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VALUE - A Framework to Validate Downscaling Approaches for Climate Change Studies

Douglas Maraun (1), Martin Widmann (2), José M. Gutiérrez (3), Sven Kotlarski (4), Richard E. Chandler (5), Elke Hertig (6), Joanna Wibig (7), Radan Huth (8), and Renate A.I. Wilke (9)

(1) GEOMAR Helmholtz Centre for Ocean Research, Ocean Circulation and Climate Dynamics, Kiel, Germany (dmaraun@geomar.de), (2) School of Geography, Earth and Environmental Sciences, University of Birmingham, United Kingdom, (3) Institute of Physics of Cantabria, IFCA, Santander, Spain, (4) Institute for Atmospheric and Climate Science, ETH Zurich, Zurich, Switzerland, (5) Department of Statistical Science, University College London, London, UK, (6) Institute of Geography, University of Augsburg, Augsburg, Germany, (7) Department of Meteorology and Climatology, University of Lodz, Lodz, Poland, (8) Department of Physical Geography and Geoecology, Faculty of Science, Charles University and Institute of Atmospheric Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic, (9) Rossby Centre, Swedish Meteorological and Hydrological Institute, Norrköping, Sweden

VALUE is an open European network to validate and compare downscaling methods for climate change research. VALUE aims to foster collaboration and knowledge exchange between climatologists, impact modellers, statisticians, and stakeholders to establish an interdisciplinary downscaling community. 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. Here, we present the key ingredients of this framework. 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. Several experiments have been designed to isolate specific points in the downscaling procedure where problems may occur: what is the isolated downscaling skill? How do statistical and dynamical methods compare? How do methods perform at different spatial scales? Do methods fail in representing regional climate change? How is the overall representation of regional climate, including errors inherited from global climate models? The framework will be the basis for a comprehensive community-open downscaling intercomparison study, but is intended also to provide general guidance for other validation studies.