



FRENCH ANTARCTIC, SUB-ANTARCTIC AND SOUTHERN OCEAN
PROJECTS 2015 - 2016 Summer season and 2016 winter-over



MEMBER COUNTRY: France

National Report to SCAR for year: 2015-2016

Activity	Contact Name	Address	Telephone	Fax		Email	Web site
National SCAR Committee							
CNFRA - Comité National Français des Recherches Arctiques et Antarctiques	Secrétariat du CNFRA	Administrative address : Académie des Sciences, 23 Quai Conti, 75006 PARIS For correspondence: Mireille Raccurt 121 Avenue Raoul Servant 69280 MARCY L'EYOILE				secretariat@cnfra.org	www.cnfra.org
SCAR Delegates							
1) Delegate	RACCURT Mireille	Laboratoire d'Ecologie des Hydrosystèmes Naturels et Antropisés - LEHNA, Université Claude Bernard Lyon1, 43 boulevard du 11 novembre 1918, 69622 VILLEURBANNE Cedex, France	33 (0)6 63 73 82 47			mireille.raccurt@univ-lyon1.fr	
2) Alternate Delegate	Vacant, to be nominated						

Standing Scientific Groups							
Life Sciences Delegates							
1) Chef Officer of the group	ROPERT-COUDERT Yan	Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France 34 rue Preschez 92210 Saint-Cloud - France	33 (0)5 49 09 35 11	33 (0)5 49 09 65 26		yan.ropert-coudert@cebc.cnrs.fr	
2)	BACHELARD Claude	INRA-UMR IGEPP, B.P. 35327, 35653 Le Rheu Cedex, France	33 (0)1 46 02 20 27 (0)6 07 38 69 27	33		bachelard.claude@gmail.com	
3)	HULLÉ Maurice	Université Pierre et Marie Curie, UMR 7208 BOREA, Muséum National d'Histoire Naturelle, 43 rue Cuvier, CP 26, 75005 Paris, France.	33(0)2 23 48 51 67			maurice.hulle@inra.fr	
4)	KOUBBI Philippe	Université Jean Monnet - UMR CNRS 6524 "Magmas et Volcans" 23 rue du Dr. Paul Michelon, 42023 St-Etienne Cedex 2, France	33 (0)1 40 79 30 95 (0)6 08 06 34 79	33		philippe.koubbi@upmc.fr	
Geosciences Delegates							
1)	BASCOU Jérôme	Ecole et Observatoire des Sciences de la terre (EOST), Institut de Physique du Globe, 5 rue René Descartes, 67084 Strasbourg Cedex, France	33 (0)4 77 48 51 24	33 (0)4 77 48 51 08		jerome.bascou@univ-st-etienne.fr	
2)	CHAMBODUT Aude	Ecole et Observatoire des Sciences de la terre (EOST), 5 rue René Descartes, 67084 Strasbourg Cedex, France	33 (0)3 90 24 00 81	33 (0)3 90 24 01 25		aude.chambodut@unistra.fr	
3)	ZIGONE Dimitri	Ecole et Observatoire des Sciences de la terre (EOST), 5 rue René Descartes, 67084 Strasbourg Cedex, France	33 (0)3 68 85 02 14			zigone@unistra.fr	

4)	GUILLAUME Damien	GET-UMR 5563, Observatoire Midi Pyrénées, 14 avenue Edouard Belin, 31 400 Toulouse, France	33 (0)5 61 33 26 60	33(0)5 61 33 25 60		damien.guillaume@get.obs-mip.fr	
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Physical Sciences Delegates

1)	FAVIER Vincent	Université Joseph Fourier, LGGE CNRS, 54 rue Molière, BP96, 38402 St. Martin d'Hères Cedex, France	33 (0)4 76 82 42 68	33(0)4 76 82 42 01		vincent.favier@univ-grenoble-alpes.fr	
2)	RITZ Catherine	Université Joseph Fourier, LGGE CNRS, 54 rue Molière, BP96, 38402 St. Martin d'Hères Cedex, France	33 (0)4 76 82 42 34	33 (0)4 76 82 42 01		catherine.ritz@univ-grenoble-alpes.fr	
3)	SULTAN Emmanuelle	Université Pierre et Marie Curie, LOCEAN- IPSL Case 100, 4, place Jussieu, 75005 Paris, France	33 (0)1 44 27 75 32			emmanuelle.sultan@locean-ipsl.upmc.fr	
4)	VAUGLIN Isabelle	CRAL CNRS - Observatoire de Lyon, Université Claude Bernard Lyon 1, 9, Avenue Charles André, 69561 Saint Genis Laval Cedex - France	33 (0)4 78 86 25 21	33 (0)478 86 83 86		isabelle.vauglin@univ-lyon1.fr	

Scientific Research Program

Activity	Contact Name	Address	Telephone	Fax		Email	web site
							http://www2.umaine.edu/itase/
ITASE							
1)	FAVIER Vincent	Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière, BP 96, 38402 St Martin d'Hères, France	33 (0)4 76 82 42 68	33 (0)4 76 82 42 01		vincent.favier@univ-grenoble-alpes.fr	

2)	MAGAND Olivier	Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière, BP 96, 38402 St Martin d'Hères, France	33 (0)4 76 82 42 32	33(0)4 76 82 42 01		olivier.magand@univ-grenoble-alpes.fr	
ISMSS							http://www.climate-cryosphere.org/activities/groups/ismass
1)	RITZ Catherine (Chairman)	Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière, BP 96, 38402 St Martin d'Hères, France	33 (0)4 76 82 42 34	33 (0)4 76 82 42 01		catherine.ritz@univ-grenoble-alpes.fr	
AntEra and AntEco							http://eba.aq/
1)	LEBOUVIER Marc (Member)	UMR 6553 CNRS-Univ. Rennes 1, Station Biologique, 35380 Paimpont, France	33 (0)2 99 61 81 75	33 (0)2 99 61 81 87		marc.lebouvier@univ-rennes1.fr	
2)	RENAULT David (Member)	UMR 6553 CNRS-Univ. Rennes 1, Campus de Beaulieu, 35042 Rennes, France	33 (0)2 23 23 66 27	33 (0)2 23 23 50 26		david.renault@univ-rennes1.fr	
3)	HULLE Maurice (Member)	INRA-UMR IGEPP, B.P. 35327, 35653 Le Rheu cedex, France	33 (0)2 23 48 51 67			maurice.hulle@rennes.inra.fr	
GIANT (Geodetic Infrastructure for Antarctica)							
1)	ROGISTER Yves	IPGS-EOST, 5 rue Rene Descartes, 67084 Strasbourg Cedex				Yves.rogister@unistra.fr	
AAA (Astronomy, Astrophysics from Antarctica)							<u>NIR@ANT</u>
1)	TAO Charling (Steering committee member)	Centre de Physique des Particules de Marseille, 163 avenue de Luminy, Case 902, 13288 Marseille cedex 09				tao@cppm.in2p3.fr	
2)	TILQUIN Andre (Working group D)	Centre de Physique des Particules de Marseille, 163 avenue de Luminy, Case 902, 13288 Marseille cedex 09				tilquin@cppm.in2p3.fr	

3)	MORETTO Gilberto (Working group D)	IPNL/IN2P3/CNRS, Domaine scientifique de la Doua, Batiment Paul Dirac, 4, rue Enrico Fermi, 69622 Villeurbanne Cedex	33 (0)4 72 43 11 08			Gil.Moretto@ipnl.in2p3.fr	
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ACTION GROUPS

Activity	Contact Name	Address	Telephone	Fax		Email	web site
SOOS	SALLEE Jean Baptiste (Steering committee member)	Université Pierre et Marie Curie, PARIS 6 - LOCEAN- IPSL, 4, place Jussieu, 75005 Paris, France	33 (0) 1 44 27 70 71			jbsallee@gmail.com	http://www.soos.aq

insert others as needed

EXPERT GROUPS

BAMM (Birds and Marine Mammals group)

1)	ROPERT-COUDERT Yan (secretary)	Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France	33 (0)5 49 09 35 11	33 (0)5 49 09 65 26		yan.ropert-coudert@cebc.cnrs.fr	
2)	CHARASSIN Jean-Benoit (Member)	Muséum National d'Histoire Naturelle, 43 rue Cuvier, 75231 Paris cedex 05, France	33 (0)3 40 79 31 64	33 (0) 40 79 57 56		jbc@mnhn.fr	

ABI (Antarctic Biodiversity Information Facility)

1)	ROPERT-COUDERT Yan (member of the steering committee)	Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France	33 (0)5 49 09 35 11	33 (0)5 49 09 65 26		yan.ropert-coudert@cebc.cnrs.fr	
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ANTOS (Antarctic Near-shore and Terrestrial Observing System)

1)	SULTAN Emmanuelle (Member)	Université Pierre et Marie Curie, LOCEAN-IPSL Case 100, 4, place Jussieu, 75005 Paris, France	33 (0)1 44 27 75 32			emmanuelle.sultan@locean-ipsl.upmc.fr	
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HASSEG (Humanities and Social Sciences Expert Group)							
1)	SULTAN Emmanuelle (Member)	Université Pierre et Marie Curie, LOCEAN-IPSL Case 100, 4, place Jussieu, 75005 Paris, France	33 (0)1 44 27 75 32			emmanuelle.sultan@locean-ipsl.upmc.fr	
SCAR CONMAP Epert Group on Human Biology and Medicine							
1)	LAFORET Paul	CHU SUD REUNION SITE ST PIERRE Avenue Président F Mitterrand , BP 350 97448 ST PIERRE Cedex REUNION	33 2 62 96 78 76			paul.laforet@taaf.re	
SCATS (Standing Committee on the Antarctic Treaty System)							
1)	ROPERT-COUDERT Yan (member)	Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France	33 (0)5 49 09 35 11	33 (0)5 49 09 65 26		yan.ropert-coudert@cebc.cnrs.fr	
NATIONAL ANTARCTIC DATA CENTRE							
French Antarctic metadata are under the administration of IPEV	LEMAIRE Thierry	IPEV- Institut Polaire Français Paul-Emile Victor Technopôle Brest-Iroise, CS 60 075, 29280 Plouzané, FRANCE	33(0)2 98 05 65 00	33(0)2 98 05 65 55		thierry.lemaire@ipev.fr	http://gcmd.gsfc.nasa.gov/KeywordSearch/Home.do?Portal=amd_fr&MetadataType=0
SCAR DATABASE							
insert name of database for which your country has responsibility							
Our metadata database and the portal are integrated into the (Global Change Master Directory) GCMD. Data from the Antarctic are accessible via this portal: (Global Change Master Directory).	LEMAIRE Thierry	IPEV - Institut Polaire Français Paul-Emile Victor Technopôle Brest-Iroise - CS 60 075 29280 Plouzané FRANCE	33(0)2 98 05 65 00	33(0)2 98 05 65 55		thierry.lemaire@ipev.fr	http://gcmd.gsfc.nasa.gov/ ; http://gcmd.gsfc.nasa.gov/KeywordSearch/Home.do?Portal=amd_fr

SCAR DATA AND PRODUCTS

ANTABIS (biodiversity.aq)	ROPERT-COUDERT Yan (member of the steering committee)	Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France	33 (0)5 49 09 35 11	33 (0)5 49 09 65 26		yan.ropert-coudert@cebc.cnrs.fr
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A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS
Life Sciences program

Acronym	Coordinator	Institution/Adress	Objectives and scientific highlights	Location	<u>Email</u>	Web site
ORNITHOECO (IPEV Prog 109)	WEIMERSKIRCH Henri	Centre d'Etudes Biologiques de Chizé - Equipe Prédateurs Marins CNRS 79360 Villiers en Bois	<p>Seabirds and marine mammals as sentinels of global changes in the Southern Ocean The program uses seabirds and marine mammals as indicators of global changes in the marine ecosystems of the southern ocean. Through a network of 4 observatories, the populations of 25 species of marine top predators and their distribution at sea are monitored since 50 years. These individually based long term information are used to understand the processes through which climate affect marine ecosystems, and to make predictions on the future changes in these ecosystems, as well as to propose conservation measures to limit the impact of fisheries on populations.</p>	Adélie Land, Crozet, Kerguelen, Amsterdam, St Paul	henri.weimerskirch@cebc.cnrs.fr	http://www.cebc.cnrs.fr/

<p>ECOPHY (IPEV Prog 137)</p>	<p>LE BOHEC Céline</p>	<p>UMR 7178 - CNRS CNRS 23, rue Becquerel 67087 Strasbourg cedex 2</p>	<p>Adaptive strategies and population dynamics of penguins under environmental constraints. The objective is to evaluate the capacity of populations of king, Adélie and emperor penguins to adapt to global changes through the study of functional mechanisms and microevolutionary processes. Our unique database, without the biasing effects of flipper bands, will allow us to study the impacts of environmental variability (climatic and trophic) on survival, the phenology of reproductive performance, and the foraging patterns of different penguin cohorts, accounting for their age, status, experience, and other phenotypic traits (morphological, physiological, and behavioural; traits whose plasticity and heritability will be considered). We will also study the spatial structuration of colonies and the function of different constraints (parasitism, predation, meteorological conditions, location, etc.) with the use of robotic buggies and automated camera systems, as well as the structuration, the diversity, and the genetic variability between colonies within and between archipelagos. Finally, we will conduct a prospective analysis of the populations changes based on climate scenarios.</p>	<p>Crozet, Adélie land, Kerguelen</p>	<p>celine.lebohec@iphc.cnrs.fr</p>	<p>http://www.iphc.cnrs.fr/</p>
<p>ECONERGIE (IPEV Prog 119)</p>	<p>ROBIN Jean Patrice</p>	<p>Institut Pluridisciplinaire Hubert Curien, Département d'Ecologie, Physiologie et Ethologie - CNRS 23 rue Becquerel 67087 Strasbourg</p>	<p>Ashore living strategies of penguins: physiological mechanisms and evolutionary trade-offs. Our research program ECONERGY is devoted to the study of the physiological, energetic and evolutive aspects of the so-particular adaptations exhibited by adults and king penguin chicks (<i>Aptenodytes patagonicus</i>) to their ashore living stages. These are characterized either in chicks by their extraordinary long growth period and the irregular feeding rates during the winter or in adults by their long-term fast during reproduction or molting.</p>	<p>Crozet</p>	<p>jean-patrice.robin@iphc.cnrs.fr</p>	<p>http://www.iphc.cnrs.fr/</p>

<p>PHYSIO-ENERGY (IPEV Prog 131)</p>	<p>ROUSSEL Damien</p>	<p>UMR 5023 - LEHNA, Bâtiment, R Dubois, Université Claude Bernard Lyon 1- 69622 Villeurbanne Cedex, France</p>	<p>Energetic challenges in penguins: Physiological, Bioenergetics and Molecular Adjustments.Our research program PHYSIONERGY is devoted to the study of the physiological, bioenergetics and molecular adjustments that sub-Antarctic and Antarctic penguin chicks and juveniles (<i>Aptenodytes patagonicus</i> and <i>Pygoscelis adeliae</i>) develop to overcome energetic challenges imposed by their ashore and sea living stages. These challenges are characterized by short growth period in cold environment, long-term fast during winter or moulting, the passage from shore to marine life to reach nutritional emancipation, the production of visual cues as an indicator to partners of individuals "quality" on vital aspects of organismic function. Penguin is an extraordinary model to study on the same specie several bioenergetics trade-off between expansive energy consuming processes (endurance, thermoregulation, protein synthesis, ornamental colors) and limited environmental resources (oxygen during dives, nutriment while fasting during winter or molt, carotenoids).</p>	<p>Crozet</p>	<p>damien.rousseau@univ-lyon1.fr</p>	<p>http://umr5023.univ-lyon1.fr/</p>
<p>SUBANTECO (IPEV Prog 136)</p>	<p>RENAULT David</p>	<p>Université de Rennes 1 UMR CNRS 6553 Ecobio 263 Avenue du Général Leclerc CS 74205 35042 Rennes Cedex</p>	<p>Subantarctic biodiversity, effects of climate change and biological invasions on terrestrial biota. Within the latitudinal belt 45-54°S, the Southern Ocean contains a number of dots of land, almost all of which are volcanic in origin. These subantarctic islands are remote, and host low plant and invertebrate diversities. These fascinating islands are characterized by impoverished terrestrial ecosystems with highly reduced or absent functional redundancy. In Ipev 136 program, we study the terrestrial biodiversity (fauna and flora) in the French subantarctic islands and the environmental factors shaping the geographical repartition of the species. The dispersal-related trade-offs in invertebrate species and the cost-driven trade-off between reproduction and dispersion in invertebrate species are considered. In addition, we address the interactions between alien and native species and study the effects of climate change on the original subantarctic biotas.</p>	<p>Crozet, Kerguelen Islands</p>	<p>david.renault@univ-rennes1.fr</p>	<p>http://ecobio.univ-rennes1.fr</p>

<p>POPCHAT (IPEV Prog 279)</p>	<p>PONTIER Dominique</p>	<p>UMR CNRS 5558 - LBBE, "Biométrie et Biologie évolutive", Université Claude Bernard Lyon 1 - Bât. Grégor Mendel, 43 bd du 11 novembre 1918, 69622 VILLEURBANNE cedex, France</p>	<p>Assessing the anatomy of predator-prey relationships to manage reliably cat populations in the ecosystem of Kerguelen The aim of the project is to better understand the role played by introduced cats in the ecosystem of the main island of the subantarctic Kerguelen archipelago, called Grande Terre, and to bring new knowledge on the role of some aspects of prey and introduced predator behaviour in trophic relationships on subantarctic islands. The first part investigates biotic (rabbits, birds) and abiotic (climatic conditions, specifically temperature, precipitation, wind speed) factors ruling cat population dynamics and the synchronous variations in cat abundance observed among distant study sites. Several hypotheses explaining this synchrony pattern are examined. They require studying the spatial structuring of cat populations from the study of the spatial genetic variability of these populations. The second part explores more specifically predator-prey interactions, and in particular prey selection by cats and the risk perceived by rabbits in relationship with habitat characteristics in terms of prey richness and temporal prey availability. This should allow determining which seabird species are most heavily impacted by cat predation. The last part of the program aims to develop a model of cat population dynamics based on gained information on the factors and mechanistic links governing predator-prey interactions in order to predict cat numbers. This model will be designed to take into account the predicted climate change and should help to investigate environmental changes at Kerguelen. It should also be useful when defining cat control protocols in some sensitive areas situated on subantarctic islands.</p>	<p>Kerguelen</p>	<p>Dominique.Pontier@univ-lyon1.fr</p>	<p>http://lbbe.univ-lyon1.fr</p>
<p>ETHOTAAF (IPEV Prog 354)</p>	<p>BONADONNA Francesco</p>	<p>CEFE-CNRS-UMR 5175, Centre d'Ecologie Fonctionnelle et Evolutive, 1919 route de Mende, 34293 Montpellier Cedex 05, France</p>	<p>Behavioural ecology of subantarctic birds Since ever humans observed animals because their lives depended on knowledge of animal behaviour. Today knowledge on behaviour of protected species may enable conservationists to design adequate actions, reducing significantly involuntarily threats to a given species, or waste of time and money, with not completely under control conservation programs. Our project ETHOTAAF aims at studying those cues and clues coming from the surrounding environment influencing seabirds behaviour. We will consider both signals coming from other individuals, influencing pair formation in the sexual selection framework, and cues coming from the inanimate environment which birds need to use in navigational tasks. We will study essentially burrowing petrels and king penguins, tackling different senses (olfaction, hearing, sight) alone, step by step, or in synergy. The originality of our approach is that the sensorial modalities involved in the perception of the external cues are often the same and that the study of one framework (e.g. navigation) suggests the original solutions adopted by individuals in the other framework (e.g. sexual selection) and vice versa.</p>	<p>Kerguelen, Crozet</p>	<p>francesco.bonadonna@cefe.cnrs.fr</p>	<p>http://www.cefe.cnrs.fr/</p>

OISEAUX PLONGEURS (IPEV Prog 394)	BOST Charles André	CEBC UPR 1934 - Centre d'Etudes Biologiques de Chizé 79360 Villiers-en-Bois France	Foraging Ecology and Energetic of Southern Diving Predators in Relation to Climatic Variability The objectives of this proposal are to study the foraging strategies and energetics of the main diving birds of the Southern Ocean (especially penguins) that play in major role in food webs through a pluri-disciplinary study involving ecologists, physiologist and oceanographers and using bio-logging developments. We want to determine i) their foraging strategies : key at-sea habitats and environmental variables driving their movements at-sea, ii) their at-sea energetics , from the individuals to the population; iii) investigate the role of quality, age and experience in the foraging efficiency. The applied issues concerns the determination of important at-sea birds areas and the use of penguins as indicators of the impact of climatic variability, at short and long term, on some poorly known food webs of the South Indian ocean.	Kerguelen	bost@cebc.cnrs.fr	http://www.cebc.cnrs.fr
HEnergES (IPEV Prog 1037)	GILBERT Caroline	Ethologie-Physiologie, Bâtiment Blin ; EnvA - Ecole nationale Vétérinaire d'Alfort 7 avenue du Général de Gaulle 94704 ;Maisons-Alfort cedex ; France	Huddling Energetics of moulting Elephant Seals : thermal ecology of moulting elephant seals Southern elephant seals (<i>Mirounga leonina</i>) are faced with contrasting periods in terms of energy requirements. They alternate foraging periods at sea, where they feed to replenish their body fuels, and periods on land where they fast and complete their breeding cycle and moult. The moult is an energetically costly phase of their lifecycle during which Southern elephant seals aggregate or huddle more or less closely depending on local climate. Huddling is a powerful energy saving strategy widely used by mammals and birds facing high energetic demands. However, huddling behaviour and its energetics in Southern elephant seals have not yet been extensively studied. This project therefore focuses on this energy saving strategy used by Southern elephant seals during their moult on land. We hypothesize that behavioural and physiological adaptations linked to huddling during the moult, may be influenced by the organisms body condition and the environmental constraints while fasting. Huddling would thus allow individuals to minimise the time and energy required to complete the necessary replacement of skin and hair. Our main objectives are to determine how Southern elephant seals behave during the moulting period (huddling, posture, haul-out sites and changes of location), and how they cope with the energy demands of the moult (body composition, core, and skin temperature) according to weather conditions.	Kerguelen	cgilbert@vet-alfort.fr	

<p>I'AMMER (IPEV prog 1091)</p>	<p>ROPERT-COUDERT Yan</p>	<p>Centre d'Etudes Biologiques de Chizé, Station d'Ecologie de Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France</p>	<p>Adelie penguins as Monitor of the Marine Environment This program proposal proceeds from the recent international efforts towards long-term monitoring of at-sea foraging performances of key species serving as eco-indicators of environmental changes. Here, foraging success of these species is linked to physical parameters of their environment and to resource availability. The data collected will consist in identifying the preferred foraging zones of Adélie penguins in Dumont d'Urville, Adélie Land and quantifying the hunting effort according to i) the availability of their main prey, ii) their own ability to find and capture prey, which depends on their individual quality. In partnership with the WWF, these data will be included in the databases of international programs of eco-regionalization (Census of Antarctic Marine Life, SCAR). Comparisons with Adélie penguins' performance in other regions of the East Antarctic sector will be conducted, in collaboration with colleagues from Australian and Japanese polar institutes. In parallel, a monitoring of the on-land breeding activities (adults and chicks) will be conducted. A series of experiments will also be performed in order to test the hypotheses that emerge from the data collected in the Observatory phase.</p>	<p>Adélie Land</p>	<p>yan.ropert-coudert@cebc.cnrs.fr</p>	<p>http://www.cebc.cnrs.fr</p>
<p>PROTEKER (IPEV prog 1044)</p>	<p>SAUCEDE Thomas AMEZIANE Nadia</p>	<p>Biogéosciences, UMR-CNRS 6282, Université de Bourgogne, 6 bd Gabriel 21000 Dijon, France. Muséum National d'Histoire Naturelle BP 225 29182 Concarneau Cedex, France.</p>	<p>Effects of global change on coastal marine life in Kerguelen Islands. Establishment of a base line for ecological and genetic monitoring, protection and conservation PROTEKER is a pilot program that aims to establish a base line for assessing the impact of climate change in coastal marine ecosystems of Kerguelen islands by ecological and genetic monitoring at reference sites. The high diversity of coastal marine ecosystems is usually strongly impacted by environmental changes over the planet. In Kerguelen, such environments were little investigated compared to open sea areas, and are still poorly known. The project should provide stakeholders and decision makers with scientific criteria for protection and conservation of Kerguelen coastal marine ecosystems. The PROTEKER first phase (2011-2014) aimed at assembling together and merging all available data from previous programs, selecting, and setting up monitoring stations for completion of the second current phase (2015-2018). During this second, operational phase, scientific investigations integrate all levels of marine biodiversity, from species to community levels and consist in a pluri-disciplinary approach including monitoring of abiotic parameters, habitat mapping, population genetics, genomics, functional ecology (physiological/trophic analyses), and macroecological analyses (ecological niche modelling). Expected results should provide with integrative models of Kerguelen coastal marine life distribution and sensitivity to environmental changes.</p>	<p>Kerguelen</p>	<p>thomas.saucede@u-bourgogne.fr</p>	<p>http://www.proteker.net</p>

<p>REVOLTA (IPEV Prog 1124)</p>	<p>ELEAUME Marc GALLUT Cyril</p>	<p>Unité Biologie des organismes et écosystèmes aquatiques (BOREA, UMR 7208), Sorbonne Universités, Muséum national d'Histoire naturelle, Université Pierre et Marie Curie, Université de Caen Basse-Normandie, CNRS, IRD; CP26, 57 rue Cuvier 75005 Paris, FRANCE. ISYEB (Institut de SYstématique, Evolution, Biodiversité, UMR 7205 CNRS-MNHN-UPMC-EPHE, Muséum national d'Histoire naturelle, Département Systématique et Evolution, CP39, Muséum National d'Histoire Naturelle, 57 rue Cuvier 75231 PARIS cedex 05, FRANCE</p>	<p>Ecological Ressources and valorisation using an Long Term Observatory in Terre Adélie. Radiations EVOLutives marines en Terre Adélie.The Southern Ocean has a major influence on the ocean dynamics and climate worldwide. The Southern Ocean is characterised by its unique macrofauna dominated by abundant, diversified filtering organisms. Endemicity is very high due to the shelf isolation, circum-antarctic surface currents and thick ice coverage which onsets must have occurred some 40 mya. Recent past repeated ice advances and retreats promoted rapid speciations in some benthic groups, along with morphological adaptations. Some groups, like the poikilotherm, not iso-osmotic to seawater teleosts, developed in Antarctica physiological adaptations like antifreeze glycoproteins in their blood and gut. Climatic changes in Antarctica will likely have a strong effect of the climate worldwide because of the regulatory role of the Southern Ocean. But it will surely have a role in benthic faunal changes because many species are presently stenotherm. For the moment Eastern antarctica is poorly affected by climate change and human activities. Biodiversity is exceptionnally high there comparing with arctic benthic fauna and the faunal assemblages described to date make this area a really unique patchwork of ecosystems. This area is therefore appropriate to establish a spot of reference to measure the biotic and abiotic parameters on the long run, which will allow to measure the structure and variability of an ecosystem in « normal » situations. The data that will be obtained will be of great importance for managing protected marine areas.</p>	<p>Terre Adélie Dumont d'Urville</p>	<p>eleaume@mnhn.fr gallut@mnhn.fr</p>	<p>http://borea.mnhn.fr/</p>
<p>ICO²TAKS (IPEV Prog 1142)</p>	<p>KOUBBI Philippe</p>	<p>Unité Biologie des organismes et écosystèmes aquatiques (BOREA, UMR 7208), Sorbonne Universités, Muséum national d'Histoire naturelle, Université Pierre et Marie Curie, Université de Caen Basse-Normandie, CNRS, IRD; CP26, 57 rue Cuvier 75005 Paris, France.</p>	<p>Integrated Coastal Ocean Observations in Terre Adélie, Kerguelen and other sectors of the Southern Ocean The motivation of the ICO²TAKs project is to gather spatial and long-term information on the composition of the marine biota in various sectors of the Southern Ocean through a multidisciplinary effort. The main aims will be to complete the ecoregionalisation of these areas (plankton and fish), to study the pelagic trophic food web and to determine which indicators should be monitored to assess changes in relation to environmental forcing. Three areas are proposed to be studied (1) The continental shelf of the Dumont d'Urville Sea in East Antarctica, an area investigated by our previous projects, (2) the coastal subantarctic zone of the Kerguelen islands and (3) the Scotia Sea Peninsula region that will be studied each austral winter thanks to the invitation of the US-AMLR programme (Antarctic Marine Living Ressources) of NOAA. Summer surveys will alternate between the Dumont d'Urville Sea and the coastal Kerguelen area.</p>	<p>Adélie Land, Kerguelen</p>	<p>philippe.koubbi@upmc.fr</p>	<p>http://borea.mnhn.fr/, http://www.lov.obs-vlfr.fr, http://log.univ-littoral.fr</p>

<p>ECOPATH (IPEV prog 1151)</p>	<p>BOULINIER Thierry</p>	<p>Centre d'Ecologie Fonctionnelle et Evolutive - CNRS Department of Biology, 1919 route de Mende, 34293 Montpellier Cedex 05, France. Drammensv. 201 University of Tromso N-9037 Tromso -</p>	<p>Circulation of directly transmitted and tick-borne infectious agents in sub-Antarctic and Antarctic colonial vertebrate populations: surveillance, understanding and management implications. Describing and understanding factors affecting the distribution and circulation of infectious agents in animal populations is important for basic and applied reasons. Populations of wild vertebrates living in southern polar areas are increasingly the subject of threats from infectious diseases, which can add to other environmental threats, and it is becoming critical to establish baseline data and sound understanding of the dynamics of host-parasite interactions in these systems. In some instance, such information can have clear potential management implications. Populations of vertebrates breeding in colonies are especially important to study in those respects because they are distributed in very discrete units among and within which the transmission of infectious agents can be affected by various processes and can lead to disease outbreaks than can affect hundreds to thousands of individuals at the same time. In this project, we plan to explore how large scale dispersal processes and more local interactions between hosts and parasites can affect the dynamics of circulation of infectious agents and the occurrence of possible outbreaks. In order to do so, we will combine complementary methodological approaches from different fields, involving notably laboratory analyses of biological samples gathered in the field on identified individuals, the implementation of specific field experiments and the parallel development of a modelling approach. Modern molecular technics as well as tracking devices will be used to address specific questions. The project will also rely on the existing set of long-term IPEV research programs conducted on various key sites. The work will be conducted in tight coordination with the TAAF Nature Reserve.</p>	<p>Saint Paul, Amsterdam</p>	<p>thierry.boulinier@cefe.cnrs.fr</p>
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<p>SALMEVOL (IPEV prog 1041)</p>	<p>GAUDIN Philippe</p>	<p>UMR ECOBIOP - Département EFPA (Ecologie des milieux Prairiaux, Forestiers et Aquatiques). Pôle d'Hydrobiologie INRA Quartier Ibarron 64310 Saint-Pée sur Nivelle</p>	<p>Evolutionary ecology of salmonids colonization of the Kerguelen Is. Research conducted in the SALMEVOL project focuses on the evolutionary ecology of salmonids in the specific context of the successful colonization of the Kerguelen Is by some of the species that have been introduced 60 years ago. Trout is the only species that has successfully colonize almost all watersheds of the eastern half of the main island. The large-scale experiment that was initiated by these introductions is of major interest in the context of global warming and very fast glacier retreat in the sub-Antarctic region. The tremendous database and samples collected from 1954 to the present, together with our multidisciplinary expertise, allow us to explore some of the major issues concerning the success of biological invasions, the evolution and adaptation of species and their relationships with the rapid change in their environment. Research conducted in the SALMEVOL project focuses on the evolutionary ecology of salmonids in the specific context of the successful colonization of the Kerguelen Is by some of the species that have been introduced 60 years ago. Trout is the only species that has successfully colonize almost all watersheds of the eastern half of the main island. The large-scale experiment that was initiated by these introductions is of major interest in the context of global warming and very fast glacier retreat in the sub-Antarctic region. The tremendous database and samples collected from 1954 to the present, together with our multidisciplinary expertise, allow us to explore some of the major issues concerning the success of biological invasions, the evolution and adaptation of species and their relationships with the rapid change in their environment.</p>	<p>Kerguelen</p>	<p>gaudin@st-pee.inra.fr</p>	
<p>PlantEvol (IPEV prog 1116)</p>	<p>HENNION Françoise</p>	<p>UMR Ecobio Ecosystèmes, Biodiversité, Evolution</p>	<p>Plant biodiversity in subantarctic islands: evolution, past, and future, in changing environments Contemporary climate change is already having a marked impact on sub-Antarctic environments. If we are to conserve the unique plants of this region we need to better understand their potential to respond to these long-term changes. Our programme takes a two-part approach combining macro- and micro-evolutionary studies to examine the origins and evolution of sub-Antarctic island plants and floras as well as how contemporary species interact with their environment. We propose interdisciplinary studies involving phylogenetics, cytogenetics, transcriptomics and analyses of trait variation across abiotic and biotic gradients. Combining insights into the history and current status of these plants will provide an unparalleled perspective on the potential for environmental change to shape plant diversity across a range of temporal and geographic scales.</p>	<p>Kerguelen</p>	<p>francoise.hennion@univ-rennes1.fr</p>	

<p>ZATA, Lter France (INEE CNRS)</p>	<p>LEBOUVIER Marc, ROPERT-COUDERT Yan</p>	<p>Université de Rennes 1 UMR CNRS 6553 Ecobio, OSUR Station Biologique 35380 Paimpont, France Centre d'Etudes Biologiques de Chizé, Station d'Ecologie Chizé-La Rochelle, CNRS UMR 7372, 79360 Villiers en Bois - France</p>	<p>In the French Southern and Antarctic Territories, the LTER ZATA (<i>Zone Atelier Antarctique et Subantarctique</i>) covers four sites on a vast territory which stretches from the Antarctic (Adélie Land) to the subtropical waters of the Indian Ocean (Saint Paul and Amsterdam Islands) through two groups of sub-Antarctic islands (Crozet Archipelago and Kerguelen Islands). The research sites are dedicated to long-term monitoring in terrestrial and marine environments. The monitoring refers to the changes occurring in organisms, populations and ecosystems due to the combined impact of human activities and climate changes. The LTER ZATA gathers 15 programs funded by the French Polar Institute IPEV.</p>	<p>Crozet, Kerguelen, Amsterdam, Adélie Land</p>	<p>marc.lebouvier@univ-rennes1.fr, yan.ropert-coudert@cebc.cnrs.fr</p>	<p>http://za-antarctique.univ-rennes1.fr/</p>
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Geosciences programs

<p>SISMOLOGIE/OBS (IPEV prog 133)</p>	<p>ALESSIA Maggi, ZIGONE Dimitri</p>	<p>UMS 830, UMR 7516, Ecole et Observatoire des sciences de la terre. EOST, 5 rue René Descartes, 67084 STRASBOURG Cedex, France</p>	<p>The main objective of the "SEISMOLOGY/OBS" program is the continuous, broad-band, high-resolution observation of ground motion, especially high latitudes of the southern hemisphere, which are still insufficiently sampled despite the improvements of the past few years. Recorded and quality controlled data are freely distributed to the international scientific community both in real- and delayed-time. Our data contribute equally to global and regional tomographic studies, to seismicity studies, and to studies of microseismic noise. Real-time data from our sub-Antarctic stations are used for tsunami warning alerts in the Indian Ocean, for which they are particularly valuable. Our goals are to maintain or improve the quality of the data, to improve the robustness of the data recording and distribution procedures, and to increase their national and international utilization.</p>	<p>Crozet, Kerguelen, Amsterdam - St Paul, Terre Adélie</p>	<p>alessia.maggi@unistra.fr, zigone@unistra.fr</p>	<p>http://eost.unistra.fr/</p>
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GEOMAGNETIC/OBS (IPEV Prog 139)	CHAMBODUT Aude	Institut de Physique du Globe de Strasbourg CNRS-UMR7516 - Ecole et Observatoire des Sciences de la Terre 5 rue Descartes 67084 Strasbourg Cedex - France	The 5 permanent magnetic observatories of Amsterdam, Crozet, DomeC/Concordia, Dumont d'Urville and Kerguelen are fulfilling the Intermagnet (INTERNational Real-time MAGnetic observatory NETWORK, http://www.intermagnet.org/) standards. In these observatories, the Earth's magnetic field is continuously recorded with sampling rates of 1 second. Absolute measurements of the magnetic field components are also performed every day along the year. The data processing and dissemination, to the world Data Centers (W.D.C. for Geomagnetism) across the Intermagnet network, are quasi real-time thanks to the recent acquisition system integrating daily shipment protocols. The continuity, quality, stability and homogeneity of those observations are of the utmost importance for their continued usefulness for the whole scientific community. The observatories are localized in remote places that do not allow to fully use usual French observatories protocols (BCMT http://www.bcmt.fr/ protocol usually used: permanent internet connection, permanent observer, larger site and shelters, ...) and have led necessarily to logistical and technological adaptations. We plan (i) to continue the consolidation of our equipment and (ii) to establish, with the IPEV collaboration, the settlement of real-time transmission of the data.	Crozet, Kerguelen, Amsterdam - St Paul, Terre Adélie	aude.chambodut@unistra.fr	http://eost.unistra.fr/
TALISKER (IPEV 1077)	GUILLAUME Damien	Equipe Transferts Lithosphériques UMR 6524 "Magma et Volcans" Faculté des Sciences et Techniques 23 rue du Dr Paul Michelon 42023 Saint Etienne	TALISKER will focus on the characterization of fluid circulations across the lithosphere of Kerguelen, from the upper mantle to the surface and their migrations to the Southern Ocean. The three approaches are - characterization of the fluid paleocirculations within mantle rocks or associated to the emplacement of plutonic rocks, - characterization of the present-days hydrothermal discharges and the fluid-rock-biosphere interactions, - quantification of the chemical fluxes from land to the ocean.	Kerguelen	damien.guillaume@univ-st-etienne.fr	http://lmv.univ-bpclermont.fr/fr/
NIVMER (IPEV Prog 688)	TESTUT Laurent	LEGOS - UMR5566 - 14 Av. Edouard Belin 31400 Toulouse	The NIVMER program of the ROSAME tide gauge network - http://www.legos.obs-mip.fr/en/observations/rosame/ - is complementing several national research programs using in situ sea level variation observations, in the peri-antarctic area of the Indian Ocean. These programs are related to tsunami warning system, satellite altimetry processing and validation, Antarctic Circumpolar Current monitoring and secular mean sea level trends. This tide gauges network is part of the GLOSS global network.	Terre Adélie, Kerguelen, Crozet, Amsterdam - St Paul	laurent.testut@legos.obs-mip.fr	http://www.legos.obs-mip.fr

Physical sciences programs

<p>GLACIOLOGIE (IPEV Prog 902)</p>	<p>RITZ Catherine</p>	<p>CNRS LGGE CNRS - Domaine Universitaire 54 rue Moliere - BP 96 38402 ST MARTIN D'HERES - France</p>	<p>Glaciological studies at Dome Concordia Recovering a 1.5 million years record of climate and greenhouse gases from Antarctica is a major objective of the ice core community (associated in IPCS, International Partnerships in Ice Core Science) and there is an agreement that such Oldest Ice could be found in the plateau area of the East Antarctic Ice Sheet. The region around the permanent station of Concordia (East Antarctica) is among the few spots possible. The aim of this project is to improve our ability to detect regions where ice could be very old. The approach is based on the association of various types of observations and ice flow/thermal modelling. This combination will help to: Test our ability to predict the thermal type of ice-bed interface and infer geothermal heat flux ; Validate ice flow models ; Determine badly known characteristics such as the mechanical properties of ice in these very cold and slow regions. The new observations planned are essentially radar measurements and borehole logging. We will also take advantage of information obtained in the EPICA ice core. Because of this link with the EPICA ice core, this project also involves sampling of the EPICA archive left at Concordia and some management of the ice core storage.</p>	<p>Concordia</p>	<p>catherine.ritz@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>
<p>GLACIOCLIM-SAMBA (IPEV Prog 411)</p>	<p>FAVIER Vincent</p>	<p>Laboratoire de Glaciologie et Géophysique et l'Environnement - CLimat : Passé, Présent, ProjectionS (CLIPS) 54 Rue Molière BP 96 38402 Saint Martin d'Hères France</p>	<p>The glaciers, an observatory of climate, Antarctic component This project is the renewal of GLACIOCLIM SAMBA program, which was initiated in 2004. GLACIOCLIM SAMBA is the Antarctic component of the GLACIOCLIM SO/ORE, in order to detect, monitor and understand climate and mass balance variability and change in the glacial environment. The program proposes surveying and maintaining the surface mass balance networks at Cap Prud'homme (CP, summer and winter surveys), along a 156 km transect (1 survey/yr), and at Concordia (1 survey/year or more) and the meteorological instruments deployed near CP. Special meteorological and glaciological observing periods are also planned in order to analyze particular meteorological processes.</p>	<p>Terre adélie Concordia</p>	<p>vincent.favier@univ-grenoble-alpes.fr</p>	<p>http://www.lgge.ujf-grenoble.fr/ServiceObs/contexte.htm</p>

<p>KESAACO (IPEV Prog 1048)</p>	<p>FAVIER Vincent</p>	<p>Laboratoire de Glaciologie et de Géophysique de l'Environnement - CLImat : Passé, Présent, ProjectionS (CLIPS) 54 rue Molière 38 Saint Martin D'Hères France</p>	<p>Kerguelen Surface Ablation, Accumulation and Climate Observation (KESAACO) In the framework of the exploratory program KESAACO, it was proposed to develop a glaciological and meteorological networks on Kerguelen archipelago (49°S, 69°E) according to GLACIOCLIM Observatory. GLACIOCLIM is a French observatory to globally detect, monitor and understand climate and mass balance variability in the glacial environment. In this framework, 1 automatic weather station (AWS) and 1 hydrological station were intalled close to la Mortadelle hut. In the framework of a collaborating program (LEFE-KCRuMBLE) 4 additional AWS were set up on the archipelago at Port Christmas, Armor Lake, Sourcils Noirs, and Cap Cotter sites. Present project aims to define the necessary logistics to allow downloading of the AWS by IPEV staff in case of potential maintenance visists at the hut located close to the AWS.</p>	<p>Kerguelen</p>	<p>vincent.favier@univ-grenoble-alpes.fr</p>	<p>http://www-igge.ujf-grenoble.fr/ServiceObs/contexte.htm</p>
<p>ASUMA-ITASE (IPEV prog 1154)</p>	<p>FAVIER Vincent</p>	<p>Laboratoire de Glaciologie et de Géophysique de l'Environnement - CLImat : Passé, Présent, ProjectionS (CLIPS) 54 rue Molière 38 Saint Martin D'Hères France</p>	<p>Improving the Accuracy of the SURface Mass balance of Antarctica - International Trans-Antarctic Scientific Expeditions (French contribution) The present IPEV ASUMA-ITASE project, aims to define the logistical needs and requests in the framework of the ANR-ASUMA project (funded for 2014-2018). In this ANR project, we proposed to assess the integrated SMB value over Antarctica, by filling the gap that exists in the coast to central plateau transition zone, where large variations of SMB are observed within small distances. For this task, we will a) collect firm cores which will be dated using radiochemistry analyses and accurately analyzed for water isotopes and chemistry studies b) Interpolate SMB data with ground penetrating radar and satellite data, c) perform original field measurements of SMB and snow physics and robustly link them to satellite data. The present IPEV ASUMA-ITASE project will define the needs for three field trips planned during successive austral summers. Two small scale field trips are planned in the first 50 km from the coast to study melting areas in 2015-16 and 2017-18, and a long distance traverse is proposed for the 2016-17 summer. The main demand will address the long distance traverse, for which the use of IPEV's logistical supply for scientific expeditions acquired during the ANR-VANISH program (tractors and caravans) and by the EQUIPEX CLIMCOR program is required. The request also concerns the transport of snow and firm and ice samples collected in the field for their analysis in France and at Dome C.</p>	<p>Adelie Land and other</p>	<p>vincent.favier@univ-grenoble-alpes.fr</p>	<p>http://www-igge.ujf-grenoble.fr/ServiceObs/contexte.htm</p>

<p>DACOTA (IPEV prog 1053)</p>	<p>LEMEUR Emmanuel</p>	<p>Laboratoire de Glaciologie et Géophysique de l'Environnement de Grenoble - Equipe EDGe 54 rue Molière BP 96, Domaine Universitaire 38402 Saint Martin d'Hères, Cedex - France</p>	<p>Dynamics of coastal outlet glaciers and implications on the overall mass balance of the East Antarctic ice sheet Because of the test zone - observatory structure of the glacier, the objectives of the program remain the same by maintaining measurement protocols started (in order to detect significant trends) and also by proposing innovative measurements. The aim is twofold ; (i) directly use these data to improve our knowledge of the glacier (structure, dynamics..), (ii) use these data to feed numerical ice flow models in order to reproduce the glacier dynamics and its future behaviour in a changing environment. Results obtained over the test zone (reasonable extent, logistical facilities) are then intended to be generalized over the much wider WAL (Wilkes, Adélie Land) over which geophysical airborne have been undertaken and will be pursued in the framework of the project (Collaboration with the University of Texas). Although less exhaustive than those of the test zone, these measurements will serve for a larger-scale modelling effort aiming at refining the prediction of the future contribution of this entire sector to the sea level.</p>	<p>Terre Adélie</p>	<p>emmanuel.lemeur@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>
<p>CALVA (IPEV prog 1013)</p>	<p>GENTHON Christophe</p>	<p>LGGE - CNRS CNRS - Domaine Universitaire 54 rue Moliere - BP 96 38402 ST MARTIN D'HERES Cedex - France</p>	<p>Calibration, validation of meteorological and climate models and satellite retrieval, Antarctic coast to Dome C The aim of CALVA is to gather series of in-situ observations in Adélie Land and at the Dome C, which are needed to better evaluate and improve Antarctic meteorological models and global climate models over Antarctica. The observations also aim to contribute to improve remote sensing of precipitation. In Adélie Land, CALVA focuses on precipitation, extreme dynamic atmospheric boundary layer (catabtic winds) and drifting and blowing snow. At Dome C, CALVA also focuses on the boundary layer, which is extreme here in terms of temperature and inversions, and on precipitation. These are poorly known aspects of the Antarctic meteorology and climate, which are consequently poorly represented or simply ignored (blowing snow) in the models used for IPCC climate change predictions. The observation thus aim to improve those prediction, in particular those of the surface mass balance of the ice sheet and impact on sea-level.</p>	<p>Terre Adélie Concordia</p>	<p>Christophe.Genthon@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>

<p>APRES3 (IPEV Prog 1143)</p>	<p>GENTHON Christophe</p>	<p>LGGE - CNRS CNRS - Domaine Universitaire 54 rue Moliere - BP 96 38402 ST MARTIN D'HERES Cedex - France</p>	<p>Antarctic Precipitation : REmote Sensing from Surface and Space The antarctic region is still Terra Incognita in the global precipitation databases. The 1st climatology which does not heavily relies on models was recently published (2014). It is obtained from satellite-born radar data. The project is to deploy 1 or 2 summer campaigns at Dumont d'Urville to study the variability and microphysics of Antarctic precipitation in the coastal regions, as well as to calibrate and validate those data. The Ecole Polytechnique Fédérale de Lausanne meteorological radars, hydrometeor detecting lidars (Swiss and Italian), and the 70-m vertical profiling system from the CALVA program will be used during the field campaigns. It will be particularly interesting to operate the surface radars looking upward while the space radar overpasses, in order to directly cross the output from both sides of the atmosphere.</p>	<p>Adelie Land and Other</p>	<p>Christophe.Genthon@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>
<p>SUNITE DC (IPEV prog 1011)</p>	<p>SAVARINO Joël</p>	<p>Laboratoire de Glaciologie et Géophysique de l'Environnement, Chimie atmosphérique, Neige, Glace (CHANG), 54 rue Molière, BP 96, 38402 St Martin d'Hères, France</p>	<p>For this renewal, the SUNITE DC will follow the same scientific objectives fixed during the previous program, i.e. document and use of the sulfate and nitrate stable isotopes in the context of an anticipated ozone hole recovering to put new constrains on the sources, transformations and transports of these species into polar regions where there are archived in ice for hundred thousand of years. However, the methodologies and approaches will evolve toward monitoring activities instead of intensive summer campaigns. The scientific activities will concentrate on the monitoring of the aerosol and surface snow isotope composition year-round with the double objectives of allowing the comparison of long isotope series with the recovering and dynamic of the stratospheric ozone and to secure continuous monitoring in case a major event will occur (e.g. major volcanic eruption, solar proton event, major ENSO etc.) .</p>	<p>Concordia, Cap Prudhomme</p>	<p>joel.savarino@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>

<p>NDACC-Antarctica (IPEV prog 209)</p>	<p>JUMELET Julien</p>	<p>Latmos, Tour 45, couloir 45-46, 3e et 4e étages, Boite 102, Université Pierre et Marie Curie, 4 Place Jussieu, 75252 Paris Cedex 05, France</p>	<p>Long-term UTLS and stratospheric ozone monitoring, stratosphere-climate interactions and K&A;C&F The instruments are: UV-Visible spectrometers, UV-B broad-band detector, balloon ozone soundings and lidar (Rayleigh/Mie/Raman). The observed variables are ozone, total column and vertical profiles, aerosols and PSC profiles, temperature, nitrogen dioxide and erythemal UV-B. This observatory program is part, at the French level, of the Observing Service NDACC-France.</p>	<p>Concordia, Terre Adélie, Kerguelen</p>	<p>Julien.Jumelet@latmos.ipsl.fr</p>	<p>http://www.latmos.ipsl.fr/</p>
<p>RAYCO (IPEV prog 227)</p>	<p>KLEIN Karl Ludwig</p>	<p>UMR 8109 - LESIA Observatoire de Meudon LESIA - Bât. 14 92195 Meudon Principal Cedex - France</p>	<p>Observation of the nucleonic cosmic ray component Continuous observation of the nucleonic cosmic ray component: (1) as the French contribution to the international network of neutron monitors, (2) to study relativistic proton acceleration in solar eruptive events, and solar particle events in general, (3) to provide the data for, and to improve the models used by the Sievert system (DGAC-French Civil Aircraft Authority).</p>	<p>Terre Adélie, Kerguelen</p>	<p>ludwig.klein@obsrpm.fr</p>	<p>http://lesia.obsrpm.fr/</p>

<p>SUPERDARN KER (IPEV prog 312)</p>	<p>MARCHAUDON Aurélie</p>	<p>IRAP (Institut de Recherche en Astrophysique et Planétologie) 9 avenue du Colonel Roche BP 44346 31028 TOULOUSE cedex 4</p>	<p>SuperDARN Kerguelen The SuperDARN (Super Dual Auroral Radar Network) network of coherent High-Frequency (HF) radars is dedicated to global observations of the convection of the ionospheric plasma in the high-latitude regions: auroral zones and polar cap. The french SuperDARN Kerguelen radar is conjugate with the english Hankasalmi radar and with the incoherent scatter radars, ESR and EISCAT, all located in Scandinavia. This configuration greatly enhances the capabilities of the whole SuperDARN project on most of the scientific objectives, but more particularly on those centred on magnetic conjugacy between hemispheres. It will allow to understand the nature and the limits of magnetic conjugacy. Moreover, the SuperDARN network gives also complementary measurements to experiments onboard satellites, bringing a better understanding of the whole solar wind-magnetosphere-ionosphere system, particularly its evolution with time.</p>	<p>Kerguelen</p>	<p>aurelie.marchaudon@irap.omp.eu</p>	<p>http://www.irap.omp.eu/ http://www.irap.omp.eu/observations/projets/projets/projet-isl/projet-superdam</p>
<p>CESOA (IPEV prog 414)</p>	<p>LEGRAND Michel</p>	<p>LGGE, UMR 5183 - CNRS, section 19 Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière, BP 96, 38402 St Martin d'Hères - France</p>	<p>Atmospheric Sulfur Cycle in relation with climate at mid and high Southern latitudes The atmospheric Sulfur cycle at mid and high southern latitudes: interannual variability of marine DMS emissions (sea-ice, ocean temperature, oceanic DMS content, chlorophyll a, short-term climatic event such as ENSO) and future response to global climate change. That includes a year-record study of DMS and sulfur aerosol at DDU, Amsterdam and Concordia Station, DMS in seawater collected during ship traverses between different stations.</p>	<p>Terre Adélie, Amsterdam - St Paul, Concordia</p>	<p>michel.legrand@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>
<p>CHIMIE ATMO DC (IPEV prog 903)</p>	<p>LEGRAND Michel</p>	<p>LGGE, UMR 5183 - CNRS, section 19 Laboratoire de Glaciologie et Géophysique de l'Environnement, 54 rue Molière, BP 96, 38402 St Martin d'Hères - France</p>	<p>Chemistry of the Lower Atmosphere over Central Antarctica The program 903 is aimed to characterize and understand the chemical composition and future evolution of the lower boundary layer on the high Antarctic plateau at Concordia Station. Long term monitoring of ozone and other acidic trace gases in proposed with focus on two specific axes: 1. Evolution of ozone ground level and, more generally, of the atmosphere oxidative capacity in response to future recovery of the stratospheric ozone. 2. Improve our actual understanding of the specific oxidative capacity of the high Antarctic plateau by the monitoring of acidic gases since some of them are linked to intense photochemical processes above and within the snowpack.</p>	<p>Concordia</p>	<p>michel.legrand@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>

RAMCES-AMS/ORE (IPEV prog 416)	DELMOTTE Marc	LSCE/IPSL - RAMCES CE Saclay - Orme des Merisiers Bât.703, 91191 Gif sur Yvette - France	GREENHOUSE GAS MONITORING AT AMSTERDAM ISLAND The objective of the RAMCES-AMS program is the long term monitoring of greenhouse gases (CO ₂ , CH ₄ , N ₂ O, SF ₆). To properly characterize the air masses we are also performing continuous measurements of Radon-222 and meteorological parameters, and weekly air sample to analyze CO, H ₂ and CO ₂ isotopes. The atmospheric measurements performed at Amsterdam enables a quantification of the oceanic carbon sink, and the trace gases emissions from Southern Africa. During the 4 years project we will upgrade the Amsterdam observatory in order to integrate this station to the European Research Infrastructure ICOS.	Amsterdam St Paul, Crozet	marc.delmotte@lsce.ipsl.fr	https://icos-atc-demo.lsce.ipsl.fr/node/31
HAMSTRAD (IPEV prog 910)	RICAUD Philippe	Meteo-France, CNRM/GAME, CNRS URA 1357 - 42 avenue G. Coriolis 31057 Toulouse - France	H2O Antarctica Microwave Stratospheric and Tropospheric Radiometers The instrument named HAMSTRAD (H ₂ O Antarctica Microwave Stratospheric and Tropospheric Radiometers) has been automatically measuring in the microwave domain water vapour (183 GHz) and temperature (60 GHz) from 0 to 10 km above Dome C (Antarctica) since January 2010. The aim of the programme is the study of the long-term evolution of water vapour and temperature from the planetary boundary layer to the tropopause and its impact on climate change. In addition to the long-term trends, the diurnal cycles, the seasonal variabilities and some specific case studies are intended to be analyzed. The HAMSTRAD measurements will be compared to the space-borne measurements (IASI, AIRS), in-situ sensors along the 45-m high tower, daily radiosondes, ECMWF analyses/forecasts, and the Météo-France climate model outputs. Along with the polar process studies, the project will also participate to the validation of space-borne sensors, model outputs and ECMWF analyses/forecasts. ECMWF.	Concordia	philippe.ricaud@aero.obs-mip.fr	http://www.aero.obs-mip.fr/

<p>GMOstral (IPEV prog 1028)</p>	<p>DOMMERGUE Aurélien</p>	<p>LGGE - CNRS CNRS - Domaine Universitaire 54 rue Moliere - BP 96 38402 ST MARTIN D'HERES Cedex - France</p>	<p>Global Mercury Observation system in austral and antarctic lands The GMOstral is initiated by a European project GMOS (Global Mercury Observation System), which is developing a coordinated global observation system for the global pollutant, atmospheric mercury (Hg). Through a cyber-infrastructure it provides with high quality data for the validation and application of regional and global scale atmospheric models, to give a firm basis for future policy development and implementation. In this context we have implemented three Hg monitoring stations in sub-Antarctic and Antarctic sites (AMS, DDU and DMC) in order to document and monitor the atmospheric Hg trends in remote places of the southern hemisphere and to study the almost unknown reactivity of Hg in those regions, in particular diurnal cycling, deposition, and reemission trends in Antarctica. After 4 years of successful measurements, we propose to extend these monitoring activities on 2 sites (AMS and DMC) in order to provide with high quality data of atmospheric Hg that are freely accessible in the frame of an international convention (Minamata convention) and a global monitoring network acquire longer data set (up to 8 years of continuous data) in order to document the seasonality of Hg compounds and short term variation. Are the international regulations leading to decreasing atmospheric trend in the Southern Hemisphere or are the trends offset by increasing natural emission (from oceans or biomass burning) ? improve our knowledge on the transport and reaction pathways of mercury using GEOSCHEM 3D model</p>	<p>Terre Adélie, Amsterdam - St Paul, Concordia</p>	<p>aurelien.dommergue@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr/</p>
<p>NIVOLOGIE (IPEV Prog 1110)</p>	<p>PICARD Ghislain</p>	<p>Laboratoire de Glaciologie et Géophysique de l'Environnement, Université Joseph Fourier, 54 rue Molière, BP 96, 38402 St Martin d'Hères, France</p>	<p>Snow properties evolution in a changing climate in Antarctica The interactions between the snow on the surface and the atmosphere are very strong and are responsible for important feedback loops in the climate system, especially in snow-cover areas like in Antarctica. NIVO project aims to better quantify these interactions and improve their prediction by physically-based snow evolution models. For this, the project implements automated instruments and conducts manual measurements to monitor the evolution of snow physical properties at Concordia and Cap Prudhomme stations in East Antarctica. These observations related to thermal variables, the radiation balance or the surface state, will allow to better understand the evolution of the snowpack, to calibrate the observations acquired by satellites and validate snow evolution models to, in fine, suggest improvements. In the field, NIVO will deploy and calibrate new instruments developed in the framework of the ANR "MONitoring SNOW in a changing climate " (spectrum of snow optical properties, snow grain size profile, ...).</p>	<p>Concordia, Cap Prudhomme</p>	<p>ghislain.picard@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr</p>

<p>SUBGLACIOR (IPEV Prog 1119)</p>	<p>CHAPPELLAZ Jérôme</p>	<p>Laboratoire de Glaciologie et Géophysique de l'Environnement, Université Joseph Fourier, 54 rue Molière, BP 96, 38402 St Martin d'Hères, France</p>	<p>in-Situ probing of GLACier Ice for a better understanding of the Orbital Response of climate The IPEV SUBGLACIOR project makes the logistical counterpart of the following scientific projects already funded : (1) the European ERC Advanced grant project ICE&LASERS 2012-2017 (coordinator : J. Chappellaz), (2) the French ANR "Blanc" project SUBGLACIOR 2012-2016 (coordinator : O. Alemany), (3) the sponsoring of the BNP Paribas foundation (SUBGLACIOR 2011-2013, coordinator : J. Chappellaz), and (4) one of the components of the Equipex project CLIMCOR (coordinator : D.D. Rousseau, INSU/C2FN). These joint projects (or component) aim at building a revolutionary probe to measure as a function of depth, inside the glacier and in real time, the water isotopic composition (climatic signal) and the concentration of greenhouse gases (methane, and eventually carbon dioxide - provided that we handle solubility effects -), without bringing an ice core at the surface. Ultimately, the probe will allow us to rapidly test the pertinence of an Antarctic site for a new deep drilling operation, similar to EPICA, to study the link between climate and greenhouse gases through the main climatic transition of the mid-Pleistocene one million years ago. In addition, the probe will already obtain - within a single field season - the first and most important signals over this period of time. The IPEV SUBGLACIOR project will include in a first step two test campaigns in 2013/2014 and 2014/2015, to evaluate some technical choices currently envisaged for specific components of this probe. In 2015/2016, the full probe will be implemented at Concordia to measure the depth profile of water isotopes and greenhouse gas down to 3260 m of depth, and thus to validate the method against the results already obtained with the EPICA Dome C deep drilling. The last year of the project, 2016/2017, will be dedicated to the implementation of the SUBGLACIOR probe at a site of the East Antarctic plateau which can easily be reached from Concordia. The site will have been pre-selected by the "oldest ice" committee of the International Partnerships in Ice Core Sciences (IPICS).</p>	<p>Concordia</p>	<p>jerome.chappellaz@univ-grenoble-alpes.fr</p>	<p>http://lgge.osug.fr</p>
<p>CHINSTRAP (Prog IPEV 1112)</p>	<p>HUBERT Guillaume</p>	<p>ONERA DESP - BP 74025 2, av. Edouard Belin 31055 TOULOUSE CEDEX 4 - FRANCE</p>	<p>Continuous High-altitude Investigation of Neutron Spectra for Terrestrial Radiation Antarctic Project The CHINSTRAP project aims at installing a high-energy extended neutron spectrometer at the Concordia station in Antarctic. The particularities of this location are unique (high altitude and proximity to the geomagnetic pole) and allow long-term measurements dedicated to the study of the atmospheric natural radiative environment dynamics for Space Weather applications. These data will complete the ones already obtained at the Pic du Midi in France and in Brazil near the South Atlantic Anomaly. The project includes two phases: the first consists in installing and operating the HERMEIS in the station, the second consists in investigating the data then in combining their analyzes to those from other measurement sites. The multi-sites measurements (CHINSTRAP and DAARES projects) aim to understand the impact of terrestrial magnetic singularities (SAA pole) on atmospheric neutron spectrum dynamics.</p>	<p>Concordia</p>	<p>guillaume.hubert@onera.fr</p>	<p>www.onera.fr/desp</p>

<p>PAIX&EXPLORER (Prog IPEV 1096)</p>	<p>CHADID Meri�me</p>	<p>Laboratoire Lagrange ; CNAP, Centre National d'Astronomes & Physiciens</p>	<p>Photometer Antarctic eXtinction & EXoplanets, PuLsatiOn & high REsolution spectRoscopy Our proposal aims are focused on: 1) to modify the current PAIX photometer status from Astro-Concordia program (Site characterization) to a new and purely astrophysical status. 2) to perform and install a new instrument, a high resolution spectrograph EXPLORER (EXoplanets, PuLsatiOn & high REsolution spectRoscopy). PAIX photometer takes benefit from the most striking Dome C properties where long and continuous time series observations are possible during 150 « days », allowing unprecedented frequency resolution which have been only attained by space mission such as CoRoT or Kepler. Several rank A publications have been issued thanks to PAIX. EXPLORER spectrograph is a new instrumental program which will also take benefit of continuous and uninterrupted observations linked to excellent transparency skies which can be found only at Dome C. EXPLORER allows us to collect long and uninterrupted spectroscopic data-bases are which until now has never been done even with space telescope. EXPLORER will complete and challenge the space mission GAIA. EXPLORER will make a major contribution in stellar pulsation and evolution in resolving some enigmas connected to Blazhko modulations, hydrodynamical and loss-mass phenomena in evolved stars (pulsation period more than 100 days) which remains a great mystery, and to complement PAIX in studies of the pulsation mode detection of P-mode in red giant stars. EXPLORER will also complement the spectroscopic observation of the GAIA mission on the topic of determining the basic parameters and chemical abundances of stars with long pulsation period and galactic distances. EXPLORER will allow us as well to better characterize the transit detection made with ASTEP. Once a transit is detected by ASTEP, EXPLORER will help to validate the existence of a new exoplanet.</p>	<p>Concordia</p>	<p>chadid@unice.fr</p>	
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SolarIce (IPEV prog 1145)	BARONI Mélanie	CEREGE - Aix-Marseille Université	<p>Solar forcing is one of the main natural climate forcings with greenhouse gas emissions, insolation or volcanic forcing. During the last millennium, solar minima often coincide with periods of enhanced volcanic forcing, making the attribution of climate variations to one or the other cause ambiguous (IPCC, 2013) ; this should not be the case for earlier millenia and it has to be tested on expanded records. In addition, the information collected on the variation of solar forcing in the past until today, can be used in climate models and allow to better constrain the part of the current climate change that is of natural origin and that of anthropogenic origin. There are various indicators of solar activity such as irradiance values measured by satellite for 30 years, sunspots observed on the Sun's surface since the early 17th century but for longer timescales, only cosmogenic isotopes such as beryllium-10 (¹⁰Be) can provide information on past solar activity. The objective of this project is to propose a new reconstruction of solar activity during the Holocene, our current interglacial. This reconstruction will be based on a ¹⁰Be record at high resolution obtained from a new 350 m ice core drilled on the Concordia-Dome C site. In order to make a reference of this record, we will implement a multiproxy approach at a resolution rarely achieved in the past. Many data will be collected to characterize the evolution of the past atmospheric composition (carbon monoxide and methane), the variation of local temperature, humidity sources, volcanic forcing, biomass burning, the dust sources and the origin of air masses that reach Concordia-Dome C. The teams that have an expertise in each of these areas will be involved in the project through a Franco-Italian collaboration involving three French laboratories (CEREGE, LGGE, LSCE) and four Italian research institutions (Trieste, Milan, Venice, Rome). The project will constitute an important contribution to the IPICS priorities (past 2k), the Antarctic 2k (within PAGES 2K). It will also provide elements on two of the six priorities for Antarctic science as recently stated by the Scientific Committee on Antarctic Research (question 1 : define the global reach of the Antarctic atmosphere</p>	Concordia	baroni@cerege.fr	
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Human and social sciences

SICKVEST (IPEV prog 1117)	BESNARD Stéphane	UMR-S 1075 - Mobilités : Attention, Orientation et Chronobiologie (COMETE) Université de Caen Basse-Normandie, UFR de Médecine Campus, 5 Avenue de la côte de nacre, 14032 CAEN Cedex 5, France	<p>Seasickness on Astrolabe: Characterization and evaluation of pharmacological countermeasures during turnaround missions. Motion sickness is present in about 80% of the passengers during missions onboard the Astrolabe with sometimes a very significant risk of dehydration. Our unit specializes in the fundamental study of the vestibular system (inner ear), the sensory organ responsible of visual-vestibular conflict inducing this syndrome, and also provides medical support in parabolic flights (flight reproducing weightlessness) where this syndrome is also strongly present. Since the Astrolabe is a strong and reproducible stimulus triggering seasickness, we would like to characterize the strongest component of the elicitation of motion sickness (psychological component, types of boat movements) and to test 4 protocols of treatment of motion sickness with medical supervision (1 protocol per year), during turnaround missions of the Astrolabe. This work will be conducted in collaboration with the unit INSERM U 1075 (France) and the military research laboratory VIPER (Royal Military Academy, Belgium) specialized in extreme environments.</p>	Astrolabe (Vessel)	Besnard-s@phycog.org	http://www.comete-u1075.fr/fr/
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Oceanographical campaigns in the Southern Ocean (*R/V Marion Dufresne*)

N°	Acronyme	PI	Title	Discipline	Location
MD 201 / VT 146	OHA-SIS-BIO-8	J.Y. Royer IUEM	Observation Hydroacoustique sismicité et biodiversité	Marine Geosciences	Southern Indian Ocean
MD 201 / VT 147	OISO-25	N. Metzl LOCEAN	Variations cycle CO2 océanique, échanges air-mer associés, CO2 anthropique dans l'océan	Physical oceanography	Southern Indian Ocean
MD 201 / VT 148	MDCPR	P. Koubbi MNHN	Biogéographie du plancton de l'océan Austral	Marine biology	Southern Indian Ocean
MD 201 / VT 149	THEMISTO	C. Cotté MNHN	Distribution et écologie du zooplancton et des poissons pélagiques mesurés par hydroacoustique	Marine biology	Southern Indian Ocean
MD 201 / VT 150	FOAM	L. Testut LEGOS	Calibration validation des missions altimétriques	Space - Océanography	Southern Indian Ocean
MD 203	ACCLIMATE	C. Waelbroek LSCE	Elucidating the Causes and Effects of Atlantic Circulation Changes through Mode-Data Integration	Palaeclimatology	Southern Atlantic Ocean
MD 205	SOCLIM	S. Blain LOMIC	Southern Ocean and climate field studies with innovative tools	Biogeochemistry	Kerguelen Plateau, Southern Indian Ocean

