EMS Annual Meeting Abstracts
Vol. 14, EMS2017-845, 2017

A synthesis of the VALUE perfect predictor experiment

Douglas Maraun (1), José Gutierrez (2), Martin Widmann (3), Elke Hertig (4), Pedro Soares (5), Sven Kotlarski (6), Andreas Fischer (6), Renate Wilcke (7), Radan Huth (8), Daniel San-Martin (2), Joaquin Bedia (2), and Sixto Herrera (2)

(1) Wegener Center for Climate and Global Change, University of Graz, Graz, Austria, (2) University of Cantabria, Spain, (3) School of Geography, Earth and Environmental Sciences, University of Birmingham, UK, (4) Institute of Geography, University of Augsburg, Germany, (5) Instituto Dom Luiz, Portugal, (6) Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland, (7) Swedish Meteorological and Hydrological Institute, Rossby Centre, Sweden, (8) Institute of Atmospheric Physics, Praha, Czech Republic

VALUE is an open European network to validate and compare downscaling methods for climate change research. A key deliverable of VALUE is the development of a systematic validation framework to enable the assessment and comparison of both dynamical and statistical downscaling methods. VALUE's main approach to validation is user-focused: starting from a specific user problem, a validation tree guides the selection of relevant validation indices and performance measures. We consider different aspects: marginal aspects such as mean, variance and extremes; temporal aspects such as spell length characteristics; spatial aspects such as the de-correlation length of precipitation extremes; multi-variate aspects such as the interplay of temperature and precipitation; and process-oriented aspects.

Several experiments have been designed to isolate specific points in the downscaling procedure where problems may occur. A perfect predictor experiment has been conducted to isolate downscaling skill in present climate. In this experiment, downscaling methods are driven with ERA-Interim reanalysis data to eliminate global climate model errors, over the period 1979-2008. As reference data we use observations from 86 meteorological stations distributed across Europe. With more than 40 contributing methods, this study is the most comprehensive downscaling intercomparison project so far.

This presentation will give an overview on the results. They clearly indicate that for several aspects, the downscaling skill varies considerably between different methods. For specific purposes, some methods can therefore clearly be excluded.