

SESSION: (A3) S2S ensemble predictions and forecast information

(A3-10)

Advances in operational sub seasonal prediction of heat and cold waves for U.S. cities

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CFAN has been making operational probabilistic forecasts of surface air temperature, heat and cold waves for selected U.S. cities since 2010 to address needs of the energy sector in anticipating natural gas demand. An innovative multi-model prediction system using the CFSv2 and ECMWF forecasts has been developed to exploit the advantages of each model. Several categories of heat and cold waves are predicted for each city, based on both the severity and duration of the event. The ECMWF and CFSv2 forecast streams are calibrated against hindcasts using a Rank Analog approach, together with a PDF mapping technique. Additionally, ensemble clustering is used separately for the ECMWF and CFSv2 forecast streams, based on self clustering and dominant weather regimes, that takes into account combinations of well-known NH teleconnection patterns. An objective weighting technique based on past performance of each model is used to provide CFAN's final forecast. A forecast confidence assessment is made for each forecast based on identification of forecast 'windows of opportunity' determined from the current and predicted strength of teleconnections. Forecast evaluation statistics are presented as a function of region, season and circulation regime.