

Earth Science from Space

KNMI plays an important role in developing earth observation satellites and in processing and interpreting their data. Forecasts for weather and climate, air pollution and solar radiation are largely made with data from these satellites.

Geostationary satellites, such as MSG, orbit so as to maintain a fixed point above the Earth

36.000 km

Polar satellites orbit at about 800 km from pole to pole, while the earth turns underneath

Northern lights

Thermosphere

85 km

Meteorites

Mesosphere

50 km

Weather balloon

Ozone layer, protects against UV radiation

Stratosphere

12 km

Troposphere

In this layer of the atmosphere our weather takes place

Important satellites with which KNMI works:

OMI

2004

NASA/KNMI

Measures ozone and air pollution

MetOp

2006

ESA/EUMETSAT

Ozone, wind and air pollution

TROPOMI

2017

ESA/KNMI

Air pollution, ozone and climate change

Aeolus

2018

ESA/KNMI

Wind profiles

EarthCARE

2019

ESA/JAXA/KNMI

Clouds, aerosols and climate change

What do our satellites measure?

Ozone layer

Ozone is monitored using UV light

Clouds

Cameras take pictures of the earth

Wind

Radar waves reflect from sea waves from which wind is calculated

Climate change

Greenhouse gases such as methane are measured using infrared light

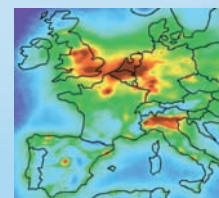
Air pollution

Small particles and gases, such as nitrogen dioxide, particulate matter and volcanic ash, are measured using UV light

Measuring air pollution

is increasingly important. NO₂ measurements show that the air in Europe is not clean:

low high



The biggest air pollutants are

- Nitrogen dioxide (NO₂)
- Particulate matter (PM)
- Ozone (O₃)

MSG

2002-2021

ESA/EUMETSAT

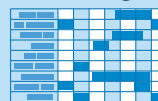
Cloudiness, air pollution, sun and precipitation

KNMI is involved in the entire process from inception to use of satellite data.

Formulating requirements



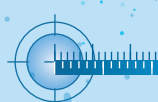
Planning



Design



Calibration



Launch



Data processing



Data interpretation



To customers

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