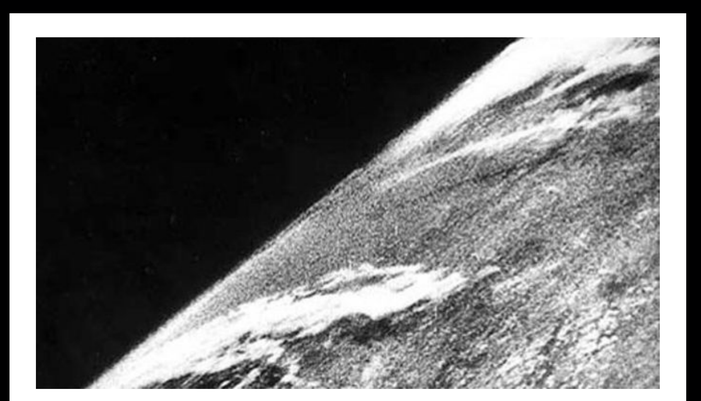
# New perspective from space

In 1946, planet Earth took its first selfie. A camera was mounted on a German rocket in New Mexico, United States and launched 100 km into space before returning with exposed photographic film. Since then, Remote Sensing technology has improved immensely, as you can see from the images of this exhibition. Modern satellites with a range of sensors are orbiting around us while continuously providing new and valuable information on our planet. The unprecedented availability of satellite time series completes field measurements and allows us to understand large-scale changes in our environment and how best to protect it.

Earth Observation satellites record electromagnetic energy reflected or emitted by objects on the Earth's surface, capturing not only the part of the electromagnetic spectrum that is visible to the human eye (visible light), but also other wavelengths such as the infrared, including thermal and microwave radiation. This allows us to see reality with unprecedented detail and distinguish between different surfaces because they reflect solar radiation differently.

Existing satellites provide data at a range of different spatial resolutions and temporal intervals that can be selected depending on our needs. Weather forecasting requires frequent data, while monitoring changes in agriculture or natural vegetation generally requires images at a weekly, monthly or yearly basis. Spatial resolutions can vary from less than one meter to a few kilometres, allowing Earth Observations to inform us about our planet from local to global scales. Thus, the availability of sensors characterized by a range of spectral, spatial and temporal resolution offers new perspectives in Earth surface monitoring.



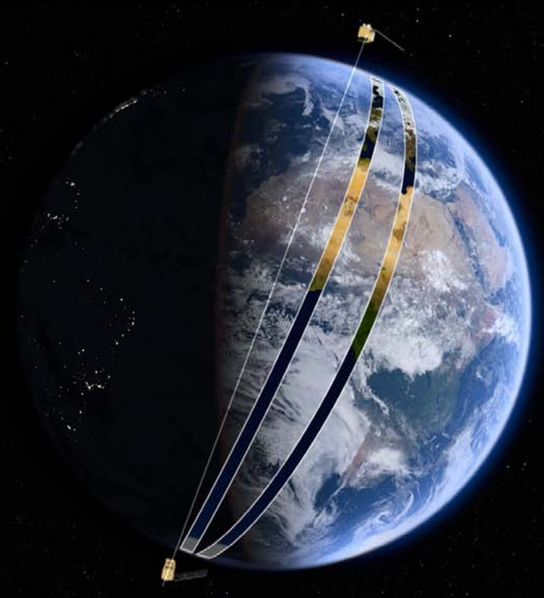
*First photo from space. © White Sands Missile Range Applied Physics Laboratory*

# Meet some of the satellites informing ECOPOTENTIAL

Several Earth observing satellites  are now orbiting the Earth. In particular, the European Sentinel 2A and 2B are twin satellites, which oppose each other in orbit. Their data, freely available, can support the monitoring of land surfaces, providing quantitative information on deforestation, crops condition, glacial or snow melting, as well as emergency response services. The two Sentinels can capture images of the same location on Earth every five days, at spatial resolutions ranging from 10 to 20 meters, and ensure continuity to data acquired in the past, such as to the optical Landsat data archives. Thus, having access to long-term environmental data records can offer the perspective to detect changes and trends useful to predict new scenarios. Sentinel 3A, on the other hand, focuses on observing the weather and oceans, including sea ice, ocean temperature and water quality. It carries a suite of instruments, including a radar altimeter, and will provide continuity to other satellites such as ERS, Envisat and SPOT. The Sentinel family was created by the European Space Agency for the Copernicus Programme and comprises additional future Sentinel missions to monitor the health of our planet. Specifically, Sentinel-4 and Sentinel-5 will provide data for atmospheric composition monitoring from geostationary and polar orbits, respectively. In addition to optical sensors, radar Sentinel-1 sensors provide day and night radar images in all weather conditions for land and ocean services.

*Sentinel 3A. ©ESA/ATG medialab*

*Sentinel 2A was launched on 23 June 2015 and Sentinel 2B followed on 7 March 2017. Together they monitor changes in Earth's land cover with unprecedented detail. © ESA/ATG medialab*



*The two opposing satellites Sentinel 2A and 2B. ©ESA/ATG medialab*

*Sentinel 2B. ©ESA/ATG medialab*

*Sentinel 2A. © ESA/ATG medialab*

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