



Università degli Studi di Cagliari
Dottorato di Ricerca in Ingegneria Civile ed Architettura

Summer school on
**Hydrometeorological extremes:
processes, models and human impacts**
Cagliari (Italy) – July 6–12, 2017

Under the Visiting Scientist funding programme of the University of Cagliari (Italy), a Summer school on “Hydrometeorological extremes: processes, models and human impacts” will take place on July 6–12, 2017 in Cagliari. The summer school is organized with the sponsorship of the Italian Hydrological Society (SII), the Hydraulic Italian Group (GII), and the Italian Universities Consortium for Hydrology (CINiD), and is addressed to PhD students and young researchers. The course is organized in two modules: “Hydrological extremes and human societies” with lecturer Prof. Giuliano Di Baldassarre (Uppsala University, Sweden) and “The WRF-Hydro modeling system” with lecturer Prof. Giuseppe Mascaro (Arizona State University, Tempe, AZ). The school is free of charge, but participants should cover their travel and accommodation expenses.

Module 1 - Hydrological extremes and human societies
(July 6-8, 2017)

Lecturer: Prof. Giuliano Di Baldassarre
Uppsala University, Sweden
giuliano.dibaldassarre@geo.uu.se

There has been an increasing interest in the study of human impacts on hydrological extremes, i.e. droughts and floods, over the past decades. This module introduces the multiple ways in which humans influence and respond to extreme events with reference to recent empirical and theoretical studies on dynamic human-water systems. It will also discuss the implications for the analysis of hydrological risk in a rapidly changing environment. This module will provide students with the ability to describe the main processes through which human systems impact water systems, to discuss the analytical frameworks dealing with the interplay between hydrological extremes and human societies, to explain the interactions and feedback mechanisms between hydrological and social processes that are relevant for risk management

This module will cover the following specific topics:

- Alteration of hydrological extremes (droughts and floods) caused by land-use changes and urbanization.
- Impact of policies and engineering measures implemented by societies to cope with droughts.
- Impact of policies and engineering (e.g. levees) implemented by societies to cope with floods.
- Risk governance and societal response to hydrological extremes.
- Role of culture, technology, economy and climate in shaping the hydrology-society dynamic interplay.
- Interdisciplinary frameworks to study dynamics human-water systems, e.g. socio-hydrology.

Module 2 – The WRF-Hydro modeling system
(July 10-12, 2017)

Lecturer: Prof. Giuseppe Mascaro
Arizona State University, Tempe, AZ
gmascaro@asu.edu

The Community Weather Research Forecasting (WRF)-Hydro (WRF-Hydro) system is a coupled model of Earth System processes that enables multi-scale and multi-physics approaches to modeling various aspects of the terrestrial and atmospheric water cycles. The system can be implemented to run in a stand-alone, land surface only mode or as a fully-coupled land-atmosphere modeling system. In addition to many research applications the WRF-Hydro system is also finding use in operational hydrologic prediction both in the U.S. and internationally. This module will provide students with formal instruction on the structure and application of the WRF-Hydro system and will offer hands-on experience in setting up and running the system for different research and prediction applications.

This module will cover the following specific topics:

- Conceptualization and structure of the WRF-Hydro system
- Description of physics components options within WRF-Hydro
- Model porting and compilation and overview of parallel computing with WRF-Hydro
- Model input data preparation
- Model configuration and execution
- Visualization and post-processing of model outputs
- Case studies

To attend the course: Please fill in the Application Form and send it by e-mail to Enrica Perra (enrica.perra@unica.it), enclosing also a copy of your curriculum vitae. **The deadline for applications is June 15, 2017.**

For more information feel free to contact: Prof. Roberto Deidda (rdeidda@unica.it) and Dr. Francesco Viola (viola@unica.it)

Web site: www.unica.it/rdeidda/indexEvents.htm

Suggestions and links for **accommodation in Cagliari** can be found in <http://people.unica.it/visitingprofessor/accommodations/>

This summer school is made possible with funding from the **Visiting Scientist programme** of the University of Cagliari and Regione Sardegna: there is no registration or tuition fee, but participants must cover their own travel and subsistence costs.



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