

Km-Scale NWP and CMIP6-based Regional Climate Projections at the Centre for Climate Research Singapore (CCRS)

Dale Barker, CCRS Director

Singapore is situated approximately one degree north of the equator, within the 'Maritime Continent' region of the tropical Western Pacific. The small (730sqkm) city-state has a typically tropical climate, with abundant rainfall, high and uniform temperatures, and high humidity all year round. Many of its climate variables, such as temperature and relative

humidity, do not show large month-to-month variation. However, many variables exhibit prominent diurnal (or daily) variations from hour to hour, indicating the strong influence that solar heating has on the local climate. Singapore's climate is characterised by two monsoon seasons separated by inter-monsoonal periods. The Northeast Monsoon occurs from December to early March, and the Southwest Monsoon from June to September. This talk will begin with an overview of the climate of the Singapore, where the major weather systems that can lead to heavy rainfall include *monsoon surges*, *Sumatra squalls* and *afternoon and evening thunderstorms* caused by strong surface heating and by the sea breeze circulation that develops in the afternoon.

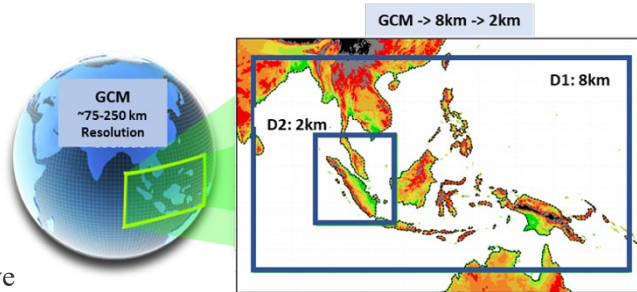


Figure 1: The regional 8/2km domains of Singapore's 3rd National Climate Projections 'V3' project

The Centre for Climate Research Singapore (CCRS) is part of the Met Service Singapore, with a mission to *advance scientific understanding of tropical climate variability and change and its associated weather systems affecting Singapore and the wider Southeast Asia Region, so that the knowledge and expertise can benefit decision makers and the community*. Formed in 2013, CCRS groups undertake R&D in a number of areas relevant to the local tropical climate, including the understanding of key tropical processes, and their modelling and prediction at timescales ranging from nowcasting rainfall for the next 30 minutes, through 1-2 day regional SE Asia km-scale NWP, subseasonal and seasonal prediction, and regional climate change projections, the latest iteration being the 3rd National Climate Change Projections ('V3' project) due for completion in September 2023. The primary workhorse for weather/climate predictions is the 'SINGV' system, a tropical configuration of the Unified Model (UM). A brief overview of SINGV development and status of the V3 project will be provided. Finally, future R&D directions including tropical urban climate modelling, coupled regional tropical environmental prediction and localised sea level projections for Singapore will be presented.

Thursday, 18 August 2022, 2:00 PM

For Zoom information, please contact Nancy Sue Kerner nskerner@ucar.edu

Seminar will also be live webcast <https://operations.ucar.edu/live-mmm>