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Advanced Climate and Regional Model Validation for Societal Applications

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Earth System Models (EaSM) comprehensively encapsulate the complex interactions between physical, geochemical and biological subsystems, but their standard products are not directly useful for most planning and decision-making processes that are confronted with the need to account for climate change. One important necessity for more useful information includes an evaluation of EaSM performance. Such evaluations inherently need to address specific concerns depending on the system and decisions of interest; hence, that evaluation tools must be tailored to inform about these specific issues. Generally, the spatial and temporal scales necessary for most such users are relatively fine, requiring more sophisticated tools than those often used currently, such as comparisons of zonal or other large spatial and temporal domain averages. Tools from weather forecast verification, which typically occur at much finer scales, should be very useful. Here, we employ some of these methods to climate model evaluation with the further aim of considering the specific needs of water management systems.