



UNIVERSITY
of HAWAI'I
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



What caused the weakest Indian summer monsoon around 1600 and abrupt monsoon increase afterwards?

Ms. Hui (Daisy) Shi

Atmospheric Sciences Ph.D. Candidate
Department of Atmospheric Sciences
University of Hawai'i at Mānoa

Date: Thursday, May 4, 2017
Refreshments: Free Cookies, Coffee & Tea Provided
(Please Bring Your Own Cup)
Seminar Time: 2:00pm
Location: IPRC Conference Room, POST 414

Abstract:

Upwelling records from the Arabian Sea documented that around 1600 occurred the weakest Indian summer monsoon (ISM) in the Holocene. Later around 1650, an abrupt increase in summer monsoon was observed from stalagmite records in central India. Previous studies link the weak monsoon period to the cool Northern Hemisphere temperature during the Little Ice Age. However, the mechanisms remain unclear because the proxy records are not sufficiently resolved to discriminate among the forcing time series.

Here we attempt to answer this question using newly reconstructed annual Asian summer monsoon precipitation dated back to AD 1470. The gridded reconstruction combines information from an intensive tree-ring network and ancient historical documents. The first rotated empirical orthogonal function (REOF) mode of decadal Asian monsoon variability shows concurrent changes over India and northeastern China. This mode is found associated with external forcing, especially with radiative forcing related to volcanic eruptions around 1600. This could provide an explanation for the weak ISM during this period. Cross wavelet analysis shows strong coherence between reconstructed NINO index and the principle component (PC) of REOF1 in the 1600s. This indicates that changes in equatorial Pacific Ocean conditions could be responsible for the abrupt change of the ISM around 1650.