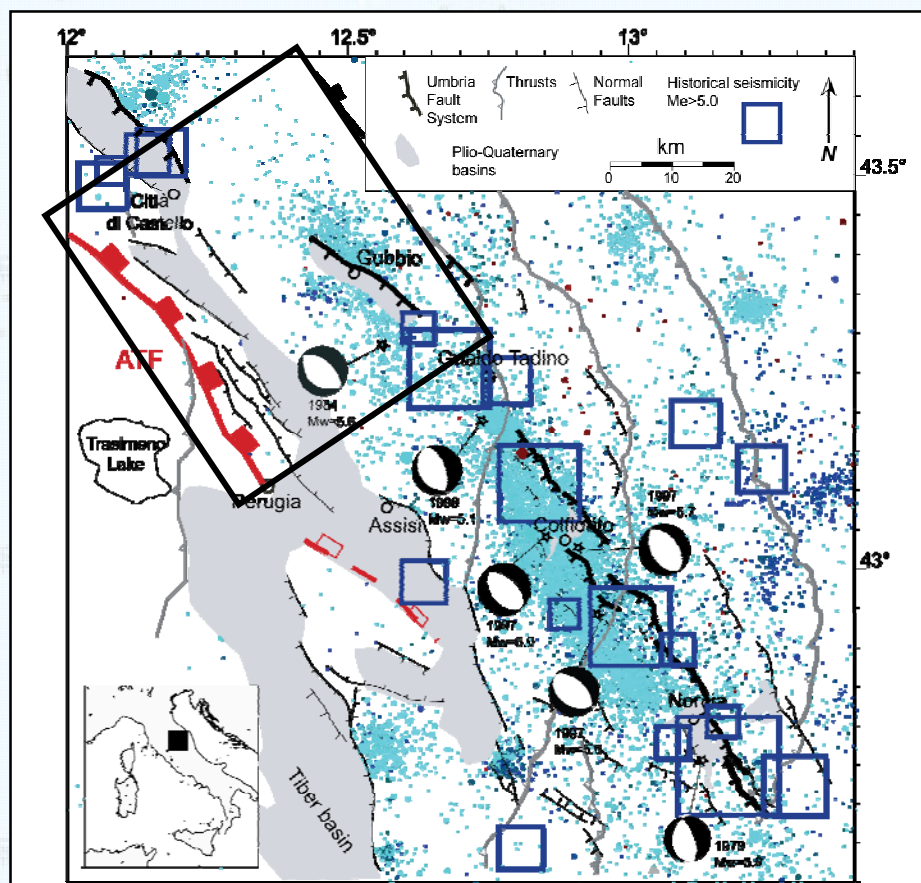
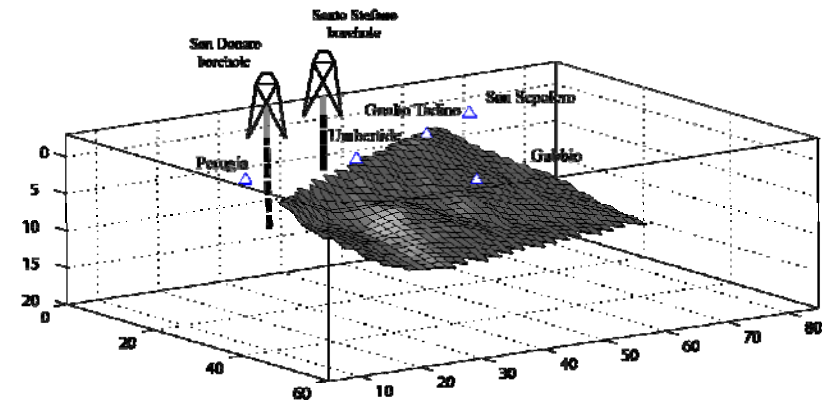
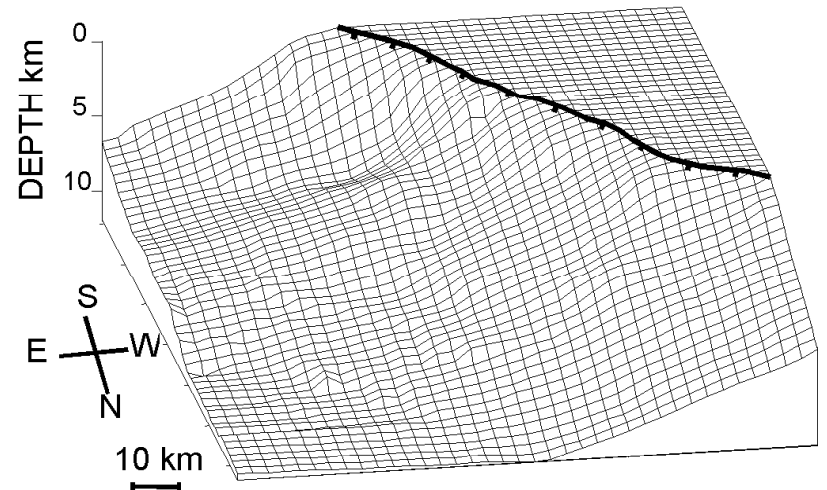
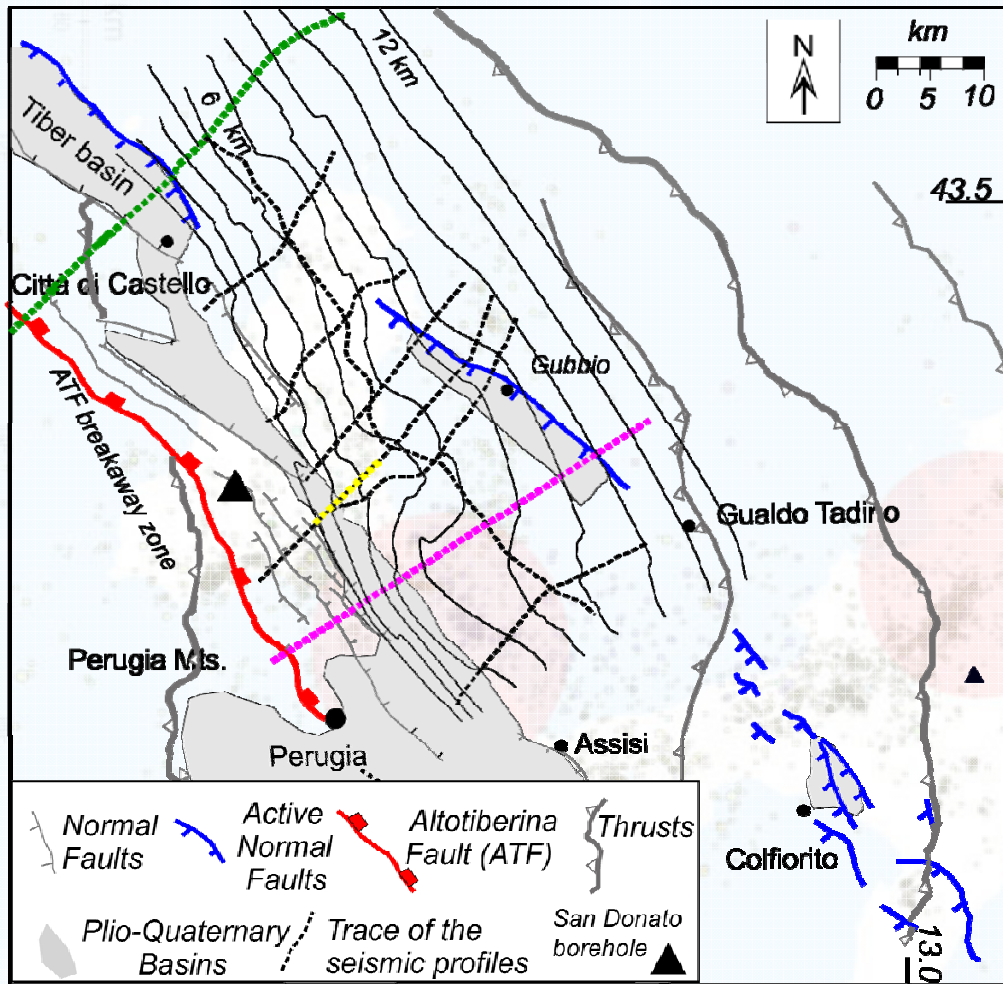


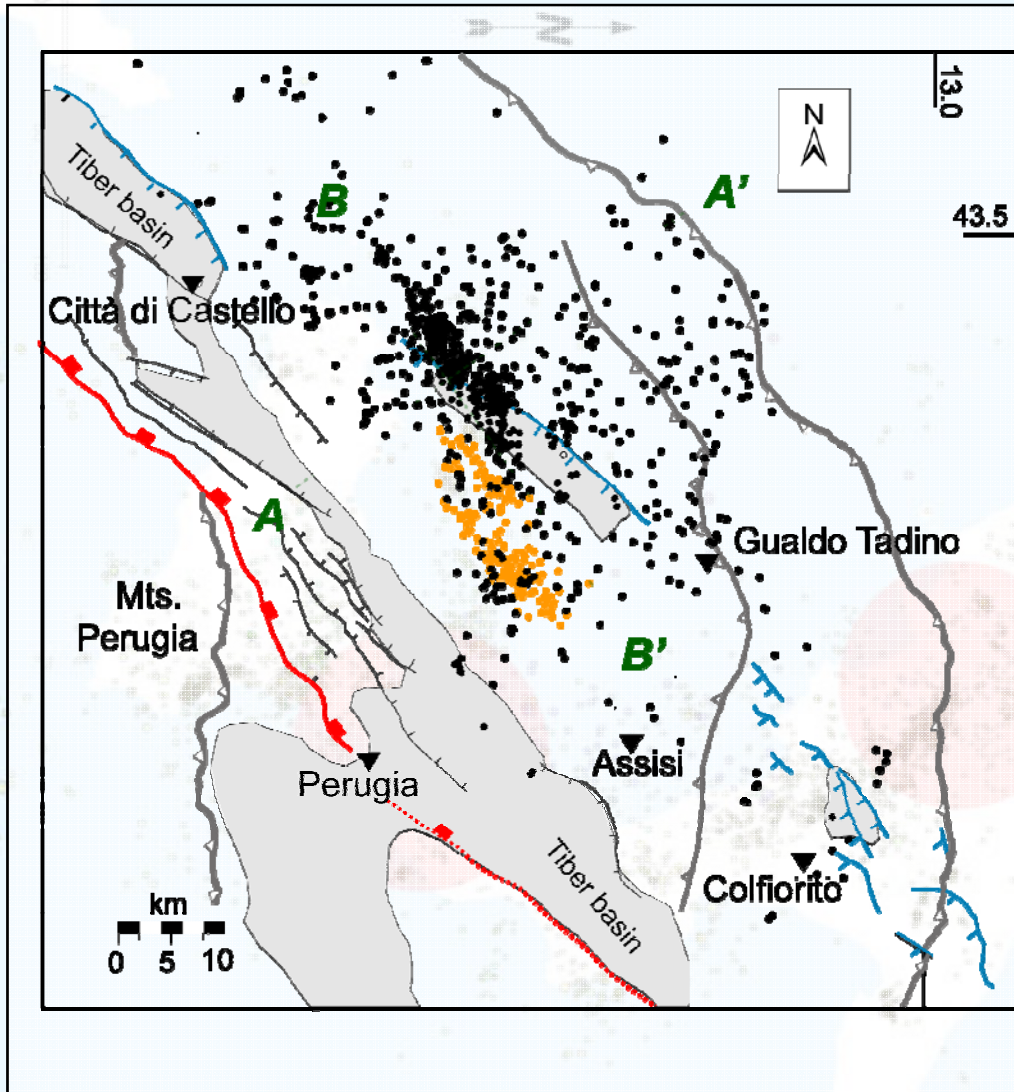
## Test Site 'Faglia Alto Tiberina (ATF)'

- A contribution to the development and functionality of a high density geodetic/seismological network (including borehole observations) to understand physical processes governing the earthquake generation on LANFs.
- Refinement of the fault system geometry through the re-interpretation of commercial seismic sections and definition of the recent (Plio-Quaternary) geological evolution of the Tiber valley from Perugia to Città di Castello providing a new cartography.

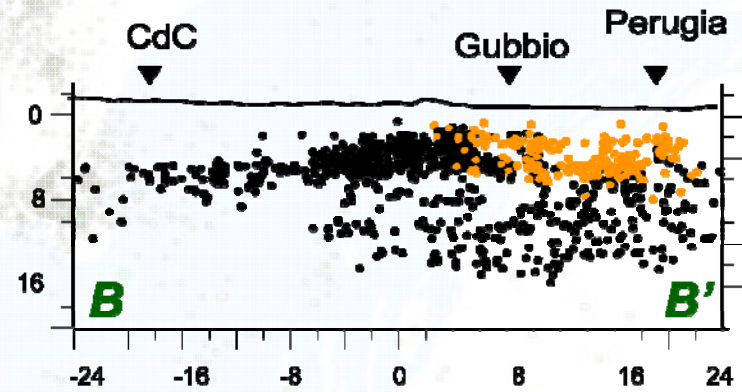
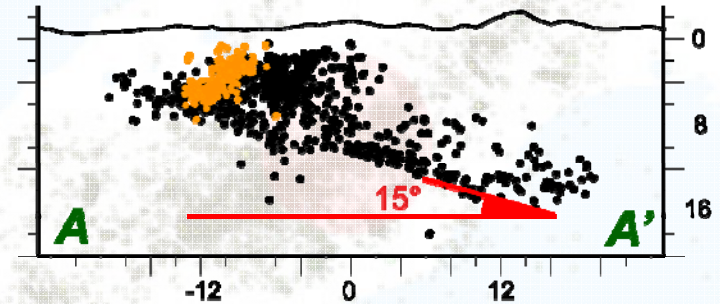




Fluid overpressure ( $\text{CO}_2$ ) at 85% of the lithostatic load below the fault zone, within the Trassic Evaporites



ATF possesses a dimension (60x20 km) able to generate a  $M > 7$  eqk.



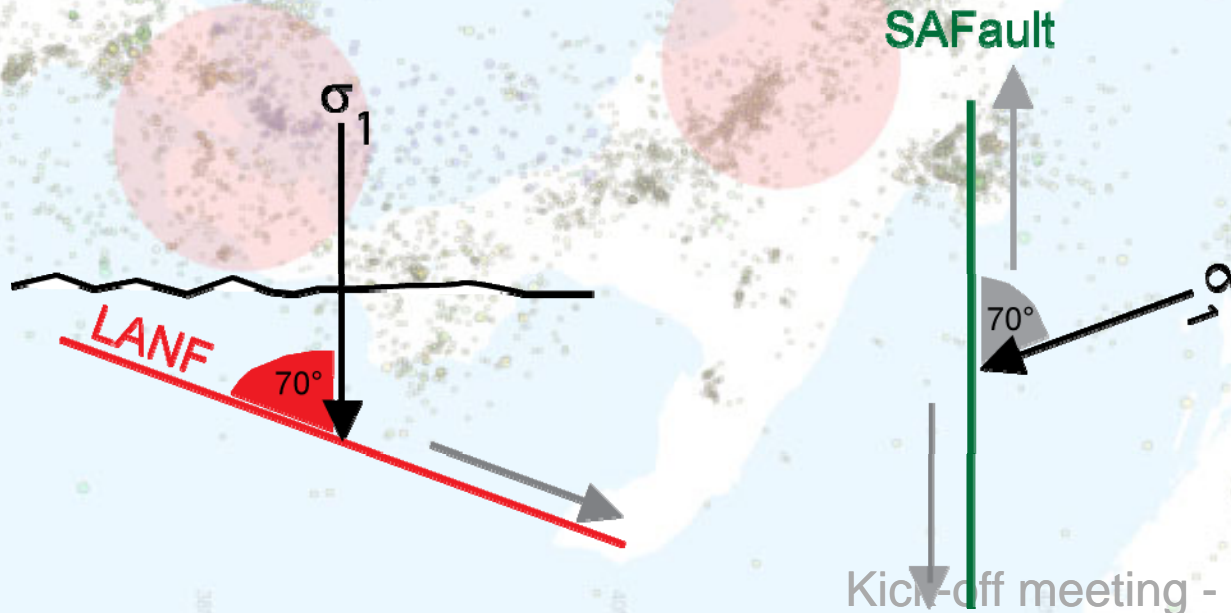
Within a tectonic context characterised by vertical  $\sigma_1$  and faults possessing Byerlee's friction coefficients ( $\mu_s > 0.6$ ):

Can eqks nucleate on **LANF** (dip  $< 30^\circ$ )?

Can **LANF** accommodate extension of continental crust?

Extensional environment, faults dipping less than  $30^\circ$ : these faults are severely misoriented for reactivation.

The San Andreas as an example of a severely misoriented fault (e.g. Townend & Zoback, GRL, 04).

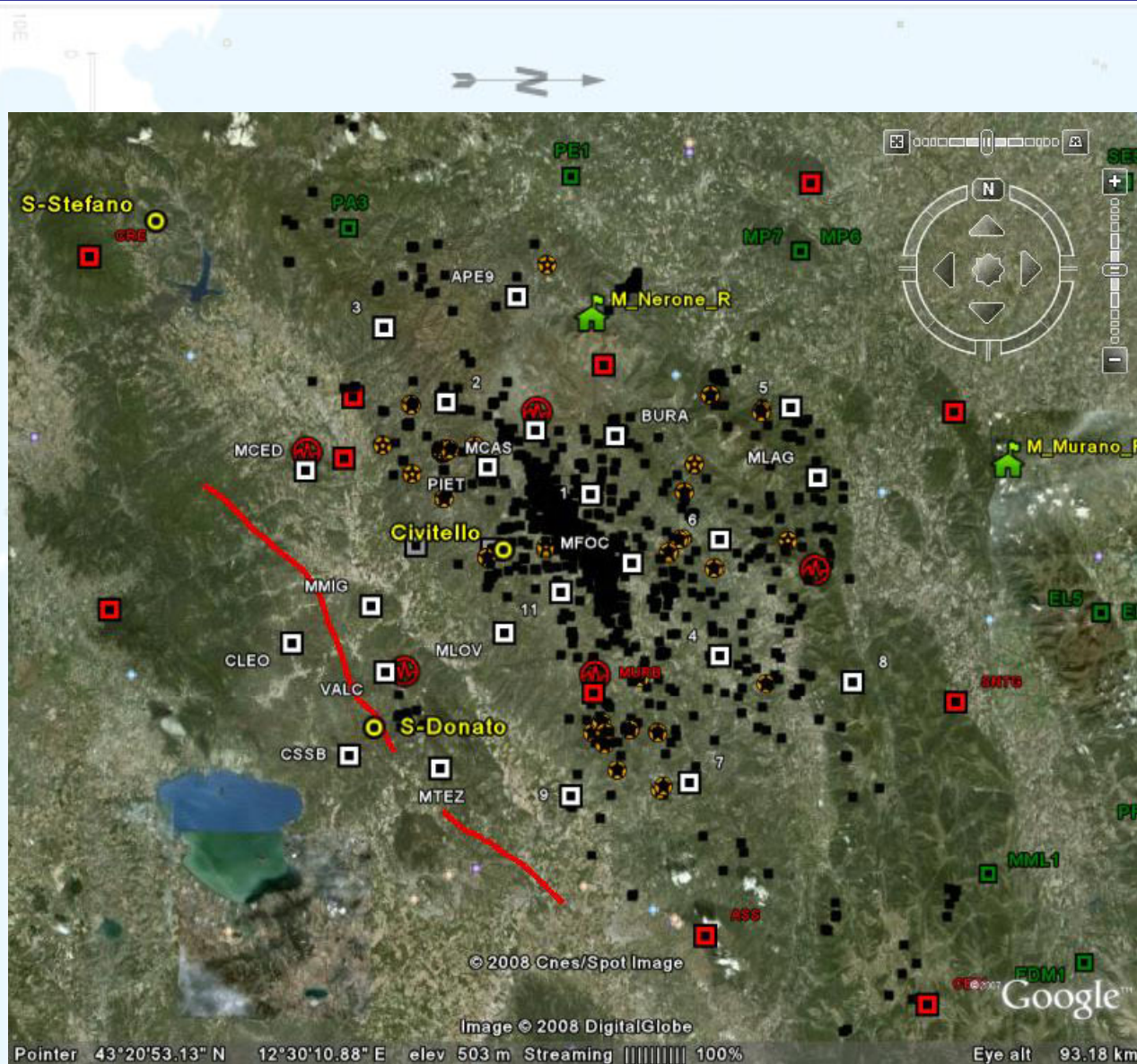


- In the area a very dense seismic network is under-construction (**AIRPLANE project** financed by MIUR), consisting of 20 **seismic** stations with an average spacing between stations of 6-8 km. In addition 3 boreholes (200m deep) equipped with three component seismometers will be deployed. The resolution of the geodetic observation will be improved by adding 7 continuous **GPS stations** to integrate the existing network. Through this project we will monitor the seismicity and active deformation in the southern part of the ATF for a minimum of five years.
- Capitalizing on this monitoring network, the **S5 project**, will focus on performing a series of multidisciplinary studies: geological seismological and geodetic. These will have the duty to **complement and integrate the AIRPLANE project in terms of produced dataset, approach and knowledge.**
- The experience gained through this two year project, with the developed software and technological facilities, will establish a **methodology to produce first order information** to share with the other groups investigating different tectonic areas.

S<sub>5</sub>

DPC 2007-2009

High-resolution multi-disciplinary monitoring of active fault test-site areas in Italy



**AN INTEGRATED  
GEODETIC AND  
SEISMIC NETWORK  
WITH REAL TIME  
CONNECTION FROM  
THE STUDY AREA TO  
ROME**

Kick-off meeting - Rome, 4 July 2008

## Progetto S5: Test Site “Faglia Altotiberina”

UR1 – Istituto Nazionale Geofisica e Vulcanologia  
Responsible: *Lauro Chiaraluce* (INGV-CNT)

### WP1.1 *Raffaele Di Stefano*, CNT-INGV

Automated seismic data analysis

### WP1.2 *Luigi Improta*, RM1-INGV

Imaging the shallower portion of the Tiber basin to optimize the installation of borehole seismic sensors

### WP1.3 *Nicola D’Agostino*, RM1-INGV

Velocity and strain rate fields across the fault from integration of regional GPS networks

UR2 – Istituto Nazionale Geofisica e Vulcanologia  
Responsible: *M. R. Barchi* (Univ. Di Perugia)

### WP1.4 *Francesco Mirabella*, Università’ di Perugia

*Upper crustal structure and tectonic evolution of ATF*

### WP1.5 *Massimiliano R. Barchi*, Università’ di Perugia

*Quaternary tectonics of the ATF region*

Deliverables of S5 project which have immediate impact and relevance for the Civil Protection Department (DPC) are :

- The **seismic and geodetic** networks deployed in this test site are **permanent infrastructures** which will improve the monitoring capacity of the Umbria-Marche region together with the developed and improved tools (softwares) for managing high flux of real time data
- The studies finalized for borehole installations are important for the integration of **borehole seismometers** inside the Italian National Seismic Network.
- The refined geological and geophysical studies performed in this test site will help in to better define the **earthquake generation potential of ATF**, a large active fault located in a densely populated area



## People

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- *Thomas Braun*
- *Pasquale De Gori*
- *Aladino Govoni*
- *Giancarlo Monachesi*
- *Alfonso Mandiello*
- *Marina Pastori*
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- *Elisi Tinti*

- **Wp2 - Luigi Improta**
- *Pier Paolo Bruno*
- *Marco Cattaneo*
- *Maria Grazia Ciaccio*
- *Dario De Rosa*
- *Paola Montone*
- *Simona Pierdominici*
- *Francesco Varriale*
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- *Luisa Valoroso*
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- **wp3 - Nicola D'Agostino**
- *Antonio Avallone*
- *Daniele Cheloni*
- *Elisabetta D'Anastasio*
- *Sergio Mantenuto*

- **wp4 - Francesco Mirabella**
- *Andrea Lupattelli*
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- *Cristiano Collettini*

- **wp53 - Massimiliano R. Barchi**
- *Laura Saccucci*
- *Francesco Mirabella*
- *Stefano Pucci*