

**SSEC/CIMSS
Seminar**

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**From AO to ARP: Untangle the Mystery of
the Recent Rapid Arctic Climate Change
and the Extreme Sea Ice Loss in 2007**

In this presentation, we describe a new finding of recent rapid changes in atmospheric circulation pattern, which is characterized by the Arctic Rapid change Pattern (ARP). Arctic climate system change has been largely attributed to the upward trend and positive polarization of the Arctic Oscillation/North Atlantic Oscillation (AO/NAO) in the context of global warming effects. However, the Arctic climate system change has accelerated tremendously since the beginning of this century, and a strikingly extreme event of sea ice cover loss occurred in summer 2007, while the previously-identified driving role of AO/NAO has been substantially weakened. Systematic change in the atmospheric circulations is a missing piece of information explaining the recent rapid changes in the Arctic climate system; this lack has puzzled the climate and broader communities. Our analysis indicates that ARP is a decisive driver in the recent rapid and accelerating sea ice retreat and ocean and atmosphere warming. Our results also suggest that changes in atmospheric circulations can extremely speedup gradual global-warming-forced climate change to result in a rapid change event, perhaps shedding light on recent arguments about a tipping point of global-warming-forced climate change in the Arctic.

Friday, 22 May 2009

10:00 a.m.

Room AOSS 351