Name:

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Thesis Title:

Projecting Future Wildfire Spread Potential in British Columbia, Canada

Supervisor:

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Abstract:

Wildfires that occur during extreme fire weather events are more likely to escape initial attack by fire management agencies and threaten human lives, communities and infrastructure. Due to the strong relationships between temperature, precipitation, and fuel moisture, research suggests that western North America will experience more frequent and severe extreme fire weather events under climate change. The present study investigates trends in the frequency and magnitude of extreme fire weather events under different climate change scenarios in the Wells Gray Provincial Park area of British Columbia. We examine trends in the extreme values (95th percentile) of the Canadian Fire Weather Index (FWI) System, as well as the frequency of weather-based potential spread days (PSDs). PSDs are defined as days in which threshold values of the Initial Spread Index (ISI) > 8.7 are reached, indicating weather conditions that are conducive to rapidly spreading, high intensity wildfires. Past weather data is generated using ERA 5-Land climate reanalysis, and future weather data is generated using an ensemble of General Circulation Models. Weather data is then converted to FWI values, and the monthly, seasonal, and annual distribution of PSDs and extreme FWI values in the past (1991-2021) are compared to the future (2041-2100). This research is intended to contribute to the understanding of climate change impacts in British Columbia, demonstrating the need for local governments, communities, and fire management agencies to prepare for increased fire activity in the future.