



OBSERVING
OUR FUTURE

FACTS

Tropomi technology

How does Tropomi work?

Tropomi measures direct sunlight and compares it to light reflected by the atmosphere. In the atmosphere, gasses exist each of them absorbing a specific wavelength of light. With these so-called absorption lines, Tropomi is able to determine which gasses can be found to what extent in the atmosphere.

Technological innovations

The secret of this relatively small yet powerful measuring instrument known as Tropomi consists of two Dutch innovations provided by SRON and TNO.

1. Freeform optics (TNO)

Reflecting telescopes with a variable curve (freeform optics) make Tropomi's high resolution possible.

2. Immersed grating (SRON, TNO)

A grating immersed in silicon unravels light in the shortest wavelengths. It is like a that visibly unravels light into a rainbow.

Wavelength range

270-500 nanometre (ultraviolet)

675-775 nanometre (near infrared)

2305-2385 nanometre (far from infrared)

Elements visible to Tropomi

Aerosols

Clouds

Methane (CH₄)

Carbon monoxide (CO)

Water vapour (H₂O)

Nitrogen dioxide (NO₂)

Chlorine dioxide (ClO)

Bromine oxide (BrO)

Sulphur dioxide (SO₂)

Formaldehyde (HCHO)

Oxygen (O₂)

Glyoxal (CHOCHO)

Oxygen dimer (O₂-O₂)

Semiheavy water (HDO)

Iodine oxide (iodine oxide)

