Deliverables:

RU1 (INGV-CNT)

Deliverable: Procedure for genetic algorithm inversion of waveforms and traveltimes

Description: Code for the inversion of waveform and arrival time data to determine 1-D velocity models.

Nature: unix scripts and fortran codes

Contact: Hongyi Li, Alberto Michelini, INGV, Roma, hongyi.li@ingv.it alberto.michelini@ingv.it

Availability: at the reported contact

Deliverable: Procedure for the determination of group velocities from ambient seismic noise

Description: several bash scripts and fortran codes for the evaluation of the continuous data cross- correlations and the determination of group velocities

Nature: unix shell scripts

Contact: Fabrizio Bernardi and Hongyi Li, INGV, Roma, fabrizio.bernardi@ingv.it, hongyi.li@ingv.it

Availability: at the reported contact

Deliverable: Procedure for real-time moment tensor determination

Description: several bash scripts and fortran codes for the evaluation of the moment tensor solutions using the broadband data of the Italian Seismic network

Nature: unix shell scripts

Contact: Laura Scognamiglio and Elisa Tinti, INGV, Roma, laura.scognamiglio@ingv.it, elisa.tinti@ingv.it

Availability: at the reported contact

Deliverable: Procedure for near real-time finite fault determination

Description: scripts to run the finite source inversion code by Dreger and Kaverina (2000)

Nature: unix shell scripts

Contact: Elisa Tinti and Laura Scognamiglio, INGV Roma, elisa.tinti@ingv.it, laura.scognamiglio@ingv.it

Availability: at the reported contact

Deliverable: web interface for moment tensor solution review

Description: Interface to promptly review the automatic moment tensors

Nature: XML script

Contact: Matteo Quintiliani, matteo.quintiliani@ingv.it

Availability: At the reported contact

Deliverable: project web portal

Description: This deliverable allows publication of the results of the project. It consists of several unix scripts and PHP programs designed to populate the pages of the project web portal

Nature: bash unix scripts, PHP scripts, GMT package, HTML

Contact: Valentino Lauciani, valentino.lauciani@ingv.it

Availability: At the reported contact

Deliverable: Software for ShakeMap feeding

Description: Changes of earthworm module *localmag* in order to produce input for ShakeMap software

Nature: C code

Contact: Matteo Quintiliani, INGV, quintiliani@ingv.it

Availability: Within *Earthworm v7.1* http://www.isti2.com/ew/

Deliverable: Automatic control of ShakeMap Software at INGV

Description: Daemon for monitoring the event locations, automatic generation of shakemaps and web page publication

Nature: Shell scripts

Contact: Matteo Quintiliani, INGV, quintiliani@ingv.it

Availability: CVS Server cvs.rm.ingv.it

Deliverable: Filling Nanometrics gaps in near real time

Description: Added a feature to naqs_plugin (SeisComP) in order to fill gaps in near realtime.

Nature: C code

Contact: Matteo Quintiliani, INGV, quintiliani@ingv.it

Availability: CVS Server cvs.rm.ingv.it

Deliverable: Nanometrics Data Completeness

Description: Off-line procedure to complete archived Nanometrics data. Procedure requests missing data by the “Data Access Protocol”

Nature: C, Perl code, shell scripts

Contact: Matteo Quintiliani, INGV, quintiliani@ingv.it

Availability: CVS Server cvs.rm.ingv.it

Deliverable: **msdc** (miniseed data completeness)

Description: procedure for filling waveform gaps in miniseed data archives

Nature: unix shell script

Contact: Stefano Pintore, stefano.pintore@ingv.it

Availability: At the reported contact

Deliverable: porting of the SeisComP seedlink-slarchive software on the INGV-GAIA data logger

Description: software to obtaion miniseed data streams on the INGV built data loggers

Nature: C and XML languages

Contact: Stefano Pintore and Leonardo Salvaterra, stefano.pintore@ingv.it, leonardo.salvaterra@ingv.it

Availability: At the reported contact

Deliverable: Early warning procedure

Description: Procedure to run the ElarmS early warning package

Nature: C and Fortran language codes and unix shell scripts

Contact: Marco Olivieri, marco.olivieri@ingv.it

Availability: At the reported contact

Deliverable: SAC to Shakemap data feeding

Description: Off-line procedure to extract peak ground motion parameters from SAC event waveforms

Nature: unix and perl shell scripts

Contact: Alberto Michelini, alberto.michelini@ingv.it

Availability: At the reported contact

Deliverable: Med calculation

Description: Off-line procedure to determine Energy-Magnitude Duration

Nature: unix shell scripts and SeisGram2k program

Contact: Anthony Lomax, alomax@free.fr

Availability: At the reported contact

Deliverable: Mwp calculation

Description: Off-line procedure to determine Mwp (i.e., moment magnitude from broadband P-arrival phases) from Seed volumes available through ORFEUS or IRIS peak data management centers

Nature: unix and perl shell scripts

Contact: Alberto Michelini, alberto.michelini@ingv.it

Availability: At the reported contact

Deliverable: ISESD to Shakemap data feeding

Description: Off-line procedure to extract peak ground motion parameters from Internet-Site for European Strong-Motion Data

Nature: unix and perl shell scripts

Contact: Alberto Michelini, alberto.michelini@ingv.it

Availability: At the reported contact

Deliverable: NLL real-time

Description: procedure to feed the NLLoc location program in near real-time using the automatic picks of the INGV backnet-locator system.

Nature: unix and perl shell scripts

Contact: Alberto Michelini, alberto.michelini@ingv.it

Availability: At the reported contact

Deliverable: near real time ETAS implementation

Description: procedure to determine at 5 minutes interval maps of seismic hazard.

Nature: unix shell scripts, fortran codes and GMT

Contact: Alberto Michelini, alberto.michelini@ingv.it

Availability: At the reported contact

Deliverable: geologic map with soil class differentiation

Description: geologic map classified in five different categories starting from the 1:100,000 Italian geological map (Servizio Geologico Nazionale).

Nature: ASCII file has been elaborated with ArcInfo software

Contact: Marco Moro, marco.moro@ingv.it

Availability: At the reported contact

Deliverable: SAC waveforms event data

Description: procedure to convert native TWF format INGV data in SAC tar archives.

Nature: unix shell scripts, fortran and C codes

Contact: Remo Moro and Franco Mele, remo.moro@ingv.it f.mele@ingv.it

Availability: At the reported contact

RU2 (INGV-Roma1)

Deliverable: Preliminary study on cross-correlation of broadband ground noise and joint inversion of group velocity dispersion curves with receiver functions.

Description: Gathering of a data set of interstation Green's functions and of a data set of receiver functions at a number of available broadband stations

Nature: Codes, data, cross-correlation results

Contact: Luca Malagnini, INGV-Roma, malagnini@ingv.it

Availability: At the reported contact

Deliverable: Web Pages to collect data on effects of earthquakes (Did you feel it?), and to show results with maps and data.

Description: Two main pages constitute the subject. The first page is the questionnaire used to collect info on effects felt after an earthquake. In the second page a map shows the results of elaboration in graphic and numeric output. The system is automatic and works in real time (updating time ca. 10 minutes).

Nature: Web code, elaboration programs code, maps and data files.

Contact: Valerio De Rubeis, INGV-Roma, derubeis@ingv.it

Availability: http://terremoto.rm.ingv.it/
http://terremoto.rm.ingv.it/index.php?page=lis

Deliverable: Predictive relationships for the ground motion from weak-motion data: extrapolation to strong-motion level.

Description: Study on wave propagation in the San Francisco Bay Area: source, absolute site, and propagation terms

Nature: Publication and codes.

Contact: Luca Malagnini, INGV-Roma, luca.malagnini@ingv.it

Availability: At the reported contact.

Deliverable: Automatic evaluation of moment magnitudes.

Description: Automatic code for the calculation of Mw in the San Francisco Bay Area.

Nature: Codes.

Contact: Luca Malagnini, INGV-Roma, luca.malagnini@ingv.it

Availability: At the reported contact.

Deliverable: Predictive relationships for the ground motion from weak-motion data in Central Apennine.

Description: Study on wave propagation in the Central Apennine: source, absolute site, and propagation terms

Nature: Data, empirical laws, and codes.

Contact: Laura Scognamiglio, INGV-Roma, laura.scognamiglio@ingv.it

Availability: INGV, Rome.

Deliverable: Predicted ground motion parameters for the Central Apennines.

Description: Based on the predictive relationship developed for the Central Apennines, we have computed peak ground acceleration (pga), peak ground velocity (pgv), and pseudospectral acceleration (psa) for magnitude between 2.5 and 7.5, and hypocentral distances in 10 – 1000 km range.

Nature: PGA, PGV and PSA (0.3, 1.0 and 3.0 sec) tables.

Contact: Aybige Akinci, INGV-Roma, akinci@ingv.it

Availability: INGV, Roma.

Deliverable: Automatic evaluation of moment magnitudes.

Description: Automatic code for the calculation of Mw in the Central Apennine.

Nature: Codes.

Contact: Luca Malagnini, INGV-Roma, luca.malagnini@ingv.it

Availability: At the reported contact.

Deliverable: Predicted ground motion parameters for the Western Alps.

Description: Based on the predictive relationship developed for the Western Alps, we have computed peak ground acceleration (pga), peak ground velocity (pgv), and pseudospectral acceleration (psa) for magnitude between 2.5 and 7.5, and hypocentral distances in 10 – 1000 km range.

Nature: PGA, PGV and PSA (0.3, 1.0 and 3.0 sec) tables.

Contact: Aybige Akinci, INGV-Roma, akinci@ingv.it

Availability: INGV, Roma.

Deliverable: Predicted ground motion parameters for the Eastern Alps.

Description: Based on the predictive relationship developed for the Eastern Alps, we have computed peak ground acceleration (pga), peak ground velocity (pgv), and pseudospectral acceleration (psa) for magnitude between 2.5 and 7.5, and hypocentral distances in 10 – 1000 km range.

Nature: PGA, PGV and PSA (0.3, 1.0 and 3.0 sec) tables.

Contact: Aybige Akinci, INGV-Roma, akinci@ingv.it

Availability: INGV, Roma.

Deliverable: Predictive relationships for the ground motion in Calabrian Arc from weak-motion data.

Description: A frequency dependent propagation term containing both anelastic, and elastic attenuation parameters.

Nature: Data, empirical laws, and codes.

Contact: Sebastiano D'Amico, INGV-Roma, damico@ingv.it

Availability: INGV, Roma.

Deliverable: Waveforms database for the Southern Apennines

Description: Data set of weak-motion waveforms for Southern Apennines.

Nature: Data

Contact: Sebastiano D'Amico, INGV-Roma, damico@ingv.it

Availability: INGV, Roma.

Deliverable: Waveforms database for Northern Sicily

Description: Database consists in velocity waveforms from 392 earthquakes recorded in Sicily by seven three component digital stations (INGV Seismic Network, and Mednet network) located in the region from October 2005 to May 2007. These events have magnitude ranging from M_l=1.0 to M_l=4.2, epicentral distances comprised between few kilometers to about 300 km, and they have maximum depth around 50 km.

Nature: Data

Contact: Sebastiano D'Amico, INGV-Roma, damico@ingv.it

Availability: INGV, Roma.

Deliverable: Source Energy Scaling

Description: Method for studying self-similarity in source radiation processes: calibration of the codes and application to Hector Mine (California) seismic sequence

Nature: Codes, publications

Contact: Luca Malagnini, INGV Roma 1, luca.malagnini@ingv.it

Availability: At the reported contact

Deliverable: Source Energy Scaling

Description: Method for studying self-similarity in source radiation processes: application to Colfiorito seismic sequence

Nature: Results

Contact: Luca Malagnini, INGV Roma 1, luca.malagnini@ingv.it

Availability: At the reported contact

Deliverable: Source Energy Scaling

Description: Method for studying self-similarity in source radiation processes: application to San Giuliano seismic sequence

Nature: Results

Contact: Luca Malagnini INGV Roma 1, luca.malagnini@ingv.it

Availability: At the reported contact

Deliverable: Tables of rheological parameters and stratification derived from_40 rheological profiles_

Description: The table is divided in two parts: rheological parameters, and_information about the stratification. These tables can be used with the friction law, and with dislocation creep power-law to reproduce the rheological profiles at the 40 locations where such profiles have been computed.

Nature: Tables of results

Contact: Salvatore Barba, INGV-Roma, barba@ingv.it

Availability: INGV, Roma.

Deliverable: National geologic map at 1:100.000 scale modified according to the EC8 soil classes.

Description: A geologic map with soil class differentiation has been elaborated starting from the 1:100.000 Italian geological map (Servizio Geologico Nazionale). Geologic units have been unified in five different classes A, B, C, D, E according to the EuroCode8 provisions, EC8, after Draft 6, January 2003, on the base of the ground acceleration response.

Nature: GIS project, raster and vectorial maps, and database files.

Contact: Marco Moro, INGV-Roma, moro@ingv.it.

Availability: INGV, Roma.

Deliverable: Monograph of investigated recording sites.

Description: Description of the seismic recording site including: geographical information, stratigrafic description, geotechnical and seismological data.

Nature: Power Point presentation.

Contact: Giuliano Milana, INGV-Roma, milana@ingv.it.

Availability: INGV, Roma.

RU3 (OGS-CRS)

Deliverable: Low-cost accelerometric network

Description: Prototype low-cost accelerometric network implemented at Tolmezzo with real-time connection to OGS/CRS and INGV/DPC

Nature: hardware/software system

Contact: Pier Luigi Bragato, OGS/CRS-Udine, pbragato@inogs.it

Availability: seedlink connection over IP

Deliverable: Implementation of ShakeMap for NE Italy

Description: Prototype software system for production of ShakeMaps with data from OGS seismic stations in NE Italy

Nature: software system

Contact: Pier Luigi Bragato, OGS/CRS-Udine, pbragato@inogs.it

Availability: At the reported contact

Deliverable: Implementation of the MT inversion software for NE Italy

Description: Prototype software system for MT inversion with data from OGS seismic stations in NE Italy

Nature: software system

Contact: Pier Luigi Bragato, OGS/CRS-Udine, pbragato@inogs.it

Availability: At the reported contact

Deliverable: Noise recordings at the 1976 accelerometric stations

Description: Noise recordings and HVSRs computed for 9 accelerometric stations that recorded the 1976 Friuli sesmic sequence.

Nature: Data files and technical report in electronic format

Contact: Pier Luigi Bragato, OGS/CRS-Udine, pbragato@inogs.it

Availability: At the reported contact

Deliverable: Code for estimate an optimal site classification, OPTSITECLASS

Description: Code for estimate the contribution of site variability to the overall standard deviation of a ground motion relation.

Nature: Code for Linux system

Contact: Angela Saraò, OGS/CRS-Udine, asarao@inogs.it

Availability: At the reported contact

Deliverable: Structural model of NE Italy

Description: Structural model for different areas in NE Italy used for the computation of the Green functions in MT inversion

Nature: Data files

Contact: Angela Saraò, OGS/CRS-Udine, asarao@inogs.it

Availability: At the reported contact

Deliverable: MT solutions for recent earthquakes in NE Italy

Description: Data file with the main parameters of the MT solutions for recent earthquakes in NE Italy.

Nature: Data file

Contact: Angela Saraò, OGS/CRS-Udine, asarao@inogs.it

Availability: At the reported contact

RU4 (University of Genova)

Deliverable: Automatic evaluation of moment magnitudes.

Description: Automatic code for the calculation of Mw in the Western Alps and Northern Apennines.

Nature: Codes.

Contact: Paola Morasca, Dip.Te.Ris.-Genova, alpocc@dipteris.unige.it

Availability: At the reported contact.

Deliverable: Energy-moment scaling in the Western Alps and Northern Apennines.

Description: Based on coda waves calibration study, we derived a relationship between radiated energy and seismic moment for two regions: Western Alps and Northern Apennines.

Nature: Energy-moment relationship.

Contact: Paola Morasca, Dip.Te.Ris.-Genova, alpocc@dipteris.unige.it

Availability: At the reported contact.

Deliverable: Synthetic coda envelope parameters, frequency-dependent path and site correction parameters calibrated for coda waves in the Western Alps and Northern Apennines.

Description: Coda waves calibration studies yielded synthetic coda envelope parameters and a set of path and site correction parameters to be applied on coda waves to estimate stable seismic source parameters for the Western Alps and Northern Apennines

Nature: Synthetic coda envelope parameters and frequency-dependent path and site correction tables.

Contact: Paola Morasca, Dip.Te.Ris.-Genova, alpocc@dipteris.unige.it

Availability: At the reported contact.

Deliverable: M_W and E_R estimates for 1283 earthquakes occurred in the Western Alps and Northern Apennines.

Description: Based on the coda waves calibration studies in the Western Alps and Northern Apennines, we derived stable source spectra and hence source parameters such as E_R and M_W for 1283 earthquakes.

Nature: Tables of source parameters for 1283 earthquakes.

Contact: Paola Morasca, Dip.Te.Ris.-Genova, alpocc@dipteris.unige.it

Availability: At the reported contact.

Deliverable: 1D and 3D crustal models in North - Western Italy

Description: Study on the mono dimensional and three dimensional seismic velocity structure of the north – western part of Italy based on a selected and reliable dataset of earthquake locations and P and S phase arrival times.

Nature: Data and publications

Contact: Davide Scafidi, Dip.Te.Ris. - Università di Genova, scafidi@dipteris.unige.it

Availability: At the reported contact

RU 5 (University of Trieste)

Deliverable: Integrated shake map system for Antelope users.

Description: Integrated software for event location, parameters extraction and real-time shake map computation running on Antelope system.

Nature: Integrated software

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

Deliverable: Prototype of Matlab code for the real time Mw computation

Description: Matlab code for the calculation moment magnitude Mw computation using real-time data (antelope system).

Nature: Code for Antelope (BRTT)-Matlab system

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

Deliverable: Datascope RAF strong motion database (1993-2006).

Description: Strong motion database of the Friuli Venezia Giulia Accelerometric Network.

Nature: Digital data

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

Deliverable: Attenuation relationships (PGA, PGV, PGD, PSA Arias, Housner) for the Alps Dinarides contact and for North Italy.

Description: RAF strong motion database, ISESD strong motion database, RSNI, INGV-CNT, INGV-MI, ARSO, SDS-net etc. have been used to obtain attenuation relationships (PGA, PGV, PGD, PSA Arias, Housner) for the Alps Dinarides contact and for North Italy

Nature: Reaserch pubblications

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

Deliverable: Prototype of shake map WEB site.

Description: WEB site prototype for the shake map publication.

Nature: WEB site

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

Deliverable: Accelerometric stations site monographies.

Description: Site monographies and EUROCODE classification for the RAF stations.

Nature: Reports

Contact: Costa Giovanni, DST Univ. Trieste, costa@units.it

Availability: at the Dip. Scienze della Terra, University of Trieste (DST)

RU6 (University of Rome – Pierdicca)

Deliverable: Method to generate “Potential damage snapshot” product from Earth observation data

Description: Prompt overview of potentially damaged area (only qualitative) (application procuct)

Nature: Procedure description by flow chart and/or pseudo code

Contact: Nazzareno Pierdicca, Dept. Electronic Engineering - Sapienza University of Rome, nazzareno.pierdicca@uniroma1.it

Availability: At the reported contact

Deliverable: Method to generate “Damage level at district scale” product from Earth observation data

Description: Damage level (i.e., collapse ratio) estimated on homogeneous urban areas (application product)

Nature: Procedure description by flow chart and/or pseudo code

Contact: Nazzareno Pierdicca, Dept. Electronic Engineering - Sapienza University of Rome, nazzareno.pierdicca@uniroma1.it

Availability: At the reported contact

Deliverable: Method to generate “Collapsed/heavy damaged buildings” product from Earth observation data

Description: Identification of single buildings collapsed or heavily damaged from very-high resolution images (application product)

Nature: Procedure description by flow chart and/or pseudo code

Contact: Nazzareno Pierdicca, Dept. Electronic Engineering - Sapienza University of Rome, nazzareno.pierdicca@uniroma1.it

Availability: At the reported contact

Deliverable: InSAR coherence model in urban areas

Description: Empirical low relating the Interferometric SAR coherence to spatial baseline, temporal baseline and azimuth difference between satellite tracks (research product)

Nature: Regressive low coefficient

Contact: Nazzareno Pierdicca, Dept. Electronic Engineering - Sapienza University of Rome, nazzareno.pierdicca@uniroma1.it

Availability: At the reported contact

RU 7 (University of Rome, Cardarelli)

Deliverable: training of UR7 about equipment device source SBS42 and SBS66

Description: meeting and short course in the manufacturing industry of the sparker source SBS42 and SBS66

Nature: operative ability to use the equipment in the field survey.

Contact: Prof. Ettore Cardarelli, "Sapienza" l'Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: test and upgrading of the device source SBS66.

Description: test in Valmontone site, planning and construction of waterproof case of compass_senso of the device source SBS66.

Nature: improved unit compass_sensor

Contact: Prof. Ettore Cardarelli, "Sapienza" l'Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: records of P and S waves in Valmontone site (RM)

Description: tomography map of P waves and S waves log

Nature: digital files of records and results

Contact: Prof. Ettore Cardarelli, "Sapienza" l'Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: records of P and S waves in Barisciano site (AQ)

Description: tomography map of P waves and S waves log

Nature: digital files of records and results

Contact: Prof. Ettore Cardarelli, “Sapienza” l’Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: records of P and S waves in Castelli site (TE)

Description: tomography map of P waves and S waves log

Nature: digital files of records and results

Contact: Prof. Ettore Cardarelli, “Sapienza” l’Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: records of P and S waves in Gubbio (PG) site 1 and site 2

Description: P and S waves log

Nature: digital files of records and results

Contact: Prof. Ettore Cardarelli, “Sapienza” l’Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma

Deliverable: records of P and S waves in Valle dell’Aterno site (AQ)

Description: tomography map of P waves and S waves log

Nature: digital files of records and results

Contact: Prof. Ettore Cardarelli, “Sapienza” l’Università di Roma, ettore.cardarelli@uniroma1.it

Availability: at Dept. ITS, via Eudossiana, 18 – 00184 Roma
