

CLIMATE CHANGE IN SINGAPORE



DAILY TEMPERATURE



FREQUENCY OF WARM DAYS & NIGHTS



RAINFALL



WIND

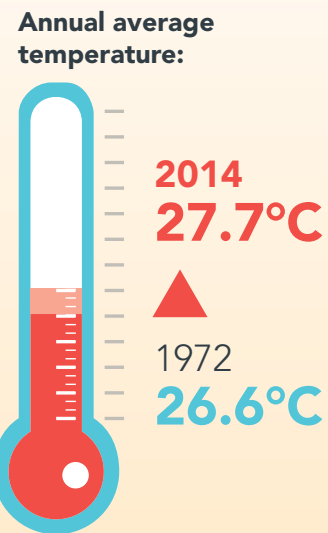


SEA LEVEL RISE



OBSERVED CHANGES IN SINGAPORE'S CLIMATE

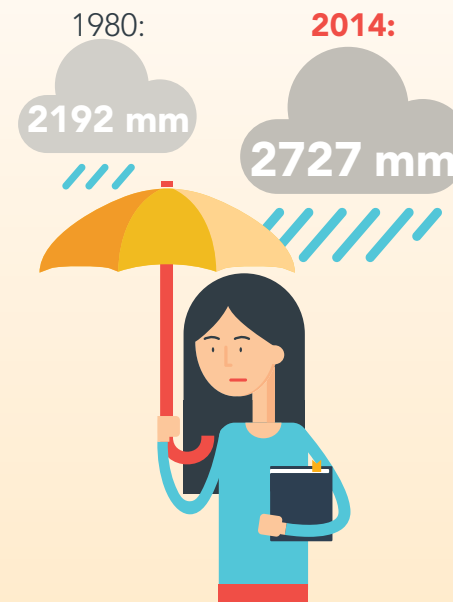
From 1972 to 2014, annual average temperature has increased from 26.6°C to 27.7°C.



From 1972, the number of warm days & nights have increased, and the number of cool nights have decreased.



General uptrend in annual average rainfall from 2192 mm in 1980 to 2727 mm in 2014.



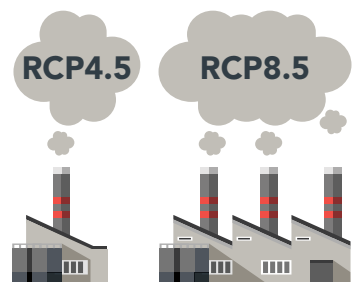
- General wind patterns influenced by **northeast and southwest monsoons**.
- No clear trends as wind speed is **environment dependent** (e.g. presence of buildings and trees).



Annual sea levels in the Straits of Singapore rose at the rate of 1.2–1.7 mm yr⁻¹ in the period 1975-2009.

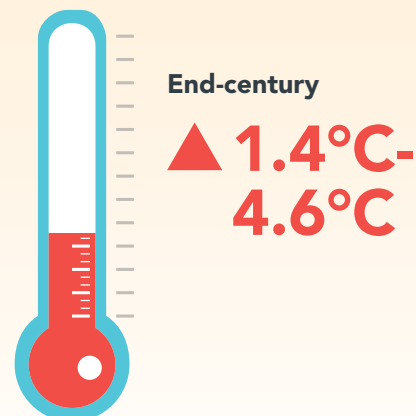


FUTURE CLIMATE PROJECTIONS FOR SINGAPORE

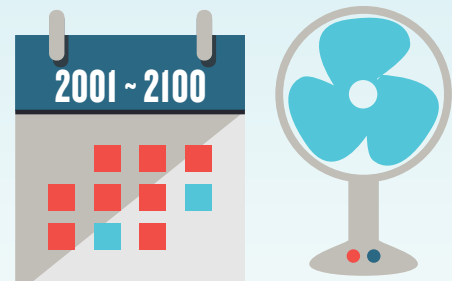


Higher greenhouse gas emissions lead to larger changes in the climate*

Changes in daily mean temperatures are projected to increase 1.4-4.6°C by end-century (2070-2099) with respect to the baseline period 1980-2009.

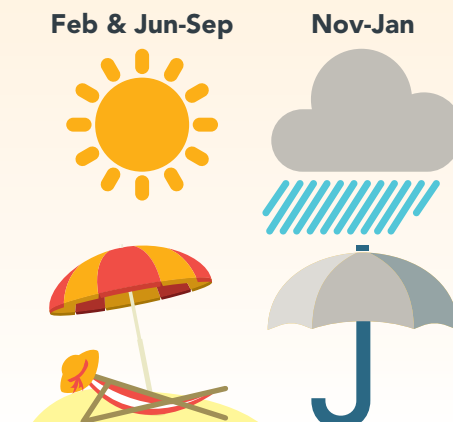


More warm days and warm nights for Feb to Sep* throughout the 21st century.

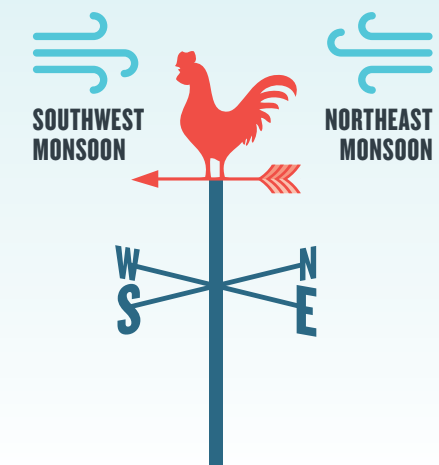


*Under the current climate, the period February to May has the highest number of warm days, and the period June to September has the highest number of warm nights.

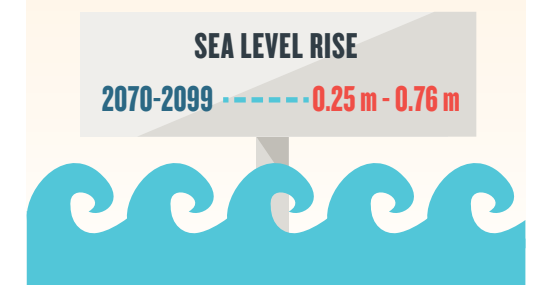
- The contrast between the wet months (Nov to Jan) and dry months (Feb and Jun to Sep) is projected to become **more pronounced**.
- **Increasing trends** in both **intensity** and **frequency** of **heavy rainfall** events as the world warms.



- Singapore will continue to be influenced by the **northeast and southwest monsoons**.
- **No substantial changes** in wind direction but potential increase in wind speeds during the northeast monsoon season.



- **End-century (2070-2099) mean sea-level rise projections** relative to baseline period ranges from **0.25 m to 0.76 m**.
- Changes in extreme sea levels for the Singapore region over the 21st Century are likely to be dominated by the **regional time-mean sea level rise**, with only small future changes to the storm surge and wave components.



*Representative Concentration Pathways (RCPs) are defined by the cumulative measure of human emissions of Greenhouse Gases (GHGs).