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

USEReST 2008

Naples, Italy, November 11-14, 2008

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<td>Welcome</td>
<td>Luigi Colangeli – Director of Capodimonte Astronomical Observatory</td>
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<td>Ovidio Bucci – Director of IREA-CNR</td>
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<td>Marcello Martini – Director of Vesuvius Observatory</td>
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<td>Enzo Boschi – INGV President</td>
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<td>Bernardo de Bernardinis – Italian Civil Protection</td>
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<td>Eugenio Sansosti and Sven Borgstrom – USEReST Conference Committee</td>
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<td>Updates from Space Agencies</td>
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<td>H. Laur (ESA) ENVISAT and ERS</td>
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<td>C. Minet (DLR) TerraSAR-X</td>
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<td>A. Coletta (ASI) Cosmo-SkyMed</td>
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<td>Y. Miyagi (JAXA) ALOS</td>
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<td>Towards Operational Systems I - Projects</td>
<td>Chairs: Henri Laur and Alessandro Coletta</td>
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<td>M. Hort, K. Zakšek Exupery: The mobile volcano fast response system</td>
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<td>D. Mandl, L. Ong Sensor Web Operations: Rapid Data Acquisition and</td>
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<td>Product Generation During a Volcanic Crisis</td>
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<td>S. Salvi, S. Vignoli, S. Zoffoli, P. Soddu The SIGRIS pilot project:</td>
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<td>producing value-added EO-based information for the management of the</td>
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<td>L. Candela, S. Zoffoli, B. De Bernardinis, V. Bosi, C. Cardaci, P.</td>
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<td>Soddu The operational use of COSMO-SkyMed satellites data</td>
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<td>within the Italian Civil Protection System: first experiences</td>
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<td>S. Hensley, H. Zebker UAVSAR, an L-band Synthetic Aperture Radar (SAR)</td>
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<td>for airborne repeat track differential interferometric measurements</td>
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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 SR4S-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. Ciraudo, 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 Brioile

11:30  P. Brioile, P. Elias, G. Puglisi, F. Guglielmino
First results of ALOS interferometry at Etna

11:45  S. Samsonov, K. Tiamo, 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. Sefert, 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, 
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. Spinettti, 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. Pallero, S. Pospiech 
DInSAR, GPS and Gravity Observation Results in La 
Palma, Canary Islands

16:45 E. Bernardo, M. Cotelli, 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. Ameling
Evidence for Multiple Magma Bodies Beneath Kilauea Volcano, Hawaii

P. Carrara, F. Bucci, M. Pepe, A. Rampani
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

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

Pre-operative test of the Eurorisk-Preview project during the Mt. Etna 2006 eruption

A. Vicari, A. Ciraudo, 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

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.
Tour to the Vesuvius Crater

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 became his main instrument. He has been collaborating with many Italian and international artists, among which: Archie Shepp, Chet Baker, Solomon Burke, Roscoe Mitchell, Van Morrison, Billy Preston, Brian Ferry, Renaud-Garcia 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.