THE STRUCTURE OF THE ORGANISATION RESPONSIBLE FOR FACILITATING THE ANTARCTIC PROGRAM

Originally created under the name of IFRTP (Institut Français pour la Recherche et la Technologie Polaire) in 1992, the French Polar Institute IPEV (Institut Polaire Français Paul-Emile Victor) has the status of Public Interest Group (Groupement d'intérêt public, or GIP). The main partners supporting the Polar Institute are:

- French Ministry for Research
- National Centre for Scientific Research (CNRS)
- French Ministry of Foreign Affairs
- French Atomic Energy Commission (CEA)
- French Research Institute for Exploitation of the Sea (Ifremer)
- French Meteorological Agency (Météo-France)
- French Space Agency (CNES)

The two first members provide more than 70 % of the budget.

IPEV has about 50 staff based at its headquarters in Brest (35 of them appointed by the CNRS) plus some 70 staff in the field on fixed term contracts.

THE ROLE OF GOVERNMENT AGENCIES, UNIVERSITIES, THE PRIVATE SECTOR AND OTHERS PLAY IN THE ANTARCTIC PROGRAM

Role of IPEV

The French Polar Institute IPEV is a support agency. It is the reason why no scientists are appointed by the Institute. IPEV's missions are:

- to support and to implement national and international scientific and technologic programs in polar regions (in Arctic, Antarctic and Sub-Antarctic),
- to organise scientific expeditions,
- to build and to maintain infrastructure and equipment in support of research,
- to participate in the international scientific and logistic discussion through regular collaboration with other polar agencies
- to organise oceanographical campaigns, using its ships (mainly the N/O *Marion-Dufresne*, l'*Astrolabe* and the smaller trawler-type vessel *La Curieuse*)

Research programs

Some 60 research programs covering all disciplines are selected every year by IPEV on the recommendation of its Council on polar scientific and technological programs (CPST, an international group of 16 independent experts in the different field of science).

Where are we working?

A large proportion of these programs are based on field activities in the Southern polar regions: Terre Adélie and Dôme C in the Antarctic and the French subantarctic islands of Kerguelen, Crozet and Amsterdam in the sub-Antarctic.

In the Arctic, programs are carried out in summer in Spitzberg in the Svalbard archipelago using the research support infrastructure managed by IPEV at the international scientific station of Ny-Alesund.

On board the Marion-Dufresne, marine science programs selected generally as part of international collaborations, take advantage of the vessel's specialised capabilities :

- Specific technology for sampling: heavy duty equipment for oceanologic work

- Comfortable accommodation for long expeditions

What research is conducted?

- **External geophysics**: magnetosphere and associated phenomena (solar wind, cosmic rays), ionosphere
- **Internal geophysics**: terrestrial magnetism, seismology, geology, volcanism
- **Physicochemistry** of the lower and upper layers of atmosphere: meteorology, katabatic winds, atmospheric radioactivity and pollutants, greenhouse gases and stratospheric ozone
- **Glaciology**: glacier dynamics, ice-ocean-atmosphere exchanges, paleoclimatology
- **Biology**: marine and terrestrial biodiversity, population monitoring, ecosystem functioning, evaluation of disturbances to ecosystems (human impacts and climate changes), physiological adaptation of species, microbiology
- **Medicine**: psychobiological and psychosocial adaptation of winter personnel populations
- **Oceanography**: marine tectonics, sedimentology, palo-oceanography, oceanic physicochemistry, biology and biogeochemistry
- **Human sciences**: study of indigenous populations in the countries bordering the Arctic Ocean.

Logistics at land

Dumont d'Urville research station in Terre Adélie, located in a rocky archipelago on the edge of the Antarctic continent, is only accessible by sea during summer in the southern hemisphere, the austral summer, from mid December to mid March. The supply vessel, L'Astrolabe, makes five return voyages between Hobart in Tasmania and Dumont d'Urville over the summer. IPEV manages the entire operation of the station and the support to its research programs.
The station now offers some 5000 m^2 of covered floor area. Over winter the station accommodates around thirty staff comprising both personnel providing general support and these collecting data for the French laboratories involved in polar research programs. Over summer, from November to March, the station can accommodate about 100 staff. During the summer period, more favourable meteorological conditions allow construction and maintenance operations, various logistic operations and research programs which are not possible in winter.
An annex station, Cape Prud'homme, located on the Antarctic continent off Dumont d'Urville, supports the organisation of the three surface convoys or "traverses" organised each summer to deliver equipment to Dôme C, the site of the new Concordia station (see below).

Concordia is an international research station built jointly with our Italian partners (ENEA). Located at Dôme C, the main interest of this station for scientists are the following:

- the presence of a 3,300 m thick ice cap that allows access to the planet's climate archives and the reconstruction of glacial-interglacial cycles over more than 700,000 years.
- a particularly stable, pure and dry atmosphere ideal for astronomy observations and for research on the chemical composition of the lower and upper layers of the atmosphere.
- a situation distant from coastal perturbations favourable to magnetic and seismological observatories to complement a world data network poor in observatories in the southern hemisphere.
- a small, totally isolated group of people confined to the station over a long winter, offering an opportunity for a range of medical studies useful to space programs.

As the third permanent research station erected on the Antarctic plateau, Concordia was conceived according to strict criteria taking account of the severe climate and isolation of the site. The opening of the station for wintering is expected in February 2005. It will accommodate sixteen persons over winter, researchers, technicians, a doctor and chef, living a totally self-sufficient life for nine months.

Surface convoys, known as "traverses", composed of heavy tractors, trailers and sleds, operate between Dumont d'Urville and Dôme C, 1100 km further inland over the ice cap, to deliver all equipment for the construction and operation of Concordia station and the conduct of its research programs. The traverse's duration is about 10 days. Personnel can travel by plane from the Italian Station Mario Zuchelli in the Ross Sea, a 4 hours, 1200 km flight over the Transantarctic Mountains and the ice cap.

Logistics at sea

In the Southern Indian Ocean, the French austral, or southern, islands of Kerguelen, Crozet and Amsterdam are serviced by the Marion Dufresne. This multipurpose vessel is chartered by the administration of the French Austral and Antarctic Territories Office (TAAF) for resupply operations and for eight months of the year by IPEV for marine science expeditions.

IPEV also operates a trawler-type vessel, La Curieuse, for coastal marine science operations and for the transport of research personnel and equipment within the Kerguelen archipelago.

Role of Research Agencies

Program leaders belonging to French Research Agencies (CNRS, Universities..) submit their proposals to IPEV. These proposals are evaluated by a specific council called CPST (Conseil des Programmes Scientifiques et Technologiques). According to this evaluation, and to the availability of logistic facilities, IPEV support the proposed researches in the field. Research agencies, on the other hand, support researches in laboratories in France.

Up to day, there is few private funding in the French polar research, restricted to the field of Oceanography.

Role of TAAF

The French Austral and Antarctic Territories (TAAF) is the administrative organisation officially representative of the French government. It is in charge of the logistics in the French subantarctic islands and manages the three permanent at stations at Crozet, Kerguelen, Amsterdam islands. TAAF has an annual budget of about 20 Million Euros.

WAYS IN WHICH THE ANTARCTIC PROGRAM PROMOTES INTERNATIONAL COLLABORATION

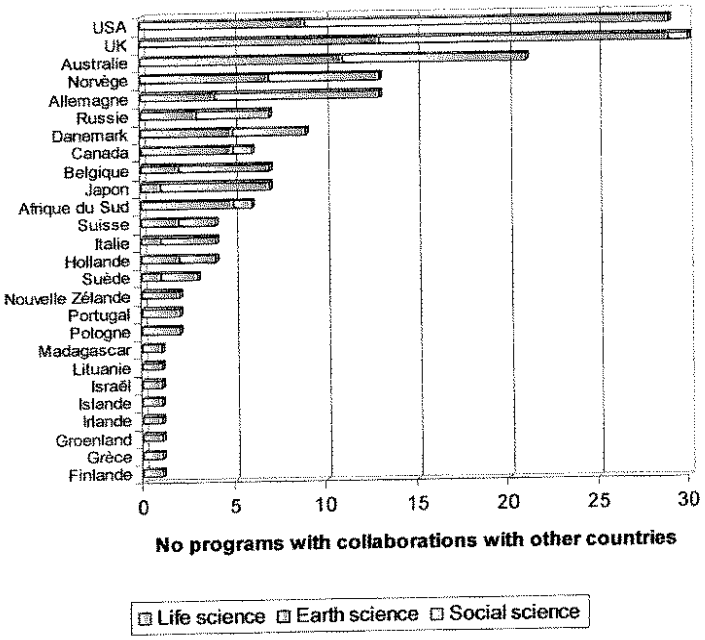
During the last few years, IPEV has signed five Memories of Understanding with Australia (AAD), Germany (AWI), Italy (PNRA), Norway (NPI) and USA (NSF/OPP). They allow a close cooperation in term of logistics and science.

In 2003, 26 countries were involved in terrestrial programs supported by IPEV. The following figure illustrates the number of programs developing collaborations with these countries.

In each country, programs collaborate with many scientific organisations. For example, 16 Australian scientific institutes, Universities or other organisations were involved in the programs supported by IPEV in 2003. During the present year, several Australian scientists were invited to participate in the French expeditions in Antarctica or in the subantarctic islands.

The table in Appendix lists the programs developing collaboration with Australia.

In addition, IPEV is responsible for the logistics of the European drilling project EPICA at Dôme C. Ten countries are involved in this important program which will allow to reconstruct more than 700,000 years of the past earth climate.



HOW THE BUDGET FOR THE ANTARCTIC PROGRAM IS ALLOCACTED – THAT IS, IS THE OPERATIONAL AND LOGISTICS BUDGET KEPT SEPARATE FROM THAT FOR THE SCIENCE PROGRAM? ARE THERE SUFFICIENT OPPORTUNITIES FOR "NEW" SCIENCE?

The resources allocated to scientific, technical and logistic activities in the field represent more than 90% of IPEV's 26 Million Euros annual budget. These include capital expenditure for scientific equipment, infrastructure and vehicles as well as operating costs such as the charter and operation of vessels and salaries and travel expenses to and from the polar regions for field personnel.

A privileged relationships between Australian and French Agencies

A Memorandum of Understanding between Australian Antarctic Division (AAD) and IPEV allows to facilitate collaboration in the following areas :

-the logistics related to the research support installations and equipment operated by the parties (scientific stations and refuges, ships, aircrafts and other major equipments),

-the terrestrial and maritime scientific activities in the Antarctic, the sub-Antarctic and, as appropriate, the Arctic,

-international relations in relation to the above.