

# AIR TEMPERATURE CHANGE



Observations from six weather stations with more than a century of data (Taipei, Taichung, Tainan, Hengchun, Hualien, and Taitung) provided by the Central Weather Administration (CWA) reveal that the average air temperature gradually increased from 1920 to 1940, remained stable from 1940 to 1980, and rose considerably after 1980. The temperature increase after 1980 was notably greater than that in other periods. The warming rates since the 1990s, since the 1970s, and in the long term (1900 to 2022) are 0.27°C, 0.25°C, and 0.15°C per decade, respectively. (Figure 1)

Regarding future projections, global surface air temperatures have steadily risen over the past century, primarily due to increasing anthropogenic greenhouse gas emissions. On the basis of the CMIP6 climate projections under the four SSP scenarios, warming in Taiwan will continue at least until the middle of the century.

In the near term (2021 to 2040), the range of average air temperature increases across scenarios is nonsignificant, with a projected warming of 0.6°C to 0.8°C (median). In the midterm (2041–2060), the difference between scenarios is greater: the low-emissions scenario (SSP1-2.6) projects a temperature increase of 1°C, whereas the very high-emissions scenario (SSP5-8.5) projects a temperature increase of 1.6°C. By the long term (2081–2100), the differences between scenarios are highly pronounced. Under the low-emissions scenario, the warming could be maintained at the midterm rate of approximately 1°C, but under the extremely high-emissions scenario, the warming could increase by 3.4°C. (Figure 2)

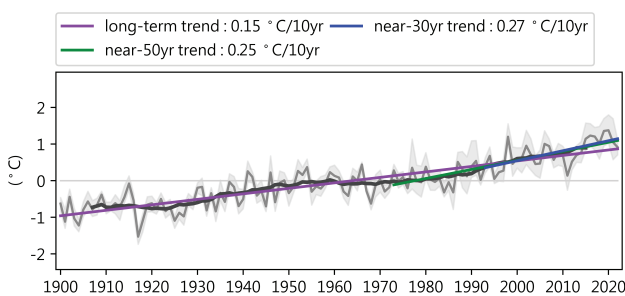


Figure 1  
Trend of annual average surface air temperature anomaly in Taiwan (six CWA stations with observations exceeding 100 years)

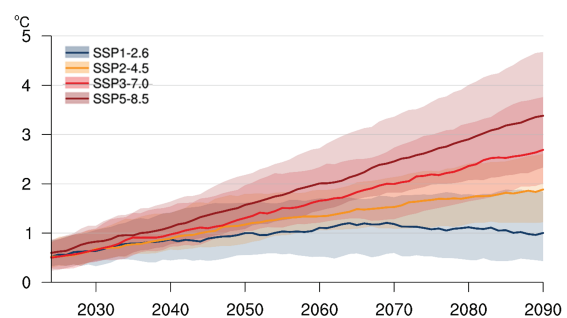


Figure 2  
Projection of annual average surface air temperature anomalies in Taiwan (CMIP6 models)

