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Agenzia Spaziale Italiana

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TAKING THE PULSE OF OUR PLANET FROM SPACE

EUMETSAT ECMWF EUSPA

EO Italian Missions, Strategy and Programmes

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NATIONAL SPACE GOVERNANCE

In 2018 the ASI space governance was reformed by conferring the key management, the general political responsibility and the policy coordination of all the Ministries involved in space programmes to the Prime Minister, and by establishing the "Inter-ministerial Committee for space and aerospace-related policies" (COMINT).

The Committee has the task of elaborating the governmental and industrial strategies in view of facing the new challenges which derive from security requirements or from new developments.

NATIONAL SPACE GUIDELINES

Furthermore, National Space Guidelines were addressed in 2019 highlighting, among others, the following elements:

(i) an industrial policy which also supports new technological production chains in the space sector;

(ii) a programme able to attract capital;

(iii) a space diplomacy;

(iv) a plan to promote the applications and use of space technologies;

(v) a national strategic plan for space economy;

(vi) a national security space strategy;

(vii) a development programme from the upstream to the downstream sector.

NATIONAL SECURITY SPACE STRATEGY

In the same year, the Italian Prime Minister also addressed the National Security Space Strategy whilst recognising the need to guarantee an adequate level of continuity in the provision of services and applications to institutional and commercial user communities - enables acquiring an adequate intrinsic resilience of space infrastructures towards natural events (accidental collisions of satellites with dangerous debris and space weather) or intentional threats (physical, computer and electromagnetic ones) to orbiting and terrestrial systems.

EARTH OBSERVATION A PRIORITY SECTOR

Earth Observation is a **priority sector**, where Italy has consolidated its experience in the last decades. Nowadays EO infrastructures are permanent features of the Italian space system.

The Italian industry cover the whole value chain of the Space domain: upstream, midstream and downstream, fully part of the European industrial landscape; therefore, Italy is capable to develop several sensor typologies, small, medium and large satellites, as well as to operate constellation of satellites and to exploit EO data for the benefit of a wide range of users (institutional, scientific, defence and commercial).

ASI Earth Observation at glance: *for our planet, for our future…*

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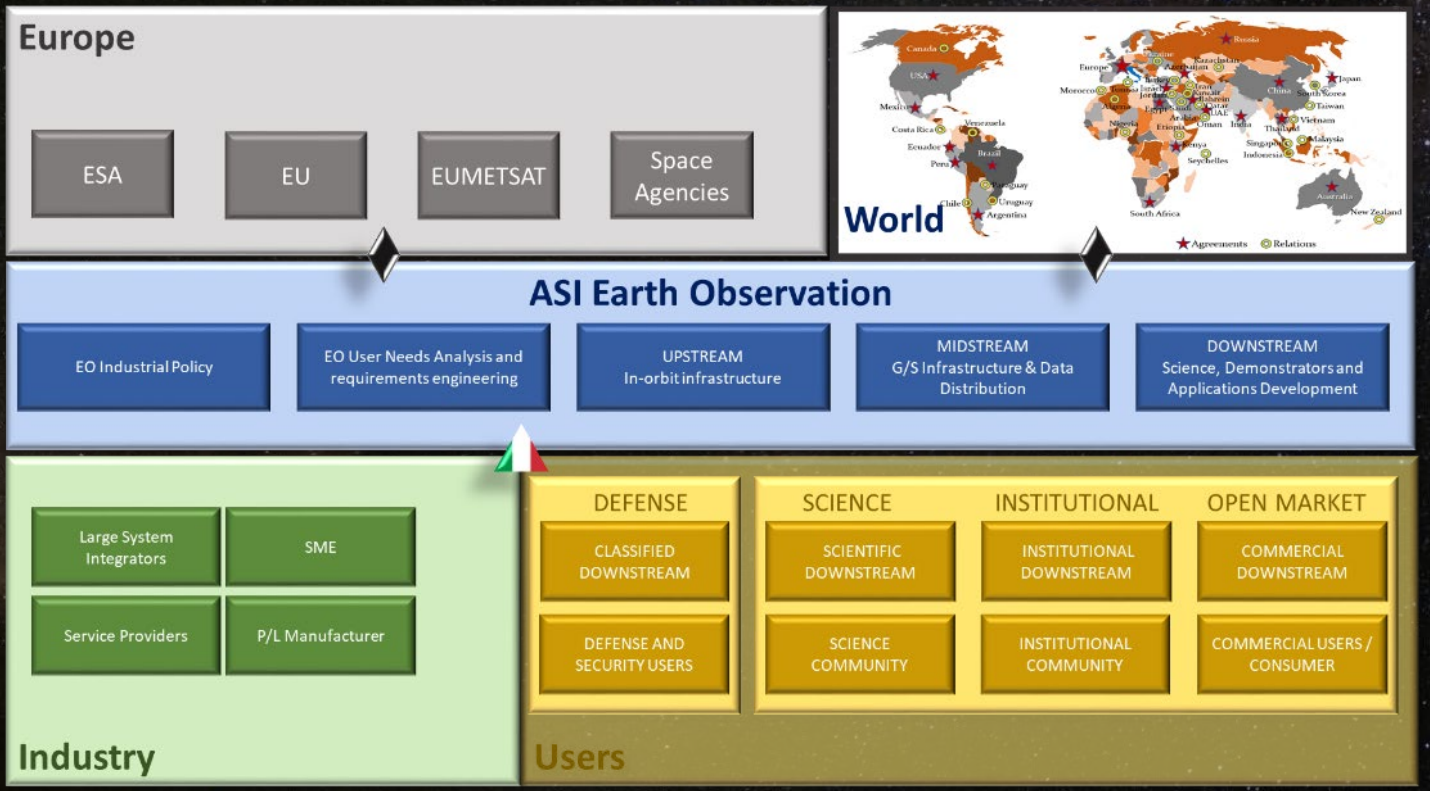
…ensure the understanding, monitoring and protection of our planet guaranteeing the maximum benefit for science, applications, society and economic growth of Italy…

ASI implements this vision through its Earth observation programs developed in Italy, in Europe (ESA, EU, EUMETSAT) and within the widest international framework.

ASI plays an architect role in the definition, development, procurement, exploitation and evolution of the space assets through its National industry and science and application community, contributing actively to the major European infrastructures.



Our 8 major objectives in Earth Observation

Sustain the Future of Synthetic Aperture Radar	•New instruments and constellations (X/L/P Bands) •Developments for large reflectors/deployable antennas •SAR Technology Roadmap
Secure the leadership in Hyperspectral payload	•Hyperspectral Next Generation •Miniaturized Hyperspectral Mission (PLATiNO) •Hyperspectral Technology Roadmap
Strengthen developments in Thermal Infrared	•TIR Mission based on minisatellite (PLT-2) •ASI-NASA TIR mission •TIR hyperspectral / TIR Technology Roadmap;
Achieve autonomy in HR systems	•HR Mission based on minisatellite (Feasibility study) •Optical Technology Roadmap
Consolidating the Lidar capability	•Lidar mission (Feasibility study) •Lidar Technology Roadmap
Sustain development of new instruments	•Radiometers, Quantum Gravimetry, etc •Technology roadmap
Strengthen Earth science and applications	•Scientific and application projects 1) to understand Earth system and interaction between process and 2) to deliver information to enhance quality of life and strengthen our economy
Pull users towards our applications and services layers	•Demonstrators •Application Services Start-Up

EUROPEAN PROGRAMMES AND ROLE OF ITALY

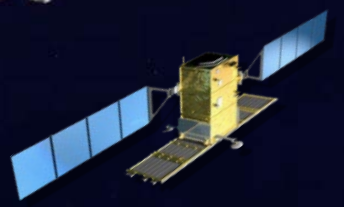
At European level Italy is one of the main founding members of Copernicus.

At European level Italy is also one of the most important contributors to the space programmes of European Union, **ESA and EUMETSAT**.

Last but not least Italy participates in the **Copernicus Programme**, the most important EO programme at worldwide level.

ITALIAN COOPERATION

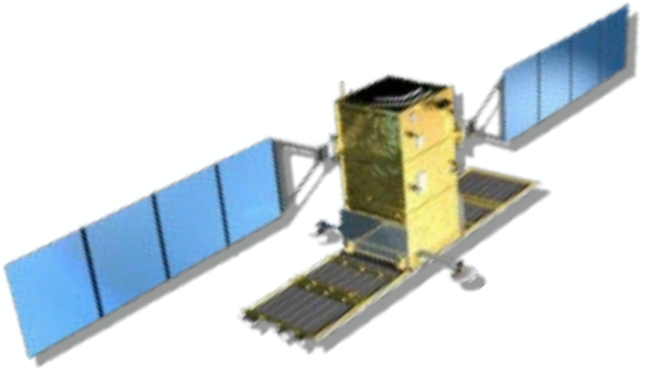
- ASI-ESA SUPPORT TO CHIME (2020 and 2021 PRISMA4CHIME project), study of a HYP+HR/VHR CALVAL site
- ASI-NASA COOPERATION (with NASA/JPL, TIR-Multispectral Mission)
- ASI-CONAE COOPERATION: *SIASGE PROGRAMME COSMO-SkyMed & SAOCOM (L-band SAR)*
- ASI-JAXA COOPERATION: *COSMO-SkyMed & ALOS-2 (L-band SAR)*
- ASI-UKSA COOPERATION: *COSMO-SkyMed & NOVASAR (S-band SAR)*
- ASI-CNSA COOPERATION: CSES/HEPD- High-Energy Particle Detector
- ASI-ISA COOPERATION: *SHALOM (hyperspectral mission)*
- *ASI-ISRO COOPERATION: WG EO (hyperspectral research activity)*



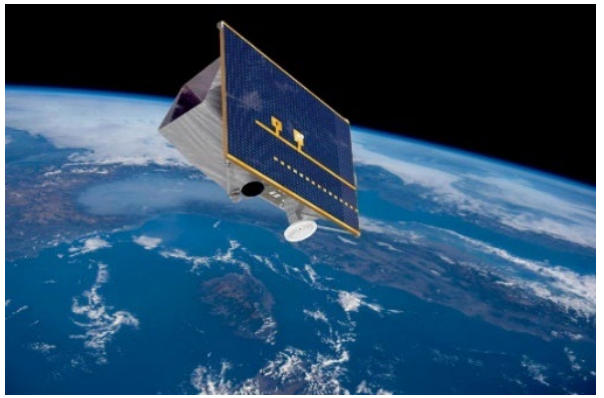
ITALIAN EO SATELLITES

At present, Italy has the following operational national EO satellites: three COSMO-SkyMed satellites (CSK-3 deorbiting started on 1 May 2022), two new COSMO-SkyMed Second Generation satellites and the PRISMA hyperspectral satellite.

COSMO-SkyMed Second Generation: CSG-1 launched on 18 December 2019 (operational since December 2020); CSG-2 launched on 1 February 2022 (commissioning expected to end in September 2022)



PRISMA: launched on 21 March 2019, opened to users on 21 May 2020



Targets

Promote the development of **applications and value-added services** based on Earth Observation data (and the use of Telecommunications and Navigation satellite systems) also combined with each other and / or integrated with non-space data and services – **Integrated applications**

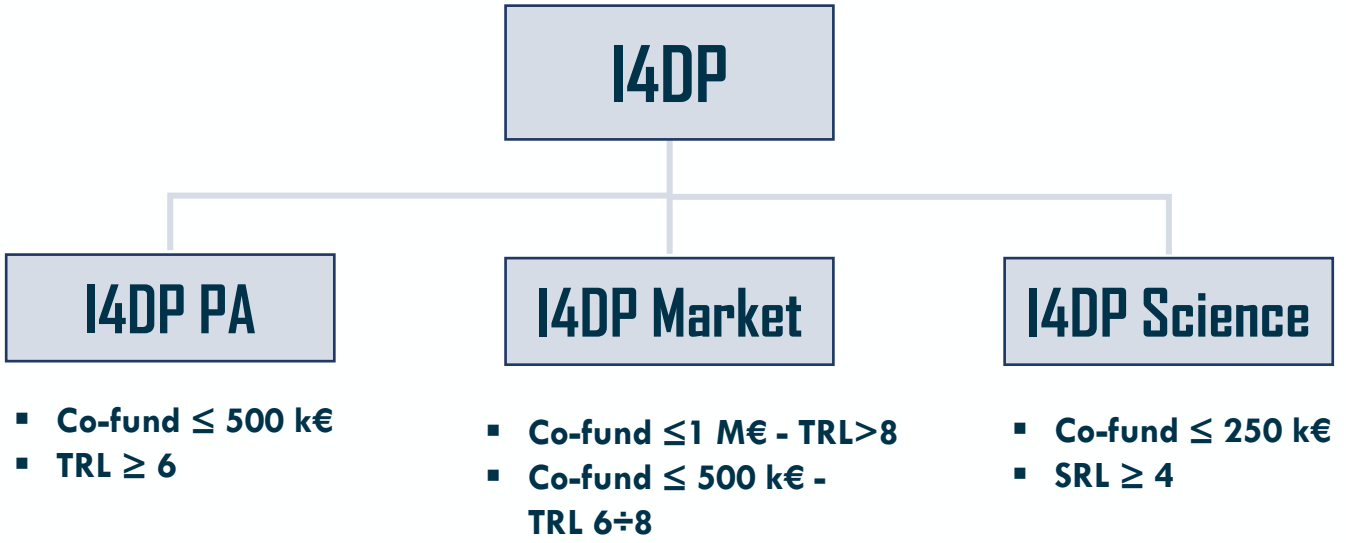
Allow the acceleration of scientific and technological development, through the implementation of **demonstrators and pilot projects** capable of using national systems dedicated to the management of geo-spatial data

Encourage the use of spatial data, systems and services, as well as the development of new techniques, **including those of non-spatial derivation** (e.g. Artificial Intelligence, Data Analytics), for the analysis and integration of increasingly numerous and complex data coming from multi-band sensors

Prepare new generation downstream services, useful for users engaged in the governance and monitoring of the territory and its resources, using entrepreneurial and scientific skills and enhancing the infrastructure investments made by ASI – **user-driven approach**

I4DP – Innovation for Downstream Preparation

The program is divided in **3 different actions**, based on the different categories of users to whom it will be directed (Public Administrations, Companies, Universities and Research Centers)



Periodic thematic calls will be issued (every 4 ÷ 6 months)

First call themes: Climate changes (PA) – Sustainable Cities (Science) – Infrastructure monitoring, Precision farming (Market)

ASI DATA ACCESS AND USE – SAR – CSK

- These calls are addressed to basic and applied R&D in view of scientific and toward operational utilization of the products/services developed
- Commercial or operational activities are not supported


COSMO-SkyMed Constellation
First and Second Generation
Open Call for Science

Italian Space Agency

Agenzia Spaziale Italiana

January, 2021

Selected projects will be supported for a maximum of two years, trough a provision of **maximum 100 free of charge COSMO-SkyMed scenes**

- 80 archive products
- 20 tasking products

National/International users

Selected projects will be supported for a maximum of two years, trough a provision of **maximum 100 free of charge COSMO-SkyMed scenes**

- 100 archive products or
- 100 tasking products


Open Call
per
l'industria nazionale
Utilizzo dei dati COSMO-SkyMed
prima e seconda generazione

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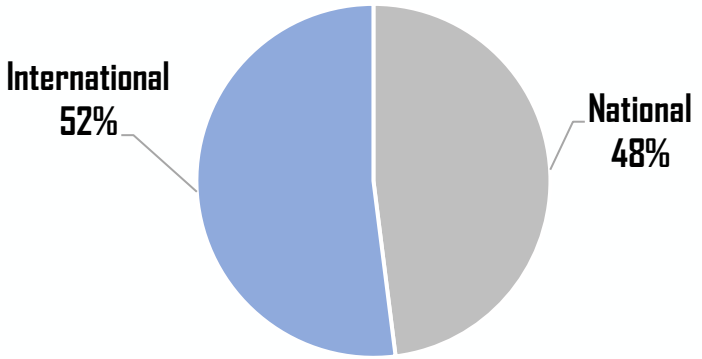
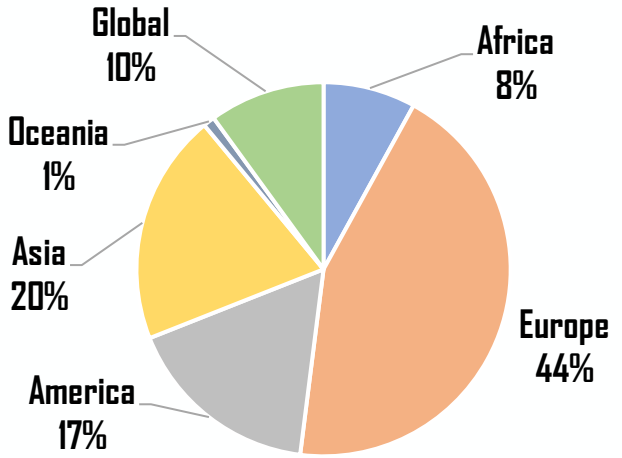
Gennaio 2021

National users

ASI DATA ACCESS AND USE – SAR – CSK

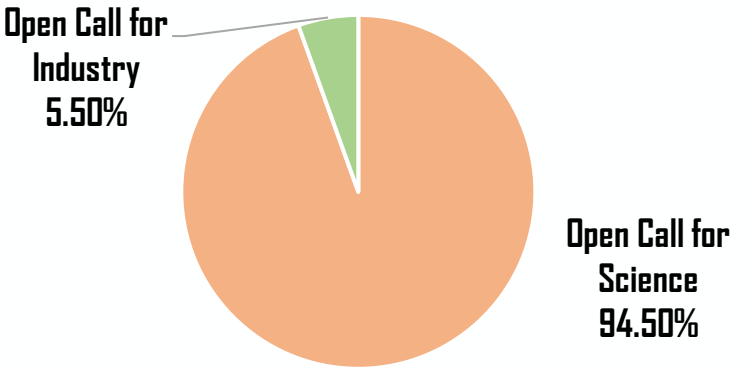
National and International user distribution





- Equal distribution between national / international users, with prevalent European area of interest
- Around 2000 products/year delivered

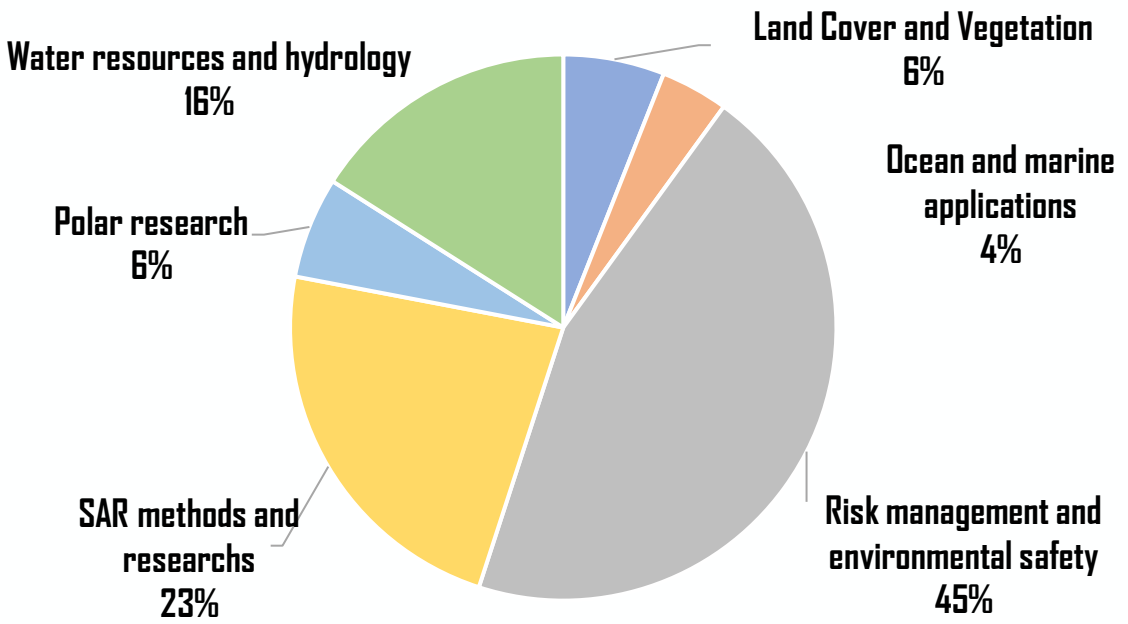
Distribution between the two types of calls



- Interest for high spatial resolution X-band SAR data with integration of other SAR sensors (es. medium resolution Copernicus Sentinel-1 C-band SAR datasets)

ASI DATA ACCESS AND USE – SAR – CSK

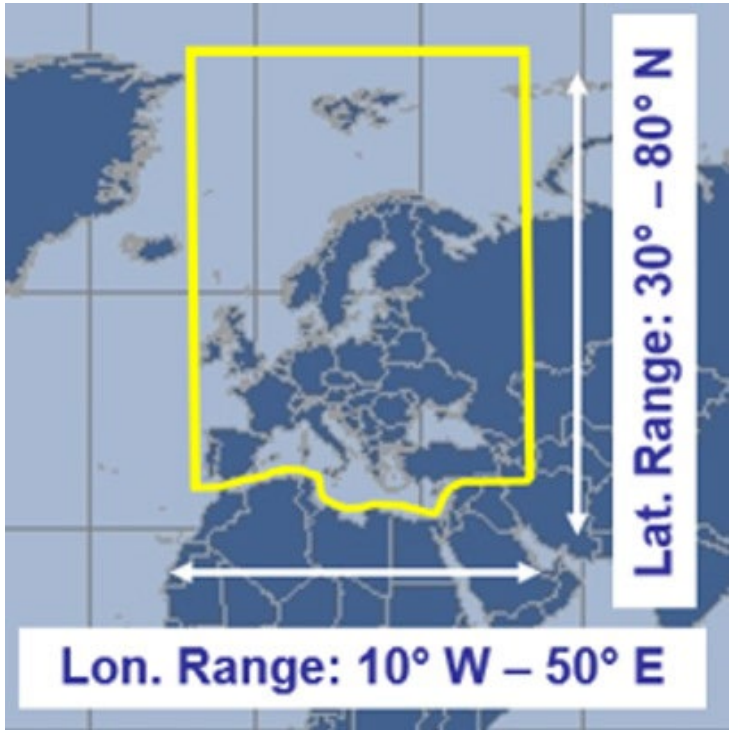
Primary application domain distribution

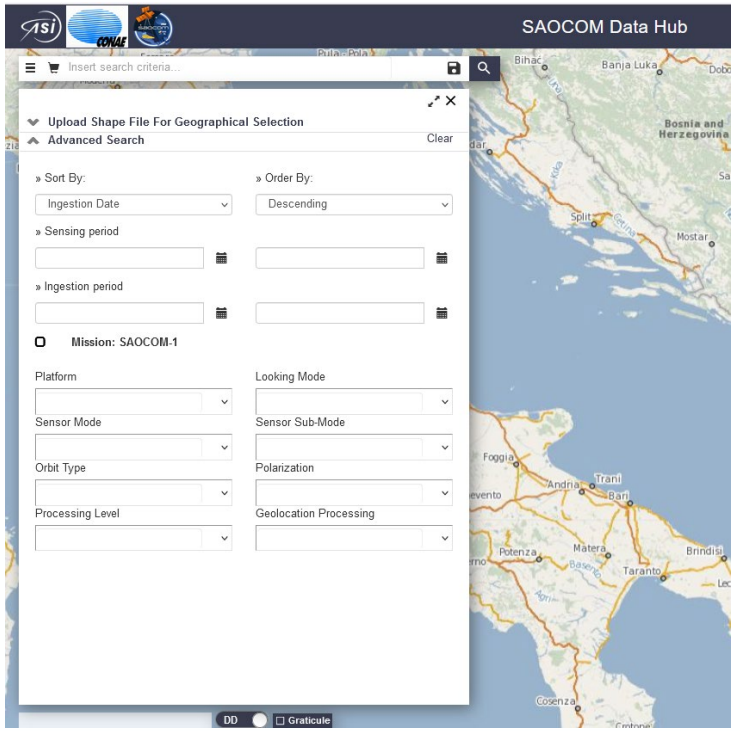


- Primary Applications Domain distribution shows **"Risk Management and Environmental Safety"** as the main field of application, with 45%
- A number of projects are closely connected with **Disaster Risk Reduction (DRR)** in order to reduce natural disasters impact, with a focus over European territories. Investing in prevention and preparedness is a cost effective approach: on average, every euro spent on DRR activities **saves between four and seven euros** that would be spent to respond to the impact of disasters

ASI DATA ACCESS AND USE – SAR – SAOCOM

In the so-called **Zone of Exclusivity (ZoE)**, placed in the 10W-50E longitude range and 30-80N latitude range, ASI has the right to use the SAOCOM system **freely, fully and up to the saturation of the granted resources (around 150s of sensing time per orbit), for scientific and institutional purposes**, by users constituted by the agency's internal personnel or people who -for the strict scopes of SAOCOM mission exploitation- became affiliated to ASI.





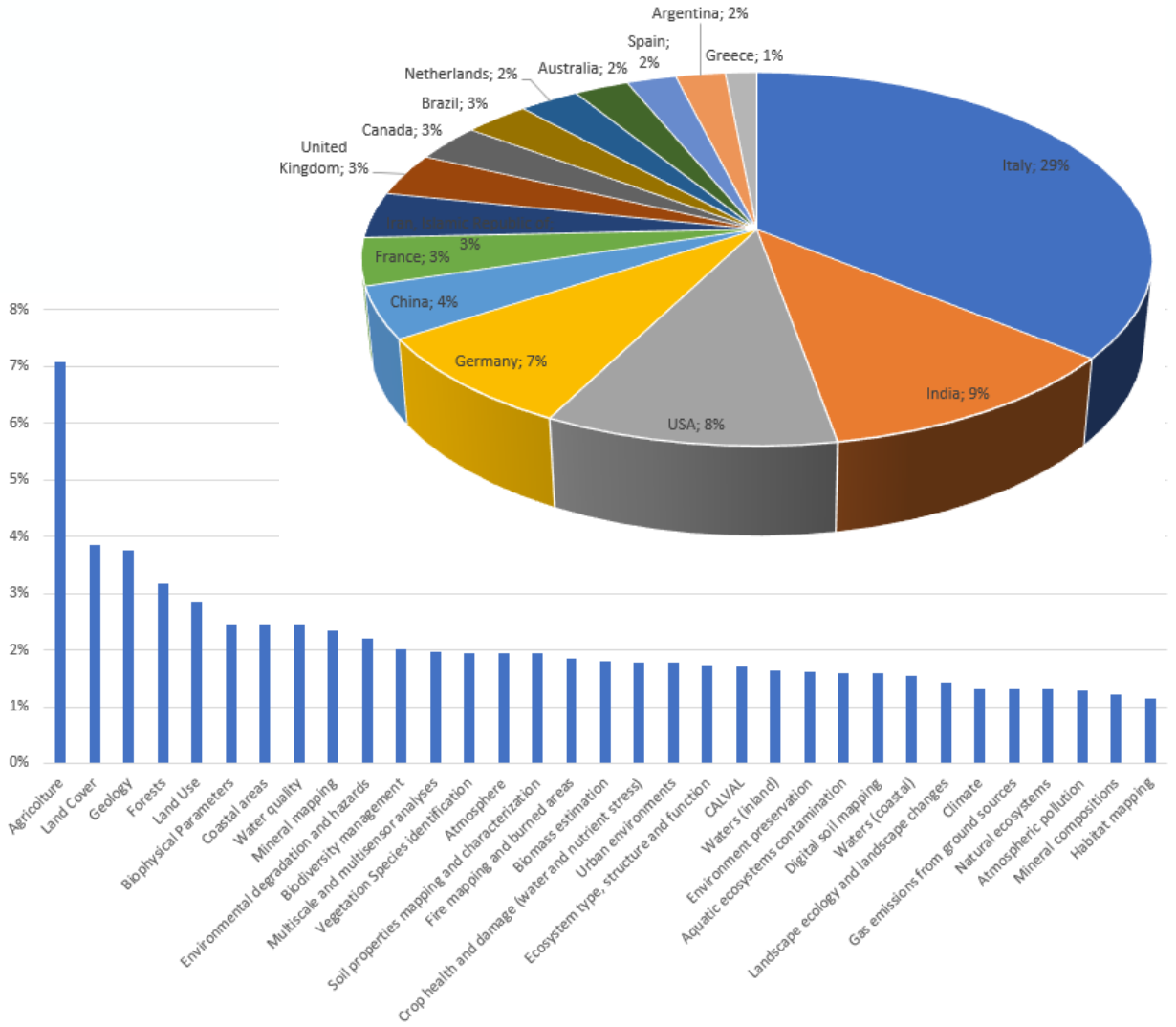
ASI DATA ACCESS AND USE - HYPERSPECTRAL

1150 Licenses to Use activated @ 15.01.2022

Showing the (statistically) most representative part of the user population:

- 15 nations cover **80%** of the users
- the Italian users are only **1/3**
- India, USA & Germany together account for **1/4** of the users

- **63%** of the total users are scientists (**50%** of the users belongs to non-Italian Science and is the largest category)
- Institutional (**9%**) and commercial (**12%**) represents **21%** of total users
- Foreign commercial (**8%**) is two times the Italian commercial (**4%**)
- **6%** of users are still freelance!



FUTURE CHALLENGES

In the coming years new challenges, such as EO market development, fostering the evolution and continuation of the European and national programmes, will come and they will be fully part of the national strategy already encompassing a wide variety of EO Programmes at national and European level.

General objectives:

In this context, among the others, the following general objectives will be pursued:

- Encouraging the market development of applications and services;
- Supporting and promoting national and European initiatives, highlighting the benefits of space technology & services and increasing the integration among different sectors of economy;
- Fostering the evolution and continuation of programmes such as Copernicus and the development of its complementary programmes;
- Favouring the optimisation of the different European programmes, avoiding duplications and pursuing synergies;
- Sustaining the direct involvement of Large System Integrators and Small & Medium Enterprises.

Next ESA Council Ministerial 2022

General objectives:

The Italian EO data portfolio, including the future IRIDE EO constellation, will pursue the complementarity to ESA's Earth Explorers, to Copernicus Sentinels and to EUMETSAT missions.

The Italian EO system will continue to be improved, from the upstream to the downstream sectors, expanding the national data portfolio with the aim to use new Earth Observation technologies also for the access and use of earth observation data for novel applications and services.

Maximizing the return of Earth Observation investments for the economy, science and society.

Earth Observation represents a strategic sector for Italy with highest priority, as reported in the *Government guidelines on space and* aerospace with the aim of promoting applications and use of EO space technologies.

THANKS FOR YOUR ATTENTION

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