

EarthCARE/ATLID in the Global Stratospheric Aerosol Watch portal (GSAW): rapid contextualization using enhanced quicklooks

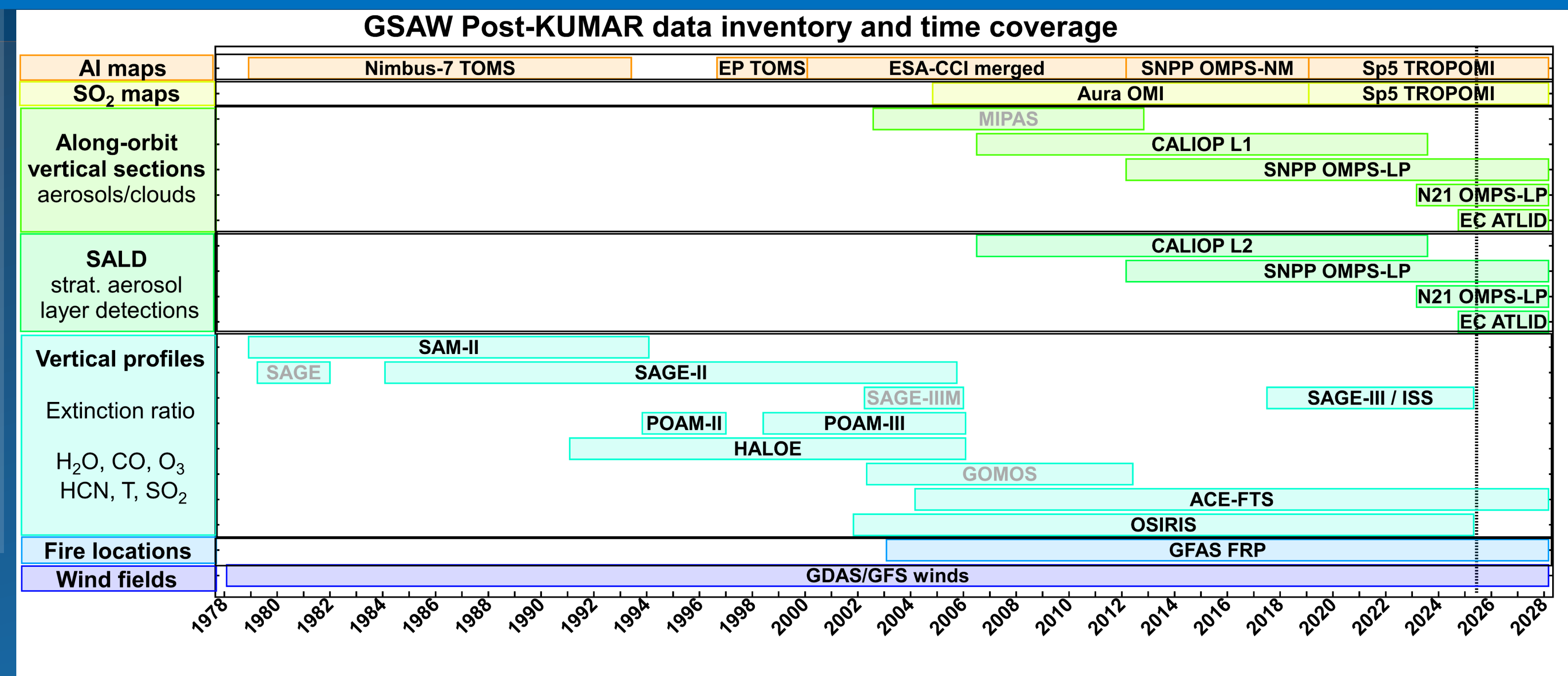
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EUROPEAN SPACE AGENCY



GSAW Portal

- GSAW is a public web portal conceived for quick visualization of various satellite observations relevant to stratospheric aerosols with a specific focus on extreme events, reaching the stratosphere
- GSAW enables convenient visualization of NRT data (delivered with a latency of 1-3 hours) as well as historical data dating back to 1979 for some data sets.
- GSAW includes various interactive modules enabling to combine different types of observations (satellite active and passive remote sensing, ground-based lidars) for the following purposes:
 - 1) NRT detection of extreme events: wildfire outbreaks and explosive volcanic eruptions
 - 2) Spatiotemporal tracking of aerosol plumes in NRT mode
 - 3) Source attribution of aerosol plumes in the UTLS
 - 4) Multi-scale analysis of stratospheric aerosol perturbations, their evolution and longevity



Post-KUMAR

ATLID Geo viewer

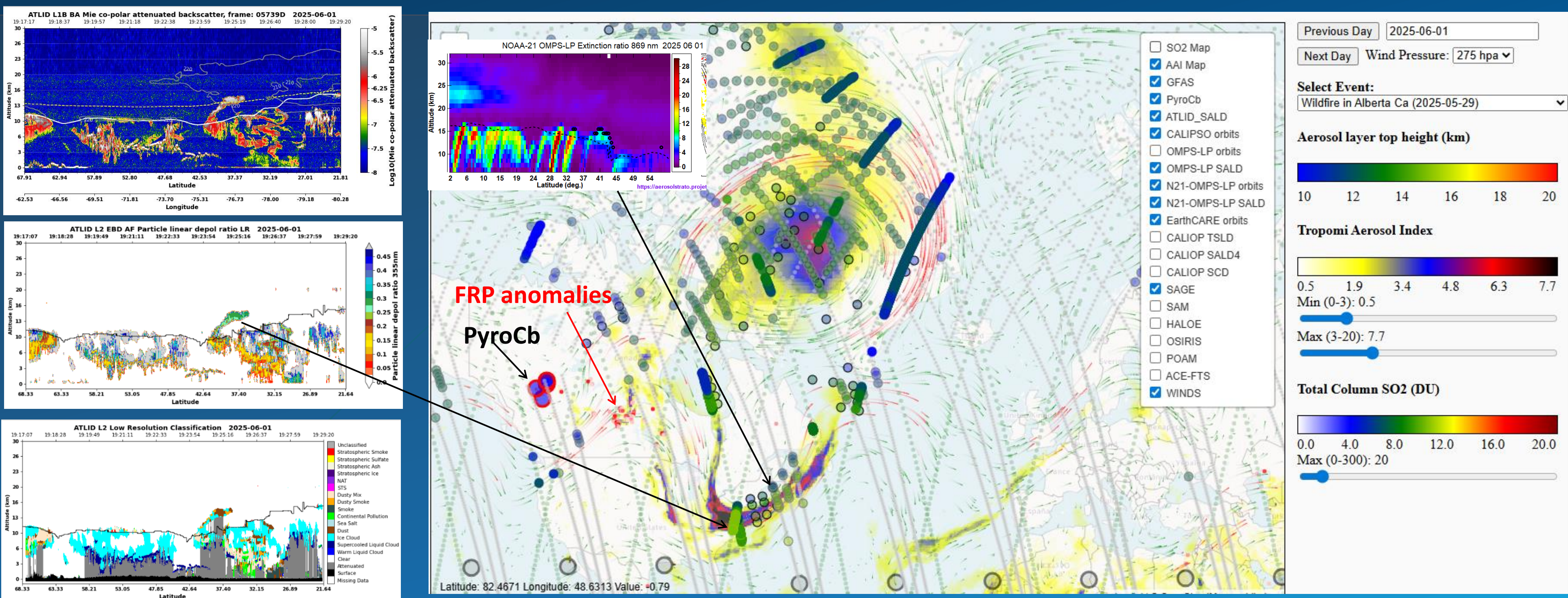
ATLID image browser

Bulletin LatAlt

30+ datasets, 10 operational, 45-yr near-global coverage

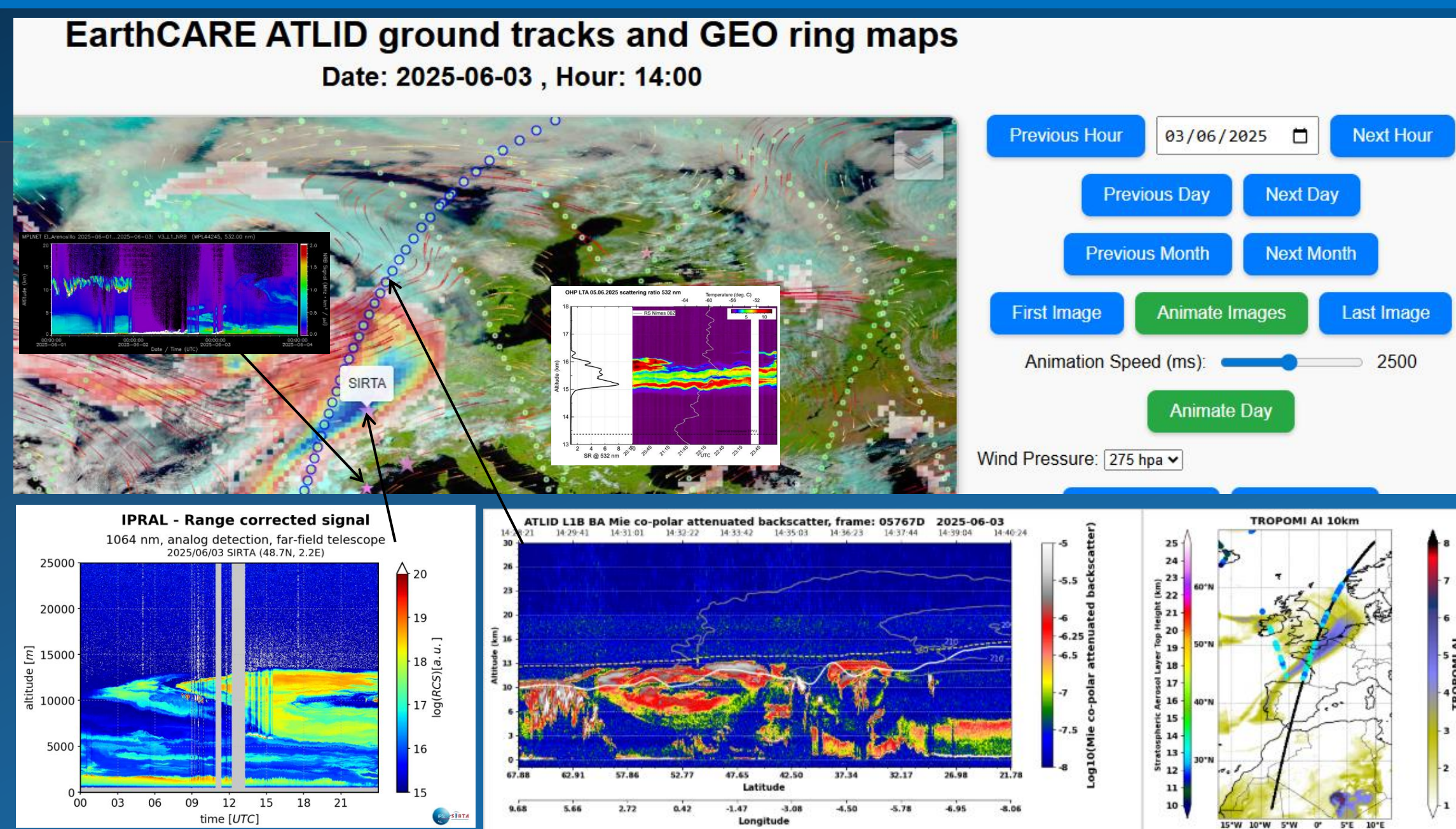
Post-KUMAR

- The most advanced interactive module that places ATLID in immediate geophysical context. Daily global fields (UV-absorbing Aerosol Index and SO₂) are overlaid with clickable satellite ground tracks; selecting an overpass opens the corresponding along-track vertical curtain with ATLID L1 backscatter/depolarization and L2 aerosol/cloud classification on consistent color scales.
- Co-rendered layers (TROPOMI AAI/CO, OMPS-NM/LP heritage, CALIOP legacy curtains) and GFS winds aid scene interpretation and transport; stratospheric aerosol-layer detections (SALD) highlight plume tops for quick triage. Near-real-time ATLID curtains (≈1–3 h latency, when available) can be browsed alongside historical tracks; users can animate maps, adjust color limits, and jump between orbits to follow an event.



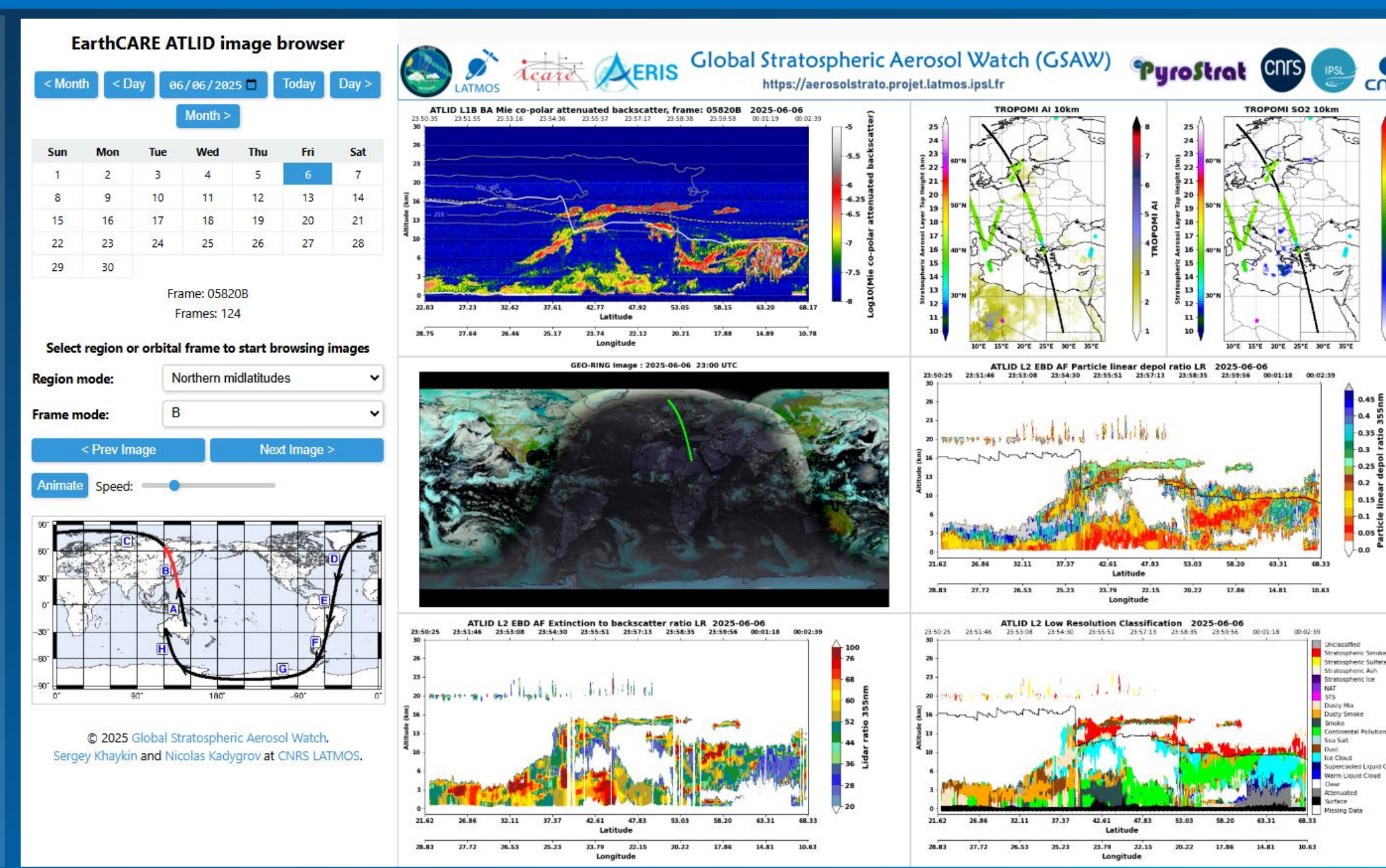
ATLID GEO viewer

- A map-centric EarthCARE view that fuses NRT ATLID curtains (≈1–3 h) with an hourly global day/night composite from geostationary imagers. On this backdrop, TROPOMI AAI, live EarthCARE position and ground track, and 3-hourly GFS winds at different pressure levels are animated to follow scene evolution.
- Clicking an ATLID orbit opens a quicklook of corresponding frame combining ATLID L1/L2 with TROPOMI AAI and SO₂ to pinpoint smoke and volcanic aerosol plumes
- Station quick-looks from lidar networks (MPLNET, EARLINET, NDACC/ACTRIS) provide local context



ATLID Image Browser

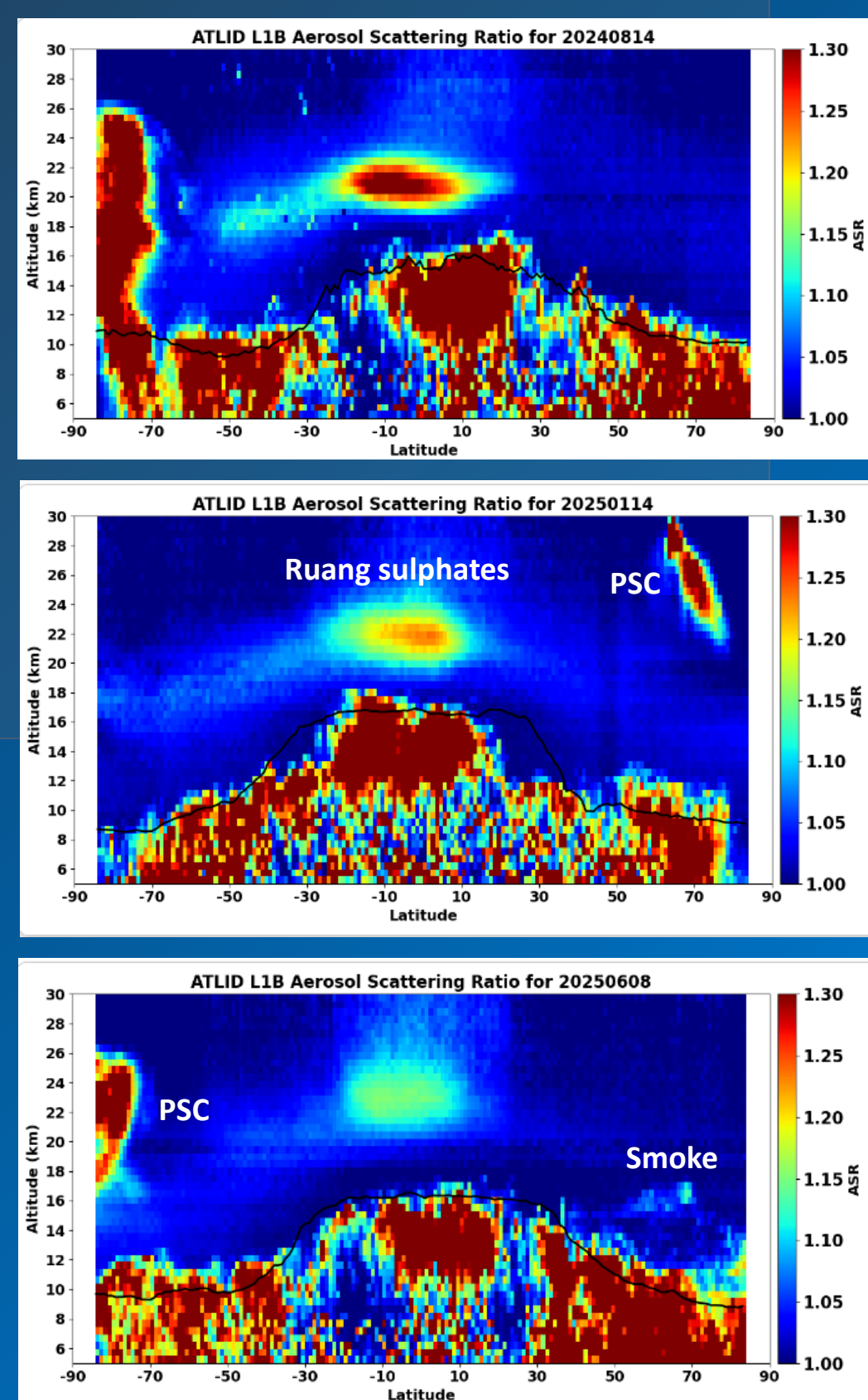
- A lightweight explorer for rapid discovery, browsing, and inspection of ATLID frames.
- Quick browsing through the frames
- All quicklooks have been updated to include NOM_1B, EBD_2A, TC_2A data



Bulletin LatAlt

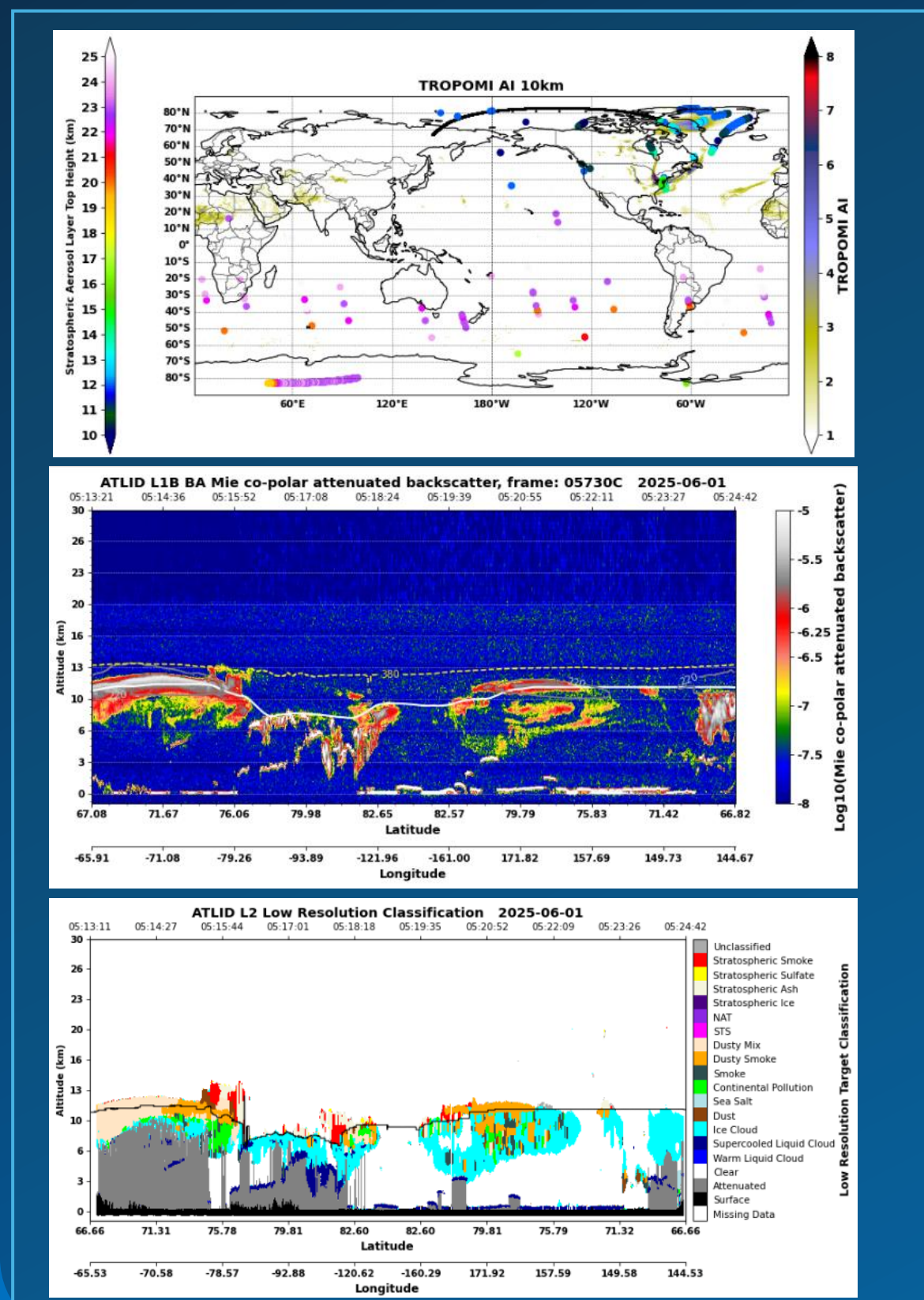
A concise, situation-awareness bulletin delivering vertically resolved, global views of stratospheric aerosol. It provides daily latitude–altitude sections of scattering ratio from EarthCARE/ATLID.

Users can pick a date or play animations to track perturbations—emphasizing where (and how high) plumes occur, their extent, and their temporal evolution.

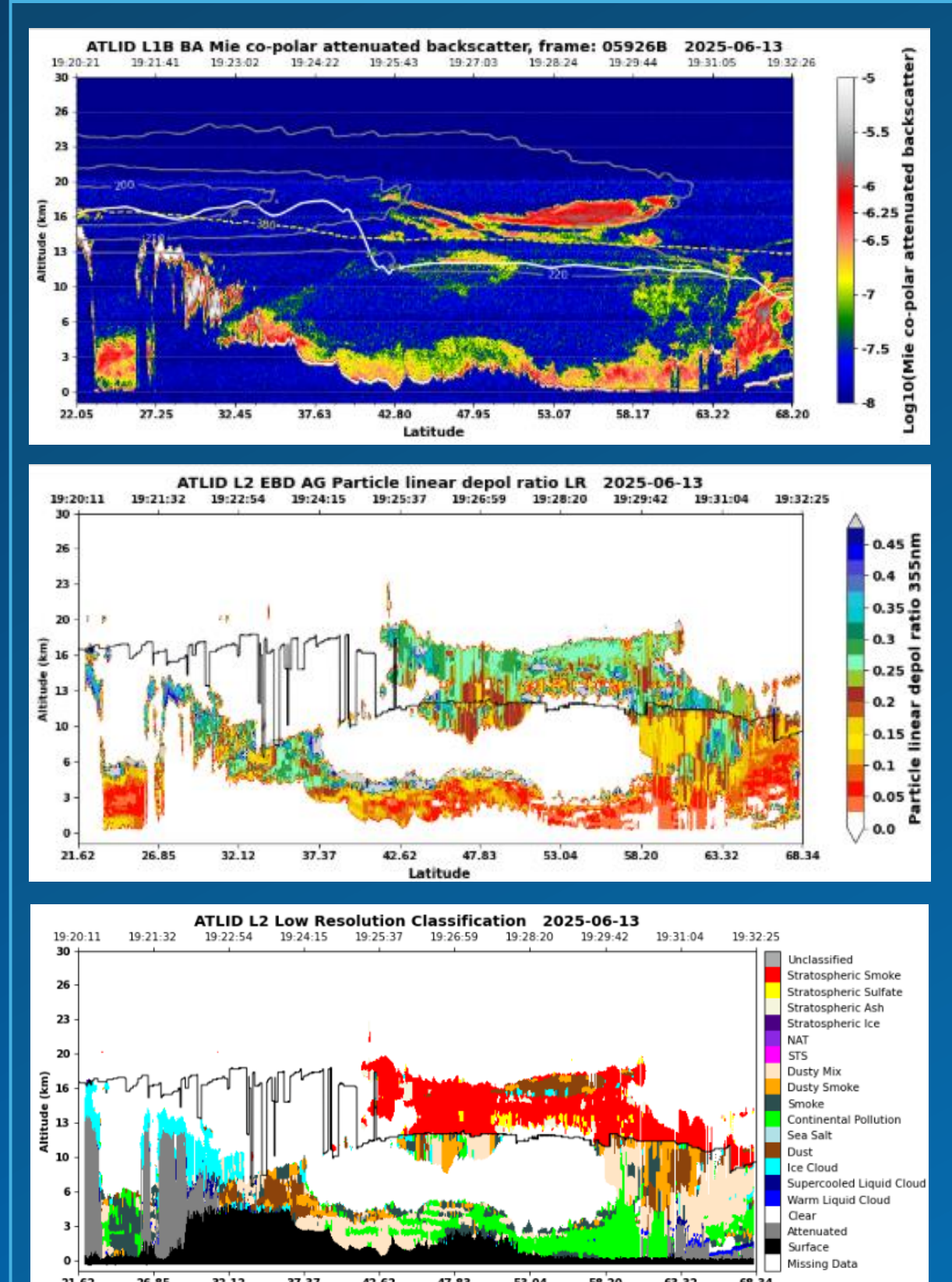


Selected show cases

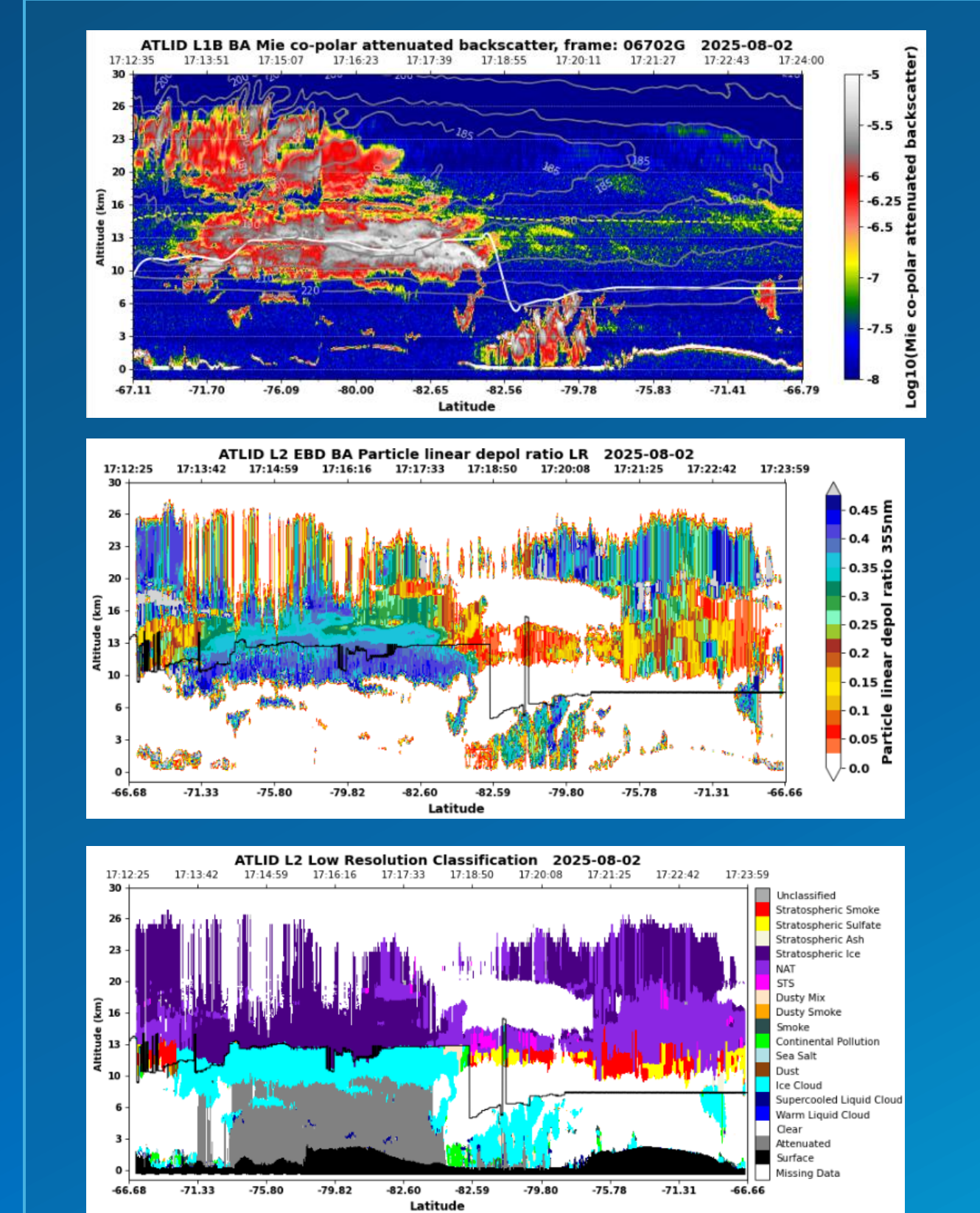
Canadian and Siberian smoke plumes in one frame



PWO-2025 Canadian smoke charged vortex



Mixed-state Antarctic PSC



EarthCARE 2026 Science and Validation workshop

8–12 June 2026 | Rhodes House | Oxford, UK