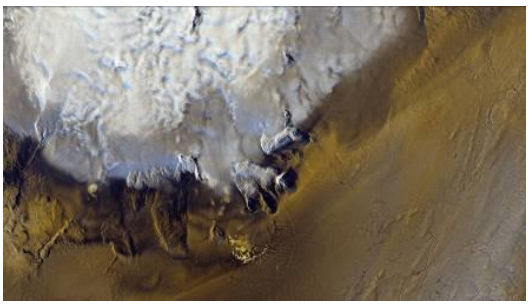
COSMO-SKYMED: SATELLITES AT THE SERVICE OF SUSTAINABILITY

COSMO-SkyMed is the first dual-use satellite constellation committed to environmental and territory monitoring, security, and emergency management. The data collected by the COSMO-SkyMed Earth observation radar satellites provides useful information both to support the daily lives of all citizens and to protect and preserve our planet.

CLIMATE CHANGE



With its unique features that allow it to monitor the Earth from Space both by day and by night, the COSMO-SkyMed constellation makes it possible to **measure the impact of climate change on our planet**, such as rising sea levels, melting glaciers and desertification, while also contributing significantly to the study of extreme weather conditions.

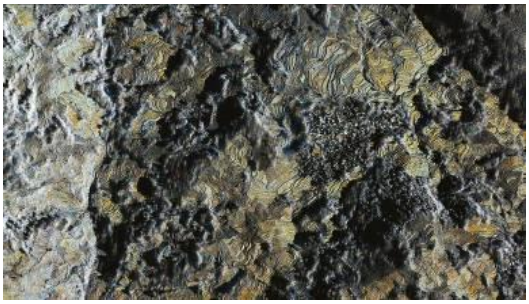
The Hofsjökull Glacier in Iceland. The COSMO-SkyMed radar sensor allows for the best observation both of the glacier surface, at the top, but also of the terrain morphology, at the bottom, despite the glacier being completely covered in snow. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS. https://leonardo.canto.global/b/OD6FC

SUSTAINABLE RESOURCE MANAGEMENT

With COSMO-SkyMed, it is possible to **improve Man's management of natural resources**. This can be achieved by fighting deforestation and the overexploitation of agriculture and livestock farming and by mitigating their effects also in terms of desertification and hydrogeological instability, but also by monitoring urbanisation, abusive waste and water management, which are the main causes of the progressive reduction of land fertility and of the degradation of the connected ecosystem services

The Liwa Oasis, in the United Arab Emirates. The oasis is located on the northern border of the Rub' al Khali, the large desert area at the heart of the Arabian Peninsula, and one of the most inhospitable areas of our planet. Through sustainable agriculture based on drip irrigation and greenhouses, Liwa's small farms offer protection against the advancing sand dunes of the Rub' Al Khali, forming a veritable wall against desertification. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS https://leonardo.canto.global/b/JFV14

AGRICULTURE



The COSMO-SkyMed radar data makes it possible to optimise the classification of soils and the **monitoring of farming** during the growth cycle, also with a view to optimising crops. In addition to improving yield and quality, water savings of up to 40% can also be achieved.

Honghe Hani, China. In the "Globally Important Agricultural Heritage System" of Honghe Hani, in China, rice plantations and traditional terracing techniques combine with the importance of aquatic biodiversity celebrated in the local culture. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS. https://leonardo.canto.global/b/O241E

CULTURAL HERITAGE

COSMO-SkyMed **also observes monuments, historical buildings, archaeological areas and cultural landscape, in Italy and around the world, studying their changes over time** and detecting their every infinitesimal movement. Monitoring from Space for the protection of cultural heritage is a useful means of monitoring the state of conservation of the world's known heritage, such as the **Colosseum Archaeological Park**, which has been under observation from Space since 2018, but also of promoting new discoveries, as happened recently for the UNESCO site of Bosra, in Libya, or the Sergiopolis site, in the Syrian desert.

The Giza plateau in Egypt and the three great pyramids of Khufu, Khafre, and Menkaure. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS. https://leonardo.canto.global/b/GC333)

CONTROL OF CRITICAL INFRASTRUCTURE

The extraordinary accuracy of the COSMO-SkyMed images and their high spatial and temporal resolution provide a powerful tool to **plan at best** the implementation of new settlements or works, **to keep under control the movement of the soil**, a frequent cause of structural failure and collapse, and to **observe strategic infrastructure** such as dams, bridges and buildings

The Wembley Stadium area, London, UK, taken a few days before the EURO 2020 finals. The image shows the stadium, inaugurated in 2007 on the ashes of the previous structure, and the surrounding area, Wembley park, springing from an important urban recovery project and today one of the most fashionable districts of the British capital. The entire area is bordered by two railway lines, clearly visible in the radar image. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS https://leonardo.canto.global/b/HNJOS

MARITIME SAFETY

COSMO-SkyMed is a **fundamental resource for protecting our seas and ensuring their safety** by monitoring coastlines and high waters so as to detect vessels engaged in illegal activities, identify dangerous spills, or support search and rescue activities at sea. The satellites are also used to identify optimal routes, thus making **navigation more sustainable**, economical and safe – also in the Arctic, where it is possible to detect the presence of icebergs. In the maritime field, for example, in March 2021 the COSMO-SkyMed satellites monitored the **accident of the Ever Given**, the container ship that got stranded in the Suez Canal.

Between 23 and 29 March 2021, the container ship Ever Given got stranded in the Suez Canal, blocking the passage of other commercial ships through the artificial isthmus. Images were taken by numerous Earth observation satellites, including COSMO-SkyMed, which provided essential information both for rescue operations and on the shipping traffic waiting at the two ends of the canal. COSMO-SkyMed © ASI. Processed and distributed by e-GEOS https://leonardo.canto.global/b/RK1HD

EMERGENCY MANAGEMENT

With its radar eyes, COSMO-SkyMed helps to predict landslides and floods, and to coordinate rescue services in the event of earthquakes or fires, due to its **ability to monitor critical areas "from above"**. As part of the European Copernicus programme, the COSMO-SkyMed images are of great importance in the European Commission's Emergency Mapping Rapid Mapping service, which in just a few hours provides **satellite maps of areas affected by natural emergencies or humanitarian crises** – such as the **volcanic eruption in La Palma**, for which COSMO-SkyMed provided data and maps of the lava movements.

At the centre is the lava flow from the Cumbre Vieja volcano, on the Spanish island of La Palma. Between the start of the eruption, on 19 September 2021, and its conclusion 85 days later, on 26 December, the COSMO-SkyMed radar made it possible to constantly monitor the lava flow's progress towards the sea, providing valuable information for the rescue operations. COSMO-SkyMed Second Generation © ASI. Processed and distributed by e-GEOS https://leonardo.canto.global/b/JNQFR