Center of Excellence

ETEMPS

Telesensing of Environment and Model Prediction of Severe events

WORKSHOP

PREDICTABILITY IN WEATHER AND CLIMATE

16 Aprile 2018 Aula 0.4

ARE ENSEMBLES 'VALUABLE' TO PREDICT WEATHER EXTREMES

h 15:00 prof. Roberto Buizza

Biografia

Roberto Buizza has a degree in Physics from the University of Milano, a PhD in Mathematics from University College London, and an MBA from the London Business School. He joined ECMWF in 1991, after 4 years at the Centre for Thermonuclear Research of the Electricity Board of Italy. He served as Head of the Predictability Division, and since January 2016 he is a Lead Scientist of the ECMWF Research Department. His current role includes coordinating research and development work across the Centre. He is a member of the ECMWF Senior Management team and is responsible for Research-to-Operation work.

Abstract

Weather prediction fails at times even at very short time ranges because of the growth of initial errors, linked e.g. to observation uncertainties, with growth rates affected by model uncertainties. A further challenge is that the error growth rates are flow dependent. Ensembles are helping us dealing with these uncertainties, and provide us with an estimate of possible forecast outcomes. In this talk, I will illustrate the current status of the ECMWF ensembles, and discuss how they can be used to provide more complete and valuable weather forecasts, in particular of extreme and rare conditions.

LATE AUTUMN AND EARLY WINTER VERSUS LATE WINTER AND SPRING ENSO TELECONNECTIONS TO EUROPE

h 15:40 dr. Fred Kucharski

Biografia

Dr. Fred Kucharski is a Research Scientist in the Earth System Physics Section and also Head of the Office of External Activities at the Abdus Salam International Centre for Theoretical Physics. He studies global climate variability and predictability, including phenomena such as the North Atlantic Oscillation, Sahel rainfall variability, ENSO, ENSO-South Asian Monsoon. Dr. Kucharski received his Ph.D. from the University of Frankfurt, where he studied the concept of energy and potential energy at the Institute of Meteorology and Geophysics. He completed his postdoctoral fellowship at the University of Reading, and then became a Research Scientist at the Meteorology Office in Bracknell in the Numerical Weather Prediction Division.

Abstract

El Nino Southern Oscillation (ENSO) teleconnections to Europe are typically studied for the canonical seasons, for example December-to-February (DJF) averages. However, the DJF teleconnections to Europe are rather weak. Recent research has investigated the possibility of a systematic change of late Autumn/early Winter to late Winter/Spring teleconnections, with nearly opposite response. Namely, the response to an ENSO warm phase is a positive NAO-type response late Autumn/early Winter period, and becomes more negative NAO-like in late Winter and Spring. This presentation will show some preliminary investigation on the possible physical mechanisms for these changes, and show that models partially reproduce them in seasonal forecast mode.

PREDICTING THE CLIMATE OVER DECADAL TIME SCALES

h 16:20 dr. Alessio Bellucci

Biografia

Alessio Bellucci holds a PhD in physical oceanography at the National Oceanography Centre Southampton (NOCS, UK) and is currently working at the Centro EuroMediterraneo sui Cambiamenti Climatici (CMCC) in Bologna (Italy) as the coordinator of the Climate Variability and Prediction group. His main research interests are the role of the ocean on the global climate, with specific emphasis on midlatitude climate variability at decadal and interdecadal timescales, ocean-atmosphere interactions in the North Atlantic sector, and near-term climate predictability and predictions. He is currently involved in several EU-funded Projects (among the others, PRIMAVERA, Blue-Action and EUCP) and in the Coupled Model Intercomparison Project 6 (CMIP6) international effort (HighResMIP and DCPP).

Abstract

Delivering trustworthy climate predictions beyond the seasonal-to-interannual time scale limit is one of the grand challenges faced by the climate science community. While the praxis of seasonal forecast (nowadays operated by several climate centers) is entering into a mature phase, decadal prediction is a relatively novel field of investigation, often referred to as "the new kid in the block" within the Climate Prediction family [Goddard et al., 2012]. Despite its young age, decadal prediction is rooted in a longer history of efforts devoted to understand the sources of low-frequency decadal variability found in both observational and model records. The purpose of this talk is to provide an overview of this rapidly evolving field, touching aspects of the "decadal prediction issue", from the sources of decadal predictability in the climate system, to the recent attempts towards the release of pre-operational decadal predictions.

c/o Edificio «Coppito 1», Polo Universitario di Coppito
Via Vetoio snc, 67100 – L'Aquila

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