



Examining relationships between sea ice and Arctic vegetation on the Pan-Arctic, regional and site scales

U. Bhatt (1), D. Walker (2), M. Reynolds(2), J. Comiso (3)

(1) University of Alaska Fairbanks, Geophysical Institute, (2) University of Alaska Fairbanks, Institute of Arctic Biology, (3) NASA Goddard Space Flight Center

Recent reductions in sea ice and changes in Arctic vegetation are well documented but the mechanisms of their variability are not understood. Climate analysis techniques are applied to high-resolution passive microwave sea ice concentration and AVHRR land surface temperatures to evaluate the direct relationship between coastal ice and the adjacent land. Model re-analysis data sets provide information on the atmospheric circulation, which plays a key role in the local effects on land temperature resulting from increased open water.

The relationship between sea ice and land surface temperature is found to vary with spatial scale and season. Large-scale as well as local circulation plays a role in determining the variability of sea ice and tundra vegetation. We attempt to separate the local versus large-scale forcing of the ice and vegetation as well as to estimate the direct impact of reduced ice on vegetation.