INFRASTRUCTURES

Infrastructures to support the research activities in Antarctica
- Mario Zucchelli Station
- The Italian-French Concordia Station
- The oceanographic research icebreaker “Laura Bassi”

Infrastructures that support research in Italy
- National Antarctic Museum - Specimens repository
- Antarctic Interlaboratory System - SIA
- NADC National Antarctic Data Center
- Hydrographic Institute of the Italian Navy

PERMANENT OBSERVATORY SYSTEM

Observatories at Mario Zucchelli Station
- Geomagnetic
- Geodetic
- Upper atmosphere and space weather
- Seismological
- Meteorological-climatological
- Volcanological
- Permafrost and vegetation
- High-frequency solar imaging
- Microbial communities

Observatories at Concordia Station
- Geomagnetism
- Upper atmosphere and space weather
- Radiation fluxes seismological activity
- Meteorology-climatology
- LIDAR - study of stratospheric and tropospheric clouds
- SuperDARN - Ionospheric radar High-frequency solar imaging
- Atmospheric chemistry

Observatories operating in other areas
- Marine observatory in the Ross Sea
- Seismic Broadband Network in the Scotia Sea and surrounding areas

The **National Antarctic Research Program (PNRA)** is a program of the Italian **Ministry of University and Research (MUR)**. The **National Scientific Commission for Antarctica (CSNA)** defines the strategic goals and the annual plans in Antarctica. The **National Research Council (CNR)** coordinates scientific activities, the **National Agency for new technologies, energy and sustainable economic development (ENEA)** programs and carries out all the logistical support while the **National Institute of Oceanography and Experimental Geophysics (OGS)** coordinates and manages the technical and scientific activities of the icebreaker **“Laura Bassi”.**

FOR FURTHER INFORMATION

www.pnra.aq - www.mna.it
www.enea.it - www.cnr.it - www.ogs.it

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Italian National Antarctic Program

THE ITALIAN STRATEGIC PROGRAM 2024/2026

Consolidate the strategic role of Italy in Antarctica and strengthen Italian scientific leadership internationally.

VISION

- Study Antarctica and the Southern Ocean to understand the evolution of climate, to understand the present and improve predictions of the future
- Contribute to finding adequate responses to the global climate emergency, support policymakers in defining sustainable and effective environmental, economic and social interventions and policies
- Promote a sustainable development and the respect for the environment

MISSION

- Consolidate Italian logistical support for research in Antarctica
- Strengthen scientific leadership

STRATEGY

Consolidate the strategic role of Italy in Antarctica

- Revamp and improve the Italian research stations in Antarctica and the supporting research infrastructures in Italy
- Introduct innovative technologies, improve energy efficiency and reduce the environmental impact of the plants and structures
- Promote international logistical collaboration
- Promote the Boulder Clay Airstrip as an Antarctic gateway

Strengthen scientific leadership

- Stimulate active Italian participation in SCAR and the various bodies of the Antarctic Treaty System
- Fund Italian research activities in international strategic science sectors
- Promote interdisciplinary and international scientific research activities
- Update data collection and metadata systems to facilitate the dissemination of results
- Support universities and young researchers to promote polar sciences
- Dissemination of PNRA activities to promote polar research and the protection of environment

SCIENCE PRIORITIES

LAND/ICE/CLIMATE INTERACTIONS
Antarctic Ocean, Lithosphere, and Atmosphere

Oceanographic dynamics:
- Variability in space and time of oceanographic dynamics
- Role and variability of sea ice and polynyas

Paleoclimatic dynamics:
- Dynamics and stability of ancient polar ice cap
- Influence of past climate changes on the stability and dynamics of ice cap
- Analysis of the biogeochemical cycles dynamics of C and of the variability in climate and ocean dynamics
- Development of forecast models

Lithosphere/Ice Caps Interactions:
- Determine the interactions between the WAIS and the West Antarctic Rift System
- Assess the interactions between the WAIS, the Transantarctic Chain and the Wilkes Basin

Ice sheet dynamics:
- Dynamics of the West and East Antarctic ice sheets
- Understanding of changes in the two ice sheets and in permafrost
- Analyze the stability of the ice shelves
- Development of forecast models

Atmospheric and climate dynamics:
- Chemical variability and dynamics of clouds
- Analysis of interactions between clouds and aerosols
- Reactive gases in the atmosphere
- Assessment of the impacts of the atmospheric circulation between Antarctica and the mid-latitudes

ASTRONOMY, ASTROPHYSICS AND SPACE WEATHER

- Observations of the primeval universe, through measurements of the cosmic background radiation
- Observations of the universe in visible and infrared spectrum
- Coronagraphic solar observations and monitoring the Sun in microwaves
- Observations of plasma motion and phenomena due to processes of space weather in the ionosphere

LIFE IN ANTARCTICA
Evolution, Adaptation, Biodiversity

- Climate impact on Antarctic biodiversity and ecosystems
- Analysis of marine and terrestrial Antarctic biodiversity
- Study of the role of the Antarctic ecosystems in carbon sequestration
- Study of terrestrial analogues for search for life beyond the Earth

HUMAN IMPACT AND ENVIRONMENTAL CONTAMINATION

- Sources of contamination, transport, accumulation and transformation of chemical contaminants in marine and terrestrial ecosystems and interfaces air/snow and sea ice/sea
- Aerosol and atmospheric depositions of chemical contaminants
- Impact of chemical contaminants on the biota and ecosystems
- Effect of climate change on the bioavailability and transfer along food chains of micropollutants and micronutrients

BIOMEDICINE AND PSYCHOLOGY

- Effects of isolated and confined environments on psycho-neur endocrine-immune stress
- Effects of cold and hypoxic and dysbaric stress on cardiovascular and pulmonary functions
- Epigenetic effects of prolonged exposure to isolated environments in conditions of deprivation of sunlight
- Variations in the human microbiome
- Evaluation, experimentation and implementation of telemedicine and teleassistance

DATA COLLECTION AND DISSEMINATION

- Support the National Museum of Antarctica
- Expansion of the National Antarctic Data Centers
- Promotion and participation in establishment of a trans-national and pan-Antarctic monitoring network facilitating access and sharing of data and samples

TEACHING, TRAINING AND INFORMATION

- Management of websites and social pages
- Support for the National Museum of Antarctica
- Promoting exhibitions and events
- The AUSDA project (Adopt a school from Antarctica)
- Support for the Association Young Researchers (APECS)
- Research Doctorates