



UNIVERSITY  
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MĀNOA

## Department of Atmospheric Sciences Seminar Announcement

Department of Atmospheric Sciences, S.O.E.S.T., University of Hawai'i at Mānoa  
2525 Correa Road, HIG 350; Honolulu, HI 96822 ☎956-8775



# Arctic sea ice patterns driven by the Asian summer monsoon

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**Date:** Wednesday, April 13, 2016  
**Refreshments:** 3:00pm at MSB courtyard  
Free Cookies, Coffee & Tea Provided  
(Please Bring Your Own Cup)  
**Seminar Time:** 3:30pm  
**Location:** Marine Sciences Building, MSB 100

### Abstract:

The fluctuation of Arctic sea ice concentration (SIC) has been associated with changes in ocean circulation, ecology, and Northern Hemisphere climate. Prediction of sea ice melting patterns is of great societal interest, but such prediction remains difficult because the factors controlling year-to-year sea ice variability remain unresolved. Distinct monsoon-Arctic Rossby wave trains modulate summer SIC along the periphery of the Arctic largely by changing wind-forced sea ice transport. Anomalous East Asian monsoon rainfall produces a northward propagating meridional Rossby wave train extending into the Siberian Arctic and influences sea ice patterns with a single barotropic circulation center. The Indian summer monsoon excites an eastward propagating circumglobal teleconnection that extends into the North Atlantic before bifurcating into the Arctic. This bifurcation produces a barotropic dipole circulation pattern over the Arctic, which drives distinct sea ice patterns. The remote Asian monsoon variations induce a dominant dipole sea ice melt pattern in which the North Atlantic-European Arctic contrasts the Siberian-North American Arctic. The monsoon-related sea ice variations are complementary and comparable in magnitude to locally forced Arctic Oscillation variability. The Monsoon-Arctic link will improve seasonal prediction of summer Arctic sea ice and possibly explain long-term sea ice trends associated with the projected increase in Asian monsoon rainfall over the next century.