

**PARALLEL SESSION B : FRONTIER DOWNSCALING TOOL
B3: A FOCUS ON ESD SPECIFIC OPPORTUNITIES**

**VALUE perfect predictor validation results, part 2:
spatial, multivariate and process-based aspects**

Douglas MARAUN

Wegener Center for Climate and Global Change, University of Graz - Austria

VALUE is an open European network to validate and compare downscaling methods for climate change research (<http://www.value-cost.eu>). As a key deliverable, VALUE developed a systematic validation framework to assess and compare the performance and added value of dynamical and statistical downscaling methods. The framework comprises three experiments with (1) perfect predictors, (2) GCM predictors and (3) pseudo-reality predictors (see Maraun et al., 2015, for more details). For an overall validation of marginal and temporal aspects, refer to the abstract submission by Gutierrez et al.

Here we present validation results of the perfect predictor experiment for spatial and multivariate aspects, including process-oriented diagnostics. We show the performance of a broad range of classical perfect prognosis statistical downscaling methods as well as bias correction methods across all European climates. Specifically, we assess how these methods simulate

(1) the spatial dependence expressed by, e.g., empirical orthogonal functions, de-correlation lengths, decay lengths of tail dependence;

(2) multi-variable dependence between different meteorological variables expressed by, e.g., correlations and more generally parameters of conditional distributions; and

(3) the relationships between dominant weather phenomena and local surface weather at different scales, such as the North Atlantic oscillation, blocking, synoptic weather types and regional scale wind phenomena including Mistral and Bora.

Douglas Maraun¹, Martin Widmann², Renate Wilcke³, Jose Gutierrez⁴, Radan Huth⁵, Sven Kotlarski⁶, Elke Hertig⁷, Joanna Wibig⁸ and the VALUE team

¹Wegener Center for Climate and Global Change, University of Graz, ²University of Birmingham, ³SMHI, ⁴University of Cantabria, ⁵Charles University Prague, ⁶MeteoSwiss, ⁷University of Augsburg, ⁸University of Lodz