

Virtual BSC RS: NextGen: A methodology for cross-timescale, calibrated and flexible forecasts

Objectives

Abstract: Successful climate services involve the use of tailored regional forecasts at single or multiple timescales. The implementation of such forecasts is not always straightforward, and depends on several different factors, like which variables, models and calibration methods to use, how to create the ensemble and tailoring, or even how to present them to the decision makers. In this talk I'll discuss NextGen, IRI's systematic, general approach for designing, calibrating, combining, and verifying objective forecasts, aligned with WMO's recommendations for objective forecasts. NextGen involves the identification of decision-relevant variables with the stakeholders, and the analysis of the physical mechanisms, sources of predictability and suitable candidate predictors for those key relevant variables, in observations and models. If prediction skill is deemed actionable, NextGen helps select the best (dynamical/statistical/hybrid) models for the region of interest through a physical-process-based evaluation, and automates the generation and verification of tailored multi-model, locally- or pattern-based-calibrated predictions at multiple temporal and spatial scales. The system takes advantage of the expertise of local scientists and decision-makers in the implementation countries to maximize predictive skill and the potential to tailor the forecasts. Several concrete examples will be discussed, from "usual" climate forecasts to applications for forecast-base financing and predictions of coffee and rice yield, energy, acute under-nutrition cases, potential risk of transmission of mosquito-borne diseases, and human migration.



Short bio: Ángel G. Muñoz is an Associate Research

Scientist in IRI's Climate Program, focusing on climate variations and prediction at multiple timescales. He also leads the Latin American component of the Columbia World Project "Adapting Agriculture to Climate Today, for Tomorrow" (ACToday). Muñoz holds a BS in physics (2002, numerical general relativity), a Master of Arts, a Master of Philosophy and a PhD in climate sciences (2014-2016, Columbia University,

Department of Earth and Environmental Sciences). His present research interests are associated with physical processes involved in how climate signals at multiple timescales can interact with each other (cross-timescale interference), and how those interactions impact predictability and predictive capacity; in particular, he's interested in better understanding how cross-timescale interference can be used to diagnose and improve misrepresented processes in a hierarchy of atmospheric circulation models. Muñoz also works on the development of climate services, especially those related to food security (involving models for undernutrition and human migration), vector-borne diseases and lightning activity.

Speakers

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