

SCIENCE @ PRINCESS ELISABETH ANTARCTICA

Field seasons 2021-2022-2023 PEA = Princess Elisabeth Antarctica

SPACE & HIGH ATMOSPHERE

HYPERNETS

EU Horizon 2020 grant agreement No 775983

A new type of radiometer measures incoming & reflected radiance (visible light & near infrared) of the nearby surface, as part of an international network of automated radiometers. These data will serve to calibrate remote sensing images.

SPACE & HIGH ATMOSPHERE

AWDA

A Very Low Frequency (VLF) antenna automatically detects **Whistler Waves**. These waves (0-10 kHz) are caused by lightning in the Northern Hemisphere, and travel to the South via Earth's magnetic lines.

SPACE & HIGH ATMOSPHERE

GEOMAG

Belgian Magnetic Value Initiative

A magnetometer permanently logs the Earth's magnetic field near Princess Elisabeth Antarctica.

SPACE & HIGH ATMOSPHERE

AURORA

Scientists are studying the Aurora Australis ('Southern Light') near PEA. They use a 'magnetometer', an Aurora camera, and a specific GNSS antenna.

ATMOSPHERIC SCIENCES

CLIMB

Belspo project BR/154/AI/RECTO

A. SAMPLING
On the Antarctic Plateau and near PEA samplers are collecting Ice Nuclei and Volatile Organic Compound (VOCs) from the air.

B. MEASURING
A ceilometer measures the height of the clouds. A Micro Rain Radar checks how big droplets in the air are, and how many there are.

ATMOSPHERIC SCIENCES

ACME

A weather balloon is launched every other day from PEA. It has a sensor that measures t° , humidity, wind speed & wind direction, up to 25 km high.

GEOLOGY

BELAM

Belspo project SOL/14/01/A

Since 2010, geologists are collecting meteorites & micrometeorites from 'Blue Ice Fields'. They will also be sampling rocks from the Sor Rondane Mountains in 2022-2023.

GEOLOGY

SEISMO GIANT

Royal Belgian Observatory grant no. 3FullCost

A number of instruments are installed at PEA to study the Earth's crust in East-Antarctica: a **seismometer** measures the 'motion' of the ground (e.g. when there is an earthquake).

A 'Global Navigation Satellite System (GNSS, such as GPS or Galileo)' antenna measures the **exact x, y and z-coordinates** of the antenna. This information helps to monitor plate tectonics and glacio-isostatic changes.

GLACIOLOGY

DOME FUJI

Japanese National Institute of Polar Research

In the Japanese station Dome Fuji (880 km South of PEA) **Deep Ice Core Drilling** is planned for the future. IPF-staff members help by bringing fuel towards Dome Fuji, and doing scientific measurements on their return to PEA. (2021-2022-2023)

ATMOSPHERIC SCIENCES + GLACIOLOGY

Automated Weather Stations (AWS)

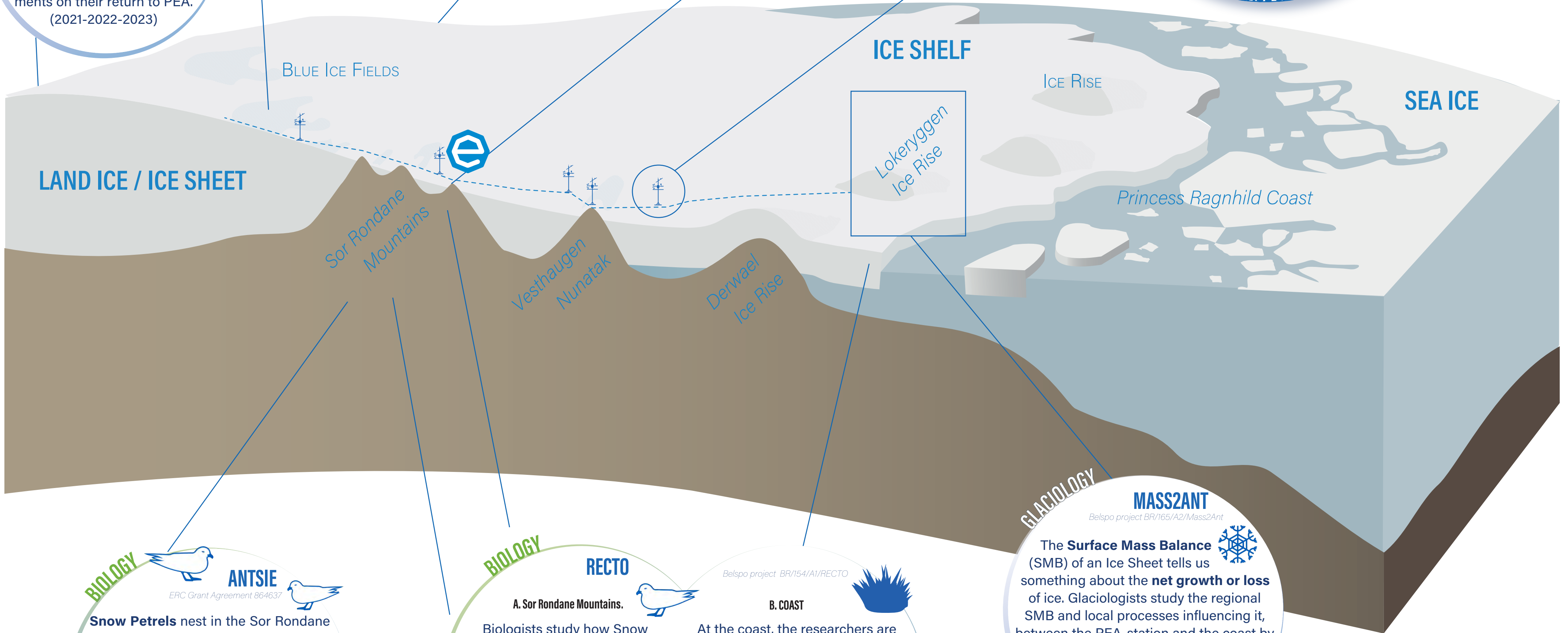
are installed at PEA and along a transect from the Antarctic Plateau (N) to the Princess Ragnhild Coast (S). Their data serve different projects.

They measure meteorological parameters:

- precipitation
- cloud cover
- temperature
- solar irradiance
- relative humidity
- wind speed & direction
- atmospheric pressure
- snow height
- reflected solar radiation
- longwave radiation

PEACE & PEPEL-CRYOS

PRINCESS ELISABETH ANTARCTICA



BIOLOGY

ANTSIE

ERC Grant Agreement 864637

Snow Petrels nest in the Sor Rondane mountains. Biologists are studying their **diet** & how they gather it. They analyse 'mumiyo' (solidified regurgitated stomach oil), and they track their movements using GPS-trackers and light-weight location data loggers (GLS).

BIOLOGY

RECTO

Belspo project BR/154/AI/RECTO

A. Sor Rondane Mountains.
Biologists study how Snow Petrels select their **nests**, and will study **microplastics** in the micro-environment of the birds. They also take samples of the micro-environment to study the **micro-organisms** living there.

B. COAST
At the coast, the researchers are **sampling sea floor** scavengers, **measuring** water temperature, electrical conductivity and seawater pressure. They also deploy a Yo-Yo cam to make **underwater images**. This will help to monitor marine biodiversity in a fast changing environment.

GLACIOLOGY

MASS2ANT

Belspo project BR/165/A2/Mass2Ant

The **Surface Mass Balance (SMB)** of an Ice Sheet tells us something about the **net growth or loss** of ice. Glaciologists study the regional SMB and local processes influencing it, between the PEA-station and the coast by doing Radar measurements, shallow ice coring, surface snow sampling and surface firn (= partially compacted snow at the ice surface) measurements.

Glaciologists collected **snow samples** every 5 km along a transect from PEA to the coast.

Ice rises have an influence on the speed of discharge of the ice into the ocean. On the Lokeryggen Ice Rise scientists did ground penetrating **radar (GPR)** measurements across the whole Ice Rise and in more detail near a 2017 ice core drilling site.

They also drilled a 15 meter long ice core at a corner of a grid on the Lokeryggen Ice Rise, and did near surface firn measurements (top 1m) and Polarimetric pRES measurements.

GLACIOLOGY

TIMBR

International Polar Foundation initiative

Since more than 10 years, Alain Hubert conducts snow and ice sampling & measurements along a **transect** from the PEA station to the coast. These measurements contribute to studies of the SMB of the East-Antarctic Ice Sheet.



INTERNATIONAL
POLAR FOUNDATION

