



SENTINEL



# Sentinel -1

- ▶ Sentinel-1 provides all-weather, day and night radar imagery for land and ocean services. The twin satellites Sentinel-1A and Sentinel-1B were respectively launched on 3 April 2014 and on 25 April 2016.
- ▶ Sentinel-1A is the first satellite that was launched on 3 April 2014 on a Soyuz rocket from Europe's Spaceport in French Guiana for land and sea monitoring, natural disasters mapping, sea ice observations and ship detection.
- ▶ Applications
  - Oceans and Ice
  - Changing lands
  - Emergency response
  - Monitoring sea ice zones and the arctic environment
  - Surveillance of marine environment
  - Monitoring land surface motion risks
  - Mapping of land surfaces: forest, water and soil, agriculture
  - Mapping in support of humanitarian aid in crisis situations.



# Sentinel - 2

- ▶ Sentinel-2 provides high-resolution optical imagery for land services. It provides for example, imagery of vegetation, soil and water cover, inland waterways and coastal areas.
- ▶ Sentinel-2 also delivers information for emergency services. The twin satellites Sentinel-2A and Sentinel-2B were respectively launched on 22 June 2015 and on 7 March 2017.
- ▶ Applications
  - [climate change](#)
  - [land monitoring](#)
  - [emergency management](#)
  - [security](#).

# Sentinel 2 Bands and Resolutions.

| Sentinel-2 Bands             | Central Wavelength ( $\mu\text{m}$ ) | Resolution (m) | Bandwidth (nm) |
|------------------------------|--------------------------------------|----------------|----------------|
| Band 1 – Coastal aerosol     | 0.443                                | 60             | 20             |
| Band 2 – Blue                | 0.490                                | 10             | 65             |
| Band 3 – Green               | 0.560                                | 10             | 35             |
| Band 4 – Red                 | 0.665                                | 10             | 30             |
| Band 5 – Vegetation Red Edge | 0.705                                | 20             | 15             |
| Band 6 – Vegetation Red Edge | 0.740                                | 20             | 15             |
| Band 7 – Vegetation Red Edge | 0.783                                | 20             | 20             |
| Band 8 – NIR                 | 0.842                                | 10             | 115            |
| Band 8A – Narrow NIR         | 0.865                                | 20             | 20             |
| Band 9 – Water vapour        | 0.945                                | 60             | 20             |
| Band 10 – SWIR – Cirrus      | 1.375                                | 60             | 20             |
| Band 11 – SWIR               | 1.610                                | 20             | 90             |
| Band 12 – SWIR               | 2.190                                | 20             | 180            |



# Sentinel - 3

- ▶ Sentinel-3 provides high-accuracy optical, radar and altimetry data for marine and land services.
- ▶ It measures variables such as sea-surface topography, sea- and land-surface temperature, ocean colour and land colour with high-end accuracy and reliability.
- ▶ The first Sentinel-3 satellite was launched on 16 February 2016. Sentinel-3B is scheduled for launch in 2017. [EUMETSAT](#) operates the satellites and delivers the marine mission, while [ESA](#) delivers the land mission.
- ▶ Applications
  - Ocean colour and land reflectance data
  - Sea, land and ice surface temperature
  - Active fire and burnt area monitoring
  - Sea surface topography data



# Sentinel - 4

- ▶ Sentinel-4 will provide data for atmospheric composition monitoring.
- ▶ Its objective is to monitor key air quality trace gases and aerosols over Europe at high spatial resolution with a fast (hourly) revisit time.
- ▶ It will be a payload embarked on EUMETSAT's Meteosat Third Generation (MTG), which is scheduled to be launched around 2019.
- ▶ Applications
  - Air Quality measurements
  - Stratospheric Ozone monitoring
  - Solar Radiation measurements
  - Climate monitoring



# Sentinel - 5

- ▶ Sentinel-5 will also be dedicated to atmospheric composition monitoring.
- ▶ It will be a payload embarked on a EUMETSAT's Metop Second Generation (Metop-SG) to be launched in 2020 timeframe.
- ▶ It will provide accurate measurements of key atmospheric constituents such as ozone, nitrogen dioxide, sulphur dioxide, carbon monoxide, methane, formaldehyde, and aerosol properties.
- ▶ Applications
  - Air Quality measurements
  - Stratospheric Ozone monitoring
  - Solar Radiation measurements
  - Climate monitoring



# Sentinel – 5P

- ▶ Sentinel-5 Precursor is a satellite mission planned to launch on 21 September 2017 in order to reduce data gaps between Envisat and Sentinel-5.
- ▶ Applications
  - [Air Quality](#)
  - [Ozone Layer](#)
  - [Climate Change](#)





# Sentinel - 6

- Sentinel-6 will provide high accuracy altimetry for measuring global sea-surface height, primarily for operational oceanography and for climate studies.
- It is a cooperative mission developed in partnership between Europe (EU, ESA and EUMETSAT) and the U.S. (NOAA and NASA). It is planned for launch in 2020.
- Applications
  - Mission availability (lack of "down-time")
  - Reliability
  - Timely distribution of data products
  - Support to information service providers
  - Reprocessing capabilities.