

Since ancient times, men have been studying, interpreting, describing and picturing the world where they live. For thousands years, one of the tasks of explorers has been to draw geographical maps, which were often inaccurate because they could not watch the territories they were exploring from above.

Thanks to space technology, now it is possible to explore the Earth very precisely and accurately, to study its atmosphere, the crust, the seas, even more times a day, to check for changes. For example, from space it is possible to monitor whether deserts extend, lakes dry out or glaciers shrink.

Our Earth never stops and, thanks to images from space, scientists can follow its behaviour, know how it reacts to changes, either natural or caused by human beings.

But who is out there in space, doing all this observation work, taking pictures and sending them down to Earth?

It is a constellation of artificial satellites, instruments launched from the Earth to space to become our eyes up there: some are devoted to observe the Universe and discover its secrets, some watch the Earth and keep it under control. Italy is at the forefront in this important activity. Our country has built and sent into space a group of satellites which are among the newest and most precise in the world. The system is called COSMO-SkyMed

(Constellation of small Satellites for Mediterranean basin Observation = COSMO+SkyMed because we are interested in what happens close to home, even though satellites can observe the rest of the world) and is managed by the Italian Space Agency.

The COSMO-SkyMed satellites are truly special eyes: they can watch at night and through the clouds.

This is because they have a radar onboard, which can see through any weather condition. The radar sends X-ray waves which bounce back on the ground and go back to the antenna.

The COSMO-SkyMed radar are so powerful that from space, 620 Km away from the Earth, they can picture objects down to one meter in size. That is why the satellites were completely designed and built by the Italian industry, which has the longest experience in the world in creating radars to study the Earth or other planets.

COSMO-SkyMed has another record: it is the first dual system in the world, civilian and military at the same time. The Italian Defence has contributed to the project's funding in exchange of the rights to use part of the images to monitor dangerous areas.

Yet COSMO-SkyMed is mostly devoted to Earth

monitoring activities and natural disasters prevention. The Civil Protection is among the principal users: thanks to images from the satellites, processed by the Space Geodesy Centre in Matera, a few hours after the severe earthquake that struck Abruzzo in 2009, the Civil Protection already had an estimate of the damages, and could organize rescues.

The cost of COSMO-SkyMed has been 1 Billion Euros.

It is the biggest scientific and technological investment in Italy and the country, thanks to ASI, reaffirms its role at the forefront of the space sector.

