UNIVERSITA' DEGLI STUDI DI PADOVA
DIPARTIMENTO DI GEOSCIENZE
Via Gradenigo 6
35131 Padova
www.geoscienze.unipd.it

DIPARTIMENTO DI GEOSCIENZE

Seminario

Towards more robust evaluation and use of environmental models against clilmate uncertainty

Mercoledì, 21 Settembre – ore 12:00 Aula Arduino

Relatrice: **Dr Francesca Pianosi**
University of Bristol, UK - Water & Environmental Engineering

Computer models are essential tools in the earth system sciences. They underpin our search for understanding of earth systems functioning and support decision-making across spatial and temporal scales. Ever growing computing power and data availability enable the construction of increasingly complex and coupled models of human-environment interactions. Yet while these progresses make models capable (in principle) of addressing new questions, they rarely help reducing the uncertainties associated with model responses. Indeed, gaps and errors in input data and epistemic uncertainty about the best way to characterise many natural and anthropogenic processes, keeps challenging our ability to establish if a model is "valid" and suitable to inform decisions - even more so when informing long-term decision under a changing climate.

In this talk I will show how we can design tailored computational experiments to (i) gain a deeper understanding of model behaviour, hence leading to more robust model evaluation; (ii) make predictions for large spatial scales with limited data; and (ii) learn about system response to uncertain drivers such as climate and land-use change. I will argue that we can use a common methodology (namely "Global Sensitivity Analysis") for running these computer experiments in a structured way, and provide application examples from my recent research in hydrology and natural hazard assessment.

Proponente: **Simone Bizzi**