Robinson, S.A., Popp, M., Lovelock, C.E. (2006) Climate change manipulations show Antarctic flora is more strongly affected by elevated nutrients than water. Global Change Biology 12 1800-1812. 4. Wasley, J., Robinson, S.A., Popp, M., Lovelock, C.E. (2006) Some like it wet – biological characteristics underpinning tolerance of extreme water events in Antarctic bryophytes. Functional Plant Biology 33 443-455. 5. Robinson, S.A., Turnbull, J.D. Lovelock, C.E. (2005) Impact of changes in natural UV radiation on pigment composition, surface reflectance and photosynthetic function of the Antarctic moss, <i>Grimmia antarctici</i>. Global Change Biology 11: 476-489. 6. Robinson, S.A., Wasley, J., Tobin, A.K. (2003) Living on the edge-plants and global change in continental and maritime Antarctica. Global Change Biology 9 1681-1717. 7. Lovelock, C.E., Robinson, S.A. (2002) Surface reflectance properties of Antarctic moss and their relationship to plant species, pigment composition and photosynthetic function. Plant Cell and Environment 25: 1239-1250. 8. Robinson, S.A., Wasley, J., Popp, M., Lovelock, C.E. (2000) Desiccation tolerance of three moss species from continental Antarctica. Australian Journal of Plant Physiology 27 379-388
Other publications (e.g. institution reports, articles in the grey literature,	<ol style="list-style-type: none"> 9. Robinson, S.A. (2002) Indicator 72-Windmill Islands terrestrial vegetation dynamics. Antarctic State of the Environment Indicator. http://aadcmaps.aad.gov.au/aadc/soe/display_indicator.cfm?soe_id=72 10. Robinson, S.A. (2008) Indicator 72-Windmill Islands terrestrial vegetation

maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>dynamics. Antarctic State of the Environment Indicator. (<u>in press</u>)</p> <p>11. Robinson, S.A., Wasley, J., Turnbull, J., Lovelock, C.E. (2001) Antarctic moss coping with the ozone hole. Proceedings of the 12th International Congress on Photosynthesis "PS2001 Proceedings" CSIRO publishing ISBN 0643 067116.</p> <p>Papers submitted</p> <p>12. Clarke, L.J., Robinson, S.A. Cell wall-bound UV-screening pigments explain the high UV tolerance of the Antarctic moss, <i>Ceratodon purpureus</i> (revised submission to New Phytologist Feb 2008)</p> <p>13. Clarke, L.J., Robinson, S.A., Ayre, D.J. Genetic structure of Antarctic populations of the moss <i>Ceratodon purpureus</i>. (revisions to Antarctic Science March 2008)</p> <p>Recent International Conference Abstracts (2005-2006)</p> <p>14. Robinson, S.A., Turnbull, J.D., Leslie, S.J. (2006) Safer to be dry - desiccation protects Antarctic mosses from UV-B induced DNA damage. American Society of Plant Biologists Annual Meeting. Boston August 2006 (oral presentation).</p> <p>15. Robinson, S.A., Turnbull, J.D., Dunn, J.L., Wasley, J. (2006) How will Climate Change affect Antarctic Moss species? SCAR Open Science Meeting Hobart, July 2006 (oral presentation).</p> <p>16. Robinson, S.A., Turnbull, J.D. Lovelock, C.E. (2005) Ambient UV radiation levels negatively affect the endemic Antarctic moss, <i>Grimmia antarctici</i>. SCAR Biology Meeting, Curitiba, Brazil July 2005 (oral presentation).</p> <p>17. Fyfe, S.K., Robinson, S.A. (2005) Can remote sensing be used to map and monitor vegetation on subantarctic islands? SCAR Biology Meeting, Curitiba, Brazil July 2005 (oral presentation).</p> <p>18. Robinson, S.A., Turnbull, J.D. Lovelock, C.E. (2005) Ambient UV radiation levels negatively affect the endemic Antarctic moss, <i>Grimmia antarctici</i>. International Botanical Congress Vienna July 2005 (oral presentation).</p> <p>19. Turnbull, J.D., Leslie, S.J., Robinson, S.A. (2005) Susceptibility of Antarctic mosses to UV-B induced DNA damage. International Botanical Congress Vienna July 2005 (poster presentation).</p> <p>20. Grant, N.M., Turnbull, J.D., Robinson, S.A. (2005) Protection against a sub-Antarctic summer - photoprotective and UV-B screening pigments of Heard Island species. International Botanical Congress Vienna July 2005 (poster presentation).</p>
Brochures, posters, press/media articles and similar PR material	Several
Web site details	http://www.uow.edu.au/science/biol/staff/sharonr/sr_coolplants.html http://www.uow.edu.au/science/biol/icb/antdiary/index.html
Information on project database(s)	http://data.aad.gov.au/aadc/portal/login_process.cfm
Number and type of education/training	Hons & Phd student training school visits etc
Notes on new technology/model	
Inputs	

Number, gender and country of participating scientists in your project	Female 13 Male 8 Australian, German, Austrian, Czech Rep, Italian, USA
Title, place and type of meetings/workshops,	
Links to other SCAR SRPs or SCAR Action or Expert Groups	
Links to other ICSU bodies or to other scientific groups	

Your Name:	Dr Sven Thatje
Your Project Name:	Ecology and Evolution of Antarctic invertebrates
Outputs	
Key achievements (provide a short paragraph on each)	The group has significantly contributed to the field of Antarctic invertebrate ecology in recent years, with special focus on reproductive traits in marine benthic invertebrates. Major achievements involve a better understanding of the evolutionary history of the Antarctic biota, including publications in <i>Ecology</i> (2x), <i>TREE</i> (2x) and <i>Ann Rev Ecol Evol Syst</i> (1x).
Is this project an IPY project?	NO
If this project is not an IPY project, what contributions has it made to other IPY projects?	Not officially linked to any IPY project
Publications in peer reviewed literature (including articles "in press") [Please append]	<p>A total of 24 Publications (peer-reviewed) related to project (2005-2008)</p> <p>Thatje, S., C.D. Hillenbrand, A. Mackensen, R. Larter (2008). Life hung by a thread: endurance of Antarctica fauna in glacial periods. <i>Ecology</i>, 89(3): 682-692.</p> <p>Pérez-Barros, P., S. Thatje, J.A. Calcagno, G.A. Lovrich (2007). Larval development of the subantarctic squat lobster <i>Munida subrugosa</i> (Decapoda: Galatheidae), reared in the laboratory. <i>Journal of Experimental Marine Biology and Ecology</i> 352: 35-41. DOI:10.1016/j.jembe.2007.06.035.</p> <p>Lovrich, G.A., S. Thatje, J.A. Calcagno, K. Anger (2007). Las centollas colonizan la Antártida. <i>Ciencia Hoy</i>, 17 (99): 22-33 (ISSN 1666-5171).</p> <p>Reid, W., J. Watts, S. Clarke, M. Belchier, S. Thatje (2007). Egg development, hatching rhythm and moult patterns in reared <i>Paralomis spinosissima</i> (Decapoda: Anomura: Paguroidea: Lithodidae) from South Georgia waters (Southern Ocean). <i>Polar Biology</i>, 30: 1213-1218. DOI:10.1007/s00300-007-0279-x.</p> <p>Aronson, R.B., S. Thatje, A. Clarke, L.S. Peck, D.B. Blake, C.D. Wilga, B.A. Seibel (2007). Climate change and invasibility of the Antarctic benthos. <i>Annual Review of Ecology, Evolution, and Systematics</i>, 38: 129-154. DOI:10.1146/annurev.ecolsys.38.091206.095525.</p> <p>Rehm, P., S. Thatje, A. Brandt, U. Mühlenhardt-Siegel (2007). Distribution and composition of the peracarid crustacean fauna in the Ross Sea (Antarctica) with special emphasis on the Cumacea. <i>Polar Biology</i>, 30: 871-881. DOI:10.1007/s00300-006-0247-x.</p> <p>Lovrich, G.A., S. Thatje (2006). Reproductive and larval biology of the sub-Antarctic hermit crab <i>Pagurus comptus</i> reared in the laboratory. <i>Journal of the Marine Biological Association of the United Kingdom</i>, 86: 743-749.</p> <p>Watts, J., S. Thatje, S. Clarke, M. Belchier (2006). A description of larval and early juvenile development in <i>Paralomis spinosissima</i> (Decapoda: Anomura: Paguroidea: Lithodidae) from South Georgia waters (Southern Ocean). <i>Polar Biology</i>, 29: 1028-1038. DOI 10.1007/s00300-006-0146-1.</p> <p>Rehm, P., S. Thatje, W.E. Arntz, A. Brandt, O. Heilmayer (2006). Distribution and composition of macrozoobenthic communities along a Victoria-Land transect (Ross Sea, Antarctica). <i>Polar Biology</i>, 29: 782-790. DOI 10.1007/s00300-006-0155-8.</p> <p>Saborowski, R., S. Thatje, J.A. Calcagno, G.A. Lovrich, K. Anger (2006). Digestive enzymes in the ontogenetic stages of the southern king crab, <i>Lithodes santolla</i>. <i>Marine Biology</i>, 149: 865-873.</p> <p>Raupach, M.J., S. Thatje (2006). Two new records of the rare parasite <i>Zonophryxus quinquedens</i> Barnard, 1913 (Crustacea, Isopoda, Dajidae):</p>

	<p>ecological and phylogenetic implications. <i>Polar Biology</i>, 29: 439-443.</p> <p>Spiridonov, V., M. Türkay, W.E. Arntz, S. Thatje (2006). A new species of the genus <i>Paralomis</i> (Crustacea: Decapoda: Lithodidae) from the Spiess seamount near Bouvet Island (Southern Ocean), with notes on habitat and ecology. <i>Polar Biology</i>, 29: 137-146.</p> <p>Arntz, W.E., S. Thatje, K. Linse, C. Avila, M. Ballesteros, D.K.A. Barnes, T. Cope, F.J. Cristóbo Rodríguez, C. De Broyer, J. Gutt, E. Isla, P. López-González, A. Montiel, T. Munilla, A.A. Ramos Esplá, M. Raupach, M. Rauschert, E. Rodríguez, N. Teixidó (2006). Missing link in the Southern Ocean: sampling the marine benthic fauna of remote Bouvet Island. <i>Polar Biology</i>, 29: 83-96.</p> <p>Arntz, W.E., G. Lovrich, S. Thatje (2005). The Magellan – Antarctic connection: links and frontiers at southern high latitudes. IBMANT II Symposium and Workshop. Foreword. <i>Scientia Marina</i>, 69 (Supplement 2): 3-5.</p> <p>Thatje, S., J.A. Calcagno, W.E. Arntz (eds.) (2005). Evolution of Antarctic Fauna – Extended Abstracts of the IBMANT/ANDEEP Symposium and Workshop in 2003. <i>Berichte zur Polar- und Meeresforschung (Reports on Polar and Marine Research)</i>, 507: 1-200 (ISSN 1618-3193).</p> <p>Arntz, W.E., S. Thatje, D. Gerdes, J.M. Gili, J. Gutt, U. Jacob, A. Montiel, C. Orejas, N. Teixidó (2005). The Antarctic-Magellan connection: Macrobenthos ecology on the shelf and upper slope, a progress report. <i>Scientia Marina</i> 69 (Supplement 2): 237-269.</p> <p>Lovrich, G.A., M.C. Romero, F. Tapella, S. Thatje (2005). Distribution, reproductive and energetic conditions of decapod crustaceans along the Scotia Arc (Southern Ocean). <i>Scientia Marina</i> 69 (Supplement 2): 183-193.</p> <p>Thatje, S., C.D. Hillenbrand, R. Larter (2005). On the origin of Antarctic marine benthic community structure. <i>Trends in Ecology and Evolution</i>, 20 (10): 534-540.</p> <p>Calcagno, J.A., G.A. Lovrich, S. Thatje, U. Nettelmann, K. Anger (2005). First year growth in the lithodids <i>Lithodes santolla</i> and <i>Paralomis granulosa</i> reared at different temperatures. <i>Journal of Sea Research</i>, 54: 221-230.</p> <p>Thatje, S. (2005). The future fate of the Antarctic marine biota? <i>Trends in Ecology and Evolution</i>, 20 (8): 418-419.</p> <p>Thatje, S., K. Anger, W.E. Arntz (2005). Leben am Limit – Die Evolutionsgeschichte antarktischer Zehnfusskrebse. <i>Biologie in unserer Zeit</i>, 35 (2): 100-107.</p> <p>Thatje, S., A.N. Lörz (2005). First record of lithodid crabs from Antarctic waters off the Balleny Islands. <i>Polar Biology</i>, 28: 334-337.</p> <p>Thatje, S., R. Bacardit, W.E. Arntz (2005). Larvae of the deep-sea Nematocarcinidae (Crustacea: Decapoda: Caridea) from the Southern Ocean. <i>Polar Biology</i>, 28: 290-302.</p> <p>Thatje, S., K. Anger, J.A. Calcagno, G.A. Lovrich, H.O. Pörtner, W.E. Arntz (2005). Challenging the cold: crabs reconquer the Antarctic. <i>Ecology</i>, 86 (3): 619-625.</p>
Other publications	<p>Thatje, S. (2006). Return of the King Crab in Antarctica. <i>Journal of the Marine Biological Association of the United Kingdom - Global Marine Environment</i>, 3: 14-15.</p> <p>Thatje, S. (2006). Icy life in space and time. <i>Trends in Ecology and Evolution</i>, 21 (1): 12-13 (book review).</p>
Brochures, posters,	-
Web site details	-
Information on project database	-
Number and type of education/training and other capacity building activities	Various teaching units/lectures on polar and invertebrate ecology/evolution within School of Ocean and Earth Science (NOCS) educational pathways.

Notes on new technology	Use of hyperbaric pressure facility (NOCS) in polar research http://www.soc.soton.ac.uk/obe/PROJECTS/DEEPSEAS/fac_pages/press_lab.htm
Inputs	
Number, gender and country of participating scientists	Two Postdoctoral scientists, three PhD students (all NOCS, Southampton, UK)
Links to other ICSU bodies or to other scientific groups	BAS (Biology, Belchier, Linse; Geology, Hillenbrand, Larter), AWI (Held), Museum Koenig, Bonn (Raupach/Waegele), Dauphin Sea lab (US, Aronson), UBA, Buenos Aires (Calcagno), CADIC, Ushuaia Argentina (Lovrich), NIWA, Wellington (NZ), IOZ, London (Rogers), among others

Your Name:	Wim VYVERMAN With Annick WILMOTTE, Marc DE BATIST & Dominic A HODGSON (BAS CACHE-PEP Project)
Your Project Name:	HOLANT – Holocene climate variability and ecosystem change in coastal East and Maritime Antarctica
Outputs	
Key achievements (provide a short paragraph on each)	<p>HOLANT is a BelSPO funded multidisciplinary research project which is aimed at studying past climate and environmental changes in coastal Antarctic regions using sedimentological and biological proxies in lake sediment cores. One of the research questions addressed within the project - How did Holocene climate changes affect the diversity of primary producers in Antarctic lakes? - is of direct relevance to the SCAR EBA programme. Below we listed our key achievements within this research question:</p> <p><u>1. Field work</u> We collected sediment cores and samples for biological and limnological analyses in lakes from the Lützow Holm Bay region, the Antarctic Peninsula, and Annenkov Island in close collaboration with the BAS CACHE-PEP and the NIPR REGAL projects. The samples will also contribute to the AMBIO project (www.AMBIO.Ulg.ac.be).</p> <p><u>2. Analyses of temporal patterns in microbial community structure</u> The cores from the Antarctic Peninsula and Annenkov Island were dated using ¹⁴C and diatom and fossil pigment analyses are completed. The cores from the Lützow Holm Bay region are being analysed. We are currently optimizing our protocols for the analyses of fossil DNA from cyanobacteria and green algae. Together with the diatom and fossil pigment data, they will allow us to assess (1) the colonization, succession and extinction history of primary producers in Antarctic microbial mat communities and (2) the response of these microbial mats to past climate and environmental changes during the Holocene in Maritime and east Antarctic ice-free regions. In combination with our results from the AMBIO project we will thus be able to reveal the relative role of historical, regional and local factors in structuring terrestrial microbial communities in Antarctica and assess the congruence of these patterns as those observed in macroorganisms.</p>
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	It contributes to the IPY project MERGE
Publications in peer reviewed literature (including articles "in press")	<p>Hodgson D.A., Roberts D., McMinn A., Verleyen E., Terry B., Corbett C. & Vyverman W. (2006) Recent rapid salinity rise in three east Antarctic lakes. <i>Journal of Paleolimnology</i> 36 (4): 385-406.</p> <p>Vyverman W., Verleyen E., Sabbe K., Vanhoutte K., Sterken M., Hodgson D.A., Mann D.G., Juggins S., Van de Vijver B., Jones V.J., Flower R., Roberts D., Chepurnov V., Kilroy C., Vanormelingen P., De Wever A. 2007. Historical processes constrain patterns in global diatom diversity. <i>Ecology</i> 88 (8): 1924-1931</p> <p>Zakhia F., Jungblut A-D., Taton A., Vincent W.F. and Wilmotte A. 2007. Psychrophiles: from Biodiversity to Biotechnology. In: Margesin R.,</p>

	<p>Schinner F., Marx J.-C., Gerday C. (Eds.) Cyanobacteria in cold environments. Springer Verlag, pages 121-135. (see also AMBIO project)</p> <p>Note that these papers were not directly financed through HOLANT, yet they were finalised during the first year of the project and directly benefited from a previously BelSPO financed project (LAQUAN).</p>
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Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>See also AMBIO project.</p> <p>Wilmotte, A. 2007. L'API, année polaire internationale. Focus sur les poles. Bulletin de Sciences et Culture, n° 406, p 52-58. mars-avril 2007 http://www.ambio.ulg.ac.be/articles/Acr9.tmp.pdf</p> <p>Wilmotte, A. 2007. Les cyanobactéries, comment exploiter au mieux la lumière? In: Probio Service. Recueil trimestriel. 26ème année. septembre 2007 (3). p 219-230. Association des professeurs de biologie PROBIO ASBL. (Belgium)</p> <p>Article regarding climate and environmental change in Antarctica in University newsletter 'Universiteit Gent' – March 2006.</p>
Brochures, posters, press/media articles and similar PR material	<p>HOLANT in the media: Articles regarding the international Polar Year in the Belgian newspapers 'De Morgen – 27/02/2007' and 'De Standaard – 01/03/2007'.</p> <p>For posters and presentations at international symposia, please visit the HOLANT website</p>
Web site details and number of hits to this site if data is available	<p>www.HOLANT.UGent.be 1656 hits</p>
Information on project database(s)	<p>no public available database yet. All data stored in a local database</p>
Number and type of education/training and other capacity building activities	<p>See also the AMBIO project</p> <p>1) One 'hands on' workshop with secondary schools' students during 'Le printemps des sciences' (19.03.07 - 23.03.07) in French, University of Liège (Belgium) We took part in 2007 to the 'Spring of Sciences' in Liège. We organized a <u>workshop</u> for secondary school students and presented the <u>International Polar Year</u> and some related projects: <u>MERGE</u> and <u>AMBIO</u>. The role of Antarctic cyanobacteria has been emphasized. Experiments to extract hydrosoluble and liposoluble photosynthetic pigments from polar cyanobacterial strains were carried out. http://www.ulg.ac.be/sciences/pedagogique/dossierpds2007/cyano1.pdf</p> <p>2) 'Semence de curieux' (25.03.07 - 01.04.07), in french 2 Radio Broadcasts of RTBF: Interview on the Cyanobacteria in Polar zones with Dr Annick Wilmotte Cyanobacteria in polar zones. Liège (Belgium) http://old.rtbef.be/rtbf_2000/bin/view_something.cgi?type=sac&id=0193584_sac&menu=default&pub=RTBF.PREM%2FPREM.FR.la_taille.SP.SUCR</p> <p>3) Conference for Science Teachers, "L'Antarctique est un continent microbien" 23.08.07, In french At the 'congrès des professeurs de sciences' (Science Professor Society), Faculté Agronomiques de Gembloux, (Belgium) http://www.congres-des-sciences.be/</p> <p>4) Conference, "L'Antarctique, un continent microbien"</p>

	<p>09.09.07, in french Wide audience conference presented by Dr Annick Wilmotte at the occasion of the inauguration of the Belgian Antarctic Station, Tour et Taxis, Brussels (Belgium) The development of a microbial communities, especially the cyanobacteria in Antarctica is emphasised.</p> <p>5) Conference, "Reconstructie van vroegere klimaatsveranderingen met behulp van de Antarctische kustmeren als natuurlijke archieven", 09.09.07, in Dutch Wide audience conference presented by Dr Elie Verleyen, at the occasion of the inauguration of the Belgian Antarctic Station. The use of "natural archives" from Antarctica in order to reconstruct the climate changes is presented. Tour et Taxis, Brussels (Belgium)</p> <p>6) Conference, 'Genetic diversity and distribution of cyanobacteria in Antarctica' 20.09.07, in English Presented by Dr Wilmotte at the Faculteit der Natuurwetenschappen, Wiskunde en Informatica, Instituut voor Biodiversiteit en Ecosysteem Dynamica (IBED), Amsterdam (The Netherlands)</p> <p>7) "Researcher Night" 28.09.07, in french Wide audience activities in the frame of the european "<u>Researcher Night</u>", at the Institut de zoologie, Quai Van Beneden, Dr Zakhia showed strains of polar cyanobacteria at a wide audience. Liège (Belgium). http://www.ulg.ac.be/nuitdeschercheurs/</p> <p>8) Global Change and the Antarctic: in Dutch, workshop organized for primary school teachers and presentations for primary school kids by Dr Elie Verleyen</p>
Notes on new technology/model developments	none
Inputs	
Number, gender and country of participating scientists in your project	11 scientists of which 4 women including 1 team leader. 9 are working in Belgium and 2 in the UK (and funded by the BAS CACHE PEP project)
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	An international workshop is planned during the final year of the project (2009)
Links to other SCAR SRPs or SCAR Action or Expert Groups	ACE
Links to other ICSU	IGBP PAGES PEP program and contribution to all 4 PAGES science foci

bodies or to other scientific groups	which were redefined in 2006.
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Your Name:	Svein A. Iversen
Your Project Name:	Antarctic krill and Ecosystem Surveys - AKES [Part of AMES (Integrated circumpolar studies of Antarctic marine ecosystems to the conservation of living resources)]
Outputs	
Key achievements (provide a short paragraph on each)	The survey is still going on. It started 4 January and will end 28 March 2008. Main objectives: krill biology, ecosystem studies in the Bouvet area. TS and acoustic performance of antarctic krill. Map the distribution and abundance the pelagic resources in Bouvetøy area.
Is this project an IPY project?	Yes -#131
Publications in peer reviewed literature (including articles "in press") [Please append]	Several publications are planned: hydrography, krill behaviour, acoustic performance krill and icefish, zooplankton, phytoplankton, interactions krill -marine mammals-birds, genetics, fish pathogens etc
Other publications	-
Brochures, posters, press/media articles and similar PR material	www.imr.no
Web site details and number of hits to this site if data is available	www.imr.no
Information on project database(s)	-
Number and type of education/training and other capacity building activities	Four master students and one PHD, University of Oslo
Notes on new technology/model developments	Landers and TS probe
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Total: 20 5 females Germany, USA, China, Brazil, Norway
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	-
Links to other SCAR SRPs or SCAR Action or Expert Groups	
Links to other ICSU bodies or to other scientific groups	

Your Name:	Rachel Cavanagh
Your Project Name:	ICED (Integrating Climate and Ecosystem Dynamics in the Southern Ocean)
Outputs	
Key achievements (provide a short paragraph on each)	<p><u>Establishment of programme</u></p> <p>The initial ICED science planning meeting comprised 34 delegates from 14 countries. The main outcomes were the formation of an Interim Steering Committee, a workshop report and a draft of the ICED Science Plan and Implementation Strategy (see below). We are now expanding to create an integrated group including expertise from the biological, geochemical, physical and climate research communities, that links with all relevant Southern Ocean programmes. A new post at the British Antarctic Survey - International Marine Science Programme Officer - was created to meet some of the needs of ICED during its development phase, the links with IPY, and EUR-Oceans.</p> <p><u>Science Planning Workshop Report</u></p> <p><i>The ICED Science Planning Workshop Report has been published electronically and is available on the ICED website.</i></p> <p><u>Science Plan and Implementation Strategy</u></p> <p>A comprehensive ICED Science and Implementation Plan was developed during 2006/07 on the basis of the workshop outcomes, and is currently under external review. The document will then be formally submitted to GLOBEC and IMBER for approval.</p> <p><u>Website</u></p> <p>ICED website launched to serve as a communication tool for news, meeting information, posting documents for review/information, maps of cruise transects, etc. The website comprises a member's area and public area.</p> <p><u>First model workshop</u></p> <p>ICED is convening its first modelling workshop in April 2008 to begin to characterise the Southern Ocean food web. This workshop, the first in a series of ICED modelling workshops is a first step towards the development of circumpolar ecosystem models to predict ecosystem responses to variability and change. A group of multidisciplinary experts will attend this workshop which will also form a contribution to IPY.</p> <p><u>Initiation of fieldwork map project</u></p> <p>ICED is leading the IPY Ecosystems and Biogeochemistry of the Southern Ocean Consortium. We have produced an interactive map on the ICED website for this consortium. We are now working towards a series of maps representing the spatial and temporal coverage of Southern Ocean</p>

	<p>ecosystem fieldwork during IPY.</p> <p><u>Data rescue project</u></p> <p>A project has begun with EUR-OCEANS to retrieve biological information from past Southern Ocean cruises. These include the circumpolar expeditions of the R.R.S. Discovery (1925-1951) and Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS) in the 1980s. Information is being collated on the abundance and distribution of pelagic species to build a more complete picture of the changing circumpolar ecosystem.</p>
Is this project an IPY project?	Yes, #92. ICED-IPY is an IPY project and is leading the IPY Ecosystems and Biogeochemistry of the Southern Ocean Consortium. However, ICED will continue for a decade.
If this project is not an IPY project, what contributions has it made to other IPY projects?	n/a
Publications in peer reviewed literature	Not yet – will follow once Science Plan is adopted and model workshop has taken place.
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>Murphy E.J., Johnston N.M., Cavanagh R.D. (Eds). 2006. Integrating Climate and Ecosystem Dynamics (ICED) in the Southern Ocean: Report of the first ICED Science Planning Workshop, British Antarctic Survey, Cambridge, UK, 24-26 May 2005. 58pp.</p> <p>ICED. <i>In prep.</i> Integrating Climate and Ecosystem Dynamics (ICED) in the Southern Ocean: a circumpolar ecosystem programme. Science Plan and Implementation Strategy.</p> <p>Murphy E.J., Hofmann E. and Johnston N. 2006. Integrated analyses of circumpolar Climate interactions and Ecosystem Dynamics in the Southern Ocean (ICED) Science Planning Workshop, Cambridge, UK, 24–26 May 2005. GLOBEC International Newsletter vol. 12, no. 1, 42-44.</p> <p>Murphy E.J., Hofmann E. and Cavanagh, R.D. 2006. Integrating Climate and Ecosystem Dynamics. IMBER Newsletter no. 4, 1-3.</p> <p>Cavanagh, R.D. and Garcia, C. 2007. Southern Ocean science during the International Polar Year. IMBER Newsletter no.6, 4-6.</p> <p>Cavanagh, R.D. Submitted. Integrating Climate and Ecosystem Dynamics in the Southern Ocean. EBA Newsletter.</p> <p><u>Presentations at scientific meetings:</u></p> <ul style="list-style-type: none"> • XXIX SCAR Meeting with Open Science Conference, 8 - 19 July 2006, Hobart, Tasmania (Oral). • European Launch Event of the International Polar Year 2007-08, European Parliament, Strasbourg, France. • EUR-OCEANS Annual PI Meeting, Glyfada, Greece.

	<ul style="list-style-type: none"> • 4th Annual Zooplankton Production Symposium, Hiroshima, Japan.
Brochures, posters, press/media articles and similar PR material	<ul style="list-style-type: none"> • Website http://www.iced.ac.uk • Information poster: http://www.iced.ac.uk/products.htm • General information sheet on ICED is also available. • <i>Brochure to be developed.</i>
Web site details and number of hits to this site if data is available	http://www.iced.ac.uk <i>(Information on hits to follow...)</i>
Information on project database(s),	Programme database options currently being explored.

Number and type of education/training and other capacity building activities	<ul style="list-style-type: none"> • Contribution to Polar Marine Science Exhibition, Oceanopolis, France. • Participation in Association of Polar Early Career Scientists UK Polar Network meeting, Cambridge, UK. • Contribution to IPY Sea Ice Day – providing information for public outreach. • Successful application for, and coordination of production of, EUR-OCEANS film on Southern Ocean science and the International Polar Year.
Notes on new technology/model developments	Still in the very early phases of ICED so nothing to report here yet. However, new model development activities will be initiated through the first modelling workshop (April 2008).
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Around 100 scientists currently specifically involved in ICED. However, the programme is expanding, and, through each of the scientists we have named, they in turn are linked to numerous other scientists who will be indirectly involved in ICED. We will have a better idea of numbers at a later date. Gender ration approx 25% females. Around 20 countries and expanding.
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<ul style="list-style-type: none"> • ICED Science Planning workshop, British Antarctic Survey, Cambridge, UK. 34 scientists, 14 countries, gender: 20% female. • The first ICED science session at the XXIX Scientific Committee on Antarctic Research (SCAR) Open Science Conference in Hobart. Eleven oral presentations and six posters. • Joint organisation (with EUR-OCEANS Southern Ocean System) of Southern Ocean Science Session at EUR-OCEANS Annual PI Meeting, Glyfada, Greece. Ten presentations (all oral). Around 30 scientists attended this session, around 300 delegates in the conference as a whole. • The first ICED model development workshop will be held in April 2008 at Old Dominion University, Virginia, USA. 30 scientists, 9 countries, gender: 25% female.
Links to other SCAR SRPs or SCAR Action or Expert Groups	SCAR EBA, SCAR Expert Group on Oceanography, SCAR MarBin, SOOS.
Links to other ICSU bodies or to other scientific groups	GLOBEC, IMBER, IPY, SCOR, CCAMLR and EUR-OCEANS. Links to numerous Southern Ocean programmes, many of them through IPY, e.g. CAML, CLIVAR, CliC, SOLAS, iAnZone, CASO, GEOTRACES, etc

Your Name:	Cinzia Verde
Your Project Name:	ICEFISH
Outputs	
Key achievements (provide a short paragraph on each)	The objectives of ICEFISH 2007 have not been achieved as yet, due to of lack of funding from the Italian Antarctic Institution
Is this project an IPY project?	YES - #93
Publications in peer reviewed literature (including articles "in press")	<ol style="list-style-type: none"> 1) Verde C, Berenbrink M, di Prisco G. (2008) Evolutionary physiology of oxygen secretion in the eye of fishes of the suborder Notothenioidei. In <i>Dioxygen Binding and Sensing Proteins</i>, Protein Reviews Series (Eds. Bolognesi M, di Prisco G, Verde C) Springer (in press). 2) Verde C, Giordano D, di Prisco G. (2008) The Adaptation of Polar Fishes to Climatic Changes: Structure, Function and Phylogeny of Hemoglobin <i>IUBMB Life</i> 60, 29-40. 3) di Prisco G, Eastman JT, Giordano D, Parisi E, Verde C. (2007) Biogeography and adaptation of Notothenioid fish: hemoglobin function and globin-gene evolution <i>Gene</i> 398, 143-155 PMID: 17553637 4) Verde C, Lecointre G, di Prisco G 2007. The phylogeny of polar fishes and the structure, function and molecular evolution of hemoglobin <i>Polar Biol</i> 30, 523-539 5) Verde C, Parisi E, di Prisco G. (2006). The evolution of thermal adaptation in polar fish <i>Gene</i> 385, 137-145 PMID: 16757135 6) Giordano D, Grassi L, Parisi E, Bargelloni L, di Prisco G, Verde C 2006. Embryonic b-globin in the non-Antarctic notothenioid fish <i>Cottoperca gobio</i> (Bovichtidae) <i>Polar Biol</i> 30, 75-82. 7) Verde C, Giordano D, di Prisco G. (2006) Molecular evolution of haemoglobins of polar fishes. <i>Rev Environ Sci Biotechnol</i> 5: 297-308.
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	Verde C, di Prisco G (2007) Cambiamenti climatici e vita negli ambienti estremi. Struttura, funzione ed evoluzione delle emoglobine dei pesci polari. In "Clima e Cambiamenti Climatici-le attivita' di ricerca del CNR", National Research Council
Brochures, posters, press/media articles and similar PR material	
Web site details	www.icefish.neu.edu
Information on project database(s)	
Number and type of education/training and other capacity building activities	See website
Notes on new technology/model developments	
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Guido di Prisco, M, Italy; Marino Vacchi, M, Italy; Guillaume Lecointre, M, France; Don Robertson, M, New Zealand; John Macdonald, M, New Zealand; Joe T Eastman, M, USA; Arthur L DeVries, M, USA; Hans-Otto

	Poertner, M, Germany; Dick Williams, M, Australia; Lucelia Donatti, F, Brasil; Ian A Johnston, M, UK; Ofer Gon, M, South Africa.
Title, place and type of meetings/workshops	-
Links to other SCAR SRPs or SCAR Action or Expert Groups	EBA, CAML, ANDEEP, CCAMLR
Links to other ICSU bodies or to other scientific groups	

Your Name:	Roberto Bargagli
Your Project Name:	Environmental, Biological, and Ecological Studies in Antarctica - EBESA
Outputs	
Key achievements (provide a short paragraph on each)	<ol style="list-style-type: none"> 1. June 2007- attendance, together with Takeshi Naganuma and several colleagues in the IPY Project MERGE, at the International Conference "Cryogenic Resources of Polar Region"; West Siberia; 2. December 2007- attendance at the AMBIO meeting, organized by Annick Wilmotte (second contact person of the IPY Project MERGE "Polar Microbial Diversity"; (Liege, Belgium); 3. December 2007- some researchers in the EBESA project such as Pavel Prosek, which is the EBESA's second contact, and Milos Bartak (Czech Republic), began their field activity (three months) on terrestrial ecosystems at the James Ross Island, Antarctic Peninsula; 4. January 2008- Roberto Bargagli, Piero Luporini and Tancredi Caruso performed field surveys and sampling of protozoans, soil invertebrates and cryptogams in Patagonia and Tierra del Fuego to study the phylogeny of Antarctic organisms.
Is this project an IPY project?	
If this project is not an IPY project, what contributions has it made to other IPY projects?	Linked Through EBA-IPY
Publications in peer reviewed literature (including articles "in press") [Please append]	<p>BARGAGLI R, MONACI F., BUCCI C. (2007) - Environmental biogeochemistry of mercury in Antarctic ecosystems. <i>Soil Biol & Biochem.</i>, 39:352-360.</p> <p>BARGAGLI R. (2007) Ecotoxicology. In: Riffenburgh B (ed.) <i>Encyclopedia of the Antarctic</i>. Routledge, Taylor & Francis Group, Vol. I , pp. 372-374</p> <p>C</p> <p>ARUSO T, BARGAGLI R. (2007) – Assessing abundance and diversity patterns of soil microarthropod assemblages in northern Victoria Land (Antarctica). <i>Polar Biol.</i>, 30: 895-902.</p> <p>BORGHINI F., COLACEVICH A., BARGAGLI R. (2007) - Sedimentary pigments in Antarctic lakes. <i>Polar Biol.</i>, 30:1173-1182.</p> <p>CARUSO T., BORGHINI F., BUCCI C., COLACEVICH A., BARGAGLI R. (2007) - Modelling local-scale determinants and the probability of microarthropod species occurrence in Antarctic soils. <i>Soil Biol. & Biochem.</i> 39:2949-2956.</p>

	BORGHINI F., COLACEVICH A., CARUSO T., BARGAGLI R. (2008) – Temporal variations in the water chemistry of northern Victoria Land lakes (Antarctica). <i>Aquat. Sci</i> (in press)
Other publications	
Brochures, posters, press/media articles and similar PR material	<p>Caruso T., Bargagli R. (2007) - Terrestrial biodiversity in Antarctic ecosystems: research priorities for the IPY 2007-08. VI PNRA Meeting on Antarctic Biology; Follonica, 7-9 June 2007; (abs)</p> <p>Caruso T., Bargagli R. (2007) - Modelling the local probability of occurrence of the prostigmatic mite <i>Stereotydeus belli</i> in Antarctic ice-free areas. <i>Proced. Int. Conf. "Cryogenic Resources of Polar Regions"</i>, Salekhard City, West Siberia, 17-21 June 2007; vol. I pp. 308-310</p> <p>Bargagli R., Caruso T. (2007) – Determinants of Antarctic epilithic lichen distribution in northern Victoria Land (Antarctica): <i>Int. Conf. "Cryogenic Resources of Polar Regions"</i>, Salekhard City, West Siberia, 17-21 June 2007; vol.1., pp. 310-312.</p> <p>Borghini F., Colacevich A., Bargagli R. (2007) Limnological investigations in northern Victoria Land lakes. <i>AMBIO Meeting "Polar Microbial Diversity"</i>, Liege, 6th December 2007.</p>
Web site details	-
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	Data are summarized in scientific publications and some are in the "National Antarctic Data Centre", which is managed by the PNRA
Number and type of education/training and other capacity building activities	Two lessons in the Post-graduate School in Polar Sciences; training of three post-graduate students (diversity of freshwater Antarctic organisms and soil invertebrates); three conferences to students in primary and secondary school and to the general public on Antarctic ecosystems, climate changes and the role of polar regions.
Notes on new technology	-
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Indicatively: 18 Italian (10 male, 8 female) and 10 in the Czech and Ukraine republic (6 males, 4 females)
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<p>June 2007- Organization of the international workshop "Critical issues and research priorities for the IPY and 2007-09"; Follonica, (Tuscany; Italy); 7-9 June.</p> <p>Attendees: USA (3Male+2Female); UK (2M); NZ (2 M); Spain (2M), Germany (2M), Czech (2M+2F); Ukraine (2F), India (1M), Italy (16M, 18F)</p>
Links to other SCAR SRPs or SCAR Action or Expert Groups	Scientific collaboration with some research groups in the IPY project MERGE (Microbiological and Ecologica Responses to Global Environmental Changes in Polar Regions)
Links to other ICSU bodies or to other scientific groups	

Your Name:	Shulamit Gordon
Your Project Name:	Latitudinal Gradient Project (LGP)
Outputs	
Key achievements (provide a short paragraph on each)	<ol style="list-style-type: none"> The Project has been logistically supported since 03/04 season. Sites supported have been: <ol style="list-style-type: none"> Cape Hallett (3 seasons) – NZ and US researchers on marine and terrestrial ecosystems. Terra Nova Bay (2 seasons) – NZ marine and terrestrial ecosystems. Darwin Glacier regions (1 season, 1 to go) – terrestrial ecosystems. Also 3 ship cruises with NZ <i>Tangaroa</i> and Italian <i>Italica</i> have contributed to the LGP. Special publication of Antarctic Science published in 2006 with 18 papers from NZ, US and Italian contributors. See http://journals.cambridge.org/action/displayIssue?jid=ANS&volumeId=18&issueId=04# Concept of Invited workshop on Antarctic Gradients that will be held in May 2008 at BAS came from discussions held by the NZ LGP science steering committee and US collaborators.
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	Contributing to EBA-IPY and MERGE
Publications in peer reviewed literature (including articles "in press") [Please append]	See http://www.lgp.aq/publications/
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	International LGP Workshop Hobart 2006, Final Report
Brochures, posters, press/media articles and similar PR material	Poster: The Latitudinal Gradient Project – Contributing to EBA. Presented at SCAR 2006 in Hobart and ISAES 2007 Meeting.
Web site details and number of hits to this site if data is available	www.lgp.aq 2006: 3448 Unique Visitors; 87253 Hits 2007:2308 Unique Visitors; 112034
Information on project database(s)	N/A
Number and type of education/training and other capacity building activities	N/A

Notes on new technology/model developments	N/A
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Approximately: 9 New Zealand Male 5 New Zealand Female Italian (5) and US (5)
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<ol style="list-style-type: none"> 1. LGP Science Steering Committee Meeting, March 2006, Wellington, NZ. 9 NZers (5 Female, 4 Male) 2. New Zealand LGP Workshop, July 2006, Wellington NZ: Approx 25 People. 3. International LGP Workshop, July 2006, Hobart Australia. Approx 40 people (17 Female, 23 male). Argentina, US, UK, NZ, Belgium, Canada, Germany, Australia, Malaysia, Poland, China, Spain, France. 4. LGP Science Steering Committee Meeting March 2007, Christchurch, NZ. 7 NZers (4 Female, 3 Male). 5. LGP Workshop July 2007, Wellington, NZ. Approx 50 people (Mostly NZ with some UK, Australia, Italy)
Links to other SCAR SRPs or SCAR Action or Expert Groups	Integral part of EBA.
Links to other ICSU bodies or to other scientific groups	N/A

Your Name:	Berry Lyons
Your Project Name:	McMurdo Dry Valleys LTER (MCM-LTER)
Outputs	
Key achievements (provide a short paragraph on each)	<p>Limnology</p> <p>The limnology team has made continuous measurements of selected physical, chemical and biological parameters on 4 lake basins (Fryxell, Hoare, east lobe Bonney, west lobe Bonney) at approximately monthly intervals during the austral summer since the inception of the MCM-LTER. All of these lake basins are hydrologically terminal (i.e. there are no outflows) and integrate environmental change in the region. They are also the only landscape unit that contains bulk liquid water throughout the year. Our long term data on phytoplankton dynamics reveal that summer rates of primary productivity (PPR) and chlorophyll-a (CHL) react dramatically to changes in temperature-induced stream flow. This response is supported by the fluctuations recorded in east lobe Lake Bonney that followed the 2001-02 austral summer, which had the warmest air temperatures recorded by the MCM-LTER since its inception. The "flood" event that resulted from the warm air temperatures also changed the ice thickness in all of the lakes resulting in changes in the under-ice photosynthetically available radiation. The 10 years before the flood was a period of cooling, and phytoplankton production was in quasi-steady state with respect to time. These results have led us to develop a conceptual model of the lake ecosystem where we suggest that periods of relatively stable climate produces an oscillating system punctuated by decadal warming events. As climate continues to either warm or cool, a threshold is eventually reached where lake basins either coalesce or separate, resulting in a new level of biological activity and diversity. Only through continued long term research will the true dynamic nature of the ecosystems be known.</p> <p>Stream Hydrology and Ecology</p> <p>One of the key habitat features of the dry valley streams is that water temperatures can reach 15°C. These warm temperatures promote the growth of the algal mats during the brief summer. We have found that the maximum temperatures in the streams are controlled by the balance between the rates of warming by solar radiation and cooling by evaporation. An experimental "cooling" manipulation of a dry valley stream was conducted to quantify the rates of processes that control the warming of the stream. This experiment also confirmed that advection of the warm water into the hyporheic zone eroded the frozen boundary with the underlying permafrost, causing the hyporheic zone to expand during the summer (Cozzetto et al., 2006). Subsequent field experiments have been conducted to more fully resolve the thermal budget for the streams.</p> <p>Diatom algae from our monitoring sites in the glacial meltwater streams that flow into Lake Fryxell were identified to elucidate biotic responses to the cooling trend. Diatoms are abundant in these streams, and 24 of 40 species have only been found in the Antarctic, predominantly in the South Victoria Land (Esposito et al., 2006). We found that the percentage of these Antarctic diatom species increased with decreasing annual stream flow and increasing harshness of the stream habitat. Harshness was characterized using the stream flow record following an approach developed by the Konza LTER (Kansas, USA) for intermittent prairie streams. The species diversity of assemblages reached a maximum when the</p>

	<p>Antarctic species accounted for 40–60% of relative diatom abundance. Decreased solar radiation and air-temperatures reduce annual stream flow, raising the dominance of these Antarctic species to levels above 60%. These results show that cooling favors the Antarctic species, and generally lowers diatom species diversity in this region. We created a relational database that presents the morphological information on the diatom species found in these streams, and this database is widely used by diatomists from other Antarctic research programs.</p> <p>To evaluate the longer term persistence of cyanobacterial mats, we diverted flow to an abandoned channel, which had not received substantial flow for approximately two decades. Monitoring of specific conductance showed that for the first 3 years after the diversion, the solute concentrations were greater in the reactivated channel than in most other dry valley streams. We observed that cyanobacterial mats became abundant in the reactivated channel within a week, indicating that the mats had been preserved in a cryptobiotic state in the channel. Over the next several years, these mats had high rates of productivity and nitrogen fixation compared to mats from other streams. Experiments in which mats from the reactivated channel and another stream were incubated in water from both of the streams indicated that the greater solute concentrations in the reactivated channel stimulated net primary productivity of mats from both streams. These stream-scale experimental results indicate that the cryptobiotic preservation of cyanobacterial mats in abandoned channels in the dry valleys allows for rapid response of these stream ecosystems to climatic and geomorphological change, similar to other arid zone stream ecosystems.</p> <p>Soils</p> <p>Biogeochemical controls on the distribution of biota were examined utilizing the natural gradient in geochemical conditions to quantitatively assess controls over the distribution and abundance of the dominant animal, the nematode <i>Scottinema lindsayae</i> (Poage et al., in press). Correlations suggest that progressive increases in anion concentrations (particularly nitrate), collectively reflected in the conductivity values, create progressively inhospitable soils for viable <i>S. lindsayae</i> communities along the Bull Pass transect. We proposed that the influence of soil salinity on invertebrate community structure is scale-independent over ranges of meters to tens of kilometers and should be considered a primary determining factor explaining nematode habitat suitability (Barrett et al., 2004; Courtwright, 2001). This dataset, compared with model results from previous literature, suggests that the large scale distribution of nematodes across the MCM may be reflected in small-scale chemical gradients.</p> <p>Soils are the primary reservoir of phosphorus in the McMurdo Dry Valleys, a severely P-limited ecosystem. Quantification of the P in soils indicates that landscape history and contemporary subsurface and stream hydrology are the primary controls over phosphorus cycling in the MCM. As with other terrestrial deserts, P dynamics are dominated by physicochemical factors, with little internal biological P cycling except in stream channels or biologically active upland soils. There is little evidence for spatial variation in P dynamics as a consequence of <i>in situ</i> processes, as has been suggested for the MCM, but for a larger role of geological legacies (Bate et al., in press, Blecker et al., 2006).</p>
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The MCM polar desert also provides an opportunity to evaluate stoichiometric approaches to understand nutrient cycling in an ecosystem where biologic diversity and activity are low and controls over the movement and mass balances of nutrients operate over 10-10⁶ years. The high variability in ecosystem stoichiometry was examined using contemporary C, N and P data from soils, glaciers (cryoconite holes), streams, and lakes, and a synthesis of recent literature to develop a conceptual model describing variation in element ratios and nutrient transformations among aquatic and terrestrial landscapes of the MCM. We conclude that contemporary ecosystem stoichiometry of Antarctic dry valley soils, glaciers, lakes and streams result from a combination of extant biological processes superimposed on a legacy of landscape processes and previous climates. Physical processes (e.g. weathering, landscape development, etc.) dominate the geochemical stoichiometry of soil and aquatic system weathering controls biota. When activated by the availability of liquid water, biota can alter the environment according to their strict biochemical requirements. Sources of nutrients (N and P) in the MCM are often decoupled from the biota that facilitate their transformation and the availability of liquid water that controls their transport (Barrett et al., 2007).

Within the Taylor Valley, some nematode species are dispersed by wind in a survival state, anhyrobiosis, with no apparent geophysical barriers (Nkem et al., 2006a). Long term field studies have shown that soil factors such as salinity, pH, and nutrient status determine suitable habitats and structure species distributions (Nkem et al., 2006b, Adams et al., 2006, Blecker et al., 2006, Ayres et al., 2007, Poage et al., in press). Further study along elevation transects and long term manipulation plots show that faunal species have clearly defined niches in soils that are based on soil carbon, presence of algae, moisture, and salinity, and the structure of nematode genera (and rotifers and tardigrades) are similar in soils and sediments. This indicates that environmental conditions in Taylor Valley may select for groups with broad ecological niches (Ayres et al., 2007). Using molecular and morphological approaches we determined the southernmost distribution of Nematoda towards the pole and infer tremendous capacity for gene flow, but also high sensitivity to environmental perturbation (Adams et al., 2007).

Long term monitoring of Taylor Valley climate shows that cooling reduces populations of the dominant nematode species (Doran et al., 2002). The addition of labile carbon sources to soils over 13 years did not increase soil animals over the long term, indicating that climate effects such as temperature change and soil moisture may have a greater effect on species distribution than nutrient addition.

Glaciology

Our glacier-wide statistical models of seasonal melt have proved to be successful (Ebnet et al., 2005) and we plan on using these to estimate past and future lake level changes where only temperature change is known. We have also adapted physically-based models to investigate the specific controls on melt and to predict hourly to daily estimates of meltwater runoff. The modeling has shown that it is not glacier specific. That is, the characteristics of the ice appear to be fairly uniform in Taylor Valley. The large difference in the magnitude and timing of runoff has to be due to other factors discussed below.

The morphology of the glaciers changes dramatically from glacier to glacier with some glaciers as smooth as ice-skating rinks and others with large canyons. These differences are due to rock debris, either from rock avalanches, medial moraines, or aeolian transport of sediment, on the glacier surface that alter local energy balance conditions resulting in rough topography (Johnston, et al., 2005). This sets up a feedback process such that rough topography reduces the wind and that also shifts the energy balance at the ice surface from sublimation conditions to melting (runoff) conditions (Lewis et al., 1998). Melting is a more energy efficient ablative process and the roughness features develop further. The process is limited by the available solar radiation that can reach the bottom of the rough depressions and by the long winter night where the high points of the roughness ablate faster than the bottom of the depressions. The net result is that glaciers with a rough topography provide much more runoff than smooth glaciers. Future modeling will explicitly include the spatial pattern of glacier roughness in Taylor Valley for melt water flow (Ebnet, 2008).

Cryoconite holes are subsurface melt water habitats formed from ice melt around sediment patches on and in the glaciers (Fountain et al., 2003). Solar radiation preferentially heats the sediment compared to the surrounding ice, melting the sediment into the ice. We have shown that hole depth is in equilibrium with the local climate confirming theoretical studies. The holes host cyanobacteria, bacteria, and protists that incorporate nutrients from the sediments and the melting ice (Porazinska et al., 2004; Foreman et al., in press). The chemistry and physical evolution of the cryoconites varies from hole to hole depending on surface albedo and on subsurface hydrologic connections (Fountain et al., in press). The biology is fairly consistent on one glacier but varies from glacier to glacier. Cyclical precipitation/dissolution of carbonate minerals reflects periods of summer photosynthesis and autumn net respiration prior to freezing (Tranter et al., 2004; Bagshaw et al., in press). Cryoconite holes represent an icy habitat and play a role as a way station in recycling sediment and biologic material transported from the valley bottom by winds and returned to the valley bottom by water. Periodically, as the cryoconites are "flushed," they return organisms that have survived this environment back to the streams and lakes.

Glacier mass balance is measured because the growth or shrinkage of the glaciers is an important climate indicator and affects the ecology of the valley through landscape modification and water availability. Our mass balance measurements over the past 10 years show that the glaciers are in equilibrium with the present environment, unlike the rapidly shrinking glaciers of the temperate or Arctic regions (Fountain et al., 2006). The meteorological measurements support this result, showing that the summer and annual air temperatures continue to cool with time as shown previously (Doran et al., 2002). We have also examined our precipitation data, after many difficulties in the field and can now show that yearly snow accumulation has not exceeded 10 cm water equivalent (weq) with minimum values of 0.3 cm weq. These values include both direct snowfall and wind redistribution of snow from the surrounding mountains.

Geochemistry

In addition to the ongoing monitoring programs where our geochemical

	<p>measurements are used to track contemporary hydrological and biogeochemical processes, we have also used geochemical and isotopic distributions to describe past climate dynamics of MCM. For instance, we have used halogen geochemistry to understand the sources of solutes and evolutionary histories of the Taylor Valley lakes (Lyons et al., 2005). Recent work has also focused on the description of subsurface melt features within Taylor Valley and their potential contribution of solutes to the surface waters (Harris et al., 2007), and the processes involved in forming calcium carbonate in Taylor Valley soils (Foley et al., 2006). Review papers on the biogeochemistry of Antarctic and polar lakes have strongly relied on MCM geochemical data (Lyons et al., 2006; Lyons and Finley, in press). Geochemical investigations continue to be an important part of MCM synthetic activities, as evidenced by Barrett et al. (2007).</p> <p>See www.mcmlter.org for data and details</p>
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	The IPY Polar Night project, headed up by Dr. John Priscu as the Principal Investigator, will extend our lake biogeochemical and biodiversity monitoring program through the "sunset" period until mid-April. This has never been done before in the McMurdo Dry Valleys.
Publications in peer reviewed literature (including articles "in press")	All MCM-LTER peer-reviewed publications from 1993-present can be found at the following URL: http://www.mcmlter.org/publications_home.htm 2006: 23 2007: 13 In Press: 17
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p><i>The Lost Seal</i> by Diane McKnight, Moonlight Publishing; associated website: www.mcmlter.org/lostseal - Children's book</p> <p>Interactive CD for middle/high school science education, featuring MCM-LTER research. Available at: http://bprc.osu.edu/education/lter/</p> <p>MCM-LTER research, outreach and collaborative activities are frequently featured in the LTER Network Newsletter</p>
Brochures, posters, press/media articles and similar PR material	<p>MCM-LTER research has been featured in the popular press several times during 2006-2007. Highlights include the following (a more complete list can be found at http://www.mcmlter.org/outreach.htm):</p> <ul style="list-style-type: none"> - Peter Doran wrote an Op-Ed piece for the New York Times entitled "Cold, Hard Facts," written to try to combat the spread of misinformation over Antarctic climate trends. Numerous web articles covered the piece, which led to his appearance on several radio shows and more print interviews. - Diane McKnight's children's book <i>The Lost Seal</i> was featured on Denver's CBS television affiliate <p>New LTER site brochure available at the following URL: http://intranet.lternet.edu/modules.php?name=UpDownload&req=viewdownload&lid=501</p>
Web site details	www.mcmlter.org (approximately 1,000 unique hits per month)
Information on project database(s), and amount of use of	All MCM-LTER data are stored in a fully relation database (Oracle). These data (both tabular and spatial data) are accessed dynamically via the web. Database access statistics are not tracked specifically.

database(s) (e.g. as measured by hits on a web version)	All MCM-LTER metadata are in the standardized Ecological Metadata Language (EML) format used by the LTER Network. All our data are searchable from centralized global searches such as the LTER Network (www.lternet.edu) and the Knowledge Network for Biocomplexity (KNB - http://knb.ecoinformatics.org/)
Number and type of education/training and other capacity building activities	<p>Schoolyard LTER (SLTER) - Scientists from the McMurdo-LTER support studies on local rivers by providing technical support and sampling equipment for the students at Linworth Alternative High School in Worthington, OH. The SLTER website features waters sampling procedures, data collected by students, an interactive map of sampling locations, photos & videos, and many other educational materials. (www.mcmlter.org/SLTER/)</p> <p>Many LTER students participate in various aspects of the research. This may include field work such as sample collection, sample analysis (both at home institutions and in Crary Lab), data interpretation, background research, and writing and readying papers for publication.</p>
Notes on new technology/model developments	<p>MCM-LTER now has an online interactive GIS map, available at http://www.mcmlter.org/GIS/</p> <p>Modeling</p> <p>We constructed a new model for soil water-release curves which is applicable to dry valley soils, and which also represents a fundamental advance in representing the effects of texture and bulk density on water potential (Hunt et al., 2007). A major conclusion was that soil texture is necessary for predicting matric potential and biological activity from observed gravimetric water, even though dry valley soils are very sandy, with clay contents generally below 7%.</p> <p>The above model serves as the core of a new mechanistic heat and water flow model for dry valley soils. This model was developed using data for three sites in Taylor Valley, and predicts soil temperatures within 1 to 2 degrees in validation tests. The model (ms. in prep.) is being used to examine long-term trends in soil temperatures, a major control on the activity of soil organisms.</p>

Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	<ul style="list-style-type: none"> • Graduate Students, Undergraduate Students, Post-Docs, and Technicians funded by LTER during the current funding period: Total=55; Male=27, Female=28. • PIs: Total=7; Male=5, Female=2. • Current Formal Collaborators: Total=6; Male=4, Female=2 • Current "Investigators": Total=7; Male=3, Female=4 • Countries represented in the MCM-LTER project: USA, Canada, New Zealand, Australia, UK, Czech Republic, Japan
Title, place and type of meetings	MCM-LTER has two meetings per year. One is a "science" meeting attended by all PIs, collaborators, investigators and students. The last meeting was held in Boulder, CO in August, 2007.
Links to other SCAR SRPs or SCAR Action or Expert Groups	Through Lyons there are links to the Environmental Contamination Antarctic Group and the Pan-Antarctic Observation Network
Links to other ICSU bodies	None

<p>Your Name:</p>	<p>MERGE: Takeshi Naganuma & Annick Wilmotte</p> <ol style="list-style-type: none"> 1. MERGE-Japan: Satoshi Imura & Takeshi Naganuma 2. MERGE-New Zealand: Ian Hawes & Brian Sorrell 3. MERGE-Brazil: Vivian Helena Pellizari 4. MERGE-Malaysia A: Irene Kit-Ping Tan 5. MERGE-Malaysia B: Phang Siew-Moi & Chu Wan-Loy 6. MERGE-Poland: Jerzy Rokicki & Edward Skorkowski 7. MERGE/TARANTELA/EBA-Spain: Antonio Quesada 8. MERGE-Belgium: Annick Wilmotte, Wim Vyverman & Anne Willems 9. MERGE-affiliate UK: David Pearce
<p>Your Project Name:</p>	<p>MERGE: Microbiological and Ecological Responses to Global Environmental Changes in Polar Regions</p> <ol style="list-style-type: none"> 1. MERGE-Japan: Inventory of microbial diversity in Arctic and Antarctic habitats 2. MERGE-New Zealand: Late season ecosystem processes in Antarctic inland waters 3. MERGE-Brazil: Microbial diversity of terrestrial and maritime ecosystems in Antarctic Peninsula 4. MERGE-Malaysia A: Biological and functional diversity of microbial communities in ecologically distinct polar environments 5. MERGE-Malaysia B: Response of polar, tropical and temperate microalgae to global warming and increased UV radiation 6. MERGE-Poland: Molecular identification of polar Anisakidae 7. MERGE/TARANTELA/EBA-Spain: IPY in Byers Peninsula 8. MERGE-Belgium: AMBIO: Antarctic microbial biodiversity: the importance of geographical and ecological factors 9. MERGE-affiliate UK: Long term monitoring and survey (Biology) or LTMSB-task 7
<p>Outputs</p>	
<p>Key achievements (provide a short paragraph on each)</p>	<p>MERGE is an IPY umbrella that hosts a number of individual national projects, and also functions as an EBA umbrella for longer-term, post-IPY activities to be further implemented. Below-listed are 9 representatives of the MERGE-affiliated projects that would make direct contributions to EBA.</p> <p>1. MERGE-Japan: Literature survey, as a pre-site survey, yielded a compiled dataset on industrial applications and patents of microorganisms derived from Polar regions. The survey report is available only in Japanese, but most of the cited literatures are English-written, and thus it serves as a nice list of Polar microbiological studies.</p> <p>2. MERGE-New Zealand: Funding obtained in August 2008 to carry out studies of limnology and microbial ecology of meltwater ponds of the McMurdo ice shelf during the 2008 Antarctic autumn and winter periods.</p> <p>3. MERGE-Brazil: The field trip to Antarctic Brazilian Station at King George Island, Antarctic Peninsula occurred during summer 2007/2008. In marine environments the ecology of methanotrophic bacteria and methanogenic archaea are under study. Isolation of pure cultures is also on course and molecular techniques are being used to characterise microbial communities' structure. DGGE analysis showed that activities in EACF are probably selecting for different groups in the area near the wastewater discharge and archaeal 16S rRNA and <i>pmoA</i> gene libraries are being constructed to obtain more information on species composition (Team of V.H.Pellizari at U. of Sao Paulo).</p>

Also another study have the goal of to isolate and characterize heterotrophic bacteria associated with marine macroalgae from Antarctica in order to understand the ecological interactions between these algae and bacteria that live on them. The 16S rRNA gene sequences presented in this investigation were related to sequences belonging microorganisms isolated from cold and polar regions. In general, each algae studied (*Ascoseira mirabilis*, *Palmaria decipiens*, *Desmarestia antarctica* and *Himantothallus grandifolia*) presented a distinct bacterial community, only genus *Pseudoalteromonas* was associated with all algae analysed. This result could indicate a species-specific interaction between algae and its surface microbiota. The increase of sampling effort associated with the use of culture-independent techniques will be necessary to confirm this result.

A collection of acidophile bacteria isolated from soil samples are under molecular characterization. The teams of A. Rosado (UFRJ) and C. Rosa (UFMG) are sampling rizosphere of Antarctic hairgrass (*Deschampsia antarctica*) to isolate bacteria and fungi associated with rhizosphere. Rhizosphere bacterial communities are now been studied through pyrosequencing technique.

Also soil and lakes sediments were sampled and are under screening for actinomycetes presence, diversity and screening of polyketide producers microorganisms (Team of Dr. G. Padilla). In 2008 the virologists team went to Elephant Island and Keller Peninsula (King George Island) to collect blood samples from penguins. (Team of E. Durigon from USP). The presence of virus will be detected and quantified by PCR and qPCR.

4. MERGE-Malaysia A:

Have participated in the following expeditions:

Casey station, AAD (2002/03 and 2005/06)

Maitri station, NCAOR (2004/05)

Signy island, BAS (2005/06 and 2006/07)

Dasan station (KOPRI) in Ny-Ålesund (2006)

Environmental samples were collected and analysed for culturable (by isolation) and unculturable bacteria (DNA extraction, PCR, clone libraries, DGGE). The chemical composition of the environmental samples was also analysed. Bioproducts studied include polyhydroxyalkanoates, biosurfactants, antimicrobial compounds.

Two MoUs for scientific collaboration were signed:

Irene K.P.Tan (MARP) and Peter Convey (BAS) in 2005

Irene K.P.Tan (MARP) and Hong-Kum Lee (KOPRI) in 2006

One Master of Biotechnology dissertation was generated:

Sharmila Veerasamy (2007) Isolation and screening of Antarctic bacteria for the ability to produce biosurfactant. M.Biotech. dissertation, University of Malaya, Kuala Lumpur, Malaysia.

5. MERGE-Malaysia B:

Dr. Ng Kim Yong and Shamala Marimuthu went on an expedition to Casey from 12 Oct 2006 to 16 Jan 2007 (AAD Project 2779) to measure the baseline levels of oxidative stress enzymes of sea ice algae.

Emienour Muzalina Mustafa and Dr. Siti Aishah Alias went on an expedition to Marion Island, sub-Antarctica under the South African Antarctic Research Program (SANAP) from 5 April to 14 May 2007. The main objective was the collection of sub-Antarctic algae.

Gold Medal Award: Response of Sea ice algae towards oxidative stress : Biochemical properties around Casey Station, Antarctica Expo UM 2007, Research, Invention and Innovation

6. MERGE-Poland

A field investigation was carried out from November 2007 to January 2008 during the 32th Polish Antarctic Expedition. Seven fish species were collected from Admiralty Bay (King George Island, South Shetlands, near the Arctowski station - 62° 09'S, 58° 27'W) from 20 to 100 m depth. Two fish species were infested. (*Lepidonotothen nudifrons* (Lönnerberg, 1905) harbored about 50 and *Notothenia coriiceps* Richardson, 1844 about 200 specimens of *Gyrodactylus* spp. The collected material will be analyzed using morphological and molecular methods. The attachment organs (haptors) will be dissected and fixed in ammonium picrate glycerine according to standard procedure for morphological examination. The images will be compared with the existing Gyro base (<http://www.gyrodb.net/>). The rest of the body will be used for amplification of the entire ITS region of the ribosomal DNA array (spanning ITS1-5.8S-ITS2 and terminal fragments of 18S and 28S). The fragments will be sequenced and the sequences will be compared with the entries in Genbank. (<http://www.ncbi.nlm.nih.gov/Genbank/>).

Level of fish infection by anisakid nematodes in the South Shetland Island was studied. Total amount of 303 fishes belonging to 23 species from 7 families were examined in November–December 1978, January 1979 and January–March 1981. The fish were caught in the areas off the South Shetlands (Elephant and Shishkov Islands) and seven species (79 fish) from King George (Admiralty Bay) from November 2007 to January 2008.

Fish were dissected and the visceral cavity examined with the naked eye. Nematodes were preserved in 3% formaldehyde in saline and cleared in glycerin or lactic acid. Anisakidae larvae were identified on the basis of morphological characters.

For determination, anisakid larval forms were used key of Rocka (2004). Three species of L3 larvae nematodes were found: *Anisakis simplex*, *Contracaecum* spp. and *Pseudoterranova decipiens*.

Higher prevalence, intensity and abundance of infection by *Anisakis simplex* and *Pseudoterranova decipiens* of *Notothenia rossi* was observed in Elephant and Shishkov Islands compared to Admiralty Bay.

In opposite, the infection levels by *Contracaecum* spp. and by *Chaenocephalus aceratus* was higher in Admiralty Bays as in Elephant and Shishkov Islands.

7. MERGE/TARANTELA/EBA-Spain:

Obtaining funding for an international multidisciplinary sampling season.

The funding has been provided by the Spanish Polar Programme and grants enough money for supporting all the logistics to set up a small camp at Byers Peninsula (Livingston Island) and studying terrestrial limnetic and coastal ecosystems. It will be organized in slots of 3 weeks from November to March. During these periods, 6 scientists per period, from all over the World will study different aspects in situ.

Obtaining funding for basic equipment. Some basic instruments have already been purchased

Launching an international call for that project. This call was very successful and over 20 EoI were received

Organizing research groups. 24 teams from different countries will participate in this project, most of them with field time.

8. MERGE-Belgium:

With the beginning of the AMBIO project, the sampling campaigns were pursued by the team of Wim Vyverman (U.Gent).

The work on bacterial, cyanobacterial and diatom (and other protists) diversity started on the available material: several environmental samples spanning different antarctic biotopes, from harsh continental

	<p>(Transantarctic Mountains) to relatively mild (Antarctic Peninsula) ones. The samples from the site of the future Belgian Base at Utsteinen arrived in February, and were also partially included in the surveys.</p> <p>The preliminary results of the cyanobacterial molecular study (team of A. Wilmotte, U.Liège) showed that continental samples harbored less cyanobacterial diversity than coastal ones, confirming the paradigm of an impoverished diversity with more extreme conditions but also emphasizing that, in Antarctica, it is possible to find biotopes that are less hostile to life and harbour a quite large diversity. This is the case of the coastal freshwater lakes in the Prydz Bay area, and of meltwaters in Antarctic Peninsula. Furthermore, 4 cyanobacterial strains have been isolated, purified, then characterized morphologically and molecularly.</p> <p>The team of Wim Vyverman (U.Gent) has started to study the cultivated diversity of diatoms and green algae and is currently performing a molecular screening of the available strains. Due to the delay in the arrival of the new samples, the work on the uncultivated diversity has focused on the optimisation of techniques and the analysis of samples from the new Belgian base region.</p> <p>The main efforts of the team of Anne Willems (U.Gent) focused on exploring the bacterial diversity through cultivation. Five samples from different Antarctic origins were studied so far and about 2000 psychrophilic or psychrotolerant new isolates were retrieved. By genetic fingerprinting (rep-PCR) and partial 16S rDNA sequencing, a preliminary identification was performed. The samples proved to be very diverse and to harbour potentially many species and genera that are new to science. More samples, selected on partly the basis of the uncultivated bacterial diversity data will be included over the next year.</p> <p>The available samples and supporting environmental data will allow us to evaluate the geographic distribution and dispersal limitation of microorganisms. We address this question using both cultivation and molecular methods. The results obtained in 2007 are promising and further analyses are well under way in order to obtain publishable data in short term.</p> <p>During this first year, the AMBIO website was constructed. All partners took part in several outreach activities, national and international scientific meetings and participated to meetings concerning the future Belgian basis to brainstorm on the scientific projects that could be carried out. The dataset on the diversity will be ultimately entered in an international database, recommended by our Follow-up committee members.</p> <p>9. MERGE-affiliate UK:</p> <p>Two Antarctic metagenomic libraries have been constructed, one terrestrial and one marine. The libraries are currently housed at BAS and will be available to the community subject to request and following NERC guidelines.</p>
Is this project an IPY project?	<p>Yes, IPY Full Proposal #55.</p> <p>The Spanish project is a joint venture between MERGE, TARANTELA and EBA.</p> <p>The British project is not an IPY project.</p>
If this project is not an IPY project, what contributions has it made to other IPY projects?	<p>9. MERGE-affiliate UK: As an affiliated project (with MERGE & PAME) the data generated will be available for analysis and co-ordinated research effort with other EBA partners.</p>
Publications in	<p>1. MERGE-Japan:</p>

<p>peer reviewed literature (including articles "in press") [Please append]</p>	<p>Kohshima S, Takeuchi N, Uetake J, Shiraiwa T, Uemura R, Yoshida N, Matoba S, & Godoi MA Estimation of net accumulation rate at a Patagonian glacier by ice core analyses using snow algae. (2007) <i>Global and Planetary Change</i>, 59, 236-244.</p> <p>Natalia S. Duxbury, Sabit S. Abyzov, N.E. Bobin, Satoshi Imura, Hiroshi Kanda, I.N. Mitskevich, A.L. Mulyukin, Takeshi Naganuma, M.N. Poglazova & N.V. Ivanov (2006) Time machine: ancient life on earth and in the cosmos. <i>EOS</i>, 87(39): 401, 406.</p> <p>2. MERGE-New Zealand: Wait BR, Webster- Brown J, Healy M & Hawes I (2006): Chemistry and stratification of Antarctic meltwater ponds I: Coastal ponds near Bratina Island (Lat 78°S), Ross Sea, <i>Antarctic Science</i> 18, 515-524 Healy M., Webster-Brown J.G., Brown K.L, Lane V. (2006) Chemistry and stratification of Antarctic meltwater ponds II: Inland ponds in the McMurdo dry valleys, Victoria land. <i>Antarctic Science</i> 18, 525-533 Howard-Williams C. & Hawes I. (2007): Ecological processes in Antarctic inland waters: interactions between physical processes and the nitrogen cycle. <i>Antarctic Science</i> 19, 205-217</p> <p>3. MERGE-Brazil: not yet.</p> <p>4. MERGE-Malaysia A: not yet.</p> <p>5. MERGE-Malaysia B: Wong Chiew-Yen, Chu Wan-Loy, Harvey Marchant & Phang Siew-Moi (2007) Comparing the response and adaptation of Antarctic, tropical and temperate microalgae to ultraviolet radiation (UVR) stress. <i>Journal of Applied Phycology</i> 19: 689 - 699</p> <p>6. MERGE-Poland: not yet.</p> <p>7. MERGE/TARANTELA/EBA-Spain: not yet.</p> <p>8. MERGE-Belgium: Zakhia, F., Jungblut A-D., Taton, A., Vincent, W.F. and Wilmotte A. (2007) Cyanobacteria in cold environments. In: Margesin, R., Schinner, F., Marx, J.-C., Gerday, C. (eds.), <i>Psychrophiles: from Biodiversity to Biotechnology</i>. Springer Verlag, pp. 121-135.</p> <p>9. MERGE-affiliate UK: not available</p>
<p>Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)</p>	<p>1. MERGE-Japan: Have released a DVD of the televised program, 'Hot Antarctica', available only in Japanese. This is a product from a joint project of Hiroshima University and the Hiroshima-based RCC TV company.</p> <p>2. MERGE-New Zealand: Wait, B. (2006): <i>The Extreme Chemistry of Meltwater Ponds</i>, Access Antarctica, March 2006</p> <p>3. MERGE-Brazil: Press http://www.usp.br/jorusp/arquivo/2007/jusp800/pag1011.htm (in Portuguese).</p> <p>4. MERGE-Malaysia A: Tan IKP (2007) Biological and functional diversity of microbial communities in ecologically distinct polar environments. <i>Proceedings of the International Symposium, Asian Collaboration in IPY 2007-2008</i>, 1 March 2007, Tokyo, Japan. p. 38-40 Tan IKP, Goh YS, Tan GYA (2006) Occurrence and Diversity of Polyhydroxyalkanoate-producing Bacteria in Antarctic Soils. Abstracts of the <u>2nd SCAR Open Science Conf.</u>, 12-14 July 2006, Hobart, Australia. Tan GYA, Chong CW, Salwoom LT, Tan IKP (2006) Bacterial Diversity in Environmental Samples from Antarctica. Abstracts of the <u>2nd SCAR Open Science Conf.</u>, 12-14 July 2006, Hobart, Australia. Tan IKP, Goh YS, Sharmila V, Tan GYA, Misni M (2005) Isolation and</p>

	<p>screening of Antarctic bacteria for the ability to produce polyhydroxyalkanoates and biosurfactants. Abstracts Book, <u>9th SCAR International Biology Symposium "Evolution and Biodiversity in Antarctica"</u>, 25-29 July 2005, Curitiba, Brazil. p 203</p> <p>Lee SM, Tan IKP (2004) Comparison of protocols for extraction of genomic DNA from antarctic waters. Abstracts Book, <u>1st SCAR Open Science Conference "Antarctica and the Southern Ocean in the Global System"</u>, 26-28 July 2004, Bremen, Germany. p 117</p> <p>5. MERGE-Malaysia B:</p> <p>Phang Siew-Moi and Chu Wan-Loy (2007) IPY EOI No. 96: Response of Polar, Tropical and Temperate Microalgae to Global Warming and Increased UV Radiation. International Symposium on Asian Collaboration in IPY 2007 -2008, Tokyo, Japan, 1 March 2007.</p> <p>Chu W.L. (2007): Cruise Report on International Polar Year (IPY) Research Cruise to the Bering Sea (Sub-Arctic) and Chukchi Sea (Arctic) 24th July 2007 – 15th August 2007</p> <p>Emienour Muzalina Mustafa (2007): Cruise Report on the Expedition to Marion Island, sub-Antarctica, 5 April to 15 May, 2007.</p> <p>6. MERGE-Poland: not yet.</p> <p>7. MERGE/TARANTELA/EBA-Spain:</p> <p>Have presented our project in two different scientific events, one related with Tarantella in the Netherlands, and the other related with the Italian Polar programme.</p> <p>8. MERGE-Belgium:</p> <p>Wilmotte, A. 2007. L'API, année polaire internationale. Focus sur les poles. Bulletin de Sciences et Culture, n° 406, p 52-58. mars-avril 2007. http://www.ambio.ulg.ac.be/articles/Acr9.tmp.pdf</p> <p>Wilmotte, A. 2007. Les cyanobactéries, comment exploiter au mieux la lumière? <i>In</i>: Probio Service. Recueil trimestriel. 26ème année. septembre 2007 (3). p 219-230. Association des professeurs de biologie PROBIO ASBL. (Belgium)</p> <p>9. MERGE-affiliate UK: not available</p>
Brochures, posters, press/media articles and similar PR material	<p>1. MERGE-Japan: not available</p> <p>2. MERGE-New Zealand: not available</p> <p>3. MERGE-Brazil:</p> <p>Kuhn, E.; Pellizari, V.H. Diversity of aromatic ring-hydroxylating dioxygenases in sediment samples of Admiralty Bay, Antarctic Peninsula. The international conference on cryogenic resources of polar regions. Salekhard. Russia. June 17 to 20, 2007.</p> <p>Nakayama, C.R.; Kuhn, E.; Pellizari, V.H.; Vazoller, R.F. Detection and quantification of methanotrophic bacteria in Admiralty Bay, King George Island, Antarctica. XV Simpósio Brasileiro sobre Pesquisa Antártica. São Paulo. SP. 19 to 21/09/ 2007. (oral talk)</p> <p>Daniella Vilela Lima, Cristine Chaves Barreto, Eurico Cabral Oliveira, Therezinha M. Absher & Vivian Helena Pellizari-Analysis and characterization of bacteria associated with macroalgae from Antarctic sea. XXIV Conference of Brazilian Society for Microbiology. October 2007. Brasilia. Br. (Award: Oral presentation prize)</p> <p>Daniella Vilela Lima, Cristine Chaves Barreto, Eurico Cabral Oliveira, Therezinha M. Absher & Vivian Helena Pellizari: Heterotrophic Bacteria associated with the antarctic algae <i>Palmaria decipiens</i>. XV Symposium of Antarctic Research. Center of Antarctic Research from University of Sao Paulo. September 2007. Sao Paulo. SP. (oral talk)</p> <p>Duarte, R.T.; Barreto, C.C.; da Silva, H.E.; Pellizari, V.H. Microbial Community Succession in na Recently Deglaciaded Soil. XXIV</p>

	<p>Conference of Brazilian Society for Microbiology. October 2007. Brasilia.</p> <p>4. MERGE-Malaysia A: not available</p> <p>5. MERGE-Malaysia B: not available</p> <p>6. MERGE-Poland: Rokicka M, Skorkowski E.F, Zi_tara M.S (2008). <i>Gyrodactylus</i> spp. Nordmann, 1832 of several local fish species (family: Nototheniidae) from Admiralty Bay, South Shetland Islands. XXXII International Polar Conference. May 23-24. Wroc_aw, Poland.- poster (submitted). Rokicki J. (2008). Influence of climatic changes on the host-parasite system at Anisakidae (Nematoda) in polar regions. XXXII International Polar Conference. May 23-24. Wroc_aw, Poland – oral presentation.</p> <p>7. MERGE/TARANTELA/EBA-Spain: not available</p> <p>8. MERGE-Belgium: Fernandez-Carazo R, Zakhia F, Taton A and Wilmotte A (2007). Antarctic cyanobacterial communities: baseline data on their diversity and distribution. Belgian Biodiversity Platform Conference: Biodiversity and Climate Change. May 21-22, p 28. Brussels, Belgium (poster) Fernandez-Carazo R, Zakhia F, Taton A, Verleyen E, Vyverman W, Hodgson DA and Wilmotte A (2007). Diversity and distribution of cyanobacteria in Antarctica. Proceedings of the 17th Symposium of the International Association for Cyanophyte Research, June 25-29, p 92. Mérida City, Mexico (Oral talk 75) Verleyen E, Hodgson DA, Sabbe K, Wilmotte A, De Wever A and Vyverman W (2007). Biodiversity assessments of lacustrine microbial communities in Antarctic lakes. Astrobiology workshop, Royal Academy of Sciences, June 12, Brussels, Belgium (Oral talk) Fernandez-Carazo, R, Ertz, D and Wilmotte, A (2007). Cyanobacterial diversity at Utsteinen: The impact of the 'zero emission' research station in Antarctica. Bioforum, October 11, University of Liège, Liège, Belgium (poster) Hodgson DA, Convey P, McInnes S, Sands C, Fernandez-Carazo R and Wilmotte A (2007). The last lakes on earth: aquatic life in the Dufek Massif, Antarctica. British Ecological Society Annual Meeting. September 10-12. Glasgow. UK (Oral talk). Peeters K and Willems A (2007). Analysis of the bacterial diversity of samples from the Belgian Antarctic Base through cultivation. November 23, 2007. 13th Annual Symposium of the Belgian Society for Microbiology, "Evolution in the microbial World", p71. Brussels (poster) Zakhia F, Lemaire C, Taton A and Wilmotte A (2007). Cyanobacterial diversity in a laminated microbial mat from the Antarctic Peninsula. November 23, 2007. 13th Annual Symposium of the Belgian Society for Microbiology, "Evolution in the Microbial World". p. 99. Brussels (poster) (Award: poster price).</p> <p>9. MERGE-affiliate UK: not available</p>
Web site details	<p>2. MERGE-New Zealand: http://ipy.antarcticanz.govt.nz/images/pdfs/pr_frst_ipy.pdf</p> <p>4. MERGE-Malaysia A: http://www.myantarctica.com.my/researchprojects_diversity.htm</p> <p>5. MERGE-Malaysia B: http://www.myantarctica.com.my/aboutMARP.htm http://umalgae.atspace.um</p> <p>8. MERGE-Belgium: www.ambio.ulg.ac.be (>2500 hits since August 2007)</p>

Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	<p>1. MERGE-Japan:Polar Biology DataBase <http://antmoss.nipr.ac.jp/database_e.html>. The Japanese-written site < http://antmoss.nipr.ac.jp/database.html> has been first and better developed.</p> <p>2. MERGE-New Zealand: To be advised.</p>
Number and type of education/training and other capacity building activities	<p>1. MERGE-Japan: Outreach (Science Partnership Project), 'Hot Antarctica', supported by Japan Science and Technology Agency. Activity report is available only in Japanese.</p> <p>2. MERGE-New Zealand: Supporting 2 PhD scholarships.</p> <p>3. Exposition : Microbiology –The number of 1080 children from secondary school visited this exposition in our Institute at University of Sao Paulo . Their learned about several aspects of microbiology including extremophiles. We used a poster and a video made in Antarctic by our graduate students showing our lab experiments at Brazilian Station to discuss Antarctic Microbiology: http://noticias.usp.br/acontece/obterNoticia?codnucjrn=1&codntc=15784 (in portuguese)</p> <p>5. MERGE-Malaysia B: 3 PhD & 2 Ms</p> <p>7. MERGE/TARANTELA/EBA-Spain: At least two Ph.D. students will participate in this project</p> <p>8. MERGE-Belgium: One 'hands on' workshop with secondary schools' students during 'Le printemps des sciences' (19.03.07 - 23.03.07) in french, University of Liège (Belgium) We took part in 2007 to the 'Spring of Sciences' in Liège. We organized a <u>workshop</u> for secondary school students and presented the <u>International Polar Year</u> and some related projects: <u>MERGE</u> and <u>AMBIO</u>. The role of Antarctic cyanobacteria has been emphasized. Experiments to extract hydrosoluble and liposoluble photosynthetic pigments from polar cyanobacterial strains were carried out. http://www.ulg.ac.be/sciences/pedagogique/dossierpds2007/cyano1.pdf 'Semence de curieux' (25.03.07 - 01.04.07), in French. 2 Radio Broadcasts of RTBF: Interview on the Cyanobacteria in Polar zones with Dr Annick Wilmotte Cyanobacteria in polar zones. Liège (Belgium) http://old.rtbf.be/rtbf_2000/bin/view_something.cgi?type=sac&id=0193584_sac&menu=default&pub=RTBF.PREM%2FPREM.FR.la taille.SP.SUCR Conference for Science Teachers, "L'Antarctique est un continent microbien" 23.08.07, in French. At the 'congrès des professeurs de sciences' (Science Professor Society), Faculté Agronomiques de Gembloux, (Belgium) http://www.congres-des-sciences.be/ Conference, "L'Antarctique, un continent microbien" 09.09.07, in French. Wide audience conference presented by Dr Annick Wilmotte at the occasion of the inauguration of the Belgian Antarctic Station, Tour et Taxis, Brussels (Belgium). The development of a microbial communities, especially the cyanobacteria in Antarctica is emphasised.</p>

	<p>Conference, "Reconstructie van vroegere klimaatsveranderingen met behulp van de Antarctische kustmeren als natuurlijke archieven", 09.09.07, in Dutch.</p> <p>Wide audience conference presented by Dr Elie Verleyen, at the occasion of the inauguration of the Belgian Antarctic Station. The use of "natural archives" from Antarctica in order to reconstruct the climate changes is presented. Tour et Taxis, Brussels (Belgium).</p> <p>Conference, 'Genetic diversity and distribution of cyanobacteria in Antarctica' 20.09.07, in English.</p> <p>Presented by Dr Wilmotte at the Faculteit der Natuurwetenschappen, Wiskunde en Informatica, Instituut voor Biodiversiteit en Ecosysteem Dynamica (IBED), Amsterdam (The Netherlands).</p> <p>"Researcher Night" 28.09.07, in French.</p> <p>Wide audience activities in the frame of the european "<u>Researcher Night</u>", at the Institut de zoologie, Quai Van Beneden, Dr Zakhia showed strains of polar cyanobacteria at a wide audience. Liège (Belgium). http://www.ulg.ac.be/nuitdeschercheurs/</p>
Notes on new technology/model developments	<p>1. MERGE-Japan: A sister-project, EAGLE <http://polaris.nipr.ac.jp/~EAGLE/index.html>, has been trying to develop a molecular technique of 'single-cell genome amplification', and also conducting massive sequence analyses of macro-/microbial genomes from 'Antarctic moss-pillar as a mini-biosphere', or 'Bryosphere'.</p> <p>2. MERGE-New Zealand: To be advised.</p> <p>7. MERGE/TARANTELA/EBA-Spain: Have developed an automatic sampling device for limnetic ecosystems, able of wintering over and preserving the samples, which has been set up this 2007/08 field season.</p>
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	<p>1. MERGE-Japan: 10 actively working members, including 1 lady, mostly Japanese. Other members (including more ladies and foreign participants) are less active but still participating.</p> <p>2. MERGE-New Zealand: 8 actively working members (6, male, 2 female) all NZ residents or citizens.</p> <p>3. MERGE-Brazil: 10 full-time brazilian scientists, of which 4 women. Two canadians are collaborating with our project. 12 brazilian graduate students (6 female).</p> <p>4. MERGE-Malaysia A: <u>MALAYSIAN SCIENTISTS</u>: all from the University of Malaya, 4 researchers (academic staff): 2 women, 2 men, 7 graduate students: 5 women, 2 men, 5 undergraduate students: all women. <u>NON-MALAYSIAN SCIENTISTS</u>: 2 from British Antarctic Survey: both men, 1 from Korea Polar Research Institute: woman.</p> <p>5. MERGE-Malaysia B: Five Malaysian scientists with expertise ranging from biochemistry, microbiology, phycology to molecular biology; Five Malaysian Postgraduate Students; International Collaborators : Three (Australia, Germany & Japan).</p> <p>6. MERGE-Poland: not available</p>

	<p>7. MERGE/TARANTELA/EBA-Spain: Including only the team leaders: 24 men, 5 women, from Belgium, Brasil, Canada, China, France, Germany, Italy, Japan, Norway, Spain, South Africa, UK, US, and Ukraine.</p> <p>8. MERGE-Belgium: 11 full-time scientists, of which 5 women including 2 team leaders, all working in Belgium (but 1 Spanish and 1 Libanese nationals). 2 trainings for Master's students (female, Belgian), 1 training for a Erasmus student (female, Polish), 1 training for a Bachelor (female, Belgian)</p>
<p>Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees</p>	<p>MERGE business meeting with 5 participants was held on 17 June 2007 on the occasion of International Conference on Cryogenic Resources of Polar Regions <http://www.ikz.ru/permafrost/>.</p> <p>Joint EBA-MERGE session with 23 pre-registered talks was held on 19 July 2007 during the above-mentioned conference.</p> <p>Will present at the XXXII International Polar Conference. May 23-24 2008. Wroc_aw, Poland. www.meteo.uni.wroc.pl.</p> <p>Will present at the MERGE business meeting during the SCAR-IASC-IPY assembly in St. Petersburg, 7 July 2008.</p> <p>Will have several meetings prior the Spanish field activities and afterwards</p> <p>The First AMBIO Polar Meeting will take place at the University of Liège, Liège, Belgium, on 6th December 2007. This meeting gathered in the morning the AMBIO partners and the project manager, as well as the AMBIO Follow-Up Committee. In the afternoon, public conferences were given, with invited speakers. The programme: http://www.ambio.ulg.ac.be/programmeMeeting/programmeAMBIO.pdf.</p>
<p>Links to other SCAR SRPs or SCAR Action or Expert Groups</p>	<p>MERGE is generally regarded to contribute to EBA.</p> <p>1. MERGE-Japan: Have communicated with EBA, TARANTELA and SALE.</p> <p>2. MERGE-New Zealand: Links are all through EBA, and the Latitudinal Gradient project (www.LGP.aq) that is a project in EBA.</p> <p>3. MERGE-Brazil: EBA - Latin America Census of Antarctic Marine Life.</p> <p>7. MERGE/TARANTELA/EBA-Spain: as designated (TARANTELA and EBA)</p> <p>8. MERGE-Belgium: Links to ALIENS and LGP</p>
<p>Links to other ICSU bodies or to other scientific groups</p>	<p>2. MERGE-New Zealand: Links to the US McMurdo Dry Valleys Long Term Ecological Research (LTER) Project.</p>

Your Name:	Dominic Hodgson
Your Project Name:	CACHE-PEP
Outputs	
Key achievements (provide a short paragraph on each)	<p>The challenge</p> <p>To determine how the climate of the Antarctic Peninsula during the Holocene (last 10,000 years) is related to global scale patterns and trends, in order to understand the significance of current environmental changes in the region.</p> <p>Objectives</p> <ul style="list-style-type: none"> • To determine the response, during the Holocene (last 10,000 years) and glacial-Holocene transition, along a latitudinal transect from the Antarctic Peninsula to the Americas? • To understand how previous warm periods in Antarctica have been related to global climate • To determine where, along a transect from Antarctica through the Americas, the climate influence of Antarctica gives way to one more reminiscent of the northern hemisphere <p>If we are to trust models used to predict future climate change, we need to be assured that they can reproduce the spatial and temporal pattern of natural climate variability. IGBP-PAGES recognised this by setting up the PEP (Pole-Equator-Pole) traverses, which aim to determine the climate, especially throughout the Holocene, along continental transects. However, the PEPs end in mid-latitudes in the southern hemisphere, and have not been integrated with the records available from the Antarctic continent. The Antarctic Peninsula (AP) bridges that gap. CACHE-PEP will seek to place the (mainly) Holocene variability of AP and Antarctic climate in the context of global variability, as a contribution to understanding the significance of recent changes. It will do this by explicitly extending the PEP-I (Americas) transect through the AP.</p> <p>What we will do</p> <ul style="list-style-type: none"> • Produce the first complete Holocene ice core climate record truly from the AP, through a bedrock drilling project at James Ross Island (JRI-in collaboration with LGGE in Grenoble) (in progress) • Produce new lake sediment climate records from the AP to tie in with JRI and Berkner Island ice cores; new marine records of sea ice extent, sea surface temperatures, and other oceanographic variables from the northern and southern limits of the AP part of the transect (complete) • Integrate the AP record into the PEP1 transect, linking it to the Antarctic continent • A rigorous chronological and statistical assessment of the position of AP climate change vis-à-vis global Holocene climate change, in order to understand the main drivers
Is this project an IPY project?	No
If this project is not an IPY project, what contributions has it made to other IPY projects?	It has links to a number of IPY projects including MERGE

<p>Publications in peer reviewed literature (including articles "in press")</p>	<p>CROMER L., GIBSON J.A.E., SWADLING K.M. & HODGSON D.A. 2006. Evidence for a lacustrine faunal refuge in the Larsemann Hills, East Antarctica, during the Last Glacial Maximum. <i>Journal of Biogeography</i>, 33, 1314-1323. (PEP)</p> <p>HODGSON D.A., ROBERTS D., MCMINN A., VERLEYEN E., TERRY B., CORBETT C. & VYVERMAN W. 2006. Recent rapid salinity rise in East Antarctic lakes. <i>Journal of Paleolimnology</i>, 36, No. 4, 385-406. (PEP)</p> <p>HODGSON D.A., VERLEYEN E., SQUIER A.H., SABBE K., KEELY B.J., SAUNDERS K.M. & VYVERMAN W. 2006. Interglacial environments of coastal east Antarctica: comparison of MIS 1 (Holocene) and MIS 5e (Last Interglacial) lake-sediment records. <i>Quaternary Science Reviews</i>, 25, 179-197 (DRAM)</p> <p>PUDSEY C.J., MURRAY J.W., APPLEBY P. & EVANS J. 2006. Ice shelf history from petrographic and foraminiferal evidence, northeast Antarctic Peninsula. <i>Quaternary Science Reviews</i>, 25, No. 17-18, 2357-2379. (PEP)</p> <p>SMITH J.A., HODGSON D.A., BENTLEY M.J., VERLEYEN E., LENG M.J. & ROBERTS S.J. 2006. Limnology of two Antarctic epishelf lakes and their potential to record periods of ice shelf loss. <i>Journal of Paleolimnology</i>, 35, 373-394. (PEP)</p> <p>TATON A., GRUBISIC S., BALTHASART P., HODGSON D.A., LAYBOURN-PARRY J. & WILMOTTE A. 2006. Biogeographical distribution and ecological ranges of benthic cyanobacteria in East Antarctic lakes. <i>FEMS Microbiology Ecology</i>, 57, 272-289. (PEP)</p> <p>TATON A., GRUBISIC S., BALTHASART P., HODGSON D.A., PICCARDI R., BIONDI N., TREDICI M.R., MAININI M., LOSI D., MARINELLI F. & WILMOTTE A. 2006. Polyphasic study of Antarctic cyanobacterial strains. <i>Journal of Phycology</i>, 42, No. 6, 1257-1270. (PEP)</p> <p>BROOK E.J. & WOLFF E.W. 2006. The future of ice core science. <i>Eos. Transactions, American Geophysical Union</i>, 87, No. 4, 39. (DRAM)</p> <p>HODGSON D.A., BENTLEY M.J., ROBERTS S.J., SMITH J.A., SUGDEN D.E. & DOMACK E.W. 2006. Examining Holocene stability of Antarctic Peninsula ice shelves. <i>Eos. Transactions, American Geophysical Union</i>, 87, No. 31, 305-308. (PEP)</p> <p>BERGSTROM, D.M., HODGSON, D.A. & CONVEY, P. 2006. The physical setting of the Antarctic. In Bergstrom, D.M., et al. eds. <i>Trends in Antarctic Terrestrial and Limnetic Indicators: Antarctica as a Global Indicator</i>. Dordrecht: Kluwer. (PEP)</p> <p>SMITH, J.A., BENTLEY, M.J., HODGSON, D.A. & COOK, A.J. 2007. George VI Ice Shelf: past history, present behaviour and potential mechanisms for future collapse. <i>Antarctic Science</i>, 19, No. 1, 131-142. (PEP)</p> <p>SMITH, J.A., BENTLEY, M.J., HODGSON, D.A., ROBERTS, S.J., LENG, M.J., LLOYD, J.M., BARRETT, M.S., BRYANT, C. & SUGDEN, D.E. 2007. Oceanic and atmospheric forcing of early Holocene ice shelf retreat, George VI Ice Shelf, Antarctic Peninsula. <i>Quaternary Science Reviews</i>, 26, No. 3-4, 500-516. (PEP)</p>
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	<p>HODGSON, D.A. 2007. Antarctic Lakes. In Fairbridge, R.W. & Herschy, R.W. eds. <i>Encyclopedia of lakes and reservoirs: Geography, geology, hydrology and paleolimnology</i>. Dordrecht: Springer, pp.18 (Encyclopedia of Earth Sciences). (PEP)</p> <p>VYVERMAN, W., VERLEYEN, E., SABBE, K., VANHOUTTE, K., STERKEN, M., HODGSON, D.A., MANN, D.G., JUGGINS, S., VAN DE VIJVER, B., JONES, V.J., FLOWER, R., ROBERTS, D., CHEPURNOV, V.A., KILROY, C., VANORMELINGEN, P. & DE WEVER, A. In Press. Historical processes constrain patterns in global diatom diversity. <i>Ecology</i>. (PEP)</p> <p>ROBERTS, S.J., HODGSON, D.A., BENTLEY, M.J., SMITH, J.A., MILLAR, I. & OLIVE, V. In Press. The Holocene history of George VI Ice Shelf, Antarctic Peninsula from clast-provenance analysis of epishelf lake sediments. <i>Palaeogeography Palaeoclimatology Palaeoecology</i>.</p> <p>HODGSON, D. A. (2007). Antarctic Lakes. In "Encyclopaedia of Lakes and Reservoirs: Geography, Geology, Hydrology and Paleolimnology." (R. W. Fairbridge, and R. W. Herschy, Eds.), pp. 18. Encyclopedia of Earth Sciences. Springer, Dordrecht, The Netherlands.</p> <p>CONVEY, P., GIBSON, J. A. E., HILLENBRAND, C.-D., HODGSON, D. A., PUGH, P. J. A., SMELLIE, J. L., AND STEVENS, M. I. (0000). Antarctic terrestrial life - challenging the history of the frozen continent? <i>Biological Reviews</i> 00, 00-00.</p> <p>SAUNDERS, K.M., HODGSON, D.A. & MCMINN, A. (subm). Quantitative relationships between benthic diatom assemblages and water chemistry in Macquarie Island lakes and their potential to reconstruct past environmental changes. <i>Antarctic Science</i></p>
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>VERLEYEN E., HODGSON D.A., SABBE K. & VYVERMAN W. Paleolimnologische reconstructie van de Laat Kwartaire omgevingsgeschiedenis van de Larsemann Hills, Oost-Antarctica. <i>Diatomededelingen</i> 28.</p> <p>HODGSON, D.A., WOLFF, E., MULVANEY, R., ALLEN, C. 2007. Extending the Americas paleoclimate transect through the Antarctic Peninsula to the Pole. <i>PAGES News</i> 15 (2), 6-7.</p>
Brochures, posters,	Many posters and presentations made at international conferences
Web site details	http://www.antarctica.ac.uk/bas_research/current_programmes/cache/pep/index.php
Information on project database(s),	N/A
Number and type of education/training and other capacity building activities	A range of outreach activities is ongoing
Notes on new technology	N/A
Inputs	
Number, gender and country of	UK – BAS scientists in CACHE-PEP project Belgium – Universities of Ghent and Liege in the HOLANT project

participating scientists in your project [to the best of your ability]	Other countries – many collaborators included in our work and publications
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	<i>Workshops are convened annually in the UK and Belgium</i>
Links to other SCAR SRPs or SCAR Action or Expert Groups	Strong links with ACE
Links to other ICSU bodies or to other scientific groups	Links with IGBP PAGES

Your Name:	Gunnar Bratbak
Your Project Name:	Polar Aquatic Microbial Ecology (PAME)
Outputs	
Key achievements (provide a short paragraph on each)	Field experiment (mesocosm) at NY Ålesund, August 07
Is this project an IPY project?	Yes - # 71
Publications in peer reviewed literature (including articles "in press") [Please append]	0
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	3
Brochures, posters, press/media articles and similar PR material	1
Web site details and number of hits to this site if data is available	http://www.uib.no/pame/
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	
Number and type of education/training and other capacity building activities	2 PhD Students
Notes on new technology/model developments	
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	14 (5F + 9M) Norway, France
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	
Links to other SCAR SRPs or SCAR Action or Expert Groups	
Links to other ICSU bodies or to other scientific groups	

Your Name:	Bruno Danis
Your Project Name:	SCAR – Marine Biodiversity Information Network (SCAR-MarBIN)
Outputs	
Key achievements (provide a short paragraph on each)	<p>Webportal: A webportal has been setup, linked to the main Antarctic marine databases, which gives free and open access to a variety of information relevant to Southern Ocean biodiversity.</p> <p>RAMS: A Register of Antarctic Marine Species (RAMS) is being established, providing accurate and complete taxonomic and distribution data openly accessible online. RAMS in turn contributes to the World Register of Marine Species (www.marinespecies.org), to the Catalogue of Life (www.catalogueoflife.org) and to the Encyclopedia of Life (www.eol.org). RAMS includes data on 12,500 taxa.</p> <p>Distribution data: occurrence data is visible and downloadable through a webGIS application. Users can query the database, which links 52 datasets, giving currently access to ca. 500,000 records.</p>
Is this project an IPY project?	Yes - #83
Publications in peer reviewed literature	-
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	Please see http://www.scarmarbin.be/imis.php?module=dataset&show=search
Brochures, posters, press/media articles and similar PR material	Please see http://www.scarmarbin.be/downloads.php Includes flyers, presentations, poster.
Web site details and number of hits to this site if data is available	Please see http://www.scarmarbin.be Ca. 300,000 visitors; 1,6000,000 hits
Information on project database(s)	52 datasets, ca 500,000 records dataflux: ca. 14,000,000 records downloaded in 2007
Number and type of education/training and other capacity building activities	No capacity building activities have been carried out so far. Setting up some specific technical workshops is under consideration.
Notes on new technology/model developments	Short term developments: Interactive identification Keys, Antarctic Field Guides, WFS/WMS, Webservices for taxonomic and distribution data, automatic identification,...
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	International Scientific Steering Committee: 16 participants from 8 countries The whole Network relies on the participation of scientists from the majority of countries and institutions involved in Antarctic biodiversity research.
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	3 international workshops organized. Ca. 25 attendees from 12 countries. SCAR-MarBIN has been represented at ca. 40 international meetings.
Links to other SCAR SRPs or SCAR Action or Expert Groups	SCAR-MarBIN is a SCAR Action Group. Linked to CAML, EBA.
Links to other ICSU bodies or to	Barcode of Life, RAPID

other scientific groups	
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Your Name:	Jan Andries van Franeker (Proj. leader), Hauke Flores
Your Project Name:	Scratching the surface
Outputs	
Key achievements (provide a short paragraph on each)	Census of top predators in the Antarctic seasonal sea ice zone Quantification of krill and other macrofauna in the surface layer and under sea ice
Is this project an IPY project?	no
If this project is not an IPY project, what contributions has it made to other IPY projects?	Participation to IPY Education and Outreach through weblogs and newsletters; results contribute to e.g. AMES, CAML, CCAMLR Survey, EBA; SCAR MARBIN; SYSTCO
Publications in peer reviewed literature (including articles "in press")	Flores H, Haas C, Van Franeker JA et al. (in press) Density of pack-ice seals and penguins in the western Weddell Sea in relation to ice thickness and ocean depth. Deep Sea Research II Krapp RH; Berge J; Flores H; Gulliksen B; Werner I (in press) Eusirid and Lysianassid Amphipods under Antarctic Pack Ice. Deep-Sea Research II Flores H, Van de Putte A, Siegel V, Pakhomov EA, van Franeker JA, Volckaert F (subm.) The ecological significance of fish in the Lazarev Sea, Southern Ocean. Marine Ecology Progress Series Van Franeker JA, Bathmann UV, Mathot S (1997) Carbon fluxes to Antarctic top predators. Deep Sea Research II 44, 435-455 Van de Putte A, Flores H, Volckaert F, Van Franeker JA (2006) Energy content of Antarctic mesopelagic fish: Implications to the marine food web. Polar Biology 29, 1045-1051
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	Publications (other) Flores H, Van Franeker JA, Meijboom A, Van Dorssen M (2005) Distribution of surface zooplankton and micronekton as potential prey for Antarctic top predators – a SUIT experience. Berichte zur Polarforschung 500, 200-206 Flores H (in press) Antarctic top predators and their prey. Berichte zur Polarforschung Flores H, van Franeker JA, Fijn R, Meijboom A, van Dorssen M (in press) Fresh from the fridge: Top predators' food sources under the pack-ice. Berichte zur Polarforschung Flores H, van Franeker JA, Feij B, Meijboom A, van Dorssen M (in press) Macrozooplankton and micronekton in the surface layer and under sea ice. Berichte zur Polarforschung Van Franeker JA, Flores H, Meijboom A, Van Dorssen M (2005) Spatial patterns in food requirements of marine birds and mammals in the Lazarev Sea, April 2004 (Polarstern ANT XXI-4, SO-GLOBEC). Berichte zur Polarforschung 500, 206-211 Van Franeker JA, Flores H (2006) Zuidpool en zeenaalden? Nieuwsbrief Nederlandse Zeevogelgroep 8(1/2), 4 Van Franeker JA, Feij B, Flores H, Meijboom A, van Dorssen M (in press) Marine birds and mammals in the Lazarev Sea: the summer influx (Polarstern ANT XXIV-2 LAKRIS summer expedition). Berichte zur Polarforschung Van Franeker JA, Fijn RC, Flores H, Meijboom A, van Dorssen M (in press) Marine birds and mammals wintering in the Lazarev Sea: further

	<p>evidence of a major role of sea ice in structuring the Antarctic foodweb (Polarstern ANT-XXIII-6, LAKRIS winter expedition). Berichte zur Polarforschung</p> <p>Van Franeker JA, Feij B, Meijboom A, Müller E (in press) Sea ice conditions during Polarstern expedition ANT 24-2, December 2007 – January 2008. Berichte zur Polarforschung</p> <p>Expedition newsletters, videos (see website details)</p> <p>Various appearances in Dutch and German press and books, TV and radio interviews</p>
Brochures, posters, press/media articles and similar PR material	<p>9 posters related to this project (see below), collection of video material for tv purpose</p> <p>Posters</p> <p>Van Franeker (2004) Antarctisch ijs net. Poster presentation</p> <p>Flores H (2004) Potential prey for Antarctic upper level predators – alternatives to krill. Poster presentation, Annual Meeting of the Graduate School Functional Ecology ('Verweij Dagen'), 26-28 January 2004</p> <p>Flores H, Van de Putte A (2005) Antarctic fuel resources. Poster presentation, 12th Benelux Congress of Zoology, Wageningen, 26-28 October 2005</p> <p>Flores H (2006) Fueling Antarctic top predators. Poster presentation, annual meeting of the Graduate School of Functional Ecology ('Verweij dagen'), 30 January – 1 February 2006</p> <p>Van Franeker JA, Flores H, Fijn RC, Wolff WJ (2007) Scratching the surface. Poster presentation, Durch Polar Congress, Groningen, 09 March 2007</p> <p>Flores H, van de Putte A, van Franeker JA, Volckaert F (2007) Ecological significance of lanternfish in the Southern Ocean. Poster presentation, 14th Benelux Congress of Zoology, Amsterdam, 01 – 02 November 2007</p> <p>Flores H, van Franeker JA, Meijboom A, van Dorssen M, Feij B (2008) The importance of sea ice: prey. Poster presentation, reception of the Minister of research and education (Germany), RV POLARSTERN, 06 February 2008</p> <p>Van Franeker JA, Feij B, Meijboom A, van Dorssen M, Flores H (2008) The importance of sea ice – the predators. Poster presentation, reception of the Minister of research and education (Germany), RV POLARSTEN, 06 February 2008</p> <p>Riehl T, Brenke N, Flores H, Schrödl M, Zapata Guardiola R (2008) Amazing diversity. Poster presentation, reception of the Minister of research and education (Germany), RV POLARSTEN, 06 February 2008</p>
Web site details and number of hits to this site if data is available	<p>http://www.pooljaar.nl/poolijs</p> <p>www.jafweb.nl</p> <p>http://www.wageningenimares.wur.nl/NL/Onderzoek/poolonderzoek/</p> <p>http://www.kennisonline.wur.nl/WOT/WOT-04/003/002</p>
Information on project database(s)	Metadata information passed on to Taco de Bruyn
Number and type of education/training and other capacity building activities	Video camera training
Notes on new technology/model developments	The Surface and Under Ice Trawl (SUIT) is a unique, newly developed net system to sample macrofauna under sea ice in a quantitative manner

Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	8 male participants from the Netherlands, Belgium, Germany and Canada
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	Antarctic Trophic Interactions, Texel (NL). Workshop. 9 attendees (2 females, 7 males) from the Netherlands, Belgium, Germany, UK
Links to other SCAR SRPs or SCAR Action or Expert Groups	SCAR group of Bird Experts
Links to other ICSU bodies or to other scientific groups	SO GLOBEC: LAKRIS (Germany) PELAGANT (Belgium / France)

Your Name:	Paul Dyer and Peter Crittenden
Your Project Name:	Sex and Variation in Antarctic Lichens
Outputs	Publications and DNA sequences
Key achievements (provide a short paragraph on each)	Studies have been assessing nature of reproduction and extent of biodiversity in Antarctic lichen-forming fungi. Experimental work has been completed, with much of the data now awaiting analysis. Preliminary results are available. These suggest that the majority of species studied demonstrate outcrossing sexual reproductive breeding strategies. This is likely to promote genetic variation in populations, helping survival given climate change. Indeed related studies assessing population biodiversity have shown there is notable variation within populations of the same species on the basis of DNA fingerprinting. Thus a 'good news' story. However, some isolated species have demonstrated self-fertile breeding systems, likely to reduce population variation, so might be at more risk given environmental change.
Is this project an IPY project?	NO – Funding application unsuccessful.
What contributions has it made to other IPY projects?	Contributing to EBA
Publications in peer reviewed literature (including articles "in press") [Please append]	<p>Seymour FA, Crittenden PD, Wirtz N, Øvstedal DO, Dyer PS, Lumbsch HT (2007). Phylogenetic and morphological analysis of Antarctic lichen-forming <i>Usnea</i> species in the group <i>Neuropogon</i>. <i>Antarctic Science</i> 19: 71-82.</p> <p>Seymour FA, Crittenden PD, Dyer PS (2005). Sex in the extremes: lichen-forming fungi. <i>Mycologist</i> 19: 51-58.</p> <p>Seymour FA, Crittenden PD, Dickinson MJ, Paoletti M, Montiel D, Cho L, Dyer PS (2005). Breeding systems in the lichen-forming fungal genus <i>Cladonia</i>. <i>Fungal Genetics and Biology</i> 42: 554-563.</p> <p>Murtagh GJ, Dyer PS, Furneaux PA, Crittenden PD (2002). Molecular and physiological diversity in the bipolar lichen-forming fungus <i>Xanthoria elegans</i>. <i>Mycological Research</i> 106: 1277-1286.</p>
Other publications	Dyer PS (2001). Sex and variation in lichens. <i>British Lichen Society Bulletin</i> 88: 13-14.
Brochures, posters, press	
Web site details	
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	DNA sequences deposited on Genbank international publicly accessible DNA database.
Number and type of education/training and other capacity building activities	Work publicised through University open days.
Notes on new technology	
Inputs	
Number, gender and country of participating scientists in your project	3 x UK Male.

[to the best of your ability]	
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	Annual BAS Antarctic Funding Initiative Meetings 2002-2005.
Links to other SCAR SRPs	
Links to other ICSU bodies or to other scientific groups	Project funded through NERC / BAS Antarctic Funding Initiative.

Your Name:	Graham Hosie
Your Project Name:	Southern Ocean Continuous Plankton Recorder Survey (SO-CPR Survey) supported by CPR-AG
Outputs	SO-CPR Database held at AAD, NIPR and SCAR-MarBIN. The data currently comprises 22,000 sample records from 1991 to 2007, for 200+ zooplankton species plus environmental data, covering about 70% of the Southern Ocean. Data and advice to ATS agencies and projects, e.g. SCAR, CAML, SCAR-MarBIN, SOOS, SAHFOS, CCAMLR and Bioregionalisation studies, plus individual researchers. Publications. The Survey is also the focus of developing long term collaboration in marine biodiversity.
Key achievements (provide a short paragraph on each)	<ul style="list-style-type: none"> • The SO-CPR Survey has been established as the first and only regular ocean scale marine plankton survey and monitoring program that covers most of the Southern Ocean and Antarctic waters. • The Survey has established that the open ocean area, between the sub-Antarctic front and the sea-ice zone, has a much higher biodiversity and abundance of zooplankton than originally expected and higher than the SIZ. The zone is dominated by mesozooplankton such as small cyclopoid and calanoid copepods, larvaceans and small euphausiids. • The Survey identified a major change in the zooplankton in the SIZ in 2000/2001 with mesoscale zooplankton significantly more abundant after 2000 instead of krill. • The Survey reported a major increase in the abundance of pelagic foraminiferans in 2004/05, with forams exceeding 50% of the numerical abundance compared with the long term average of 2% before 2004/05. • The Survey has contributed significantly to SCAR-MarBIN and CCAMLR's Bioregionalisation program.
Is this project an IPY project?	A pre-IPY project established in 1991, but a major contributor to IPY through CAML #53
If this project is not an IPY project, what contributions has it made to other IPY projects?	It is a major component of CAML with CPR tows being conducted all round Antarctica in 2007-08 on eight vessels, Aurora Australis (Australia), Shirase (Japan), Umitaka Maru (Japan), Polarstern (Germany), Tangaroa (New Zealand), James Clark Ross (UK) Yuzhmorgeologiya (USA) and Akademik Federov (Russia). All countries and ships are expected to be long term members of the Survey. In 2008-09, I expect France and the South American OLA CAML Consortium to join the Survey with new routes south of Tasmania and across Drake Passage.
Publications in peer reviewed literature (including articles "in press") [Please append]	Peer Review from 2006 Hosie, G.W., Stoddart, D.M., Wadley, V., Koubbi, P., Ozouf-Costaz, C., Ishimaru, T. and Fukuchi, M. (2007), The Census of Antarctic Marine Life and the Australian-French-Japanese CEAMARC (Collaborative East Antarctic Marine Census) contribution. Proceedings of the International Symposium Asian Collaboration in IPY 2007 -2008. Publisher - National

	<p>Institute of Polar Research, Tokyo . pp47-50</p> <p>Hunt, B. P. V., Pakhomov, E. A., Hosie, G. W., Siegel, V., Ward, P. Bernard, K. (Submitted) Pteropods in Southern Ocean ecosystems. <i>Progress in Oceanography</i></p> <p>Hunt, B.P.V. and Hosie, G.W. (2006) Continuous Plankton Recorder flow rates revisited: clogging, ship speed, and flowmeter design. <i>Journal of Plankton Research</i>. 28, 847-855</p> <p>Hunt, B.P.V., Hosie, G.W. (2006) Seasonal zooplankton community succession in the Southern Ocean south of Australia, Part I: The Seasonal Ice Zone. <i>Deep-Sea Research I</i> 53. 1182-1202</p> <p>Hunt, B.P.V., Hosie, G.W. (2006) Seasonal zooplankton community succession in the Southern Ocean south of Australia, Part II: The Sub-Antarctic to Polar Frontal Zones. <i>Deep-Sea Research I</i> 53. 1203-1223</p> <p>RAYMOND, B. and HOSIE, G.W. (Submitted) Network-based exploration and visualisation of ecological data. <i>Ecological Modelling</i>.</p> <p>Takahashi, K.T., Hosie, G.W., Umeda, H., Hirawake, T., Fukuchi, M. (2006) Plankton sampling on board <i>Shirase</i> in 1999-2004. <i>JARE Data Reports</i>. No. 286. 1-15</p>
Other publications (e.g. institution reports, articles in the grey literature, maps, atlases, CDs, Newsletters or contributions to newsletters)	<p>Hosie, G.W., Hunt, B.P.V., Kitchener, J.A., Fukuchi, M., Kawaguchi, S. (2006) Southern Ocean continuous plankton recorder survey: Spatial and temporal variation in zooplankton abundance, distribution and composition. <i>Abstracts of the SCAR Open Science Conference, Hobart, 12-14 July 2006</i>. 0259/414</p> <p>Hunt, B.P.V., Hosie, G.W. (2006) Ocean biogeography and taxonomic resolution: What is in the name? <i>Abstracts of the SCAR Open Science Conference, Hobart, 12-14 July 2006</i>. 0478/403</p> <p>Takahashi, K., Hosie, G., Fukuchi, M. (2006) Temporal and spacial variability of zooplankton community in the Indian sector of the Southern Ocean. <i>Abstracts of the SCAR Open Science Conference, Hobart, 12-14 July 2006</i>. 0244/414 (Poster)</p> <p>Hosie, G. (2006) Southern Ocean CPR operations. Edwards, M., John, A.W.G. (ed.) <i>Sir Alister Hardy Foundation for Ocean Science Annual Report 2005</i> 13-15</p> <p>Hosie, G. (2007) Southern Ocean CPR operations. Edwards, M., John, A.W.G., Johns, D.G. (eds.) <i>Sir Alister Hardy Foundation for Ocean Science Annual Report 2006</i> 9-12</p>

	<p>Hosie, G. and Richardson (2007) Australian CPR Survey. Edwards, M., John, A.W.G., Johns, D.G. (eds.) <i>Sir Alister Hardy Foundation for Ocean Science Annual Report 2007 12</i></p> <p>Hosie, G.W. (2007) Southern Ocean plankton surveys are blooming. <i>Australian Antarctic Magazine</i>, Issue 13. 12</p> <p>Hosie, G.W. and Richardson, A. (2007) Australian plankton survey. <i>Australian Antarctic Magazine</i>, Issue 13. 13</p> <p>Pyper, W. (2007) Collaborative East Antarctic Marine Census. <i>Australian Antarctic Magazine</i>, Issue 13. 14</p> <p>An atlas is being developed as a contribution to CAML and IPY.</p>
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Brochures, posters, press/media articles and similar PR material	
Web site details and number of hits to this site if data is available	<p>http://data.aad.gov.au/aadc/cpr/index.cfm The number of hits on this site was 22,059 (2006) and 47,062 (2007) and so far for 2008 there have been 11568 which would lead to 80,000 hits for the year.</p> <p>www.scarmarbin.be The SO-CPR data is the major contributor to SCAR-MarBIN and receives the highest number of hits for all data sets topping 2007 with 3,317,154 hits and remains on top in 2008 with 122,753 hits so far.</p>
Information on project database(s), and amount of use of database(s) (e.g. as measured by hits on a web version)	<p>The data currently comprises 22,000 sample records from 1991 to 2007, for 200+ zooplankton species plus environmental data, covering about 70% of the Southern Ocean. Most of the data comes from the September to April period with occasional samples collected in winter. The 2007-08 season will produce about another 5,000 records, or 30,000 nautical miles of data. As noted above, the data is the major contribution to SCAR-MarBIN with the highest number of hits for any data set in SCAR-MarBIN. The data have been used by a number of institutes and individuals and is the major pelagic dataset being used by CCAMLR for its bioregionalisation process aimed at the establishment of marine protected areas. The data set will be a central component of the CAML pelagic data base and the proposed new Southern Ocean Observation System (SOOS), which will also contribute to the Global Ocean Observing System (GOOS). It also contributes to Australia's new Integrated Marine Observing System (IMOS), and may contribute to new monitoring programs in New Zealand.</p>
Number and type of education/training and other capacity building activities	<p>A number of graduate students and postdoctoral fellows from Australia, Japan, South Africa, Germany and UK: 2 MSc, 4 PhD, 3 post-doctorates. The SO-CPR Survey lab at AAD conducts training programs to teach use of the CPR, maintenance, processing of samples, use of supporting software and analysis. This has led to the establishment of satellite SO-CPR survey groups and labs in Japan, Germany and New Zealand. The Survey also serves as a catalyst for expanding collaborative research with expansion of the survey itself as well as the development of ancillary or supporting projects as the Survey identifies new research issues.</p>
Notes on new technology/model developments	<p>The AAD manufactures CAD designed CPR units, which are fundamentally functions in the same way as the 1931 design and fully compatible with CPR units used in the North Sea, North Atlantic and North Pacific. Officially the AAD design is a Mark V Type II recorder and basically differs only in having a more robust and easier to use design, all units are exactly the same and interchangeable, made from robust metals and alloys, and overall have greater reliability. New software has been developed to merge the ecological and environmental data sets.</p>

Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	Currently seven nations are involved: Australia, Japan, Germany, New Zealand, UK, USA and Russian. By next season 08-09, we expect France to join as well as the South American OLA CAML consortium of Brasil, Peru, Chile, Ecuador, Argentina, Uruguay and Venezuela. Approximately, 25 people are involved with the Survey at present, with about eight female. After next year we expect at least another eight people involved with 4 being female.
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	The SCAR Action Group on CPR Research CPR-AG was established to assist the Survey expand and to develop and maintain the dataset. There are five core members who are the principal owners/contributors of the data: Australia (Graham Hosie AAD), Japan (Mitsuo Fukuchi NIPR), Germany (Uli Bathmann, AWI), New Zealand (Don Robertson, NIWA) and UK (Peter Ward, BAS). In addition there are a number of supporting members to provide addition advice as required. These members comprise early career scientists, and representatives from the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) and CCAMLR. The group is designed to meet electronically, although core group members meet occasionally with the co-chairs Hosie and Fukuchi. A meeting is scheduled for SCAR St Petersburg to review progress and to the group's last term of reference of converting the group to Expert Group status.
Links to other SCAR SRPs or SCAR Action or Expert Groups	The SO-CPR Survey will be linked with a number of other SRPs, AGs and EGs through the SOOS and possibly PAntOS. Discussions have been held with Mike Meredith of AGCS Oceans relation to linking the CPR and ocean-ice data.
Links to other ICSU bodies or to other scientific groups	The SO-CPR Survey is linked with the various institutes listed above. It will be a core element of SOOS. The Survey is linked with SAHFOS with Dr Hosie being a governor (trustee) of the SAHFOS Council. He is a member of the SCOR WG 115 on Standards for the Assessment and Analysis of Plankton representing Australia and Antarctica, and is the SCAR-CCAMLR Liaison.

Your Name:	Ad Huiskes (compiled by S. Gordon based on information given by Ad)
Your Project Name:	Terrestrial ecosystems in ARctic and ANTArctic: Effects of UV Light, Liquefying ice, and Ascending temperatures (TARANTELLA)
Outputs	
Key achievements (provide a short paragraph on each)	<ol style="list-style-type: none"> 1. Meta analysis of warming treatments on biota in the Antarctic (Objectives 1 and 3). 2. Meta analysis of warming treatments on microclimate conditions in the Antarctic (Objective 2). 3. Compare warming treatments in the Arctic and Antarctic on potential decomposition rates at different field sites which already have (long-term) warming experiments and control sites that also have microclimatic data (Objective 2 and 3). 4. Do experiments to compare similarities and differences and respective responses of (different) warming treatments (objective 4). <ol style="list-style-type: none"> a. Comparison of effects of warming treatments on decomposition rates at existing field sites b. Comparison of effects of warming treatments on moss growth c. Comparison of the response of mosses with bipolar distribution to UV-B₂ using similar UV-B filters d. Chemical profiling of mosses
Is this project an IPY project?	Yes - #59
Publications in peer reviewed literature	None.
Other publications	None as far as I am aware
Brochures, posters, press/media articles and similar PR material	None as far as I am aware
Web site details and number of hits to this site if data is available	www.tarantella.aq
Information on project database(s)	-
Number and type of education/training and other capacity building activities	
Notes on new technology/model developments	
Inputs	
Number, gender and country of participating scientists in your project [to the best of your ability]	24 participants (5 female) The Netherlands, Czech Republic, United Kingdom, Norway, Belgium, USA, Canada, Japan, France, Spain Also see table below
Title, place and type of meetings/workshops, and numbers, genders and countries represented in their attendees	1st TARANTELLA workshop, 9-11 October 2006, Rilland, The Netherlands (see above for participants)
Links to other SCAR SRPs or SCAR Action or Expert Groups	EBA
Links to other ICSU bodies or to	ITEX (International Tundra Experiment)

other scientific groups	http://www.geog.ubc.ca/itex/ affiliated to IGBP-GCTE (http://www.gcte.org/) in the Arctic.
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Field sites

Site	Position	Scientists (Nationality)
Ile de la Possession	46°S 51°E	Van de Vijver, DeSmet (Belgium) Lebouvier (France)
Falkland Islands	52°S 59°W	Huiskes, Aerts, Kowalchuk (Netherlands)
Signy Island	61°S 46°W	Convey, Newsham (United Kingdom) Huiskes, Aerts, Kowalchuk (Netherlands)
Byers Peninsula (Livingston Island)	63°S 61°W	Quesada (Spain)
James Ross Island	64°S 58°W	Bartak/Prozek (Czech Republic)
Anvers Island	65°S 64°W	Day (United States of America)
Anchorage Island	67°S 68°W	Convey, Newsham (United Kingdom) Huiskes, Aerts, Kowalchuk (Netherlands)
Yukidori Valley	69°S 39°E	Kanda (Japan)
Mars Oasis	72°S 68°W	Convey, Newsham, Worland (United Kingdom)
Taylor Valley	78°S 163°E	Wall (United States of America)

Members of the TARANTELLA group also carry out similar studies in the Arctic

Site	Position	Scientists (Nationality)
Abisko,	68°N 18°E	Aerts, Cornelissen, Rozema (Netherlands) Gwyn Jones (United Kingdom)
Svalbard	79°N 16°E	Cooper (Norway) Rozema Netherlands

Appendix 4: Refereed Publications from EBA-Related Projects 2006-2008

PUBLICATION	YEAR	PROJECT
Abyzov SS, Duxbury NS, Bobin NE, Fukuchi M, Hoover RB, Kanda H, Mitskevich IN, Mulyukin AL, Naganuma T, Poglazova MN & Ivanov MV (2006) Super-long anabiosis of ancient microorganisms in ice and terrestrial models for development of methods to search for life on Mars, Europa and other planetary bodies. <i>Advances in Space Research</i> , 38: 1191-1197.	2006	MERGE
ADAMS B.J., BARDGETT R.D., AYRES E., WALL D.H., AISLABIE J., BAMFORTH S.S., BARGAGLI R., CARY C., CAVACINI P., CONNELL L., CONVEY P., FELL J.W., FRATI F., HOGG I.D., NEWSHAM K.K., O'DONNELL A.G., RUSSELL N., SEPPELT R.D. & STEVENS M.I. 2006. Diversity and distribution of Victoria Land biota. <i>Soil Biology and Biochemistry</i> , 38, No. 10, 3003-3018	2006	BIOFLAME, MCM-LTER, LGP
Adams, B.J. Wall, D.H. Gozel, U. Dillman, A.R. Chaston, J.M. Hogg, I.D. The southernmost worm, <i>Scottinema lindsayae</i> (Nematoda): diversity, dispersal and ecological stability. <i>Polar biology</i> 30: 809-815, 2007. doi: 10.1007/s00300-006-0241-3	2007	LGP MCM-LTER
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Esposito, R.M.M., S.L. Horn, D.M. McKnight, M.J. Cox, M.C. Grant, S.A. Spaulding, P.T. Doran, K.D. Cozzetto. 2006. Antarctic Climate Cooling and Response of Diatoms in Glacial Meltwater Streams. <i>Geophysical Research Letters</i> 33(7): Art. No. L07406.	2006	MCM-LTER
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Flores H, Van de Putte A, Siegel V, Pakhomov EA, van Franeker JA, Volckaert F (subm.) The ecological significance of fish in the Lazarev Sea, Southern Ocean. <i>Marine Ecology Progress Series</i>	Submitted	Scratching the Surface

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Foreman, C.M., B. Sattler, J.A. Mikucki, D.L. Porazinska and J.C. Prisco. In press. Metabolic Activity and Diversity of Cryoconites in the Taylor Valley, Antarctica. <i>Journal of Geophysical Research-Biogeosciences</i> .	In Press	MCM-LTER
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Giordano D, Grassi L, Parisi E, Bargelloni L, di Prisco G, Verde C 2006. Embryonic b-globin in the non-Antarctic notothenioid fish <i>Cottoperca gobio</i> (Bovichtidae) <i>Polar Biol</i> 30, 75-82.	2006	ICEFISH, EBA-IPY Italy
Giordano D, Parrilli E, Dettai A, Russo R, Barbiero G, Marino G, Lecointre G, di Prisco G, Tutino L, Verde C (2007) The truncated hemoglobins in the Antarctic psychrophilic bacterium <i>Pseudoalteromonas haloplanktis</i> TAC125. <i>Gene</i> 398: 69-77	2007	EBA-IPY Italy
Giordano D, Vergara A, Lee H-C, Peisach J, Balestrieri M, Mazzarella L, Parisi E, di Prisco G, Verde C (2007) Hemoglobin structure/function and globin-gene evolution in the Arctic fish <i>Liparis tunicatus</i> . <i>Gene</i> 406: 58-68	2007	EBA-IPY Italy
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Gregorich, E.G. Hopkins, D.W. Elberling, B. Sparrow, A.D. Novis, P. Greenfield, L.G. Rochette, P. 2006. Emission of CO ₂ , CH ₄ and N ₂ O from lakeshore soils in an Antarctic dry valley. <i>Soil biology and biochemistry</i> 38: 3120-3129. doi:10.1016/j.soilbio.2006.01.015	2006	LGP
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Gutt J, Koubbi P, Eléaume M (2007) Mega-epibenthic diversity off Terre Adélie (Antarctica) in relation to disturbance. <i>Polar Biol</i> 30: 1323-1329	2007	Gutt
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HAWES T.C., BALE J.S., CONVEY P. & WORLAND M.R. 2006. Ecologically realistic modalities in arthropod supercooling point distributions. <i>European Journal of Entomology</i> , 103, No. 4, 717-723.	2006	BIOFLAME
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HAWES T.C., COULDRIDGE C., BALE J.S., WORLAND M.R. & CONVEY P. 2006. Habitat temperature and the temporal scaling of cold hardening in the high Arctic collembolan <i>Hypogastrura tullbergi</i> (Schäffer). <i>Ecological Entomology</i> , 31, No. 5, 450-459.	2006	BIOFLAME
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Hawes, T.C., Worland, M.R., Bale, J.S. & CONVEY, P. 2007. Rafting in Antarctic Collembola. <i>Journal of Zoology</i> doi:10.1111/j.1469-7998.2007.00355.x	2007	Convey
HAWES, T.C.; BALE, J.S.; WORLAND, M.R.; CONVEY, P. 2007. Moulting reduces freeze susceptibility in the Antarctic mite, <i>Alaskozetes antarcticus</i> (Michael). <i>Physiological Entomology</i> ; DOI 10.1111/j.1365-3032.2007.00547.	2007	BIOFLAME
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Helge Niemann, David Fischer, Americo Montiel, Olaf Heilmayer, Kerstin Pfeiffer, Sabine Kasten, Gerd Bohrmann, Antje Boetius, Julian Gutt (submitted) A low-activity cold seep in the Larsen B area, western Weddell Sea, Antarctica. Biogeosciences.	Submitted	Biodiversity-Change in the formerly ice shelf-covered Larsen A/B area

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HODGSON D.A., BENTLEY M.J., ROBERTS S.J., SMITH J.A., SUGDEN D.E. & DOMACK E.W. 2006. Examining Holocene stability of Antarctic Peninsula ice shelves. <i>Eos. Transactions, American Geophysical Union</i> , 87, No. 31, 305-308. (PEP)	2006	CACHE-PEP
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HODGSON D.A., VERLEYEN E., SQUIER A.H., SABBE K., KEELY B.J., SAUNDERS K.M. & VYVERMAN W. 2006. Interglacial environments of coastal east Antarctica: comparison of MIS 1 (Holocene) and MIS 5e (Last Interglacial) lake-sediment records. <i>Quaternary Science Reviews</i> , 25, 179-197 (DRAM)	2006	CACHE-PEP
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Hopkins, D.W. Sparrow, A.D. Elberling, B. Gregorich, E.G. Novis, P.M. Greenfield, L.G. Tilston, E.L. 2006. Carbon, nitrogen and temperature controls on microbial activity in soils from an Antarctic dry valley. <i>Soil biology and biochemistry</i> 38: 3130-3140. doi:10.1016/j.soilbio.2006.01.012	2006	LGP
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