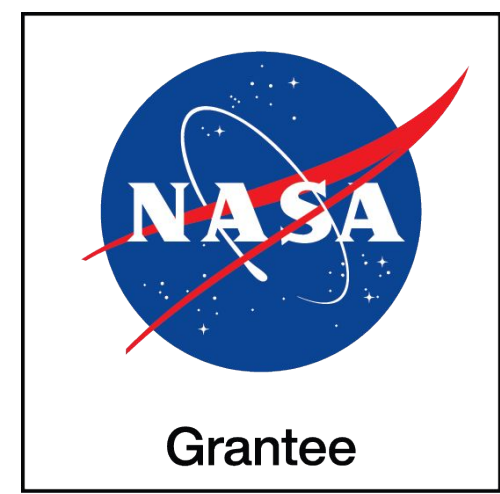




MAAP: A cloud-native platform for end-to-end EO open science

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NISAR-ready from day one.

Discover, process, and fuse NISAR with BIOMASS, GEDI, SMAP, and ICESat-2 at mission scale in the cloud.

Why cloud-native?

- Fragmented discovery: every agency catalogs data differently
- Access walls: separate logins, credentials, and policies
- Scale gap: laptop notebooks can't run mission-scale jobs

300+

registered scientists across 15+ groups

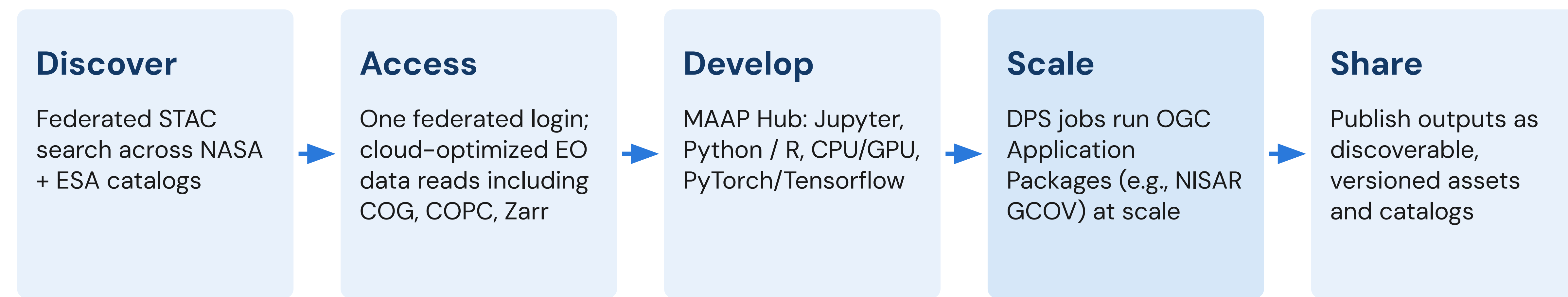
400k+

compute hours processed on MAAP

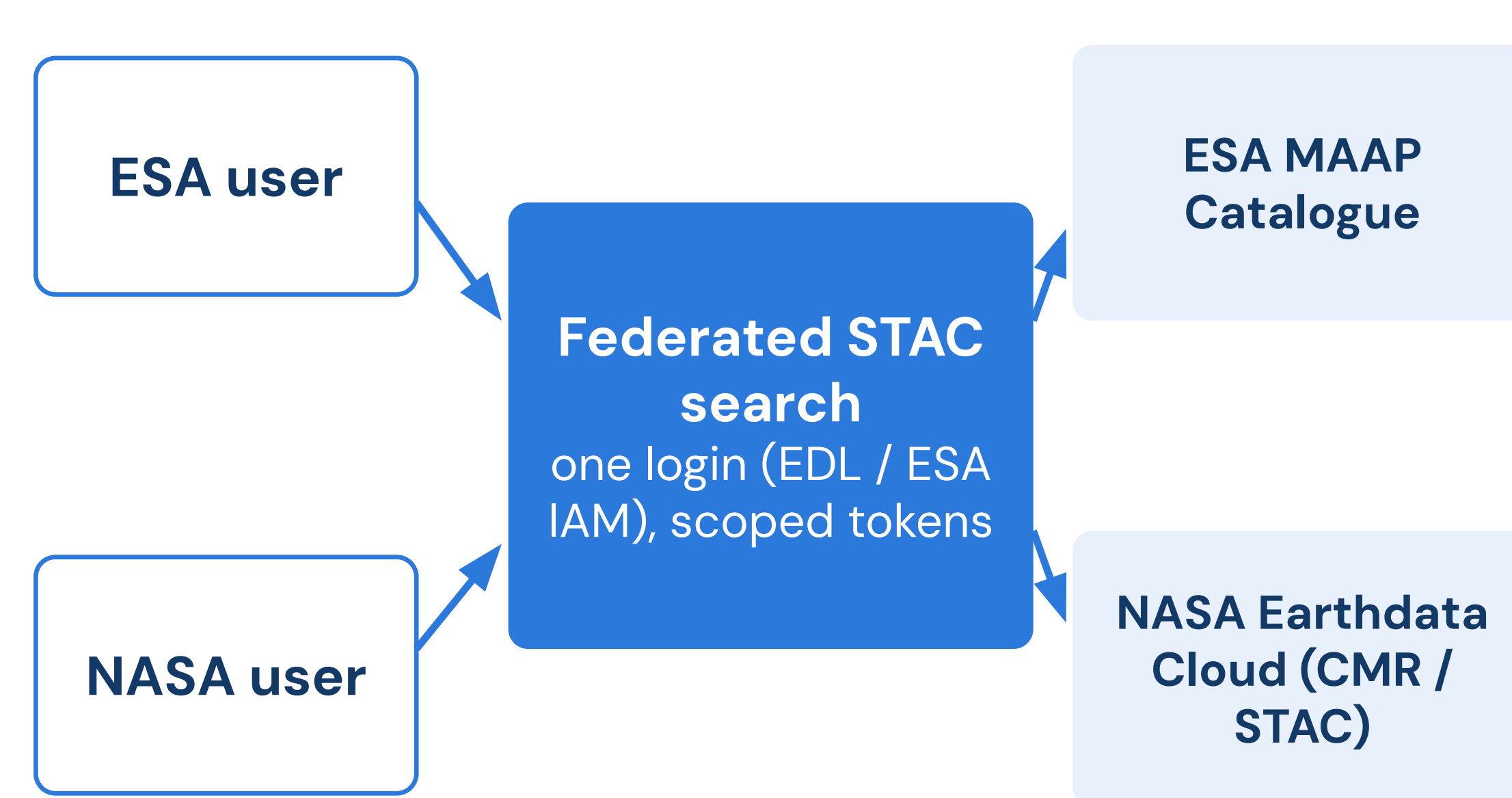
130+ TB

of data products generated

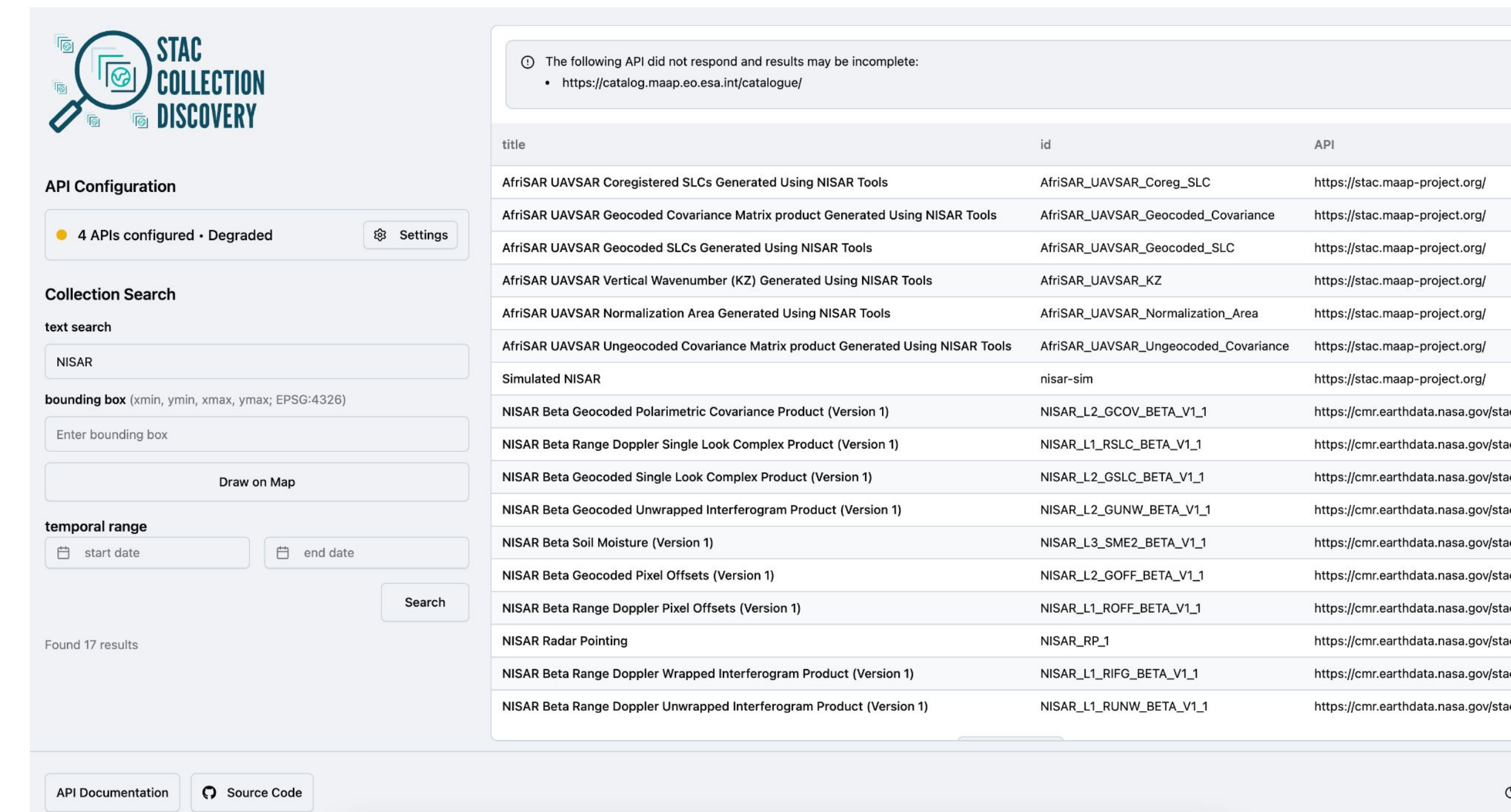
End-to-end in the cloud: how MAAP works



Federated STAC catalog & cross-agency access

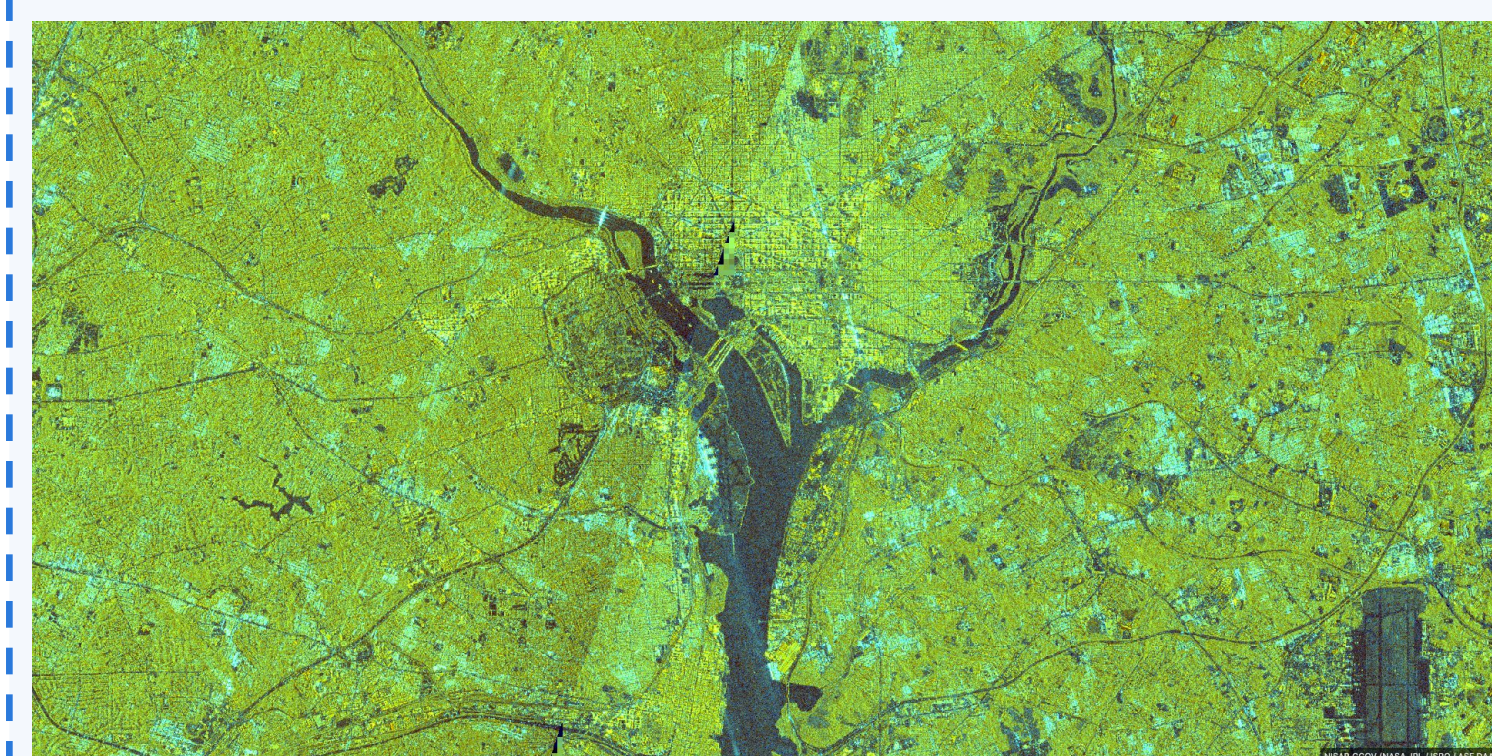


A single search and login spans NASA MAAP STAC, CMR, and ESA MAAP STAC. Data stays in place.



Federated search: one 'NISAR' query lists collections from every agency catalog.

NISAR on MAAP

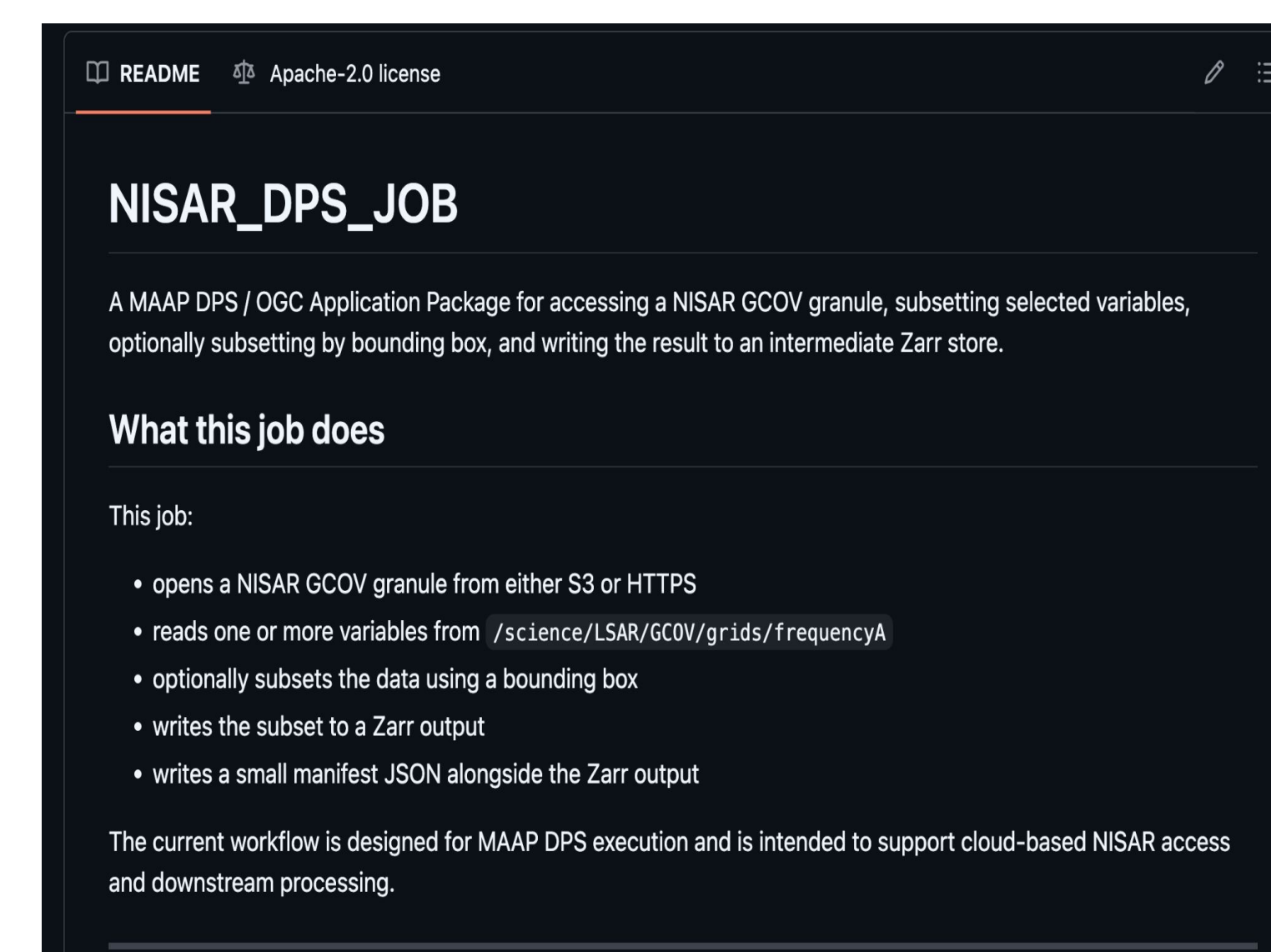


Washington, US

Cloud-optimized reads of NISAR layers tiled interactively by TiTiler-CMR.



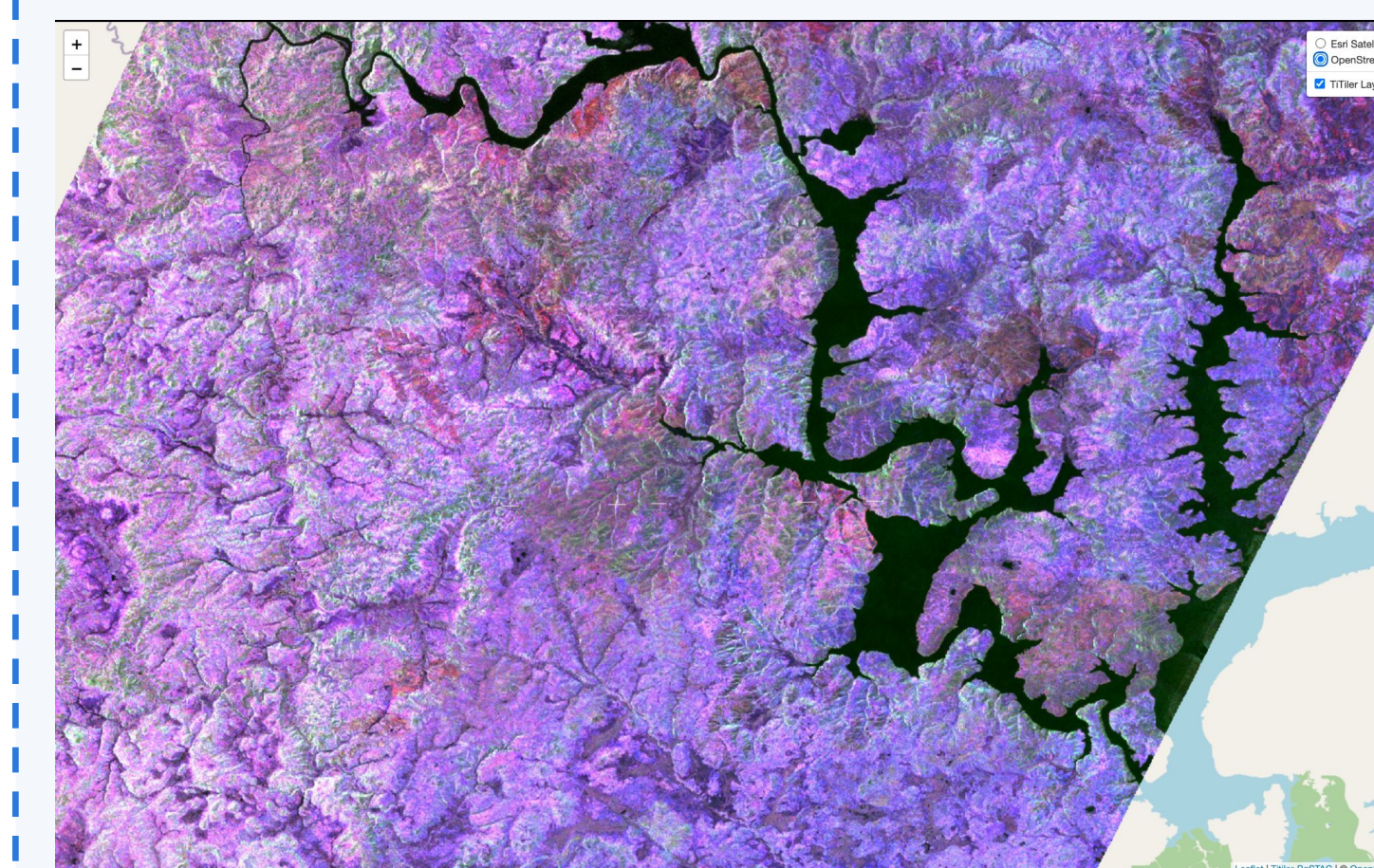
Scalable Processing



This NISAR DPS job reads GCOV granules, subsets by AOI, and writes analysis-ready Zarr. It runs as an OGC Application Package.



BIOMASS on MAAP

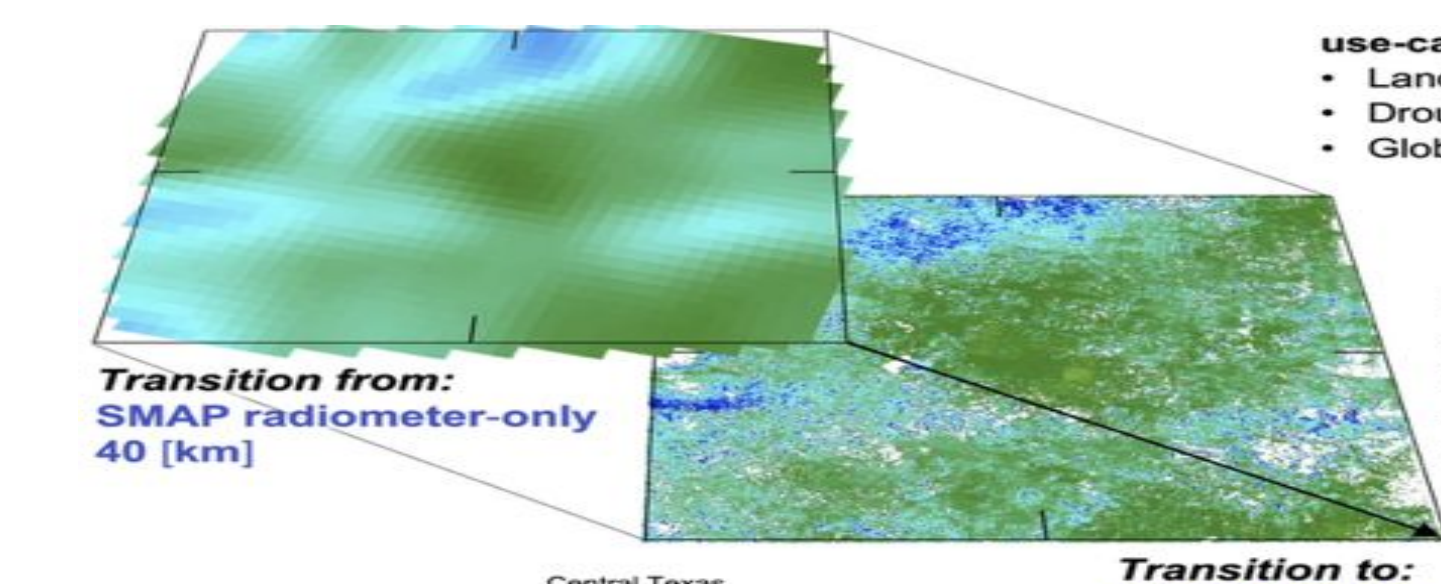


Boreal region

ESA BIOMASS β^0 radar brightness (uncorrected), HH/HV/VV mosaic generated by a MAAP DPS job, published to STAC, and tiled by TiTiler.

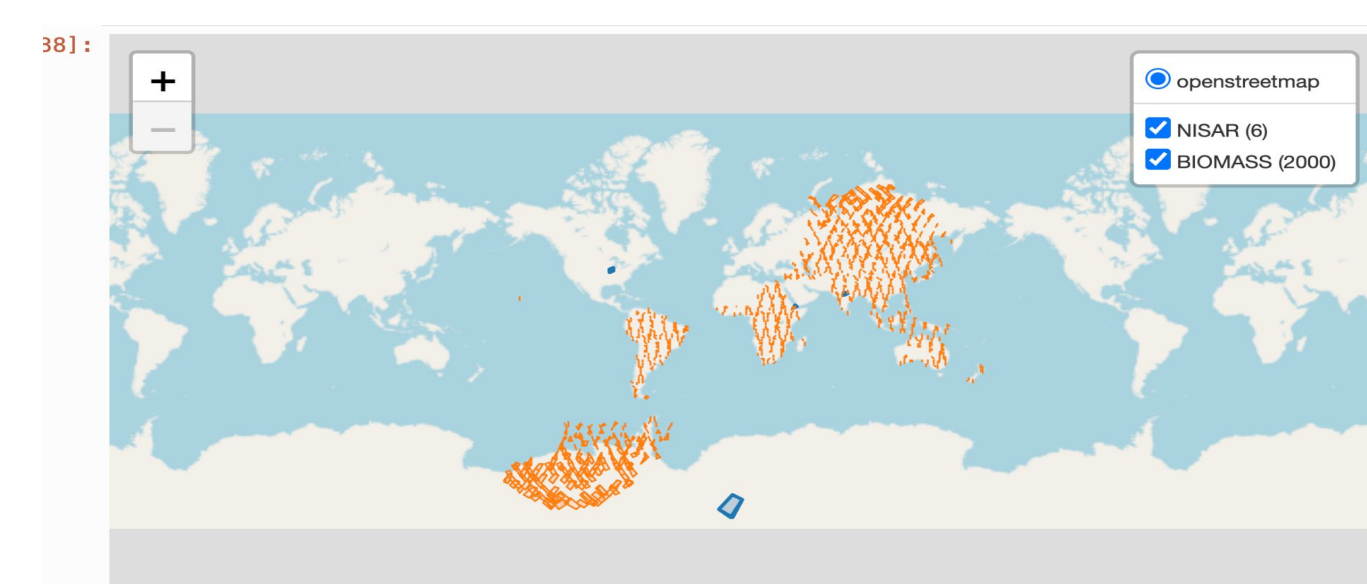


Data fusion on MAAP



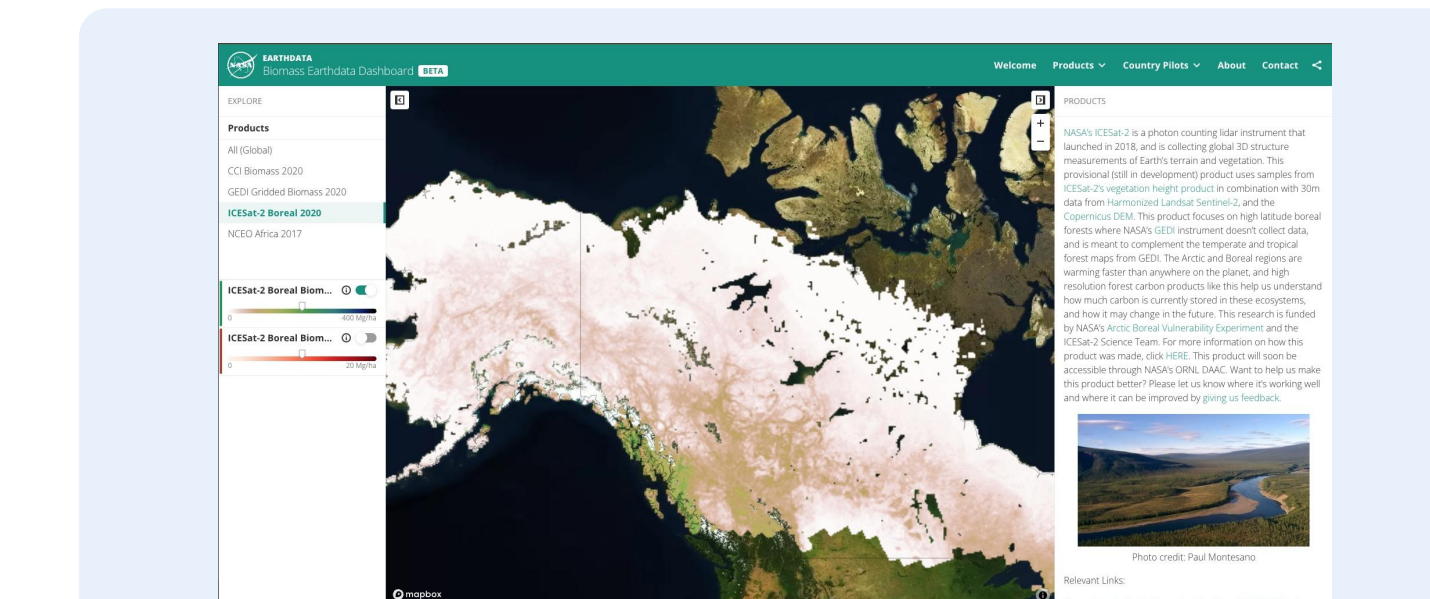
SMAP × NISAR soil moisture

Radiometer 40 km → SAR 100 m



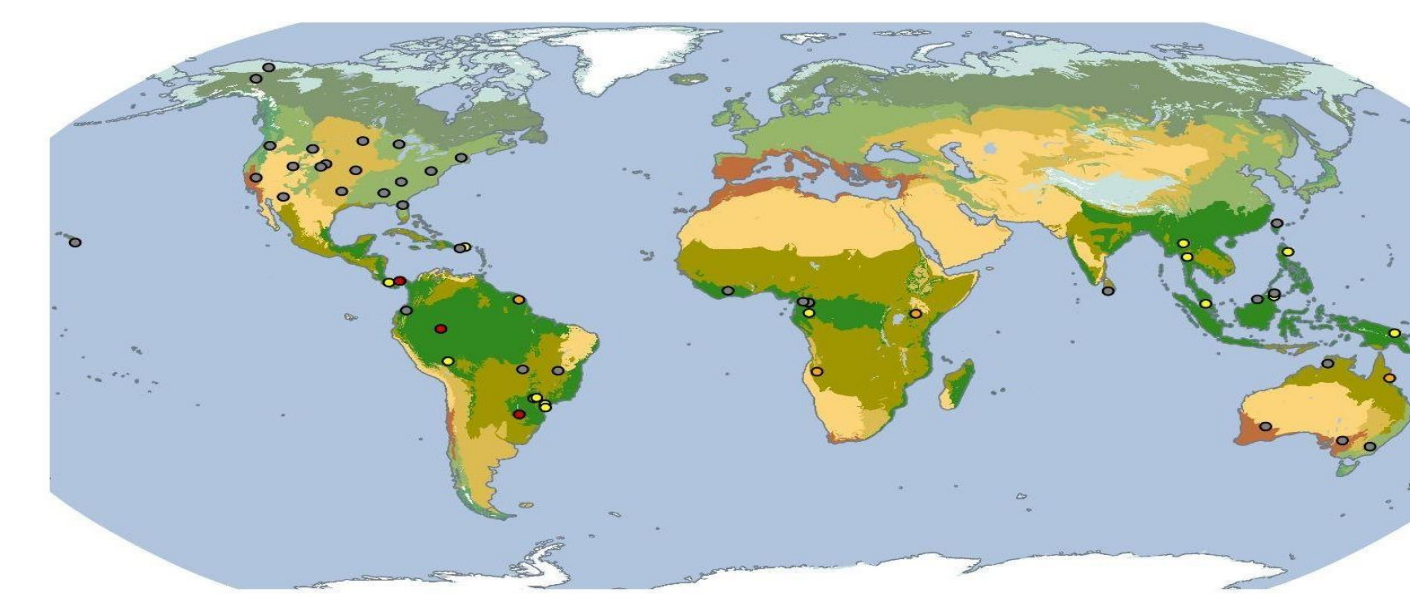
Data fusion across missions

Shared coverage & joint AOIs



GEDI · ICESat-2 · BIOMASS carbon BIOMASS Earthdata Dashboard

Multi-mission boreal AGB



Global Environmental monitoring

Event-driven mission data suites

Imagery: NASA Earthdata / MAAP dashboards, ESA MAAP; SMAP-NISAR graphic: SMAP Science Team, JPL

Status & findings

- Federated STAC search operational across agency catalogs
- Cross-agency access via short-lived, scoped tokens
- OGC App Packages enable portable algorithm exchange
- Sandboxed analysis of restricted, auth-protected data
- Scalable OGC Application workflows

Takeaways

- 1 Standards (STAC + OGC) make interoperability routine
- 2 Cloud-native compute-to-data scales notebooks to missions
- 3 A platform built on standards – uniting data, compute & science communities



Scan for docs & paper
[maap-project.org](https://maap-project.org/docs.maap-project.org)
docs.maap-project.org

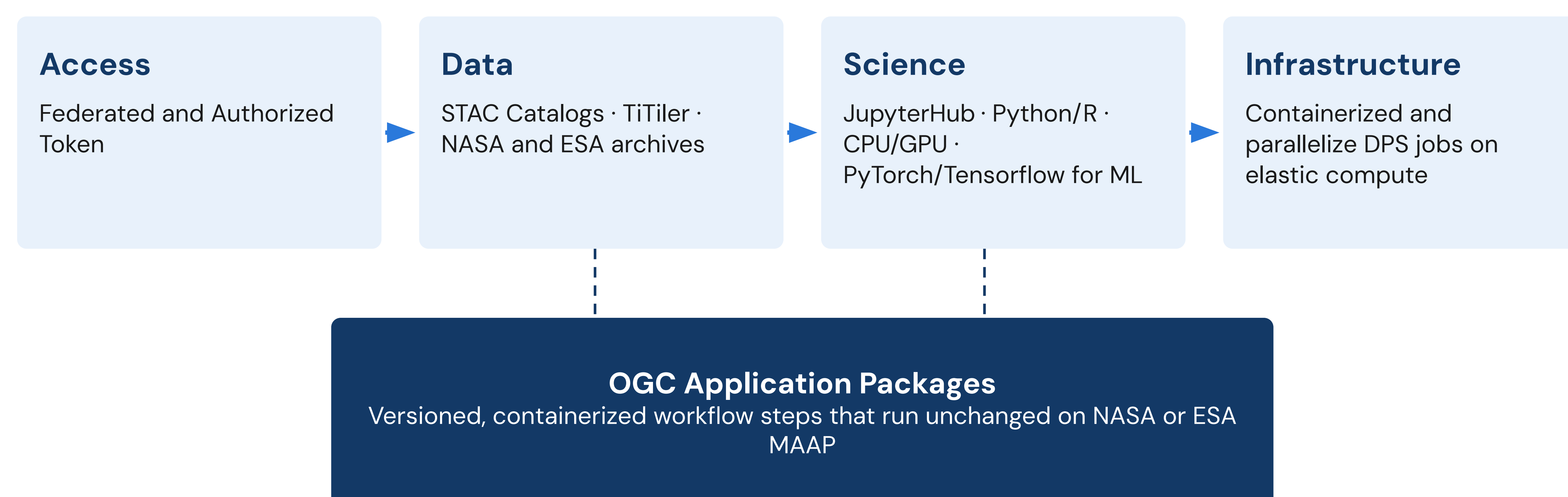
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Inside the platform: Scalable Computing at the core



Compute moves to the data: less egress, and analyses that took weeks are completed in hours