

# → ATMOSPHERE APPLICATIONS

The Earth's atmosphere is the mixture of gases that surrounds our planet. It is of fundamental importance to life on Earth. Among other things, it provides living organisms air to breathe, protects us from the sun's ultraviolet radiation and regulates the Earth's temperature to keep it habitable. Monitoring the properties of the atmosphere is therefore essential.

Sensors on board satellites offer new capabilities to support atmospheric applications. For example, they provide profiles of wind and measurements of clouds distribution to improve weather models and forecast. They also monitor changes in atmospheric composition, useful to control air quality and refine climate models. They provide detailed views of phenomena such as hurricanes, eruptions of volcanic ash and urban heat islands.



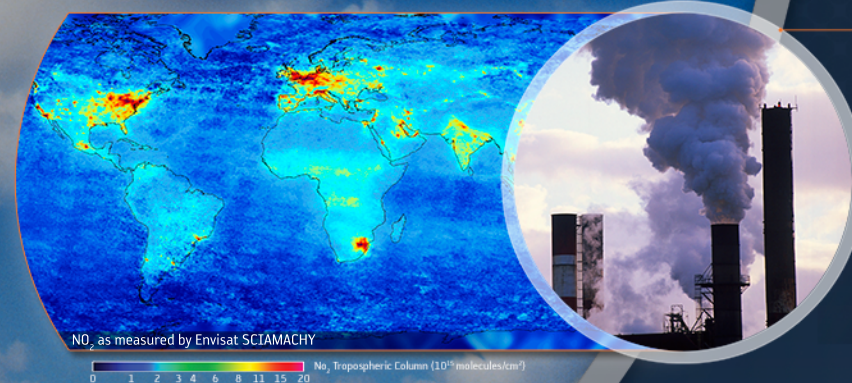
## HURRICANE

Optical imagers from space provide detailed views of cloud structures associated with the convection of wind. This information is useful to support the monitoring of hurricanes and improve weather forecasting.



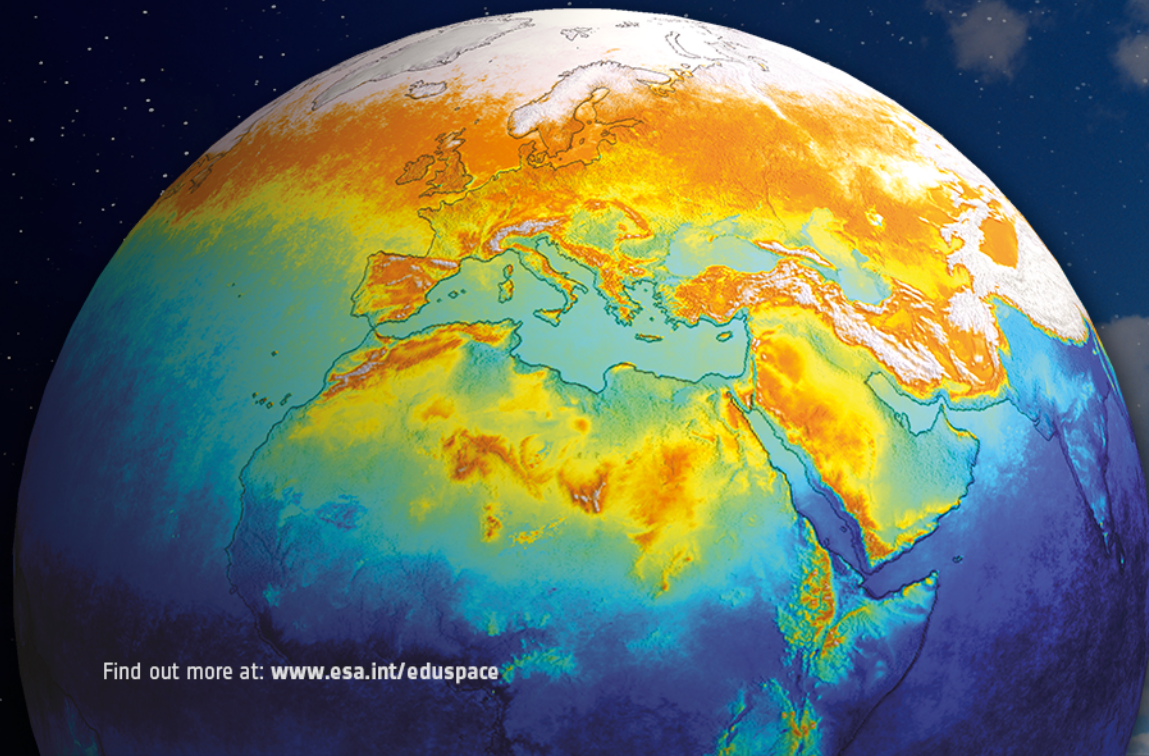
## WIND

Imaging radar instruments are sensitive to water surface roughness such as waves produced by wind on open oceans or lakes. This information is used to retrieve wind estimates which are essential to the management of wind farms and to weather forecasting.



## NITROGEN DIOXIDE (NO<sub>2</sub>)

Optical spectrometers measure the light reflected from the atmosphere and reveal absorption lines, which correspond to certain gases such as Nitrogen dioxide (NO<sub>2</sub>). This information is vital to assess air quality and to support the prediction of climate change.



Find out more at: [www.esa.int/eduspace](http://www.esa.int/eduspace)