sentinel-1

→ RADAR VISION FOR COPERNICUS

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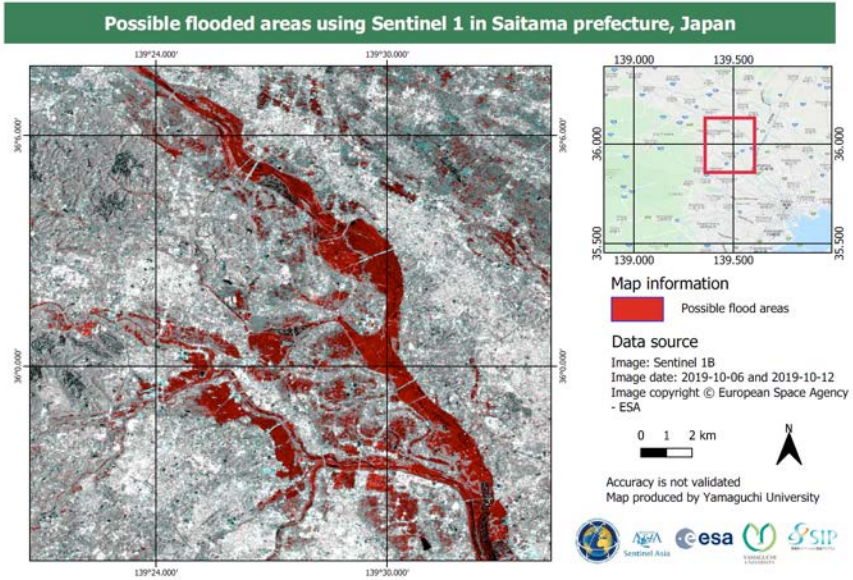
Sentinel-1 Mission Status

Pierre Potin, Sentinel-1 Mission Manager, ESA

GOCG meeting, 14-15 October 2019, ESRIN

Sentinel-1 mission status

- Sentinel-1A and Sentinel-1B overall mission operations → **nominal**
- **Routine provision** of Sentinel-1 data **to operational services**
- Sentinel-1 **contribution to emergency activations**, in particular from the Copernicus Emergency Management Service and from the International Charter Space and Major Disasters, continues to be very high, for flood monitoring in particular
- **Yearly Mission Review successfully held on 24 May 2019**
- **Both satellites are in good health**
- Sentinel-1 is operated close to its **full mission capacity** (i.e. difficulty to accommodate additional observations)

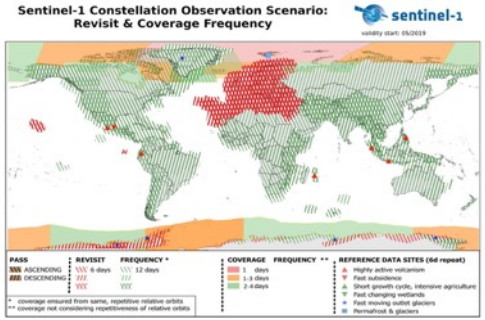


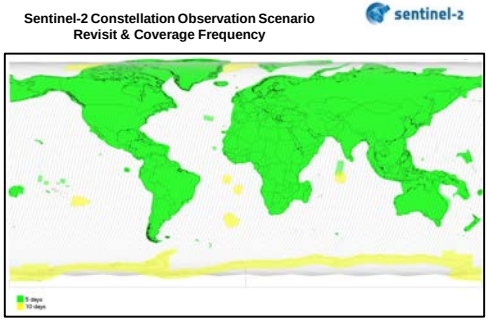
Saitama (near Tokyo), Japan, due to super-typhoon Hagibis

Flood map based on Sentinel-1B image acquired on 12 October 2019

Call 719 from International Charter Space and major Disasters

Sentinel High Level Operations Plan (HLOP)





- A new Sentinel HLOP revision loop was launched in January 2019
- The **Sentinel HLOP revision 3.0** (dated 22nd July 2019) reflects the completion of the **full operational capacity** (i.e. constellation of the Sentinel-1, -2, -3 A and B units as well as Sentinel-5P)
- As committed in 2013, the **HLOP** has been submitted to ESA Member States participating to the Copernicus Programme and was unanimously **approved at the September 2019 PB-EO meeting**
- The HLOP document has previously been **reviewed and accepted by the European Commission**


DOCUMENT

Sentinel High Level Operations Plan (HLOP)

HLOP version 3.0 available at:

https://sentinels.copernicus.eu/web/sentinel/news/-/article/new-version-of-the-copernicus-sentinel-hlop-available

https://sentinels.copernicus.eu/documents/247904/685154/Sentinel_High_Level_Operations_Plan

Sentinel-1 Constellation Observation Scenario: Mode - Polarisation - Observation Geometry

sentinel-1

validity start: 05/2019

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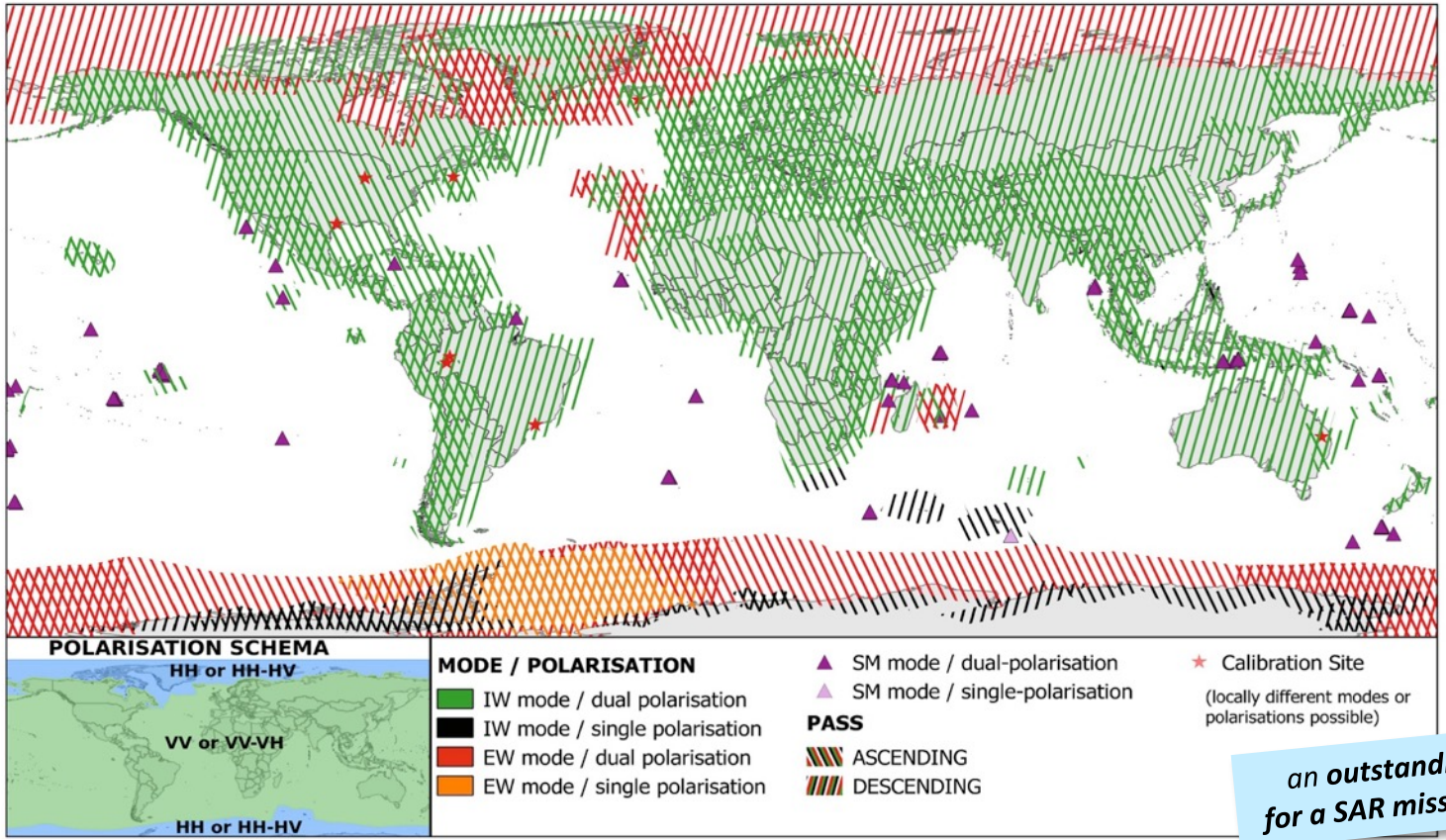


Updated Baseline Map , starting May 2019

This map is related to SAR High Rate modes only. Wave mode operated by default over open oceans (not shown)

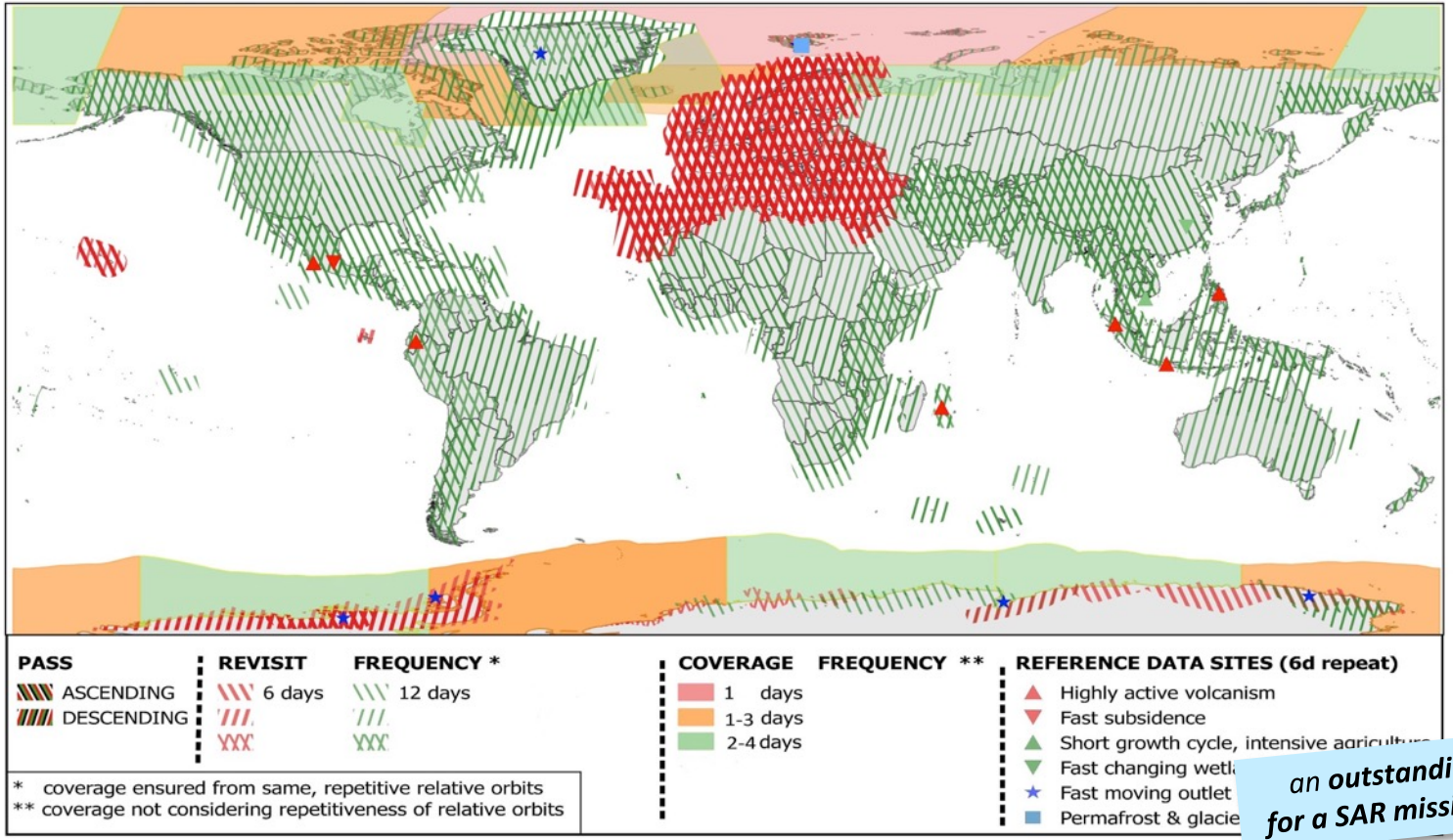
*an **outstanding coverage achievement** **for a SAR mission,** predictable and reliable!*

Sentinel-1 Constellation Observation Scenario: Revisit & Coverage Frequency

sentinel-1

validity start: 05/2019

esa



Updated Baseline Map , starting May 2019

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Sentinel-1 mission evolution

Ongoing / planned:

- Further **optimisation of observation scenario**
- Mitigation of C-band **SAR interferences** between Sentinel-1 and Radarsat Constellation Mission
- Further improvement of **Radial Surface Velocity** component (Level 2 OCN product)

Subject to decisions:

- Possibly, generation of **S-1 Analysis Ready Data** (**ARD) product (Radiometrically Terrain Corrected – RTC**, making use of the new **Copernicus DEM**), starting with demo product.
  => Strong request from user community

- **Operational tropical cyclone monitoring** over oceans with on-demand Sentinel-1 tasking

- **Wave Mode** enhanced to **Dual Polarisation** (formal request needed)

Amery Iceberg

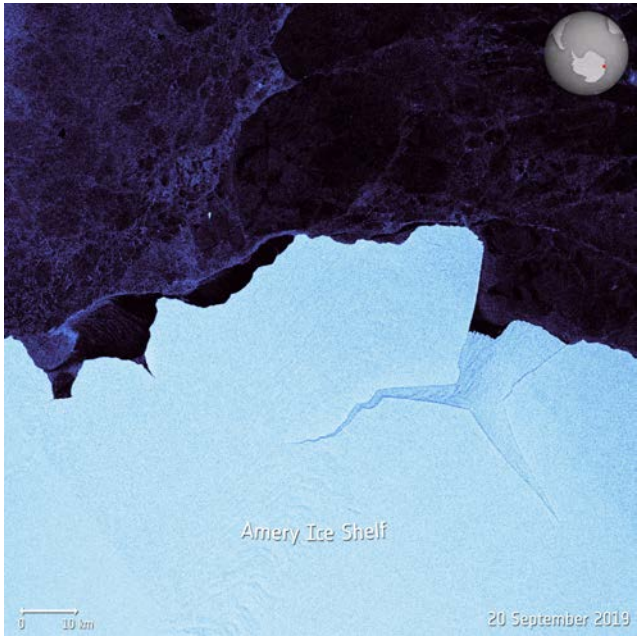
End Sep 2019

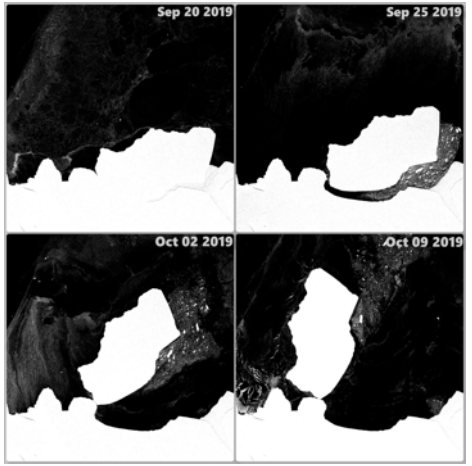
A huge iceberg has broken off the Amery Ice Shelf in Antarctica.

Dubbed D28, the iceberg is around 1600 sq km – about the size of Greater London. Approximately 30 km wide and 60 km long, it is estimated to weigh over 300 billion tons.

It is estimated to have calved from the Amery Ice Shelf between 22 and 25 September 2019.

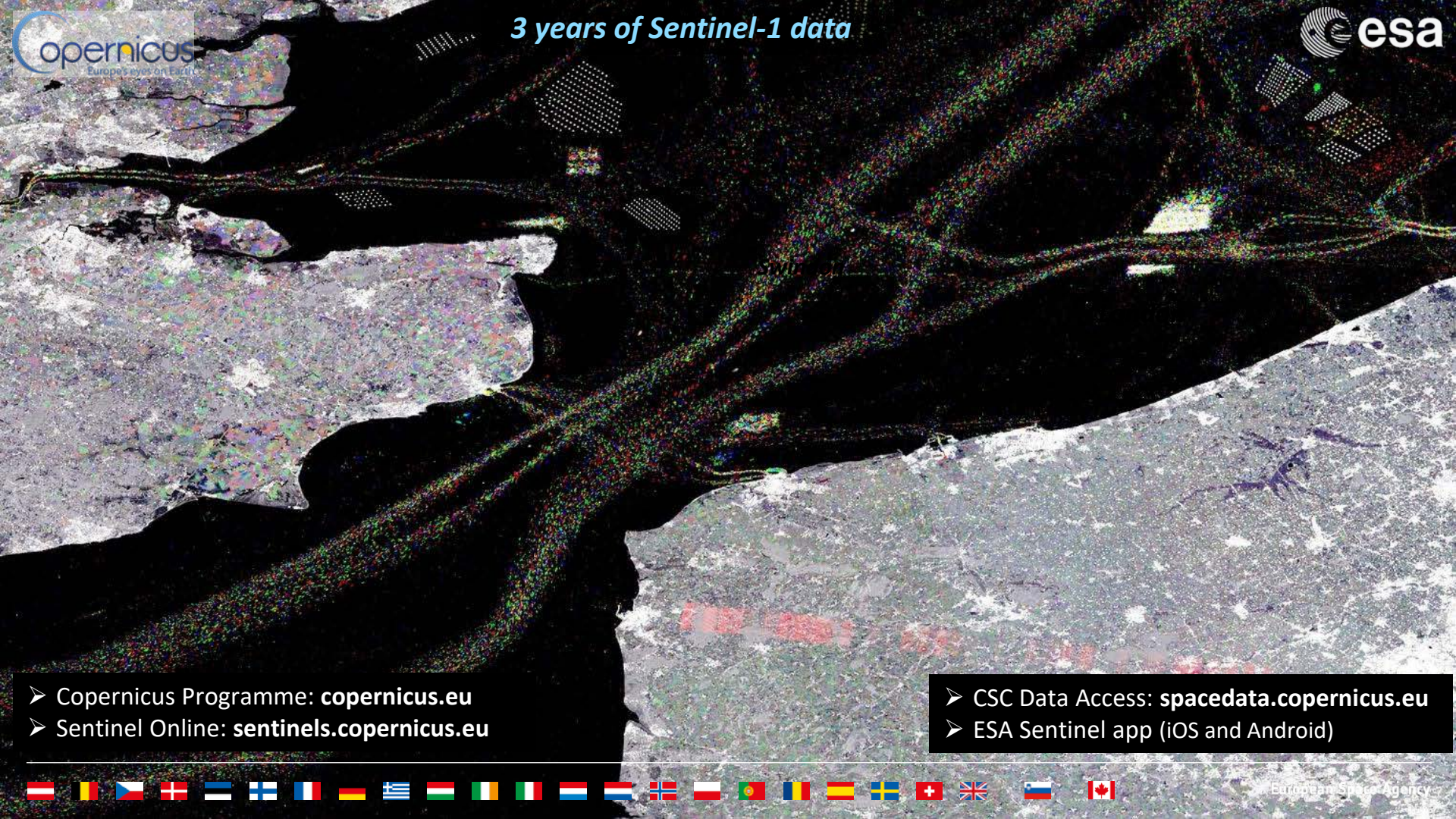
Scientists say that this is the biggest calving of the Amery Ice Shelf in 50 years





http://www.esa.int/spaceinimages/Images/2019/10/Amery_Iceberg

3 years of Sentinel-1 data



- Copernicus Programme: **copernicus.eu**
- Sentinel Online: **sentinels.copernicus.eu**

- CSC Data Access: **spacedata.copernicus.eu**
- ESA Sentinel app (iOS and Android)