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Department of Atmospheric Sciences Seminar Announcement

Department of Atmospheric Sciences, S.O.E.S.T., University of Hawai'i at Mānoa
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Development of Taiwan Earth System Model and Evaluation against CMIP6 Models

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You are invited to a Zoom meeting.

When: April 14, 2021 at 3:30PM HST

Register in advance for this meeting:

<https://hawaii.zoom.us/meeting/register/tJYvfu2urD8jEtb2-aKc4ISPr4W9YuHre-tE>

After registering, you will receive a confirmation email containing information about joining the meeting.

Abstract:

This study evaluated the performance of the Taiwan Earth System Model version 1 (TaiESM1) in simulating the observed climate variability in the historical simulation of the Coupled Model Intercomparison phase 6 (CMIP6). TaiESM1 was developed based on the Community Earth System Model version 1.2.2, with the inclusion of several new physical schemes and improvements in the atmosphere model. The new additions include an improved triggering function in the cumulus convection scheme, a revised distribution-based formula in the cloud fraction scheme, a new aerosol scheme, and a unique scheme for three-dimensional surface absorption of shortwave radiation that accounts for the influence of complex terrains. In contrast to most model evaluation processes, which focus mainly on the climatological mean, this evaluation focuses on climate variability parameters, including the diurnal rainfall cycle, precipitation extremes, synoptic eddy activity, intraseasonal fluctuation, monsoon evolution, and interannual and multidecadal atmospheric and oceanic teleconnection patterns. A series of intercomparison between the simulations of TaiESM1 and CMIP6 models and observations indicate that TaiESM1, a participating model in CMIP6, can realistically simulate the observed climate variability at various time scales and performs better than the other CMIP6 models in terms of many key climate features.