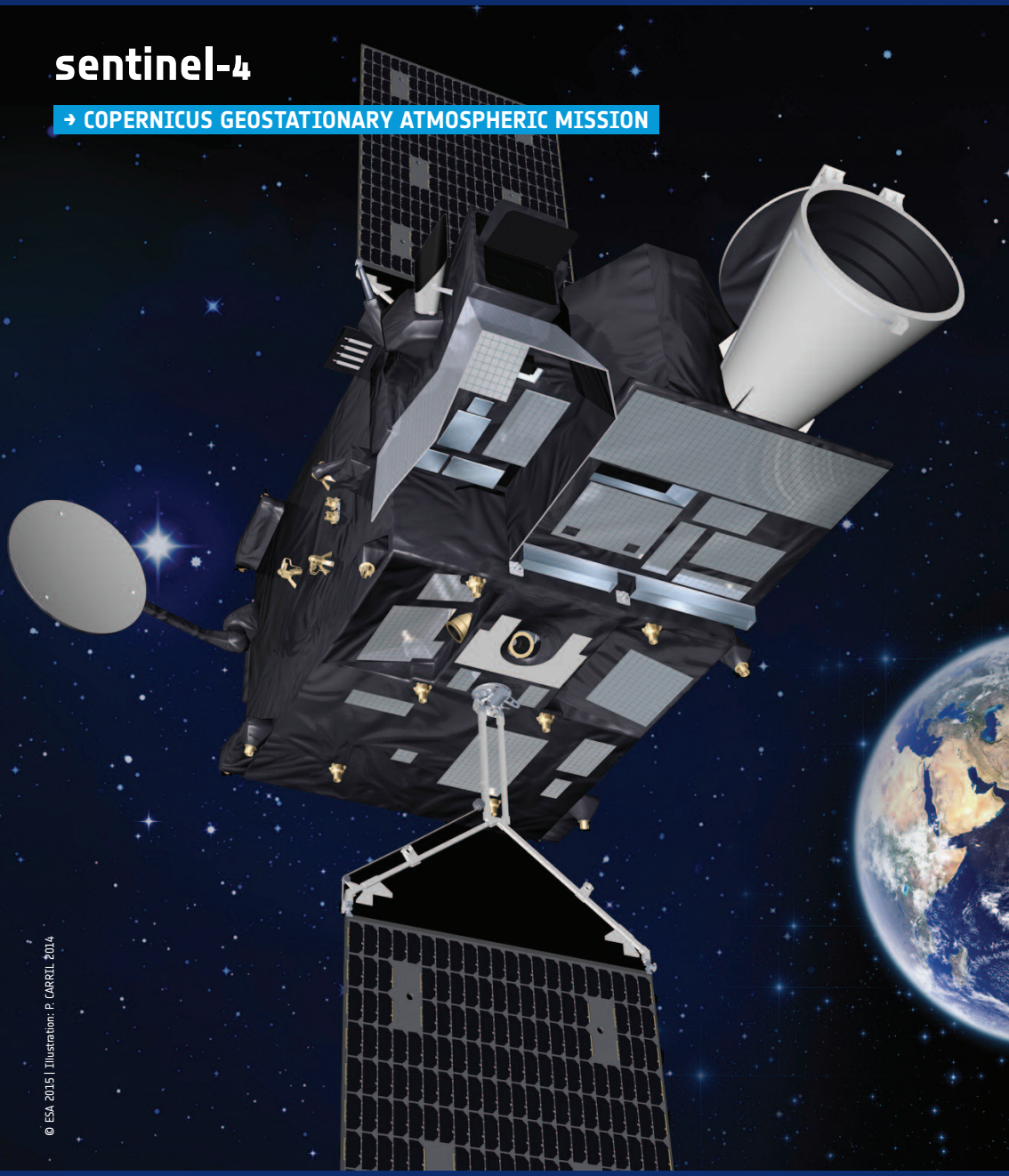
European Commission

esa

sentinel-4

→ COPERNICUS GEOSTATIONARY ATMOSPHERIC MISSION



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Last update April 2015

MISSION OBJECTIVES

The Sentinel-4 mission covers the needs for continuous monitoring from a geostationary orbit of the atmospheric chemistry in order to support air quality monitoring and forecast over the skies of Europe. The main data products will be O_3 (Ozone), NO_2 (Nitrogen dioxide), SO_2 (Sulfur dioxide), HCHO (Formaldehyde) and aerosol optical depth, which will be generated about every hour at a high spatial resolution.

The Sentinel-4 UVN instrument is a high resolution spectrometer covering the
› ultraviolet (305-400 nm),
› visible (400-500 nm)
› near-infrared (750-775 nm) bands.
The spatial resolution is 8 km while the spectral resolution in the three wavelength bands ranges between 0.12 and 0.50 nm.

MISSION PROFILE

Two Sentinel-4 instruments will be embarked respectively on two Meteosat Third Generation-Sounder satellites (MTG-S1 and MTG-S2).
Coverage of Europe and of North Africa (Sahara) is achieved by scanning an area of 8.8° East-West x 16.6° North-South (full angles, w/o margins) with a repeat cycle of about 60 minutes.

SATELLITE PAYLOAD

Number of units

The instrument will be composed of 3 units:
› the Main Optical Unit which contains the optical and detection chain
› the Instrument Control Unit
› the Scan Drive Electronics Unit

Instrument Characteristics

› Allocated mass: 200 kg
› Allocated mean power: 180 W
› Data Rate during acquisition = <30 Mbps
› Mission reliability = >0.75 @ 8.5 years

Imaging coverage and instrument field of view

From the MTG-S satellite, the accessible area is 8.8° EW x 16.6° N-S (full angles – w/o margins), assuming a 180°-satellite yaw flip by the MTG-S satellite. Because of the yaw flip of the MTG-S satellite every 6 months, the 2-axis mechanism will allow to point both the northern and southern hemisphere. The instrument has a N-S field of view of: 3.4° (instantaneous during acquisition).