Field Trip Workshop
"The Dead Sea Rift as natural laboratory for earthquake behaviour: prehistorical, historical and recent seismicity" (15^{th}-23^{rd} February, 2009)

INQUA TERPRO – Commission on Terrestrial Processes Deposits, and History

Focus Area on Paleoseismology and Active Tectonics

MINUTE OF THE 2nd BUSINESS MEETING

Dead Sea Rift, Israel, 22nd February 2009

Agenda

1) INQUA #0811 2008-09 PROJECT AND PROPOSAL FOR 2009

2) THE EEE CATALOGUE

- THE WORK PLAN FOR 2009
- THE NEW INFRASTRUCTURE (IN PROGRESS)
- STRATEGIES FOR THE IMPLEMENTATION

3) THE COLLABORATION TO THE GEO INITIATIVE

4) NEXT MEETINGS AND 2010 ACTIVITIES

List of Participants: (37 people from 12 countries)
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PREFACE

The 2nd Business Meeting of the INQUA TERPRO Focus Area on Paleoseismology and Active Tectonics was held on 22nd February in the frame of the 8 days-long Field Trip Workshop along the Dead Sea Rift organized by the Geological Survey of Israel in collaboration with the University of Tel Aviv and the Hebrew University.
The itinerary crossed the Israeli and Jordan sector of the Dead Sea Rift from Northern Galilee (Hula Valley) to the Red Sea (Aqaba and Eilat).
The entire Field Trip Workshop has been an extraordinary opportunity for field discussion with specific emphasis on the study of coseismic environmental effects and on the application of the ESI 2007 intensity scale. In the Appendix we report on the points discussed during the Final Meeting held on February 23rd.

1) INQUA #0811 2008-09 PROJECT AND PROPOSAL FOR 2009

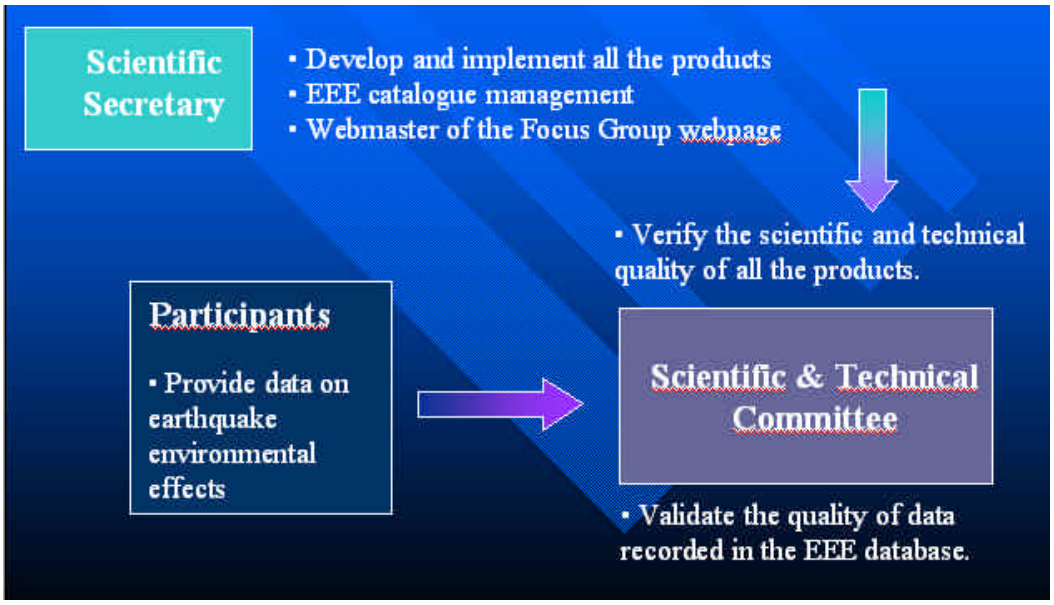
OKUMURA, INQUA Vice President, introduces the meeting. He reminds that the results of the activities have to be finalized in time for the XVIII INQUA Congress, which will be held in Switzerland in August 2011. As a preliminary informal communication, the INQUA Executive Committee has approved the report of the 2008 activities and the proposal for 2009, and a letter will be officially sent in the next weeks to the FG.
MICHETTI reports that the suggestions from the Executive Committe will be carefully taken into account; the III Business Meeting of the Focus Group, that will be held in Baelo Claudia in September (see below, point 4), will be specifically devoted to discuss the new activities for 2010 – 2011.

2) THE EEE CATALOGUE

GUERRIERI summarizes the basic knowledge on the EEE catalogue:

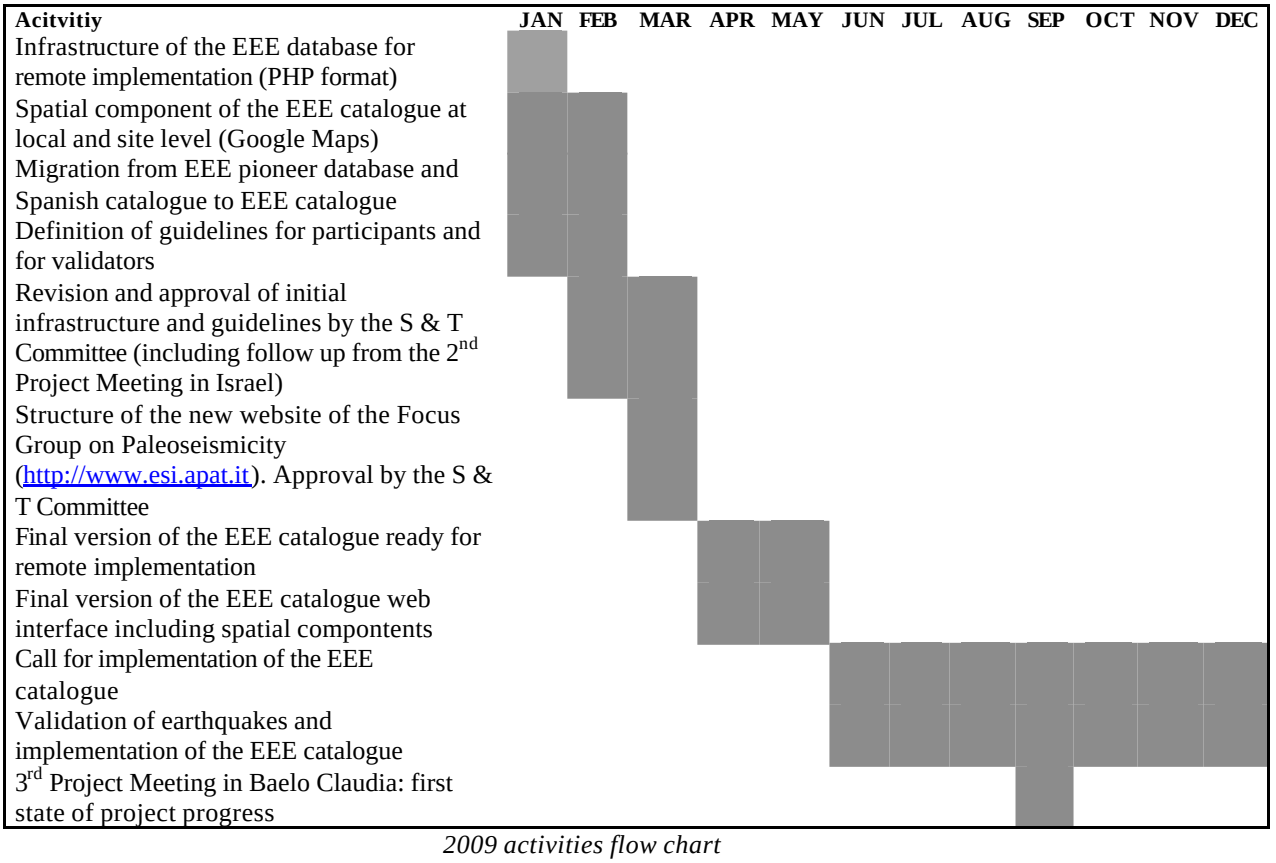
- It will be a catalogue of Earthquake Environmental Effects (EEE) compiled at global level.
- It will be structured similarly to traditional seismic catalogues, in three different levels of detail (earthquake, locality, site).
- It will be designed to collect data on recent, historical and paleo earthquakes. In this way, it will bridge the gap among different earthquake data sources and allow a unique and comparable intensity assessment through the ESI intensity scale.
- Participants will voluntarily contribute to the catalogue compiling the EEE database through a web interface for remote implementation.
- Data will be validated by members of the Scientific & Technical Committee and then published in the EEE catalogue by the Scientific Secretary.

The implementation of the EEE catalogue will be coordinated (see below) by a Scientific Secretary located at the Italian Geological Survey (ISPRA) in charge to develop and implement all the products, to manage the records of the EEE catalogue, and to update the Focus Group web page.
A Scientific and Technical Committee will verify the quality of the products and will validate the quality of data on environmental effects provided by the participants.



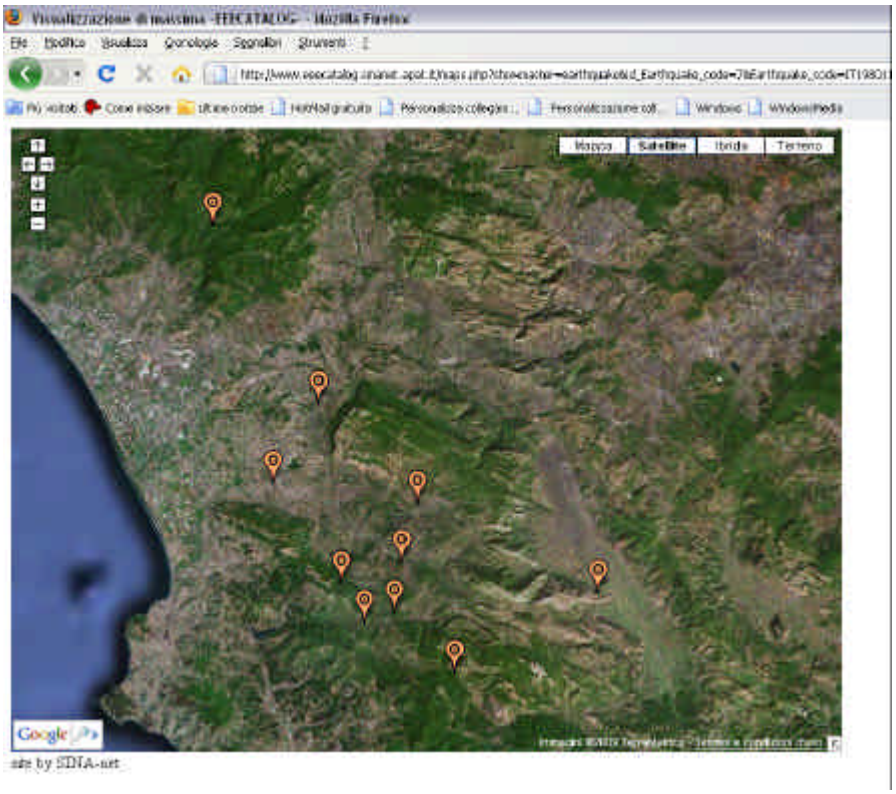
Strategy for the implementation of the EEE Catalogue

Concerning 2009 activities, the following flow chart is discussed and approved.



2009 activities flow chart

The Scientific Secretary Several will conduct several preliminary activities aimed at finalizing the EEE catalogue infrastructure **by June 2009.**
Particular attention will be paid to the development of the spatial component of the catalogue, and to the elaboration of guidelines.
The second part of the year will be focused on the implementation, validation and publication of EEE data.



The spatial component of the EEE catalogue will be based on the Google Maps platform

3) THE COLLABORATION TO THE GEO INITIATIVE

The Group on Earth Observations (GEO, www.earthobservations.org) is a voluntary partnership of governments and international organizations with the aim to build the Global Earth Observation System of Systems (GEOSS).

The purpose of GEOSS is to achieve comprehensive, coordinated and sustained observations of the Earth system, in order to improve monitoring of the state of the Earth, increase understanding of Earth processes, and enhance prediction of the behaviour of the Earth system.
The GEO initiative was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 leading industrialized countries.
As of November 2008, GEO's Members include 76 Governments and the European Commission. In addition, 56 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations.
During the 5th GEO Plenary Session held in Bucarest in the period 18-20 November, the Italian delegation recommended to include the EEE in the 2009-2011 GEO Work-Plan as a subtask into the Task "Systematic Monitoring for Geohazards Risk Assessment" (DI-09- 01).
In fact, the catalogue of earthquake environmental effects is a very effective tool for in situ validation for global seismic hazard maps. Moreover, it fits very well with requirements of GEO since it will be prepared at global level, and it provides a social benefit in the area Disasters as an "information product that enable planning and mitigation" (GEOSS 10-Year IP), as it is expected to become a key tool for seismic hazard assessment especially in sparsely populated areas.

On the other side, the INQUA 0811 project will also strongly benefit from the GEO initiative: the linkage of the catalogue into the GEOSS is expected to strongly stimulate all participants to provide data on earthquake environmental effects which will significantly contribute to the implementation of the catalogue.
A first presentation of the contribution of the INQUA 0811 project to the GEO Community will be the upcoming 33rd International Symposium on the Remote Sensing of Environment (Stresa, 4-8 May 2009).

4) NEXT MEETINGS AND 2010 ACTIVITIES

- **3rd Project Meeting: "Workshop on Earthquake Archaeology and Paleoseismology" Baelo Claudia, Spain, 7th-14th September 2009.**
Leaders: Pablo Silva Barroso & Klaus Reicherter

The Workshop will be organized by the INQUA Spanish Regional Working Group (AEQUA) and the RWTH Aachen University under the INQUA Focus Group on Paleoseismology umbrella, and in collaboration with the IGCP project 567. The workshop will include the guided visit to the Roman ruins of the Baelo Claudia town, and one-day field trip on the active tectonics/paleoseismicity around the Gibraltar Strait area, as well as a complementary field-training course (2 ½ days) on Archaeoseismology.

First Announcment of the Baelo Claudia Workshop

Appendix

Dead Sea Workshop 2009
Final discussion, Jerusalem, February 23rd

Notes by Christoph Gruetzner and Nadine Hoffman

Steve Wesnousky
- Rivka Amit et al. have organized a spectacular week in Israel
- could compare his working area (San Andreas, Walker Lane) to the Dead Sea transform
- San Andreas is a more simple system, Walker lane has greater offset than DST, they show completely different patterns, different evolution and geometry
- DST is a very good study site for the relations between displacement and faults
- very interesting to see what faults look like in different settings and under different boundary conditions

Klaus Hinzen
- focus on engineering aspects of earthquakes
- sees two main points:

1. source, medium, instrument:
   We know nothing about source and paths of the earthquake in Archeo-/Paleoseismology, and only little about the "recording instrument"
   Therefore first interpret instrument, then the medium, then the source
2. PGA
   It's almost impossible to use PGA as a characteristic number for Paleo-/Archeoseismology.
   It is not enough to concentrate on PGA, as the REAL ground motion is very complicated and a high PGA does not necessarily lead to severe damage, there might also be high amplitude but low PGA, for example.
   We need a 3D-vector and time information to draw conclusions, not PGAs.
   PGA is mainly interesting for engineers, as they have to compute max. forces.
   It is very hard to interpret accelerogramms.

Manuel Sintubin
- we have seen "On-fault sites" and "Off-fault sites"

"On-fault sites" like Ataret, Aqaba:
- offer displacement and time information
- Those are only piercing points, but we have to look for more of them
- we know fault kinematics and slip rate
- Still the question is: Primary or secondary effects? Timing?
- We have to avoid the "Trap ocatalogues".

"Off-fault sites" like Susita, Nimrod, Petra:
- there is historical evidence
- we have archeological evidence vs. site effects
- therefore we need the expertise of Archeologists and Historians (like Kate)
- try to understand damage typologies: modelling of columns etc.

What do we expect from Archeoseismology? Improving the catalogues or buils "archeoscopes", "seismograms"?
- we do not have an unique pattern: Flagstones, Columns etc.

There is a new ESF Research Networking Programme called QUAKE.

Interesting point are also: ancient anti-seismic design (Kim)
- random or engineered? Or just "Survival of the fittest" from past earthquake observations?

- Earthquakes and History: always apocalyptic? Tipping point or opportunity?

Maryline LeBeon
- DSW was a good opportunity to experience science, to see, what you read in the papers
- we got to know about a lot of different things: Slip-rates, archaeology, rockfalls, seismites etc.
- a lot of indirect records have been shown, but we need more direct records
- we should put more attention on the question which segment of a certain fault had ruptured to achieve more information on archeoseismology and the fault itself

Additional comments
Rivka Amit:
- need to relate Paleoseismology to Archeoseismology
- that is why we had this workshop, e.g. Susita
- we want to tie all information accessible
- many thanks to all the co-organizers and for the possibility to bring all the people together

Susan Hough:
- we have to take out recent measurements and then use them to look in the past

Alessandro Michetti:
- got to the site, do what you can and gain data