

**Poster #1-8****Vegetation-Permafrost-Hydrology-Climate Relationships Along Three Hillslopes in the Low Arctic: Synthesis of Ngee Arctic Observational Studies**

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NGEE Arctic aims to improve climate model predictions through advanced understanding of coupled processes in Arctic terrestrial ecosystems. We are synthesizing observations along three hillslopes in the low Arctic on the Seward Peninsula to expand our understanding and model representation of landscape structure and organization. Discontinuous permafrost, high annual precipitation, and well-drained watersheds characterize the three sites –Teller, Kougarok and Council – with strong topographical gradients in comparison to the high Arctic landscape of the Barrow Peninsula. Here we summarize the linkages we are in the process of identifying among vegetation, permafrost, hydrology and climate. For example, tall and dense alder and riparian shrub communities with thin organic horizons are linked to deeper winter snow depth and the presence of taliks. In contrast, shorter-stature sedge dominated communities with thicker organic horizons are associated with shallow permafrost table and low winter snowpack. Sedge dominated communities are further differentiated by soil substrate chemistry. Tussock tundra sedge dominated communities that occur on acidic soils have thinner active layers than non- acidic non-tussock sedge dominated communities. We anticipate the trends we identify will not only be useful for predictions of future ecosystem changes in the low Arctic, but will also be applicable to paleoecological reconstructions.