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**Theme**

Sub-Theme 1: The need for the Observing System

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**Poster title (brief)**

Greenland precipitation analysis from the Arctic System Reanalysis (ASR): 2000-2012

**Abstract - text box**

The Arctic System Reanalysis (ASR) is a recently developed, multi-agency, university-led retrospective analysis (reanalysis) of the Greater Arctic. Monthly precipitation data over Greenland derived from ASR version 1 (ASRv1) are compared with gauge-based precipitation measured by the Danish Meteorological Institute (DMI) and precipitation retrieved from the Precipitation Occurrence Sensor System (POSS) at Summit. The ASRv1 precipitation generally agrees with the corrected DMI gauge-based precipitation measured at coastal or near-coastal stations in Greenland. In contrast, ASRv1 precipitation at Summit, i.e., in a higher continental environment, is overestimated compared with the POSS observations. Statistical analysis is performed in order to examine features of the collection of information including seasonality. Utilizing a boxplot approach, similar seasonal variability in ASRv1 precipitation is found among stations that are geographically close. The interquartile ranges (IQRs) of DMI precipitation show similar variations to those of ASRv1, but the variability of the median values is not always comparable. The North Atlantic Oscillation (NAO) index, which is associated with changes in temperature and rainfall in Europe and North America, and ASRv1 precipitation are moderately correlated over northern Greenland, the North

Atlantic, and the Greenland Sea regions (0.32-0.49). It is suspected that local wind events have a larger influence on precipitation where smaller correlations occur. Suggested future work to understand discrepancies between ASRv1 and DMI precipitation fields in Greenland coastal regions is to include case studies of local wind events and corresponding precipitation variations utilizing in-situ measurements during both strong positive and negative NAO phases. At high-altitude and inland areas, further observations are needed to confirm the ASRv1 overestimation.