

Climate: from pole to pole



Katabatic winds blow across the Antarctic

It is an issue that shows no signs of leaving the spotlight. October's announcement that the Nobel Peace Prize would be awarded to the IPCC and Al Gore was the latest headline acknowledging just how crucial science communication is, when it comes to the issue of climate change.

President Barroso of the European Commission was quick to congratulate them, stating "their work has been an inspiration for politicians and citizens alike. The European Union remains committed to its ambitious goals in the field. I call on all our partners to take this Nobel Peace Prize as an encouragement to approach this challenge even more swiftly, and decisively."

There are clear signs of this swift and decisive action across our institutions. This issue of the Newsletter takes a look at both what has been done and how science centres and museums can get involved even more deeply in engaging the public in the debate around climate change.

The International Polar Year is a focal point for activities on the subject of climate change, and this issue presents a number of its past and future projects from all over Europe and the world. The event itself was launched at the Palais de la Découverte in Paris, and the Palais pays homage to French polar expeditions to Greenland in its new exhibition. The International Polar Foundation created and exhibited a new polar research centre for the IPY, which is now being constructed on an Antarctic ridge. The IGLO project has come up with innovative ways of communicating on the issue. We also hear from the European Commission on the importance of global warming in their latest Framework Programme for Research and Technological Development, and how our institutions can get involved.

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Why IPY? Rhian Salmon, Education and Outreach Coordinator for the International Polar Year outlines the importance of this large-scale event and how Europe's science centres and museums can get involved.

IPY 2007-8: The Big Picture

The International Polar Year 2007-2008, IPY, represents an ambitious, coordinated international science programme focussed on both the Arctic and Antarctic and on the strong linkages between those regions and the rest of the globe. The evidence of significant change already underway in polar regions, an urgent need to improve climate models and to confirm their polar predictions with observations, and the challenge of achieving an integrated understanding of geophysical - ecological - social systems, are drawing worldwide scientific attention to polar regions.

Polar research builds on a tradition of international scientific and logistic cooperation. Three previous Polar Years, in 1882-3, 1932-3, and 1957-58 (the 1957-1958 Polar Year grew into the International Geophysical Year, IGY), each produced increases in scientific understanding of the Earth system. They also changed international principles and processes of science itself and, after IGY, resulted in an unprecedented international political agreement, the Antarctic Treaty.

Researchers in many countries have developed plans for this IPY. Over 200 international projects, including more than 50 addressing education and outreach, have earned endorsement as IPY activities. Implementing those projects will require the coordinated efforts of approximately 50,000 participants from more than 60 countries. This IPY includes the geophysical disciplines (meteorology, astronomy, oceanography, glaciology, geology, and so on) of the previous years, but also includes biologists, ecologists, anthropologists, economists, linguists, physiologists and many other specialists - all the talents and skills needed to understand the integrated physical, biological and social systems of polar regions. Perhaps most important, this IPY will attract, engage and develop a new generation of polar researchers.

We expect substantial progress on several urgent issues during IPY:

- (a) Observations and modelling studies of IPY will quantify the extent, rate and impact of **changing snow and ice** environments in both polar regions, including three vital components

of the climate system: sea ice, permafrost, and ice sheets.

- (b) IPY research will enhance understanding of polar **linkages to global processes**, particularly in ocean and atmospheric circulation, sea level, and carbon cycles.
- (c) IPY research, guided by and in partnership with polar residents, will seek to understand the complex factors that determine **individual and community well-being** in the face of extraordinary environmental and social change.

IPY represents a unique opportunity to push collectively at intellectual frontiers, to explore unseen places, to develop new concepts and theories, and to set the stage for predictions, assessments, recommendations, and future discovery through international collaboration and partnership, and with a stronger emphasis on interdisciplinary research including physical and social sciences, indigenous communities, and educators. IPY can engage the public with an exciting, broad and diverse scientific investigation and stimulate an improved science with society dialogue on global scientific issues.

IPY Education and Outreach is occurring, like the science, on many levels. This includes national and regional activities, programmes initiated by individual IPY projects, and public events on all scales. As examples, local exhibitions and lecture series' are occurring around the world, IPY science has been incorporated into national school curricula, IPY projects studying Sea Ice Physics (SIPEX) and ancient geology (ANDRILL) have teachers on their Antarctic expeditions, a large media focus carried out by IPY CAML (Census on Antarctic Marine Life) raised awareness of biodiversity in the polar oceans, and the IGLO project is catalysing a range of polar-related activities in science centres around the world.



René Robert - © IPF

Blue ice under the sun

International coordination of IPY education and outreach brings together, and promotes, all these specific projects. We try to ensure that science remains at the centre of outreach, and to foster networks that will raise polar awareness in the longer term. The IPY website (www.ipy.org) is designed to encourage participants to contribute a diverse array of stories and news about their research. International Polar Days have also been planned that each focus on a different aspect of polar research. These occur every three months and include activities and material for educators, press, and scientists as well as an interactive 'balloon launch' to show involvement in IPY. The next International Polar Day, on December 13th 2007 will focus on Ice Sheets, Traverses, and Exploration.

IPY scientists have all made a commitment to education and outreach, it is our job to help build partnerships and opportunities that maximise this potential for direct interaction between scientists and the public. Science centres are a natural home for such a dialogue. We hope that you will join us by hosting polar events on International Polar Days and inviting local polar scientists to meet with your visitors.

If you would like to get more involved with IPY, or receive updates about IPY events, please email Rhian Salmon on ipy.ras@gmail.com or see the website www.ipy.org

The International Polar Foundation has created a new research base for Antarctica. On display in Brussels until recently, it is now on its way south. Scientific officer Sandra Vanhove of the IPF explains the story behind this venture, and other related projects.

From Brussels to the Poles

An ambitious project

Belgium has a long, distinguished history of exploration and scientific research in Antarctica. In 1898-99, Belgian Adrian de Gerlache's expedition aboard the Belgica was the first to overwinter in the Antarctic. During the International Geophysical Year 1957-58, de Gerlache's son, Gaston, set up the first Belgian Antarctic Station, King Baudouin, which operated successfully until 1967.

Building on this tradition, in 2004, the Belgian government commissioned the International Polar Foundation (IPF) to design and construct a new research base in Antarctica. The Princess Elisabeth station will become operational during the fourth International Polar Year (2007-08) and will support scientific research within the context of the IPY. Reflecting the public-private philosophy at the heart of the project, the maintenance costs of the station will be funded by the Belgian government, while funds for the design and building costs are being raised by the IPF through corporate sponsorship and public donations.

In accordance with the wishes of explorer and entrepreneur Alain Hubert, one of the three co-founders of the International Polar Foundation, and his colleagues at the IPF, the Princess Elisabeth will be the first Antarctic research station entirely designed and built as a "zero emission" structure. Materials and technologies have been selected in accordance with eco-construction principles that aim to reduce the environmental impact of the station.

The chosen site for the station is a small ridge running north to south 500 metres north of Utsteinen Nunatak, and only a few kilometres from the Sør Rondane Mountain Range. It lies in the middle of a 1,100 km gap between the Russian Novolazarevskaja station and the Japanese Syowa station, and not far from the old King Baudouin station: a region which, for a long time, has been without logistical and scientific infrastructure.

The official inauguration of the Princess Elisabeth station took place in September in Brussels. It is now being disassembled and sent to Antarctica. From here, the construction phase of the station will begin from November 2007 to February 2008.

Observing climate change

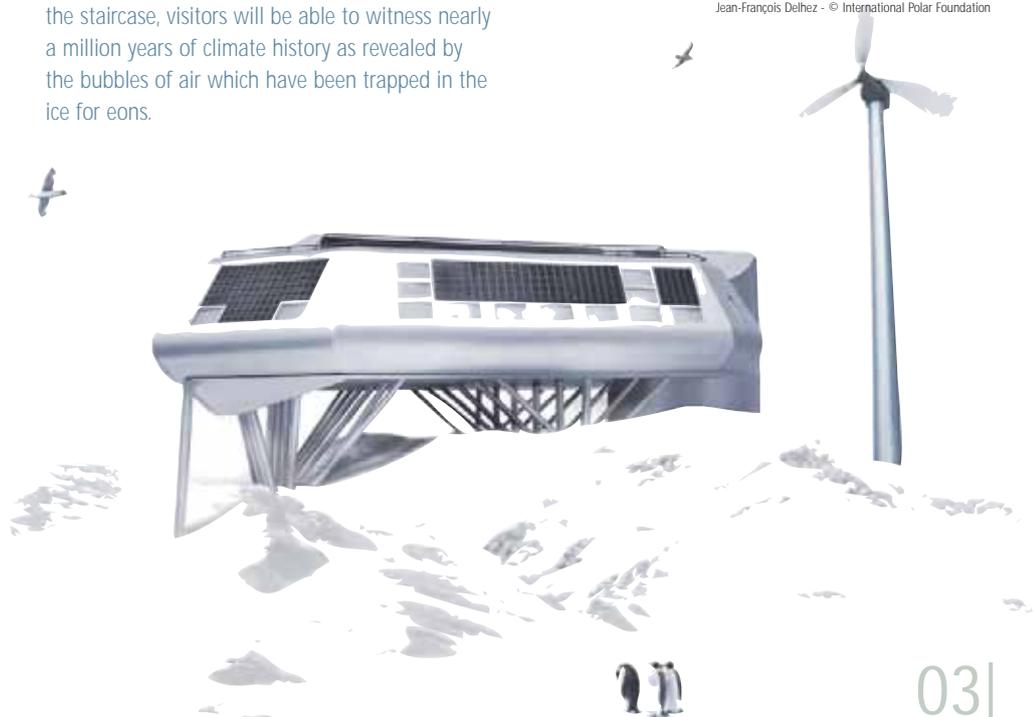
The IPF is currently engaged in building a series of Polaris Climate Change Observatories (CCO), with the first to open in Brussels in 2008. The Observatory's main objective is to make climate change comprehensible for the general public - while focusing on the importance of polar science in understanding its causes and consequences. The focal point and symbol of the Polaris will therefore be a 25-metre high representation of a cylindrical ice core, through the heart of which will run a transparent spiral staircase. Ice cores taken from the polar regions have, in the last two decades, enabled scientists to gain detailed information from the distant past about the Earth's climate and atmosphere. While descending the staircase, visitors will be able to witness nearly a million years of climate history as revealed by the bubbles of air which have been trapped in the ice for eons.

From the Arctic to Brussels, and onwards

The IPF has also developed an exhibition to communicate to the wider public what the DAMOCLES project is doing in the Arctic and why. This exhibition opened in Brussels at the Royal Belgian Institute of Natural Sciences in March 2007. The DAMOCLES project (Developing Arctic Modelling and Observation Capabilities for Long-term Environmental Studies) is funded by the EU to research, over 4 years, developments in ice, ocean and atmosphere in the Arctic basin. DAMOCLES involves over 200 scientists from 11 European nations and Russia and the project is also linked to polar research efforts in the United States and Canada. The exhibition is expected to have traveled to a number of other countries by the end of 2008, including Austria, Finland, France, Germany, Italy, Norway and Russia.

For more information please visit www.polarfoundation.org

A model of the Princess Elisabeth Station
Jean-François Delhez - © International Polar Foundation



Working on the IGLO project on climate change has brought up new ways of communicating science to the public. Walter Staveloz, Director of International Relations for ASTC outlines his vision of "extreme science communication."

Science Communication Goes to the Extreme

As long as we can recall, the poles have represented Earth's cold corners, embodying an ice-covered, remote, and adventurous ideal. Recently the notion that the ice caps would remain unchanged beyond our lifetimes has been eroded by studies showing that they are melting at an alarmingly rate, much quicker than previously believed.

To spread awareness and stimulate research, the International Council for Science (ICSU) and the World Meteorological Organization (WMO) organized the fourth International Polar Year (IPY), which offers unprecedented opportunities to demonstrate, follow, and partake in real-time science. IPY has generated many research projects, stimulated a large number of science education and outreach ideas, and may be the world's largest science communication effort ever on a single topic.

Wielding an extensive science centre network, the Association of Science-Technology Centres (ASTC) created IGLO (International Action on Global Warming) to augment IPY. In many ways, IPY is the ideal umbrella for this initiative as the poles represent the most concrete and compelling example of climate change. Global warming already invokes a sense of urgency, thanks to the film *An Inconvenient Truth*, the latest Interplanetary Panel on Climate Change reports, and the renewal of the Kyoto Protocol. But how can we provoke the public and policy makers to act?

IGLO's goals include raising awareness about global warming, positioning science centres as internationally recognized leaders in engaging the public about science, and supporting IPY. However, an underlying goal has since emerged: transforming science communication. IGLO is as much about climate change and science centres as it is an exercise in scientific communication that compels people to take action.



Walter Staveloz of ASTC and Jack Guichard, director of the Palais de la Découverte, with Prince Albert II of Monaco, trying out the ice-cutting demonstration at the launch of the International Polar Year.

Because of the project's broad scope stemming from its focus and available technology, we believe that IGLO embodies a new concept we call "extreme science communication." Three specific examples are cited to support this conclusion.

"Can you see my breath?"

Japanese astronaut Dr. Mamoru Mohri, director of the National Museum of Emerging Science and Innovation (Miraiikan), Tokyo, is very interested in pushing the limits of credible science communication, which he believes must mimic

scientific methods to accurately reflect the scientific process. For one project, he organized a video conference between the Japanese Research Station, Antarctica, and three science centres: Miraiikan; Questacon, Canberra, Australia; and the National Science Museum (MST), Pathum Thani, Thailand.

From Antarctica, standing outdoors, Dr. Mohri asked if there were any noticeable peculiarities in his surroundings. He noted that when he had left Tokyo, the temperature was near freezing and his breath was visible. Yet in Antarctica where temperatures are well below zero, he saw nothing. Why was this? Dr. Mohri revealed that the Antarctic atmosphere contains no aerosols. Prior to this conversation, he had sent each

participant a device for measuring the aerosol levels in the air, which he then asked each science centre to use and share results.

Merging Science with Emotion

We have all seen before and after images of the shrinking poles and photos of the planet. Previously, these pictures were taken by scientists using satellites and other equipment to which everyday citizens had no access. Things have since changed - thanks to technological advances, anyone can travel just about anywhere and use equipment that until recently had been available only to professionals.

Although there is no scientific proof in individual experiences, there is value in the collective. Surely a common, unifying bond connecting humans intensely enough to make a statement must exist. From this thinking we created the Photo Project. If we asked ordinary citizens to find old photographs of somewhere nostalgic, how would they feel when revisiting that location? Certainly this would yield a powerful emotional response, especially if the place was particularly susceptible to global warming.

In 2006, I learned about a talk that Professor Richard Primack, an ecologist and conservation biologist at Boston University, Boston, Massachusetts, United States, gave about his research on climate change. His work pursued two tracks: the first followed the detailed observations of the greater Boston area begun by famed naturalist Henry David Thoreau in the 1800s that were continued by U.S. scientists. The second entailed poring through the Boston Botanical Gardens' archive of photos and records. Primack compared these two sources of data and found that they corroborated each other which led to the conclusion that a warming trend did exist.

Once we have compelling evidence supporting a call to action - how do we harness the responses and put them in perspective with climate change and science communication? Through science centres, which are ubiquitous and link scientists to the public. If we involved these institutions, then people could dialogue with scientists about climate change to inform their emotional experiences with science. They could easily share and submit photos which would then come full circle and help further Primack's research. Here, extreme science communication comes into play in terms of the breadth of the project. Experiments can now be

replicated on a much larger scale with laypeople rather than only within the research field. Additionally, this endeavour provides a way to emotionally connect the past with a project outcome (building awareness and contributing to research).

Large-scale Public Experiments

The albedo effect describes the poles' reflection of the sun's rays which affect the earth's temperature. Larger ice caps reflect more sunlight. Conversely, smaller ice caps mean more sunlight absorption by the dark polar water. The albedo effect is extremely important in regulating the earth's climate. Scientists have noted, once the equilibrium of the ice caps is disturbed, a snowball effect occurs. As the poles absorb more sunlight and heat, they are less able to refreeze and the melting of the ice caps is accelerated through this cycle.

To help people understand this phenomenon and stress its urgency, we developed the Albedo Experiment where 20 science centres worldwide will invite local schools to convene next spring and create white spots using already available materials such as old sheets and scrap cardboard or paper. A NASA satellite will fly over each location at a

specified time and measure the amount of sunlight that is reflected. On that same day, schools are encouraged to involve their communities, perform experiments, and participate in activities from the IGLO Toolkit in a show of solidarity.

Though vital, global scale is neither the ultimate goal nor a measure of success. A tabletop experiment would elicit the same results. However, Albedo is an important example of extreme science communication because of scale of experience and reach of audience - it is a community-oriented event where people can come together and learn.

Extreme science communication is not simply communicating about or from extreme places but creating inventive and eclectic methods of communication. Important components to keep in mind include: sound science, simple activities in which visitors can participate, adapted technology, topics relevant to everyday life, an emotional connection, events that garner media attention, and innovative partnerships with experts outside of the field. Embracing this multi-faceted combination can certainly only lead to successful and resonant communication.

For information about IGLO and upcoming events, visit www.astc.org/iglo. You can subscribe to the IGLO e-newsletter by e-mailing iglo@astc.org.



René Robert, © IPF

Elisabeth Lipiatou, Head of Unit, and Damien Cardinal, Research Programme Officer at the Climate Change and Environmental Risks Unit of the European Commission's Directorate for Research explain how FP7's focus on climate change intends to address the associated issues.

European research on climate change: focus on the polar regions

European Research Framework Programme

The Framework Programme (FP) is the European Union's main instrument for funding research and development. Research Framework Programmes are multiannual and have been in operation since 1984. These Framework Programmes are implemented through annual calls forming a work programme describing topics under which scientists submit their proposals. After an evaluation process the successful are funded for a period ranging from 1 to 5 years depending on the funding instrument and the characteristics of the project. Projects funded under the FP need to be transnational. The preparation of work programmes is guided by key basic principles such as upcoming research needs in the medium and long term, and the gaps research needs to fill to progress on the understanding of an important policy issue.

The current Framework Programme, the seventh one (FP7), started on 1st January 2007 and will run until 2013. Its total budget will be 50.5 billion

euro, of which 1.89 is expected to be devoted to environment research (including climate change). Research framework programmes are designed to build on the achievements of their predecessors and to carry them further towards the development of a knowledge economy and society in Europe. The first call of FP7 was published in December 2006, the evaluation of the proposals is almost finished and the funded projects are about to start early 2008. EU Research Framework Programmes are open to participation from non European countries and have also specific actions to the benefit of developing countries. Besides, they have a separate activity entirely focused on international cooperation.

Research on Climate Change

Climate change, and its impacts, is one of the greatest environmental, social and economical threats our planet is facing, and is becoming one



of the key international problems of the 21st century. There is no scientific doubt that human-induced climate change is a fact, and that society is facing enormous challenges. The global dimension of the problem and the need to improve the understanding of its impacts, mitigation and potential adaptation has initiated a number of international collaborative research efforts, in which Europe has played and continues to play a leading role. Research on climate change impacts on the natural resources and mankind improves the identification and assessment of key drivers and the understanding of their interactions. Such research has been carried out during previous framework programmes and will continue during FP7. Research plays a key role in quantifying not only global but also local impacts of climate change in the most sensitive regions of Europe and worldwide, and in underpinning further policy options. During FP6 (2002-2006), a wide spectrum of research projects related to climate science were financed with the objective to detect and describe global change processes associated to greenhouse gas emissions and atmospheric pollutants, including the formation of aerosols and ozone and their impacts. The impacts have also been studied, including sea level rise, changes in precipitation and storms, and severity of frequency and magnitude of floods and droughts.

FP7 will cover, among others, the identification of risks and uncertainties, and the development of measures for mitigation and adaptation. The Seventh Research Framework Programme (FP7) will continue supporting research on the following areas:



- the earth system and climate, functioning and abrupt changes
- emissions and pressures: natural and anthropogenic
- the global carbon cycle: greenhouse gas budgets
- future climate
- natural, social and economic impacts of climate change
- response strategies: adaptation, mitigation and policies

Research in the Polar Regions

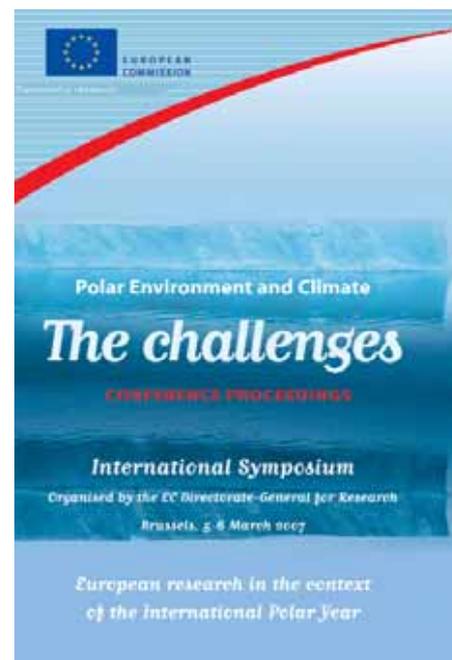
European scientists have a long and outstanding history of research in the polar regions. The importance of these regions in the functioning of our planet, and especially as concerns the whole climate system, make their study essential. This explains why research in the polar regions is potentially suitable in all of the above FP7 areas. The priority themes of the Framework Programmes are based on results acquired during previous and ongoing programmes. For instance, in the first FP7 call for proposals published at the end of 2006, polar issues were included under two topics which are at the current science frontier: stability of the thermohaline circulation and investigating life in extreme environments. The topic on the thermohaline circulation is particularly important because this global oceanic circulation redistributes heat from tropical surface waters to the atmosphere in northern latitudes of the Atlantic. More concretely, this means that this process is needed to maintain mild temperatures in places like Europe. Climate change is threatening this circulation to an extent that still needs to be assessed. The FP7 thermohaline circulation topic builds heavily on the knowledge that has been built from the projects supported during the previous framework programmes for research.

We have identified nearly 60 FP5 and FP6 projects that have direct or indirect links with research in the polar regions. This includes for instance the largest IPY project, DAMOCLES (Developing Arctic modelling and observing capabilities for long-term environmental studies), a FP6 integrated project involving 49 institutions from 13 countries and supported by an European Commission contribution of 16.5 million euro. Another type of contribution of the EC to the IPY is the release of a report highlighting these research actions entitled "European research on polar environment

and climate - Results and information from FP5 and FP6 projects". An international symposium, open by the Commissioner for Science and Research Janez Potočnik, was also held on 5-6 March 2007 in Brussels and the proceedings have been released recently. By bringing together key polar scientists at the start of both the International Polar Year and the Seventh Framework Programme, this symposium provided a unique occasion to review the European research activities in the Polar Regions. Future polar research challenges in relation to climate change, natural, health, and socio-economic impacts, research infrastructures and public outreach/awareness building have been identified. The outreach component is indeed an important issue, first to make the general public aware of what is going on in the context of climate change and keep it high on the policy agenda; second, there is a need to convince youth embracing a scientific career at a time when some universities face a shortage of motivated and qualified students. This is why scientists increasingly disseminate their work outside the research world, most often via national media and internet. The IPY has a strong outreach component and sharing field trip experience with students and schools has now become a common activity for polar scientists. This increasing trend of science communication toward the general public and policy makers has also been encouraged by the EC and an ambitious outreach policy is now duly integrated into most European research projects. DAMOCLES is an excellent illustration of such activity.

Emphasis was also put on the discussion of polar research needs in the framework of European research policies. More than 160 participants from 21 countries attended the event. We foresee that the symposium and the associated publication of its proceedings will be a useful contribution for the development of the 7th Research Framework Programme and to raise awareness of the policy makers on the importance of the Polar Regions for our environment and climate.

Climate change and polar regions are indeed of high priority on the EU agenda. The recent European Commission's Communication "Limiting global climate change to 2°C" demonstrates the European commitment to leadership on this issue. Moreover, European Commission President José Manuel Barroso visited Greenland last June and Commissioner for Science and Research Svalbard in the Arctic last July. Both of them acknowledged the urgency to act for protecting the endangered polar regions.



Therefore we foresee polar issues to be present in the successful proposals to be funded by FP7. Topics that are expected to be open in the near future include the contribution of melting of continental ice sheets to sea-level rise, the impact of climate change on marine Arctic ecosystems, the reconstruction and understanding of past abrupt climate change events and health risks in the Arctic population resulting from climate change.

Further information on EC research actions related to IPY

Publications

- Catalogue of projects: "European research on polar environment and climate - Results and information from FP5 and FP6 projects"
http://ec.europa.eu/research/environment/pdf/polar_catalogue_final.pdf
- Conference proceedings: "Polar environment and climate: The challenges"
http://ec.europa.eu/research/environment/pdf/polar_env_and_climate_proceedings.pdf
- CORDIS Focus Thematic Supplement: "European research: Focusing on polar changes"
http://cordis.europa.eu/news/focus/supplements_en.html

Websites

- European research on environment:
<http://ec.europa.eu/research/environment>
- Environment research in FP7:
<http://cordis.europa.eu/fp7/environment/>

Brigitte Zana, Head of Networks and Development of the Palais de la Découverte in Paris, examines how the legacy of the French polar expeditions is becoming more important than ever in the struggle to combat climate change.

Following in the footsteps of Paul-Emile Victor



Polar Adventure at the Palais de la Découverte

In 2007 and 2008, the international polar research community celebrates not only the 125th anniversary of the first International Polar Year (IPY), but also the 75th anniversary of the International Geophysical Year (IGY). These pioneering initiatives produced masses of new knowledge about planetary processes and have served as the basis for decades of polar research of inestimable value.

In France, this international context takes on local resonance through Paul-Emile Victor, a major figure in the world of polar science. This year also marks the 100th year of his birth, the 70th anniversary of his expedition to the east coast of Greenland and the 60th anniversary of the Expéditions Polaires Françaises, the French polar expeditions. It is also the 70th anniversary of the Palais de la Découverte itself, which opened in 1937.

The Hachette Filipacchi group and the family of Paul-Emile Victor wanted to supplement the events that have already been planned for the International Polar Year with an in-depth and high quality exhibition at a prestigious location, such as the Palais de la Découverte. The project was based on two major centres of interest:

- Two expeditions "following in the footsteps of Paul-Émile Victor" to revisit the sites of the explorer's famous journeys along the east coast of Greenland 70 years after the fact.

- An exhibition at the Palais de la Découverte to show not only the changes that have taken place in Greenland over the last 70 years, both at human (the Inuits) and ecological (flora and fauna) levels, but also a scientific approach with features on glaciology and climate change.

The expeditions took

place in March and July 2006. Journalist Stéphane Dugast and photographer Xavier Desmier visited the Inuits for three weeks by dog sled in March and for five weeks by boat in July. They brought back photos, videos and reports looking at the climate changes

that have occurred and evaluate their consequences for the Inuit population.

The exhibition, "Aventure aux Pôles," (Polar Adventure) is presented at the Palais de la Découverte in Paris from 12 June 2007 to 7 January 2008. The data collected during the two expeditions in 2006 were analysed and compared with the studies carried out by Paul-Emile Victor. This process shows "the retreat of the polar ice caps due to global warming" and the upheaval this has created for the Inuit population.

The Palais focuses on the scientific aspect of the exhibition: the impact of climate change on the environment, glacier behaviour, changes in the flora and fauna, the perseverance of endemic species, the existence of new species, the state of the ice: physical state, chemical state, dating using core samples, etc.

For more information, see www.palais-decouverte.fr

Palais de la Découverte and IPY

The International Polar Year was launched at Le Palais de la Découverte on March 1 2007. This was followed by an exhibition "Envisat: the environmental watchdog" on the European observation satellite, exhibitions of work by Inuit painter Buuti Pedersendu and Danish artist Anne-Mette Holm. Current and upcoming projects include:

Tara Arctic Expedition (1st March - 28th November 2007)

The good ship Tara set sail in September 2006 for the North Pole and a two-year expedition to carry out daily measurements of drift ice and assess the risks and impact of global warming. This large-scale human and scientific adventure can be monitored from the "Tara" stand on the Palais 1st floor, featuring a model of the boat, exceptional photos and videos, a giant map of the pole, interactive terminals, the expedition website, an opportunity to track the ship's progress via Google Earth and a telephone link to the scientists on the other side of the world. Everyone can follow the expedition on Tara on the web site www.taraexpeditions.org. Every day, the 10 person crew sends diary entries, photos and videos.

An exhibition of work by Oddbjorg Reinton (6th November 2007 to 6th January 2008)

This Norwegian artist and painter lives in France and is passionate about representing endangered species. The Palais exhibition will include paintings of polar bears and threats to this species.

Illustration:
2008 Project of Technorama,
THE SWISS SCIENCE CENTRE

Display your world

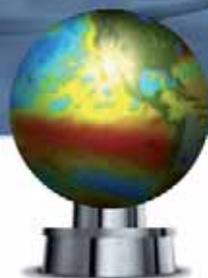
The Omniglobe, a digital and interactive „living planet“, customized to your needs. Creates an emotional centre and fills halls and exhibitions with a unique presence, 360 degree views. Up to date and real time software.



Star constellations,
natural earth



Planets, sun,
art, advertising



Animation of climate
changes, tectonic images,



Historical globes,
civilisation, culture



Real time moving clouds and
actual weather, live GPS data's

Hardware

Digital globes from 82 cm to 2 meters in diameter. Pedestal design "free standing" or unique to the world "free floating" (big picture). Integrated high-end computer and up to two high resolution HDTV projectors. Specially coated "contrast spherical screens" for brilliant image quality. Separate touchscreen control panel for continuous projection mode, or interactive audience or presenter mode. Designed for long life operation in crowded areas.

Software

Software solutions to customize your individual theme globe. Widest range of topics, optimized to your needs. From realistic pictures of the earth to GPS movements or art. Live streaming, video animations and multimedia presentations. The best of edu- and docutainment. Connected to our server for real time updates and downloads, or easily controlled by yourself.



the interactive globe specialist



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ECOWISE

A strong focus on environmental science at Techniquest gained further impetus this summer with the 6-week long Ecowise event, developed by Techniquest's specialist R&D group. Many of the elements are now expected to tour within Wales



and beyond. The shows, activities and demonstrations took place both indoors and outdoors, ensuring good accessibility to the widest audiences. Taking the sustainability message fully on board, the R&D group even reused objects in storage from previous shows to create a popular exhibit focussing on energy efficiency. The Gran Designs theatre show, looking at environmental aspects of product design, was also a big hit. Young and old visitors alike responded enthusiastically to the content, proving that there is a strong interest in finding out more if it is presented in a fun and engaging way.

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www.techniquest.org

MONOGRAPH ON SCIENTIFIC COMMUNICATION

The Science Museums of Corunna have created a series of publications to answer matters of social interest. The last edition deals with climate change. The Science Museums of Corunna in collaboration with the Network of Excellence EurOcean, are distributing a publication, in several European countries, that gathers and answers to the questions of citizens on climate change and its impact on the environment and on the people's lives. The monograph has been translated to several languages and will be distributed in aquariums and science centres of the United Kingdom, Sweden, France, Italy, Greece, Poland and Monaco. The initiative comprises of the educative program of the Eur-Oceans' Public Outreach Team. (www.eur-oceans.info).

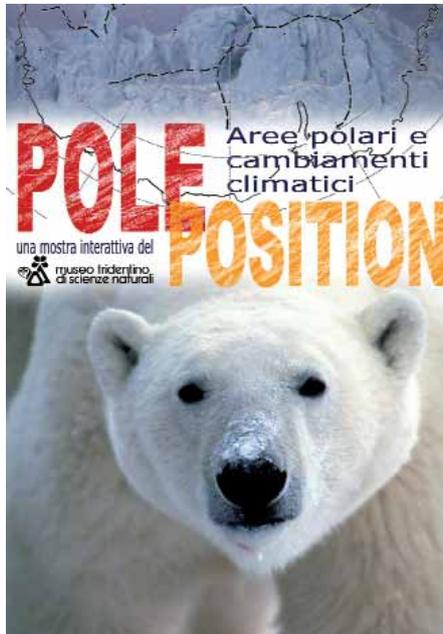
Museos Científicos Coruñeses, Spain

prensa@casaciencias.org
www.casaciencias.org/mc2/responde.html

POLE POSITION

"Pole position," a travelling hands-on exhibition about ecology and physics of the extreme polar regions of our planet. The project was created for the International Polar Year and is included in the IGLO activities. It shows what is going on in these fragile regions of the Earth and underlines their important connection to the global climate change.

The exhibition (300 sqm) is organised by Museo Tridentino di Scienze Naturali of Trento (Italy) and will be open for the first period in Genoa at the Science Festival 2007 (Oct 27 - Nov 6 2007). It will be hosted then by other Italian museums (Città della Scienza in Naples and the museum of Trento) and will be available for rental from June 2009. Both Nature and Science are displayed.



Museo Tridentino di Scienze Naturali, Trento, Italy

Christian Casarotto: casarotto@mtsn.tn.it
www.mtsn.tn.it/poleposition/

DELPHI GOES PUBLIC

The Institute for new Dimensions of the University of Applied Sciences Bremen, Germany developed the exhibition "Energy Visions 2030" with interactive exhibits on the topic of renewable energies.

The results of the first Europe wide Energy-Delphi Study "EurEnDel Technology and Social Visions for Europe's Energy Future" are presented in an understandable way for the general public. The topics "zero energy houses" and "geothermal energy" are presented in interactive exhibits, addressing different learning patterns and senses.



Game, Info and Hands-on Areas inform all age groups about trendsetting renewable energies. The visitors get options for their individual behaviour in using energy in a sustainable way.

Institute for New Dimensions of the University of Applied Sciences, Bremen, Germany

Steffi Kollman: kollmann@ind.hs-bremen.de
www.hs-bremen.de/ind

MARINE ENVIRONMENT STUDY DAYS

New cross-curricula study days at the National Maritime Museum for students aged 11 to 16 studying Science, Geography and/or Citizenship. The study days address citizenship and responsibility, and the impact of local action on the wider environment, particularly how human activity affects our climate.



Students will participate in interactive sessions, experience hands-on learning, develop research skills, debate emotive and topical issues and have the opportunity to quiz leading industry experts on topical marine issues such as energy, pollution, global warming and sustainable development.

National Maritime Museum, Greenwich, UK

Rachel Hall: rhall@nmm.ac.uk
www.nmm.ac.uk/learning

MISSION: CLIMATE EARTH AT SWEDISH MUSEUM OF NATURAL HISTORY

Welcome to an interactive exhibition with 28 stations in 500 m² about climate change! It opened in 2004 and will stay open to the public until 2009. The Earth's climate is changing at an increasing rate. What part do we humans play in that process, and what can we do about it? The mission is a great challenge!

The exhibition includes fossils, real ice cores from glaciers, a stalagmite from South Africa, and a cross-section of a tree. Together they provide insight into the climate of the past. As regards future climate, IPCC and the Swedish Weather Service have developed scenarios of the most likely developments. The exhibition also shows what we can do if we work together and gives tips on how to reduce your personal impact on the climate.

Swedish Museum of Natural History, Stockholm, Sweden

Claes Enger: claes.enger@nrm.se
www.nrm.se

LOWESTOFT ENERGY CHALLENGE

In partnership with Enterprise Insight NESTA is launching the Lowestoft Energy Challenge, a pilot project to encourage enterprise capabilities in young people.

From October 2007, teams of young people will set themselves up as environmental energy consultants and develop enterprising solutions to the challenges of sustainability and energy use in their school. They will then bid for funding from NESTA to implement their ideas.



"Lowestoft Journal"

It is intended that the project will become a blueprint for schools throughout the country, with teaching packs circulated through national education networks so schools can develop their own energy challenges.

NESTA, London, UK

Liz Newton: Liz.newton@nesta.org.uk
www.nesta.org.uk/programmes/future_innovators/index.aspx

LEARN MORE ABOUT CLIMATE CHANGE

Muvita is an innovative science learning centre, exclusively dedicated to the relationship between man, energy and climate. The centre offers educational exhibits and labs designed to explore different topics like the mechanics of climate, energy sources and more efficient energy use. This year Muvita received almost four thousands students from all Italy visiting its seven areas built up in order to communicate, inform and educate about the role each of us can play in fighting the deterioration of our planet.

Muvita, Arenzano, Italy

Carmen Giordano: carmen.giordano@muvita.it
www.muvita.it

CLIMATE CHANGE CONTROVERSIES: A SIMPLE GUIDE

The Royal Society has produced a short overview of the current state of scientific understanding of climate change to help non-experts better understand some of the debates in this complex area of science. It responds to eight key arguments that are currently in circulation by setting out where the weight of scientific evidence lies. Science moves forward by challenge and debate and this will continue. However, none of the current criticisms of climate science, nor the alternative explanations of global warming are well enough founded to make not taking any action the wise choice. The guide is intended for use by public audiences, but science centre staff may also find it useful to help answer questions they receive, and for background reading for the preparation of activities on climate change. The Society also publishes a number of scientific policy reports on climate change, biodiversity and the environment, which are all freely available on our website.

Royal Society, London, UK

climate@royalsoc.ac.uk
www.royalsoc.ac.uk/climateguide

'ON THIN ICE' AT SENSATION, DUNDEE

Celebrating International Polar Year with the Dundee community, Sensation encourages local families to "think global, act local".



Highlighting IPY and the climate change debate to the local community, Sensation is offering free admission for 1,000 families to widen access to the science centre, and its Magic Planet 'On Thin Ice' show. 'On Thin Ice' uses satellite images of Earth and projections of its appearance after extreme climate change, with interactive voting technology to challenge visitors' ideas and assumptions. An outreach programme will also reach schools and nurseries.

Sensation, Dundee, UK

Hannah Crookes:
hannah.crookes@sensation.org.uk
www.sensation.org.uk

CLIMATE X

The Norwegian Museum of Science and Technology is Norway's national museum for science, technology, industry, transport and medicine. This December the museum will open a new exhibition about climate and climate changes. The exhibition Climate X will remain open for 2 years. Climate X is primarily about the research and science of climate and climate changes, focusing on new information that can prevent our planet from becoming uninhabitable. The exhibition uses new and groundbreaking effects which will allow the public to physically feel the impact of these climate changes. Moreover, Climate X communicates objective facts and solid knowledge to provide understanding and reflection as well as highlighting possible solutions.

Norwegian Museum of Science and Technology, Oslo, Norway

Camilla Marie Klevstrand: post@tekniskmuseum.no
www.tekniskmuseum.no

Ecsite and the European Commission

On Monday 24th September 2007, Ecsite's president Vincenzo Lipardi and executive director Catherine Franche held a meeting with European Commissioner for Science and Research Janez Potočnik, to discuss developments in the role of science centres and museums in Europe, and closer collaboration between Ecsite and the European Commission. The discussion was frank and open, and Mr. Potočnik clearly expressed his strong belief in the importance of science centres and museums. The Commissioner was very interested to hear that science centres and museums are not only places to visit, but also places where the link between science and society is clearly and actively implemented, where two-sided dialogues are created. Following this meeting, others are already planned with DG Research's senior officers.

European Commission: become a Project Evaluator

European project proposals are evaluated by a group of European experts from across the field of science and research. To ensure that science centres and museums are well represented on these panels, and that evaluators know our field, it is vital that Ecsite members put themselves forward as potential evaluators. When evaluating proposals for the European Commission you are entitled to daily fees of € 450, as well as an allowance to cover accommodation and meals. You are also reimbursed for your travel expenses.

In order to register as a potential evaluator, please enter your CV online in the European Commission's experts database EMI at:
<https://cordis.europa.eu/emmf7/index.cfm>

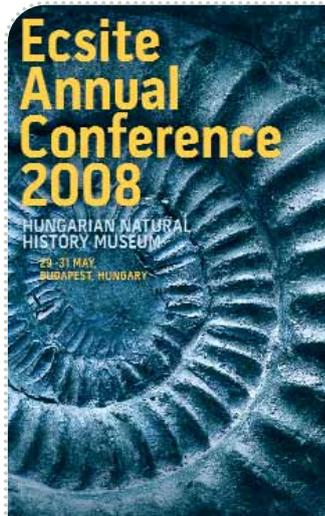
ASTC honours Per-Edvin Persson of Heureka

On October 13th 2007, the Association of Science-Technology Centres (ASTC) presented its highest award to Per-Edvin "Pelle" Persson, director of the Heureka, the Finnish Science Centre, Vantaa, Finland. Persson was recognised for his global vision and the inspiration he has offered to science centre colleagues worldwide. Persson was a founding member of Ecsite. Under his leadership, Heureka hosted the First Science Centre World Congress, in 1996, and the Ecsite Annual Conference in 2005. He has also served as ASTC president and president of Ecsite 1997-98 and is still an active board member.

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Conference Focus: Science centres and museums' commitment for a sustainable society 29-31 May 2008, Budapest, Hungary

Next year we have the pleasure of welcoming you to Budapest for our Annual Conference 2008

Alongside the sessions that will cover all the various aspects of our work, the 2008 Annual Conference will have a central focus on our institutions' commitment for a sustainable society.

Science centres and museums can be important actors in a world that needs to be sustainable. We want to discuss our role, our actions, and our impact in the coming decades.

- How do we contribute to the creation of a knowledge based society for all?
- How can the universal language of science be used to promote dialogue and mutual understanding?
- What is our influence on the economic prosperity of our countries and of Europe?
- What do we do towards the protection of the environment in our planet?

The importance of taking action is undisputed. From the creation of exhibitions and education programmes that address sustainability, to a commitment of our institutions in operating and management, our impact is significant. Science centres and museums can create links between scientists and society, can create a platform for discussions between citizens, non-governmental organisations, enterprises and governments, and can promote inclusion and equality among the public. At this conference we aim to discuss our contribution in this global issue.

Registration for the Conference will open in February 2008.

Aliki Giannakopoulou, Conference Coordinator: agiannakopoulou@ecsitem.net
www.ecsitem-conference.net

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