

Foreword

The Alliance of Laboratories in Europe for Research and Technology (ALERT¹) "Geomaterials" was created in 1989 as a pioneering (at the time!) effort to develop a European school of thought in the Mechanics of Geomaterials. The generic name "Geomaterials" is viewed as gathering together materials whose mechanical behaviour depends on the pressure level, which can be dilatant under shearing and which are multiphase because of their porous structure. Therefore, the "geomaterials" label brings together concrete, soils and rocks.

ALERT now includes 20 European Universities of Organisations, which are the most active in the field of numerical modelling of geomaterials and geostructures.

The main areas of interest of ALERT are the following:

- micromechanics and constitutive modelling for geomaterials engineering;
- failure, strain localisation and instabilities;
- large scale computations for geomaterials and geostructures;
- integrity of geostructures and inverse analysis in geomechanics;
- environmental geomechanics and durability of geomaterials.

Since the creation of ALERT by Roberto Nova, Manuel Pastor, Ian Smith, Peter Vermeer, Oleg Zienkiewicz and Felix Darve, and in parallel with the necessity of coordinated research on a European level, it was obvious for all of us that there was a crucial need for a joint Graduate School in order to build firmly this European scientific group in the Mechanics of Geomaterials, in close link with the students.

Thus we have organized each year in October a 3-day workshop followed by a 3-day graduate school in the CNRS Paul Langevin Centre (Aussois, France).

In 2002, session 1 of the Workshop was devoted to "Geomechanics for Natural Hazards". The numerical modelling of natural hazards is presently a very active domain from a scientific point of view and it also corresponds to obvious significant socioeconomic issues. The coordinators of this session (Professor Laurent Vulliet from EPFL in Lausanne, and Professor Cino Viggiani from the University J. Fourier in Grenoble) were asked to pursue the series of special issues of the *Rivista Italiana di Geotecnica*, following the previous issue (3/03) on "Mechanics and Physics of Granular Materials". This previous edition was rather theoretically oriented so it was decided, in agreement with the Chief Editor Professor Roberto Nova, to present papers oriented towards practical applications in this second "ALERT" Special Issue.

You will discover herein some new views about the analysis and modelling of natural hazards!

Thank you warmly to Laurent Vulliet, Cino Viggiani, Roberto Nova and to all the authors!

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¹ <http://alert.epfl.ch>