Course offered for the PhD program
in Civil, Chemical and Environmental Engineering
Curriculum in Fluid Dynamics and Environmental Engineering – a.a. 2013/2014
(XXIX ciclo)

(possibility of participation for students in other PhD cycles or other PhD courses)

1. Title

Meteorological modelling and GNSS monitoring

2. Course Description

The course provides the general ideas of the meteorological modeling and the contribution that GNSS satellite measurements can provide through tropospheric monitoring.
The aim of the course is to provide an overview of the topics in the area.
Main topics are:

Meteorologia	GNSS
Troposphere effect on elettromagnetic signal crossing the atmosphere	Main existing GNSS networks and their applications
The equations of the Atmospheric Physics: phenomena described dynamically and parameterized. phenomena	Elaboration of the GNSS networks, particularities for the tropospheric parameter's estimation ZTD in respect to the positioning
Sensitivity of the equations to the initial conditions: the predictability problem and its consequences (practical and philosophical)	The punctual ZWD estimations coming from ZTD estimation and the modelled ZHD. The PWV estimation like a refresh/starting point of the meteorology model. Necessary data and their spatio-temporal resolution
Meteorological modelling chains: from the planetary scales to the local scale	The measurements of the meteorological radars, further technique to monitor the atmosphere
Analysis of an extreme event: Genova, November 2011	Some applications to the pilot cases with particular attention to limits, potentiality and comparisons between techniques

3. Course Organization

The course consists of lectures and seminars by recognized leaders in the area

4. Teacher

Andrea Mazzino e Domenico Sguerso
(informations via e-mail andrea.mazzino@unige.it and domenico.sguerso@unige.it)

5. Duration and credits

10 hours/2 credits

6. Activation mode and teaching period

Periodicity: Two years. The course will be held in the April month starting on 2014.
Registration via email: domenico.sguerso@unige.it

7. Deadline for registration

Registration within the end of the February month

8. Final exam

Critical presentation of scientific material proposed by teachers or coming from literature.