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VALUE - Validating and Integrating Downscaling Methods for Climate Change Research

Douglas Maraun (1), Martin Widmann (2), Rasmus Benestad (3), Sven Kotlarski (4), Radan Huth (5), Elke Hertig (6), Joanna Wibig (7), and Jose Gutierrez (8)

(1) GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany (dmaraun@geomar.de, +49-(0)431-6004052), (2) University of Birmingham, UK, (3) Norwegian Meteorological Office, Norway, (4) ETH Zurich, Switzerland, (5) Charles University Prague, Czech Republic, (6) University of Augsburg, (7) University of Lodz, Poland, (8) University of Cantabria, Santander, Spain

Our understanding of global climate change is mainly based on General Circulation Models (GCMs) with a relatively coarse resolution. Since climate change impacts are mainly experienced on regional scales, high-resolution climate change scenarios need to be derived from GCM simulations by downscaling. Several projects have been carried out over the last years to validate the performance of statistical and dynamical downscaling, yet several aspects have not been systematically addressed: variability on sub-daily, decadal and longer time-scales, extreme events, spatial variability and inter-variable relationships. Different downscaling approaches such as dynamical downscaling, statistical downscaling and bias correction approaches have not been systematically compared. Furthermore, collaboration between different communities, in particular regional climate modellers, statistical downscalers and statisticians has been limited.

To address these gaps, the EU Cooperation in Science and Technology (COST) action VALUE (www.value-cost.eu) has been brought into life. VALUE is a research network with participants from currently 23 European countries running from 2012 to 2015. Its main aim is to systematically validate and develop downscaling methods for climate change research in order to improve regional climate change scenarios for use in climate impact studies. Inspired by the co-design idea of the international research initiative "future earth", stakeholders of climate change information have been involved in the definition of research questions to be addressed and are actively participating in the network. The key idea of VALUE is to identify the relevant weather and climate characteristics required as input for a wide range of impact models and to define an open framework to systematically validate these characteristics. Based on a range of benchmark data sets, in principle every downscaling method can be validated and compared with competing methods. The results of this exercise will directly provide end users with important information about the uncertainty of regional climate scenarios, and will furthermore provide the basis for further developing downscaling methods. This presentation will provide background information on VALUE and discuss the identified characteristics and the validation framework.