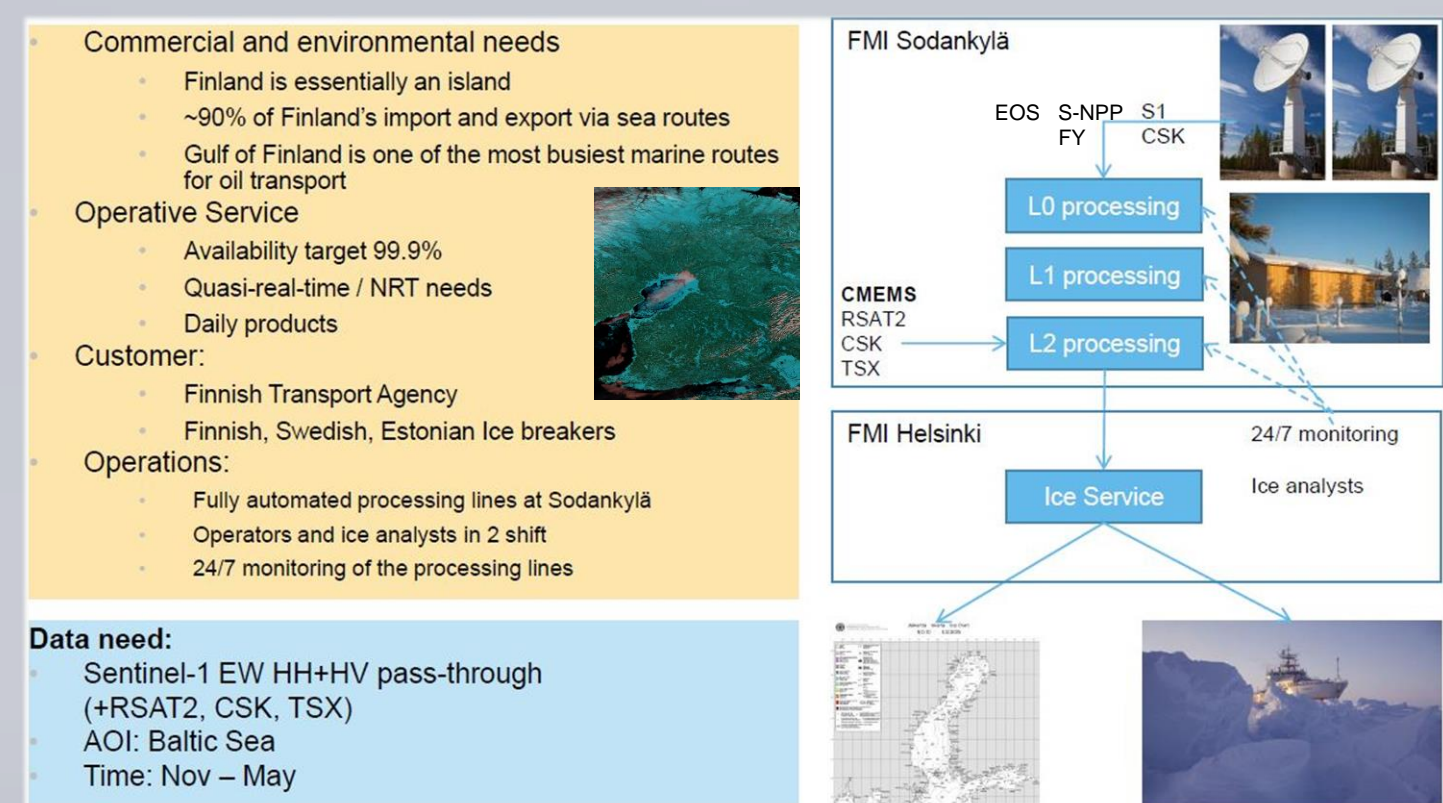


Satellite activities, facilities and capabilities at NSDC, Finland



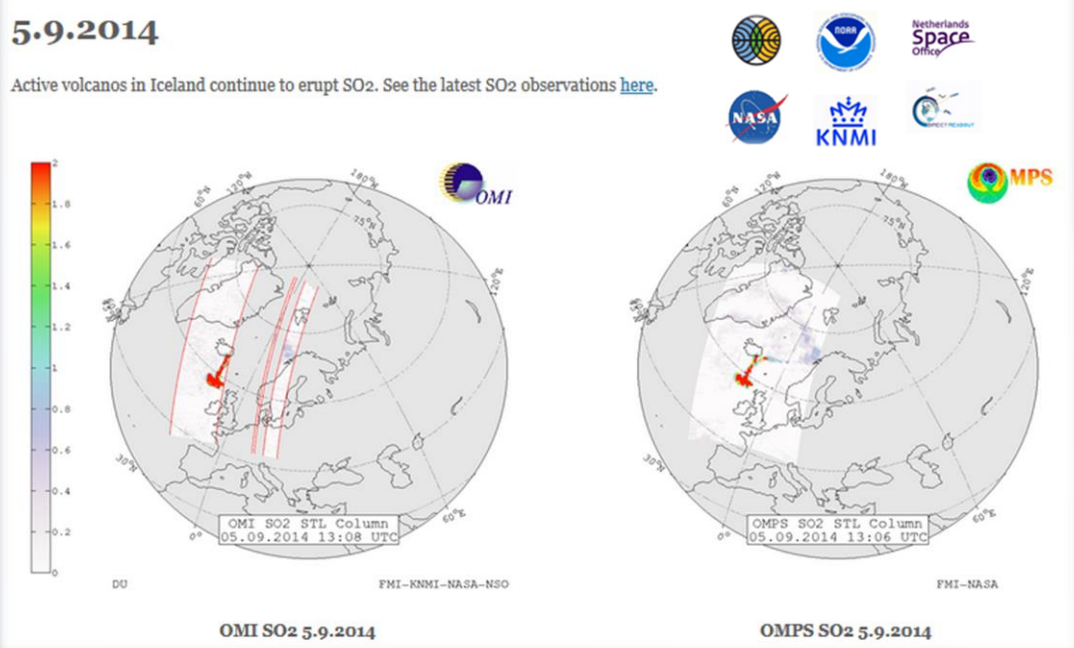
National satellite data center (NSDC) provides satellite data reception and data processing services to Finnish and international partners

Near-real time satellite imagery usage



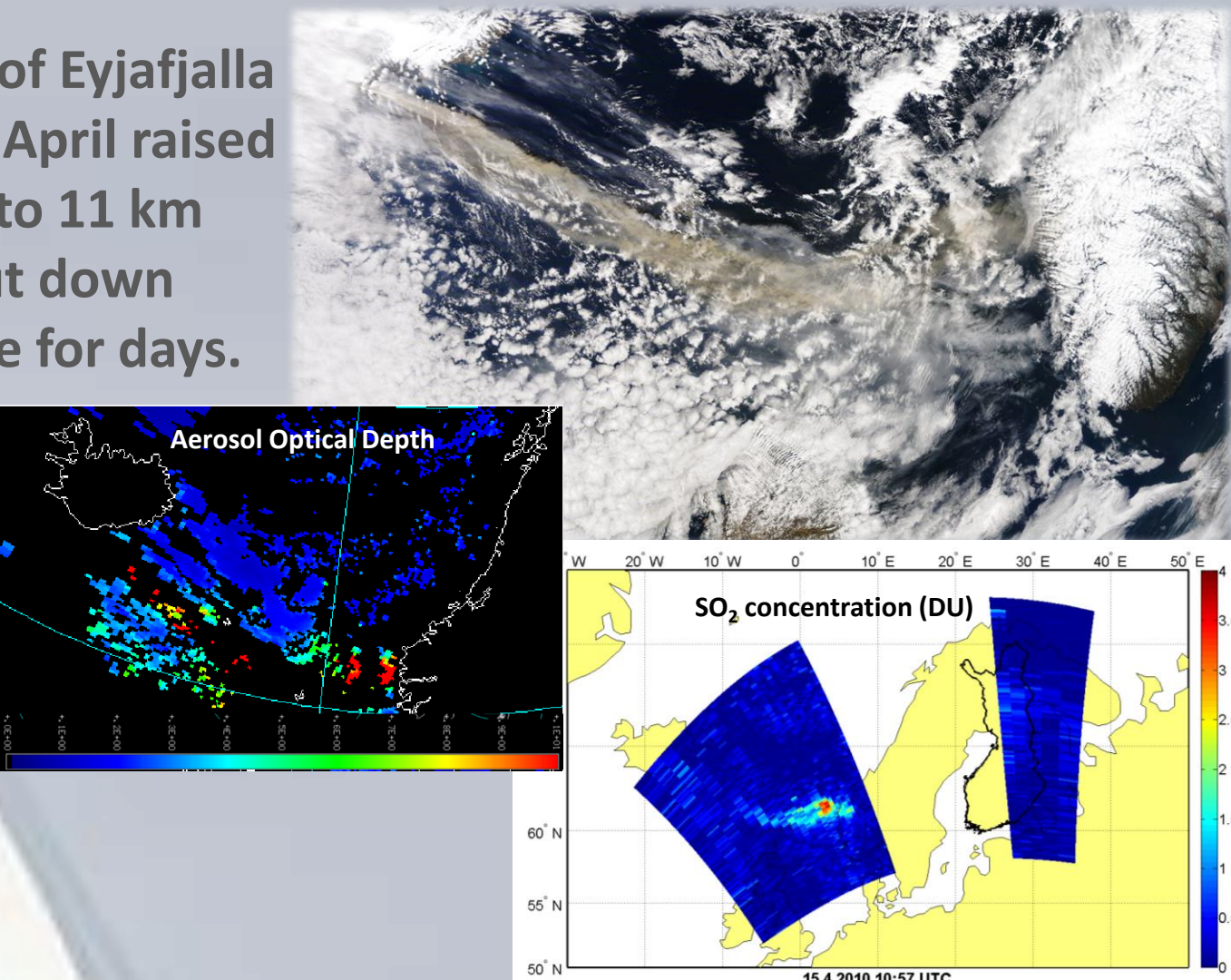
Satellite Measurements from Polar Orbit

Instantly delivered Direct Readout products available at sampo.fmi.fi



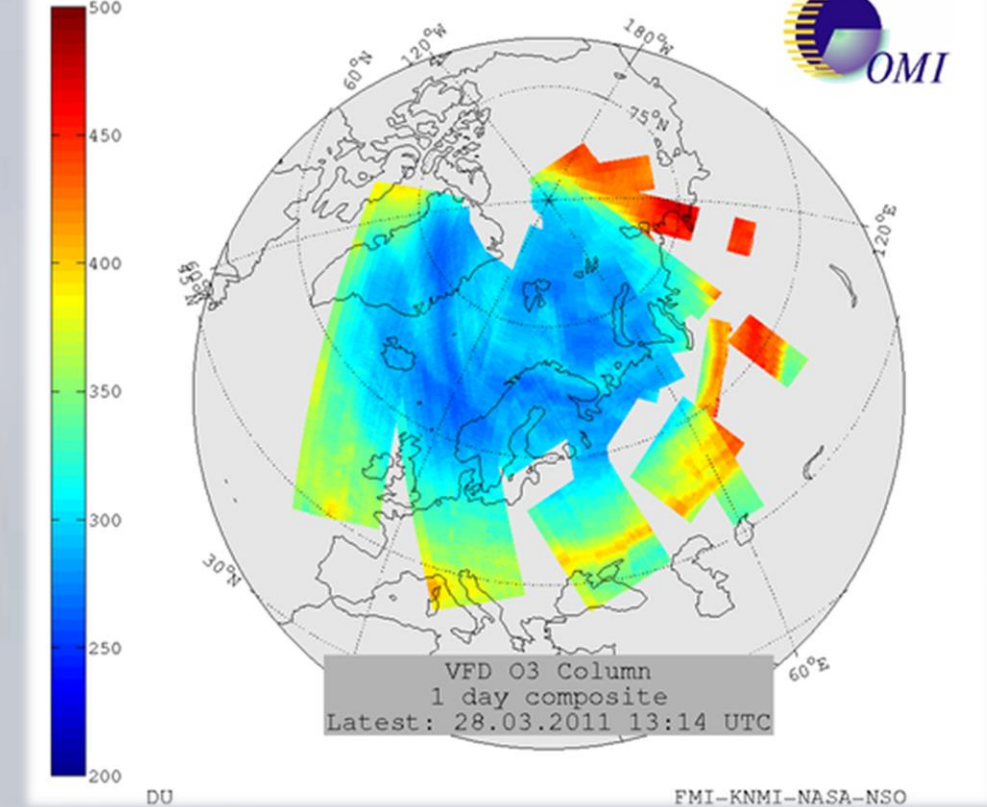
April 2010 – Iceland volcano eruption

Strong eruption of Eyjafjalla volcano on 14th April raised an ash cloud up to 11 km altitude that shut down Europe's airspace for days.



Spring 2011 – Arctic ozone loss

Ozone loss due to extreme cold temperatures and stagnant atmosphere with man-made chemicals were clearly visible from satellite images.

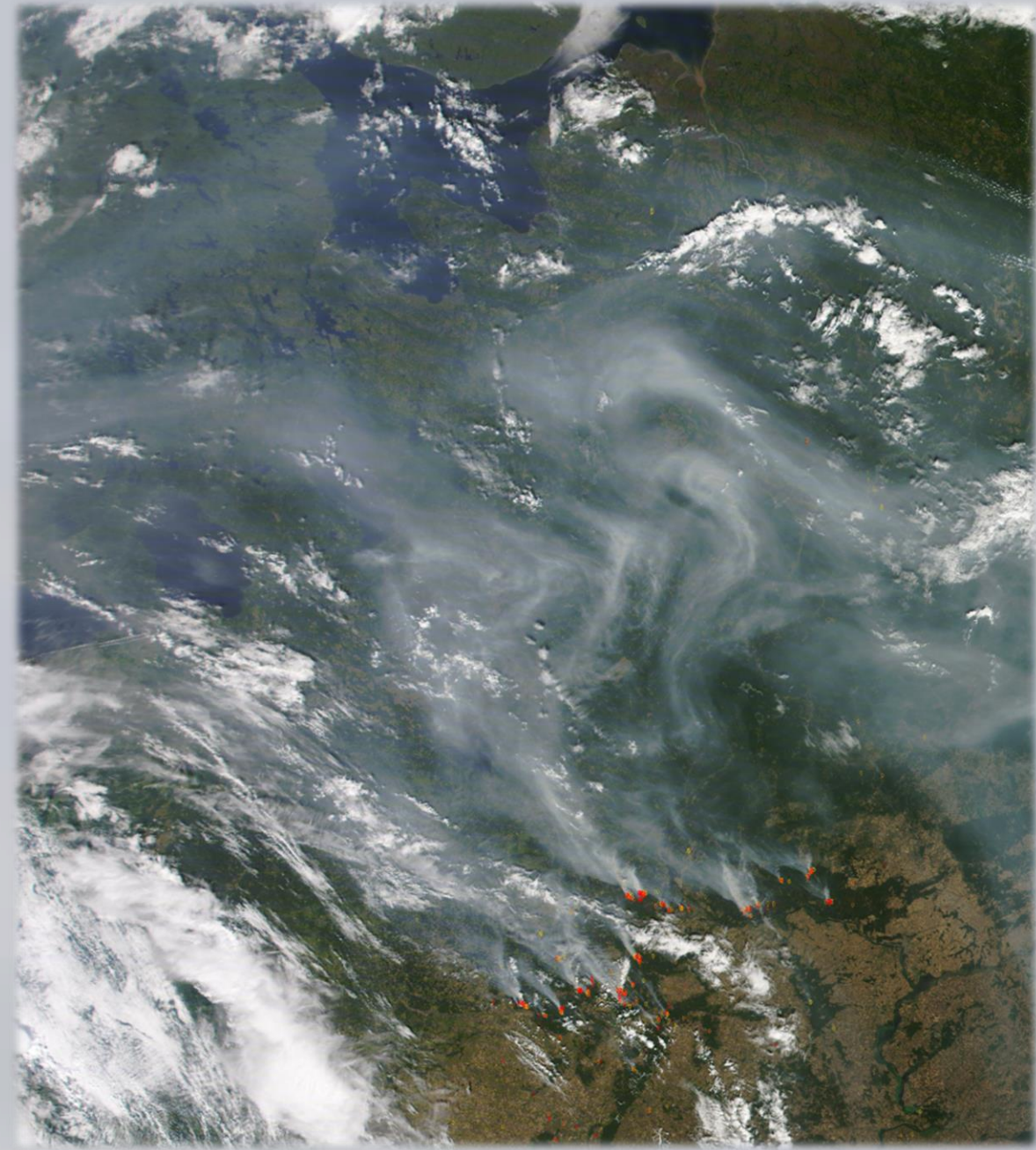


Near-real Time Satellite Data Availability

- Terra & Aqua **MODIS**
- Aura **OMI**
- S-NPP **VIIRS** & **OMPS**
- FY3-B & FY-3C **MERSI**
- Cosmo SkyMed constellation **SAR**
- Sentinel 1A & 1B **SAR**

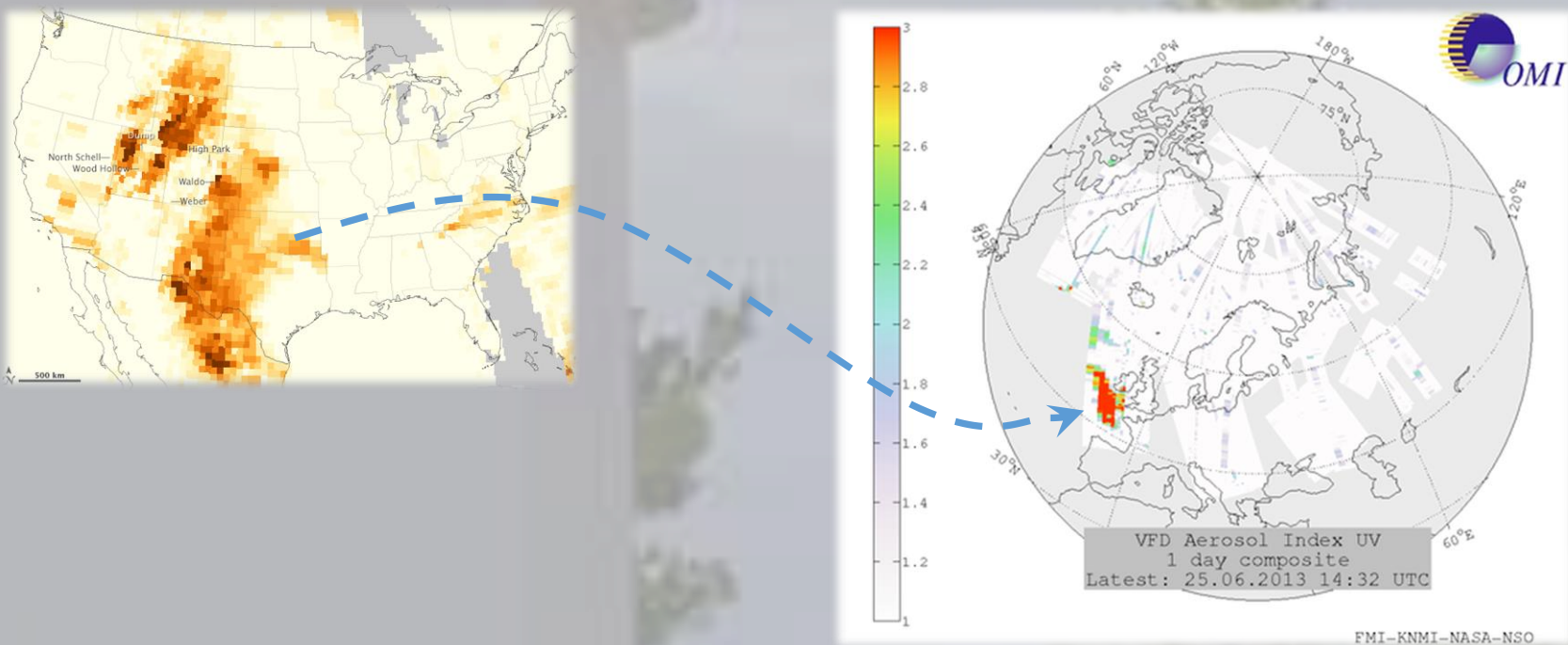
Summer 2010 – Russian forest fires

Extra high temperatures with dry summer caused several forest fires that had influence on air quality and death rates.



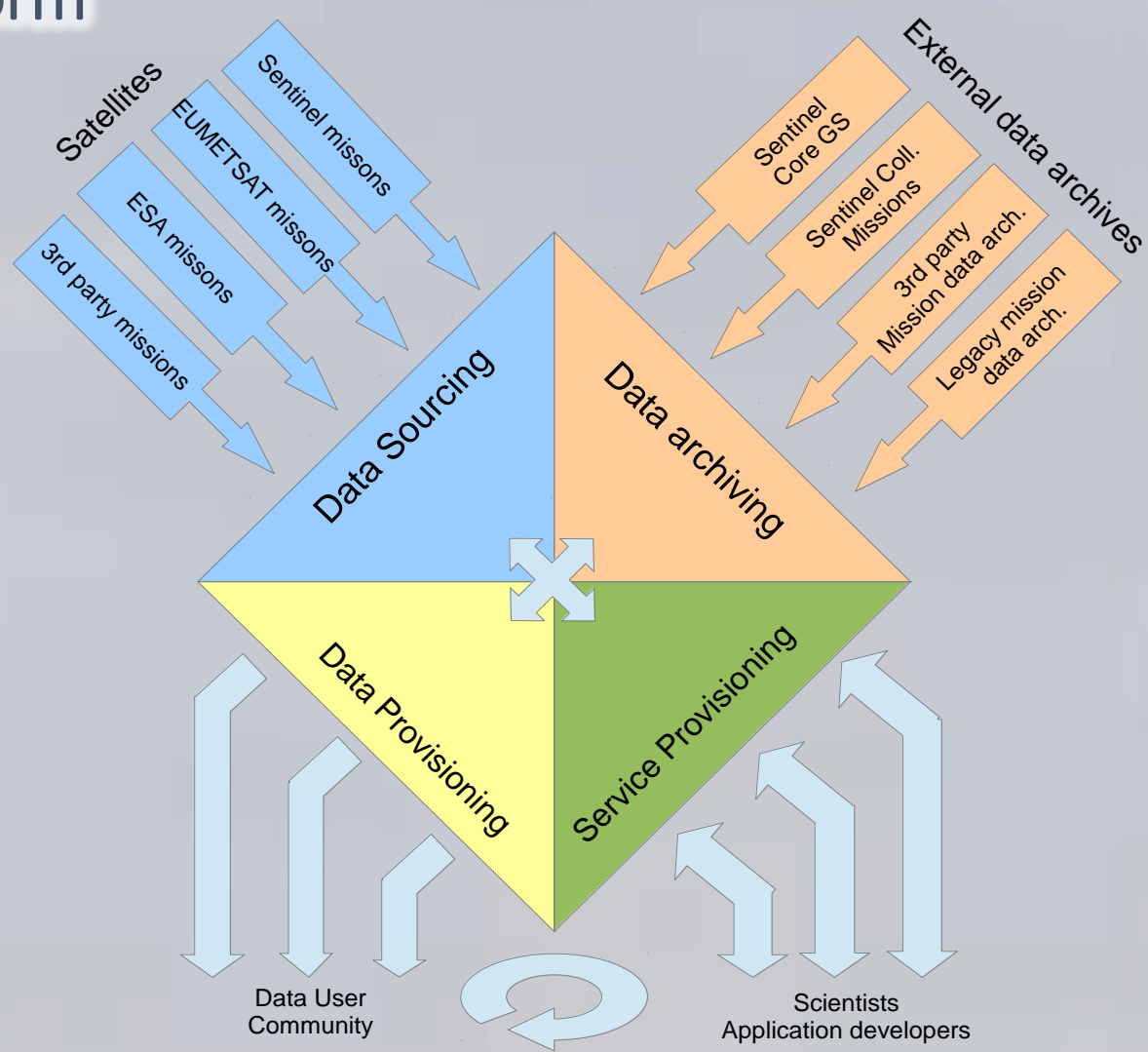
June 2013 – Smoke plume from Colorado

The smoke plume originating from the wildfires in Colorado reached Europe in 25th June 2013.

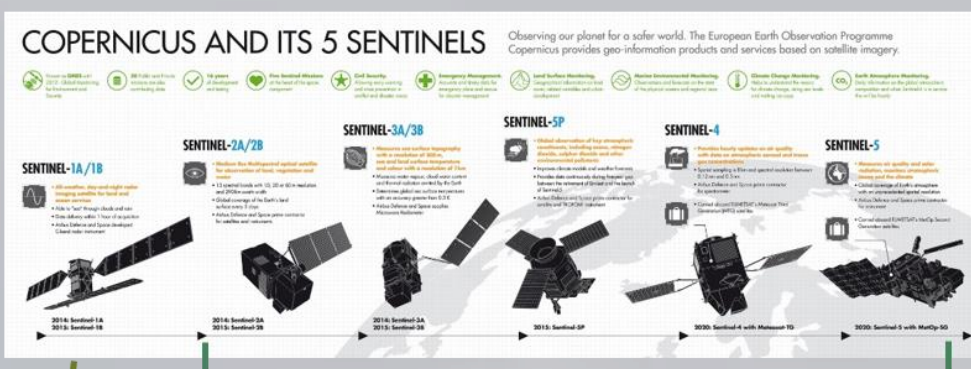
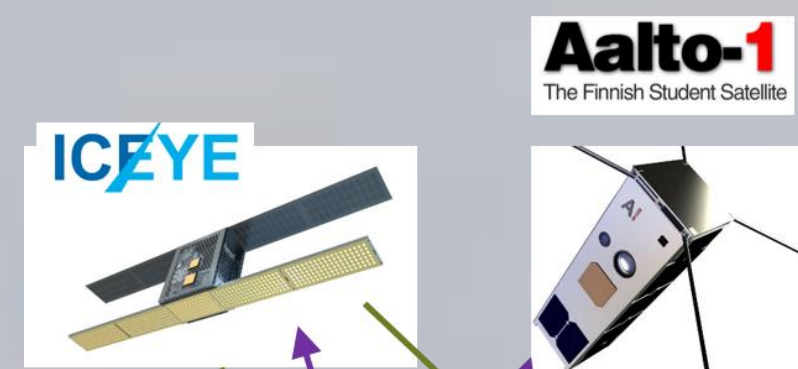
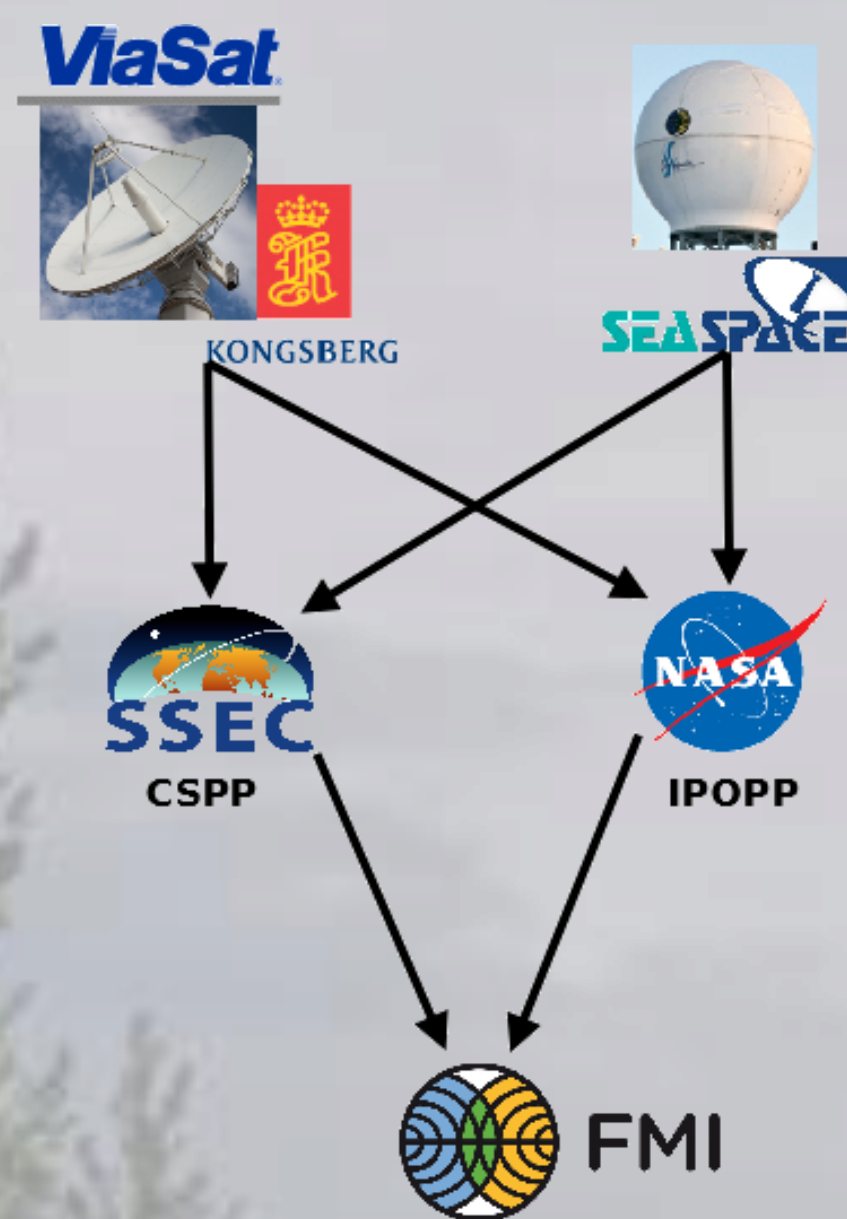


Thematic and regional exploitation platform

Traditionally EO data has been downloaded to the researchers' personal laptops for analysis and product development. New instruments with higher accuracy and more bands have increased the data amounts so that the data transfer is the bottle neck of the process chain. Bringing the source code and processing environment next to the data and only download the final product, which is usually smaller than the raw data, will solve this issue.



- Fast access to data concerning certain themes, including satellite data, in-situ data
- User driven approach
- Infrastructure as a service (IaaS)
 - Processing capacity (cloud, grid, clusters)
- Platform as a service (PaaS)
 - Processing software (toolboxes, commercial software)
- Virtual servers
 - Easy to create – flexible to modify
 - Joint servers vs. dedicated
 - Shared data disk vs. restricted
- 24 h/7 surveillance and monitoring



2.4 m System	Item	7.3 m System
2.4 m X-band Cassegrain	Reflector	7.3 m X-band Cassegrain
Hemispherical No keyholes	Coverage	Hemispherical No keyholes
7.7 – 8.5 GHz	Frequency	7.7 – 8.4 GHz
22.8 dB/K	G/T	≥31.2 dB/K
RHCP/LHCP	Polarizations <ul style="list-style-type: none">DataTracking	RHCP+LHCP RHCP/LHCP
0.1° 0.03°	Accuracy <ul style="list-style-type: none">PointingTracking	0.06° 0.04°
Auto and Program Track	Tracking	Auto and Program Track
Radome	De-/anti-icing	Electrical heating
NASA EOS and S-NPP	Satellite support	LEO > 250 km, MEO, GEO
1	Data channels	2
0.665 to 20.8 Mbps	Data rate	2 to 320 Mbps (expandable)
Fully automated	Station control	Fully automated
2003	Operational	2011

Data distribution using 10 Gbps data link
New 7.3 m antenna with S-band uplink 2017 onwards

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Finnish Sentinel Collaborative Ground Segment

- Sentinel-1 Collaborative Acquisition Station (CAS)
 - Sentinel-1 NRT delivery from local reception
- Collaborative Archiving and dissemination Centre (CAC)
 - Sentinel-1/2/3/SP National Mirror Site
- FINHub Data dissemination system
 - <https://finhub.nsdc.fmi.fi>
 - Utilizes the ESA developed DHUS system
 - Same graphical user interface
 - Same M2M interface