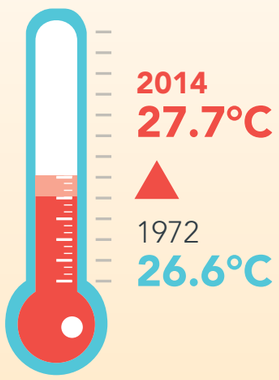
CLIMATE CHANGE IN SINGAPORE

OBSERVED CHANGES IN SINGAPORE'S CLIMATE

DAILY TEMPERATURE

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

Annual average temperature:

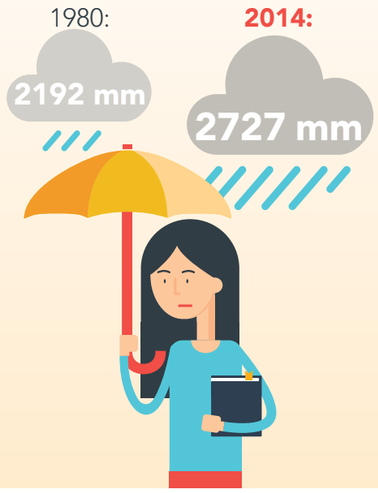


FREQUENCY OF WARM DAYS & NIGHTS

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

RAINFALL

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

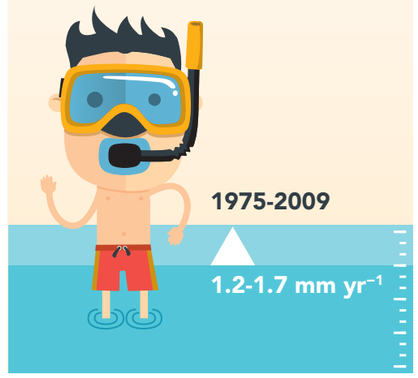


WIND

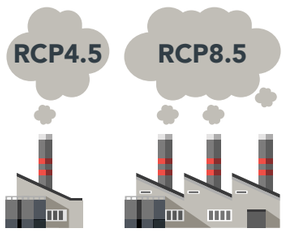
- General wind patterns influenced by **northeast and southwest monsoons**.
- No clear trends as wind speed is **environment dependent** (e.g. presence of buildings and trees).

SEA LEVEL RISE

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**.



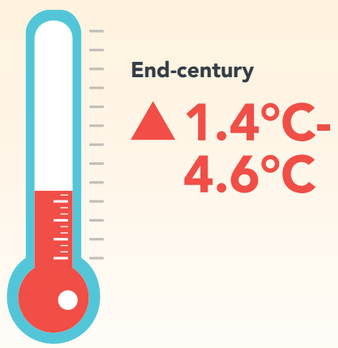
FUTURE CLIMATE PROJECTIONS FOR SINGAPORE



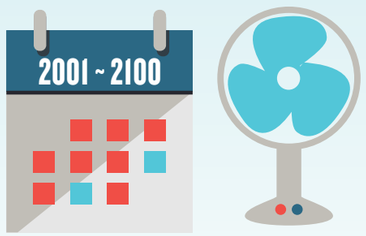
Higher greenhouse gas emissions lead to larger changes in the climate*

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

Changes in daily mean temperatures are projected to increase **1.4-4.6°C** by **end-century**.

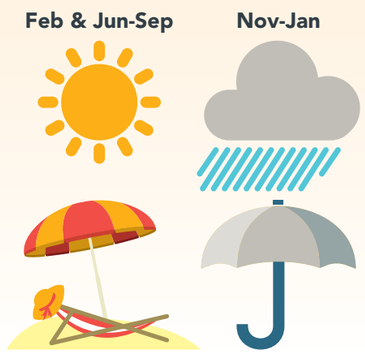


More warm days and **warm nights** for **Feb to Sep*** **throughout the 21st century**.

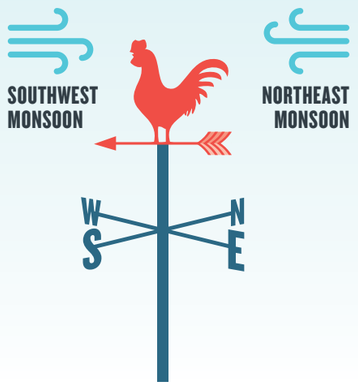


**Under the current climate, the period February to May has the highest number of warm days, and the period June to September has the highest number of warm nights.*

- 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) sea-level rise projection** 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.