



# *The GEO Office in Greece and its role in monitoring Natural Disasters*



Presenter: Dr. Iphigenia Keramitsoglou  
National Observatory of Athens  
Key Scientific Contributor SB-04 Global Urban Observations  
SBIB Member





Greek GEO Office

# National Observatory Of Athens

**GREEK GEO OFFICE**

General Secretary for Research & Technology



## Greek GEO Office

**National Delegate:**

**Prof. Christos Zerefos**

President of NOA:

Prof. Kanaris Tsinganos

Supervisor:

Prof. Vassileios Tritakis

Scientific Collaborator:

Mrs Eleni Christia

- The Greek GEO Office is one of the Regional Offices in the World.
- Operational since 2007. Its target is the effective participation of the country to the global activities under the framework of GEO and GEOSS (Global Earth Observation System of Systems).



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## Organized and Hosted several workshops and meetings related to GEOSS

- **13 June, 2007**, Inform and support the Greek Scientific Community to GEO/GEOSS involvement: National Observatory of Athens, Athens, Greece: Informative Meeting "**The Group on Earth Observations (GEO) and the potential involvement of Greek Scientific Society**".
- **9-13 June 2008**, Athens, Greece: A series of (regional) GEO Workshops organized by the GEO Coastal Zone Community of Practice and the IGOS Coastal Theme in partnership with GOOS and GTOS "**First Regional Workshop-Observing System Requirements for Managing and Mitigating the Impacts of Human Activities and Coastal Inundation in the Med Region**".
- **27-28 April 2009**, **9th Capacity Building Committee Meeting**, Athens
- **8-10 June 2009**, Athens, Greece: GEO South-Eastern Europe and Eastern Mediterranean Symposium on "**Earth Observation Services for Monitoring the Environment and Protecting the Citizens**".
- **12 to 15th of October 2009**, Festival "**La Rencontre de la Terre**", Athens, Greece. Held under the patronage of the City of Athens by "Conferences sans Frontieres" and the Mariolopoulos Kanaginis Foundation and under the support of various Greek and French partners. The Festival was organized for the celebrating of International Year of Planet Earth.
- **29-30 April 2010**, **4th GEO European Projects Workshops**, Athens, Greece

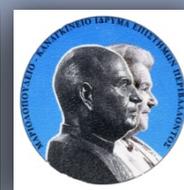


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## Contribution to GEO Workplan 2012-2015

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

## Global Urban Supersites Initiative





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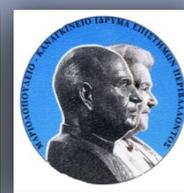


## Contribution to GEO Workplan 2012-2015

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

**Informing Risk Management and Disaster Reduction**

**Scientific Contributor: Dr. Haris Kontoes**



## Contribution to GEO Workplan 2012-2015

### 3. Task D1-01-C2 "Geohazards Monitoring Alert and Risk Assessment".

**Scientific Contributor: Dr. Issaak Parcharidis**

### 4. Task SB-02-C3 "Global Land Cover Methodology and Capacity Building/Outreach".

**Scientific Contributor: Dr. Ioannis Manakos**



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## Research Programs

Contribution to Research Programs mainly in tasks related to GEOSS Implementation:

- 1. GEOmon:** Global Earth Observation and Monitoring
- 2. Amfic:** Air Quality Monitoring and Forecasting in China
- 3. DARECLIMED:** Data Repositories and Computational Infrastructure for Environmental and Climate Studies in the Eastern Mediterranean.
- 4. BEYOND:** Building Capacity for a Centre of Excellence for EO-based monitoring of Natural Disasters



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## BEYOND – Strengthen capacity of the National Observatory of Athens as a center of excellence for disaster management based on the GMES prototype.

Establishing a **Satellite Center to monitor natural disasters** in Southeast Europe and the Balkans  
(2.3 million €, 2013-2016)

Forest fires, floods, earthquakes, volcanoes, landslides, urban heat islands / heat waves, aerosols - air pollutants, meteorology, magnetic storms

Networks for monitoring natural disasters

Archives & databases

Products and data exploitation services



## Activities of the National Observatory of Athens related to natural disasters monitoring

- 🌐 Systematic and consistent **participation in European research programmes** in the field:
  - GMES (RISKEOS, SAFER, linkER)
  - Information and Communication Technologies (TELEIOS)
  - European Space Agency (ESA)
  - Increasing Infrastructures Capacity (BEYOND)
- 🌐 Development and **certification of products and services**
- 🌐 **Support users** in their operational activities
  - ✓ Municipalities, civil protection, fire brigade, army



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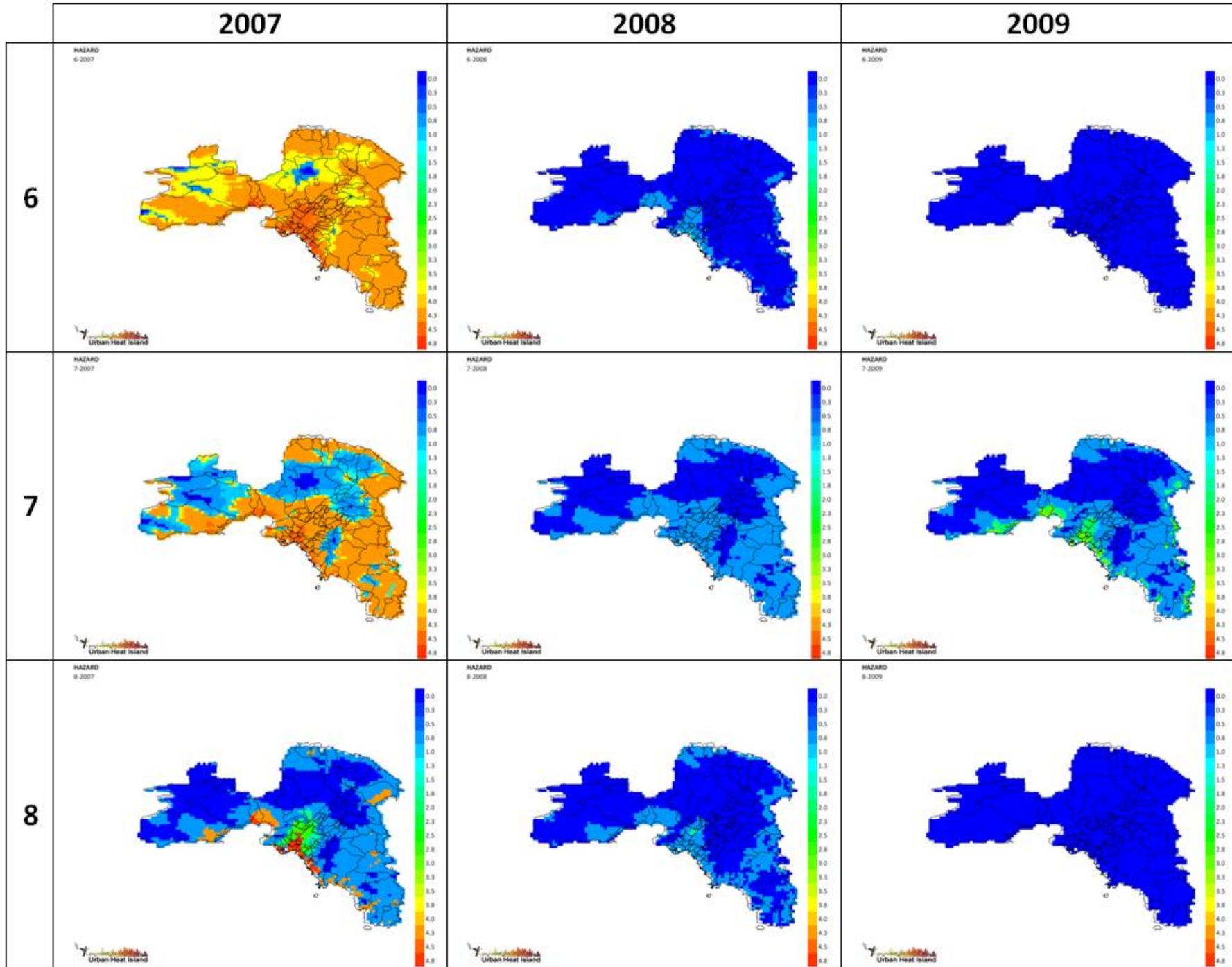
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Examples of

# BEYOND THEMATIC AREAS

# URBAN : Heat Wave Monthly HAZARD



URBAN : Heat Wave Monthly RISK

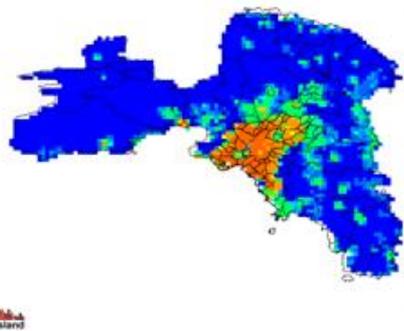
2007

2008

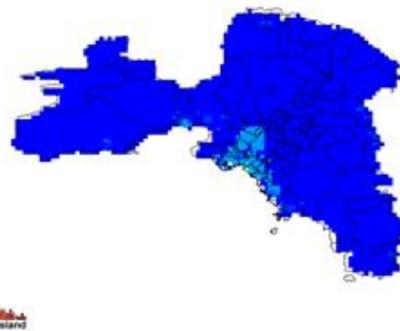
2009

6

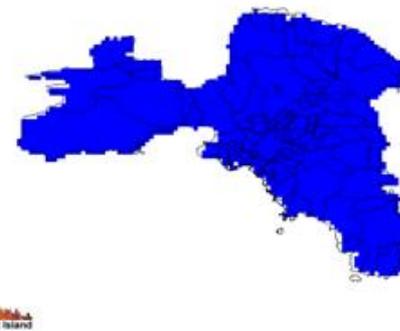
RSK  
6-2007



RSK  
6-2008

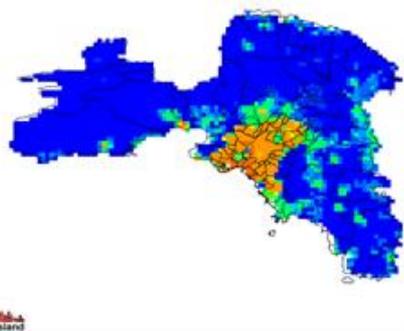


RSK  
6-2009

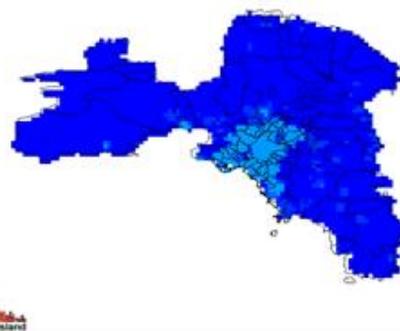


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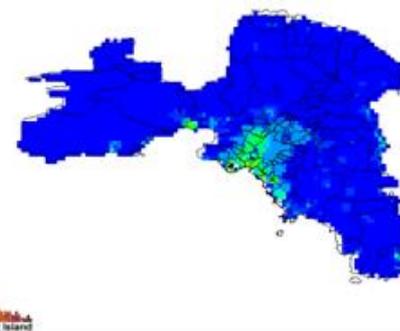
RSK  
7-2007



RSK  
7-2008

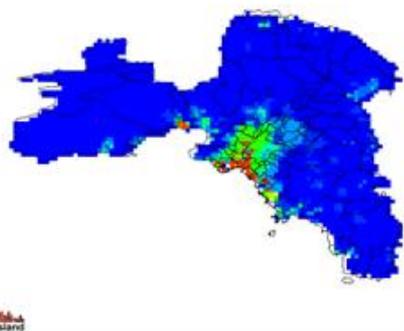


RSK  
7-2009

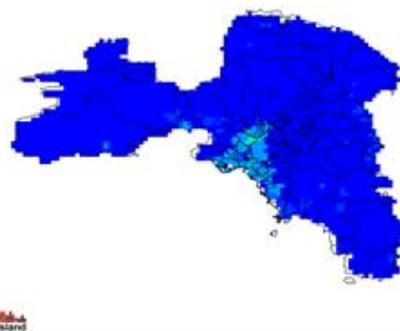


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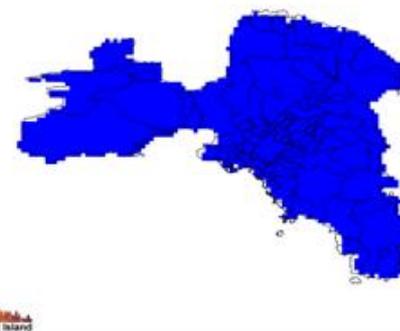
RSK  
8-2007



RSK  
8-2008



RSK  
8-2009





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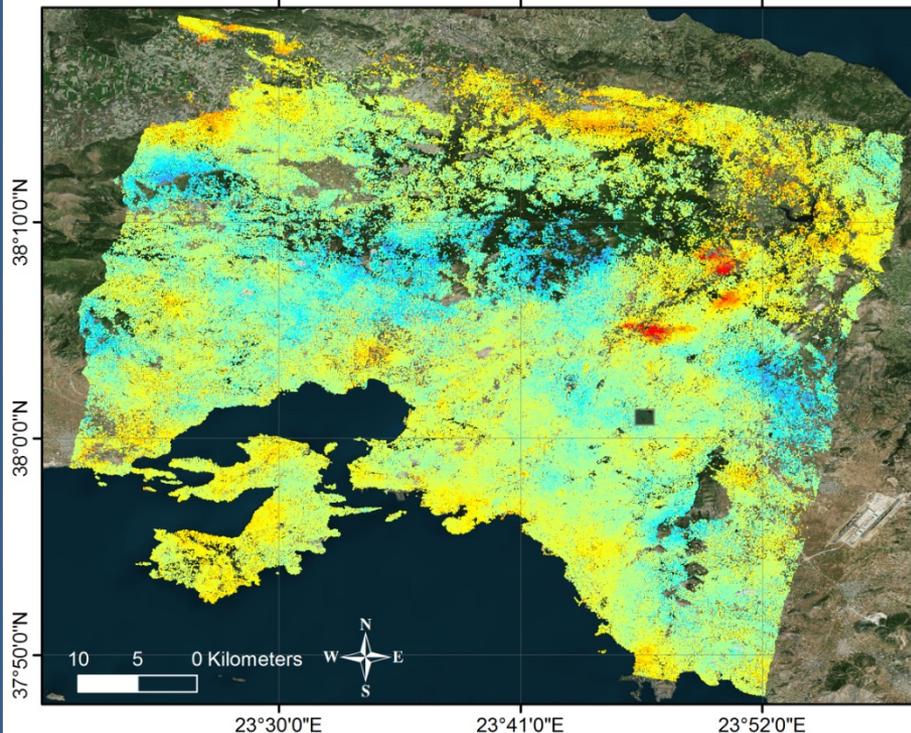


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## Monitoring temporal ground deformation

### Stack I (T236 ERS 1992 - 1999): Velocity field

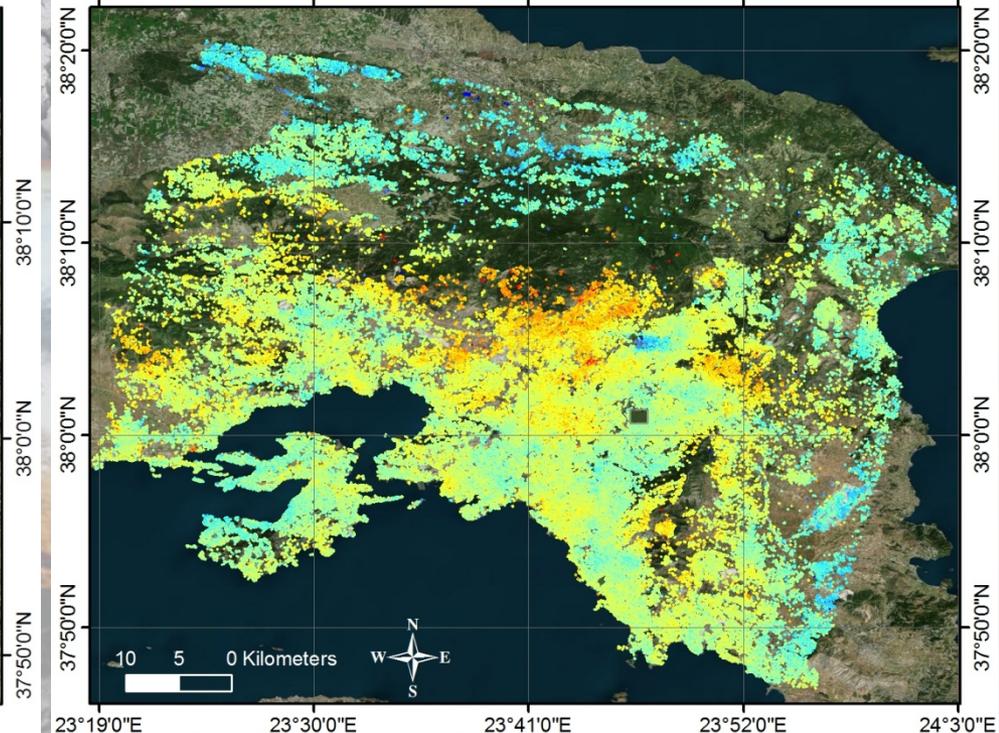
23°30'0"E 23°41'0"E 23°52'0"E



< -6 mm/yr 6 mm/yr

### Stack IV (T236 ENV 2003 - 2010): Velocity field

23°19'0"E 23°30'0"E 23°41'0"E 23°52'0"E 24°3'0"E



< -5 mm/yr > 5 mm/yr



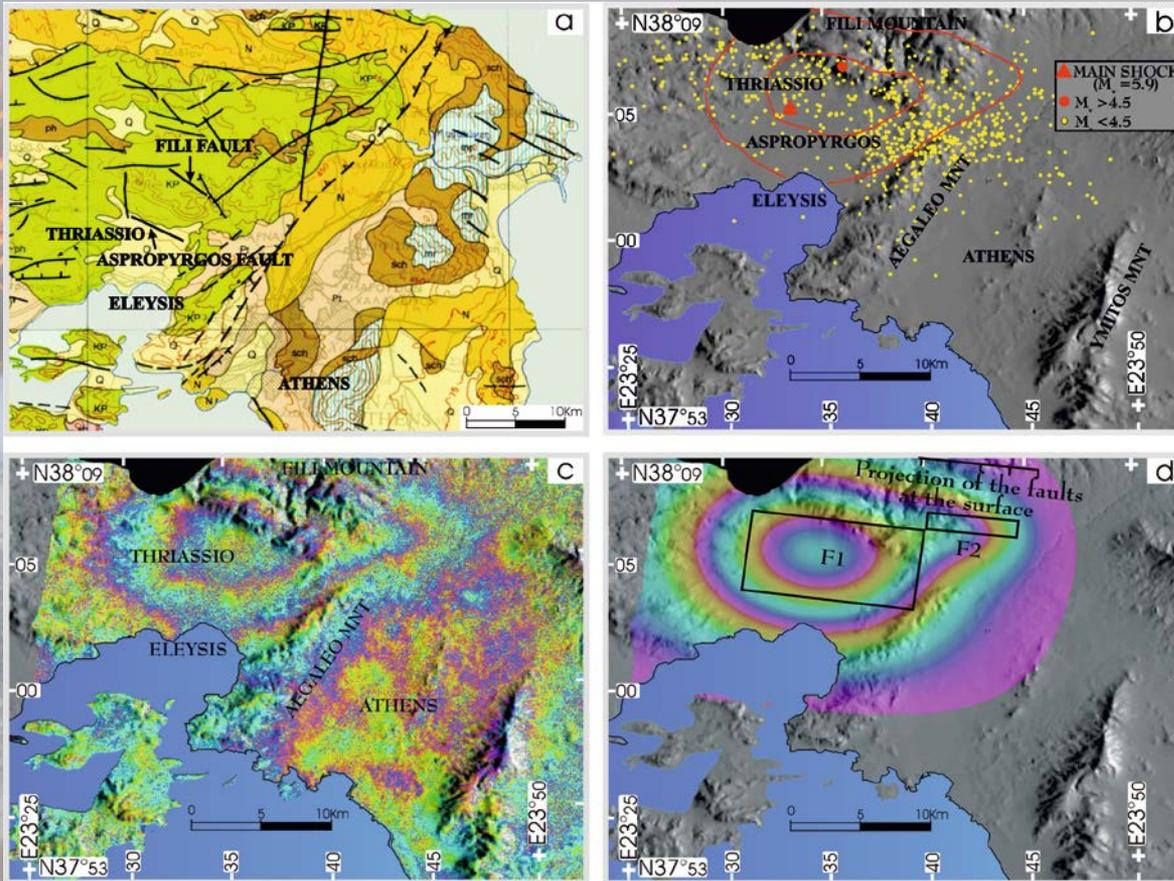
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## Estimate ground deformation after the Athens 1999 earthquake





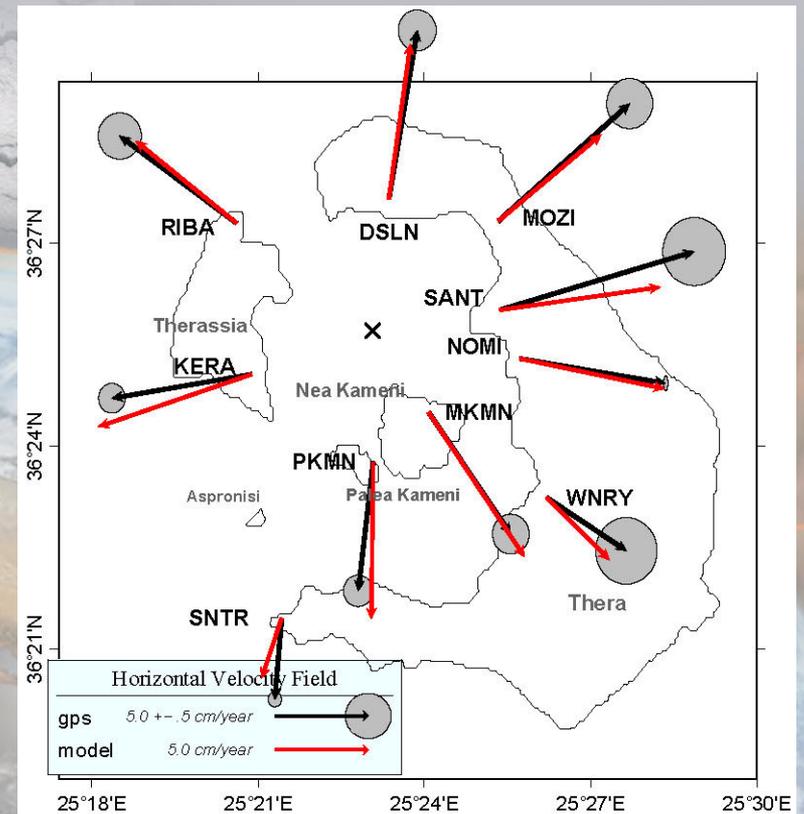
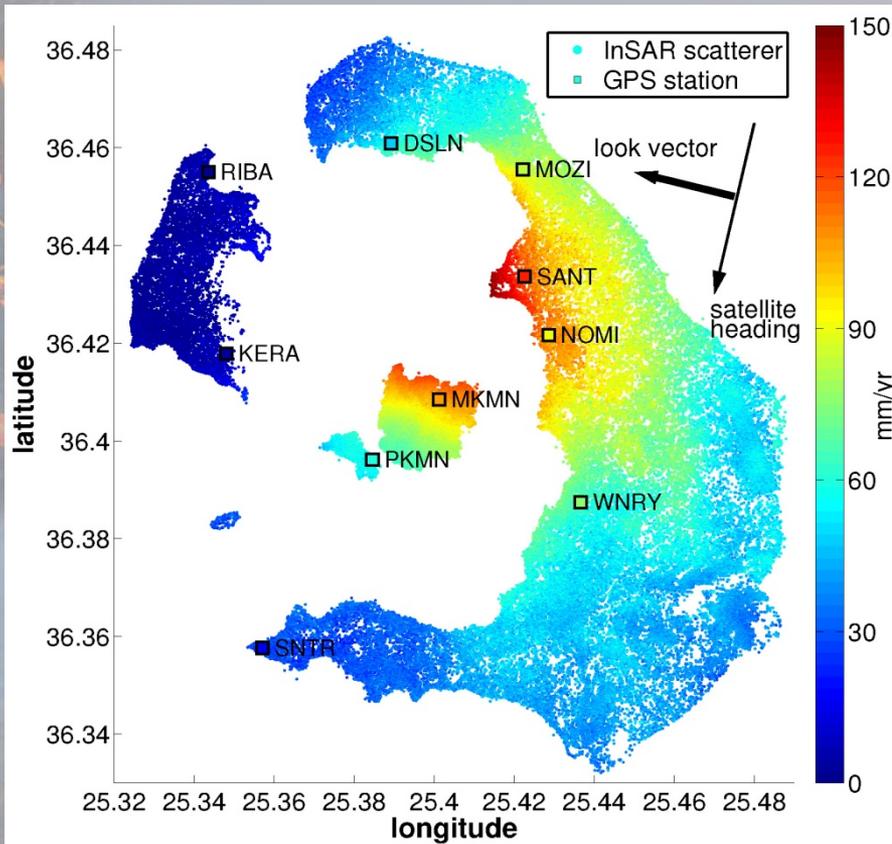
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## Monitoring the volcanic activity of Santorini Island





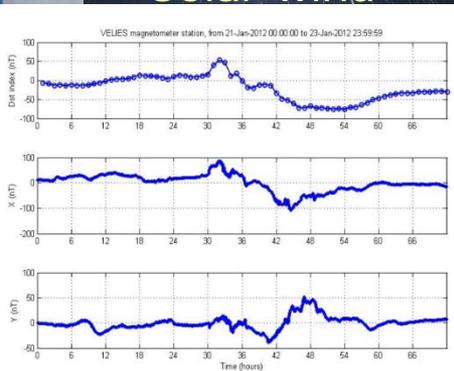
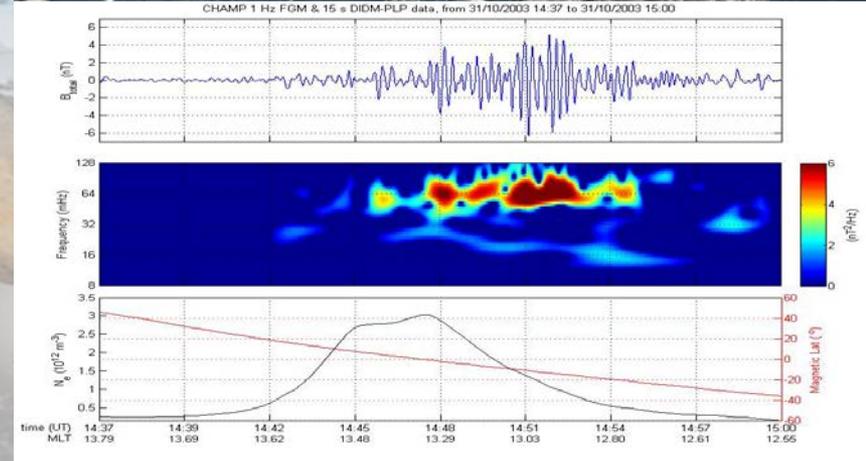
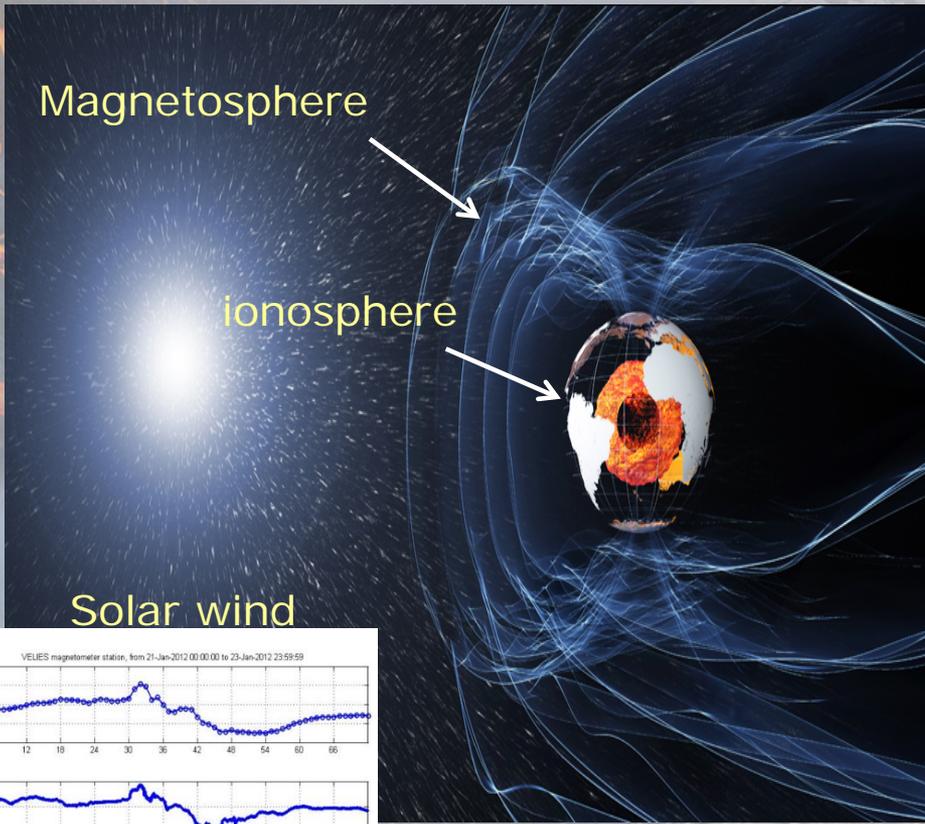
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## Study of the effects of magnetic storms on Earth



## Ground network of magnetometers



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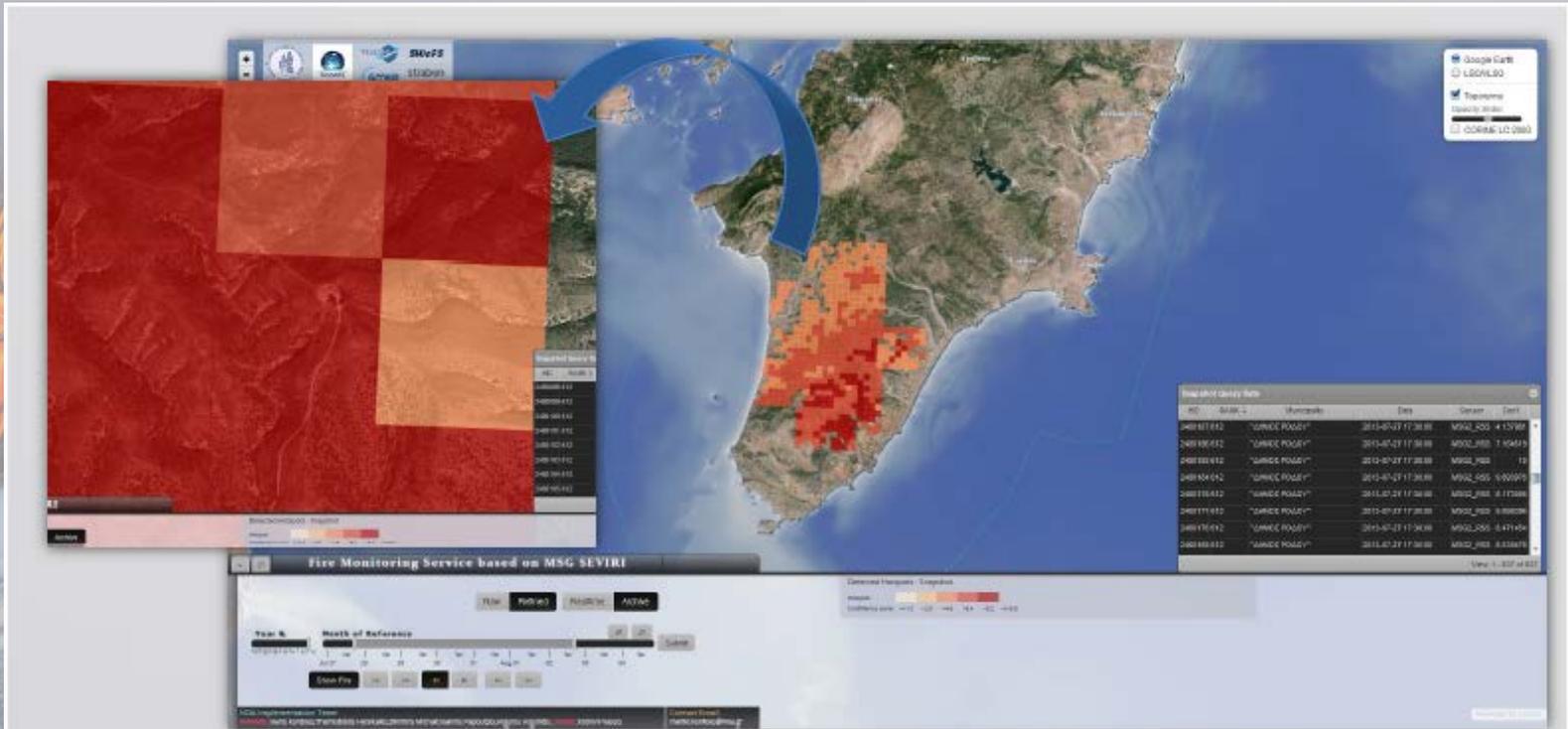
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Forest Fires - Real time monitoring



<http://ocean.space.noa.gr/fires>

*Real-time Fire Monitoring System integrating efficient algorithms for image processing and classification, producing maps of active fires every 5 minutes at a spatial resolution of 500 m.*



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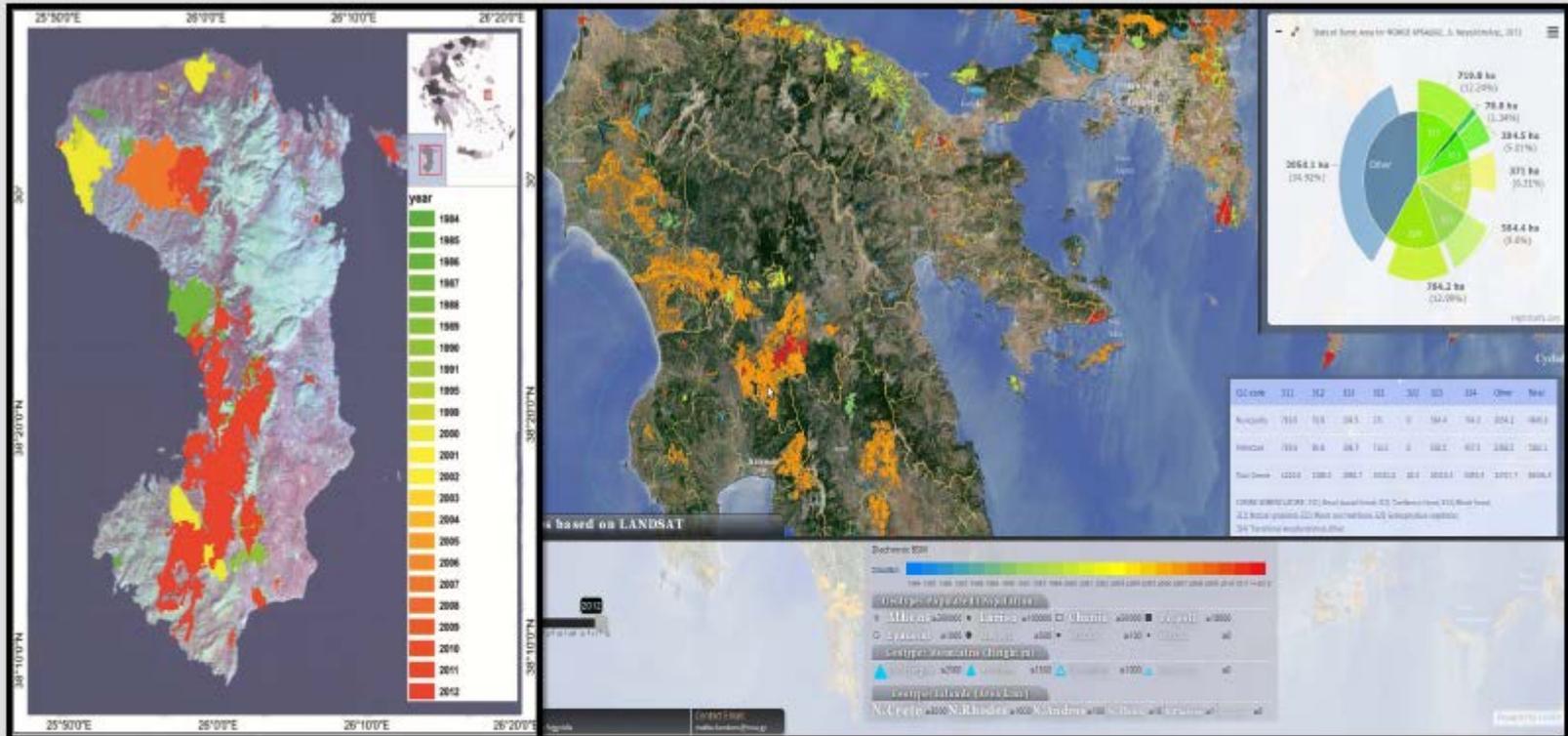
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### Forest Fires – Diachronic Mapping



<http://ocean.space.noa.gr/bsm>

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



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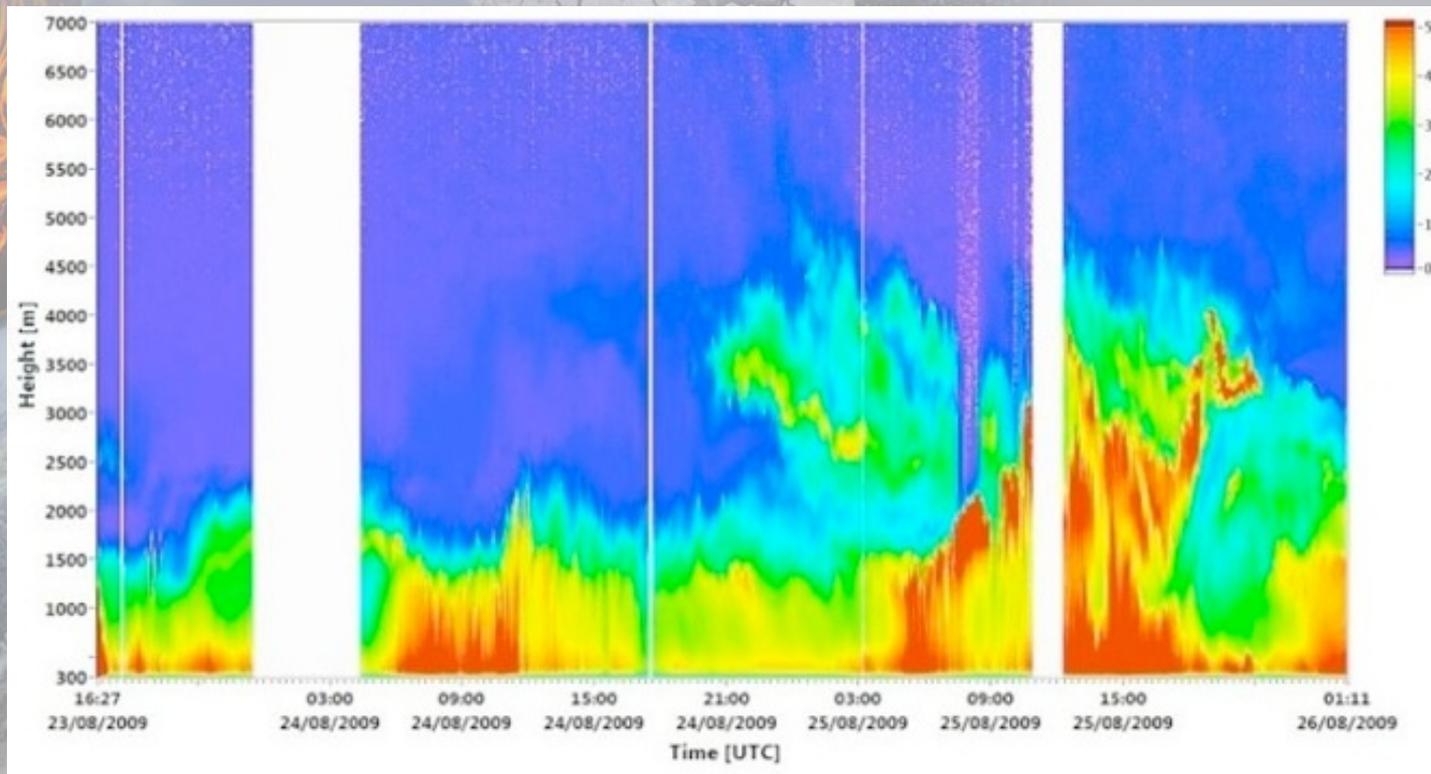
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## Monitoring forest fire emissions





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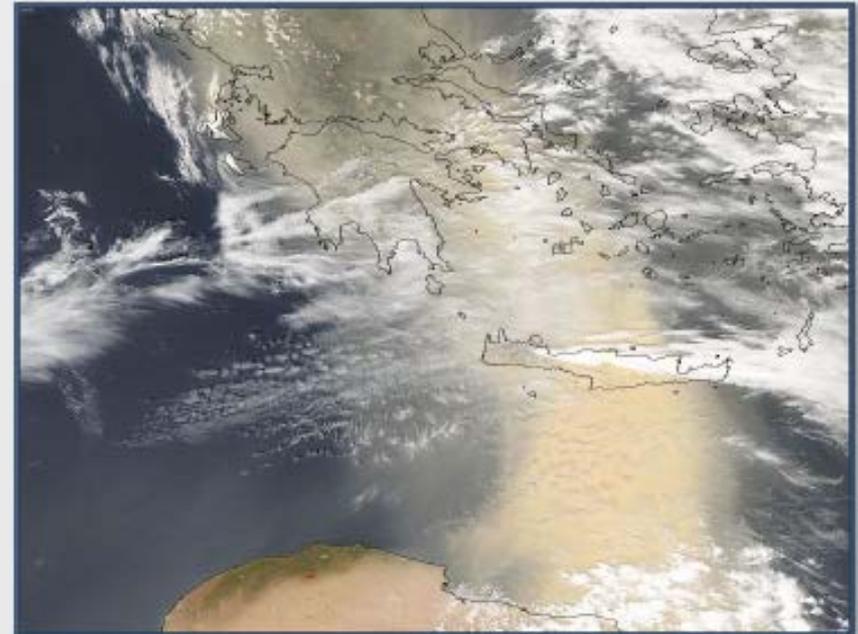
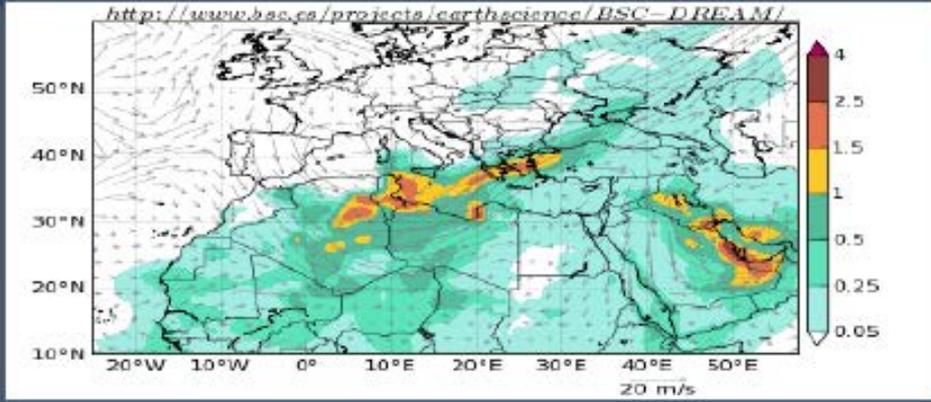
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## Saharan Dust Dispersion





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## LIDAR equipment to record air pollutants



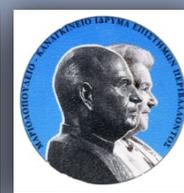


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# New Action

This proposal aims at the development of a new and innovative **Hellenic Space Data Exploitation Centre (HSDEC)**, to be established at the National Observatory of Athens, in close cooperation with other National Research and Governmental bodies for processing and analysis of satellite data as well as production and dissemination of added-value products and related services. **The Centre will host the Greek GEO Office.** The proposal is supported by ESA, European Commission and GEO



# 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



Institute 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 Ioannina



University of Patras



University of Crete



University of Thessaly



Pellos Association of Industry

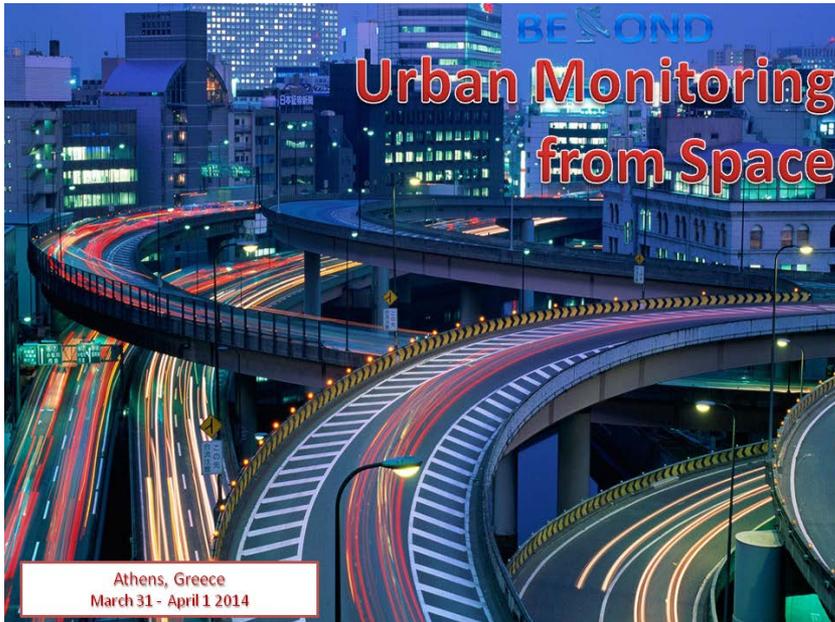


Pellos Association of Space  
Industry



Pellos Association of Mobile  
Applications Companies

# Upcoming Events



URBAN Monitoring from Space  
Athens, March 31 – April 1 2014  
By invitation



"Space for Civil Security, Security in Space  
- The importance of space to the security  
of the European Union and the  
importance of the security of space  
activities"

Athens 25-27 June 2014



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