

Report on the Sessions GEOSS for Disasters (I-II)

Dr Haris Kontoes

Dr Evangelos Kosmidis

Report on the **GEOSS for Disasters I** splinter session (Ilissos room)

Chair: Athanassios Ganas, **Rapporteur:** Evangelos Kosmidis

1. **Mrs.Carmela Freda**, described EPOS as an **integration** of a number of **infrastructures** including both **technology** and **inter-disciplinary services** combined with national services and relying on new EO technology and data. **Interoperability** is a key characteristic of EPOS. **It relies on open access** principles, however data embargo is envisaged in certain cases of users and information. **EPOS is integrating the Supersites** initiative, and especially three supersites, aiming in creating a **federated e-infrastructure**. The project emphasizes in establishing long term sustainability, dissemination and communication, as well as a **shared data policy plan**, which is expected to be ready by the end of 2014.



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2. **Dr. Haris Kontoes**, presented the project **BEYOND**, a FP 7 Capacity Building project, which aims to establish a **Center of Excellence for EO based monitoring of Natural Disasters in South Eastern Europe**. BEYOND's operations are in-line with the GEO initiative. BEYOND has been accepted in the last GEO Plenary as member of the **Natural Disaster Task D-01**, supporting a **GEOSS integrated infrastructure** for the monitoring and early assessment of disasters. BEYOND integrates EO services in a range of fields as **fires, floods, air pollution, earthquakes, volcanoes, smoke and toxic emission concentrations and dispersion**. Recently the integration of **UAV units** has proven that coupling **in-situ and EO observations with airborne monitoring capabilities** has been useful in specific disasters as the recent **Cephalonia earthquake**. An interesting point is the possibility of the integration and delivery of **open services** tailored to the needs of the users according to European **Copernicus standards**.



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Dr. Haris Kontoes, announced that the Greek GEO office together with the BEYOND project organise in Athens, the second South-Eastern European GEO Workshop on 2-3 October 2014, in Athens.

The workshop title is ***“Integrating Earth Observation Data and Services for monitoring the Environment and protecting the citizens and local economy”*** focused on North Africa, Middle East and Balkan Region.



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3. **Dr Semih Ergitav** presented the **MARsite** project and referred to its important role in providing a **new approach in seismic Hazard Monitoring in the Marmara Sea** seismic gap, an area that since 1766, is dominated by submarine landslides and trigger tsunamis.

The main scope of the project is the **re-evaluation of Seismo-tectonics** of the region, as well as the creation of an **early warning system**.

Objectives of the project include **seismological monitoring, ground shaking modelling and other important activities**, all using in-situ data and combining various data sources with EO data.



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4. **Dr Gerassimos Papadopoulos** talked about the Earthquake and tsunami hazards and their implications in the Mediterranean Sea and the North East Atlantic. He pointed out that there is clear indication **for mega earthquakes occurring in the area. Recurrence interval** for mega earthquakes in the Hellenic Arc is **500 – 600 years**. A probabilistic assessment has been conducted in order to predict next occurrences on such events (earthquakes) with a maximum likelihood assessment. Regarding Tsunamis cases, the analysis performed, shows that their characteristics can be represented by models assuming that the bathymetric data are accurate. **However, the prediction methods presented till need to be further verified by using historical resources. Probability for a M>8.5 earthquake is 17% in every 100 years.**



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5. **Dr. Ioannis Papoutsis** referred to the **geo-hazard monitoring and assessment over Greece and the SE Europe**, combining EO with seismological and GNSS data, an activity that takes place in the framework of the **BEYOND Center of Excellence**. The **geophysical pillar of BEYOND** performs **InSAR diachronic analysis** and mapping of crustal deformation over sensitive areas prone to **earthquakes, volcanic eruptions, and landsliding**. **Critical information has been delivered to users and scientists**, referring to rapidly evolving geological phenomena like the **crustal deformation** over the densely occupied urban Attika region, the Santorini, and Nisyros **volcanoes inflation episodes**, the recent and rather catastrophic **Cephalonia earthquake**. Also validated services representing **smoke and volcanic ash dispersion** were presented, with significant implications to health, aviation safety and climate, including the delivery of **UAV operations for damage recordings**.



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6. **Prof Valerio Tramutoli** (University of Basilicata) presented the road from **PRE-EARTHQUAKES** to a global “**EarthQuake Observing System (EQuOS)**”. The concept of the above project and the relation of “cost” to early prediction of quakes were outlined, as well as the use of MSG/SEVIRI data for operational detection of thermal anomalies in the Mediterranean Region. There were also presented results from the project **PRIME** which included **20 different satellite technologies, and about 3000 different combinations of parameters and algorithms**. Additional lessons from the PRIME project include the added value of the **continuity of observations** and **the improved data analysis**.

The project provides **global observations capabilities, and real-time integration of observations, using emerging technologies**.



Report on the **GEOSS for Disasters II** splinter session (Ilissos room).

Chair: Kanaris Tsinganos, **Rapporteur:** Haris Kontoes

1. **Dr Claire Roberts** from NPA Satellite Mapping Company, presented the **European project PanGeo** a **unique service** that provides geohazard information and enhances the knowledge on **geological hazards in the large scale of urban areas**. **52 of the largest cities of Europe** have been selected to be the test sites of the project. The project integrates modern **GIS techniques, PSinSAR and modelling**, together with updated and detailed **geological data** that are provided by the large community of Geological Survey Organisations over Europe for delivering two products that are, **a) the Ground Stability Layer, and b) the Geohazard document** that describes the geological interpretation for each GSL polygon. It is worth-noting that the project has set up the PanGeo **portal providing free data on the concept of One Geology European Architecture** fully compliant with the **Inspire and open GIS initiatives**.



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Dr Giuseppe Puglisi presented the **MED-SUV European FP7** project, a 3 year project with 24 partners involved. The project **applies the rationale of the Supersites GEO initiative to Mt Etna, Campi Flegrei, and Vesuvius.** The project establishes **monitoring infrastructures**, collects data from various sensors **in-situ and space borne** to ensure the **long term monitoring of the volcanoes** (GPS, thermal sensors, magnetometers, spaceborne SAR, optical data) for monitoring the **volcanic activity**, detecting **thermal anomalies**, and monitoring the **dispersion of ashes plumes**. The project has defined a **free data policy**, based on **open data sharing concepts**; it also integrates and creates **interoperable data**. Contribution to GEOSS comprise the **new digital observational infrastructure and integration of new processing techniques**, collection and sharing of data with decision makers, enhance the collaboration between the different scientific teams, perform activities fully compliant with EPOS, FUTUREVOLC, and MARSITE projects.



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Dr Freysteinn Sigmundsson, presented the **FUTUREVOLC**, a collaborative FP7 project with 26 partner involved, which aims to establish an **integrated volcanological monitoring network and procedures over the icelanding volcanoes**, install and operates **GPS, infrasound arrays, and seismological networks**, develop **new methods**, evaluate **volcanic crises**, provide **early warning** and increase **the scientific understanding of magmatic processes** and deliver **new information** to scientists, civil protection and authorities. The project compiles systematically **catalogues from past eruption events** and explores methods for assessing **Mass Eruption Rates**.

The contribution to GEOSS comprise the **ease access to monitoring data**, provides **open data to the scientific and Civil protection authorities**, and establishes **integrated monitoring networks**.



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Dr Athanasios Ganas, presented the **GNSS network installed in Greece by NOA-GI**. It comprises of 22 continuous GNSS stations. The network is the **Greek component of the HELPOS RI infrastructure**. The NOANET provides scientific skills and releases 30-s data to the entire geodetic and solid Earth community via a dedicated web interface (www.gein.noa.gr/gps.html).

The network provides core services as, a) dissemination of raw and higher level GNSS data, b) geodetic products based on the time series analysis of GNSS data, and c) user oriented services namely real time monitoring of velocity fields strain rate maps, etc.



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Dr Symeonidis Panagiotis, presented the **AEROVIS project** which is a **prototype SW visualisation tool** for representing the outcomes of the time series analysis of air pollution data, EO data, and also provides **information on aerosols, clouds, and other climatic parameters** that are essential for climatic and climate change studies.

The tool has capabilities of **handling big data**, integrates **many different types of data and image data**, exports data **in standard formats**, adopts **OGC technology** and standards, provides **time enabled layer capabilities**, and supports **Google Earth plug ins**.



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Conclusions

Both disaster management sessions successfully addressed and reported the **existing capabilities in terms of regional monitoring infrastructures**, and highlighted **complementarities that are suitable for completing GEOSS**, emphasized on the advancement of the **scientific and service provision excellence all over Europe for disaster monitoring and management** through integrated and standardised solutions, identified **future priorities and perspectives** towards the generation of more **complete and freely accessible catalogues and data bases** of in-situ and space based infrastructures, and emphasized on the **adoption of a data policy based on open standards and open access**.

