2. Abstract

Project Title: Seasonal Climate Forecasting Applied to Wildland Fire Management in Alaska

The summer of 2015 was the second largest Alaska fire season since 1950 where approximately the land area of Massachusetts burned. The record fire year of 2004 resulted in 6.5 million acres burned and was costly from property loss (> $35M) and emergency personnel (> $17M). In addition to requiring significant resources, wildfire smoke impacts air quality in Alaska and downstream into North America. The largest acreage fires in Alaska result from lightning strikes in remote areas with limited fire management and the seasonal climate/weather determine the extent of the fire season in Alaska. Fire managers rely on weather/climate outlooks for allocating staff and resources from days to a season in advance. Forecasts of the expected seasonal climate/weather would aid tremendously in the planning process. This project will develop relevant products using state-of-the-art forecast models to advance and expand the tools available to fire managers.

This project will create, test, and provide specific forecast products for fire managers in Alaska on the 2-week to seasonal time scale that are not currently available for. This project builds on existing weather/climate products already applied to wildfires and extends them to longer lead times. This study will increase the forecast lead-time for the Canadian Forest Fire Weather Index System (CFFWIS) in Alaska from the current 48-hours to several months by utilizing state-of-the-art seasonal forecast models (CFSv2 and NMME). Map typing will be applied to meteorological fields in Alaska, a methodology that has been developed and used in the western US to evaluate lightning ignition risk (LIR). These products, which provide forecasts for the likelihood of ignition by lightning and fire danger, will be invaluable to Alaska fire managers in decision-making (e.g., how to allocate resources). This work would expand NCEP’s prediction products for Alaska, which can then be easily extended to other parts of the US, particularly the western states.

This study is being submitted to the MAPP Program: NOAA Climate Test Bed – Accelerating Transition of Research into Operations Competition and will evaluate and provide operational products that are needed by the Alaska Fire Service and their partners (e.g., US resource managers and Canadian fire managers). These stakeholders need monthly to seasonal climate forecasts to better estimate resource demands and to minimize the potential for resource shortcomings. This project is aligned with the first objective of NOAA’s NGSP long-term climate adaptation and mitigation goal of “Improved scientific understanding of the climate system and its impacts.” A successful pilot study for forecasting the 2017 and 2018 Alaska fire seasons with NMME/CFSv2 prediction products would be one of the measures of success noted in the NGSP, which can be summarized as “an advancement in climate predictions at the regional and seasonal time scale”. This improved scientific understanding comes from applying prediction projects to creating products that build decision support. Therefore, the core capabilities that would be supported through the proposed study are predictions and projections and integrated service development and decision support.