

Mission Status Report 360

Reference Period: 15 June 2021 – 21 June 2021

Mission status

sentinel-1

→ RADAR VISION FOR COPERNICUS

- The Copernicus Sentinel-1A and Sentinel-1B routine operations are on-going.
- **Despite the critical situation in Europe due to the COVID-19, efforts are being made to ensure the continuity of the Sentinel-1 mission operations**
- The Copernicus Sentinel-1 observation scenario supports the systematic coverage of Copernicus Services areas of interest, of European land and coastal waters, of global tectonic/volcanic areas, as well as of other areas worldwide for various applications. The observation plan also includes a regular mapping of all land areas worldwide.
- World maps providing a high level description of the Sentinel-1 constellation observation scenario, in terms of SAR modes, polarisation, observation geometry, revisit and coverage frequency are available at: <https://sentinels.copernicus.eu/web/sentinel/missions/sentinel-1/observation-scenario>
- The detailed observation plan in the form of instrument acquisition segments, for both Sentinel-1A and Sentinel-1B is published at: <https://sentinels.copernicus.eu/web/sentinel/missions/sentinel-1/observation-scenario/acquisition-segments>
- **The Copernicus Sentinel-1 Wave Mode performance will be improved with a change performed on the beam 2, by optimising the antenna configuration. This change is planned to take place on 22 June 2021 for Sentinel-1A and on 24 June 2021 for Sentinel-1B. This optimisation is characterised by a higher incidence angle of beam 2 (equivalent to swath 4 of the Stripmap mode) and new antenna gain settings, that will allow a substantial gain on the Signal to Noise Ratio. See more information at: <https://sentinel.esa.int/web/sentinel/-/copernicus-sentinel-1-wave-mode-beam-2-optimisation-on-22-june-2021-sentinel-1a-and-24-june-2021-sentinel-1b-1.0>**
- Specific actions were performed (NRT data provision) in response to the call 825 from the International Charter Space and Major Disasters on 21 June 2021, related to floods in Russian Federation
- Concerning the large floods that have affected Guyana in various areas, for which specific Sentinel-1 observations were planned, here are examples of floods maps based on Sentinel-1 imagery produced by the Rapping Mapping of the Copernicus Emergency Management Service (CEMS, activation EMSR514) and by the International Charter Space and Major Disasters, respectively:
 - https://emergency.copernicus.eu/mapping/system/files/components/EMSR514_AOI01_DEL_PROD_UCT_r1_RTP01_v2.jpg
 - https://disasterscharter.org/image/journal/article.jpg?img_id=9821386&t=1623745546091
- Both Sentinel-1A and -1B spacecraft are in a stable state, operating in Nominal Mission Mode (NMM). The Flight Operations Segment (FOS) ensuring the monitoring, control and commanding of the satellites is operating nominally. Orbit control manoeuvres are performed once a week
- The use of the EDRS-A service by Sentinel-1A and -1B is on-going as part of the routine operations
- Ground Segment operations have continued smoothly as part of the on-going Payload Data Ground Segment (PDGS) service operations, the transfer to the cloud has been finalised for all production related activities and data flows were modified to use public internet
- Sentinel-1 production is successfully performed on the cloud since 23 February 2021 in line with the new ground segment architecture and interfaces. The legacy PDGS PAC and PDMC centres have been decommissioned end of March 2021
- X-Band data acquisitions are routinely performed over Matera, Svalbard, Maspalomas and Neustrelitz X-band core stations. The acquired data are circulated within the PDGS, systematically processed to Level-0 and Level-1 products and archived
- Wave Mode data are regularly acquired over open oceans, systematically processed to Level-2 OCN products and made available. Sentinel-1 IW and EW Level-2 OCN products over regional ocean areas are available on the Data Hubs. The operations of the systematic generation and distribution of Sentinel-1 level-2 OCN products derived from IW, EW and SM modes over seas at global level is on-going since 15 November 2017 (relevant for the Wind component - OWI). The operational qualification of the Level-2 the OCN Radial Surface Velocity (RVL) component is on-going.
- **By 17th June 2021, a total of 499,418 users have self-registered on the Sentinels Open Access data Hub; 34.8 million Sentinel-1 product download have been made by users, representing 42.9 PB of data. 6.7 million Sentinel-1 products are available on-line for download, representing 10.8 PB of data. Statistics of last 24 hours are available in real time at the Open Data Hub home page: <https://scihub.copernicus.eu>**

Outlook

- Continuation of Sentinel-1 constellation routine operations

