5A.3 Evaluation of a regional climate ensemble using self-organizing maps.

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A Regional Climate Ensemble is used to investigate the limits of predictability of climate simulations, with a focus on high-impact weather. A twenty-four member physics ensemble of climate simulations using the state-of-the-art Weather Research and Forecasting Model at sufficient resolution to capture high-impact weather has been run over an extended North American domain of approximately 25° S to 70° N and from the African coast to the East Pacific. A diverse set of approaches are being applied to examine the impact of the different physics parameterizations on the simulated climate and high-impact weather statistics and to determine the physics combinations that result in physically realistic scenarios. In this paper we explore one such approach that evaluates the performance of the ensemble using Self-Organizing Maps (SOMs). The SOMs are used to: 1) identify the ensemble members that are able to capture current climate weather patterns and their relative frequencies, 2) investigate the underlying interactions between the different physics components that leads to differences in these patterns across the ensemble, and 3) investigate climate change and variability under an RCP 8.5 climate change scenario.