

Iran oil tanker attacked off Saudi coast, foreign ministry says

An Iranian-owned oil tanker has been attacked in the Red Sea off the coast of Saudi Arabia, Iran's foreign ministry says. The ministry said the tanker Sabiti had been hit twice, causing some damage. Earlier Iran's national oil company (NIOC) said two explosions on the vessel had been caused "likely by missiles". But it dismissed earlier reports quoting it as saying the missiles were likely to have come from Saudi Arabia.

In recent months "other sabotage acts" had been carried out against Iranian tankers in the Red Sea and these were being investigated, foreign ministry spokesman Abbas Mousavi said.

The incident took place at 04:50 (01:50 GMT) about 95km (60 miles) from the Saudi city of Jeddah, Iran's Mehr news agency said. Two of the vessel's tanks were struck, it added, causing damage measuring between 0.5m and 1.5m. There were no reports of injuries. The Sabiti is now sailing towards the Gulf, Mehr said. (source [BBC](#) on 11 October 2019).

See also [ESA Sentinel Online](#)

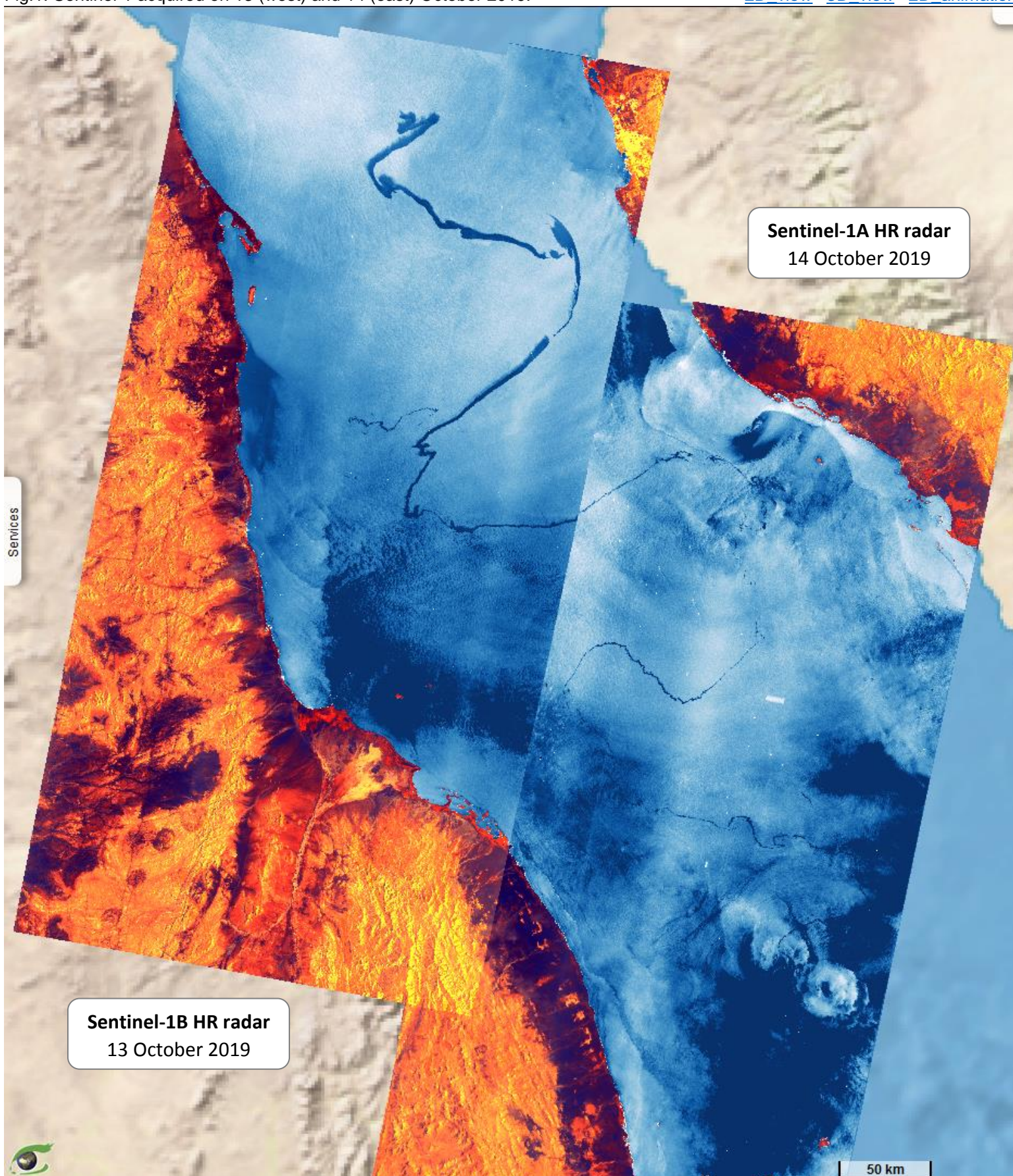
Oil spill 1300 km long ! A sad record in the Red Sea

[2D layer stack](#)

Sentinel-1 HR radar

Fig.1: Sentinel-1 acquired on 13 (west) and 14 (east) October 2019.

[2D view](#) [3D view](#) [2D animation](#)



Sentinel-1 radar satellites are equipped with the instrument **C-SAR** (C-band Synthetic Aperture Radar). Two satellites have been operated to date: S1A launched on April 3, 2014 and S1B launched on April 22, 2016. These satellites have a 12-day cycle and follow each other at 6 days. The **C-SAR** instrument operates in C-band at a frequency of 5.405 GHz and therefore at a wavelength of approximately 5.5 cm which will determine the size of the targets with which the radar signal interacts. C-SAR operates in two polarizations: -vertical (V) and -horizontal (H). The emission can be done vertically and received vertically (VV) or horizontally (VH). Similarly, horizontal transmission and horizontal (HH) or vertical (HV) reception is an alternative mode of acquisition. The default acquisition mode is (VV,VH) producing two "bands" in the image products. Acquisitions are performed according to [three main modes](#): -IW (Interferometric Wide swath), -EW (Extra Wide swath) or -SM (Stripmap). The default mode is IW leading to swath widths of 240 km against 400 km (EW) and 80 km (SM). As the instrument is active, the acquisition can operate both in descending orbit (daytime) and ascending orbit (night).

Sentinel data are the major inputs to the 6 **Copernicus services**. The five first ones are public.

- **CMEMS** Copernicus Marine Environment Monitoring Service
- **CLMS** Copernicus Land Monitoring Service
- **CAMS** Copernicus Atmosphere Monitoring Service
- **C3S** Copernicus Climate Change Service
- **CEMS** Copernicus Emergency Management Service
- **CSS** Copernicus Security Service

CMEMS - Copernicus Marine Environment Monitoring Service

CAMS - Copernicus Atmosphere Monitoring Service

Fig.2: CMEMS water velocity models on 13 (left) and 14 (right) October 2019.

[2D-left](#) [2D_right](#) [2D_animation](#)

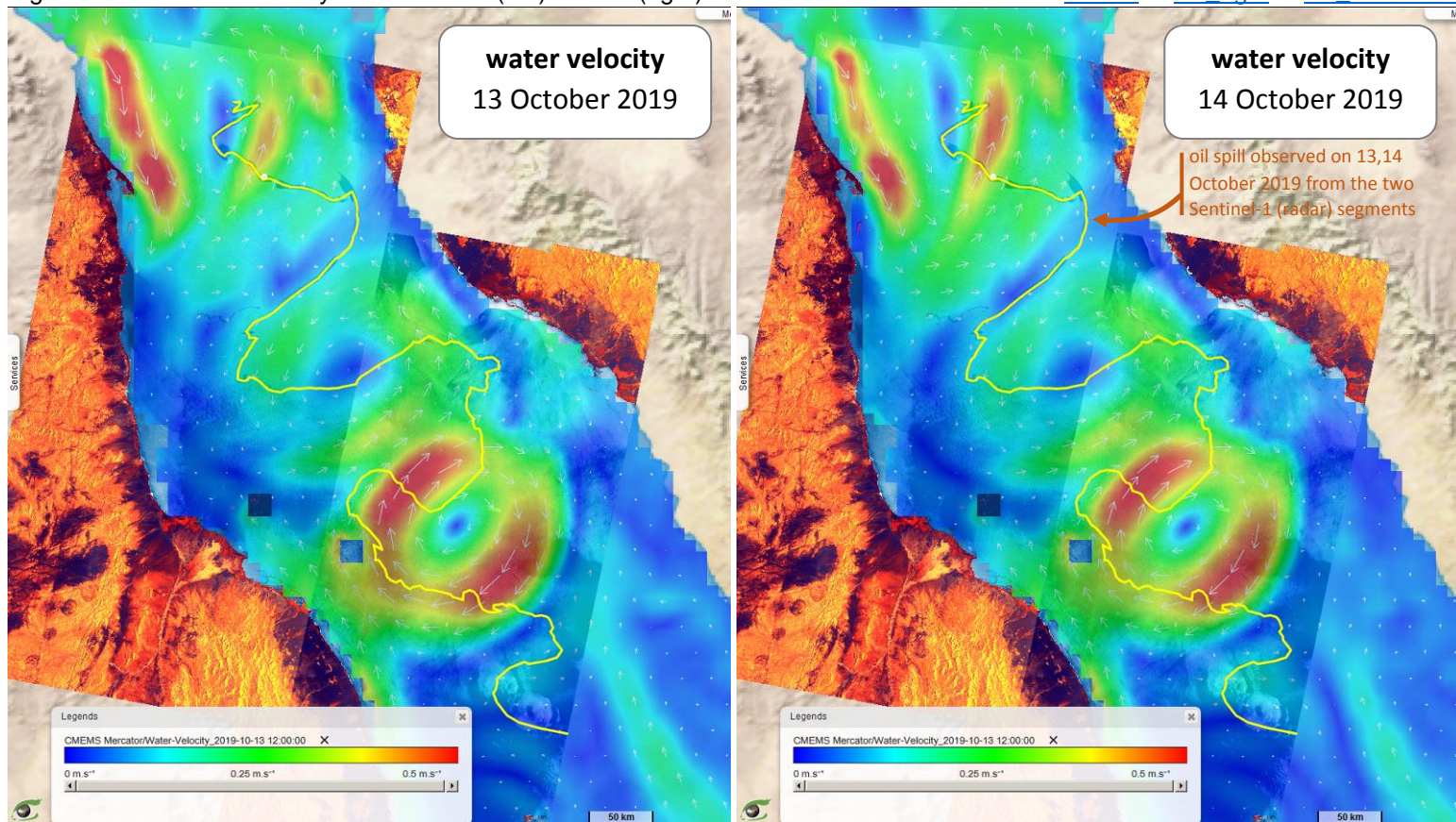
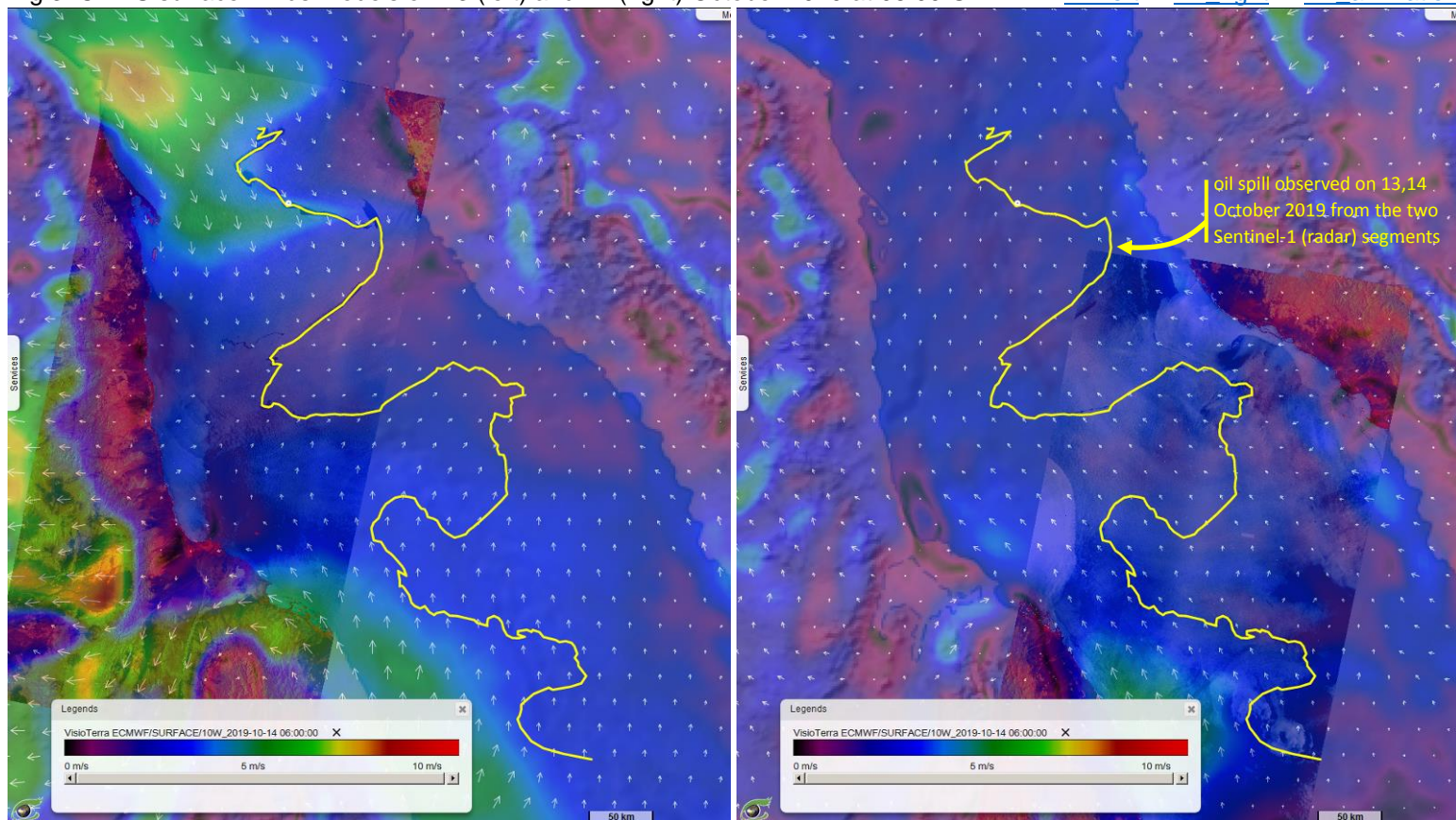


Fig.3: CAMS surface winds models on 13 (left) and 14 (right) October 2019 at 06:00 GMT.

[2D-left](#) [2D_right](#) [2D_animation](#)



Sentinel-3 is a family of satellites carrying on-board three instruments: -**OLCI** (Ocean and Land Colour Instrument), -**SLSTR** (Sea and Land Surface Temperature Radiometer) and -**SRAL** (Sentinel-3 Ku/C Radar Altimeter). The first satellite Sentinel-3A (S3A) has been launched on 16 February 2016 and the second one (S3B) on 25 April 2018. Each satellite has an orbital cycle (i.e. time between the same positions in orbit) of 27 days. OLCI is a spectrometer of 21 bands which wavelengths are in the range $[0.4, 1.02] \mu\text{m}$. Instrument is an assembly of 5 cameras operating in pushbroom mode. The total swath width of 1270 km results from a field of view (FOV) of 68.5° tilted of 12.2° westward to minimise the risks of Sun glint. Products have a ground sampling distance (pixel size) of 300 m.

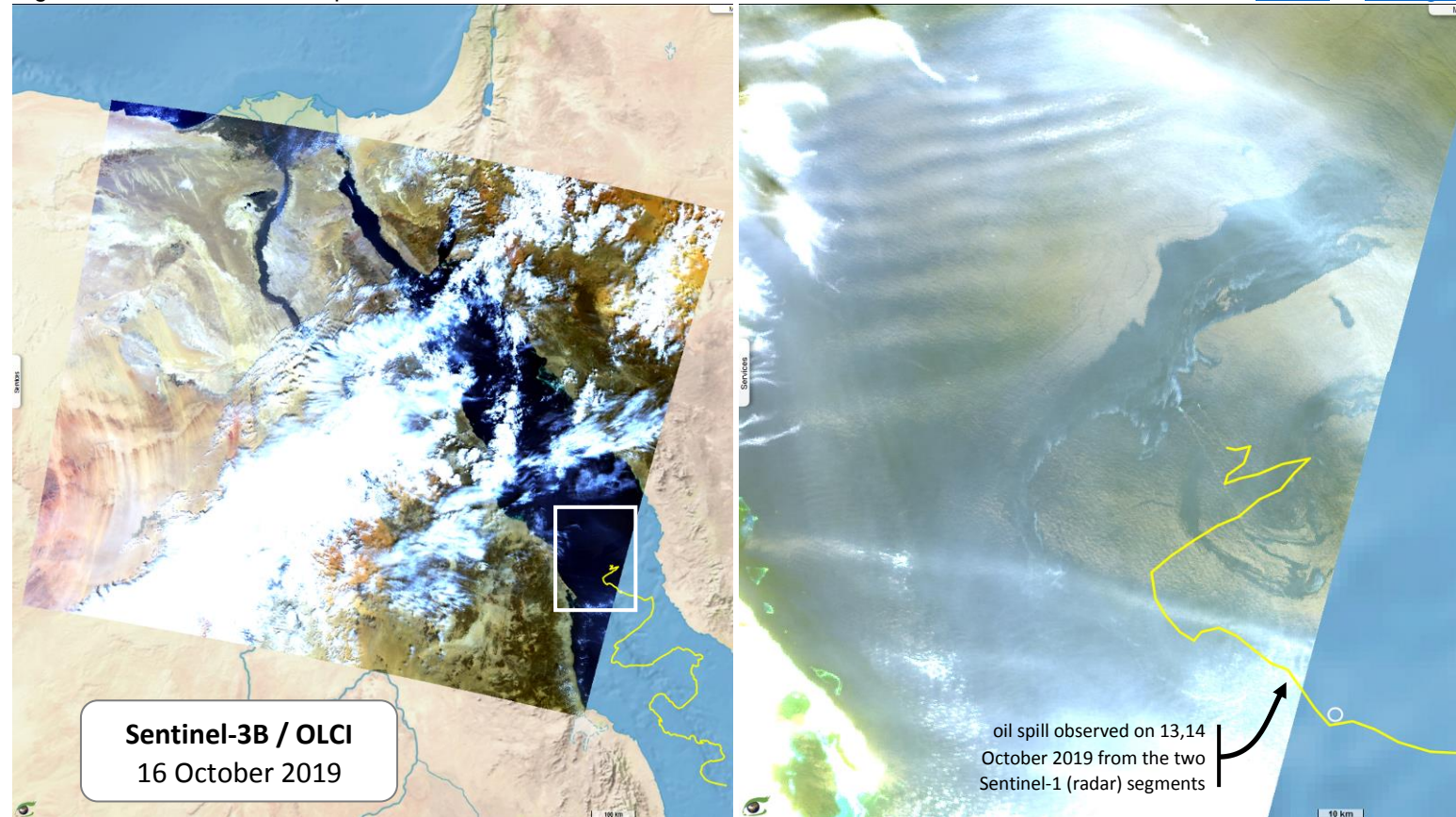
Sentinel-2 optical satellites are equipped with the instrument **MSI** (Multi-Spectral Instrument). Two satellites have been operated to date: S2A launched on June 23, 2015 and S2B launched on March 7, 2017. These satellites have a 10-day cycle and follow each other at 5 days. The **MSI** instrument comprises 13 spectral bands: -3 bands B,G,R in the visible (VIS) and a band in the near-infrared (NIR) at a spatial resolution of 10m, -3 bands in the "red edge" (between red and NIR), -2 bands in the shortwave-infrared (SWIR) at 20m and -3 absorption bands for atmospheric correction with a spatial resolution of 60m. The swath width of the scenes is 290 km producing products so large that they are cut into tiles of 100km x 100km.

Sentinel-3 / OLCI
Medium resolution spectrometer

Sentinel-2 / MSI
High resolution optical

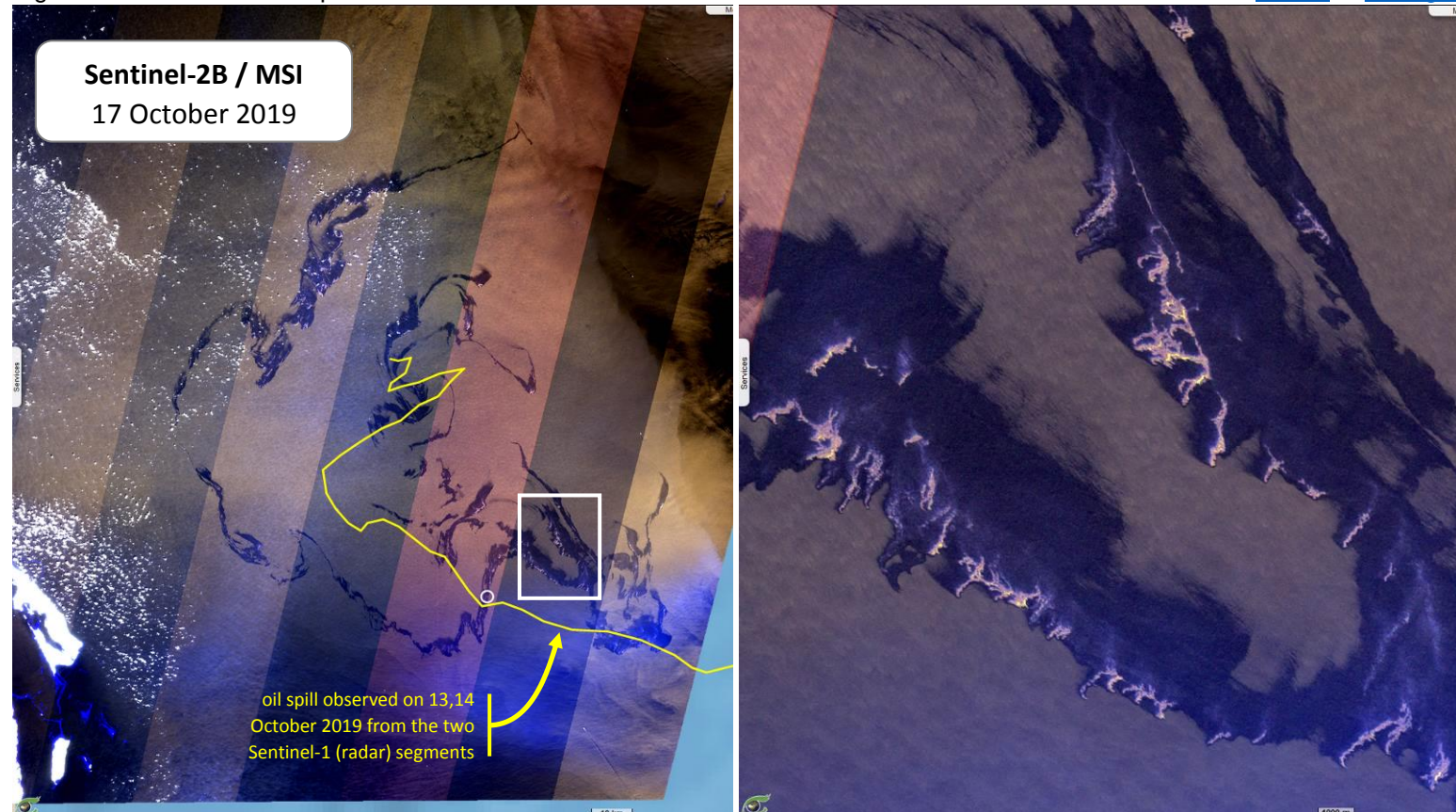
[2D-left](#) [2D_right](#)

Fig.4: Sentinel-3B / OLCI acquired on 16 October 2019.



[2D-left](#) [2D_right](#)

Fig.5: Sentinel-2B / MSI acquired on 17 October 2019.



Sentinel-5P is an intermediate mission to fill the gap before the launch and operations of the Sentinel-5 mission(s). Sentinel-5P measures the atmosphere chemistry with its instrument **TROPOMI** (TROPOspheric Monitoring Instrument). This absorption spectrometer operates in UV, visible, NIR and SWIR domains. TROPOMI has a low spatial resolution of 7 km (along track) x 3.5 km (across track). Sentinel-5P has been launched on 13 October 2017 and follows a sun-synchronous orbit with a repeat cycle of 16 days (227 orbits). Swath width is about 2600 km leading to a daily revisit time.

Level 2A products:

- [SSP-TRO-AER_AI](#) UV Aerosol Index
- [SSP-TRO-CLOUD](#) Cloud fraction, albedo, top pressure
- [SSP-TRO-CO](#) Carbon Monoxide (CO) total column
- [SSP-TRO-HCHO](#) Formaldehyde (HCHO) total column
- [SSP-TRO-NO2](#) Nitrogen Dioxide (NO₂), total and tropospheric columns
- [SSP-TRO-O3](#) Ozone (O₃) total column
- [SSP-TRO-SO2](#) Sulphur Dioxide (SO₂) total column

Sentinel-5P / TROPOMI absorption spectrometer

HCHO, NO₂, O₃, SO₂
Civil or military activities ?

Fig.6: Sentinel-5P / TROPOMI HCHO (formaldehyde) observations.

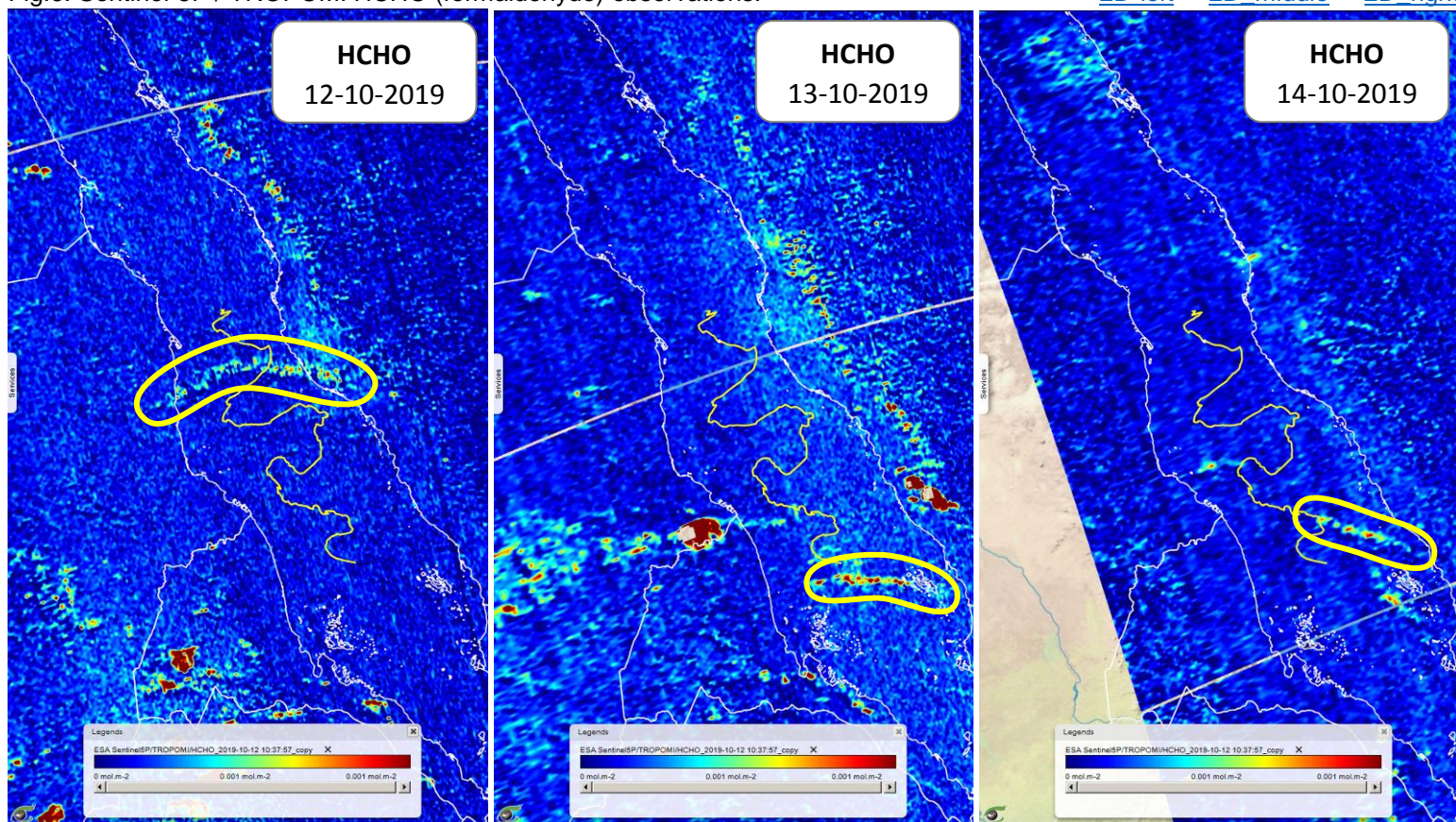


Fig.7: Sentinel-5P / TROPOMI NO₂ (left), O₃ (middle), SO₂ (right) observations.

