



ALERT Geomaterials

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<http://alertgeomaterials.com>

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Impressions of Aussois
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competition 2012

EDITORIAL

Dear ALERT member,

our short and informal Newsletter, published in springtime, has always represented in my mind a sort of annual “opening ceremony”, after the big event of the Aussois meeting and the subsequent (resting?) winter period. It is then my pleasure to welcome you in this new ALERT Geomaterials year!!

As usual, many activities will be proposed during this year, and you will find hereafter all the detailed information. This witnesses the high vitality of our association, and the hard work of the organizers during the winter: many thanks to all the organizers for their effort!

As you may have noticed, this is my first Editorial. In the past month of February, there was in fact a small change within the ALERT Bureau. Due to his new position in the Faculty of Civil Engineering in Dresden, Prof. Ivo Herle asked me to manage the current affairs of the association, as ALERT Director, for the remaining duration of the current mandate of the Bureau. I congratulate Ivo for his new high responsibility, and I thank him for the hard work he did in these years and for the important contribu-

tion he accepted to still give to ALERT as Vice-Director for Administration.

I would even take advantage from this my first Editorial to invite all of you to enrich this newsletter: all contributions for the next issues are welcome!

During the last meeting held in Aussois last October, the Board of Directors accepted the application of Lund University as new ALERT member. On behalf of the whole association, I sincerely welcome the colleagues from Lund, encouraging more and more fruitful exchanges and collaborations with the members of the ALERT community at any level: personal, scientific, didactic.

I am strongly convinced that this is one of the most important values that our association may be proud of, and that must be kept and developed over the years: the strong willing of freely sharing, exchanging and developing knowledge. This is even our only possible (but strong!) answer to the uncertainties of our times.

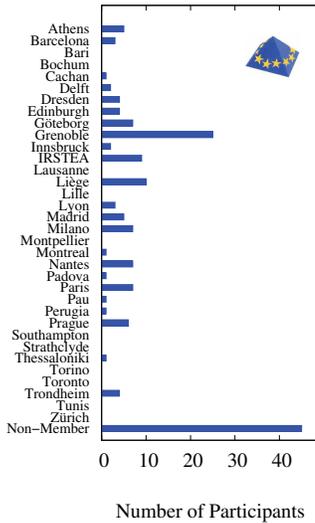
Happy new “ALERT” year to all of you!!

Yours sincerely,

Andrea Galli
Director of ALERT Geomaterials



ALERT Workshop 2015



In 2015 the annual ALERT Workshop was held from Monday, 28th until Wednesday, 30th September again in Aussois, France. The regional distribution of the participants from the institutional members of ALERT Geomaterials is shown on the left hand side. In total, 161 participants registered for the ALERT workshop 2015.

As it was introduced in 2013, the session on Tuesday lasted only half a day allowing the Board of Directors meeting, the PhD-prize ceremony and the Special lecture to be held in the afternoon.

The three topics of the ALERT Workshop 2015 are listed below:

1 From discrete methods to continuum methods: Applications, Problems and Solutions

coord. Y. Dafalias, L. Sibille & E. Andò

2 How should we teach geomechanics?

coord. G. Viggiani & I. Herle

3 Fracturing and fractured reservoirs

coord. E. Papamichos, H. Lewis & G. Couples

We thank all active participants and coordinators for their effort.

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Participants of the ALERT Workshop 2015

The presentations of the speakers can be downloaded from the ALERT website. <http://alertgeomaterials.eu/presentations-of-the-alert-workshop-2014/>

ALERT PhD Prize 2015

The jury of the ALERT PhD Prize 2015 was composed of the professors Manuel Pastor (Universidad Politécnica de Madrid), Hans Mühlhaus (University of Queensland), François Nicot (IRSTEA) and Jean Vaunat (UPC Barcelona). Only PhD students from one of the institutions belonging to ALERT are eligible candidates for the prize which is dated to 1000 Euro.

The three finalists Anna Ramon Tarragona (UPC Barcelona), Dalila Vescovi (Politecnico di Milano) and Ali Seiphooori (EPFL Lausanne) were chosen by the jury out of 11 applications.

The jury awarded the PhD student Anna Ramon Tarragona for her work entitled

Expansion mechanisms in sulphated rocks and soils

The thesis by Dr. Tarragona focused on the prediction of strains and swelling pressures in sulphated formations. On that direction, the Thesis analyses and describes the mechanisms and conditions leading to expansions

in sulphated rocks through the compilation of real cases showing the presence or absence of swelling phenomena and the detailed investigation of three exceptional cases of damage induced by expansions involving sulphated formations in Spain: Lilla tunnel, Pont de Candí bridge and Pallaressos embankments.

A model has been developed for simulating the expansions in sulphated rocks due to gypsum crystal growth. The presence of soluble sulphated minerals and the occurrence of precipitation and dissolution of crystals have been considered in the formulations. The sensitivity analysis performed indicated that the initial mineral content, solubility of gypsum and anhydrite and, especially, the confining stress have a relevant effect on the swelling strains calculated. The simulation of gypsum precipitation and expansions has been successful in Pont de Candí.

The abstract of the PhD thesis of Dr. Anna Ramon Tarragona as well as her presentation in Aussois will be available on the ALERT website.

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Anna Ramon Tarragona (UPC Barcelona)



Dedication of the ALERT PhD Prize to Prof. Ioannis Vardoulakis

Starting from 2016, the ALERT PhD prize will be entitled

Ioannis Vardoulakis PhD Prize

to commemorate Prof. Vardoulakis and his contributions to research and teaching in the field of Geomechanics.

Further changes to the PhD Prize concern the

application. Starting this year, the application for the PhD Prize has to be done completely online with a form on the ALERT website.

See the ALERT website for detailed information on the application:

<http://alertgeomaterials.eu/alert-phd-prize/>

ALERT Doctoral School 2015

The ALERT Doctoral School 2015 lasted from Thursday, 1st October to Saturday, 3rd October and was attended by 70 participants. The topic of the school was dedicated to

Coupled and multiphysics phenomena

The organization was carried out by Bernhard Schrefler, Lorenzo Sanavia (both from Università degli Studi di Padova, Italy) and Frederic Collin (Université de Liège, Belgium). The accompanying book, containing articles referring to the lectures, can be downloaded from the ALERT website.

The lectures were presented by

- Lorenzo Sanavia (Università degli Studi di Padova)
- Frederic Collin (Université de Liège)
- Pierre Delage (Ecole des Ponts ParisTech, Navier/CERMES)
- William Gray (University of North Carolina)
- Manuel Pastor (Universidad Politécnica de

Madrid)

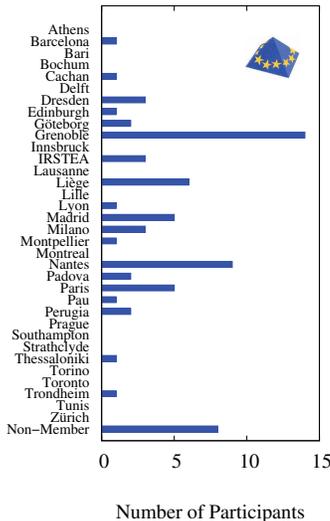
- Jacques Huyghe (Bernal Institute, University of Limerick)

In order to tackle this topic, the school was divided into three main parts:

- the description of the couplings in multiphysics phenomena, including the experimental developments;
- the mathematical modelling of all these coupled processes, with an introduction to the constitutive modelling taking into account the dilatancy, which characterizes the mechanical behaviour of geomaterials;
- the numerical implementation of the mathematical models, comprising constitutive equations as well as balance equations and finally numerical modelling through advanced applications.

On behalf all the ALERT members we want to thank the lecturers and the organizers for their commitment.

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Participants of the ALERT Doctoral School 2015

The accompanying book, containing articles referring to the lectures, as well as some books of previously held doctoral schools can be downloaded from the ALERT website.

<http://alertgeomaterials.eu/publications/>



The ALERT Special Lecturer 2015
Prof. Hans Mühlhaus

Special Lecture 2015: Prof. Hans Mühlhaus

The ALERT Special lecture 2015 was delivered by Prof. Hans Mühlhaus from the University of Queensland in Australia.

The title of the lecture was:

Mechanical and hydraulic instabilities in Geomechanics

The lecture was digitized during the presentation and will be available for downloading on the ALERT website soon.

The Special lecture during the coming ALERT Workshop 2016 will be presented by Prof. Takashi Matsushima from University of Tsukuba, Japan. He will talk about

Planetary geomechanics

On the ALERT website an abstract of his presentation will be published soon.

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CHALMERS



ALERT Workshop 2016

The ALERT Workshop in 2016 will be organized from Monday, 3rd October to Wednesday, 5th October. The workshop will again take place in the Centre Paul Langevin in Aussois, France.

The focus of the three workshop sessions and the responsible coordinators are listed below:

1 New trends in micromechanical approaches of Particulate Materials - experiments and modelling aspects

coord. M. Karstunen, N. Benahmed & M. Hattab

minna.karstunen@chalmers.se
nadia.benahmed@irstea.fr
mahdia.hattab@univ-lorraine.fr

2 Mechanics of multiphase porous media in modelling cementitious materials: from early ages to durability issues

coord. F. Pesavento, M. Briffaut &

L. Sanavia

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matthieu.briffaut@3sr-grenoble.fr
lorenzo.sanavia@unipd.it

3 Geomechanics of faults, with applications spanning from earthquake nucleation to landslides

coord. M. Veveakis, I. Stefanou, K. Regenauer-Lieb & J. Sulem

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klaus.regenauer-lieb@uwa.edu.au
jean.sulem@enpc.fr

The deadline for the submission of abstracts is 30th April 2016.

The online registration for the ALERT Workshop & School will open in June 2016 on the ALERT website and will be announced in advance again.

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Please do not forget to submit your abstract by email directly to the coordinators using the abstract form which can be downloaded at the ALERT site:

<http://alertgeomaterials.eu/2016/02/alert-workshop-2016-call-for-abstracts/>



ALERT Doctoral School 2016

The workshop is followed by the ALERT Doctoral School which will be hosted from Thursday, 6th October to Saturday, 8th October also in Aussois. The topic of the ALERT School will be dedicated to

Modelling of instabilities and bifurcation in Geomechanics

and will be organized by J. Sulem (ENPC Paris), I. Stefanou (ENPC Paris), E. Papamichos (Aristotle University of Thessaloniki) and M. Veveakis (UNSW Sydney).

A tentative programme is the following

- Thursday
 - In situ and laboratory evidence of instabilities
 - Fundamentals of bifurcation and stability analysis
 - Material instability and strain localization analysis
 - Experimental investigation of strain localization

- Friday
 - Numerical modelling of strain localization
 - Applications (Borehole stability, rock bursting, multilayer buckling . . .)
 - Multiphysics couplings and instabilities
 - Numerical modelling of Multiphysics couplings and strain localization
- Saturday
 - From theory to practice: supervised group exercises
 Based on existing templates, the participants will develop a numerical code for analyzing by themselves some illustrative examples such as spring slider model under multiphysics couplings, strain localization analysis etc.

The online registration for the ALERT Workshop & School will open in June 2016 on the ALERT website and will be announced in advance again.

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Organising Institutions of the
ALERT School 2016

ALERT Olek Zienkiewicz Course 2015

The 7th ALERT Summer school 2015 was held for five days in May in Barcelona, Spain. The school focused on the

Mechanics of Unsaturated Soils, from Fundamentals to Applications

The objectives of the course were to provide PhD students and researchers with an overview of the current knowledge in Unsaturated Soil Mechanics as well as some insights into current issues and advanced topics. Lectures were divided in four sessions of one day:

- Fundamentals of Unsaturated Soil Mechanics
- Experimental techniques
- Numerical methods
- Some advanced topics and current issues

and taught by the following lecturers: E. Alonso, Y.-J. Cui, P. Delage, A. Dono, A. Gens, C. Jommi, D. Mašín, S. Olivella, J. M. Pereira,

E. Romero, J. Vaunat and A. Yerro.

The fifth day was devoted to presentations by invited speakers on current applications of Unsaturated Soil Mechanics, including foundations, deep excavations, landslides, dams, embankments, engineered barriers and gas flow problems in unsaturated soils. The school was closed by the lecture on “Mixed Fluid conditions in Geoenery Energy Engineering” by Prof. C. Santamarina, who provided an excellent overview of current and forthcoming issues related to coupled problems in geoenery and their relationship with Unsaturated Soil Mechanics concepts.

The school was attended by 70 participants from 17 countries. Besides the lectures, they could enjoy one hands'on session on the use of a Finite Element code for coupled flow and deformation problems in geological media and the visit of UPC Soil Mechanics Laboratory.

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Impressions of the ALERT Olek
Zienkiewicz Course 2015



ALERT Olek Zienkiewicz Course 2016

The 8th edition of the ALERT Olek Zienkiewicz Course will be held from Monday, 5th September to Friday, 9th September 2016 at University of Salerno. The topic of the school is

Geomechanics of landslides

Within the framework of an institutional agreement, this year the ALERT OZ Course will be held jointly during the first week of the LARAM School (LAndslide Risk Assessment and Mitigation). Our students will have the great opportunity to share scientific and technical knowledge with other colleagues coming from LARAM School! The school will be organised by Leonardo Cascini (Università di Salerno) and Claudio di Prisco (Politecnico di Milano).

Lectures covering the following topics as well as tutorials on some of them will be delivered:

- Risk theory
- Landslide Susceptibility
- Soil characterization for landslide analysis

- Constitutive modelling in rainfall-induced landslides
- Constitutive modelling in earthquake-induced landslides
- Thermo-mechanical coupling in fast catastrophic landslides
- Diagnosis of landslide processing in clayey soils
- Modeling of rock slides and rock falls
- Modeling of landslides in coarse-grained soils
- From geomechanics to landslide susceptibility analysis
- Landslide susceptibility deterministic analysis
- Landslide susceptibility statistical analysis

Due to pedagogic reasons, the number of participants to the 8th ALERT Geomaterials Olek Zienkiewicz Course is limited to 25. The deadline for registration is 15th June 2016. The online registration form will soon be put online on the ALERT website.

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Further information can be found here:

- <http://www.laram.unisa.it/initiatives/alert2016>
- <http://alertgeomaterials.eu/category/oz-course>



Organising Institutions of the ALERT Olek Zienkiewicz Course 2016

New Institutional Member of ALERT

During its meeting in Aussois, held in September 2015, the ALERT Board of Directors approved the application for the membership in ALERT Geomaterials of

Lund University represented by Stephen Hall

Unfortunately, the members Université Lille 1 and the University of Toronto did not renew their participation to ALERT activities and they were excluded from ALERT.

With these decisions, the present number of members of ALERT Geomaterials is 33!

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New institutional Member of ALERT

To subscribe to our mailing list please go to <http://alertgeomaterials.com>

Newsletter production
Max Wiebicke