

The effect of heat wave in the summer of 2018 on carbon and water fluxes in an open black spruce forest in an interior Alaska

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Temperatures have been increasing at higher rate in the northern high latitudes than any other regions of the globe, especially over the land areas, and are projected to continue to do so during this century. In interior Alaska, where the majority of landscape is covered with evergreen needleleaf forest, an exceptionally hot dry summer heat wave was observed in July 2018. In this study, we investigated the eddy covariance carbon and water fluxes under the hot dry period in July 2018. The study was performed in an open black spruce forest site located in the Poker Flat Research Range in interior Alaska. Three eddy covariance systems (two enclosed path and one open path eddy covariance systems) were utilized in the study period. We found the significant down regulation of net ecosystem exchanges (NEE) during a high temperature period during DOY 201-206, 2018. We will introduce the results from the carbon and water fluxes with meteorological and spectral measurements in order to understand how the environmental conditions regulated the carbon and water fluxes and how these fluxes are related with the continuous spectral measurements.

Keywords: eddy Covariance, heat wave, boreal forest