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

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Key Scientific Contributor SB-04 Global Urban Observations
SBIB Member
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).
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
Contribution to GEO Workplan 2012-2015

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

Global Urban Supersites Initiative
2. Task D1-01-C1 "Disaster Management Systems".

Informing Risk Management and Disaster Reduction

Scientific Contributor: Dr. Haris Kontoes
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
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
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
Examples of

BEYOND THEMATIC AREAS
<table>
<thead>
<tr>
<th>Year</th>
<th>Map 1</th>
<th>Map 2</th>
<th>Map 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td><img src="image1" alt="Map 1" /></td>
<td><img src="image2" alt="Map 2" /></td>
<td><img src="image3" alt="Map 3" /></td>
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<tr>
<td>2008</td>
<td><img src="image4" alt="Map 1" /></td>
<td><img src="image5" alt="Map 2" /></td>
<td><img src="image6" alt="Map 3" /></td>
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<tr>
<td>2009</td>
<td><img src="image7" alt="Map 1" /></td>
<td><img src="image8" alt="Map 2" /></td>
<td><img src="image9" alt="Map 3" /></td>
</tr>
</tbody>
</table>

This table represents the monthly hazard maps for Athens from 2007 to 2009. Each map corresponds to a different month, showing the distribution of hazard levels across the city.
Monitoring temporal ground deformation

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

Stack IV (T236 ENV 2003 - 2010): Velocity field
Estimate ground deformation after the Athens 1999 earthquake.
Monitoring the volcanic activity of Santorini Island
Study of the effects of magnetic storms on Earth

Magnetosphere

Ionosphere

Solar wind

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SWARM mission

Ground network of magnetometers
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.

http://ocean.space.noa.gr/fires
Diachronic mapping of burned areas all over Greece for the past 30 years (1984 to 2012), annual Damage Assessments at HR.
Monitoring forest fire emissions
Saharan Dust Dispersion
LIDAR equipment to record air pollutants
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.
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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