



RAL SEMINAR SERIES

Advancing Actionable Hydrometeorological Climate Change Research

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Wednesday, October 16, 2024

1-2 PM (MT)

HYBRID MEETING FL2-1022 | [Watch Live](#)

There is an urgent need for climate change information to address myriad societal problems related to the climate crisis spanning fundamental Earth System to actionable science research. Here, partner-driven science to develop new datasets and understanding of regionally focused hydrometeorological climate change impacts will be discussed. Actionable hydrometeorological climate change research is an inherently interdisciplinary problem, spanning the atmospheric and terrestrial components of the water cycle, as well as a host of other sciences (e.g., social, engineering), and diverse partners.

This talk will highlight innovative science, actionable outcomes, and commonalities across work from several sponsors. We have been able to contribute to development of and improvements in community models such as the NSF NCAR Community Terrestrial Systems Model (CTSM) and the DOE funded Regional Arctic System Model (RASIM) through a co-design process. These advances have resulted in unprecedented regional climate datasets of historical and projected future hydroclimates for Alaska and parts of the Pacific Northwest. Furthermore, we are pushing the envelope in uncertainty quantification and downscaling method evaluation. We are generating large ensembles of downscaled future climates to provide quantitative uncertainty partitioning across irreducible and reducible uncertainties, for example internal variability vs method uncertainty. We are also improving downscaling method understanding and evaluation guidance. All these advances are poised to move to communities, or formal agency guidance tools.

A common theme is that a culture of trust within the diverse project teams (researchers and partners) enables both innovative science and actionable outcomes. Trust permits honest conversations regarding appropriateness of tools, methods, and what constitutes a useful outcome for partners. Trust also fosters open collaboration, shared scientific leadership, and transparency of information that supports growth across the project team, yet it requires deliberate, continuous attention. Finally, some potential future research areas will be discussed including continued refinement of our understanding and quantification of uncertainties, the interplay of nuisance and extreme events, and engagement with other partners.