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S2S Extreme Weather Featurization: A Global Skill Assessment Study

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A more accurate characterization of S2S extremes may result in great positive societal impact. Featurized S2S forecasts in the form of risk or extreme indices will aid in disaster response (especially for drought and flood events), inform disease outbreaks and heatwave onset, persistence, and decay. In this study, we identify a set of ECMWF-derived extreme weather indices that have spatio-temporal windows of opportunity for better-than-climatology skill. We report on the correlation between ECMWF-derived indices and ground-truth values. The selected indices can be calculated directly from probabilistic daily forecasts, or alternatively, by training specialized ML-models to process ensembles in a multi-task learning setup. Our goal is to find better approaches to communicate S2S climate risk by deploying a set of ECMWF-derived climate forecast products.