

Regional Climate Change for Thailand

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Foothills Lab 2, Room 1022

3:00 p.m. - Refreshments

3:30 p.m. - Seminar

Abstract

Regional climate simulations for Thailand during both the past three decades from 1970 to 1999 which are referred to as the control period and the 10-year future projections from 2020 to 2029 were performed using the nested MM5 regional climate model derived from the fifth generation mesoscale meteorological model (MM5) forced with the Community Climate System Model version 3 (CCSM3). The 6-hourly data of the forcing CCSM3 according to the IPCC SRES A1B were employed for the 10-year future projections. Dynamical downscaling of the driving CCSM3 to the MM5 nest domain at the resolution of 15 km covering Thailand and parts of Myanmar, Laos, Vietnam, Cambodia and Malaysia via a one-way nesting approach was progressively conducted. Simulated rain during the past was considerably underestimated compared to the station observation.

Climate change in Thailand is much influenced by the driving CCSM3 as well as mesoscale processes due to complex terrain, land-sea contrasts and variations in land-use in the country and surrounding areas. The higher temperature in southern Thailand in the future is associated with the warmer sea surface temperature. Projected warming of average temperatures, maximum temperatures, and minimum temperatures in the cool, warm, and rainy seasons throughout Thailand is clearly noticed for the 2020-2029 decade.

The MM5-RCM precisely captures the trend of rainy season in Thailand while it is shifted to the end of the year in southern Thailand. Conclusion can be drawn from the outputs of the MM5-RCM simulation that the projected rainfall during 2020-2029 will be relatively less in most parts of Thailand except the south and mountainous areas throughout the country. Topography and land-sea contrasts will help increase the future local rainfall while the rest of the country will be drier.