

ASGARD 0.6.1 – L0 Footprints validation

2025-04

L0 footprints

- For validation, several information were used:
 - L0 Footprints and acquisition start/stop are extracted from the L0 official manifest
- As it was not enough for validation (shift observed, that will be presented in next slides):
 - L1 Footprints are extracted from official L0 official manifest
 - L1 geoinformation data are extracted from the L1 files

01

Sentinel-1 L0 Footprints validation

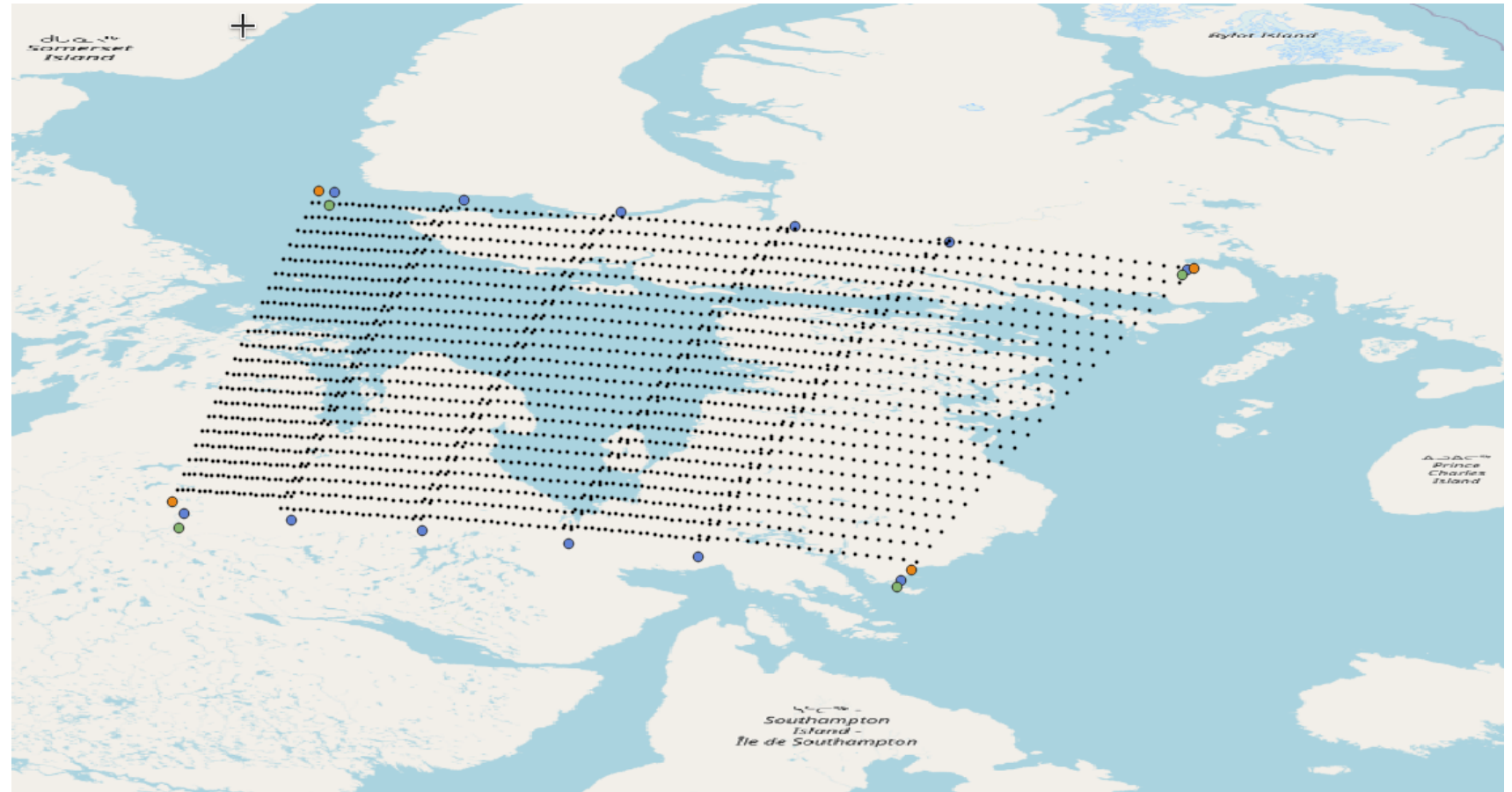
Sentinel-1 L0 footprints validation

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Sentinel-1 L0 footprints validation

TDS1

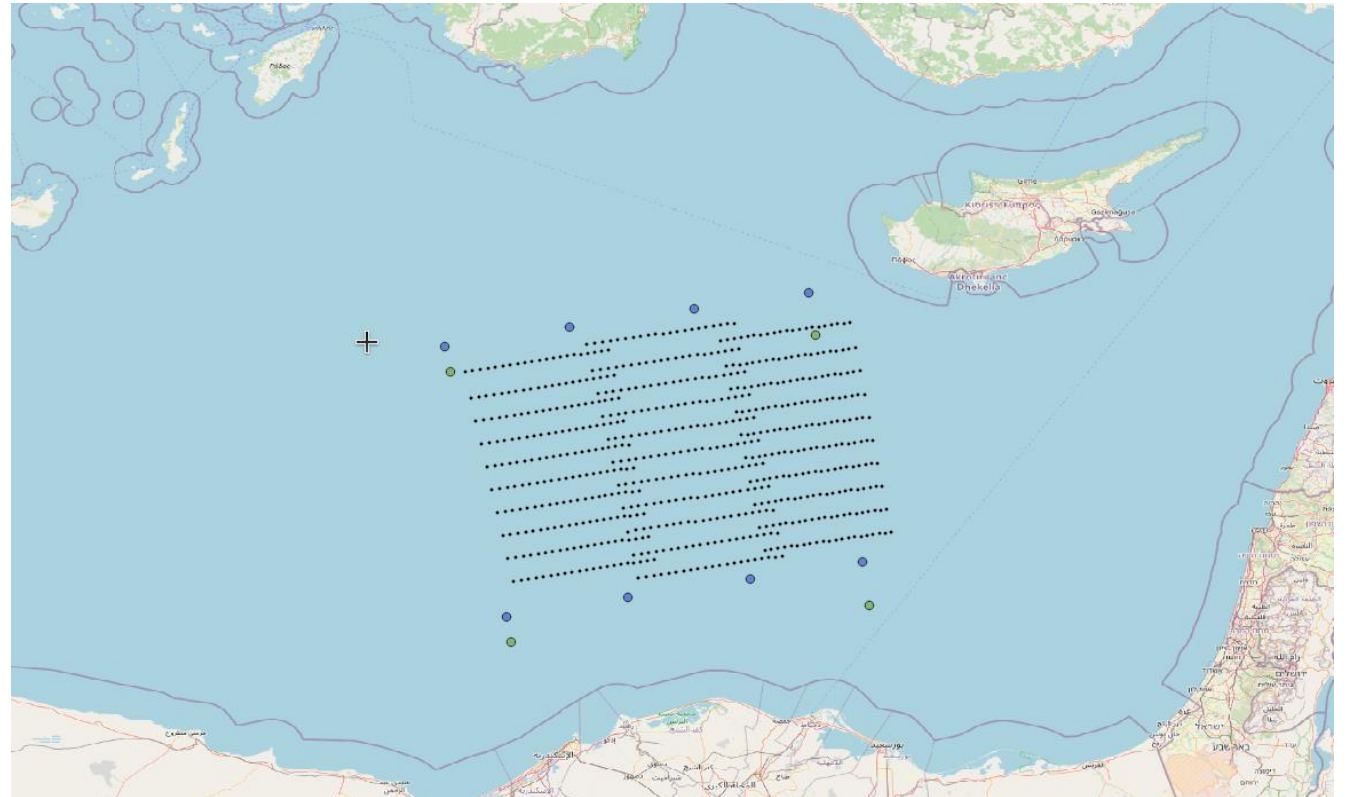
- Acquisition Type: EW
- 2022-08
- L0 reference Footprint
- L0 ASGARD Footprint
- L1 reference Footprint
- L1 geolocation data



Sentinel-1 L0 footprints validation

TDS2

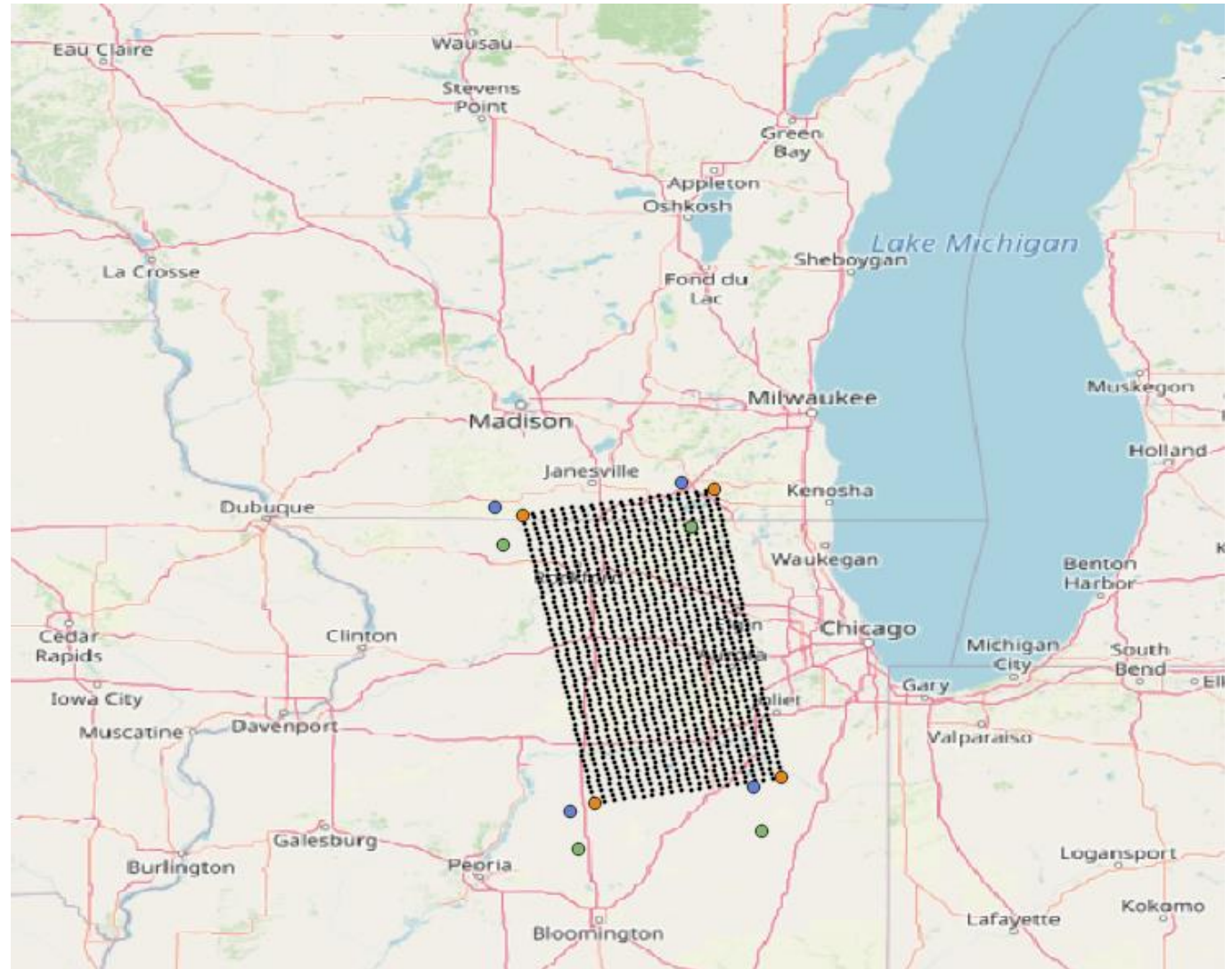
- Acquisition type: IW
 - 2023-01
-
- L0 reference Footprint
 - L0 ASGARD Footprint
 - L1 reference Footprint
 - :: L1 geolocation data



Sentinel-1 L0 footprints validation

TDS3

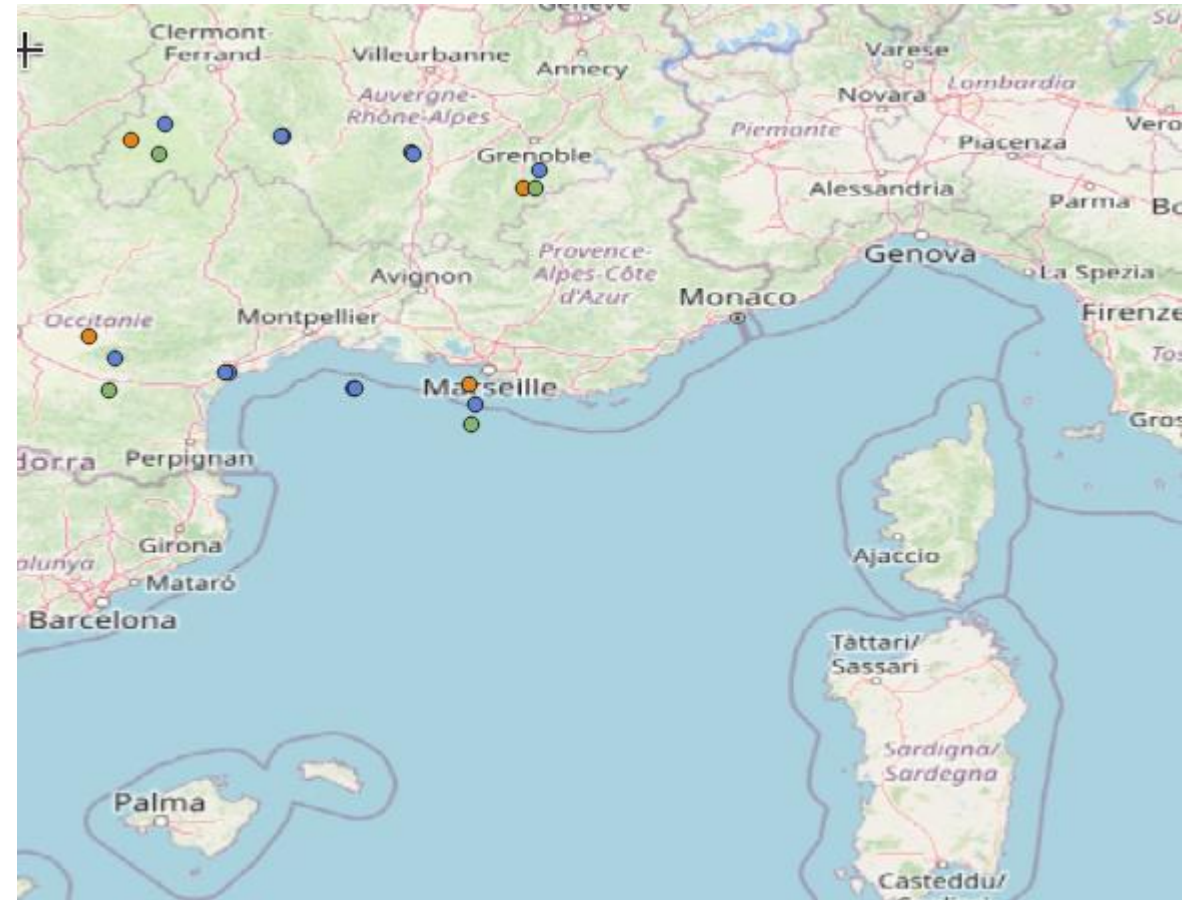
- Acquisition type: S4
- 2022-08
- L0 reference Footprint
- L0 ASGARD Footprint
- L1 reference Footprint
- L1 geolocation data



Sentinel-1 L0 footprints validation

New L0 TDS

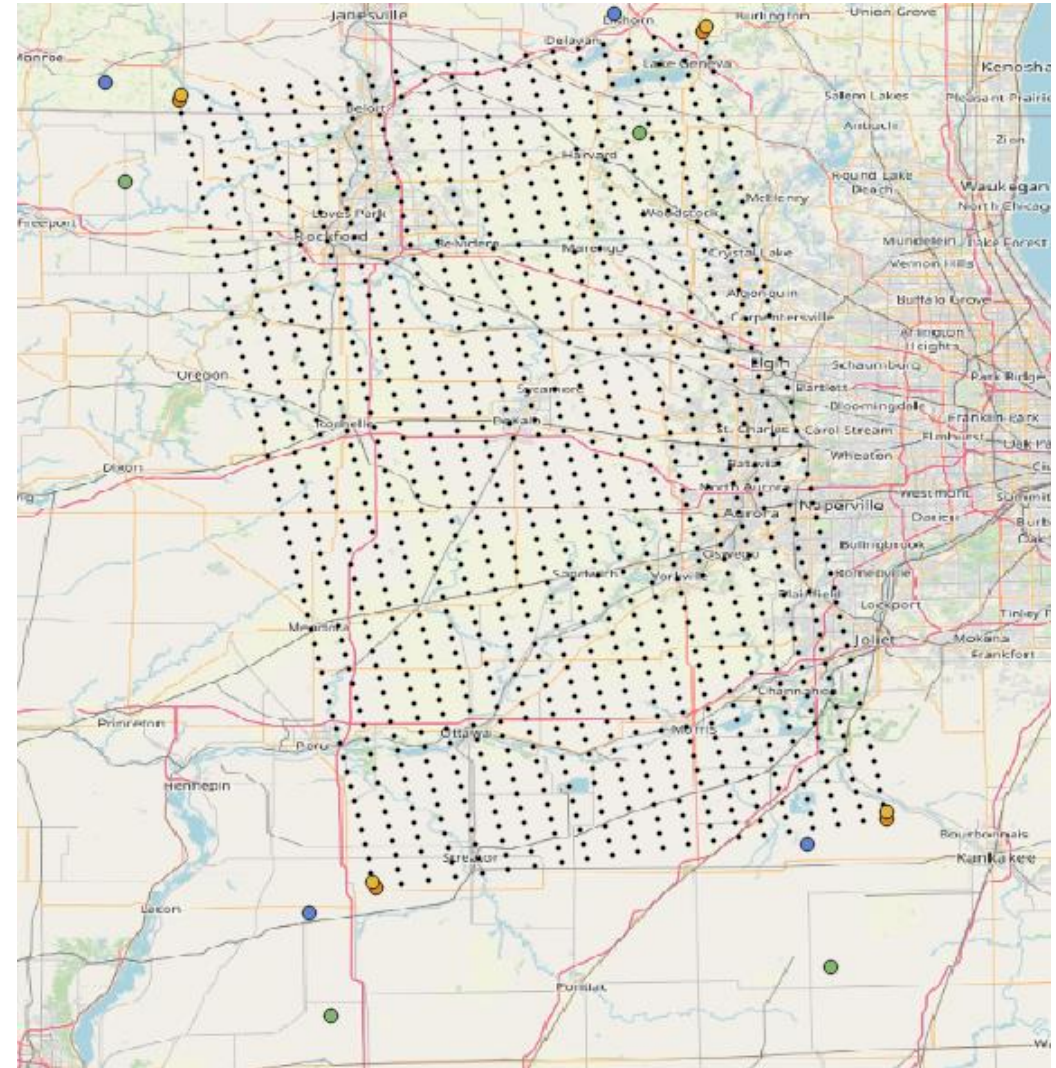
- Acquisition type: IW
 - 2025-02
-
- L0 reference Footprint
 - L0 ASGARD Footprint
 - L1 reference Footprint
 - :: L1 geolocation data



Sentinel-1 L0 footprints validation

TDS3

- Acquisition type: S4
- 2022-08
- Additional test:
 - Take Start/stop time from L1 Manifest
 - Take rounded angles from L1 annotation file
 - Compute footprint
- L0 reference Footprint
- L0 ASGARD Footprint
- L1 reference Footprint
- ⌵ L1 geolocation data
- L0 ASGARD Footprint based on L1 information



Sentinel-1 L0 footprints validation

Additional information

- This shift can also be observed directly in the Copernicus Browser (Footprint are the one in the manifests)
- To go further in the Legacy L0 Footprint issue analysis:
 - The shift is around between 20 and 30km depending on the side of the swath,
 - The shift is always in the south of the orbit, for ascending and descending acquisitions. Here I do not have any acquisition in the South hemisphere but looking at the Copernicus browser seems to confirm this trend.



Sentinel-1 L0 footprints validation

Conclusion

- **L0 reference footprints** are shifted compared to **L1 reference footprints**
- **L1 reference footprint** is close to the **L1 data** and can be considered **as good**
- **L0 reference footprints** are shifted from the **L1 data** (consistent with the analysis of the L1 footprint)
- => **L0 reference footprints** cannot be considered as reference
- **L0 ASGARD footprints** are **closer and more consistent** with **L1 data** and **footprints**.
- **L0 ASGARD footprints based on L1 information** are very close **to L1 reference footprints**
- **L0 reference footprints** are impacted by an issue: <https://esa-cams.atlassian.net/browse/GSANOM-14583> (ToD versus EF Frame)
- => **L0 ASGARD footprint computation implementation is validated**

02

Sentinel-3 L0 Footprints validation

Sentinel-3 L0 footprints validation

New L0 TDS

- L0 reference footprint taken from the L0 Legacy manifest
- ASGARD Footprint is a little shifted from the L0 Manifest (around 30m)
- Footprints are almost a column (around 300m)
- As L0 Footprints are rough estimation, **ASGARD footprint are considered as OK**

