



INTERNATIONAL
POLAR FOUNDATION

**A N N U A L
R E P O R T
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LETTER FROM THE CHAIRMAN

2021 began and ended for several of us, (including myself) in Antarctica.

The 2020-21 Antarctic season was impacted by the pandemic, and had been a “reduced” season, with limited activities and personnel.

Despite the COVID 19 pandemic continuing to hamper a return to normal operations, the Foundation continued to grow, and consolidate.

In April 2021, a Working Group was set up by the Conseil d'Administration (Board of Directors) to pilot the process of reinforcement and consolidation. At this time, it was also decided that I would resume the Chair of the Board, as pending issues were definitively laid to rest. The Board thanked the care-taker Chairman, Louis Greindl, who continued to represent the IPF and private sector partners at the Belgian Polar Secretariat. The six Members representing the IPF and the private sector who now sit on the Belgian Polar Secretariat are: Piet Steel (Vice President of the Conseil Stratégique), Louis Greindl, Olivier Perrier, Marc Saverys, Marc Speeckaert and myself.

On July 1, 2021 Nicolas Van Hoecke joined the International Polar Foundation as the new Director.

Coming from a background in industry and having a solid experience in helping new start-ups, Nicolas has brought a new energy and enthusiasm to tackle the task of helping to re-invigorate the Foundation.

The Antarctic Operations team was reinforced by the arrival of young engineering talents, and several new projects have been launched in the context of CASSIOPEIA (the in-house Centre for Antarctic Support Systems for Intelligent Operations at Princess Elisabeth in Antarctica). This group will study the best practice required to develop the base-line concepts for the Andromeda Project, the 21st Century Station that the Foundation is planning to design and build.

2021 also saw a reinforcement on other fronts: financial management, logistics, and communications. Educational activities, which had been paused since 2015, are also being re-activated due to a sustained demand from schools and the general public.

The year experienced tragedy and loss.

In spring of 2021, Princess Elisabeth Antarctica's Chief Medical Officer Jacques Richon lost his life in a freak avalanche, in the Valais. He was a popular and much-loved member of the team. He was replaced by a temporary CMO, while awaiting re-organisation of the Expedition Management.

My friend, and fellow Belgian polar explorer, Dixie Dansercoer was lost in a crevasse, during an expedition to Greenland in June 2021. The Foundation bore witness to the exceptional qualities of this extraordinary individual, and his loss marked all of us.

The summer of 2021 also saw the passing of Professor Jörn Thiede, former Director of the Alfred Wegener Institute in Bremerhaven, and Honorary Member of the IPF. He chaired the Antarctica Fellowship Committee, set up with the Baillet Latour Fund, since its inception in 2006. He was a good friend, and an honourable human being, and is much missed.



In the summer of 2021, the Foundation was requested by the WSL in Zurich to assist in a mission to clean up Swiss Camp, in Greenland. The Camp is based at the equilibrium line of the Jakobshaven Glacier.

In 2020, Honorary Member of the IPF, Konrad Steffen lost his life in a crevasse at Swiss Camp, due to increased melting in this area. The Expedition team included his son, Simon Steffen.

The IPF participated as an observer at the COP26, held in Glasgow, with reinforced COVID management strategies. The IPF was represented by several Members from Brussels and an associate Member from the UK who cycled to Glasgow, with her family in a laudable, environmentally responsible way.

The IPF Director Nighat Amin, completed two years as the Co-Chair of DROMLAN, the logistics network supporting Antarctic Operations for 12 countries. During this time, she developed the DROMLAN Sanitary Protocol, which was again used for the 2021-22 season.

The Belgian Antarctic Research Expedition 2021-22 began in November with the promise that the COVID-19 pandemic was reaching its final stages, but this was not to be, and we had to contend with the arrival with the Omicron variant in South Africa at the beginning of December.

In March 2021, IPF Antarctica was set up in Cape Town to manage the logistics and procurement for the BELARE. IPF Antarctica managed the quarantine for the fifty Expedition participants, and was successful in handling the Omicron related outbreak when it occurred.

Despite increasingly challenging circumstances, the Expedition was able to continue its work at the Princess Elisabeth Antarctica research station and welcomed several Belgian and International research projects including from Luxembourg, Switzerland the US and the UK.

The season also saw the arrival of the Venturi Antarctica at PEA. The fully electrical vehicle, developed by the Monegasque company Venturi Motors, landed at Perseus Airfield in the hold of the Ilyushin 76TD. The Venturi Antarctica will remain for three years at the Princess Elisabeth Station for testing and upgrade.

The International Polar Foundation demonstrated its resilience in the face of multiple challenges during 2021, and has emerged renewed and re-invigorated for the new challenges that lie ahead. We invite our friends and partners to join us in this endeavour.

Alain Hubert,

THE INTERNATIONAL POLAR FOUNDATION

CONNECTING SCIENCE TO SOCIETY

The International Polar Foundation supports polar scientific research for the advancement of knowledge, evidence-based decision making on climate change, and the development of a sustainable society. Founded by Belgian polar explorer Alain Hubert, Prof. Hugo Decler, and Prof. André Berger in 2002, the Brussels-based International Polar Foundation provides a novel interface between science and society. It was recognized by Belgian Royal Statute as a private foundation with a public service mandate in 2002.

HM King Philippe is the International Polar Foundation's Honorary President since 2002.



SIXTH ASSESSMENT REPORT

Working Group I – The Physical Science Basis

ipcc
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

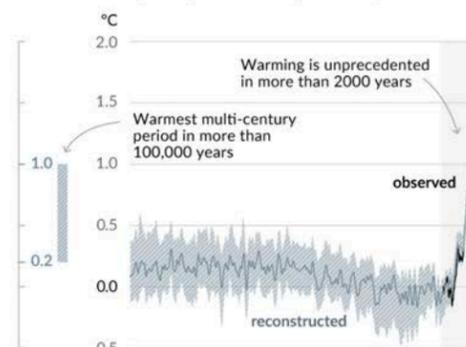


Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years

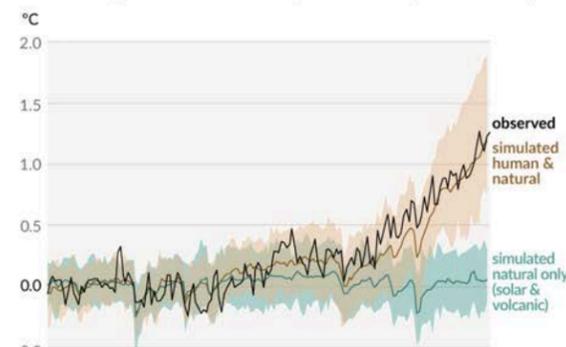
Figure SPM.1

Changes in global surface temperature relative to 1850-1900

a) Change in global surface temperature (decadal average) as reconstructed (1-2000) and observed (1850-2020)



b) Change in global surface temperature (annual average) as observed and simulated using human & natural and only natural factors (both 1850-2020)



The Foundation seeks to bring about a keener appreciation of the role of science in evidence-based decision making. In particular research in the Polar Regions, allows a thorough examination of the planet's interconnections, its fragility, the impact of human actions on the environment, and the evolution of millennial climate cycles.

To achieve its aims, the Foundation has initiated several high-profile projects, including supporting polar science through the creation and operation of the Zero Emissions Princess Elisabeth Antarctica station, which runs entirely on renewable energy. In this, the IPF partners with the Belgian State through the Belgian Polar Secretariat.

The IPF also supports scientists working in Antarctica, directly in field research and development of technical support actions, and indirectly through initiatives such as the fellowship awards for Antarctic researchers, an annual symposium on Arctic issues, organisation of seminars, exhibitions and installations, and development of science and education websites, offering classroom activities and multi-media resources for bolstering STEM learning.



BELGIAN POLAR SECRETARIAT

THE BELGIAN POLAR SECRETARIAT

The Belgian Polar Secretariat is a Public Private Partnership, which is comprised of six representatives of Belgian Ministries (cabinet level) and six representatives of the private sector nominated by the IPF.

Every year, the IPF and the Polar Secretariat sign an agreement setting out the terms and conditions of the partnership, in line with the original Protocol signed in 2010. This includes operations (logistics, station maintenance and science support) and representation of the Belgian State at certain international coordination meetings, such as the DROMLAN (the Dronning Maud Land Air Network), and the COMNAP (Committee of Managers of National Antarctic Programs).

The IPF also works closely with the different Ministries involved in Antarctic matters, in particular the SPF Environment, which is responsible for permitting the activity in Antarctica in line with the Madrid Protocol and its enabling legislation. The IPF submits a permit request to the Belgian competent authorities in collaboration with the Belgian Polar Secretariat every year, and provides an end of Mission Environmental Impact and Mitigation Report in line with the conditions of the Environmental Permit.

THE ACTIVITIES OF THE IPF

ANTARCTIC OPERATIONS

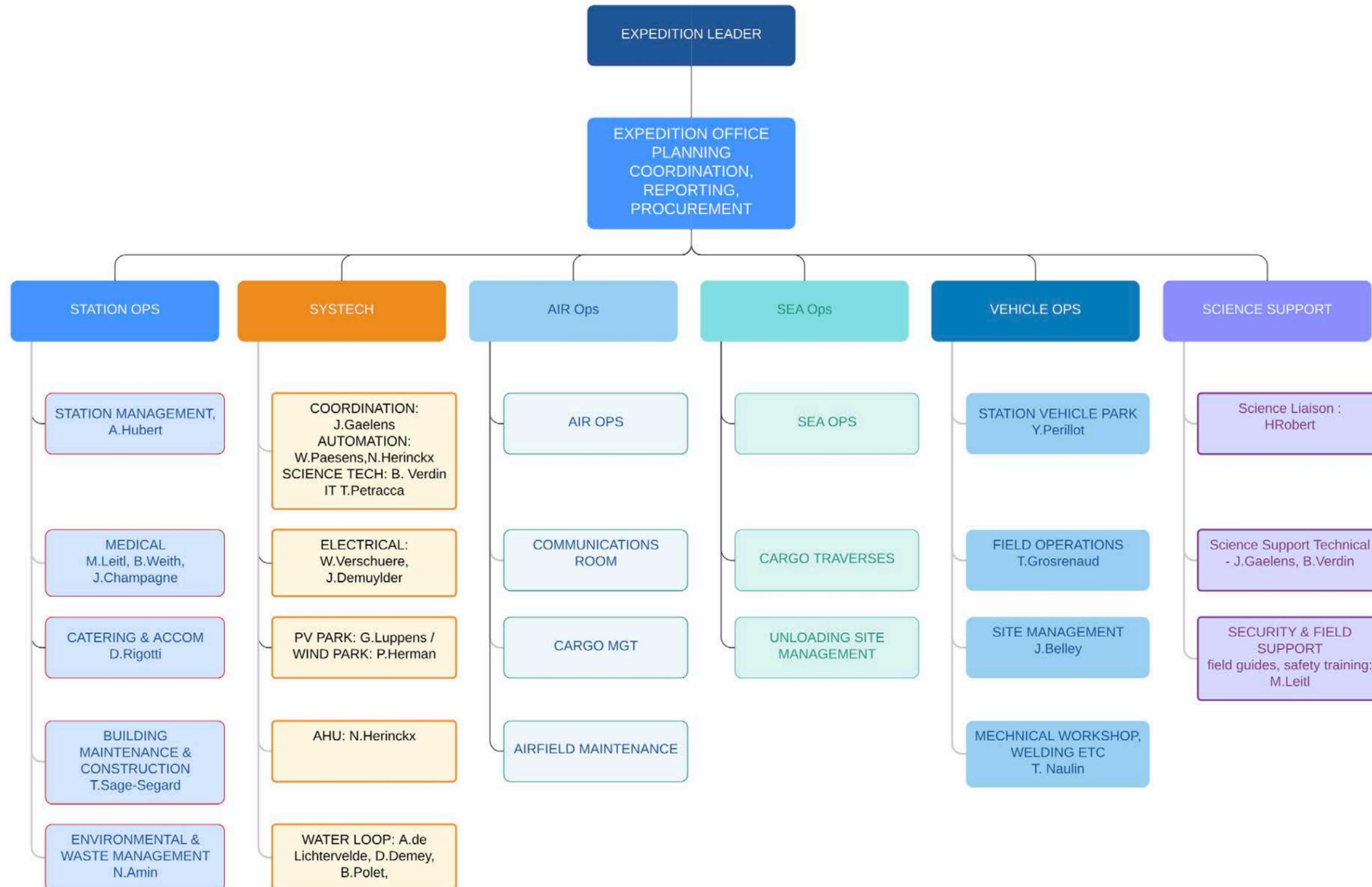
The International Polar Foundation is the privileged partner of the Belgian State under the agreements signed between the parties in 2007 and 2009. The Foundation is mandated to manage the Princess Elisabeth Antarctic Research Station by the Belgian Polar Secretariat.

Antarctic operations are managed through the Belgian Antarctic Research Expeditions - (BELARE asbl.), a subsidiary of the IPF.



PRINCESS ELISABETH OPERATIONS

2021-2022





BELGIAN ANTARCTIC RESEARCH EXPEDITIONS

BELARE 2021-2022

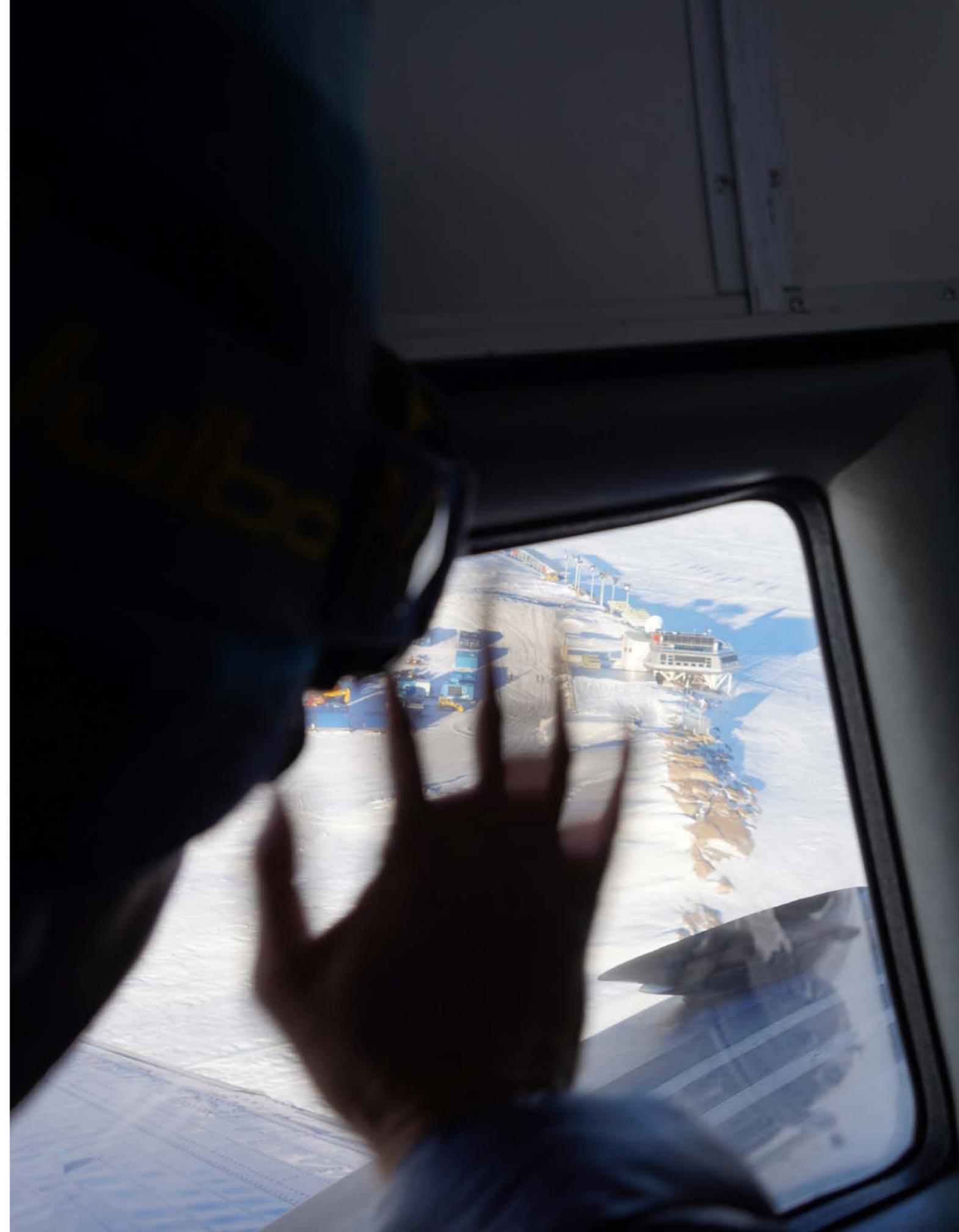
The 2020-2021 BELARE season (November 2020 to February 2021) featured a reduced scientific activity because of the challenges presented by the COVID-19 pandemic, for which no vaccine was available at the time. While the pandemic prevented many scientists from going to the station during the 2020-21 season, IPF staff on-site assisted many research projects by maintaining instruments and taking in-situ measurements on behalf of the researchers.



The 2021-22 season looked more promising as the crew was fully vaccinated by October 2021, and the number of infections was beginning to fall worldwide. The first team arrived in Cape Town at the end of October, to begin their quarantine. The site for quarantine (as in 2020-21) comprised individual rooms in self-catering cottages. This set up allowed Expedition members to have the full use of the outdoors facilities, as well as access to Table Mountain National Park to exercise without danger of infection. All team members were tested for the virus 3 times before mobilising. The first team arrived at PE in mid-November and was on site for three weeks. No symptoms were reported during this time. The Expedition Members that arrived with the dedicated Ilyushin flight in December (26 in total) were on a dedicated flight and had been accommodated under different arrangements. Again, there was a quarantine, and three negative PCR tests prior to deployment. In the ten days following the flight, a few individuals began to report mild symptoms and were placed in medical isolation.

Once the virus had taken hold, due to the infectiousness of the new variant, it was quick to spread and the isolation was no longer of any use. However, the infection was fully extinguished by the time the last team arrived in the middle of January 2022. Overall, hardly any person-days were lost due to ill-health, and the last team did not get infected by the virus during their deployment or time at the Station.

A PCR testing machine acquired from Bosch Vivalytic in 2020 was of great use in managing the outbreak at PEA. However, the number of individual tests were insufficient and testing had to rely partly on batch testing.



SCIENCE AT PEA

Since its inauguration in 2007-2009, the Princess Elisabeth station has permitted scientists from all over the world to perform their research in Antarctica. The Station regularly hosts an international research effort.

Fields of investigation are as diverse as glaciology (the study of the ancient composition of our atmosphere, mass balance, glacier movements and their implications for ocean fertilisation), atmospheric sciences with a large spectra of research topics (atmospheric properties and composition, formation of clouds, precipitation, long-range transit of particles, etc.), geology, seismology, gravimetry, astronomy, biology, ecology, biogeography, microbiology, human health in extreme environments to name a few.

The arts and social sciences have not been left out, and photographers, film makers, play wrights, and educators have also visited PEA for various projects.

Despite the Covid-19 pandemic, the year 2021 saw PEA welcome a number of scientists and research expeditions. The reduced number of scientists during the season 2020-21 was due to the difficulty of coping with the length of the mandatory quarantine while the 2021-22 season saw a return to almost normal operations. Several projects have instruments installed at the station and collect data continuously with the technical support of IPF engineers. Yearly maintenance is performed as well as data repatriation as required.

The Projects supported during the 2020-21 and 2021-22 seasons were:

PEACE - ACME

The ACME Project (or Air Column Moisture Evaluation) is another PEACE Project, started also in collaboration with Konrad Steffen in 2012. Every two days, for the entire duration of the austral summer research season, in partnership with the Royal Meteorological Institute of Belgium (IRM/KMI), IPF has launched a weather balloon equipped with radio sounding instruments. As the balloon rises into the atmosphere it collects data profiles of temperature, wind speed, humidity, precipitation, and air pressure. The purpose of this exercise is to obtain a long time series of weather data for climate models. Professor Koni Steffen provided the first ground station. Today the IPF has acquired a modern GRAW ground station to support this activity. The WMO-harmonised data that is collected is then sent to the international weather and climate modelling community so it can contribute to regional weather and climate forecasts, within the framework of the WMO's Year of Polar Prediction (YOPP).



CLIMB

The water droplets that make up clouds form around tiny particles in the atmosphere. The CLIMB project led by the Royal Meteorological Institute of Belgium is investigating the role of ice nuclei particles and organic compounds in the atmosphere and their influence on cloud formation and precipitation in Antarctica. Their investigations involve collecting meteorological data, as well as aerosol, cloud, and precipitation data at cloud level in two locations: at PEA, and on the edge of the Antarctic Plateau 50 km south of the station, at the edge of the plateau, at an altitude of 2350m.

MASS2ANT

Professor Frank Pattyn led a team of four to the Roi Baudouin Ice-shelf in December 2021, to carry out shallow ice coring. They also used ice penetrating radar and satellite observation data to compile information on the behaviour of the ice shelf. This multi-year activity contributes to the study of ice shelves in the context of the surface mass balance activities designed to determine whether Antarctica is losing or gaining ice mass. This in turn helps to establish the rate of sea level rise to be expected in the context of global warming.



CRYOS

The Antarctic Ice Sheet gains and loses ice in many different ways. An atmospheric scientist from the CRYOS lab at the Swiss Federal Institute of Technology in Lausanne (EPFL) spent several weeks in the field near PEA in the mission to determine how much ice is being gained or lost from the Antarctic Ice Sheet.

The EPFL runs numerical model simulations for the entire Antarctic Ice Sheet to identify all processes that add to or remove ice from its surface. One process of particular interest examines the influence of wind transport of snow on the surface mass balance equation.



PEACE AWS TRANSECT

The Princess Elisabeth Antarctica Climate Experiments (PEACE Projects Series) comprises several projects which investigate aspects of climate aimed at throwing light on the mechanisms of climate change. One of these is the automatic weather station (AWS) Transect. In 2012, Konrad Steffen installed the first two automatic weather stations in the vicinity of the Princess Elisabeth Station. In 2013, a third was installed at the Romnøes blue ice field (later the Perseus Airfield). In spring 2021, the University of Colorado in Boulder donated the three weather stations to the International Polar Foundation, which agreed to maintain them, and to provide the data to the international research community. In July 2021, after the clean up of Swiss Camp in Greenland by a joint team from the WSL and the IPF, more parts were made available from Konrad Steffen's laboratory, in order to build another two AWS. In December 2021, these were set up by two researchers from Switzerland: the first at the L-Zero Ice Rise, and the second on the blue ice band at the top of the Gunnestadtreen. These five AWSs form a 219Km transect which provides a unique high-resolution dataset. The Royal Meteorological Institute of Belgium has expressed an interest in collaborating with the WSL and the IPF on this project. The EPFL, which also has a weather station is also considering adding their AWS to the transect.



ATMOSPHERIC PHYSICS



IPF crew members helped set up sampling equipment powered by solar and wind energy. The data collected in the project is contributing to regional climate models for East Antarctica.

Long-series data sets – which are essential for understanding decadal scale changes – are being taken in the European Alps, the Pyrenees, the Himalayas, the Andes, and in Antarctica. IPF has been contributing to the Antarctic component of the project by taking yearly snow depth measurements along a transect between the Antarctic Plateau and the coast of Dronning Maud Land.

CHASE

Atmospheric particles from as far away as the mid-latitudes can reach Antarctica. Tracking where particles and volatile materials come from, determining their origin (man-made or of naturally occurring), and better understanding atmospheric circulation in the Southern Hemisphere are some of the objectives of the CHASE project.

Members of the CHASE project returned to PEA in 2020-21 and 2021-22 to maintain atmospheric particle samplers that had been set up in 2017 in strategic locations along a 240 km transect from the Antarctic Plateau to the coast. IPF staff helped scientists involved in the project to collect samples and to prepare them for transportation back to Belgium where the collected particles are analysed.

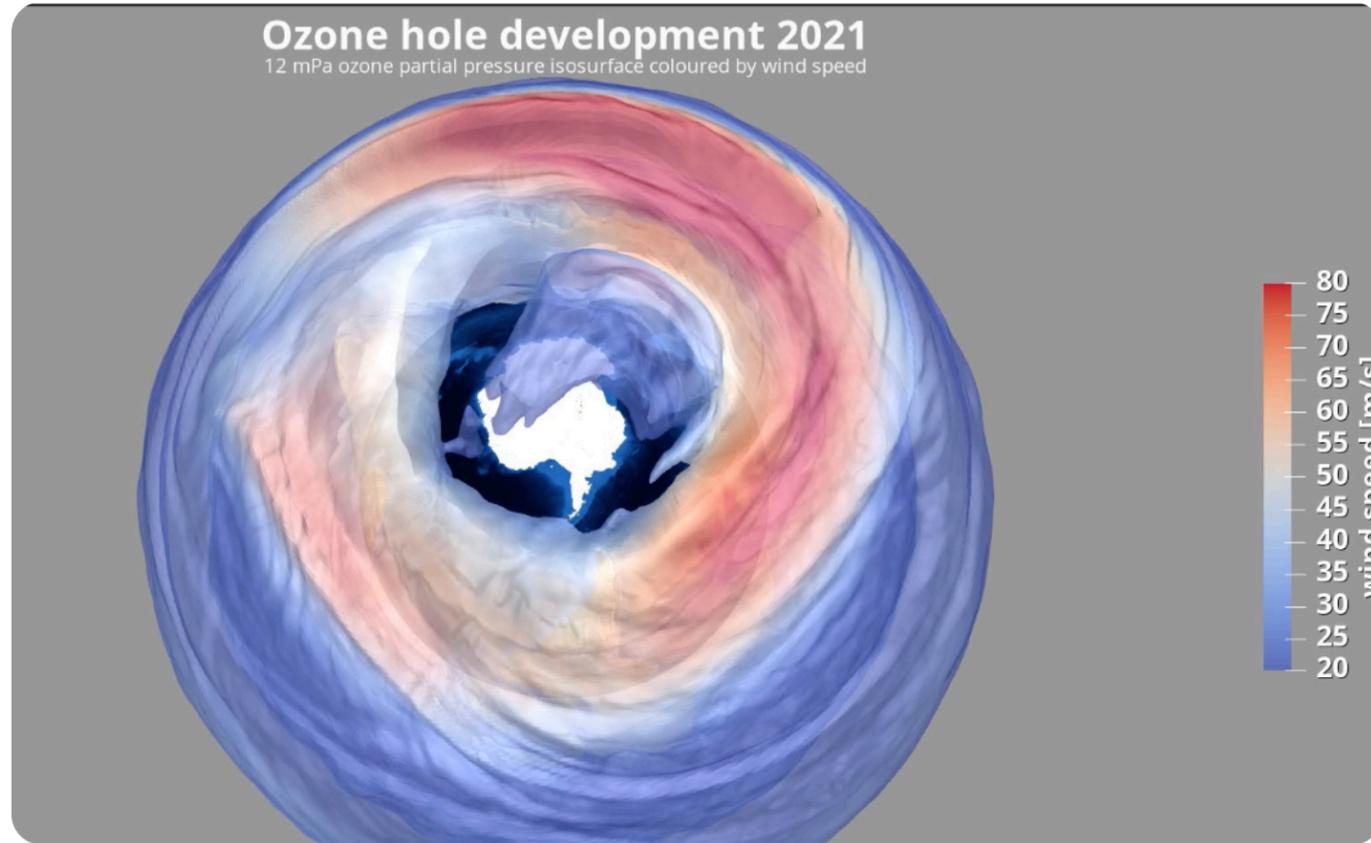




TIMBRE

TIMBRE (Transect for the Investigation of Mass Balance Reduction in East Antarctica) is another project of the Princess Elisabeth Antarctica Climate Experiments (PEACE) Series. A transect of 180 km was established for the GLACIOCLIM project started by the LGGE (Glaciology and Environmental Geophysics Laboratory of Grenoble). From 2009, the IPF carried out a series of measurements along the 60 stakes of the transect (placed at intervals of 3 km) such as snow density, accumulation, wind direction and intensity. The project aims to gather long-term, data-sets to better understand snow accumulation and the contribution to mass balance in East Antarctica in an area where little ground truth data exists for the validation of satellite data.

ATMOSPHERIC CHEMISTRY



PYRANO-UV

The objective of this Royal Belgian Institute for Space Aeronomy (BIRA-IASB) project is to collect data on ultraviolet (UV) irradiance over long periods of time. The instruments consist of a set of three UV-VIS pyranometers which measure the global solar irradiance of UVB and UVA broadband ranges, between 300 nm and 3 nm. The goal is to compare time series collected at PEA with other UV measurements around the globe.

Researchers from the Royal Belgian Institute for Space Aeronomy (BIRA-IASB) conducted research on polar vortexes and the Antarctic ozone hole, which persisted longer than usual during the austral spring of 2020 (October – December 2020). During the austral summer of 2021-22 IPF maintained the instruments on behalf of the IASB. The ozone hole was again present for a longer than was usual, and several Expedition Members suffered sunburn from higher than normal UV radiation.

GEOPHYSICS



AWDA

Led by the Space Physics Division of the Royal Belgian Institute of Space Aeronomy (BIRA-IASB) and Eötvös Loránd University (ELTE) in Hungary, the ADWA project has been monitoring whistler waves for several seasons. Whistler waves are a particular type of electromagnetic wave that propagates from one hemisphere to another in Earth's protective magnetosphere. Their study helps researchers to better understand the state of the part of Earth's magnetosphere referred to as the plasmasphere (containing low-energy plasma) and to model its behaviour.

A VLF (Very Low Frequency) magnetic antenna connected to data processing equipment, was built at the Princess Elisabeth Antarctica in 2016 as part of a global network of similar antennas designed to monitor these waves. During the 2020-21 and 2021-22 seasons the IPF team performed maintenance on the antenna. Data collected between 2016 and 2021 was recovered, for the researchers, on a hard disk.

GEOMAG

Every year since 2015 this project led by the Royal Meteorological Institute of Belgium (IRM/KMI) continues to collect data on Earth's magnetic field. The project does this using a theodolite as well as from a proton overhauser magnetometer and a triaxial variometer housed in a non-magnetic shelter at the foot of Utsteinen Nunatak, 600 metres away from the Princess Elisabeth Antarctica.

Every season the IPF BELARE team conducts maintenance on the instruments to keep them functioning properly winter. Each season a large forbidden perimeter is set up around the shelter to prevent any disturbance and interference with the highly sensitive running equipment.

GIANT

The Geodesy for Ice in Antarctica (GIANT) project led by the University of Luxembourg has been operating in the vicinity of the Princess Elisabeth Antarctica for more than a decade collecting GPS, gravimetry and seismology data. These data are analysed to track the horizontal and vertical deformation of Earth's surface. The isostatic rebound measured is also a proxy for mass changes in the Antarctic ice sheet.

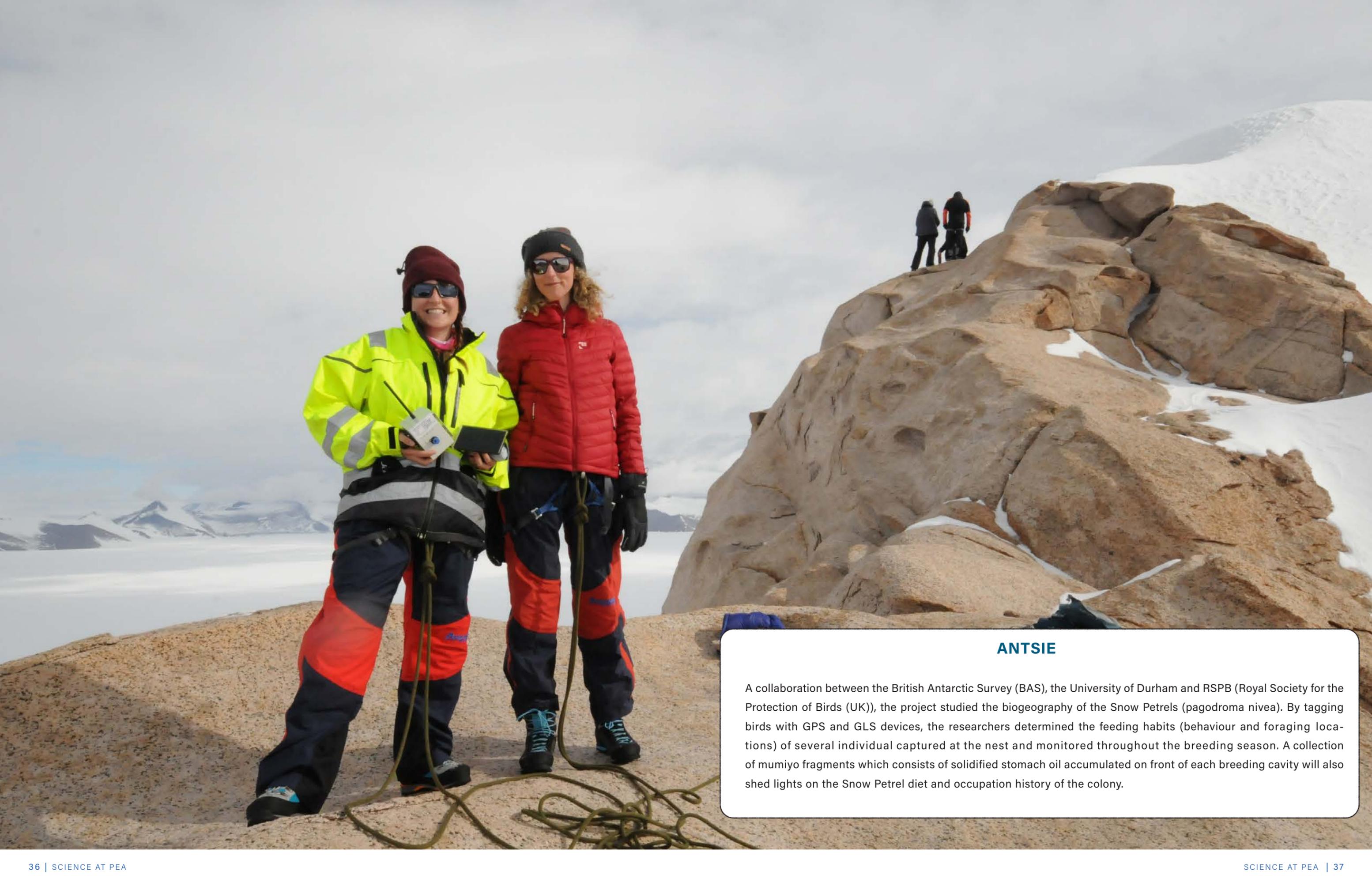
A team from the University of Luxembourg installed a new set up on the Seal Nunatak at 60 km from PEA and conducted annual maintenance and upgrades (installation of solar panel and wind turbine) on the instruments during the 2021-22 season.

SEISMO

One of the longest-running research projects at PEA, this project of the Royal Observatory in Brussels studies micro quakes induced by the movement of the glaciers in the area, but also measures seismic activity from further afield. IPF engineers assist researchers from the Royal Observatory with the maintenance of seismometers at the Princess Elisabeth Antarctica.

The SEISMO (originally called LISSA) project gathers unique information about Earth's lithosphere and microseismic activity in East Antarctica as a proxy measure of glacier movement. A surface seismometer sits in the Northern Science Platform (GEOS) near the PEA station.





ANTSIE

A collaboration between the British Antarctic Survey (BAS), the University of Durham and RSPB (Royal Society for the Protection of Birds (UK)), the project studied the biogeography of the Snow Petrels (*pagodroma nivea*). By tagging birds with GPS and GLS devices, the researchers determined the feeding habits (behaviour and foraging locations) of several individual captured at the nest and monitored throughout the breeding season. A collection of mumiyo fragments which consists of solidified stomach oil accumulated on front of each breeding cavity will also shed lights on the Snow Petrel diet and occupation history of the colony.



BIOMAR AND RECTO 2021-22

An investigation was carried out by Prof. Bruno Danis of the ULB into the effect of ice sheet loss on the marine organisms living under the ice shelf. Sudden surge in population levels has been experienced at other sites experiencing a calving event.

A "dropcam" mounted on a "lander" (specially built by an IPF crew member) was used for underwater imagery to unveil the unexplored biodiversity of this rarely visited part of the Antarctic. Traditional sampling techniques (baited traps and nets) was also used to assess marine biodiversity. Several CTD (concentration, temperature and density profiles of the water column) were performed along the edge of the Roi Baudouin Ice Shelf (RBIS) for an accurate profile of the newly formed bay's underwater characteristics.

Snow Petrel samples were collected from carcasses found at the colony near Utsteinen for further local population DNA analysis. Additional data and biological samples were collected in the colony to detect the presence of microplastics, pollutants and microorganisms. Behavioural and topographic observations were made to better understand nest selection and breeding strategies.



A person wearing a black winter jacket, black pants, and a black beanie is standing on the snow, looking down at a camera or phone in their hands.

A person wearing a dark blue winter jacket, black pants, a bright orange beanie, and sunglasses is holding a rope and looking towards the right.

A person wearing a bright blue winter jacket, black pants, a black beanie, and sunglasses is holding a rope and looking towards the right.

A person wearing a bright yellow winter jacket with reflective stripes, black pants, a red beanie, and a brown hood is holding a rope and looking towards the right.

A snowmobile with a yellow and black body is parked on the snow in the background, surrounded by other equipment.

Various pieces of equipment, including a blue bag and a black bag, are visible on the left side of the image.

JOURNAL PUBLICATIONS FROM RESEARCH AT PEA

Over several years of the BELARE expeditions around the Princess Elisabeth Station, data were collected by scientists from all over the world leading to the publication of nearly 120 peer reviewed publications, reports, notes in journals or conference communications.

During the year 2021, several papers were published in fields as diverse as remote sensing, energy production, meteorite research, microbiology, geology, biology and biogeography.

List of publication from or mentioning research at PEA for 2021:

Bustos J., Vergara J.A., Correa F.A. 2021. "Development of a concept power plant using a Small Modular Reactor coupled with a Supercritical CO₂ Brayton cycle for sustainable Antarctic stations," *Progress in Nuclear Energy*, vol. 132, p. 103606, doi: 10.1016/j.pnucene.2020.103606.

Clilverd M., Demekhov A. 2021. VLF/ELF Remote Sensing of Ionospheres and Magnetospheres (VERSIM) - iugg.org - http://www.iugg.org/IAGA/iaga_ursi/versim/Newsletter/VERSIM_newsletter2020.pdf

Frankinet B., Lecocq T., Camelbeeck T. 2021. Wind-induced seismic noise at the Princess Elisabeth Antarctica Station. *The Cryosphere* 15: 5007-5016. <https://doi.org/10.5194/tc-15-5007-2021>

Goderis S., Yesiltas M., Pourkhorsandi H., Shirai N., Poudelet M., Leitzl M., Yamaguchi A., Debaille V., Claeys P., Nankyo Shiryu A. 2021. Detailed record of the BELARE 2019-2020 meteorite recovery expedition on the Nansen Ice Field, East Antarctica. *Antarctic Record*, vol. 65, 1-20.

Inagaki O. 2021. Legal Issues concerning DROMLAN under the Antarctic Treaty System. *The Yearbook of Polar Law Online*. brill.com

Liu Q, W Li, D Liu, L Li, J Li, N Lv, F Liu, B Zhu. 2021. Light stimulates anoxic and oligotrophic growth of glacial Flavobacterium strains that produce zeaxanthin. *The ISME Journal*. <http://www.nature.com>

Pourkhorsandi H., Debaille V., Armytage R., van Ginneken M., Rochette P., Gattacceca J. 2021. The effects of terrestrial weathering on samarium-neodymium isotopic composition of ordinary chondrites. *Chemical Geology* 562: 120056. <https://doi.org/10.1016/j.chemgeo.2020.120056>

Ruppel A.S., Jacobs J., Läufer A., Ratschbacher L., Pfänder J.A., Sonntag B-L., Krasniqi K., Elburg M., Krohne N., Damaske D., Lisker F. 2021. Protracted late Neoproterozoic – early Palaeozoic deformation and cooling history of Sør Rondane, East Antarctica, from 40Ar/39Ar and U–Pb geochronology. *Geological Magazine* 158: 635-655. <https://doi.org/10.1017/S0016756820000746>



Van Ginneken M., Goderis S., Artemieva N., Debaille V., Decrée S., Harvey R.P., Huwig K. A., Hecht L., Yang S., Kaufmann F.E.D., Soens B., Humayun M., Van Maldeghem F., Genge M.J., Claeys P. 2021. A large meteoritic event over Antarctica ca. 430 ka ago inferred from chondritic spherules from the Sør Rondane Mountains. *Science Advances* 31: 7 (14). doi: 10.1126/sciadv.abc1008. Open Access: <https://www.science.org/doi/epdf/10.1126/sciadv.abc1008>

Vanhellemont Q., Lambrechts S., Savaglia V., Tytgat B., Verleyen E., Vyverman W. 2021. Towards physical habitat characterisation in the Antarctic Sør Rondane Mountains using satellite remote sensing. *Remote Sensing Applications: Society and Environment* 23: 100529, 1-13.

<https://doi.org/10.1016/j.rsase.2021.100529>. Open Access: <https://reader.elsevier.com/reader/sd/pii/S2352938521000653?token=AFAEB1B614638044F2D534D6669600B04CA2FC8A70A7B113A477D86D4FC6A351D977F0F263833A0C2179003D037F4921&originRegion=eu-west-1&originCreation=20220719082138>

Verleyen E., Van de Vijver B., Tytgat B., Pinseel E., Hodgson D.A., Kopalová K., Chown S.L., Van Ranst E., Imura S., Kudoh S., Van Nieuwenhuyze W., ANTDIAT consortium, Sabbe K., Vyverman W. 2021. Diatoms define a novel freshwater biogeography of the Antarctic. *ECOGRAPHY* 44: 548-560. doi: 10.1111/ecog.05374. Open Access: <https://onlinelibrary.wiley.com/doi/epdf/10.1111/ecog.05374>

Yamaguchi, A., Shirai, N., Kimura, M., Imae, N., Haba, M., Debaille, V., Maeda, R., Goderis, S., Claeys, P. 2021. Meteorite Newsletter 28. Japan: Antarctic Meteorite Research Center, National Institute of Polar Research. Open Access: https://cris.vub.be/ws/portalfiles/portal/76109447/MeteoriteNewsletter_28.pdf

CASSIOPEIA

Center for Antarctic Support Systems and Intelligent Operations @ Princess Elisabeth in Antarctica

WATER TREATMENT SYSTEM NEW DESIGN

An engineer from the IPF, Aymar de Lichtervelde, has been working with Dries Demey of Qinetiq Space in Antwerp, on a new water treatment installation for the Princess Elisabeth Station. The installation is to replace the current installation at PE, which was originally inspired by the MELISSA Project developed for the ISS. In contrast to the ISS, the existing water treatment unit treats all waste water – black and grey – and reduces the amount of waste from several thousand litres of water (used during a season) to a few kilograms of compacted innocuous dry matter.

HYDROGEN FOR PEA

IPF decided to investigate the feasibility of production of hydrogen at PE as a proof of concept project, aimed at extending the autonomy of the Station. The first objective is to produce green hydrogen in order to test the new generators running on hydrogen which have been donated to the IPF by a Belgian company, E-Power.

Guus Luppens of the PEA Crew was tasked with investigating the possibilities. The Belgian branch of the manufacturer will provide their new hydrogen generators to build and test the hydrogen production installation in Belgium with the IPF engineers, before making their way to the Antarctic. The importance of using green energy to produce hydrogen is an important aspect of the transition to a hydrogen economy and the IPF is well placed to use the excess renewables at PE to test the possibility of running hydrogen fuelled generators in Antarctica.



E-CARS: VENTURI ANTARCTICA

In December 2021, a fully electric polar exploration vehicle, the Venturi Antarctica, arrived at the zero emissions polar research station, the Princess Elisabeth Antarctica. It was a milestone marking ambitions for the future

Venturi (based in Monaco) wanted to test the electric vehicle for field operations around PEA, in order to eventually provide the scientists and crew working at the station a more environmentally-friendly alternative for the transport of scientists and their equipment.

The idea to build an electric vehicle capable of operating in the harsh polar environment emanated from H.S.H. Prince Albert II of Monaco. During a trip to Antarctica in 2009 he noticed that the scientific research stations he visited had no clean vehicles. Through the Prince Albert II of Monaco Foundation, Venturi was tasked with creating a zero-emission solution that would enable access to areas of scientific interest. Venturi succeeded in engineering a fully electric polar exploration vehicle that can operate on rough terrain at -40°C.

Venturi President Gildo Pastor and a team of engineers tested the electric vehicle at the PE station, with very promising results. Running on batteries charged with renewable energy from the PEA station, the electric vehicle has currently a range of 40 to 60 km. It can carry up to six people, equipment, and a second battery. Most importantly, the vehicle allows scientists to further reduce their environmental footprint while doing research in Antarctica.

In December 2021, the Venturi Antarctica transported scientists and IPF technicians to the Antarctic Plateau to conduct maintenance work on several automated weather observation stations and the new Belgian atmospheric observation station. These journeys also provided an opportunity to take snow surface temperature measurements, which are used to validate satellite observations. The vehicle is also powerful enough to be able to haul a sledge weighing several tonnes behind it, making it useful for transporting equipment around the station and in the field.

Testing and improvement to increase the range to 100km will be carried out by Venturi during the next three seasons at PEA. The vehicle will be used at the Princess Elisabeth Antarctica for the coming seasons, where it will continue to serve as a zero-emission option for transporting scientists and equipment.

OPERATIONS AT PEA

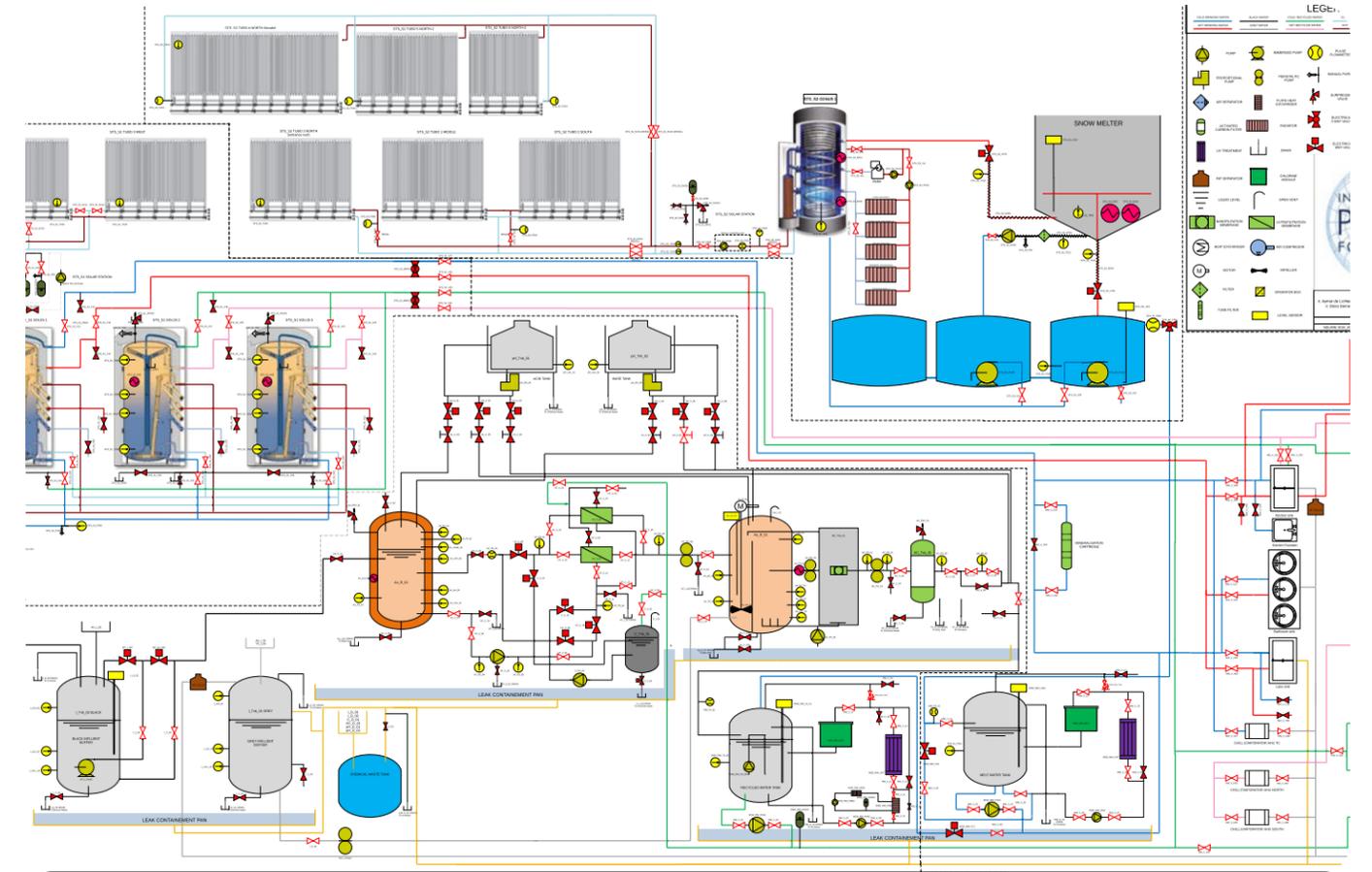
In the 2020-21 season PEA accommodated fewer Expedition participants than usual due to pandemic restrictions. In 2021-22, it was expected that with mandatory vaccination, operations could return to normal. Initially, 56 people registered for the expedition. The final number that were deployed was 50 including crew, scientists and visiting engineers.

Operations are divided into:

- Station Operations: Station Management, Medical, Environmental Management, Communications, Systems, Catering, weather reporting.
- Site Operations: Storage and sorting of waste, route preparations, route markings.
- Field Operations: Field guides, security in the field, field trainings (including in Chamonix).
- Air Operations: landing strip preparation, markings, communications room.
- Ship Operations: including cargo traverses.
- Vehicle Park Management.

SYSTECH - Life Support Systems: Energy, Water, Heat, Communications and IT Networks

Johnny Gaelens took charge of the SYSTECH team from the summer of 2021. It was a challenging year with a complex task load and multiple risks, but fortunately he already had a number of years' experience at the PE Station, gained over several seasons prior to 2018. Key upgrades were made to the Station automation systems in 2021-22.



Water Production and Treatment System Improvements

The Station team has been hard at work increasing the capacity and efficiency of the station's water treatment system and improving the production and quality of drinking water of the station. During the 2020-21 season IPF engineers installed an automatic mineralisation system that adds minerals essential to human health in the station's drinking water. The team also made upgrades to the bioreactor, which treats the station's wastewater, by improving its aeration system.

In 2021-22 the water treatment plant ran without problem. The major innovation this last season was the installation of a sludge drier unit in the station's annexe, leading to a marked reduction in the amount of waste water to be evacuated from the Station. For 3000 person days on site, only 45 Kg of dry material consisting of inert biomass has to be removed from PE. This improvement will lead to important logistics cost savings and a net reduction of potential environmental impact in the coming years.

Work began on preparing the site for a new water treatment plant to cater for the greater numbers visiting the Station every year.









Automation and Station Management

The Station automation runs on the PLC (Programmable Logic Controller) which resides in infrastructure installed in 2008. The Quantum parts for this installation are no longer available on the market, and so, in collaboration with Schneider Electric, it was decided to upgrade to a new standard using M580 modules to replace the Quantum modules.

The switch, which was a very critical operation, was carried out by Nicolas Herinckx, one of the engineers recruited this year, supported by SYSTECH team members and by Schneider Electric engineers and Senhive programmers in second line.

All Coaxial connections were replaced by LAN cables so that the frequent breakages in the coaxial cables in cold conditions are now a thing of the past.

Increase in Renewable Energy Production

The IPF SYSTECH Team replaced old-generation solar panels on the north ridge platform with new double-sided solar panels, which significantly increased renewable energy production at the station. They also installed west facing solar panels on the walls of the new North Garage, which will help fill any possible gaps in afternoon energy production in the future.

A part of the free-standing solar panel platform installation on the Utsteinen ridge was removed, in order to install (in the next season) new east facing solar panels to increase energy production during the morning hours. These installations will allow for a more constant production of solar energy throughout the day, avoiding gaps in energy production.





POLAR PARTNERSHIPS

In July 2021, IPF Founder and President Alain Hubert and Nighat Johnson-Amin, Environmental Management supervisor, accompanied Simon Steffen and Derek Houtz of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) on a mission to dismantle what remained of Swiss Camp research station in the middle of the Greenland Ice Sheet. A clean up of the camp was carried out in order to comply with Environmental Best Practice.

One of the world's leading glaciologists and a leading authority on the Greenland Ice Sheet, Professor Konrad "Koni" Steffen, had used Swiss Camp as a base from which he conducted numerous research expeditions over many decades to study the ice sheet, the impacts climate change was having on it, and the implications of the ice sheet's melt on sea level rise.

Alain Hubert and Nighat Amin helped Koni rebuild Swiss Camp in 2012, and had visited the research camp several times over the years, supported by the NSF.

Sadly, in August 2020, Koni disappeared while on a research mission on the ice sheet. The dangerous conditions on the Greenland ice sheet were compounded by extreme summer melt, and the camp was definitively closed.

The IPF-WSL mission aimed to recover equipment, snow mobiles, and supplies that could be salvaged from Swiss Camp and to return them to Ilulissat where Kathy and Steve Young, (previously of Polar Field Services, supporting the US National Science Foundation operations in Greenland), managed their recovery, recycling, or disposal.

In addition to recovering equipment and vehicles, the IPF-WSL mission to Swiss Camp also served as a tribute to Koni and his outstanding research accomplishments.



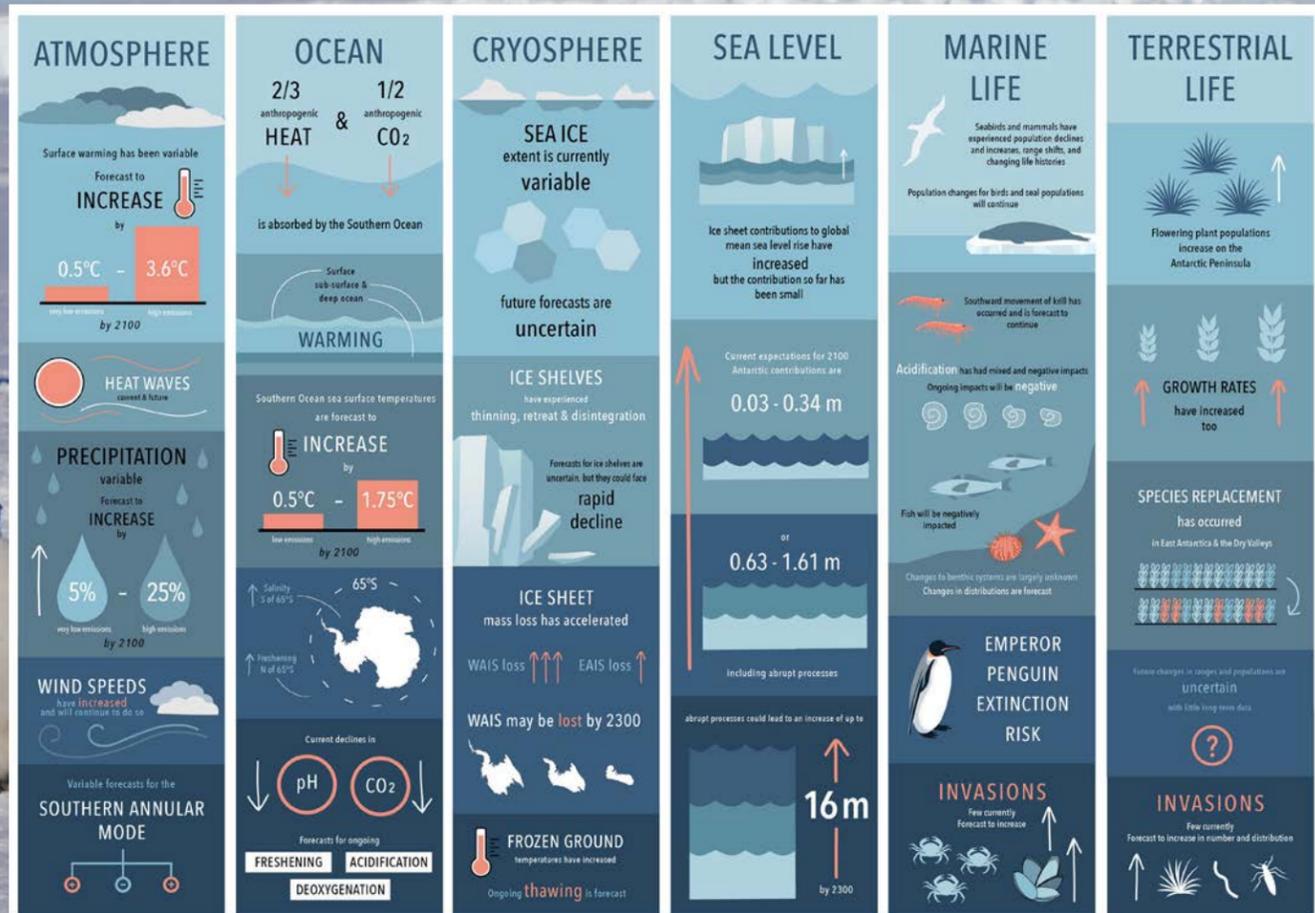
COMMUNICATIONS & OUTREACH

EDUCATIONAL ACTIVITIES

Since its founding, the IPF has aimed to support polar scientific research for the advancement of knowledge, the promotion of informed action on climate change, and the development of a sustainable society. This is why educating future generations is of great importance to the foundation, especially now that climate change poses a big threat to society and life on Earth.

In order to meet the challenges posed by climate change, it is important to impart to younger generations an understanding of how to reduce environmental impacts in order to live more sustainably. Good habits, such as being less wasteful of energy and resources are more likely to remain intact over the course of a lifetime when developed at a young age. In 2021 the IPF invested greater efforts into increasing its educational outreach activities. An education and outreach coordinator, Mieke Sterken, was engaged to manage all educational activities, and has made great progress. More funding for this action is being actively sought.





ANIMATION ON BIODIVERSITY

With financial support from the Québec Government Office in Brussels, the IPF released a short, animated video supporting climate action to be shown during COP26. The animated video focuses on safeguarding biodiversity as an essential part of maintaining all life on Earth. It also addresses the adverse impacts human activity has had on biodiversity, including unsustainable farming and fishing practices. The video ends with a list of actions we can all take to reduce our impact on ecosystems and help preserve biodiversity.

Educators in particular may find the video useful for introducing their students to the concepts of biodiversity and sustainability in their lesson planning.



ARCTIC FUTURES SYMPOSIUM

The 2021 symposium focused on four primary themes:

- Arctic governance
- Arctic youth, demographics, and capacity-building
- Arctic resilience
- The Arctic as a more sustainable place to do business

Over the two days of the symposium, these themes were addressed in six panels, each featuring a diverse selection of Arctic stakeholders and experts.

Following the welcome address from Managing Director of the IPF Nicolas Van Hoecke and IPF board member Piet Steel at the opening of the symposium, Ambassador of Canada to the EU Ailish Campbell, U.S. Coordinator for the Arctic Region James P. DeHart, new Chair of The U.S. Arctic Research Commission and Director of the Wilson Center Polar Institute Mike Sfraga, and Ambassador of Norway to the EU Rolf Einar Fife delivered poignant opening keynote speeches.

The symposium then featured three panel discussions on Arctic governance led by Arne Holm (Editor-in-Chief of High North News), Romain Chuffart (Fellow at The Arctic Institute), and Marie-Anne Coninx (Former EU Ambassador at Large for the Arctic).

The second day of the symposium addressed the themes of Arctic youth, demographics and capacity-building, Arctic resilience, and the Arctic as a more sustainable place to do business.

The moderators of these panels, Sveinung Eikeland (Vice Rector of UiT, the Arctic University of Norway) Mike Sfraga (Chair of U.S. Arctic Research Commission and Director of the Wilson Center Polar Institute), and Mads Qvist Frederiksen (Director of the Arctic Economic Council), led diverse panels with Arctic stakeholders who discussed the challenges and opportunities they face in their everyday lives.

All sessions of the 2021 symposium can be viewed on IPF's YouTube channel.



**ARCTIC
FUTURES
SYMPOSIUM**
Meeting Our Challenges

2021
6 + 7 December
Martin's Hotel Brussels and online
#ArcticFutures

FOUNDER & ORGANISER
INTERNATIONAL POLAR FOUNDATION

PARTNERS
Mission of Norway to the European Union
NORTH NORWAY
NORTH SWEDEN EUROPEAN OFFICE
Canada
KALAALLIT NUNAT
East & North FINLAND
POLAR INSTITUTE
Québec
arctic CONSENSUS
Mission of Iceland to the European Union

SYMPOSIUM PARTNERS

The 2021 symposium was made possible thanks to the contributions of the following organisations:

- The Wilson Center Polar Institute
- The Mission of Canada to the European Union
- The Mission of Norway to the European Union
- The North Norway European Office
- The Permanent Representation of Finland to the European Union
- The East and North Finland European Office
- The North Sweden European Office
- The Representation of Greenland to the European Union
- The Mission of the Faroes to the European Union
- The Québec Government Office in Brussels
- The Mission of Iceland to the European Union
- Arctic Consensus

The full programme, speaker bios, and symposium summary for the 2021 edition of the symposium can be found on the Arctic Futures website under <https://www.arcticfutures.org/past-editions>.

EVENTS & EXHIBITIONS

Due to the ongoing pandemic situation, plans for Events and exhibitionsexhibitions were again put on hold while awaiting a more favourable context. Discussions are also taking place on the possibilities for on-line exhibitions.

The IPF did however work in collaboration with IDELUX on the concept design for an exhibition centre focusing on space research, climate change and Antarctica. The project would be developed in the vicinity of the Redu Euro Space Centre, on a the site called of Galaxia in Transinne. Teaming up with long-term collaborators from the Atelier Bruckner in Stuttgart, IPF was able to propose a very attractive concept for the site. The success of the project will depend on available funding.

Discussion Forum “Why an Open Arctic Matters for Europe”

On 5 May 2021 IPF Founder and Chairman Alain Hubert took part in the online webinar discussion, The European State of the Climate: An open Arctic, why does it matter for Europe? hosted by the Brussels Times. The event focused on discussing the EU-funded Copernicus Climate Change Service’s annual European State of the Climate report for 2020.

Reacting to Deputy Director of Copernicus Climate Change Service (C3S) Samantha Burgess after she explained how their service has been able to show how weather and climate conditions in Europe have been evolving, Alain Hubert commented on the changes he has witnessed first-hand during his expeditions to the Polar Regions over the last 30 years. Alain also stressed the importance of long-term funding for polar research projects so they can collect uninterrupted data time series over long periods of time.

EU Special Envoy to the Arctic Michael Mann, Finnish Member of the European Parliament Miapetra Kumpula-Natri, Head of Unit for Adaptation to Climate Change at DG Environment Elena Višnar Malinovská, and Head of Climate and Resilience Hub at Willis Towers Watson, Rowan Douglas, also took part in the roundtable discussion.

The European State of the Climate:
An open Arctic, why does it matter for Europe?

The Brussels Times

Interactive Online Debate
05 May @ 14h30 CEST

Speakers

Moderators

Samantha Burgess, Alain Hubert, Elena Višnar Malinovská, Michael Mann, Miapetra Kumpula-Natri, Rowan Douglas, Dan Sobovitz, Marianna Evenstein

COP26

IPF participated as an observer at the 2021 United Nations Climate Change Conference (COP26), held in Glasgow. COP26 was an opportunity for the IPF team to participate in person, and to learn about sustainable initiatives happening around the world and make contacts with potential future partners.





IPF ON THE WEB

The IPF worked to re-launch websites and provide new content following a hiatus during the years 2015-2020. The pressure to improve material available on line is great especially as the COVID-19 pandemic underlined to what extent many activities and much information has now moved on-line. In order to do justice to the activities of the IPF, the Communications team has been actively looking to update websites, including the updating of the backbone software. This effort will continue in 2022.

Websites

[POLARFOUNDATION.ORG](https://polarfoundation.org) is the IPF's principal website. Content pertaining to the Foundation's initiatives, projects, and events, as part of the Foundation's mission to connect science and society, are communicated on this website by way of news items, photos and press releases. A total of 18 news items (along with relevant photos) and two press releases were published on this website in 2021.

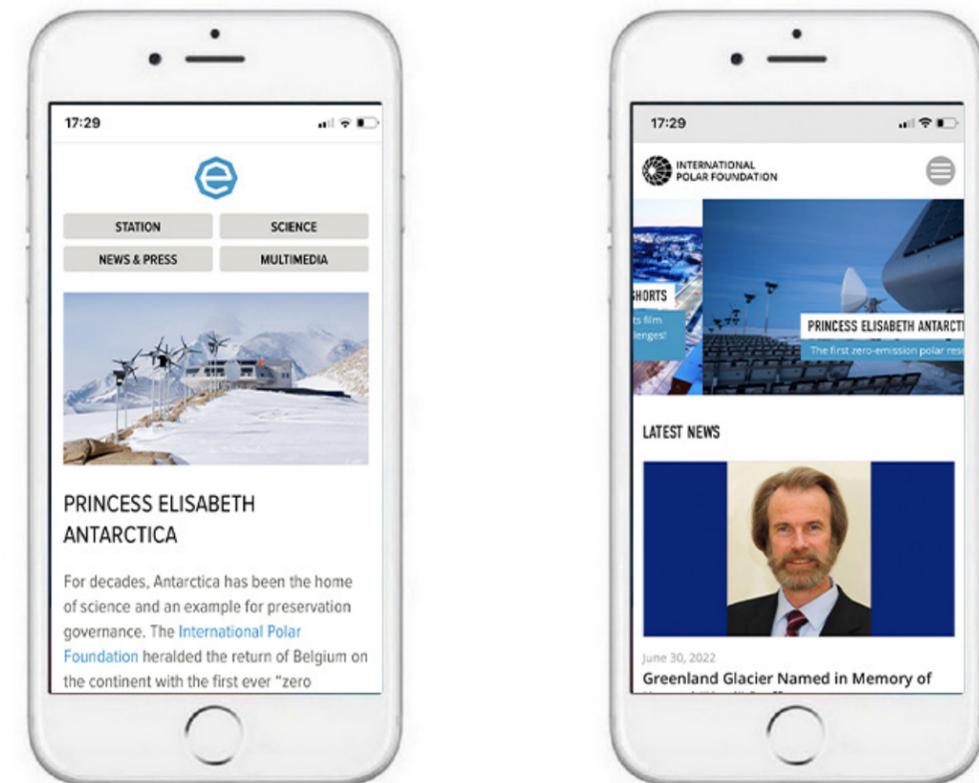
[ARCTICFUTURES.ORG](https://arcticfutures.org) provides information about the annual Arctic Futures Symposium - a multinational and multidisciplinary event at which Arctic stakeholders from Brussels and around the globe gather to discuss topics of great interest within an EU context. The website also features the Arctic Shorts Film Evening.

[ANTARCTICSTATION.ORG](https://antarcticstation.org) provides information about the IPF's flagship project, the Princess Elisabeth Antarctica - the world's first zero emission polar research base. The website is an archive of operations at the station, science projects, and the renewable energy systems and smart grid used at the station. A total of 15 news items and 12 accompanying photo galleries were published on this website in 2021.

[EDUCAPOLES.ORG](https://educapoles.org) hosts the International Polar Foundation's multimedia educational materials. The site provides these materials to the teaching community in three languages: English, Dutch, and French. The site also raises awareness of the Polar Regions as an early warning system for climate change and a unique place to conduct research, and also mobilizes citizens to take informed actions against climate change.

Aimed at teachers, teachers in training, and all other educators, EducaPoles.org offers pedagogical dossiers, animations, videos, picture galleries, tailored stories, and ready-made content such as quizzes, scientific experiments, and classroom activities.

[SCIENCEPOLES.ORG](https://sciencepoles.org) is a collection of polar science articles and interviews with top polar scientists. By clearly explaining and demystifying complex scientific issues, the website contributes significantly to the Foundation's mission to connect science and society, catering to both policymakers and the general public.



Social Media

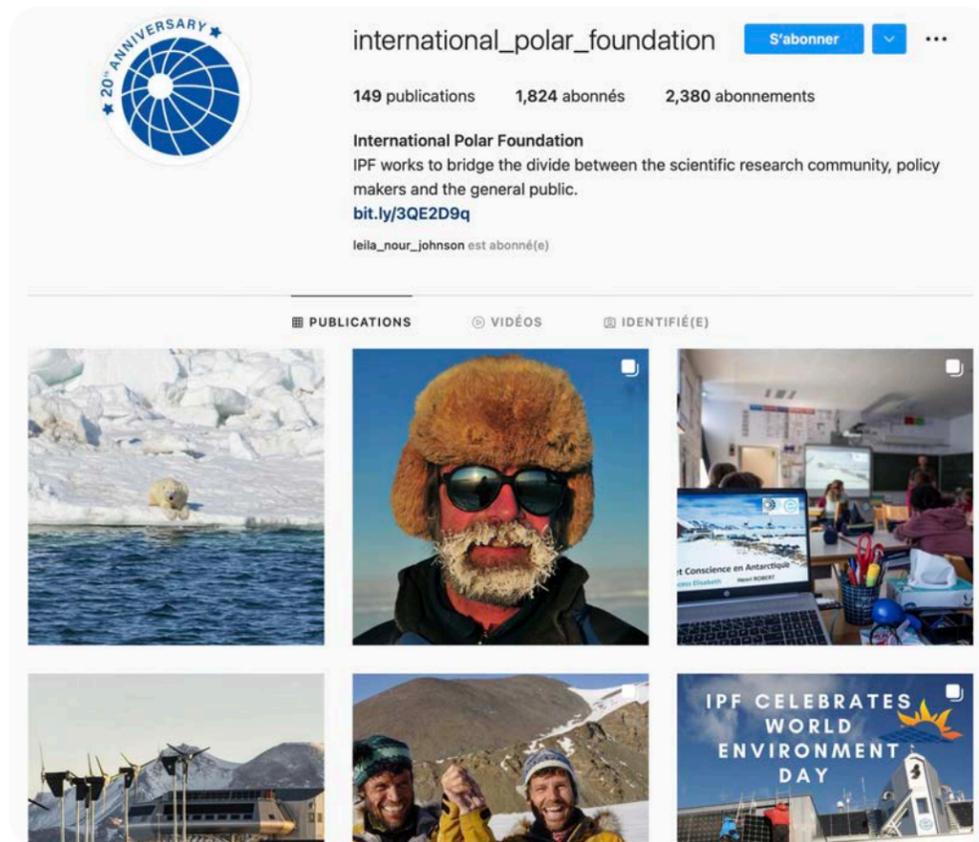
IPF is present on multiple social media platforms which keep its online followers informed about the activities and events of the Foundation while also providing information about important developments in polar and climate science, renewable energy, environmental and sustainability issues, and newsworthy events in the Polar Regions.

The International Polar Foundation was mainly active on three social media platforms: Facebook (@intpolarfoundation) Twitter (@PolarFoundation), and Instagram (@international_polar_foundation).

In the autumn IPF began to use the TikTok video-sharing app (@int.polarfoundation) featuring primarily content from the Princess Elisabeth Antarctica research station.

As the number of people who get their daily news updates from social media continues to rise, and as different platforms are aimed at different audiences, communication on a variety of platforms is essential for IPF to reach a broad cross section of the general public.

The IPF INSTAGRAM account, which was activated in the summer of 2020, had reached 456 followers by the start of 2021. By the end of 2021, the number of followers had grown to 952. Efforts will continue to increase reach, in 2022. Most of the photos shared on Instagram are related to activities of scientists and the IPF team at PEA station, or events organised by IPF such as Arctic Futures Symposium. The "Stories" feature of Instagram was used to draw attention to new posts, post short videos from the IPF team at PEA, or share photos and videos from live events in real time.

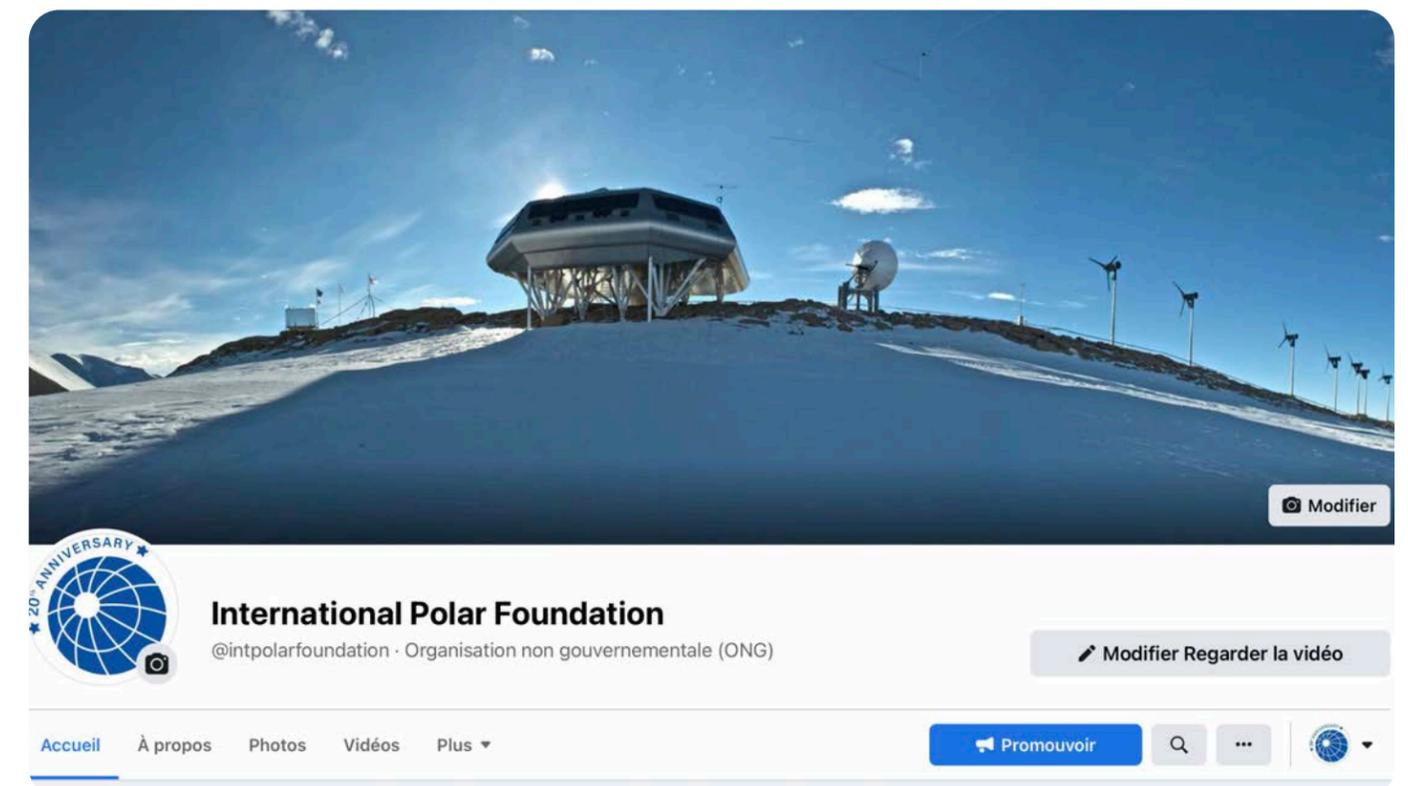


IPF's TWITTER account has been in use since 2012. The account has 6859 followers at the start of 2021 and its following had reached 7048 by the end of the year. In addition to sharing photos related to PEA and other IPF activities, "live tweets" were conducted from conferences and events IPF members took part in.

IPF's Facebook page was used similarly to Instagram and Twitter to share news related to PEA and IPF activities, events included, but also news from relevant sources related to polar research, climate change, renewable energy, sustainable development, and Arctic events and politics. The account had received 2802 likes by the end of 2021 and had reached thousands more through its posts.

The IPF TIKTOK account debuted in November 2021 as the 2021-22 austral summer research season at the Princess Elisabeth Antarctica got underway. By the end of December eight videos had been posted, reaching a total of 61K views and 1181 likes, which is very promising. TikTok as a video-sharing platform was used to share videos with content taken from the staff at the PEA station. It aims to educate and inform the general public about polar science and climate change by using entertaining videos.

IPF's Linked-In account has only recently been reactivated and efforts will be made in 2022 to increase the number of followers.





IN MEMORIAM

BELARE Expedition Medic Jacques Richon



On 19 March 2021, not long after returning from the 2020-21 BELARE mission, longtime expedition Medic Dr. Jacques Richon fell victim to an avalanche in his home Canton of Valais, Switzerland. Jacques was a Mountain Rescue doctor who specialized in surgery and emergency medicine. His extensive experience in emergency rescue and multiple competencies in cold climate scenarios made him the perfect choice to become Chief Medical Officer at the Princess Elisabeth Antarctica. Jacques spent a total of twelve seasons at PEA from 2008 to 2021.

During his tenure as Chief Medical Officer, he made it his mission to improve the station's medical infrastructure and telemedicine protocols in collaboration with Sion Hospital in Switzerland. He also organised the annual pre-season field training in Chamonix and the field rescue simulation for new arrivals at the station.

IPF Honorary Member Prof. Jörn Thiede



The summer of 2021 also saw the passing of yet another friend of the Foundation, Professor Jörn Thiede, who was an adviser and friend who had guided the IPF during its early formative period. For many years, Professor Thiede was the Director of the Alfred Wegener Institute in Bremerhaven, one of the foremost polar research establishments in the world. During his career he received many awards and tokens of recognition for the valuable contributions he made to Polar research.

In spite of his great accomplishments in the scientific world, he always remained very approachable and humble. Many younger scientists will remember him as a person who played an instrumental role in helping them find their way in the world of polar research.

Belgian Polar Explorer Dixie Dansercoer



Dixie Dansercoer, who passed away while on an expedition in Greenland in June 2021, was a fellow polar explorer and expedition partner of IPF Founder and Cahir Alain Hubert for fifteen years. In celebration of the 1998 centenary celebrations of Belgian explorer Adrien de Gerlache's first overwintering on the Belgica research vessel in Antarctica, Alain and Dixie made a 4,000 km trek across Antarctica unsupported on skis pulling a 180 kg sledge of provisions behind them. During parts of the 99-day expedition they propelled themselves forward with the help of a large sail.

Four years later in 2002, the team of explorers crossed the sea ice of the Arctic Ocean on foot, encountering walrus and polar bears over 68 days. However, they did many more expeditions and projects together until Dixie Dansercoer sadly disappeared at the bottom of a 90-metre abyss when crossing Greenland in June 2021.



STRUCTURE & GOVERNANCE 2021

INTERNATIONAL POLAR FOUNDATION

HONORARY PRESIDENT:

- HM King Philippe of Belgium

FOUNDERS:

- Alain Hubert, Civil Engineer, Polar Explorer, Mountain Guide,
- André Berger, Climatologist, Emeritus Professor at UCL (Belgium), Honorary President of the European Geosciences Union
- Hugo Declair, Glaciologist, Emeritus Professor at VUB (Belgium)

HONORARY MEMBERS:

- Roger Barry, National Snow and Ice Data Centre (NSIDC), USA
- Paul Crutzen, Max Planck Institute, Mainz, Germany
- Ivan Frolov, Arctic and Antarctic Research Institute (AARI), Russia
- Claude Lorius, Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE), France
- Lawrence Mysak, McGill University, Canada
- Olav Orheim, Norwegian Research Council, Norway
- Dahe Qin, China Meteorological Administration (CMA), China
- Chris G. Rapley, University College London (UCL), UK
- Susan Solomon, Massachusetts Institute of Technology (MIT), USA
- Svein Tveitdal, GRID Arendal, UNEP, Norway
- Okitsugu Watanabe, National Institute of Polar Research (NIPR), Japan

EXECUTIVE COMMITTEE:

- Alain Hubert, President, International Polar Foundation
- Nighat Amin, Head of Environmental and International Affairs at the IPF
- Nicolas Van Hoecke, Managing Director

FINANCIAL:

- Arnaud de Viron, IPF Finance and Accounting

BOARD OF DIRECTORS:

- Alain Hubert, Founder President, Chairman of the Board (mandate: June 2021 - December 2023) Director (mandate: December 2018 - December 2023), Member of the Belgian Polar Secretariat.
- André Berger, Founder (mandate: December 2018 - December 2024)
- Nighat Amin, Director (mandate: September 2019 - September 2024)
- Piet Steel, Non Executive Director, Member the Belgian Polar Secretariat (mandate: December 2018 - December 2023)
- Marc Speeckaert, Non Executive Director, Member of the Belgian Polar Secretariat (mandate : December 2018 - December 2023)
- Alain Dewaele, Non Executive Director (mandate: September 2019 - September 2024)
- Olivier Périer, Non Executive Director (mandate: September 2019 - September 2024)
- Eric Goens, Non Executive Director, Chairman of the Board of BELARE (mandate: September 2019 - September 2024)
- Jacques de Mevius, Non Executive Director (mandate: September 2019 - September 2024)

BELARE

EXECUTIVE COMMITTEE:

- Alain Hubert, President, International Polar Foundation
- Nighat Amin, Head of Environmental and International Affairs, International Polar Foundation
- Nicolas Van Hoecke, Managing Director

FINANCIAL:

- Arnaud de Viron: IPF Finance and Accounting (2019 - September 2024)

BOARD OF DIRECTORS:

- Eric Goens, Chairman of the Board of BELARE (mandate: September 2019 - September 2024)
- Nighat Amin, Director (mandate: September 2019 - September 2024)
- Alain De Waele, Non Executive Director (mandate: September 2019 - September 2024)
- Jacques de Mevius, Non Executive Director (mandate: September 2019 - September 2024)

IPF ORGANIGRAMME 2022

| March 23, 2022



FINANCIAL REPORTING

ACCOUNTS

OPERATING YEAR	2019	2020	2021
REVENUE & EXPENDITURE	EUROS	EUROS	EUROS
Revenue	3 736 000	3 718 000	4 022 000
Belgian Polar Secretariat funding			3 068 000
Science support			211 000
Technical Project support			325 000
Donations & bequests			231 000
Other			187 000
Expenditure	4 226 000	3 444 000	3 744 000
Expenditure related to Antarctic Operations			3 323 000
Expenditure related to other Projects			421 000
Profit/(Loss) for the Period	(490 000)	274 000	278 000
BALANCE SHEET			
Non-current Assets	0	4 000	16 000 [§]
Current Assets	1 909 000	1 210 000	2 091 000
Total Assets	1 909 000	1 214 000	2 107 000
Reserves	692 000	966 000	1 242 000
Accruals	0	0	0
Accounts payable and deferred Income	1 217 000	248 000	865 000
Total Liabilities	1 909 000	1 214 000	2 107 000

[§] In line of the rules for valuation, all the tangible fixed assets (equipment and infrastructure) belonging to the Foundation and linked to the Princess Elisabeth Antarctica station are transferred from BELARE to IPF at fully depreciated values. A later re-assessment puts their use value at €4,450,000.

FINANCIAL STATEMENT

The total assets for 2021 amount to €2,107,000 compared to the total of €1,214,000 during the previous financial year, an increase of €893,000. This difference can be attributed to the fact that the main transfer of funds related to BELARE operational costs was made after the closing of the IPF accounts.

Reserves increased by €275 000 following the new management strategy adopted in 2021, following a review of the delegation of operations to BELARE.

IPF MANAGEMENT REPORT SUMMARY ON ACTIVITIES IN 2021

The International Polar Foundation, operator of the Princess Elisabeth Antarctica station, ensured its 17th season of operations. Despite the challenges related to the COVID-19 pandemic, PEA hosted 50 participants during the four months of operations. While the Omicron variant affected the Antarctic continent, the close interaction of the Foundation with the Polar Secretariat, and the professional handling of the situation by the station management, allowed for the technical and scientific work to be executed as planned, without any significant negative impact.

Despite the challenges, the evaluations of the operator's overall support for the scientific teams supported in Antarctica by the IPF, had an approval rating of over 90%.

The Foundation also took further steps aiming for better efficiency: recruitment of new support personnel and engineers, more efficient operational structures and the development of a better-defined macro and micro vision. Personnel are engaged under consultancy contracts which do not reflect in the employment figures.

The objective is two-fold: strengthen the sustainability of Antarctic operations at PEA (as the privileged partner of the Belgian State) and to study and develop future projects.

One of the projects is related to the improvement of energy efficiency at the station and the preparation of the planned installation in 2022-23 of a new wastewater treatment system, the first of its kind in Antarctica with regard to science support.

The Andromeda Antarctic University study project and the control of the Perseus strategic intercontinental blue-ice runway to guarantee the sustainability of activities in the region of the Belgian Antarctic base continue to be studied. Numerous other projects are aimed at improving the performance of stand-alone scientific stations in the field and the repatriation of scientific data.

IPF established a new company - IPF Antarctica PTY (Ltd) - in South Africa, to coordinate local operational activities and to ensure the coordination with Brussels of the management of expeditions from Cape Town, the departure point for Antarctica.

In November 2021, IPF organized in Brussels the twelfth edition of the "Arctic Futures Symposium". Despite Covid related challenges, attendance was stable and the Symposium welcomed the active in person participation of several speakers on Arctic Affairs.

For the 2022 edition, IPF intends to set up a prize for young entrepreneurs from Arctic countries. This prize will be funded with the transfer of assets to the amounts of €50,000 from the TRAN Foundation (liquidated) that IPF benefited from in February 2021.

The end of 2021 also marked the return to the development and evaluation of new educational projects. IPF made presentations in several high schools in order to convey how important scientific research is in understanding the dynamics of climate change and the solutions to be implemented. IPF also hopes that through these interactions young people will be increasingly interested in STEM professions.

IMPORTANT EVENTS SINCE THE END OF THE FINANCIAL YEAR

The appointment of the new member of the Board, Ms. Marie-Anne Coninx, was presented and officially formalised during the Board meeting of April, 2022.

IPF started to evaluate potential risk to mitigate as far as possible the danger of the current and future geopolitical instabilities, compounding the pandemic related uncertainties.

After the closure of account for the 2021/2022 Antarctic season, the Polar Secretariat has approved the budget for the 2022/2023 season in accordance with the Executive order (*) of 2009 defining the privileged partnership between the Belgian State and the IPF.

INFORMATION ON RESEARCH AND DEVELOPMENT COSTS

Expenses were incurred for the development of a new water treatment system. This will be brought to the Princess Elisabeth Antarctica station in early 2023 and will be operational during season 2023/2024. The planned budget is approximately €380K (excluding transport).

Expenses engaged for the study of the green hydrogen production project will arise in 2022-23, but are offset by the donation of two hydrogen generators promised in 2021.

(*) Arrêté Royal du 20 mai 2009 fixant les règles de gestion du Service d'Etat à gestion séparée « Secrétariat polaire ».

