

## Report on research activity at ERI

**Dr. Eleonora Rivalta**

### Seminars

During my stay I hold two seminars, one for the Volcano Physics seminar series, on 10/22/2013, with title: *“Dike-fault interaction: implications for crustal deformation and moment tensor inversions and application to the 2000 intrusion at Miyakejima”*, and one for the department, on 10/25/2013, with title: *“The ascent of magma-filled dykes in rifts: a numerical model for off-rift volcanism”*

### Scientific Discussions/Collaborations

#### Prof. Yosuke Aoki:

We discussed extensively the work of two post-doctoral researchers in my “Magma propagation” research group at GFZ, of which Prof. Aoki is a coauthor.

- The first paper is: *“A statistical analysis of the focal mechanisms for the earthquakes induced by the 2000 dike intrusion at Miyakejima”*, by Luigi Passarelli, Eleonora Rivalta, Simone Cesca, Yosuke Aoki. The paper is currently in preparation, we plan to submit it to the special issue on J. Geophys. Res. “” of which Prof. Aoki is an editor.

- The second paper is: *“A mechanical model for the June 2000 Miyakejima magmatic intrusion”*, by Francesco Maccaferri, Gwyneth Hughes, Yosuke Aoki, Paul Segall, Eleonora Rivalta. The paper is currently in preparation, we plan to submit it to the special issue on J. Geophys. Res. “” of which Prof. Aoki is an editor.

#### Prof. Atsuko Namiki, Dept. of Earth and Planetary Science, University of Tokyo:

We discussed her projects regarding analog experiments on volcanism and faulting. We also started planning a visit by Namiki-san to GFZ in summer 2014.

#### Mr. Ryotaro Matsuyama:

We discussed his current Master work on the 2000 magma intrusion at Miyakejima

#### Dr. Shiro Hirano (former graduate student at ERI, currently post-doc at Tsukuba), with Prof. N Kame:

We discussed our reciprocal work on Elastic dislocations in layered media.

#### Mr. Kohtaro Araragi:

We discussed his current work on anisotropy at Mt. Fuji

#### Ms. Aika Kurokawa:

We discussed her Master work on magma rheology and her current PhD work on Izu Oshima.

#### Prof. Takehiro Koyaguchi:

We briefly discussed his work on Shinmoe-dake eruption and my work on the shape of magma chambers and magma compressibility.

#### Dr. Marco Brenna:

We discussed extensively the propagation of magma in the crust with application to monogenetic volcanic fields.

### Modelling, paper writing

During office time, I worked on:

- Preparing my talks,

- Progressing on a review paper on Numerical modelling of dike propagation by Eleonora Rivalta, Benoit Taisne, Andrew Bungler, Richard Katz (with input from Atsuko Namiki, Marco Brenna, Yosuke Aoki).
- Working on a numerical modelling software to model the expected focal mechanisms for earthquakes induced by a 3D static vertical penny-shaped dike. This will be incorporated in the paper by Francesco Maccaferri, to which Prof. Aoki is collaborating.

**Additional discussions:**

iI visited Prof. Yo Fukushima in Kyoto. We discussed his work on fault creeping in the Philippines and New Zealand and my work on slow earthquakes in the Tjornes Fracture Zone in North Iceland.