T h i n k S p a t i a l

The UCSB brown-bag forum on spatial thinking

Presents

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Recent Slow Melt of Arctic Summer Sea Ice caused by Tropical SST Changes

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3512 Phelps Hall

ABSTRACT:

Arctic sea ice in September, the minimum observed area each year, is very sensitive to global climate variability. Thus, the abrupt decline of this minimum area since the 1980s has been viewed as a "canary in the coalmine" of human-caused climate change in the Arctic. However, over the recent decade the rate of decline has slowed to a near-zero change. This shift in the rate of sea-ice decline cannot be fully explained by the steady increase of greenhouse gas emissions over the same period. Here we show that this slow-down may be due to internal variability of sea surface temperatures in the Eastern tropical Pacific that generate atmospheric circulation change reaching the Arctic. This change in the Arctic atmosphere has resulted in abnormal, abrupt warming from the early 2000s to 2012 and relative cooling in the recent years in the Arctic that can partially enhance and mask the effects of human-induced warming during the corresponding periods. Given the importance of this internal process in driving the Arctic climate on low–frequency time scales, a better understanding of its underlying mechanisms will improve future projections of Arctic climate.

BIO:

Qinghua Ding received his Ph.D. from the University of Hawaii in 2008. His Ph.D. work was to understand the Asian monsoon variability over the last 60 years and its linkage with global circulation variability. In 2010 he started to work at University of Washington as Research Associate on developing an isotope-enabled global climate model and understanding the recent climate change in the Arctic and Antarctic from the perspective of climate dynamics. He found that the recent warming trends in the Arctic and Antarctic are partly attributed to a tropical SST-related natural variability. He joined the Polar Science Center in 2014 and accepted a faculty position at UCSB in 2016. For future research, his focus is on exploring polar-lower latitude connections in the past 1000 years by using atmosphere-ocean-ice fully coupled GCMs, isotope-enabled GCMs and paleo-climate proxy data. The ultimate goal is to provide more reliable projections of the polar climate response to anthropogenic climate forcing.

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