Antarctic sea ice is highly variable, with large seasonal and complex interannual variations in volume resulting from variability in sea-ice area and thickness. Currently this variability is poorly understood. Several modeling studies indicate that Antarctic sea ice will exhibit changes in extent, thickness, and concentration in response to long-term changes in global climate, as well as short-term climate variations. The National Ice Center (NIC) has produced weekly, hemispheric ice charts containing information on ice concentration and extent with selected years also containing stage of development, a proxy for ice thickness. These charts, which date back to the 1970’s, provide valuable scientific information on the seasonal and interannual variability of sea ice on a continental scale and additionally may enable the detection of trends in sea-ice thickness in the Southern Ocean.

Two selected years, 1995 and 1998, are analyzed to derive sea-ice thickness from the NIC weekly ice chart concentration and stage of development in the Ross Sea. These estimates are compared to in situ ship-based observations to highlight biases and uncertainties in remote sensing-derived weekly ice chart information. The weekly thickness distributions in both years are examined to elucidate the seasonal cycle of sea-ice thickness distribution, along with the interannual variability between 1995 and 1998. Preliminary analysis of six weeks during the growth phase (May-August) resolve the seasonal cycle of sea-ice thickness distribution from May, June and August 1995 indicating the usefulness of the NIC data in a sea-ice climatology. Comparison of 1995 and 1998 growth phase shows greater ice thickness in May/June 1995 in comparison to May/June 1998 which we will extend and discuss in this presentation.

Keywords: sea ice, Southern Ocean, climate variability, GIS