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I PRESS RELEASE

Brest, 10th July 2003

On the occasion of the Council of Managers of National Antarctic Programs (COMNAP) being held from 7th to 11th July 2003, a Partnership Agreement was signed between the Institut Polaire Français Paul Emile Victor (IPEV) and Veolia Environnement. Its purpose is the overcoming of technological obstacles in polar environments in key sectors such as transport, the treatment of waste water and the management of waste. It reaffirms Veolia Environnement's desire to be involved in sustainable development, especially in Antarctica, and is based on the experience gained by companies from several countries operating in polar regions.

Sustainable development is the basic principle guiding all the Group's actions worldwide. Antarctica is the planet's last unspoiled, protected continent. This Agreement is a symbol of Veolia Environnement's commitment.

The partnership completes the agreements already signed with polar organisations from Australia (October 2001) and Chile (October 2002) which covered, among other things, the management of waste and the prevention of a water shortage or "water stress" in Antarctica.

This new cooperation with IPEV, a public body in France providing resources for research and polar logistics which has already undertaken countless actions in Antarctica, is part of the "Veolia Environnement for Antarctica" project. Its purpose is to establish the bases of a sustainable form of environmental protection for the "sixth continent" as required by the Madrid Protocol. Signed in 1991, the Protocol designates Antarctica as a "nature reserve devoted to Peace and Science" and places an obligation upon signatory States to preserve the environment. The Protocol entered the French statute books on 15th April 2003. It will lead, on national territory, to the regulations required for the application of the Madrid Protocol.

Through its on-going, determined action, Veolia Environnement undertakes to use its range of complementary areas of expertise in order to share its experience with various operators and preserve the environment in Antarctica.

After Australia and Chile, Veolia Environnement will be working with IPEV to mobilise all its resources to assist the "white continent". A total of 44 nations are present there. The experience gained and tools developed within the framework of these Agreements will be available to all of them. Veolia Environnement's aim is also to provide all the nations with an international platform in which to share expertise and resources.

Veolia Environnement's mission is not only to use its expertise in waste management but also to provide its know-how in water protection, energy-saving and the optimisation of transport in order to protect the Earth's resources and natural heritage for future generations.

By acting in this way, Veolia Environnement hopes that other countries will soon be able to take advantage of the "Antarctic know-how" built up through its various partnerships. It is, therefore, with particular pride that Veolia Environnement makes a strong commitment to its partnership with IPEV.

The agreement was signed by Jérôme Contamine, Executive Managing Director of Veolia Environnement, and Gérard Jugie, Director of IPEV. Operational management of the programme will be provided by Michel Dutang, Director of Research and Development with Veolia Environnement. Eric Lesueur, Deputy Director of Research and Development, will share operational responsibility with Gérard Jugie.

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ANTARCTICA, an Inventory

• General Remarks

Why is it so important to preserve the environment in Antarctica?

Because the region represents almost one-fifth of submerged land, two-thirds of the stock of fresh water, the largest desert in the world, the strongest ocean current and, of course, the most severe climates. There is no doubt that this is the least polluted continent on Earth, with no industry or agriculture and practically no human habitation. The continent is highly sensitive to any planetary pollution, as is evident from the analysis of ice. Moreover, it is possible to monitor the impact of human activities elsewhere on Earth. One example would be the curve showing the increase in the rate of lead in the atmosphere since the Industrial Revolution – the fastest rise occurred when lead was added to fuel for motor vehicles.

Why should we be interested in studying ice caps?

Ice plays a major role in global climate and the study of samples from the polar ice cap is still supplying key information about the climates of the past and probable climate changes for the future. The work carried out on samples from the ice cap in Greenland, like the recent results from EPICA¹ (European Programme for Ice Coring in Antarctica), showed that major climate changes occurred in the past, sometimes in timescales as short as a few decades.

Various model-building projects predict a temperature increase of between 1.5°C and 6°C for this century (the variation depends on demographic changes and the choice of energy sources), an increase in sea level of between 15 and 70 cm, changes to patterns of precipitations and a shift in climate zones. All this has a potentially huge impact on living conditions.

It is known that Lands and Oceans remain strongly inert in the face of climate changes. We must therefore take the necessary decisions on emissions into the atmosphere today and ensure that they are applied.

Observations showing that the ice is melting are important for the economy, health, biodiversity etc. The future depends on man's reaction to all this.

What is the Greenhouse Effect?

The mean temperature of our planet results from the balance between the flow of radiation from the sun and the flow of infrared radiation sent back into space.

Temperature distribution at ground level depends on the quantity of greenhouse gases present in the atmosphere. Without them, the mean temperature would be -18°C and Earth would be uninhabitable. Their presence raises the temperature to 15°C.

The gases responsible for the greenhouse effect are carbon dioxide, methane, nitrous oxide and other manmade gases which are damaging the ozone layer. Although they occur naturally in fairly low quantities, their concentrations, taken in conjunction with human activity, have greatly changed our atmosphere. The concentration of CO₂, for example, has increased by 30% since the pre-industrial era. The combined effects of all the gases is equivalent to a 50% increase in CO₂ since that time.

¹ EPICA is a project covering the analysis of the ice drilled at Dome C where the Antarctic ice cap is more than 3,500 metres thick. The project began in 1995 and involves Germany, Belgium, Denmark, France, the UK, Italy, Norway, the Netherlands, Sweden and Switzerland. It is a European project, set up by the European Science Foundation but receiving strong backing from the European Union. During the 2001/2002 campaign, European researchers working on the project drilled the pack ice to a depth of 2,871 metres to remove a sample – a core corresponding to 520,000 years of climate.

• Observation

Antarctica is a veritable life-sized research laboratory, as well as being a continent that must be preserved at all costs.

Commonly referred to as "Earth's barometer", Antarctica is the only location in which *"activities are organised and carried out in the area covered by the Antarctic Treaty in such a way as to give priority to scientific research"* (Art. 3, §3 of Madrid Protocol).

Adaptation to extreme environments, the rebuilding of climates from the past, observation of the planet's health, astronomical data and forecasts for future climates are just some of the research topics being looked at within the framework of Antarctica's protocol status (1991) by researchers from several different disciplines.

Among them are geophysicists, astrophysicists, climatologists, chemists, oceanographers, glaciologists, biologists, physiologists, animal behaviouralists, ecologists, population geneticists and sociologists.

The increasing numbers of people travelling to Antarctica over the past century (armed forces, scientists, tourists) have posed complex environmental problems that are all the more difficult to perceive because of the specific nature and the fragility of the continent.

• A Climate Regulator for our Planet

Located between the 65th parallel and the South Pole, Antarctica covers an area of 13,000,000 km², making it the same size as Europe. Only 2% of the land is free of ice. The continent represents 90% of the Earth's ice.

The continent is lapped by the waters of the Southern Ocean which is itself surrounded by the circumpolar current (encircling the polar circle). This current totally isolates the continent of Antarctica, pushing back the warmer waters located at lower latitudes and lessening their influence. It is this current which has led to the formation of the immense, ice-bound continent.

Gigantic volumes of water from all the regions in the world combine here constantly, making the Antarctic Ocean a vital factor for the Earth's climate balance.

• A Continent That Must Be Protected

In all, 44 countries are currently present in Antarctica. Almost one-half of the national Antarctic research stations that operate all year round are to be found in the Antarctic Peninsula to the south of Latin America.

Some 1,200 people spend the winter on stations scattered around Antarctica. During the southern summer, there is a steep rise in the number of people living on these stations.

• Specific Flora and Fauna

In the coastal strip, there are lichens, mosses on the rocks, and algae on the ice or in the frozen water. The sea contains an abundance of phytoplankton, providing food for the krill which is, in its turn, a vital food source for nearly all species, in particular whales.

The fauna has some unique characteristics. There are few species here compared to warm environments and they do not feed on land; they draw on the ocean's resources. The waters of the Southern Ocean around Antarctica, however, provide superb shelter for numerous birds (penguins), marine mammals (dolphins, seals etc.), fish and invertebrates (calamari).

The unique ecosystems in Antarctica provide a new field of research, drawing on a range of different scientific disciplines. Observations made in this area give a clearer insight into fundamental phenomena that reveal the adaptation of flora and fauna to their geophysical environment.

In such difficult climatic conditions, any species subjected to ill-treatment or falling into decline takes a long time to recover.

• Law, Cooperation and Treaty: 44 Supporting Nations

Antarctica was seen for the first time in 1820 by Fabian von Bellingshausen, a Russian who, without knowing it, was the first man to discover a continent which then became the subject of fierce international competition.

Yet when Ross, Dumont d'Urville and Wilkes undertook the first great scientific expeditions in Antarctica, there was no question of rivalry between countries. People praised the courage of individual initiatives in the face of the hostile environment provided by the white continent.

It was not until people began to hunt seals, elephant seals and whales, that conflicts of interest arose.

Over the years, States seeking to claim Antarctica as their own tried to strengthen their presence through a series of actions ranging from administrative measures to territorial occupation. There were decrees, fishing and hunting rights, deeds establishing territorial boundaries, the appointment of postal managers, exploratory missions, cartographic and topographic surveys, historic commemorations and the building of scientific research stations.

The economic interests of the various "occupiers" were such that it eventually became necessary to set up a territorial jurisdiction, with environmental protection treaties.

In 1959, a number of States² wanted to ensure the durability of the cooperation that had existed in the field of scientific research during the Third International Geophysics Year (1957-1958) so, on 1st December 1959, a Treaty was signed in Washington, establishing Antarctica's status. The Treaty took effect on 23rd June 1961.

The Treaty is « open to membership by any State which is a member of the United Nations, or any other State which may be invited to sign the Treaty with the consent of all the Contracting Parties whose representatives are mandated to take part in the meetings referred to in Article IX of the Treaty » (Art. 13, paragraph 1 of the Antarctic Treaty).

To date, 44 States have become signatories.

After the Antarctic Treaty, dozens of recommendations were adopted, some of them backed up by Agreements aimed, in particular, at the conservation of biological resources (marine mammals, birds, fish, krill, flora, etc.).

Examples of such Conventions are as follows:

1946: International Whaling Agreement, 2nd December 1946, Washington.

² Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, Russia, South Africa, and United States of America.

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1972 : London Agreement, 1st June 1972, providing protection for seals in Antarctica through a management system ensuring that catches do not exceed a maximum admissible level.

1980 : The International Agreement on the Conservation of Marine Living Resources in Antarctica was signed at the diplomatic conference held in Canberra (Australia) on 20th May 1980. The present decision approves the Agreement in the name of the European Union.

The basic principle of the Treaty establishing Antarctica's status is the allocation of the area to solely pacific ends, with the aim of developing research through inter-State cooperation, freezing territorial claims and rendering Antarctica neutral by prohibiting any military presence and, therefore, any form of nuclear testing.

The freedom of scientific research is seen within the framework of international cooperation (exchange of information, sharing of expedition funding etc.) and cooperation between nations and international organisations.

Antarctica is a unique case because the continent has been subject to this international Treaty for almost 40 years. This is why it cannot be administered or controlled like a territory subject to national sovereignty. To change the rules, there must be unanimous agreement on the part of all the countries which signed the Treaty. The rules laid down in the Antarctic Treaty may be completed by measures adopted by consensus on the part of the consultative Parties.

The continent provides an irreplaceable field of observation for all humanity. It must therefore be the subject of exceptional conservation measures.

Faced with the need to protect a land that was the last bastion of wild life and nature, the countries which had subscribed to the Antarctic Treaty signed the Madrid Protocol on 4th October 1991. This is an environmental protection protocol. The 29³ signatory nations undertake to ensure overall environmental protection in Antarctica and in its dependent and associated ecosystems. Antarctica is designated as a "natural reserve dedicated to Peace and Science".

This environmental protocol prohibits all activities relating to mineral resources other than those carried out for scientific purposes (there is no time limit – for the first 50 years after the Madrid Protocol comes into effect, it is possible to rescind this interdict on mineral-based activities but only by a unanimous decision on the part of the States). It also instigates a comprehensive system of protection for the natural environment. These are the most stringent rules ever laid down on the conservation and management of the environment. They cover the disposal of waste, the collection of samples, construction, tourism – in fact, all the human activities represented in Antarctica. They also establish emergency plans to fight marine pollution and protect the flora and fauna. No extraction, mining or oil prospecting is authorised, other than for scientific purposes.

The protocol encourages the nations occupying Antarctica not to leave behind their waste products and unoccupied buildings.

In accordance with the demands laid down in the Madrid Protocol, France has adopted appropriate measures "to guarantee compliance with the Protocol" (art.13 of the Madrid Protocol). For example, it passed a law on 15th April 2003 concerning environmental protection in Antarctica.

Antarctic Treaty signed in Washington on 1st December 1959: 44 countries have signed it to date.

Awareness of the essential importance of this continent for the global environment, despite its distance, led to the signing of an environmental protection protocol to the treaty in Madrid on 4th October 1991.

³ i.e. 27 Consultative Parties plus Greece and Ukraine

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Since the publication of the Treaty, 44 countries have signed it, including 27 Consultative Parties i.e. States with a voting right because they were the original signatories of the Antarctic Treaty or have shown their interest in Antarctica « *by undertaking substantial scientific research there, e.g. through the setting up of a research station or the funding of an expedition*» (Art.9 of the Antarctic Treaty).

List of signatories to the Treaty

(Consultative Parties are in bold type)

- **South Africa**
- **Germany**
- **Argentina**
- **Australia**
- Austria
- **Belgium**
- **Brazil**
- **Bulgaria**
- Canada
- **Chile**
- **China**
- Colombia
- Cuba
- Denmark
- **Ecuador**
- **Spain**
- **USA**
- **Finland**
- **France**
- Greece
- Guatemala
- Hungary
- **India**
- **Italy**
- **Japan**
- **Norway**
- **New Zealand**
- Papua New Guinea
- **Netherlands**
- **Peru**
- **Poland**
- **Republic of Korea**
- Popular Democratic Republic of Korea
- Slovak Republic
- Czech Republic
- Romania
- **United Kingdom**
- **Russia**
- **Sweden**
- Switzerland
- Turkey
- Ukraine
- **Uruguay**
- Venezuela

3

PARTNERSHIPS AND THE ACTIONS of Veolia Environnement in Antarctica

Veolia Environnement provides its expertise for agencies with responsibility for Antarctica in each country. This is why, as part of the "Veolia Environnement for Antarctica" programme, Veolia Environnement is continuing its efforts to preserve Antarctica, through various partnerships aimed at the conservation of the white continent.

The project aims to establish the bases of a sustainable form of environmental protection for the "sixth continent" as required by the Madrid Protocol signed in 1991.

As an example, the "Veolia Environnement for Antarctica" programme launched a joint project with AAD (Australian Antarctic Division) in October 2001. It was the first clean-up campaign on the continent and Veolia Environnement made its services and equipment available to help AAD complete the programme quickly.

Veolia Environnement has also processed the waste from a Russian scientific research station.

In October 2002, action taken with Chile (CONAMA) on the Antarctic Peninsula completed the programme implemented on the western section of the continent.

Like previous operations, it involved all the scientific and operation resources in Veolia Environnement's specialist areas of expertise (water, waste, energy and transport) to achieve a sustainable, global result.

• The IPEV / Veolia Environnement Agreement (10th July 2003)

The IPEV/ Veolia Environnement Partnership Agreement was signed for an estimated period of 10 years on 10th July in Brest during COMNAP, which was being held in France for the first time.

The Agreement is part of Veolia Environnement's on-going commitment through various actions in Antarctica. For Veolia Environnement, it is part of the "Veolia Environnement for Antarctica" project; for IPEV, the Agreement will enable it to provide better environmental protection within the framework of its activities in Antarctica.

Over an estimated period of 10 years, it has been agreed that Veolia Environnement will cooperate closely with IPEV to overcome any technological obstacles in Antarctica as regards transport, water and waste treatment, and energy.

IPEV complies strictly with the Antarctic Treaty in its operations. However, the principles and technological methodology require improvement, especially at the Dumont d'Urville research station. For example, IPEV has already joined forces with ESA ⁴ to build a prototype for the treatment of the grey water produced by a population of 20 or 30 people.

Under the terms of the partnership agreement, Veolia Environnement will cooperate closely with IPEV to overcome technological obstacles in Antarctica, in particular with regard to the following:

- Processing of atmospheric emissions from the diesel engines used for land transport and power production in the two French bases. The technology tested uses particle filters (almost total reduction of particles, CO and hydrocarbons);
- Processing of liquid waste from the two bases: development of compact treatment systems for

⁴ European Space Agency

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waste water, sewage and swill (mainly from washrooms and kitchens) to achieve a quality that enables the water to be reused;

- Monitoring of the environmental impact on the new Concordia base: the recent start-up of this ultramodern base in a totally unspoiled area provides an opportunity to monitor changes on the site, using environmental performance indicators. The aim is to define a “zero impact” concept that could be taken as an example for all human activity in Antarctica;
- Guidance of terrestrial vehicles: IPEV covers a distance of 1,120 km between the Dumont d’Urville base (Terre Adélie) and the Franco-Italian Concordia base in 12 days. The re-use of the same track would save time and would, therefore, be more environmentally efficient. Since there are no signs (they are prohibited in Antarctica), a system will have to be designed to check on positioning (it will probably be based on GPS). There may also be a guidance system installed in the vehicles. The aim is to reduce travelling time from 12 days to 24 hours.

• **Partnership between the Australian Antarctic Division (AAD) and Veolia Environnement (12th October 2001)**

Strong points:

- The Australian Antarctic Division (AAD) and Veolia Environnement signed a cooperation agreement in October 2001 covering their involvement in the efforts at restoration and rehabilitation in the area of waste management in Antarctica.
- The Agreement gives Australia a chance to set an example in environmental matters for the 44 countries which signed the Antarctic Treaty.
- AAD has developed a strategy for the return of the waste accumulated in Antarctica over the past 40 years.
- Veolia Environnement is providing services and equipment to assist AAD in completing the programme quickly.
- The programme also aims to share knowledge and resources between the nations which signed the Treaty.
- In addition to the provision of know-how and experience, Veolia Environnement is providing direct investment in the form of 240 waste-specific containers. This will enable AAD to repatriate the waste to Australia.
- Veolia Environnement's additional offer of specialist services in other sectors, in particular the management of waste, water, energy and transport, will remain under the control of AAD and Veolia Environnement.
- The project has been scheduled to last for ten years or more.
- The operation is not limited to the mere funding of a clean-up campaign. It will also enable the two organisations to pool their capacities in order to achieve global management of the waste left in Antarctica.
- The initiative was also agreed in order to encourage other agencies to contribute to the sustainable development of Antarctica and, of course, of other fragile environments elsewhere in the world.

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• Partnership with CONAMA ⁵ (1st October 2002)

CONAMA is a Chilean government agency which works to promote the ecological sustainability of the development process. It also aims to coordinate actions resulting from government regulations on environmental strategy.

Veolia Environnement works closely with CONAMA to provide all possible technological expertise and useful logistical back-up in order to preserve the primitive, wild, pure character of Antarctica despite the presence of Man.

Under the aegis of the Research Department at Veolia Environnement which federates four areas of expertise (water, waste disposal, energy services and transport), teams of scientists will undertake in-depth analyses of the major problems on the Peninsula generated by the increased human presence.

The agreement, which will remain in effect for ten years, should make it possible to pinpoint the now critical risks of climate warming which are destroying the ozone layer in this part of the planet and, in the long term, prevent the inherent water shortage or "water stress".

Veolia Environnement and the Chilean authorities are making optimal use of the scientific analyses to draw up an effective, sustainable strategy for the protection of the Peninsula.

⁵ *Comision Nacional del Medio Ambiente*

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A BRIEF HISTORY of the Partner Countries in Antarctica

Key dates of expeditions to the South Pole, situated at an altitude of 2,765 metres.

- 1909 - Shackleton
- 1911 - Amundsen
- 1911 - Scott
- 1929 - Byrd survole le Pôle Sud

• France in Antarctica

1840: Jules Dumont d'Urville, heading the first French Antarctic expedition, discovered part of the continent of Antarctica and gave it his wife's forename – Terre Adélie.

1904: Commandant Charcot undertook his first scientific voyage along the coast of the Antarctic Peninsula. Historian Edwin Swift Balch wrote that Charcot's explorations "*were among the most important expeditions in Antarctica. Nobody has surpassed him and few have equalled him as regards captaincy and scientific observation*".

February 1947: Paul-Émile Victor set up the French Polar Expeditions, also known as the "Paul-Émile Victor Missions".

20th January 1950: 110 years after Dumont d'Urville landed on the continent, a second expedition reached Terre Adélie.

1956: Construction of the permanent Dumont d'Urville scientific research station (on Île des Pétrés).

French scientific bases in Antarctica

There is one permanent French research station in Antarctica i.e. the Dumont d'Urville base in Terre Adélie.

Another permanent base, called Concordia, is currently being built in partnership with Italy, on the Dome C site (polar ice cap more than 3,200 m thick). It will open early in 2005. It lies in the interior, more than 1,000 km from the coast.

• The Dumont d'Urville Base

Terre Adélie includes France's one permanent research station in Antarctica, located on Ile des Pétrés in the Pointe Géologie archipelago, 5 kilometres offshore.

The buildings cover a total area of approximately 5,000 m².

The base is cut off by ice in winter and can only be reached during the southern summer. Every year, L'*Astrolabe* leaves Hobart in Tasmania and makes five round trips, ferrying relief teams and supplies. It takes 5 to 6 days to travel the 2,700 km between Australia and Terre Adélie.

During the winter months (March to November), the base accommodates some thirty people who provide general and scientific services and carry out scientific work for French laboratories involved in polar programmes.

During the southern summer, the base can cater for over one hundred people. At this time of year, the meteorological conditions are good enough to allow for maintenance work, various operations and scientific programmes that cannot be undertaken in winter.

On site, there is also a small annex, *Cap Prud'homme*, a base on the mainland opposite Ile des Pétrels. This is the departure point for overland trips to Dome C, the site of the Concordia base.

• The Concordia Base

A Franco-Italian agreement signed in 1993 between two polar institutes, IPEV and ENEA ⁶, led to the building of a new permanent research station in Antarctica, on the Dome C site. The station is scheduled to open in the spring of 2005.

While there are 44 bases scattered around the coast of mainland Antarctica, **Concordia** is one of only three permanent bases operating inland. The other two are the American **Amundsen-Scott Base** at the South Pole and the Russian **Vostok** station.

The Dome C site was chosen on the basis of several scientific criteria i.e. *the presence of a thick ice cap giving access to the planet's climate archives. Thanks to the ice cap, it is possible to rebuild the interglacial cycles over several hundred thousand years.*

- *the particularly stable, pure, dry atmosphere is ideal for astronomical observations and studies of the chemical composition of the lower and upper layers of the atmosphere.*
- *the location is far removed from the disturbances in the coastal belt and is, therefore, ideal for seismic observations and studies of magnetism. They complete the global network of data, which is scant for the Southern hemisphere.*
- *the isolation, confinement, extreme climate, and specific conditions in which a group of people work over a long winter period are useful in biomedical programmes which are applicable to space flights.*

The Concordia base consists of two main buildings.

Each building is three storeys high and has a total living area of 1,500 m². One building is for "quiet" activities (bedrooms, laboratories etc.); the other is designed for "noisy" activities (kitchen, restaurant, workshops etc.).

Concordia can cater for some fifteen people – scientists, technicians, engineers, a doctor and a cook (this is a typical group in winter; it is totally self-sufficient for nine months of the year).

A camp annex nearby can cater for forty or more additional people during the summer season.

Dome C is reached by land convoy from Dumont d'Urville (the 1,100 km are covered in approximately ten days) or by light aircraft (personnel and light equipment) from the Italian Terra Nova Bay base (a flight of approximately 4 hours for the 1,200 km trip).

⁶ *Ente per le Nuove Technologie, l'Energia e l'Ambiente (agence italienne pour les nouvelles technologies et l'environnement)*

• Australia in Antarctica

In the 19th century, Australian ports were the points of departure for many trips to Antarctica in search of knowledge and riches. Australian Douglas Mawson, who led the main expeditions to Antarctica in the early 1900's, was one of the major figures in the "epic days" of Antarctica. Mawson's work enabled Australia to claim more than 40% of the territory of Antarctica as land under Australian sovereignty and this claim has been upheld since 1936.

Since 1947, Australia has been continually present in the region. The first organisation, ANARE (Australian National Antarctic Research Expeditions), established bases on the Sub-Antarctic islands of Heard and Macquarie.

In 1954, Philip Law established the first Australian station on mainland Antarctica at Mac Robertson Land; he named it Mawson. He set up the second station, named Davis, at Vestfold Hills in 1957. Australia carried out work on the Budd Coast site for a decade before being forced by advancing ice to abandon the site and re-establish a new station nearby, Casey.

It is the Australian Antarctic Division (AAD), part of Environment Australia, which administers the national Antarctic programme.

• Chile in Antarctica

Chile is one of the closest countries to the white continent in geographical terms and, because of this, is the best point of access to its regions.

The Peninsula covers an area of approximately 1,250 000 km². It includes everything between longitudes 53° and 90° West i.e. land, islands large and small, cliffs, glaciers, known and unexplored areas and a stretch of sea.

The boundaries of this territory were laid down in 1940 by Decree 1747.

The Peninsula is the name given to the extension of South America and the Andes.

The Chileans based in Antarctica today are mainly members of the armed forces (Army, Navy and Air Force). They live there with their families.

To ensure a water supply, the bases pump water from lakes or, occasionally, melt ice. Generators provide the necessary power, using a system reminiscent of a water mill. Each base has its own sewage treatment plant and waste is incinerated then taken by boat to Punta Arenas.

PARTNER PROFILES

What is IPEV?

The French Polar Institut – Paul Emile Victor was set up in January 1992 as a result of the merger of the Mission de recherche des Terres Australes et Antarctiques Françaises and the Expéditions Polaires Françaises. At that time, it was known as IFRTP. In January 2002, its existence was extended for a further twelve years, under the name "IPEV".

The Institut Polaire Français Paul Emile Victor (IPEV) is a resource agency for polar research, at the service of national laboratories linked to structures specialising in scientific research e.g. universities, CNRS, CEA, INRA etc.

It is a Public Interest Group (PIG) of nine public or quasi-public bodies, three of which are involved in a more significant way:

- Ministry Delegate to Research and New Technologies, which supplies most of the IPEV budget,
- Ministry of Foreign Affairs and the CNRS which provides staff for the PIG.

The Polar Institute in Brest has a permanent staff of 50, two-thirds of them seconded from the CNRS.

Its main mission is to implement scientific programmes in the polar and sub-polar regions of the Northern and Southern hemispheres.

- The Institute also runs oceanography programmes, using the various ships at its disposal i.e.
- The *Marion Dufresne*, Europe's largest oceanography vessel (120 m)
- The *Astrolabe*, a Category 1 polar vessel (65 m)
- The *Curieuse*, a coastal vessel (25 m)

What is Veolia Environnement ?

Veolia Environnement is the world's leading environmental services company, present in more than one hundred countries on all five continents. It employs 302,000 staff.

Veolia Environnement is the only Group specialising solely in environment-related business and capable of providing a comprehensive range of services (water, waste disposal, energy and transport).

This enables the Group to develop an integrated services package, providing a global, customised response to the problems facing its clients in the private and public sectors.

Veolia Environnement's four divisions are as follows:

- **Water:** World's leading Group, providing 110 million people worldwide with drinking water (Veolia Water)
- **Waste disposal:** the Group ranks second worldwide and is up among the leaders in Europe, with 54 million tonnes of waste processed annually worldwide (Onyx)
- **Energy:** Top in Europe, with the management of 70,000 thermal power stations (Dalkia)
- **Transport:** Europe's largest private land passenger transport company, with more than 4,000 local authorities as clients (Connex).

Veolia Environnement's expertise

Veolia Environnement is supported by a powerful network of 600 researchers throughout the world (Europe, USA, Australia) in three main research centres:

- Water: Anjou-Recherche + sister units in the USA, Canada, Germany and Australia,
- Energy and Waste Disposal: CREED (*Centre de Recherches pour l'Environnement, l'Energie et le Déchet*) + branches in Northern Europe and Australia,
- Transport: Euroalum

What is the AAD?

AAD (Australian Antarctic Division) manages the various Australian activities in the Antarctic and sub-Antarctic regions. It is part of the Australian government's Department of the Environment.

AAD promotes Australian interests in Antarctica in accordance with its vision of an "optimised, protected and understood Antarctic continent". To this end, it carries out research into Antarctica, as well as undertaking other activities with a view to meeting the government's objectives for the region. It also manages and maintains a presence in the Australian Antarctic and Sub-Antarctic territories. AAD manages the Australian government's activity in Antarctica, arranges transport, supplies logistical support, maintains four permanent Australian research stations and leads and manages scientific research programmes on land and in the Southern Ocean.

Set up in Melbourne in 1949 to administer ANARE (Australian National Antarctic Research Expeditions), AAD now has its headquarters in purpose-built premises in Kingston, the main southern suburb of Hobart. The design of the aluminium-clad buildings was inspired by the tabular icebergs that are characteristic of Antarctica.

AAD staff provide a range of administrative and support roles for the Australian Antarctic programme. The Division's administrative role includes management of Antarctic research grants and support for studies undertaken by research institutes around Australia and in other countries. AAD scientists play a major role in the Australian Antarctic programme, in areas such as biology, glaciology, meteorology and medical science.

From Hobart, ships chartered by AAD leave every year for the Antarctic and Sub-Antarctic stations. On board are passengers and equipment for a one-year tour of duty. The Australian Antarctic Research and Supply Vessel, *Aurora Australis*, is also the platform for a research programme in the Southern Ocean stretching as far as the south and south-west of Australia. Helicopters are used for this, and for trips between the ship and the coast or between the various stations on Antarctica.

What is CONAMA?

CONAMA is a Chilean government organisation which promotes the ecological sustainability of the development process. It also aims to coordinate the actions resulting from government regulations for environmental strategy.

Its main objectives are as follows:

- Turn-around and improvement of the quality of the environment
- Improved protection for the ecological heritage and the sustainable usage of natural resources

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- Awareness of the environment in the production and manufacturing sector
- Citizen involvement in environmental processes
- Greater environmental institutionalisation at national and regional level
- Improvements to environmental legislation and the development of new management tools.

The LBGMA (*Ley sobre Bases Generales del Medio Ambiente*) is the basic law on the environment; it has been in effect since 9th March 1994. It led to the setting up of CONAMA then raised the status of the organisation, turning it into an institution, like the environment. Law n° 19.300 recognises the technical and legal responsibility of various Government departments and the need to involve each of them in the environmental process.

The final clause of the LBGMA provides for the setting up of the national environment commission (CONAMA). It is a public department considered in law as a juristic person. Its functions have been decentralised and it has its own assets. Operating under the direct responsibility of the President of the Republic, its main purpose is to coordinate the environmental processes and projects of the various public departments.

6 BIOGRAPHIES

Veolia Environnement

HENRI PROGLIO

Henri Proglío, graduated from the prestigious HEC in 1971. He has been Chief Executive Officer of Veolia Environnement (ex- Vivendi Environnement) since 2003.

In 1972, he joined the Compagnie Générale des Eaux. In 1990, he was appointed Chief Executive Officer of CGEA (Compagnie Générale d'Entreprises Automobiles), the Group's waste disposal and transport company. In 1991, he was appointed Director of the Compagnie Générale des Eaux, then executive member and, in 1997, he became Deputy Managing Director. In 1999, he was appointed Managing Director Delegate of Vivendi, Chairman of the Compagnie Générale des Eaux, Director and Executive Managing Director of Vivendi Water and Chairman of CGEA. In 2000, he became Chairman of the Vivendi Environnement board (Vivendi Water, Onyx, Connex, Dalkia).

He is a Director and member of the Executive Committee of FCC (Fomento de Construcciones Y Contratas) in Madrid, Director and member of the supervisory board of the Group's largest subsidiaries in France and abroad. He also holds similar positions in external companies such as: Thales, Elix, CNES etc.

JÉRÔME CONTAMINE

Jérôme Contamine is a graduate of three of the top higher education establishments, Ecole Polytechnique, ENSAE and ENA and is now Executive Managing Director of Veolia Environnement. He joined the Veolia Environnement Group as Deputy Director General of Finance in June 2000 and was appointed Managing Director Delegate in June 2002, becoming a member of the Board of Management. From 1988 to 2000, he worked for the Elf-Aquitaine Group as Project Leader to the Director of Finance (1988-1991), Director of Finance (1991-1994), Deputy Director (Europe/USA) for Elf exploration and production (1991-1994), Managing Director and Group Delegate in Norway (1995-1999), Deputy Director of Elf (Natural Gas) and Director (Europe/Central Asia) for Total Fin-Elf. Before that, he was successively an auditor then reporting magistrate to the Cour des Comptes (1984-1988).

MICHEL DUTANG

Michel Dutang, a civil engineer and graduate of the highly-reputed Ecole des Mines, has been Director of Research and Development with Veolia Environnement since 2001. He joined the Compagnie Générale des Eaux in 1974 and began by developing techniques to fight pollution on the outskirts of Paris, protecting water resources and developing systems to measure water quality. He became Director then Vice-Chairman of Anjou Recherche and, in 1996, was appointed Director of Research and Technology with the CGEA Group, with responsibility for the soil pollution storage centres and the development of services to industry.

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THIERRY LEMANT

Thierry Lemant trained as a chemist. He joined the Veolia Environnement Group in 1994. He held various responsibilities with the CREED and was its Deputy Director. As part of the Group's research management, he is responsible for the international coordination of "Waste Disposal" research operations and the management of technical expertise.

ERIC LESUEUR

Eric Lesueur graduated from the prestigious Ecole Polytechnique in 1977 and gained a Ph.D in Physical Sciences in 1983. He has been Managing Director of Orion, the design office of the Générale des Eaux Group, with responsibility for the provision of waste management services for local authorities (1993-1997) by CGEA-ONYX. He was also Director of Institutional Relations (1997-2000) and, since 2001, has been Veolia Environnement's Deputy Director of Research and Development, Director of Environmental Management, and Chairman of the CREED (Centre de Recherches de Veolia Environnement pour l'Environnement, l'Energie et le Déchet, Veolia Environnement's research centre for the environment, energy and waste).

RUPERT SCHMID

Rupert Schmid, a graduate of INSEAD, is the Director of the Antarctica programme, Director of Public Relations and Marketing and member of the Board of Management of Onyx (Waste Disposal). He is also PR Director for Connex. Before joining the Veolia Environnement Group, he held managerial positions in the media sector (RS Co, ISM, Journal des Finances and the Sorio Group).

IPEV

GÉRARD JUGIE

Gérard Jugie is Director of Research with the CNRS. He began his career in fundamental research in the field of coordination chemistry before assuming more general functions within the CNRS. He was Director of Industrial Relations on a national level then Regional Delegate for Western France and, later, for Languedoc Roussillon. In 1997, he was appointed Director of the Institut Français pour la Recherche et la Technologie Polaires and, in 2002, he became Director of the Institut Polaire Français – Paul Emile Victor.

Gérard Jugie is Chairman of the European Polar Board and Vice-Chairman of COMNAP. In particular, he has been Director of Partnerships at the CNRS.

YVES FRENOT

Yves Frenot has worked with IPEV since it was set up in 1992. He has been seconded from the CNRS and is currently working at IPEV as Deputy Director in charge of scientific programmes and environmental affairs for the Institute's activities in Antarctica and the Arctic.

Holder of a Ph.D in Biology from the University of Rennes, Yves Frenot is an expert in studies of the impacts of introduced species and climate changes on ecosystems in Antarctica. For twenty years, he has carried out scientific research in the French sub-Antarctic islands (Kerguelen, Crozet and Amsterdam).

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JEAN JACQUES REYSER

Jean Jaques Reyser is a Research Engineer with the CNRS. At IPEV, he is responsible for administrative and financial matters and international agreements. He is responsible for the financial group involved in the drilling programme (EPICA) and is an Expert with the ATCM (Antarctic Treaty Consultative Meeting). He holds a Master's degree in Law and was responsible for markets and contracts with the Grand Accélérateur National d'Ions Lourds (Ganil) in Caen, and Director of the Biology Research Station in Roscoff (Finistère).

PATRICE GODON

Patrice Godon, a mechanical engineer, joined the "Polar World" in 1979. He was probably the last person to have been part of the team set up by Paul Emile Victor, who began French polar explorations in 1947. Patrice Godon is responsible for IPEV's polar logistics.

JEAN JOUZEL

Chairman of the IPEV Board of Management

Jean Jouzel has been Chairman of the Board of Management of the Institut polaire français Paul-Emile Victor (IPEV) since 2000. On a national and international level, Jean Jouzel is, or has been, a member of the Scientific Committee for the international Past Global Changes programme (PAGES) from 1988 to 1995, France's representative on IPCC Working Party 1 (Intergovernmental Party on Climate Change) since 1994, expert to the group (second and third reports) and, now, a member of its committee. He has also been a member of the Comité français de l'environnement polaire (French Committee of the Polar Environment) since 1994, Chairman and Executive Manager of EPICA (European Programme for Ice Coring in Antarctica) from 1995 to 2000, a member of the Steering Group of CLIVAR (Climate Variability and Predictability), and the "World Climate Research Program" project from 1996 to 2001, CEA representative to LESC (Life and Environmental Sciences Committee) within the European Science Foundation from 1995 to 2000, and a member of the Comité consultatif des sciences de la planète et de l'environnement (CCSPE, Consultative committee for planetary and environmental sciences) since 1999.

He is a member of many scientific societies (including the American Geophysical Union and International Glaciological Society), has been a member of Academia europea since 1990, holds a honorary doctorate from the Université libre in Brussels (1997), is a Flint Lecturer (Yale University, 1996), was a winner of the Milankovitch Medal (European Geophysical Society, 1997), won the Académie des sciences award (CEA prize, 1999) and the Ippolito Award (Italian Academy of Sciences, 2000).

Jean Jouzel has written and co-authored more than 250 works, of which some 200 have been published by leading international reviews. This makes him one of the most quoted authors in the field of life and environmental sciences.

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PHOTOS ET RUSHS



1004-SDrapeau.JPG



1023-SDrapeau.JPG



1026-SDrapeau.JPG



1164-GMercier.JPG



1234-AManouvrier.JPG



1307-SDrapeau.JPG



1443-AManouvrier.JPG



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1023	Taking supplies to the Dome C camp by Twin Otter	S. Drapeau / IPEV
1164	Adelie penguins on the ice	G. Mercier / IPEV
1307	Collecting micrometeorites at Dome C	S. Drapeau / IPEV
1443	Dome C and the EPICA exploration tent	A. Manouvrier / IPEV
1455	Ice core at Dome C sampled for EPICA	A. Manouvrier / IPEV
1460	Ice corer	A. Manouvrier / IPEV
1474	Preparation of an expeditionary convoy	P Godon / IPEV
1481	L'Astrolabe in pack ice	S. Drapeau / IPEV
1594	Marion Dufresne	A. Cathala / IPEV
IFRTP1	The Institut Polaire building in Plouzané	IPEV
GJugie	Gérard Jugie, Director of IPEV	IPEV
2	Maps of Antarctica	IPEV

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Photograph exhibition at Océanopolis from 10th to 20th July 2003
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IPEV in Antarctica

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