

Submission: T-2020-253-2

Title Here's what +3C looks like: Climate and ecosystem trends and projections of climate impacts in southwest Alaska

Last Name of PRESENTING Author Littell
Middle Name or initials of PRESENTING Author S
First Name of PRESENTING Author Jeremy

Country of PRESENTING Author United States

Institution, organization or general address United States Geological Survey, Alaska Climate Adaptation Science Center

Theme -Theme 2: Observing in Support of Adaptation and Mitigation

Author list (in order) *Littell, Jeremy S.; Toohey, Ryan C.; and Chase, Malinda

Poster title (brief) Here's what +3 °C looks like

Abstract - text box

Abundant evidence indicates climate changes, and consequently climate impacts, are occurring faster in the Arctic than at lower latitudes. For many communities in rural Alaska, these impacts are visible and obvious and require constant coping and adaptation now in addition to expected responses in the decades to come. Funding (for direct responses and capacity) for adaptation, however, is sometimes contingent on developed impacts assessments and adaptation plans, and these in turn require documentation of current and expected climate changes and their impacts in regions where observations are sparse, short-term, or both. Here we describe an effort to tailor available western science climate and climate impacts information to community locations, resource concerns, and their relationships to community-observed changes in the environment and ecosystems (see Toohey et al. poster). We developed community atlases of climate changes (seasonal temperature, precipitation, snowpack, etc.) and impacts (vegetation/habitat, fires, permafrost, etc.) and watershed-level summaries based on important areas identified by community participants that can be incorporated in impacts and risk assessments as well as adaptation plans. Regionally, the rate of temperature change is approximately 2.1 – 2.4 times the global average, with expected temperature increase of +7°C by the end of the 21st century (RCP 8.5, 5 GCMs, relative to 1970-1999). Due to the sub-regional differences in absolute temperature and historical plant communities, however, projected impacts on the snow, permafrost, fire, and vegetation vary considerably. Paired with local observations of current and historical changes, these atlases can serve as a foundation for the technical documentation required from communities for proposing new work and for accessing agency funding for further adaptation efforts.