



20 & 21 October 2014
Athens, Greece

**2nd South-Eastern Europe GEO Workshop
 on Integrating Earth Observation Data
 and Services for monitoring the
 Environment, protecting the citizens and
 stimulating the regional economic growth**



Earth Observation Activities in Greece

Dr. Iphigenia Keramitsoglou
National Observatory of Athens
 co-leader SB-04 Task “Global Urban
 Observations”



Earth Observation Activities in Greece

Contents:



- Short Introduction about your Organisation
- Describe your countries participation in GEO/GEOSS
- National Existing EO capacity related to GEOSS Strategic Areas
- National Infrastructure – Data and Services related to GEOSS (EO, in-situ, space based)
- Networking Activities – Reference to EO Projects at National and Regional level
- Status of National Strategy related to EO activities
- Status of intention or planning in participation in GEO (If not already member of GEO)
- Refer to positive or negative lessons/experience learned through your involvement in GEOSS (For Members of GEO)

GEOSS Strategic Areas



NATIONAL EXISTING EO CAPACITY



Progress in total O₃ validation and demonstration of the new validation site

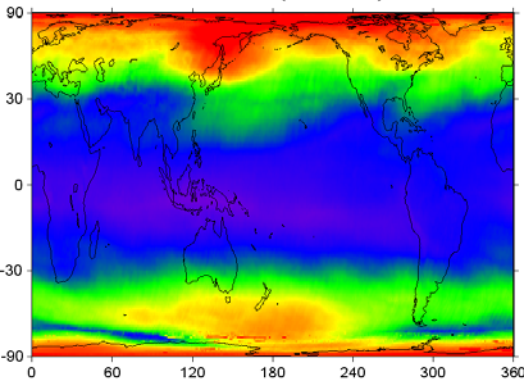
Dimitris Balis¹, Mariliza Koukouli¹, Kostas Eleftheratos², Christos Zerefos²

¹**Aristotle University of Thessaloniki, Greece**

²Mariolopoulos-Kanaginis Foundation

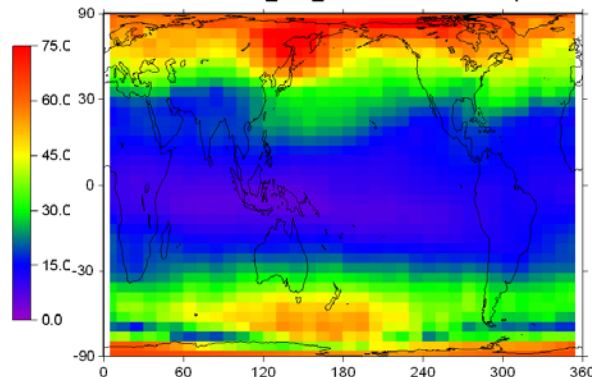
AUTH is the WMO world Ozone centre

Amplitude of annual cycle of total ozone (DU)
GOME-2 1x1 (2007-2011)

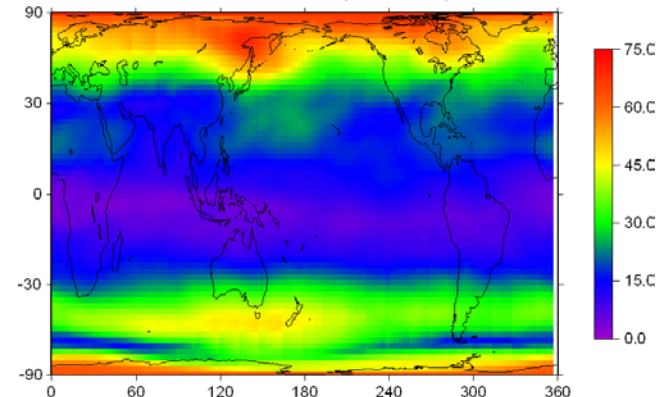


GOME-2 total ozone

Amplitude of annual cycle of total ozone (DU)
TOMS+SBUV MOD V3_OML_N18 PROF TOT 5x10 (2007-2011)



Amplitude of annual cycle of total ozone (DU)
Oslo CTM2 2.8x2.8 (2007-2011)

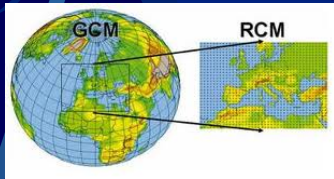


GEOCLIMA

GEOCLIMA is an interactive open access **Geographic Information System (GIS)** web application **for Climate Services** allowing the user to manage, analyze and visualize the information which is directly or indirectly related to present climate and its future projections in Greece based on **in-situ** and **satellite measurements** as well as **Regional Climate Model (RCM) simulations**.

web-based GIS application tool

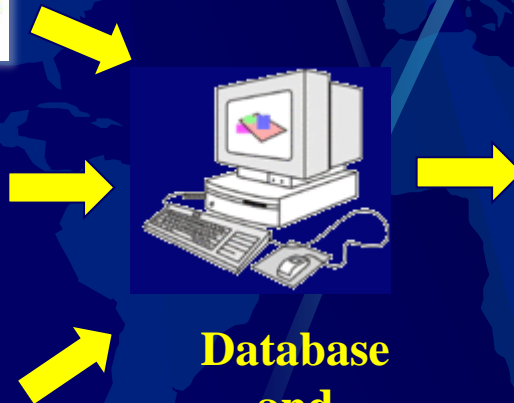
RCM model data



In-situ obs data



Satellite obs data



Database and ArcGIS server

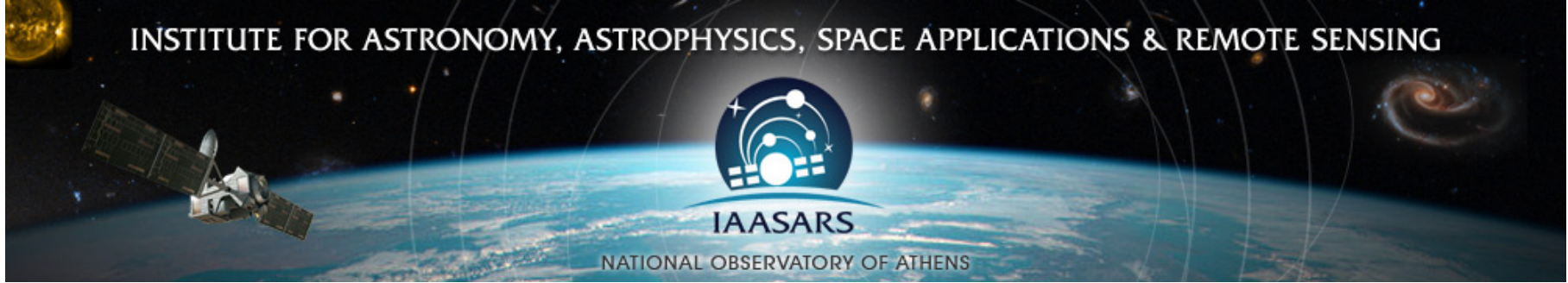


www.geoclimate.eu

Dr. P. Zanis

Research Funding Program COOPERATION 2009

Coordination: Department of Meteorology and Climatology, Aristotle University of Thessaloniki



Contribution to GEO Workplan 2012-2015

1. Task SB-04 «Global Urban Observation and Information».

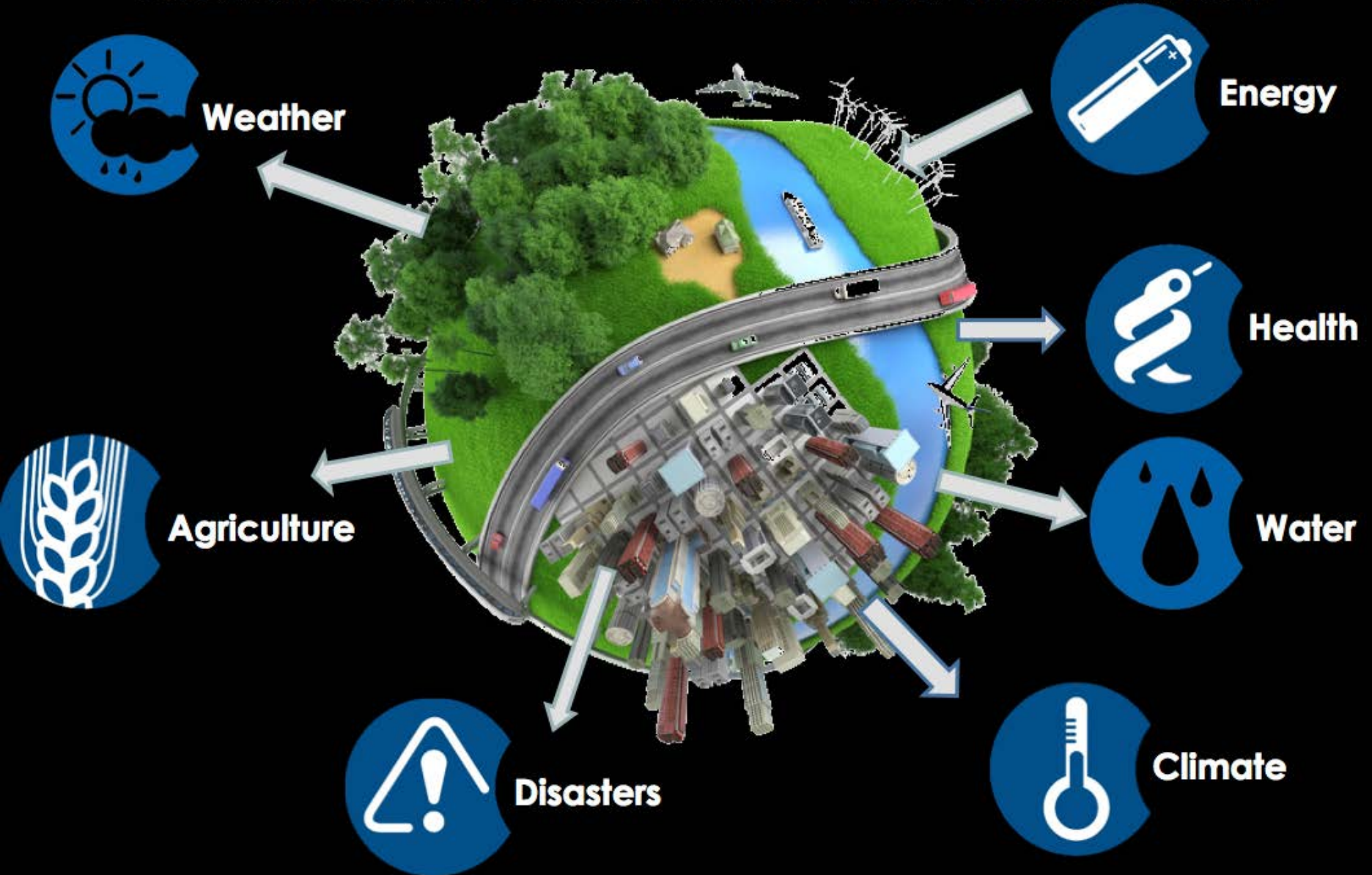
Global Urban Supersites Initiative

Co-Leader:
Dr. Iphigenia
Keramitsoglou



GEO Task SB-04

Global Urban Observation and Information





IAASARS

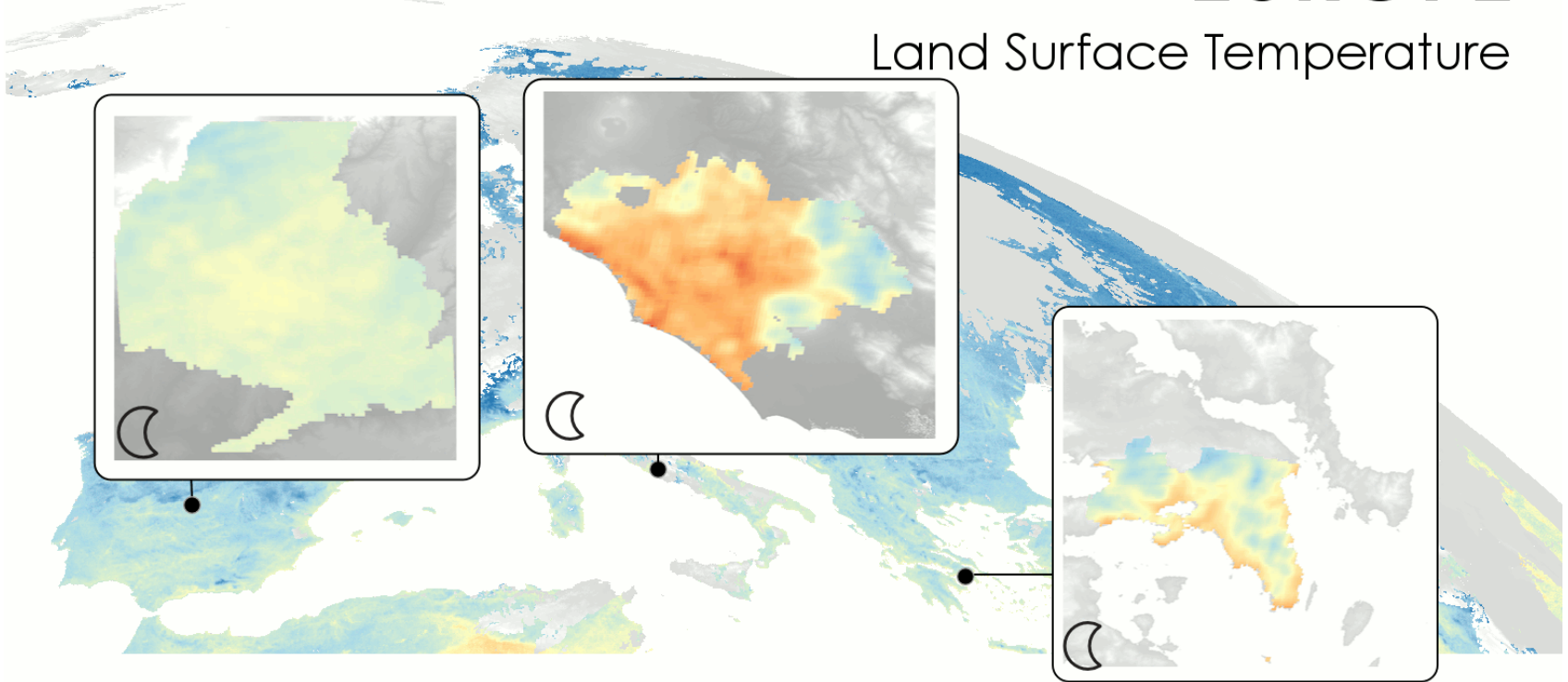
NATIONAL OBSERVATORY OF ATHENS

Date & Time

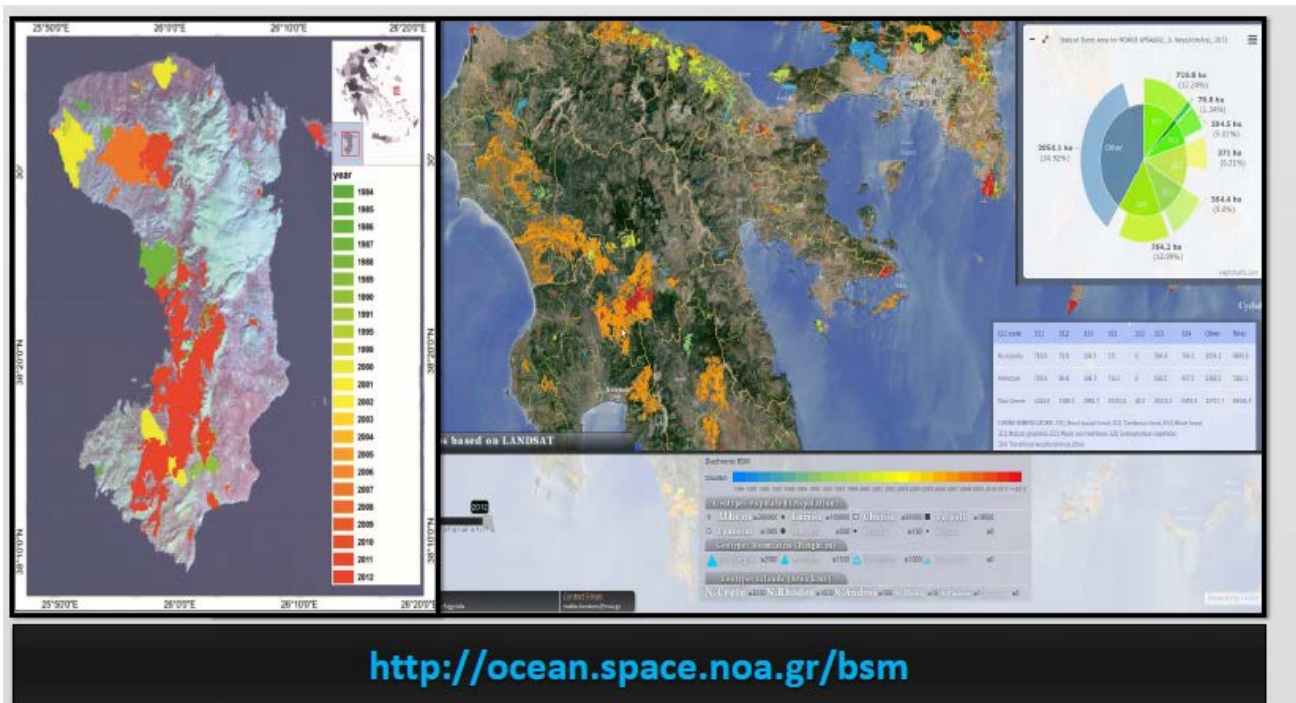
June 30th 2014 | 00:00 UTC

EUROPE

Land Surface Temperature



2. Task D1-01-C1 "Disaster Management Systems".



Informing Risk Management and Disaster Reduction

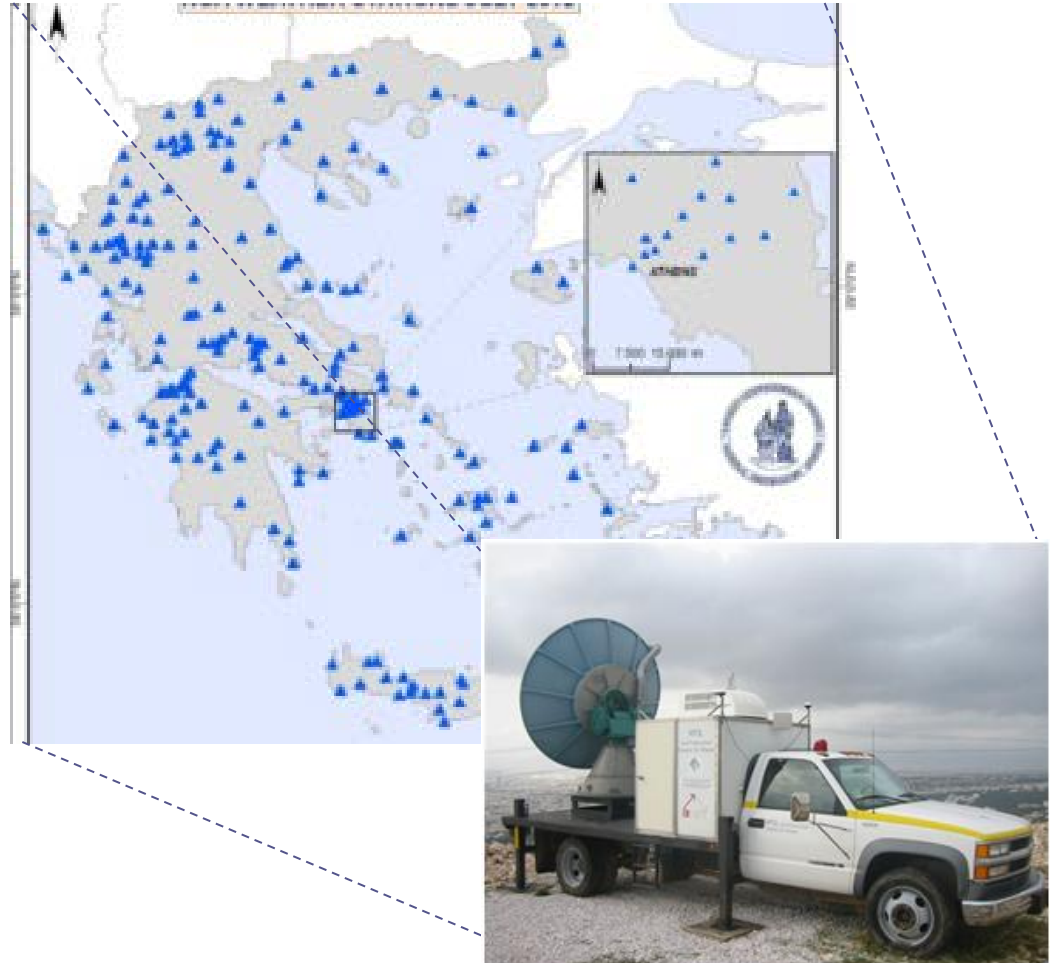
Scientific Contributor:
Dr. Haris Kontoes

Diachronic mapping of burned areas all over Greece for the past 30 years (1984 to 2012), annual Damage Assessments at HR.

Extreme Weather

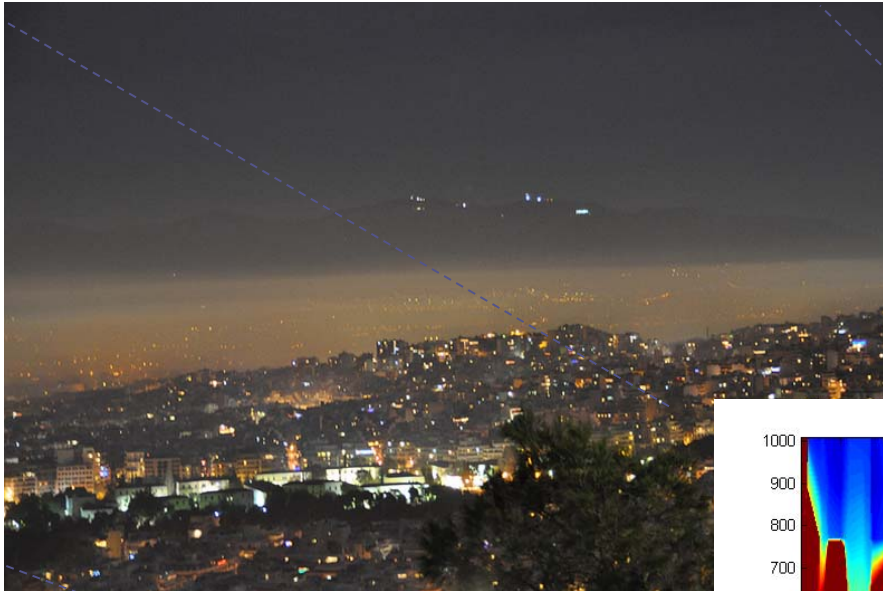
Dr. K. Lagouvardos

- Dense network of automated surface meteorological stations
- ZEUS lightning detection network
- Mobile weather radar
- Hydrometric network

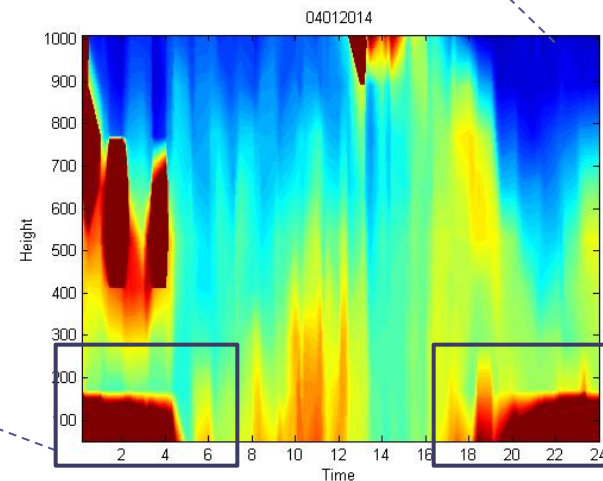


Dr. Ev. Gerasopoulos

Societal threats: "SMOG"



Application in the case of "smog" episodes due to wood burning for domestic heating

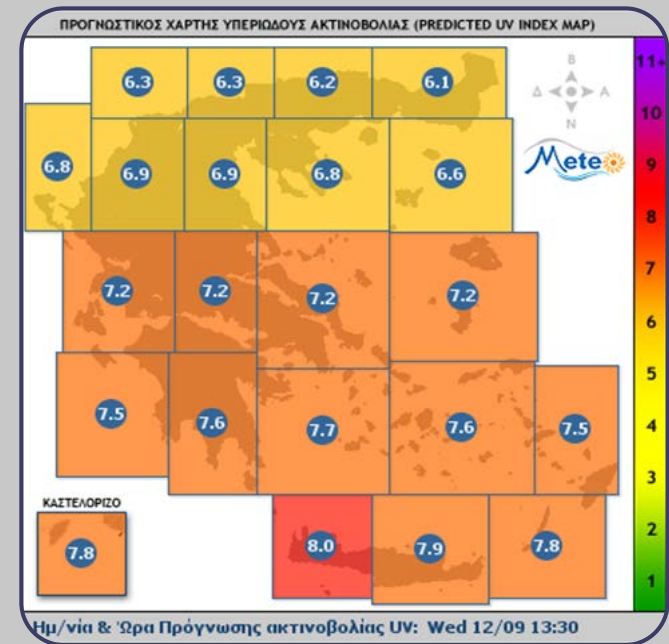
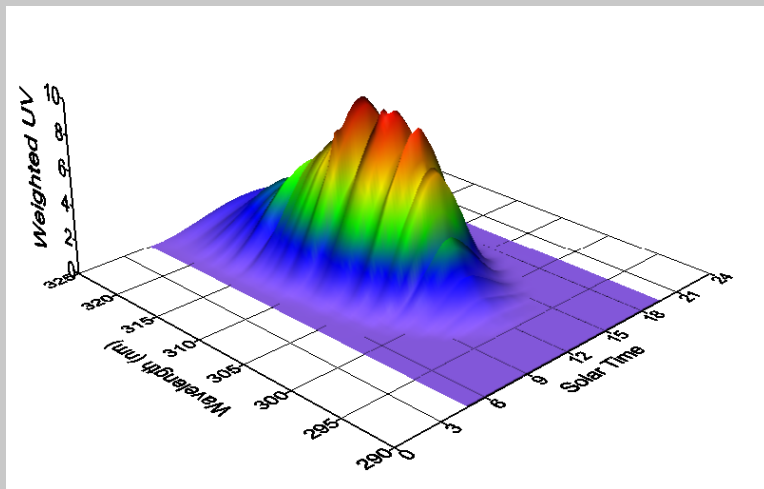


Due to the economic crisis and the increase in the price of heating oil, people turned massively to wood burning in fireplaces and wood stoves for main domestic heating.

Trap of the smog plume within the first hundreds of meters due to night thermal inversion

Dr. S. Kazadzis

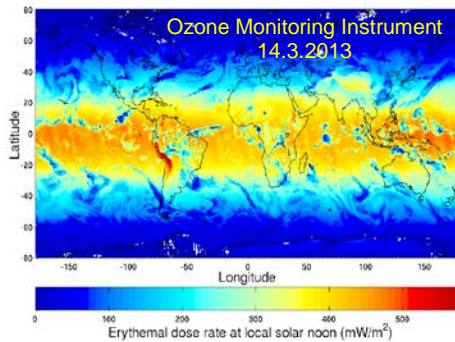
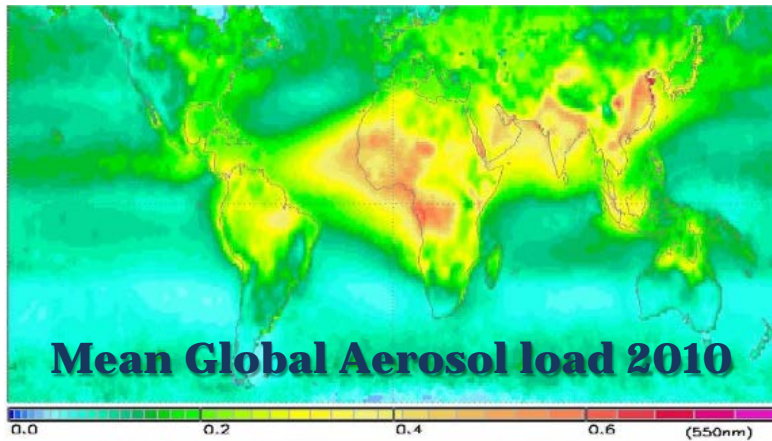
Solar radiation products and services



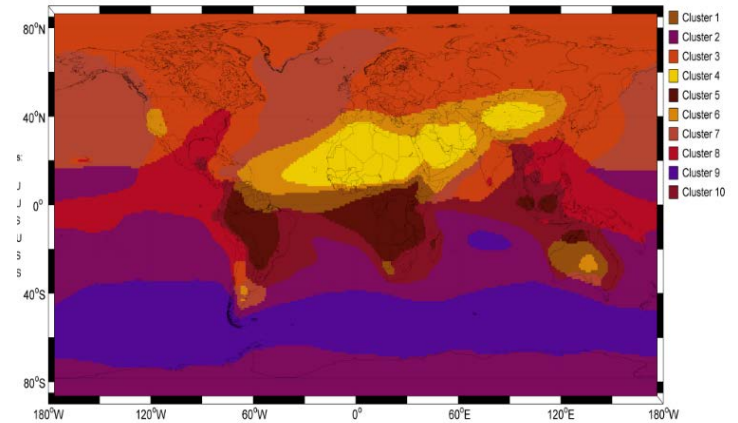
Four day forecast of solar UV Index for Greece

Dr. S. Kazadzis

Satellite based global UV and aerosol properties



Global Solar UV



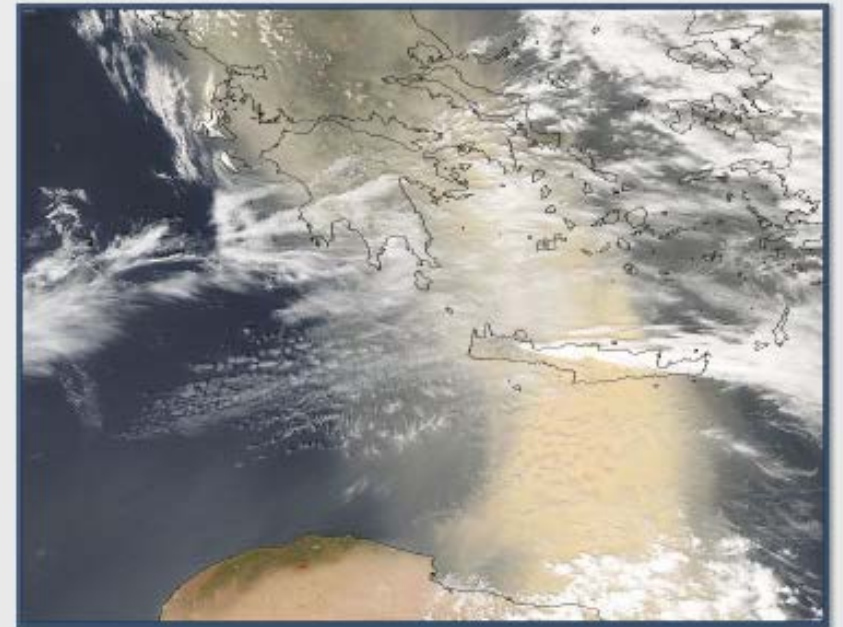
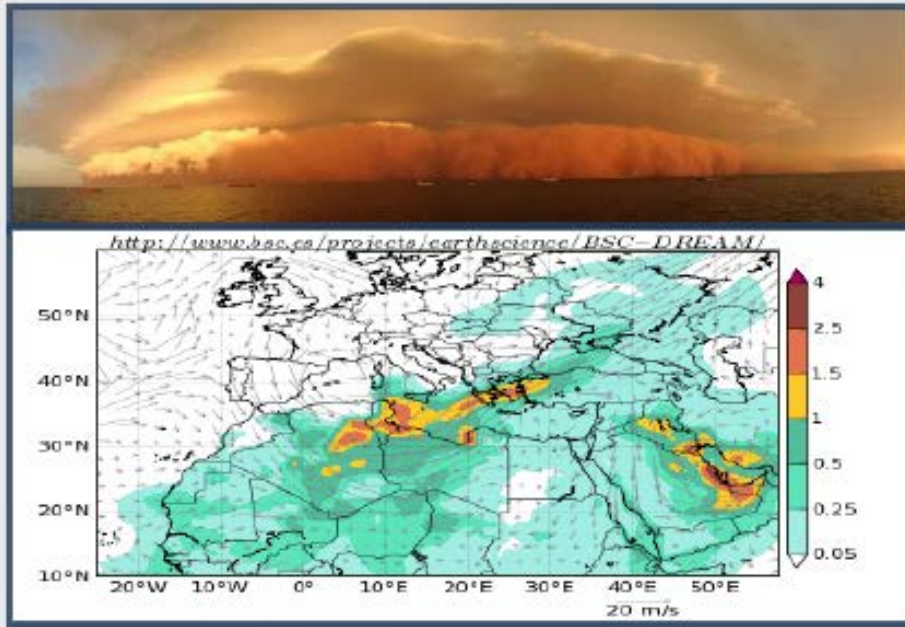
Global aerosol types



IAASARS

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Saharan Dust Monitoring & Forecast



Other Research Programs - Networking

Related to GEOSS Implementation:

1. **GEOmon**: Global Earth Observation and Monitoring – Academy of Athens
2. **MarcoPolo**: Air Quality Monitoring and Forecasting in China - NOA
3. **DARECLIMED**: Data Repositories and Computational Infrastructure for Environmental and Climate Studies in the Eastern Mediterranean. Academy of Athens
4. **EOPOWER**: Earth Observation for Economic Environment - AUTH
5. **IASON**: Fostering sustainability and uptake of research results through networking activities in Black Sea & Mediterranean Areas –AUTH
6. **GOOS** : Activities of the Black Sea GOOS and recent efforts for increasing its efficiency and sustainability –HCMR
7. **PREFER** : FP7 project for the management of the pre-and post fire phases – Center for Security Studies
8. **AEROVIS** –Urban Clusters impact on regional air pollution and climate and generic visualization software for satellite data applications – DRAXIS & DUTH
9. **BalkanGEO Net** – IRIDA
10. **URBAN FLUXES** Urban Anthropogenic Heat Flux from EO satellites -

Data and Services related to GEOSS

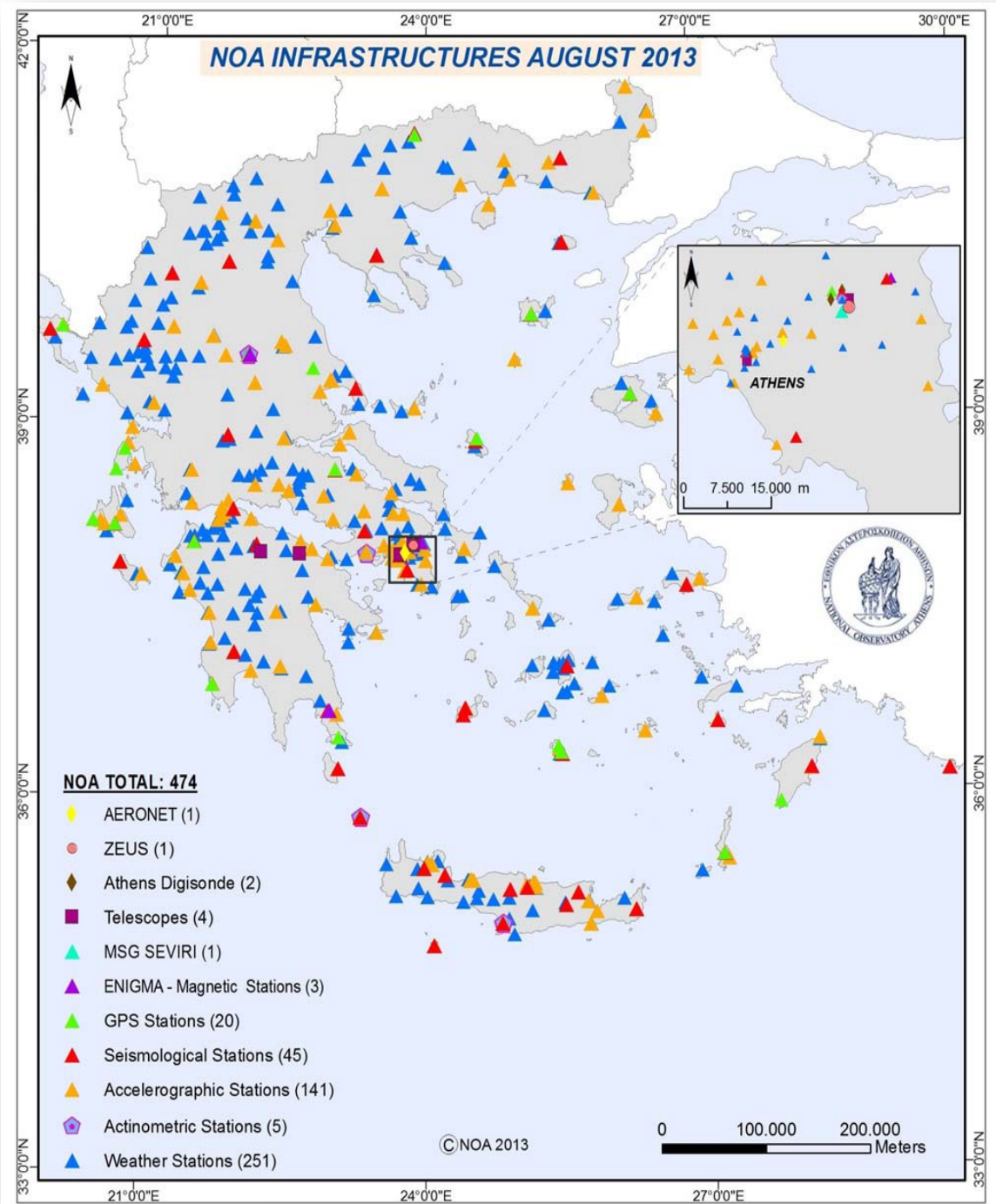


NATIONAL INFRASTRUCTURE

Hosted by:

- National Observatory of Athens
- Hellenic National Meteorological Service
- Hellenic Centre for Marine Research
- Academy of Athens
- Universities

NOA network of 474 infrastructures



GREECE GUARANTEED ACCESS TO SENTINEL DATA



Athens, Greece

12 May 2014 Just weeks after the launch of Sentinel-1A, ESA and Greece have signed a first arrangement that establishes access to Sentinel data, marking a significant step forward in their exploitation.

The Sentinel family of satellites is being developed to meet the operational needs of Europe's environment monitoring programme, Copernicus.

The information provided by the Earth-observing missions will provide a wealth of information for various services that help improve daily life and address the environmental consequences of climate change.

The data will be made freely accessible for Copernicus Services, as well as to scientific and other users.

Marking a significant step forward in the data exploitation, ESA and Greece today signed an Understanding for the Collaborative Ground Segment Cooperation at a ceremony in Athens, Greece.

Signing on Greece's behalf, the President of the National Observatory of Athens (NOA) Kanaris C. Tsinganos expressed his appreciation of working with ESA on establishing the agreement that guarantees Greece the valued access to Sentinel data.

Under the agreement, NOA intends to set up a 'national mirror site' for hosting and distributing Sentinel data, ensuring the access, archiving and redistribution of Sentinel data and products for the derivation of value-adding environmental services and information.



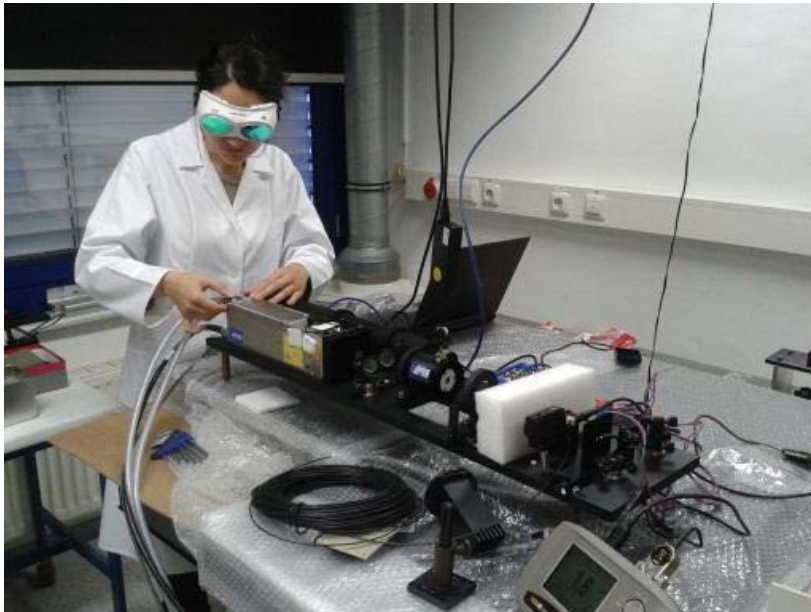
Signing ceremony



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LIDAR equipment to record air pollutants



Advanced PollyXT lidar under development, to be installed in Crete

LIDAR equipment operated in Athens & Thessaloniki by NTUA, Academy of Athens, and AUTH



Advanced mobile lidar used in campaign basis, in collaboration with NEO

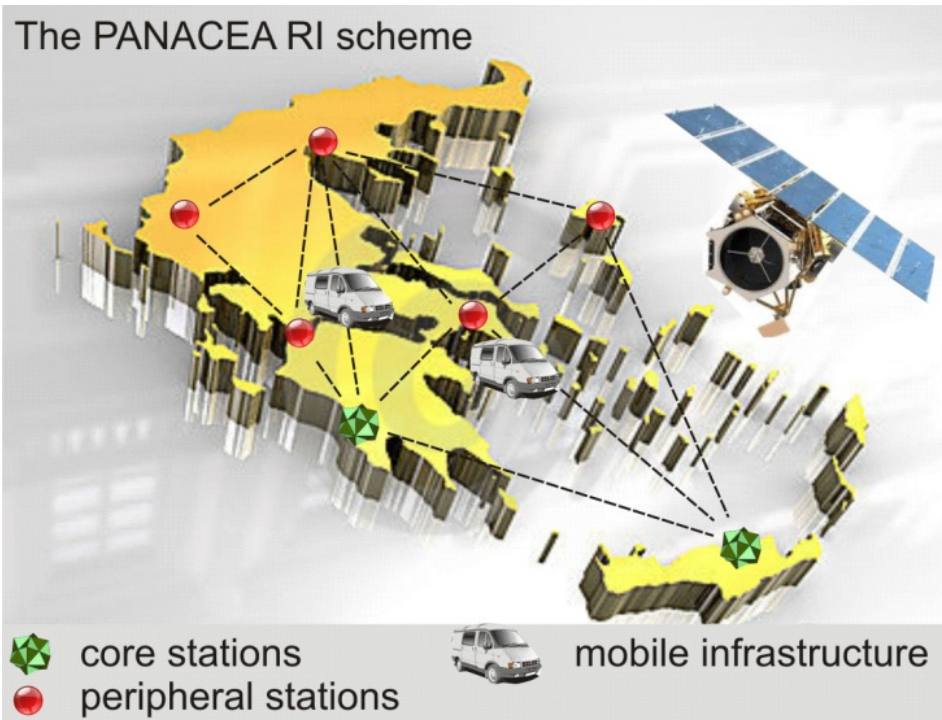
End Users:

- Scientific Community
- Local & Regional Authorities;
- Civil protection;
- Fire brigade;
- Army;
- Public

PANACEA

NOA's initiative for the National Roadmap for RIs

Coordinate existing Greek ground-based environmental stations and networks



➤ **PANACEA** (PANhellenic infrastructure for **A**tmospheric **C**omposition and climat**E** ch**A**nge)

➤ more than **15 atmospheric groups** from Greek research institutes and universities

A **coordinated system** for monitoring of *atmospheric composition, solar radiation variations, climate change and related natural hazards* in Greece



HSDEC

Hellenic Space Data
Exploitation Centre

Integrated Research
Infrastructure for Space

IRIS



*National Observatory of
Athens (Coordinator)*



Academy of Athens



Greek Research and Technology Network



*Foundation for Research and
Technology - Pellos*



*National Kapodistrian University of
Athens*



*National Technical University of
Athens*



Aristotle University of Thessaloniki



*Democritus University of
Thrace*



University of Patras



University of Piraeus



University of Crete



University of Thessaly



Hellenic Aerospace Industry



*Hellenic Association of Space
Industry*



*Hellenic Association of Mobile
Applications Companies*

Concluding remarks



- BEYOND has already integrated the majority of NOA's ground segment infrastructures but wishes to **expand its geographical boundaries** to the wider area of North Africa, Middle East and the Balkan Region
- NOA and BEYOND have already started the operation of the new **ESA mirror site**
- NOA envisions to integrate the **Greek in-situ** component via PANACEA
- The **Greek GEO Office** guides these efforts according to GEO strategic plan