



# **The Aerosol, Clouds and Trace Gases Research Infrastructure**

**Exploring the Atmosphere**

The gateway to the forefront of atmospheric  
science, research and innovation

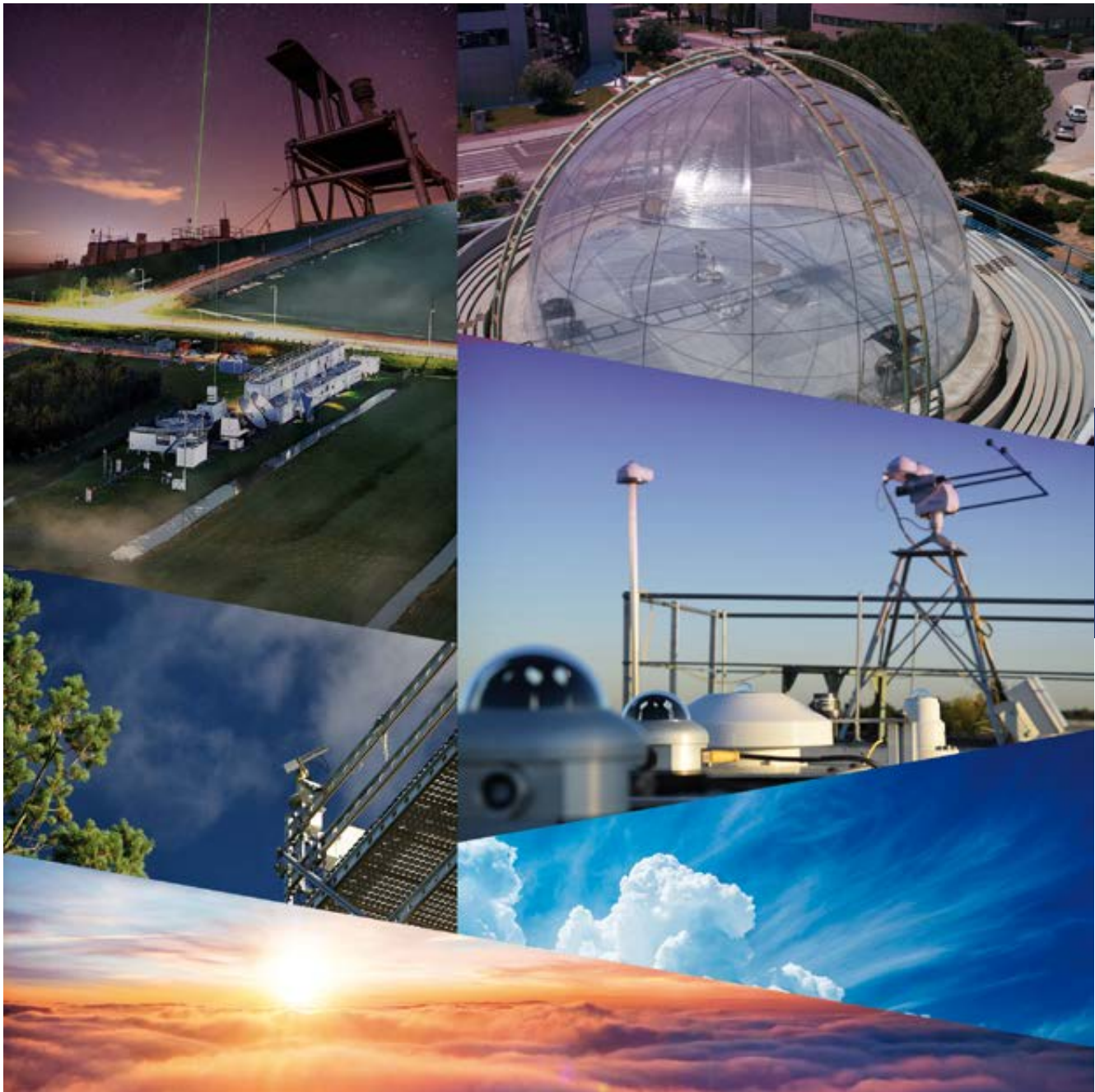
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**ACTRIS ERIC is the European Landmark Research Infrastructure for the observation of aerosol, clouds and trace gases as recognized by the European Commission.**

**ACTRIS offers access to high-quality atmospheric integrated dataset and to world-class facilities. ACTRIS provides researches, from academia as well as from the private sector, with the best research environments and expertise promoting cutting-edge science and international collaborations.**



# 01

# About ACTRIS

## The Aerosol, Clouds and Trace Gases Research Infrastructure

### Exploring the atmosphere.

*ACTRIS produces high-quality data and information on short-lived atmospheric constituents and on the processes leading to the variability of these constituents in natural and controlled atmospheres.*

ACTRIS is the pan-European research infrastructure producing high-quality data and information on short-lived atmospheric constituents and on the processes leading to the variability of these constituents in natural and controlled atmospheres.

State-of-the-art atmospheric and environmental observations are the foundation upon which society builds effective environmental policies and strategies to reduce emission of pollutants, which mitigate climate change and improve air quality. Observations are needed to better understand atmospheric processes that is required to create services and products necessary for strengthening societal resilience to environmental change. As an example, climate mitigation, adaptation and disaster risk reduction require such services and products. In addition, the enhancement of data production, data quality assurance and access to data

by ACTRIS enables advances in a fundamental understanding of physical and chemical processes, leading to advances in theory, modelling, and observations, that are vital in narrowing gaps in the predictive capability of simulation models from local to global scale.

The vision of ACTRIS is to become the leading European Research Infrastructure for short-lived atmospheric constituents increasing the excellence in Earth system observation and research and providing information and knowledge for developing sustainable solutions to societal needs.

The mission of ACTRIS is to provide high-quality integrated datasets in atmospheric sciences and provide services, including access to instrumented platforms, tailored for scientific and technological usage.

# Why ACTRIS?

# 02

## Our context

*ACTRIS strengthens societal response to the grand-challenges faced by our society by enabling a deeper understanding of atmospheric processes, improving our resilience to changes in weather, climate and air quality as well as to reducing the effects of air pollution on public health and ecosystems.*

The atmospheric environment is continuously changing. The causes are multifaceted and linked to e.g.: (i) the growth of the human population, (ii) the increasing mobility demand for people and goods, (iii) the increasing need for energy supplies, (iv) the expanding industry in many regions of the World, (v) the intensification of agricultural activities and associated changes in land use. This results in changes at different scales, i.e., affecting vulnerable regions like the Arctic and the global cycle of pollutants.

ACTRIS greatly strengthens the production of high-quality atmospheric observations and related information on shortlived atmospheric constituents. This information is required to respond to a large range of problems related to changing climate, air quality and the environment. ACTRIS fills gaps in the knowledge, essential to the delivery of services that enable an effective response to problems.

The ability to better predict the future behaviour of the atmosphere over a different time scales (hours to decades) brings great benefits to society and economy. Examples span from short-term hazardous weather and air quality health warnings to long-term evaluation of climate change and policy

effectiveness. Scientific predictions use complex models, that are underpinned by observations, to improve the understanding of atmospheric processes. Without high quality observational data to validate predictive models, any forecast of the atmosphere is highly unreliable.

State-of-the-art atmospheric environmental observations of known quality are the foundation upon which society builds effective environmental policies and strategies to reduce emission of pollutants, which mitigate climate change and improve air quality. Long-term observations are needed to better understand atmospheric processes, and to generate services and products necessary for strengthening societal resilience to environmental change. For instance, climate mitigation, adaptation and disaster risk reduction require such services and products.

In addition to strengthening the value chain required by such services and products, the enhancement of data, data quality assurance and access to data by ACTRIS enables advances in a fundamental understanding of physical and chemical processes that lead to advances in theory, modelling, and observations which are vital in narrowing

gaps in the predictive capability of simulation models from the local to the global scale. For instance, ACTRIS observations and access to observations contribute greatly to reducing uncertainties in emission source strengths, to a better understanding of atmospheric deposition processes that remove short-lived constituents from the atmosphere and impacts on ecosystems.

The National Facilities, which include observational and exploratory platforms both within Europe and at selected global sites, are responsible for the acquisition of high quality, reliable and accurate data to document the 4-D distribution and variability of aerosol, clouds and trace gases and their complex interactions.



**ACTRIS fills in a gap in integrating, quality assuring, harmonizing and distributing datasets, activities, and services provided by ACTRIS Central Facilities and National Facilities, located across Europe.**

The eight Central Facilities - comprised of six Topical Centres, the Data Centre and the Head Office - are essential to ensure compliance of the measurements with standard operation procedures and data analysis that result in observations of known quality.

ACTRIS results from more than 15 years of consistent development funded by both Member States and the European Commission through the Research Infrastructure programme.

ACTRIS builds on previous efforts, such as EARLINET, EUSAAR/CREATE, EUROCHAMP and CLOUDNET, and thus integrates several atmospheric science communities in Europe into one coherent research infrastructure, making ACTRIS the largest atmospheric research infrastructure in size, covering most of the atmospheric observations and experiments, and providing the broadest set of atmospheric variables in the atmospheric research infrastructure domain.



### Research services

- Physical access to instrumented observational and exploratory platforms
- Use of state-of-the-art instrument and equipment supporting scientific excellence



### Data & Digital services

- Compilation and quality control of ACTRIS measurements
- Long-term archiving and preservation of ACTRIS data
- Data curation
- Citation service, and data



### Technical services

- Instrument-specific calibration, testing, and intercomparison
- Provision of measurement QA/QC procedures and tools
- Improvement of measurement and retrieval



### Innovation

- Joint research activities
- Joint instruments developing and testing
- Certification of prototypes



### Training &

- Training on demand
- Training of instrument operators and data managers to ensure compliancy with ACTRIS standards
- Training of users of ACTRIS data, products and tools



### Outreach

- International engagement
- Voicing to stakeholders the importance of the atmospheric constituents and their impact on air quality and human health



# Our services

## ACTRIS is a gateway to data and services for high-quality research and innovation.

# 03

ACTRIS offers its users open access to instruments, expertise, training opportunities, and Findable, Accessible, Interoperable and Reusable (FAIR) data management services. All users, regardless of their affiliation, area of expertise, or field of activity, can benefit from ACTRIS pan-European open access services.

Data and digital services are available via wide access which is open and free access, not involving any selection process. Competitive access requires a selection process. In case of competitive access, the selection of users is regulated by scientific, technical or market

relevance. All access to ACTRIS services and resources is channeled through a single interface, the Catalogue of Services, that connects users to the whole ACTRIS.

Our services include training on demand or targeting specific user' groups, the design and co-design of instrumentation, equipment or procedures, joint research activities and joint instruments testing. By supporting innovation and knowledge transfer ACTRIS aims to create technological and societal breakthroughs and impact.



### Open access to FAIR data & services

*We offer our users effective and efficient means to uptake our high-quality, open access and FAIR data and services.*

We strive to ensure and raise the quality of data and use of up-to-date technology used in ACTRIS and the quality of services offered to our user.

ACTRIS is one of the rare distributed research infrastructures in the environmental domain that provides virtual, remote and physical access, to its advanced research facilities.



### Creating a synergetic community

*We aim at strengthening the link between research, education and innovation in the field of atmospheric science.*

ACTRIS continuously engages partners and stakeholders from the private sector, and promotes the training of our operators and users.

ACTRIS places its users at the centre of ACTRIS operations and strategic development. A systematic approach is taken to involve users, ascertain their needs, provide clear and practical recommendations for services and process development, and base continuous improvements on user feedback.



### Driving science while supporting society

*We support authorities providing a science-based analysis on air quality and the impact of atmospheric short-lived constituents on human and ecosystems.*

We provide support to policy makers through a flow of information on past and current state of the atmospheric environment, delivering unique information on short-lived climate forcers

Our services enable a deeper understanding on atmospheric processes, improving our resiliency to climate change, and air quality, contributing to reducing the effects of air pollution on public health and ecosystems.

# 04



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operate legally together, as...  
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important time since the tra...  
happening, and the synerg...  
are continuously developing*

# ACTRIS ERIC

The European Commission has taken a long-anticipated decision to establish ACTRIS as a European Research Infrastructure Consortium, or ERIC. With its ERIC status, ACTRIS is now legally recognized as a European Research Infrastructure in the atmospheric domain.

With this decision, the European Commission provides ACTRIS with a stable legal structure that also brings administrative advantages benefiting ACTRIS members and international organisations, thus contributing to the long-term sustainability of ACTRIS.

ACTRIS ERIC is established with 17 countries: Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland. Finland will host the Statutory Seat and manage the overall coordination of ACTRIS. Greece and UK expressed interest in joining at later stages.

With their commitment, the member countries demonstrate atmospheric and air quality research as a national priority for at least the next five years, thereby supporting scientific excellence across Europe. Being a member country of ACTRIS ERIC means that a country's representative can help shape the strategy, participate in mission-based research, and join ACTRIS unified voice in the forefront of European science and education landscape of atmospheric research focused on aerosol, clouds, and trace gases.

The establishment of ACTRIS ERIC manifests the fast progress of ACTRIS from a project-based network to a mature and sustainable research infrastructure. ACTRIS ERIC builds over a decade of consistent preparatory work with the active engagement of networks, such as EARLINET, EUSAAR, CREATE, Cloudnet, NDAAC, EUROCHAMP, as well as ACTRIS member countries and the European Commission.

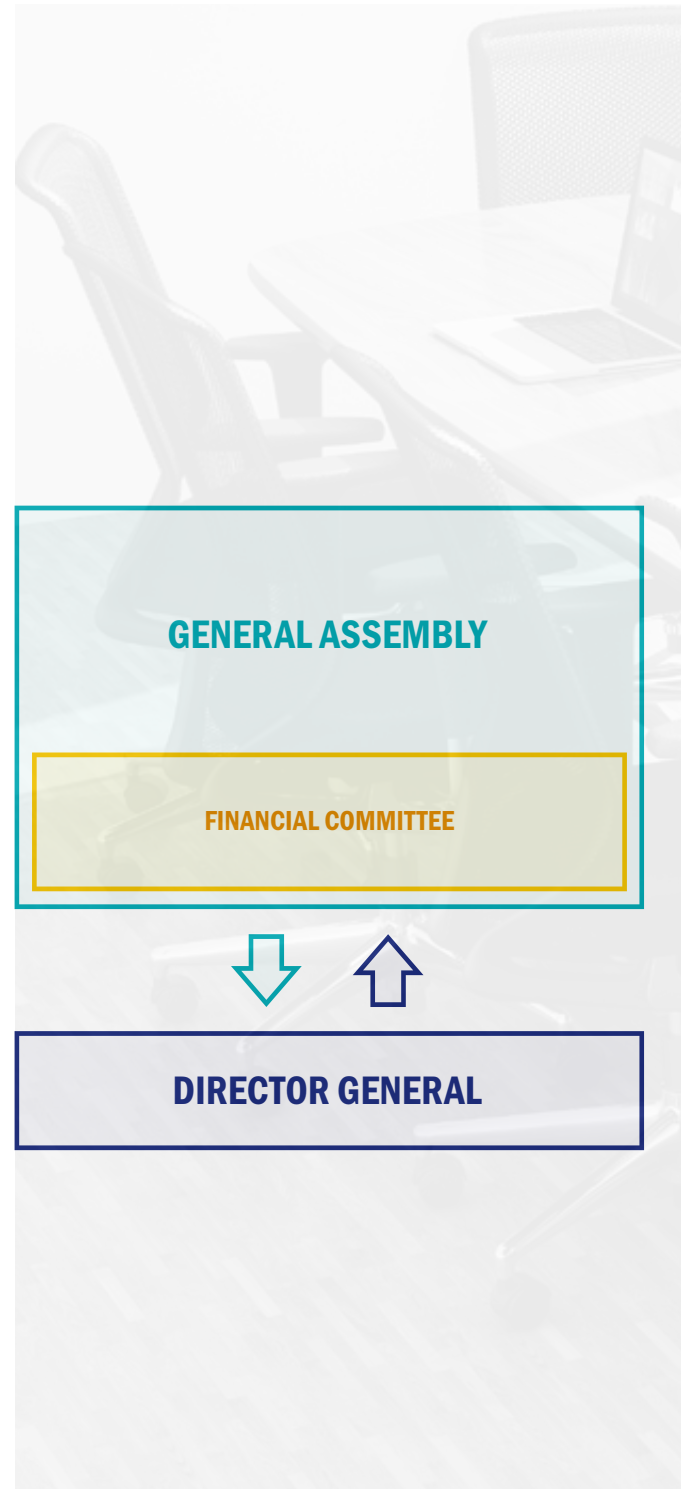
*ACTRIS facilities can now be managed by one organisation," says Eija Tuomi. "The decision comes at an important transition to operations is already underway in close cooperation with scientists and industry partners."*

# Governance

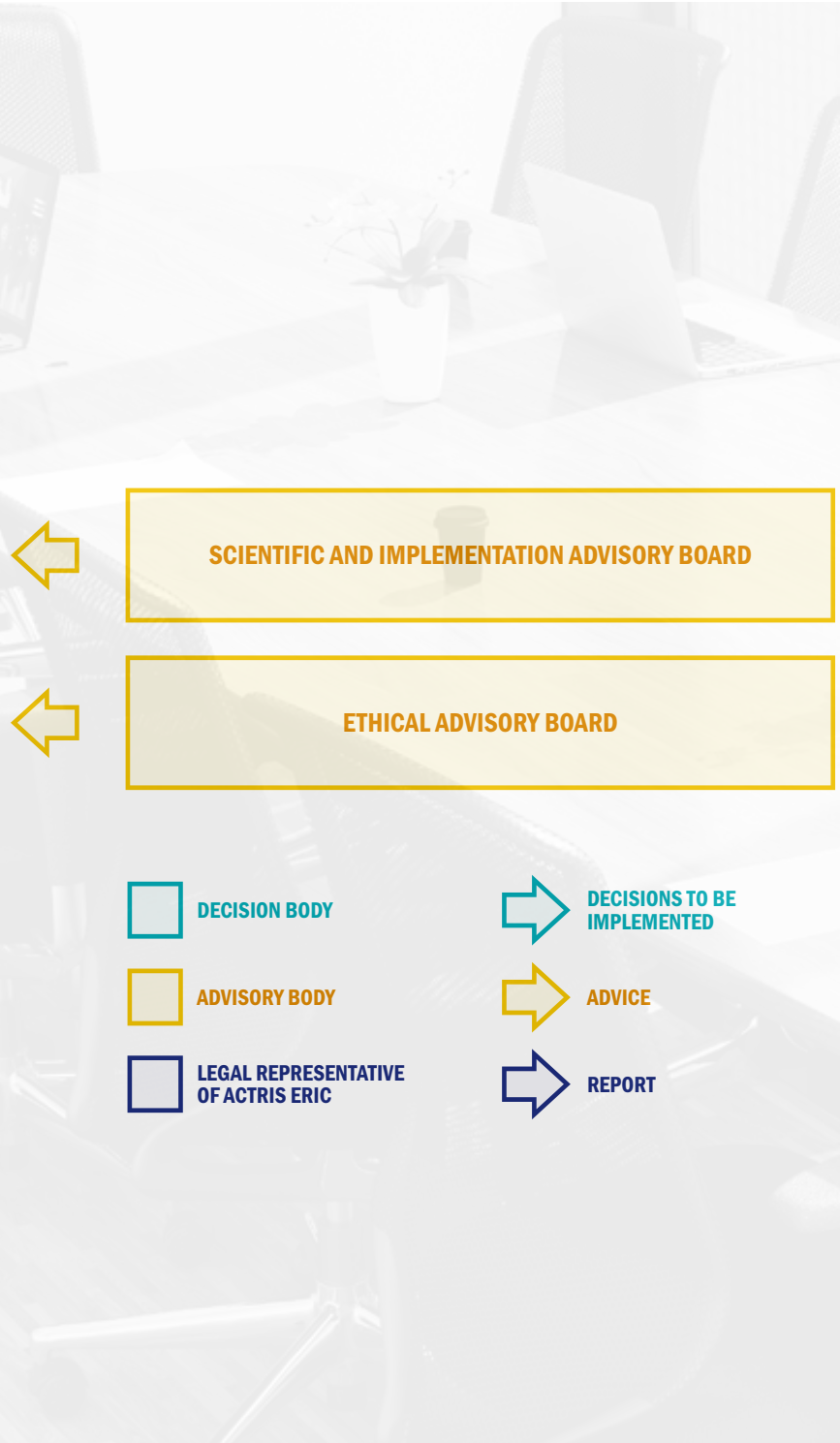
The legal entity ACTRIS ERIC is established to coordinate and operate a ACTRIS as a distributed research infrastructure. ACTRIS ERIC provides the coordination, integration, development, monitoring, and governance of ACTRIS, and will steer the strategic and financial development as well as the long-term sustainability of ACTRIS. The ACTRIS ERIC also coordinates and facilitates ACTRIS interaction with stakeholders, global and regional initiatives, and oversees the strategic development of the whole infrastructure.

ACTRIS ERIC manages the long-term agreements with the Data Centre and Topical Centres, and the service provision for wide user communities. The tasks and activities of ACTRIS ERIC and ACTRIS are defined in the ACTRIS statutes, and in the Technical and Scientific Description of ACTRIS.

The ACTRIS Head Office (HO) operates directly under the legal entity. The HO provides infrastructure coordination and leadership. The statutory seat will be in Finland but one unit of the HO shall also locate in Italy. In addition, the Data Centre is part of ACTRIS ERIC through its Management Board and dedicated working time of the Data Centre Leader and the Heads of Data Centre Units.



# 05



## General Assembly

The GA is the highest decisionmaking body, which is advised by an external Scientific and Innovation Advisory Board and by an Ethical Advisory Board. GA is also supported by the internal Financial Committee on financial planning, reporting and strategic development.

## Director General

The DG is the legal representative of the ACTRIS ERIC, overseeing and coordinating ACTRIS activities, and responsible for the implementation of the decisions by the General Assembly. The DG ensures the scientific and strategic development of ACTRIS, to meet the expectations on socio-economic impact, technology development and innovation, actively fostering community building, external relations, and strategic partnerships.

Detailed descriptions of the tasks of the governance bodies are described in the ACTRIS statutes.

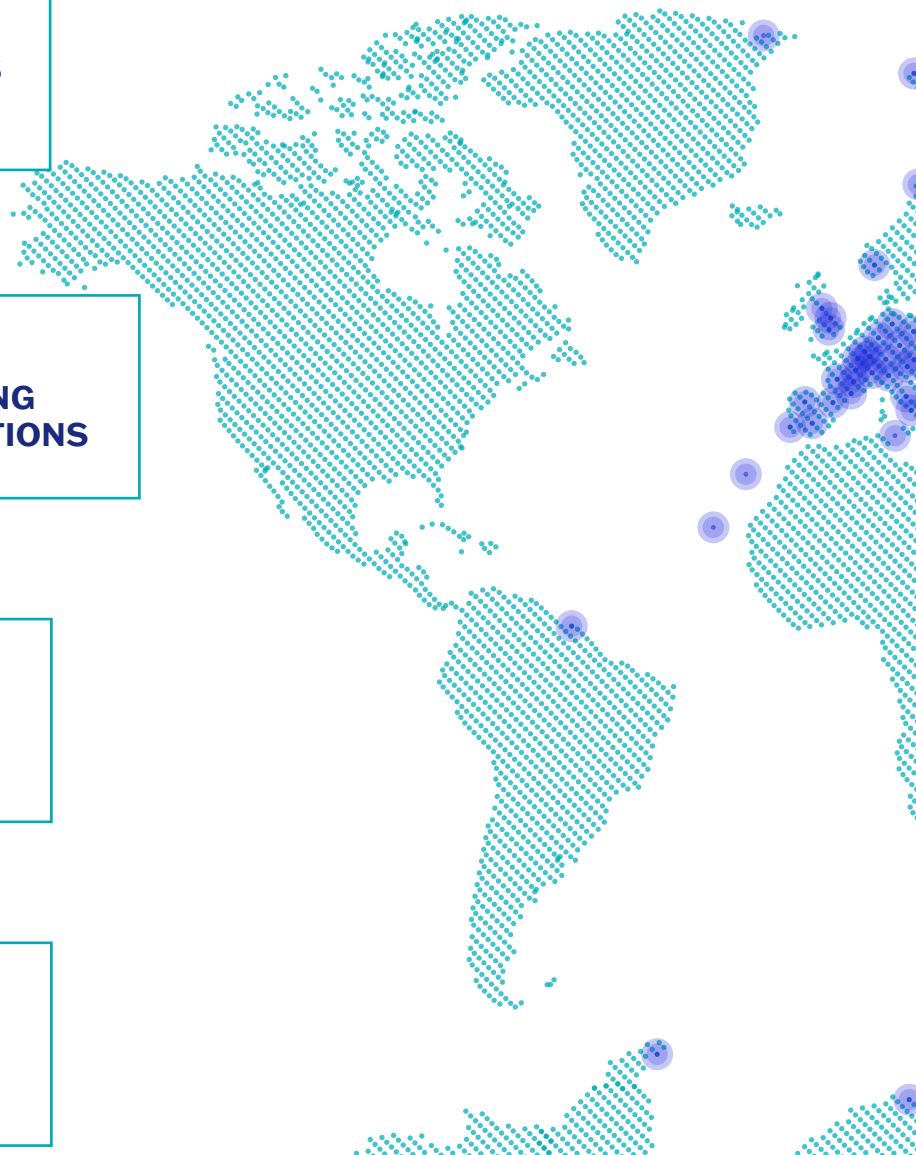
# TOWARDS BECOMING A GLOBAL INFRASTRUCTURE

ACTRIS has a large European wide community. At the moment 22 countries have shown their commitment at organizational or state level and overall ACTRIS community involves more than 100 research performing organizations. ACTRIS is consolidating its position in the national, European and international landscapes, expanding its role as a key player supporting environmental research.

Science has the ability to guide societies towards efficient emission-reduction actions at different scales, from local to national and continental scale.

ACTRIS' support to achieving the UN Sustainable Development Goals is linked to our role as key contributor and operator of the global observing system and to liaise with counterparts in different parts of the world.

It is our ambition to be clearly recognized as a key player in the Earth Observation system, supporting the policies, e.g., defined by the World Meteorological Organization (WMO), European Space Agency (ESA), or Group on Earth Observation (GEO).



# BAL RESEARCH

# 06

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*“Quality of services, open innovation culture, agility to respond to demand from user communities will enhance the level of trust, integrity and confidence between ACTRIS and its partners.” says Paolo Laj, ACTRIS Scientific Chair.*



**85**

**OBSERVATIONAL  
PLATFORMS**

**38**

**EXPLORATORY  
PLATFORMS**

**157**

**VARIABLES**



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