



Abstract Details

[AOGS 1st Annual Meeting](#) > [Ocean and Atmospheres](#) > **Effect of the Annual Cycle of SST on Australian Monsoon Intensity and Phase Transition** >

Corresponding Author : Prof. Tim Li (timli@hawaii.edu)

Organization: Univ. of Hawaii

Category: Ocean and Atmospheres

Paper ID: 57-OOA-A1028

Title: Effect of the Annual Cycle of SST on Asian-Australian Monsoon Intensity and Phase Transition

Abstract:

A traditional view is that the monsoon is determined by land-ocean temperature contrasts. Since the land surface temperature accounts for a significant large portion of the meridional temperature gradient, it is generally thought that the annual progression of SST might play a minor role. In this study, we demonstrate, based on atmospheric GCM experiments, that this traditional view is flawed. Our numerical results indicate that the annual progression of SST is critical for the Australian monsoon. It accounts for 70% of total summer rainfall over northern Australia. Even over South Asia where land mass and topography contribute greatly to the monsoon strength, the annual SST variation still accounts for 35-40% of the total rainfall. It is found that the annual cycle of SST influences the monsoon strength mainly through the following two effects. One is through hemispheric temperature gradient induced planetary-scale Hadley circulation that enhances the cross-equatorial monsoon flows. Another is through the increased surface moisture induced by both moisture flux and surface evaporation over the monsoon ocean. The asymmetric Indian and Australian monsoon phase transition between fall and spring is also investigated with idealized AGCM experiments. It is found that both internal atmospheric dynamics and air-sea interaction contribute to this temporal asymmetry of the monsoon transition.

Presentation Mode: Oral

Keywords: Annual cycle of SST, Indian and Australian monsoon intensity, asymmetric monsoon transition, AGCM experiments

Status: Pending.

Co-Authors

| No. | Title | First Name | Family Name | Organization |
|-----|-------|------------|-------------|-----------------|
| 1 | Prof. | Tim | Li | Univ. of Hawaii |