Mission Status Report 405

Reference Period: 10 May 2022 – 16 May 2022

sentinel-1

→ RADAR VISION FOR COPERNICUS

Mission status

- The Copernicus Sentinel-1A routine operations are on-going.
- **The Sentinel-1 Yearly Mission Review took place on 12 May 2022. Overall the outcome of the review was positive in all mission/system domains, obviously apart from the Sentinel-1B unavailability since 23 December 2021. This was confirmed by statements from the Copernicus Services invited at the review, who reported that their activities can continue using Sentinel-1A, with some degradations on the service delivery or performance, due to the Sentinel-1B data unavailability.**
- **The major anomaly on the Sentinel-1B satellite occurred on 23 December 2021, the latest news has been published on 22 April 2022 at: https://sentinels.copernicus.eu/web/sentinel/-/copernicus-sentinel-1b-anomaly-6th-update/1.1**

  The recent recovery attempts have not been successful.
- The Copernicus Sentinel-1 observation scenario supports the systematic coverage of CopernicusServices 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. This is based on a constellation of 2 satellites, actions are still on-going to adjust the Sentinel-1A observation scenario in order, to some extent, to fill some gaps created by the current unavailability of Sentinel-1B. It should be noted that Sentinel-1A was however already operated close to its maximum capacity.
- 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 Sentinel-1A instrument acquisition segments is published at: https://sentinels.copernicus.eu/web/sentinel/missions/sentinel-1/observation-scenario/acquisition-segments
- **Collision avoidance maneuvers were executed on Sentinel-1A to reduce the risk of collision with a Cosmos-1408 debris (1982), potentially occurring on 16 May 2022 at 22:55 UTC. See more information at: https://sentinels.copernicus.eu/web/sentinel/-/copernicus-sentinel-1a-collision-avoidance-manoeuvres-on-16-may-2022/1.1**
- **Sentinel-1A was unavailable on 12 May 2022 between 14:26 UTC and 21:12 UTC, due to a Payload Data Handling and Transmission (PDHT) sub-system anomaly. No data were generated during this period, data acquired slightly before this period may have been affected.**
- The Sentinel-1A spacecraft is 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 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
- 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, systematicallyprocessed 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.
- Updated user / product statistics will be provided in the next report
  By 5 May 2022, a total of 612,528 users have self-registered on the Sentinels OpenAccess data Hub; 39 million Sentinel-1 product download have been made by users, representing 48 PB of data. 7.7 million Sentinel-1 products are available on-line for download, representing 12.4 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-1A routine operations**

Report prepared by the ESA Sentinel-1 Team