

Italy-USA Cooperation on Science and Technology

Overview of US-Italy Earth Science Working Group

Presented by Dr. Ingrid Verstraeten, USGS, and Dr. Maria Fabrizia Buongiorno, INGV

The Working Group's members

The Working Group on Earth Sciences includes a large number of participants who develop bilateral activities with the US on a wide number of research topics included in the Earth Science area.

Italian team

ITALY WG is led by Dr Maria fabrizia Buongiorno of INGV

The Italian team is composed by Italian Government Agencies, Research Institutes and Universities

- **INGV,**
- **ENEA,**
- **INFN**
- **OGS**
- **CNR,**
- **ISPRA,**
- **MINAMB,**
- **Italian Institute of Technology**
- **ASI,**
- **UNIMIB,UNICA,POLITO,ROMA1**

US team

US WG is led by Dr. Ingrid Maria Verstraeten of the USGS

The team is composed of US government, and US research institutions. .

- **Federal Agencies:**
- **U.S. Geological Survey,**
- **NOAA,**
- **DOE**
- **US research institutions:**
- **NASA-JPL,**
- **NASA – Goddard Space Flight Center,**
- **US National Center Atmospheric Research UCAR,**
- **MTU, RSMAS/MPO-MIAMI, DCO,**

General Topics for Earth Science Collaboration

Topic 1. Natural Hazard, including volcano and earthquake hazard

- Seismological Processes & Hazards, Operational Earthquake Forecasting,
- Tsunami Hazard Assessment Hazard analysis at regional scale for landslide-induced tsunami,
- Induced seismicity hazard,
- investigating the crystal structure of high pressure carbonates
- creation of task force on calderas,
- Sharing of data, data policies, experiences, Joint bilateral and multilateral workshops,
- modelling tools and volcano hazard mapping
- Science communication

INGV, OGS, UNIMIB,ISPRA,IIT and USGS, MIT, NASA-JPL, MTU,DCO

Topic 2. Space data for Earth Observation and Geodesy

- AGUSTUS project: Study of innovative ground segment and space segment, laser and retroreflector-based devices

INFN, NASA-GFSC, NASA-JPL, USGS, NOAA

- LANDSAT and ASTER data exploitation for Earth Science application joint CAL/VAL activities.
- Collaboration to test technological development on UAVS,
- collaboration between to obtain specific user needs (scientific and final User) for next Optical missions.

INGV, USGS, NASA-JPL

- InSAR processing and modeling applications,
- Multi-platform application to Earth science processes,

CNR-IREA, NASA-JPL

- **Topic 3. Environment including Energy**

- Create a stable working group for joint research activities for Carbon Capture and Storage,

DOE-ENEA

- Coastal Studies,
- Land subsidence,
- Water resources,
- Protection of cultural heritages from geological hazard,

INGV,ISPRA,POLITO, USGS, Univ. of Rhode Island,

- Environmental Pollution monitoring (heavy metal and pm10)

INGV-University Of Nevada, UC – Davis, University of Cagliari And USGS Denver

- **Topic 4. Oceanography and Climatology**

- COSIMO Project: Diurnal Sea Surface Temperature Variation in the Mediterranean Sea^{ENEA}

RSMAS/MPO, CNR-ISAC

- **NOAA-NESDIS and CNR-ISAC signed in October 2014 an MoU for joint research collaboration activities on earth science research fields as meteorology, oceanography-**

- Development of climate models and investigation of natural and anthropogenic climate variability

INGV/CMCC, US National Center Atmospheric Research, Boulder, Colorado.

2014-2015 Milestones and Events

2014. First Earth Science/Natural Resources Working Group Meeting, Italy - United States Joint Commission Meeting, *held at Ministry of Foreign Affairs, Rome, 19 June, 2014.*

Signature of the Joint USGS-INGV activity letter 18 June, 2014.

2014. Second Earth Science/Natural Resources Working Group Meeting, Italy - United States Joint Commission Meeting *held at US Geological Survey Menlo Park, CA, 12 December, 2014 .*

2016.Third Earth Science/Natural Resources Working Group Meeting, Italy-United States Science and Technology Joint Commission Meeting, held at INGV Head Quarter, 8 January, 2016



Meetings on specific topics have been organized within the Working Group members both in US and Italy,

Space Weather Meeting, Embassy of Italy,
Washington DC, USA, May 18, 2017

Conclusions, Recent & Future Actions

- Work of the WG is a small representation of bilateral earth science activities
- USGS and INGV are committed to continue leadership Earth Science WG
- List of Recent & Future Actions:
 - **USGS-INGV meeting & workshop on communication, Italy, June 2016.**
 - **Meeting on volcanology, USA, organized by USGS, November, 2016**
 - **ISPRA – USGS meeting, Reston, USA, July 2016**
 - **USGS-ASI agreement under development, 2015-2017, last meeting February 2017**
 - **Proposed Joint activity USGS-INGV-ISPRA-CNR-IRPI to study surface seismic effects of 2016-2017 earthquake in Central Italy**
 - **Proposed workshop on remote sensing applications for improved monitoring of volcanoes and earthquakes, September 19-21, 2017, Montana.**
 - **Proposed workshop on sharing interests in coastal studies, December 8, 2017, La Fayette, Louisiana**
 - **Possible WG DVC/Conference call, December 2017**
 - **Next WG meeting day prior to next JCM in December 2018**
 - **Space Weather activities?**

Natural Hazard and Cultural Field trip to Napoli and Ercolano, January 9, 2016



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