

sentinel-2

→ COLOUR VISION FOR COPERNICUS

Satellites to serve

The Sentinels, a new fleet of ESA satellites, deliver the wealth of data and imagery that are central to Europe's ambitious Copernicus programme. This unique global monitoring initiative is making a step change in the way we manage our environment, understand and tackle the effects of climate change, and safeguard everyday lives.

Colour vision

Following on from the Sentinel-1 radar satellite, Sentinel-2 carries an innovative high-resolution multispectral imager with 13 spectral bands for a new perspective of our land and vegetation. The combination of high resolution, novel spectral capabilities, a swath width of 290 km and frequent revisit times provides unprecedented views of Earth.

The mission is based on a constellation of two identical satellites launched separately. Orbiting 180° apart, they will cover all Earth's land surfaces, large islands, inland and coastal waters between 84°N and 56°S every five days, optimising global coverage and data delivery for numerous applications.

Sharp eyes on Earth

The mission provides information for agricultural practices and to help manage food security. Images are used to detect crop type, and to determine leaf area index, leaf chlorophyll content and leaf water content to monitor plant growth and health. This is especially important for effective yield prediction and applications related to Earth's vegetation.

As well as monitoring plant growth, Sentinel-2 can be used to map changes in land cover and to monitor the world's forests. It also provides information on pollution in lakes and coastal waters. Images of floods, volcanic eruptions and landslides can contribute to disaster mapping and help humanitarian relief efforts.

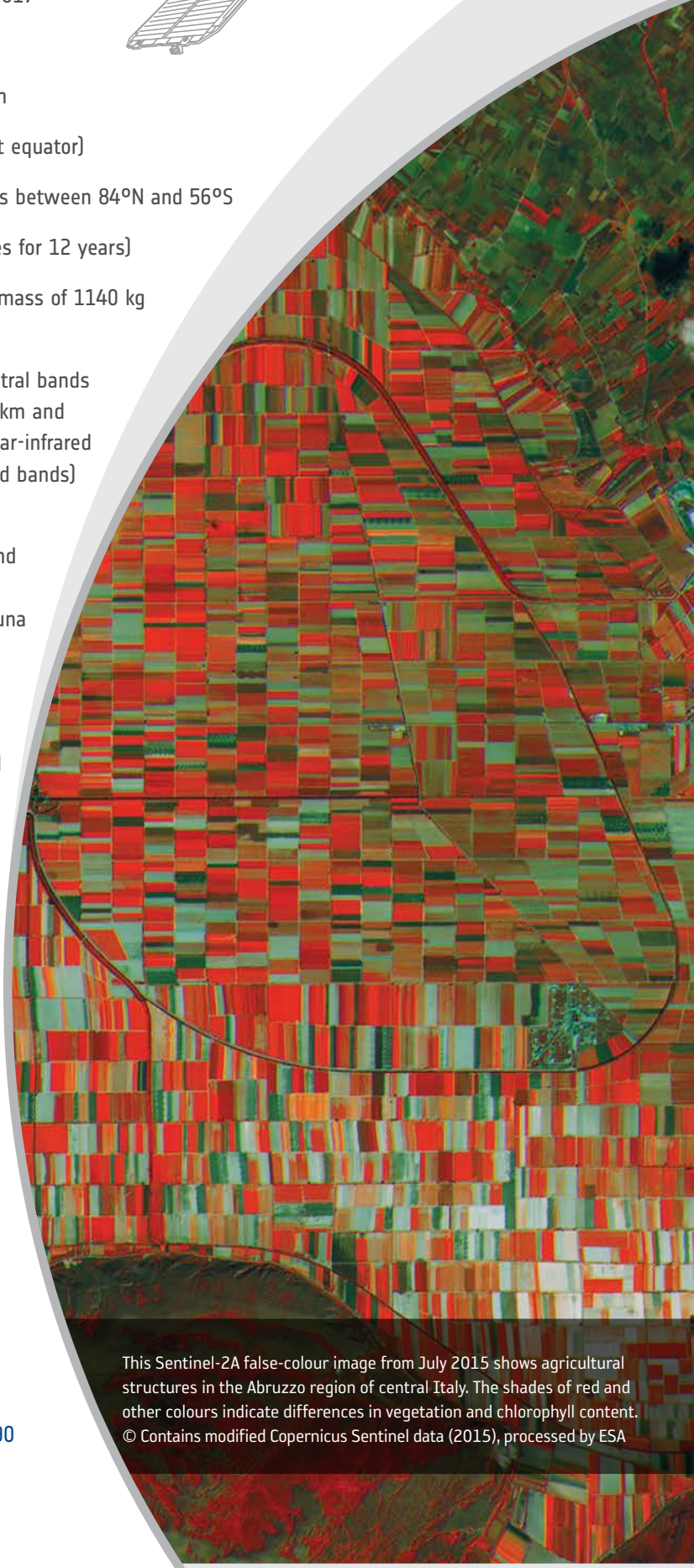
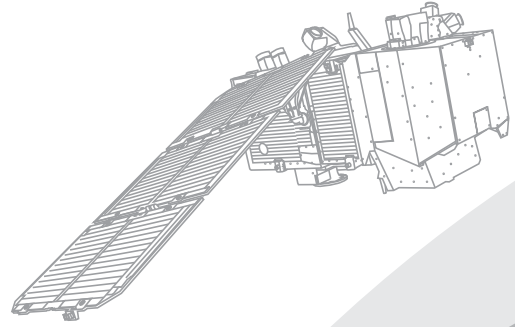
Teamwork

With its multispectral imager and wide swath coverage, Sentinel-2 not only offers continuity, but also expands on the French Spot and U.S. Landsat missions. Sentinel-2 is the result of close collaboration between ESA, the European Commission, industry, service providers and data users. Designed and built by a consortium of around 60 companies led by Airbus Defence and Space, and supported by the CNES French space agency and by the DLR German Aerospace Center, it is an outstanding example of Europe's technological excellence.



Facts and figures

Launch	Sentinel-2A in spring 2015, Sentinel-2B in 2017
Launcher	Vega from Kourou, French Guiana
Orbit	Polar, Sun-synchronous at altitude of 786 km
Revisit time	Five days from two-satellite constellation (at equator)
Coverage	Systematic coverage of land and coastal areas between 84°N and 56°S
Life	Planned for seven years (carries consumables for 12 years)
Satellite	3.4 m long, 1.8 m wide, 2.35 m high and a mass of 1140 kg (including 123 kg fuel)
Instrument	Multispectral imager (MSI) covering 13 spectral bands (443–2190 nm) with a swath width of 290 km and spatial resolutions of 10 m (4 visible and near-infrared bands), 20 m (6 red-edge/shortwave-infrared bands) and 60 m (3 atmospheric correction bands)
Receiving stations	MSI data: transmitted to core Sentinel ground stations and via laser link through EDRS Telemetry data: transmitted to and from Kiruna Sweden
Main applications	Monitoring agriculture, forests, land-use change, land-cover change; mapping biophysical variables such as leaf chlorophyll content, leaf water content, leaf area index; monitoring coastal and inland waters; risk mapping and disaster mapping
Mission	Developed, operated and managed by ESA
Funding	ESA Member States and the European Union
Prime contractors	Airbus Defence and Space Germany for the satellite, Airbus Defence and Space France for the MSI
Data access	sentinels.copernicus.eu



For further information
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This Sentinel-2A false-colour image from July 2015 shows agricultural structures in the Abruzzo region of central Italy. The shades of red and other colours indicate differences in vegetation and chlorophyll content.
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