

PolarGap Project

The PolarGap is a project funded by the European Space Agency (ESA) with the aim of collecting data regarding the Earth's global gravity field. The 2015/2016 survey saw major success where all the objectives of the project were met.

This article will further give details about PolarGap within the context of the Civil Services Examination.

Overview of the PolarGap project

The PolarGap project was an international mission launched for collecting data about the Earth's gravity field. It employed Lidar technologies and innovative radar systems to fill the 'data gap' in measurements of surface elevation over the South Pole region.

The PolarGAP project was largely funded by the European Space Agency. Gravity field and steady-state Ocean Circulation Explorer (GOCE) and CryoSat 2, the two earth observing satellite missions launched by the European Space Agency (ESA) have transformed the ability of scientists to map the global gravity field of the Earth and monitor the response of the Earth's ice fields to the global change. However, since GOCE's orbit does not pass through the Poles there is a data gap at the South Pole.

Aim of The PolarGap Project

The Aim of the PolarGap project were as follows:

- Close the gap in satellite gravity coverage through the collection of new airborne gravity data that would be combined with existing surveys in the South Pole region.
- Exploring the geological structure and evolution of East and West Antarctica in the South Pole region with new magnetic and gravity data
- Investigating Antarctic ice sheet dynamics around the South Pole using airborne radar to map the sub-ice mountains and valleys, distribution of subglacial water and internal ice sheet structures.

In order to build the first accurately constrained global gravity model, the Polar GAP project would gather new data on gravity and merge them with the data derived from the other Arctic missions. This is crucial as the data on global gravity offers unique information on transport in the Earth System, mass distribution, linked to changes and various processes in the Solid Earth, atmosphere, oceans, cryosphere and hydrology.

The gravity data thus derived will be of use in planning the satellite orbit, navigation systems

The aircraft mission and deep-field work are challenging. Using experience and expertise in aerogeophysical data collection in the frontier regions of Antarctica, the area that has rarely been studied will now be explored.

Result of the PolarGAP project

The PolarGap project achieved 100% of its stated objectives. In a report published in 2017, it was stated that new topographic data about the antarctic region previously unavailable was acquired. The data was acquired under significant challenges as global warming were causing not only the glaciers to melt but also led to major tectonic shifts. Despite the unpredictable nature of these shifts, an almost perfect data was acquired by the science team.