

5.3.2 Chengdu

The GHG emissions of Chengdu was 3.2 MtCO₂e in 1975, that escalated to 6.5 MtCO₂e in 1990 and 24.2 MtCO₂e in 2015. A majority of the GHG emissions in 2015 (Figure 5.4, top) were contributed by the industry sector (64%), followed by transport sector (16%) and residential sector (16%) and energy sector (4%). As per the ICLAP model estimates (Figure 5.4, below), there would be an increase in emissions at 5.2% per annum, leading to 28.5 MtCO₂e in 2030 and 37.5 MtCO₂e in 2050.

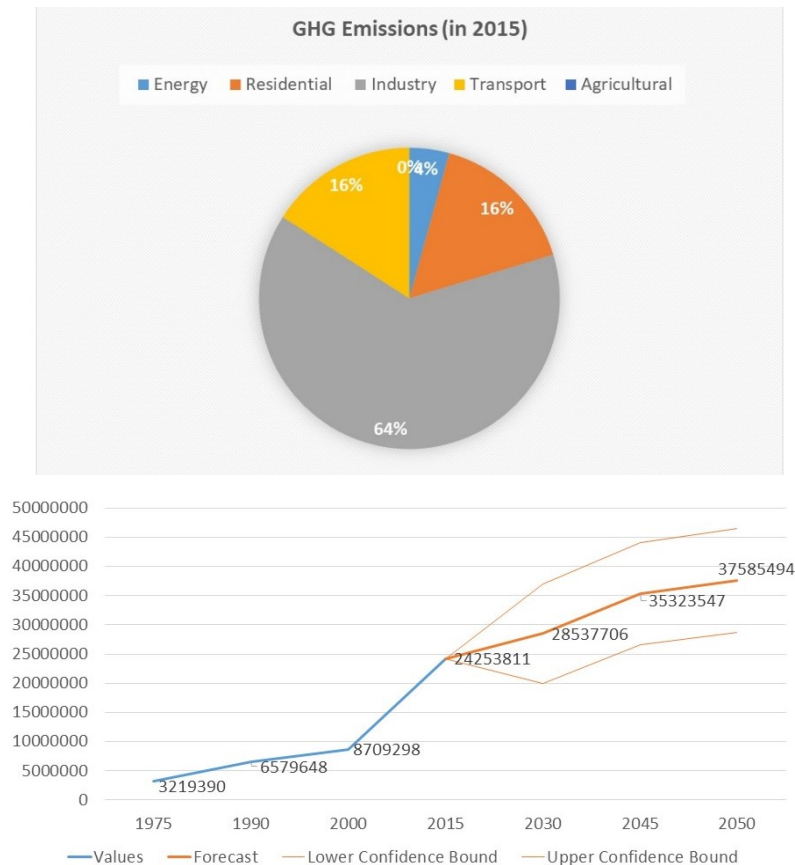


Figure 5.4: GHG contributions from different sectors in Chengdu (top); ICLAP model estimates for Chengdu's GHG emissions till 2050 (bottom)

The results for climate variability in Chengdu indicate that depending on the emission scenarios, there would be a temperature increase of 1.3–4.0 degC from 2030–80s (Figure 5.5, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.3 degC during 2030s (above the 1980 baseline temperature), 2.0 degC in 2050s, peaking to 2.5 degC during 2080s. The spatial results for moderate scenario over 2010–80s are mapped in Figure 5.5 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.3 degC during 2030s (above the 1980 baseline temperature), 2.5 degC in 2050s further rising sharply to 4.0 degC above normal up to 2080s. The spatial results for high emission scenario over 2010–80s are mapped in Figure 5.5 (bottom). Meanwhile, the precipitation change for Chengdu shows a very high variability in the long run, ranging from -100 to 200 mm from the normal (Figure 5.6, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 20 mm during 2030s (above the 1980 baseline rainfall), increasing to 100 mm in 2050s, rising again to 160 mm during 2070s and dipping to 150

mm during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.6 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Chengdu's city rainfall increase to around 90 mm (above the 1980 baseline rainfall) during 2030s, dipping up to 50 mm in 2050s, rising to 200 mm in 2060s, declining to about 100 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.6 (bottom).

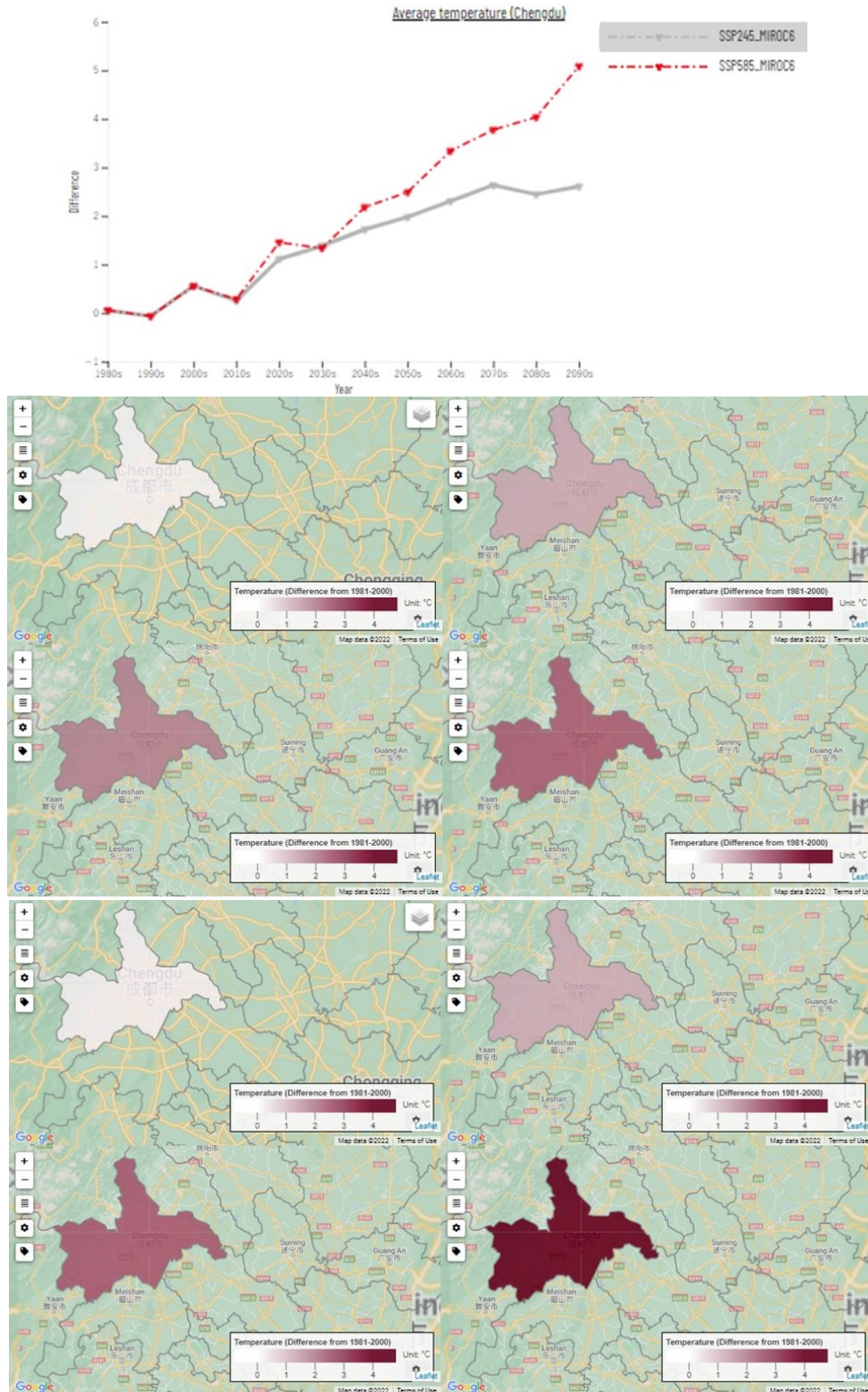


Figure 5.5: Temperature increase in Chengdu under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

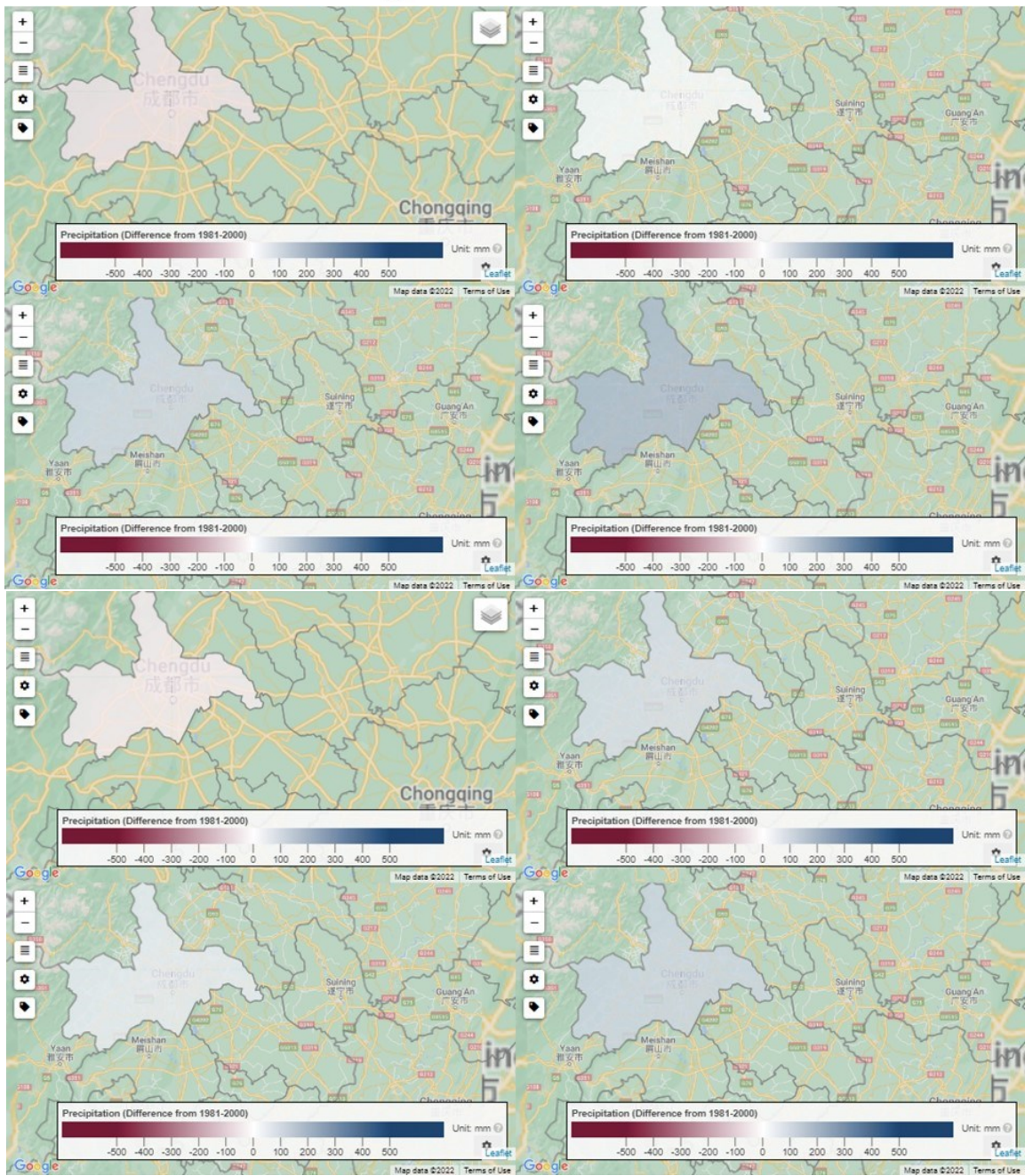
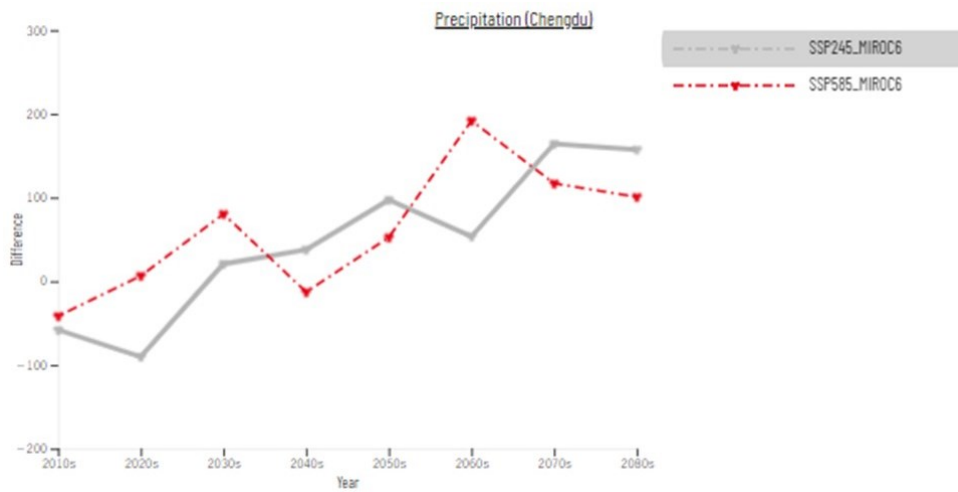


Figure 5.6: Precipitation variation in Chengdu under medium (grey) and high (red) emission scenarios till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)