



# 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:

- 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 incoherent scatter radar system for meteor- and ionospheric studies (incl. aurora)
- ESRAD - an MST radar at ESRANGE Space Center for atmospheric studies
- MARA - an atmospheric radar in Antarctica



# Research and observatory activities:

IRF's research is conducted within three research programmes:

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

In addition IRF's Kiruna Atmospheric and Geophysical Observatory conducts observatory activities with the help of the following instruments:

- Magnetogram (Kiruna, Lycksele)
- Riometer (Kiruna, Lycksele)
- All-sky camera (Kiruna)
- Ionosonde (Kiruna, Lycksele, Uppsala)
- Infra-sound (Kiruna, Jämtön, Lycksele & Sodankylä)
- mm-wave radiometers (Kiruna)

Continuous measurements are also made of:

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

