

ABSTRACT

We have developed a climate-quality data record of the clear-sky surface temperature of the Greenland Ice Sheet using the Moderate-Resolution Imaging Spectroradiometer (MODIS) ice-surface temperature (IST) algorithm. A climate-data record (CDR) is a time series of measurements of sufficient length, consistency, and continuity to determine climate variability and change. We present daily and monthly MODIS ISTs of the Greenland Ice Sheet beginning on 1 March 2000 and continuing through 31 December 2010 at 6.25-km spatial resolution on a polar stereographic grid. This record will be elevated in status to a CDR when at least nine more years of data become available either from MODIS Terra or Aqua, or from the Visible Infrared Imager Radiometer Suite (VIIRS) to be launched in October 2011. Our ultimate goal is to develop a CDR that starts in 1981 with the Advanced Very High Resolution (AVHRR) Polar Pathfinder (APP) dataset and continues with MODIS data from 2000 to the present, and into the VIIRS era. Differences in the APP and MODIS cloud masks have so far precluded the current IST records from spanning both the APP and MODIS time series in a seamless manner though this will be revisited when the APP dataset has been reprocessed. The complete MODIS IST daily and monthly data record is available online.