



Swedish Institute of Space Physics



Space Campus, Kiruna

Objectives

The Swedish Institute of Space Physics (IRF) conducts fundamental research and graduate education in space plasma physics (e.g. magnetospheric- and ionospheric physics), space technology and atmospheric physics.

- IRF also conducts applied research in signal analysis, sensor technology and satellite technology.

Overview

IRF conducts experimental and theoretical research in space physics, atmospheric physics and space technology. Measurements are made with the help of satellites, balloons and ground-based equipment.

IRF was established in 1957 by the Swedish Academy of Sciences as Kiruna Geophysical Observatory. IRF has been a state-owned research institute since 1973.

IRF has offices in:

- Kiruna (head office - at the Space Campus)
- Umeå (in the Technology Building, Umeå University)
- Uppsala (at Ångström Laboratory, Uppsala University)
- Lund (at IDEON Science & Technology Park)

IRF also operates the unmanned Lycksele Ionospheric Observatory



International cooperation

IRF takes part in several large international collaborative projects using satellites and ground-based equipment.

On-going and forthcoming satellite projects:

- Cassini-Huygens (1997) - a NASA/ESA mission to Saturn and its moon Titan
- Cluster (2000) - an ESA project for magnetospheric studies
- Mars Express (2003) - an ESA project to study Mars
- BepiColombo (2018) - an ESA/JAXA mission to Mercury
- JUICE (2022) - an ESA mission to Jupiter's icy moons

Ground-based systems:

- ALIS (Auroral Large Imaging System) - light-sensitive cameras for auroral studies
- EISCAT (European Incoherent Scatter) - radar system for meteor- and ionospheric studies (incl. aurora)
- ESRAD - an MST radar for atmospheric studies
- MARA - an atmospheric radar in Antarctica



Research and observatory activities:

IRF's research is conducted within four research programmes:

- Polar Atmospheric Research (in Kiruna)
- Solar Terrestrial Physics (Kiruna, Umeå, Uppsala, Lund)
- Solar System Physics and Space Technology (Kiruna)
- Space Plasma Physics (Uppsala)

In addition IRF conducts observatory activities with the help of the following instruments:

- Magnetogram (Kiruna, Lycksele)
- Riometer (Kiruna, Lycksele)
- All-sky camera (Kiruna, Abisko)
- Ionosonde (Lycksele, Uppsala)

Continuous measurements are also made of:

- Atmospheric trace gases (e.g. ozone)
- Atmospheric winds
- Infra-sound

