

***Second Workshop on
USE of Remote Sensing Techniques
for Monitoring Volcanoes and Seismogenic Areas***

USEReST 2008

Naples, Italy, November 11-14, 2008

Final Program

9:30-10:00 Welcome

- 09:30 Luigi Colangeli – *Director of Capodimonte Astronomical Observatory*
09:35 Ovidio Bucci – *Director of IREA-CNR*
09:40 Marcello Martini – *Director of Vesuvius Observatory*
09:45 Enzo Boschi – *INGV President*
09:50 Bernardo de Bernardinis – *Italian Civil Protection*
09:55 Eugenio Sansosti and Sven Borgstrom – *USEReST Conference Committee*

10:00-10:40 Updates from Space Agencies

Chairs: Frank Martin Seifert and Sven Borgstrom

- 10:00 H. Laur (ESA)
ENVISAT and ERS
10:10 C. Minet (DLR)
TerraSAR-X
10:20 A. Coletta (ASI)
Cosmo-SkyMed
10:30 Y. Miyagi (JAXA)
ALOS

10:40-11:00 Coffee Break

11:00-12:45 Towards Operational Systems I - Projects

Chairs: Henri Laur and Alessandro Coletta

- 11:00 M. Hort, K. Zakšek
Exupery: The mobile volcano fast response system
11:15 A. G. Davies, S. Chien, D. Q. Tran, J. Doubleday, S. Frye, D. Mandl, L. Ong
Sensor Web Operations: Rapid Data Acquisition and Product Generation During a Volcanic Crisis
11:30 S. Salvi, S. Vignoli, S. Zoffoli, P. Soddu
The SIGRIS pilot project: producing value-added EO-based information for the management of the seismic risk
11:45 L. Candela, S. Zoffoli, B. De Bernardinis, V. Bosi, C. Cardaci, P. Soddu
The operational use of COSMO-SkyMed satellites data within the Italian Civil Protection System: first experiences
12:00 S. Hensley, H. Zebker
UAVSAR, an L-band Synthetic Aperture Radar (SAR) for airborne repeat track differential interferometric measurements
12:15 Open Discussion

12:40-14:30 Lunch

14:30-16:10 Towards Operational Systems II - Case Study

Chairs: Tim Wright and Wolfgang Lengert

- 14:30 M. Costantini, F. Minati, F. Malvarosa, L. Pietranera
COSMO-SkyMed fast response and interferometric capabilities for volcanic and seismic areas monitoring: the 2008 China earthquake case
- 14:45 T. Wright, A. Ayele, E. Calais, C. Ebinger, D. Keir, E. Lewi, G. Yirgu
The Magma Plumbing System of Dabbahu and Gabho volcanoes (Afar, Ethiopia) from InSAR, GPS and Seismicity data
- 15:00 L. Clarisse, P. F. Coheur, C. Clerbaux, D. Hurtmans
Monitoring volcanic eruptions with the thermal infrared sounder IASI
- 15:15 F. Casu, R. Cossu, L. Fusco, R. Lanari, M. Manunta, G. Mazzarella, E. Sansosti, S. Guarino
SBAS-DInSAR GRID processing on-demand: a case study
- 15:30 H. Zebker, P. Rosen
InSARProc 2008: assessing existing InSAR processing technology and planning for future processor development
- 15:45 Open Discussion

16:10-16:30 Coffee Break

16:30-18:10 Use of Geophysical Models in Monitoring Scenarios

Chairs: Paul Lundgren and Alessandro Bonaccorso

- 16:30 B. Crippa, R. Sabadini, M. Chersich, R. Barzaghi, G. Panza
Coupling geophysical modelling and geodesy to unravel the physics of active faults
- 16:45 P. Lundgren, R. Lanari, M. Manzo, E. Sansosti, P. Tizzani, M. Hutnak, S. Hurwitz
Hydrothermal fluid flow models of Campi Flegrei caldera, Italy constrained by InSAR surface deformation time series observations
- 17:00 G. Di Martino, A. Iodice, D. Riccio, G. Ruello
Volcano Monitoring via Fractal Modeling of Lava Flows
- 17:15 G. Currenti, C. Del Negro, D. Scandura, C. A. Williams
Automated procedure for InSAR data inversion using Finite Element Method
- 17:30 T. R. Walter, M. Shirzaei, A. Manconi, J. Ruch, M. Motagh, R. Wang, J. Zschau
InSAR derived deformation source characteristics at volcanoes – how realistic are the models?
- 17:45 Open Discussion

18:10-19:30 Poster Session and Welcome Cocktail (c/o Hotel Villa Capodimonte)

9:00-10:40 Optical I – Observations of volcanic emissions

Chairs: Fred Prata and Fabrizia Buongiorno

- 9:00 E. Carboni, R. Grainger, G. Thomas, C. Poulsen, R. Siddans, A. Smith, A. Sayer, D. Peters
Volcanic plume characterization using satellite measurements in the visible and thermal infrared.
- 9:15 J. van Geffen, P. Valks, T. Erbertseder, R. van der A
Monitoring of volcanic SO₂ emissions from satellite
- 9:30 M. Rix, P. Valks, N. Hao, T. Erbertseder, J. van Geffen
Monitoring of volcanic SO₂ emissions using the GOME-2 satellite instrument
- 9:45 F. Prata, A. Stohl, S. Eckhardt, A. Richter, M. F. Buongiorno, P. Seibert
Support for Aviation for Volcanic Ash Avoidance: SAVAA
- 10:00 F. Marchese, G. Mazzeo, N. Pergola, V. Tramutoli
Assessment of the Robust Satellite Technique (RST) for Volcanic Ash Plume Identification and Tracking
- 10:15 Open Discussion

10:40-11:00 Coffee Break

11:00-12:40 SAR I – Science Studies

Chairs: Riccardo Lanari and Sigurjon Jonsson

- 11:00 J. Biggs, F. Amelung, T. Dixon, N. Gourmelen
InSAR Observations of 2007 Tanzania Seismic Swarm Reveals Mixed Fault and Dyke Extension in an Immature Continental Rift.
- 11:15 S. Jonsson
Plate-boundary-scale Deformation from InSAR Time-Series Analysis: Application to Reykjanes Peninsula, southwest Iceland
- 11:30 N. Gourmelen
Shallow Locking Depth and Accelerating Fault – The Hunter Mountain fault, Eastern California
- 11:45 A. Bonforte, F. Guglielmino, G. Puglisi, M. Palano
A Decade of applying Differential SAR Interferometry on Mount Etna volcano: analysis at different time and space scales.
- 12:00 F. Casu, M. Poland, G. Solaro, P. Tizzani, E. Sansosti, R. Lanari
Surface deformation analysis of the Mauna Loa and Kilauea volcanoes, Hawaii, based on InSAR displacement time series
- 12:15 Open Discussion

12:40-14:30 Lunch

14:30-16:10 SAR II - Monitoring Applications

Chairs: Eugenio Sansosti and Eric Fielding

- 14:30 S. Stramondo, C. Bignami, M. Chini, N. Pierdicca
SAR and Optical satellite data for earthquake damage mapping
- 14:45 A. Augier, J. L. Froger, V. Cayol, Y. Fukushima, P. Tinard, T. Souriot, O. Mora, T. Staudacher, P. Durand, B. Fruneau, N. Villeneuve
The April 2007 eruption at Piton de la Fournaise, Réunion Island, imaged with ENVISAT-ASAR and ALOS-PALSAR data
- 15:00 F. Casu, M. Manzo, E. Sansosti, S. Pepe, G. Solaro, P. Tizzani
The SBAS-DInSAR algorithm as a tool for generating near-real time deformation time series.
- 15:15 N. d'Oreye, F. Kervyn, E. Calais, V. Cayol, J. Fernández, C. Frischknecht, P. Gonzales, S. Heleno, A. Oyen, C. Wauthier
Systematic InSAR monitoring of African active volcanic zones: what we have learned in two years, or an harvest beyond our expectations
- 15:30 F. Sigmundsson
Deformation processes in Iceland InSAR laboratory: The case for a supersite
- 15:45 Open Discussion

16:10-16:30 Coffee Break

16:30-18:10 The SuperSites Initiative (invited)

Chairs: Falk Amelung and Marc Paganini

- 16:30 C. Meertens
Earthscope, GeoEarthscope, WinSAR and GPS at Unavco: Opportunities for SuperSites
- 16:45 Y. Miyagi
PIXEL: Japanese InSAR Community for Crustal Deformation Research
- 17:00 M. Paganini
GEO and the Joint Committee Framework for the Supersite Initiative
- 17:15 A. Vagner
The role of IGOS Geohazard for the SuperSite Initiative
- 17:30 W. Lengert
Technical Implementation of the SuperSite Initiative using Content Delivery Networks (CDNs).
- 17:45 Open Discussion

18:10-19:00 Musical Event - Marco Zurzolo

9:00-10:45 Optical II – Monitoring Applications

Chairs: David Pieri and Valerio Tramutoli

- 9:00 D. Pieri, M. F. Buongiorno
The Use of Archives for the Long Term Monitoring of Active Volcanoes
- 9:15 V. Lombardo
Volcanic hot-spot detection in near real time using AVHRR infrared data
- 9:30 A. Vicari, A. Cirauda, I. Coviello, C. Del Negro, G. Ganci, A. Herault, T. Lacava, F. Marchese, N. Pergola, V. Tramutoli
Hot Spot Detection and Effusion Rate Estimation Using Satellite Data to Drive Lava Flow Simulations
- 9:45 A. Ganas, E. Lagios, G. Petropoulos, B. Psiloglou
Thermal Imaging of Nissyros Volcano (Aegean Sea) using ASTER data: Estimation of radiative Heat Flux
- 10:00 C. Spinetti, M. F. Buongiorno, S. Amici, M. Silvestri, V. Lombardo, M. Musacchio, F. Doumaz, S. Corradini
Monitoring Italian volcanoes by NOAA–AVHRR satellite data
- 10:45 Open Discussion

11:10-11:30 Coffee Break

11:30-12:40 L-band SAR systems

Chairs: Yousuke Miyagi and Pierre Briole

- 11:30 P. Briole, P. Elias, G. Puglisi, F. Guglielmino
First results of ALOS interferometry at Etna
- 11:45 S. Samsonov, K. Tiampo, C. Bromley, B. Scott, G. Jolly, J. Beavan
ALOS PALSAR interferometry of Taupo Volcanic Zone, New Zealand
- 12:00 E. J. Fielding, J. P. Avouac, R. Bürgmann, Z. Li, I. Ryder, A. Sladen
Fault Slip Model for the 12 May 2008 Wenchuan-Beichuan Mw 7.9 earthquake in Sichuan, China from ALOS, Envisat and Teleseismic Data
- 12:15 Y. Miyagi, M. Shimada, T. Tadono, O. Isoguchi, M. Ohki
ALOS Emergency Observations by JAXA for Monitoring Earthquake and Volcanic Eruption in 2008
- 12:30 C. Minet, M. Eineder, R. Bamler, I. Hajnsek, A. Friedrich
Requirements for an L-band Mission to Monitor Global Tectonic Activities
- 12:15 Open Discussion

12:40-14:30 Lunch

14:30-16:10 ASI-SRV and ESA GlobVolcano special session

Chairs: Fabrizia Buongiorno and Lucia Tampellini

- 14:30 L. Tampellini, R. Ratti, F. M. Seifert, S. Borgström.
GlobVolcano project overview

- 14:45 A. Ferretti, M. Bianchi, A. Rucci, F. Novali, A. Tamburini.
Volcanic deformation mapping using PSInSAR: Piton de la Fournaise, Stromboli and Vulcano test sites for the Globvolcano project
- 15:00 A. Peltier, E. Kaminski, J. C. Komorowski.
Eruptive cycles inferred from deformation data at Piton de La Fournaise volcano (Réunion Island) – a case study for the Globvolcano project
- 15:15 M. F. Buongiorno, M. Musacchio, S. Zoffoli, C. Cardaci, E. Sansosti, S. Pugnaghi, S. Teggi, S. Vignoli, A. Amodio, G. Puglisi, S. Borgström. *Volcanic Risk System (SRV):ASI Pilot Project to Support The Monitoring of Volcanic Risk In Italy by Means of EO Data*
- 15:30 M. Musacchio, S. Teggi, M. F. Buongiorno, A. Amodio, M. Gregnanin, G. De Marzi, S. Vignol, S. Perelli, V. Santacesaria. *ASI-SRV General purpose modules for the pre-processing of remote sensed optical data*
- 15:45 M. Musacchio, M. Silvestri, C. Spinetti, S. Corradini, V. Lombardo, L. Merucci, M. F. Buongiorno, S. Pugnaghi, G. Gangale, L. Guerrieri, S. Teggi, V. Santacesaria, S. Perelli.
ASI-SRV Optical Sensor Data Processing Modules

16:00-16:30 Coffee Break

16:30-18:10 Use of EO and in situ data

Chairs: Marcello Martini and Giuseppe Puglisi

- 16:30 J. Fernández, J. F. Prieto, P. J. González, A. Seco, G. Rodríguez-Velasco, P. A. Perlock, A. Arjona, A. Aparicio, A. G. Camacho, J. B. Rundle, K. F. Tiampo, J. L. G. Palleró, S. Pospiech
DInSAR, GPS and Gravity Observation Results in La Palma, Canary Islands
- 16:45 E. Bernardo, M. Coltelli, M. Marsella, C. Proietti, A. Sonnessa
Photogrammetric and LIDAR surveys on the Sciara del Fuoco to monitor the 2007 Stromboli eruption
- 17:00 G. Antonello, N. Casagli, C. Del Ventisette, J. Fortuny-Guasch, L. Guerri, D. Leva, G. Luzi, F. Mugnai, D. Tarchi
Microwave interferometric sensors as a tool for space and time analysis of active volcano deformations: the Stromboli case
- 17:15 F. S. Marzano, S. Marchiotto, S. Barbieri, D. Schneider, C. Textor, G. Giuliani
Ground-based radar remote sensing of explosive volcanic ash eruptions: numerical models and quantitative applications
- 17:30 Open Discussion

17:45-18:10 Concluding Remarks

C. Aliano, R. Corrado, C. Filizzola, N. Genzano, V. Lanorte, M. Lisi, G. Martinelli, N. Pergola, V. Tramutoli
Robust Satellite Techniques for monitoring TIR anomalies in seismogenic areas.

S. Amici, S. Corradini, L. Merucci, M. F. Buongiorno
PREVIEW campaign on Mt. Teide: in-situ infrared spectral measurements of surfaces for remote sensing data validation

S. Baker, F. Amelung
Evidence for Multiple Magma Bodies Beneath Kilauea Volcano, Hawaii

P. Carrara, F. Bucci, M. Pepe, A. Rampini
EO-based data diffusion through INSPIRE SDI: Lessons learned in the IDE-Univers project

S. Chien, A. G. Davies, D. Q. Tran, J. Doubleday, S. Frye, D. Mandl, L. Ong
Sensorweb Operations: A new paradigm for volcano monitoring using remote sensing

L. Colini, M. F. Buongiorno, M. Musacchio and Preview Scientific Party
Preview Project - Prevention, Information and Early Warning pre-operational services for risk management at European level: the Geophysical Cluster, Earthquakes & Volcanoes platform

X. Cong, A. Parizzi, M. Eineder, T. Walter, M. Shirzaei, S. Hinz, M. Hort
Ground deformation measurement with radar interferometry in Exupéry

S. Corradini, L. Merucci, M. Silvestri, M. Musacchio, C. Spinetti, A. Piscini, M. F. Buongiorno
SO₂ and ash plume retrievals using MSG-SEVIRI measurements. Test case: 24 November 2006 Mt. Etna eruption

G. Gangale, F. Prata, L. Clarisse
Particle size and compositional retrievals of Chaitén volcanic ash from spaceborne, high spectral resolution infrared AIRS and IASI measurements.

K. Joyce, S. Samsonov, R. Jongens, V. Manville
Satellite and airborne remote sensing of volcanic activity in New Zealand

C. Maerker, K. Seidenberger, T. Erbertseder, J. van Geffen
Trajectory matching and dispersion modelling of volcanic plumes utilizing space-based SO₂ observations

M. Motagh, T. R. Walter, J. Zschau
INSAR investigation of ground deformation in Istanbul, Turkey

S. Alipour, M. Motagh, M. Sharifi, T. R. Walter, H. Nankali, M. Sedighi, Y. Djamour
InSAR time-series investigation of land subsidence due to groundwater overexploitation in Tehran, Iran

- V. Akbari, M. Motagh, M. A. Rajabi, Y. Djamour, H. Nankali, M. Sedighi
Monitoring of land subsidence in Mashhad, Iran, using InSAR time series (2003-2007)
- N. Crocetto, S. Ponte
Fuzzy Logic-Based Methodologies for Operational Use of EO Data: Error Detection and Estimation, Fuzzy Positioning, Data Clustering
- G. Puglisi, F. Guglielmino, A. Bonforte, G. Nunnari, A. Spata
Definition of the deformation pattern of the Sicily Island (Italy) through DInSAR techniques and studies on the integration with geodetic data
- S. Rieger
Quantifying tectonically induced 3D surface deformation in Crete using interferometry
- S. Samsonov, K. Tiampo, P. González, J. Prieto, A. Camacho, J. Fernández
Surface deformation studies of Tenerife Island, Spain from joint GPS-DInSAR observations
- S. Samsonov, K. Tiampo, V. Manville, G. Jolly
Deformations occurring in the city of Auckland, New Zealand as mapped by Differential Synthetic Aperture Radar
- Z. Servadio, N. Villeneuve, A. Gladys, T. Staudacher, M. Urai
Preliminary results of lava flow mapping using remote sensing in Piton de la Fournaise, La Réunion island
- C. Spinetti, L. Colini, M. F. Buongiorno, C. Cardaci, G. Ciminelli, S. Corradini, F. Guglielmino, M. Musacchio, G. Pace, D. Pellegrino, S. Perelli, L. Pietranera, G. Puglisi, P. Soddu
Pre-operative test of the Eurorisk-Preview project during the Mt. Etna 2006 eruption
- A. Vicari, A. Cirauo, C. Del Negro, G. Ganci, A. Herault
Near Real Time Forecasting of Lava Flow Paths Using MAGFLOW Model Driven by Thermal Satellite Data
- H. Wang, T. J. Wright, J. Biggs
Interseismic deformation of the Xianshuihe fault inferred from ERS/Envisat radar data
- K. Zakšek, M. Hort
Integration of thermal anomaly monitoring into the volcano fast response system
- M. Zoran
Use of geospatial and in situ information for seismic hazard assessment in Vrancea area, Romania
- A. Almasi
Gravity Measurement from Moving Platform by Kalman Filter and Position and Velocity Corrections for Earthquake Prediction and Volcanoes and Seismogenic Layer Monitoring
- R. P. Singh, M. Kafatos
Multi Sensor Satellite Data to Identify Seismically Active Region
- J. Blecki, M. Parrot, R. Wronowski
The Low Frequency Plasma Waves Observed By Demeter Satellite In The Ionosphere Over The Seismic Regions Prior To The Earthquake

S. A. Mahmood, F. Shahzad, R. Gloaguen
Monitoring Landscape Response to Tectonic Forcings in Central Badakhshan-Hindukush-Pamir Region Using Remote Sensing Data

O. F. Omidiora, A. Balogun
Sensible Heat Measurement Using Bowen Ratio And Eddy Correlation Techniques. Application In Prediction Of Volcanic Eruption.

F. Shahzad, S. A. Mahmood, R. Gloaguen
Remote Sensing Analysis of ongoing deformation in Hazara Kashmir Syntaxis in Northern Pakistan

A. N. M. Allotey
Geographic Information Systems (GIS) Approach to Land Degradation Assessment in Ghana, the case of Ejura-Sekyedumase District in the Ashanti Region

C. A. Rokhmana dan Soeta'
Some Notes From Modeling Landslide Area At Mount Bawakaraeng Indonesia

M. Amos
Enhancing a Multi-Hazards Approach in Reducing Vulnerability, Environmental Protection and Sustainable Development: Carbon Dioxide Capture Project in the Killer Lake Nyos in Cameroon.

T. Chia
EO Monitoring of Volcanoes and Seismically Active Zones in Cameroon for Disaster Risk Management and Sustainable Development.

Friday November 14, 2008 9:00-14:30

The tour to the Vesuvius crater will be guided by **Prof. Giovanni Orsi**, from the Vesuvius Observatory, Naples section of the Italian National Institute for Geophysics and Volcanology.

The tour will start at 9:00 from Naples Downtown. We will then reach the parking lot on the top of the volcano.

Starting from the bus stop about 200 meters below the top of the volcano, we will walk up for about 20-25 minutes. On the top of Mt. Vesuvius, we will take a walk around the crater rim, which offers also a wonderful view of the Bay of Naples and of the islands. During the tour Prof. Orsi will give an overview on the volcanological history of the volcano.

The tour will come back to Naples around 14:30.

Musical Event – Marco Zurzolo

Wednesday November 12, 2008 18:10-19:00



Marco Zurzolo was born in Naples (Italy) in 1962 and graduated in Flute, Jazz Composition and Saxophone at the Conservatory “San Pietro a Majella” (Accademy of Music) in Naples. Over time, saxophone has become his main instrument.

He has been collaborating with many Italian and international artists, among which: Archie Shepp, Chet Baker, Solomon

Burkes, Roscoe Mitchell, Van Morrison, Billy Preston, Brian Ferry, Renaud-Garçia Fons, Kokani Orkestra, Rita Marley, Don Moye and Art Ensemble of Chicago, Mike Minieri, Enrico Pierannunzi, Marc Johnson (who collaborated in the 2005 CD “7 e mezzo”), Ensemble Vocale di Napoli (Chor.Dir. Antonio Spagnolo: Officium Defunctorum, Cristobal de Morales, arr. for Chorus and Sax Soprano soloist).

Since 1995, he has been composing. Composer of music for many movie, theatre and television representations, he was awarded many prizes, among others “il premio qualità” of the Italian Ministry of Culture.

He has published nine CDs, the tenth is in preparation.

Shuttle Bus Service

A free Shuttle Bus service is offered to all the registered participants to the workshop.

The bus will leave approximately 8:00-8:30 from Downtown Naples, tentatively from via Armando Diaz, close to **Hotel Oriente**. The exact location of the bus stop will be announced after we make the final arrangement with the bus company. All the suggested hotels in Downtown Naples are within a walking distance from the bus stop.

An intermediate stop is planned at the **National Museum**. This is close to the following Metro stops:

- Line 1: Museo
- Line 2: Piazza Cavour

The bus will reach then the workshop venue.

The Shuttle Bus will serve along the way back at the end of technical sessions.

Lunch Service

A self-service buffet lunch (EUR 25,00 to be paid *in situ*) has been arranged for workshop attendees at **Hotel Villa Capodimonte** at a walking distance from the venue. Note that there are no other restaurants in the surroundings.

If you are interested, please be sure that you have made a **reservation** for lunch either while registering online, or directly at the conference registration desk.

It is very important to have a good estimate of the number of lunches to be served for each conference day to guarantee a good service.