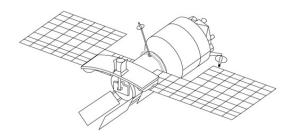
HELLENIC COLLABORATIVE GROUND SEGMENT

Yannis Mitsos

Service Delivery Manager, National Observatory of Athens





http://beyond-eocenter.eu/

https://sentinels.space.noa.gr/

Presentation structure

Comprehensive overview of the works untertaken by NOA in the context of:

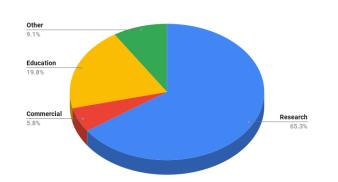
- Copernicus Data Hubs
- National mirror site HNSDMS
- Data Hub Relay

Copernicus Data Access

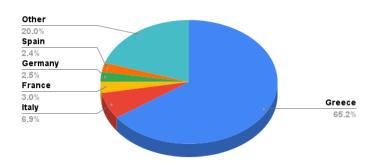
- Management and monitoring of over 50 Virtual Machines provided by GRNET for the support of 2 Services/Hubs
- Hosted in a private European cloud facility for the research and Academic community
- Collaborative Hub (Node 3): Access to Sentinel-1/2/3 data from all Collaborative Users
- **S5P Collaborative Hub**: Access to Sentinel-5P data from all Collaborative Users

HNSDMS - Statistics

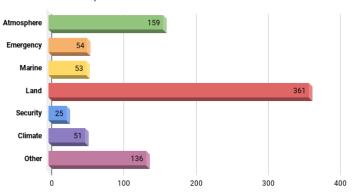
- A total of 900 users
- 65% of registered users are from Greece and 35% from other countries as Italy, France, Germany, Spain, etc.
- Most popular among the members of the research community
- Atmosphere and Land application domains are the main fields of data use Per Usage Purposes



Users per Country

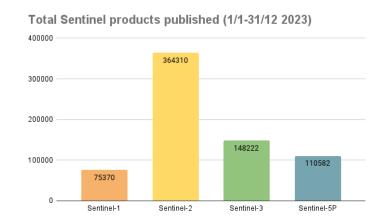


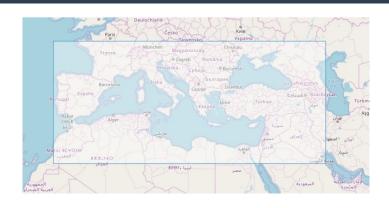
Per domain of expertise



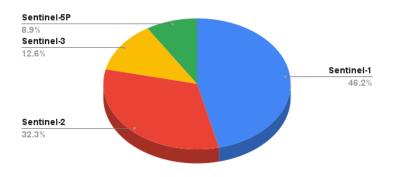
HNSDMS - Statistics

- Rolling archive of 21 days
- Sentinel-1/2/3/5P for Mediterranean Region
- 58.200 products published per month (43.5 TiB)
- Most downloaded mission is Sentinel-1 (43.8%)





Total Volume of Sentinel products downloaded (1/1-31/12 2023)



Greek Relay Data Hub

- Sentinel-1/2/3/5P data with global coverage
- Data access for selected users not eligible for the Collaborative or International Hubs
- Live archive of 9 days
- Over 11.000.000 products ingested and published in the year
 - Sentinel-1: 800.000 (2200 per day)
 - Sentinel-2: 7.300.000 (24500 per day)
 - Sentinel-3: 3.400.000 (9000 per day)
 - Sentinel-5P: 690.000 (1900 per day)
- Achieved fully the SLA requirement: 100% uptime
 - Mean delay product publication time over the one-year operation: 54 minutes
 - For the biggest period of the operations the mean delay product publication time was < 10 minutes

Contribution to Evolutions

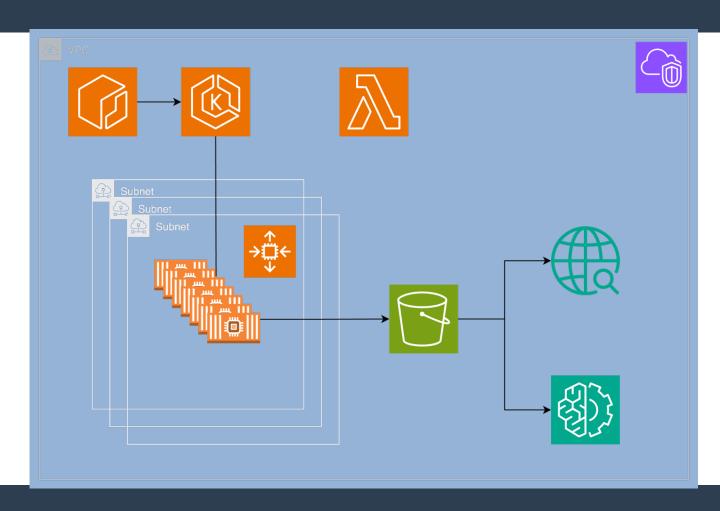
Overview

- Design and implementation of an automated pipeline for processing Earth
 Observation (EO) data, utilising modern cloud technologies hosted on public
 cloud platforms, (Dataspace Copernicus Ecosystem/CloudFerro).
- The pipeline will automate EO data processing through advanced Machine Learning (ML) algorithms, enabling timely and efficient insights for various applications, including cloud masking and the generation of Level 2/3 products.

Objectives

- Automate EO Data Processing: To develop a fully automated pipeline that ingests, processes, and analyses EO data with minimal human intervention.
- Scalability and Reliability: Utilise CloudFerro **Kubernetes** infrastructure ensure the system can scale resources up or down based on demand and maintain high availability.
- Efficient Data Management: Utilise **S3-compatible object storage** for secure, scalable, and cost-effective storage of EO data and processed outputs.
- Advanced Data Analysis: Employ **Machine Learning** algorithms to extract valuable insights from EO data, supporting decision-making and innovative applications.
- Rapid Deployment and Iteration: Leverage cloud-native technologies for quick deployment of updates and new features, reducing the time from development to production.
- Optimise Data Formats: Transition from using .SAFE files to Zarr files for data storage and processing.

Architecture



Current status

Infrastructure development

- Public cloud architecture blueprint in progress
- Local development on self hosted infrastructure

Initial applications' workflow

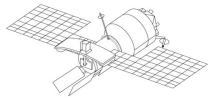
- Sentinel-1 Coherence: computation
- Sentinel-1 Backscatter: preprosessing
- Sentinel-2 Resampling, Reprojection, COG Generation and Clipping



HELLENIC COLLABORATIVE GROUND SEGMET



Thank you







http://beyond-eocenter.eu/

https://sentinels.space.noa.gr/



- Tel: +302103490125
- email: beyond@noa.gr
- www.beyond-eocenter.eu
- ♠ facebook.com/Beyond-EO-Center
- @beyond_center
- @BEYOND CENTRE OF EXCELLENCE
- @beyondnoa