5.3.12 Nanjing

The GHG emissions of Nanjing was 3.5 $MtCO_2e$ in 1975, that escalated to 9.3 $MtCO_2e$ in 1990 and 42.6 $MtCO_2e$ in 2015. A majority of the GHG emissions in 2015 (Figure 5.34, top) were contributed by the energy sector (42%) and industry sector (42%), followed by residential sector (8%) and transport sector (7%). As per the ICLAP model estimates (Figure 5.34, below), there would be an increase in emissions at 6.5% per annum, leading to 51.1 $MtCO_2e$ in 2030 and 68.1 $MtCO_2e$ in 2050.

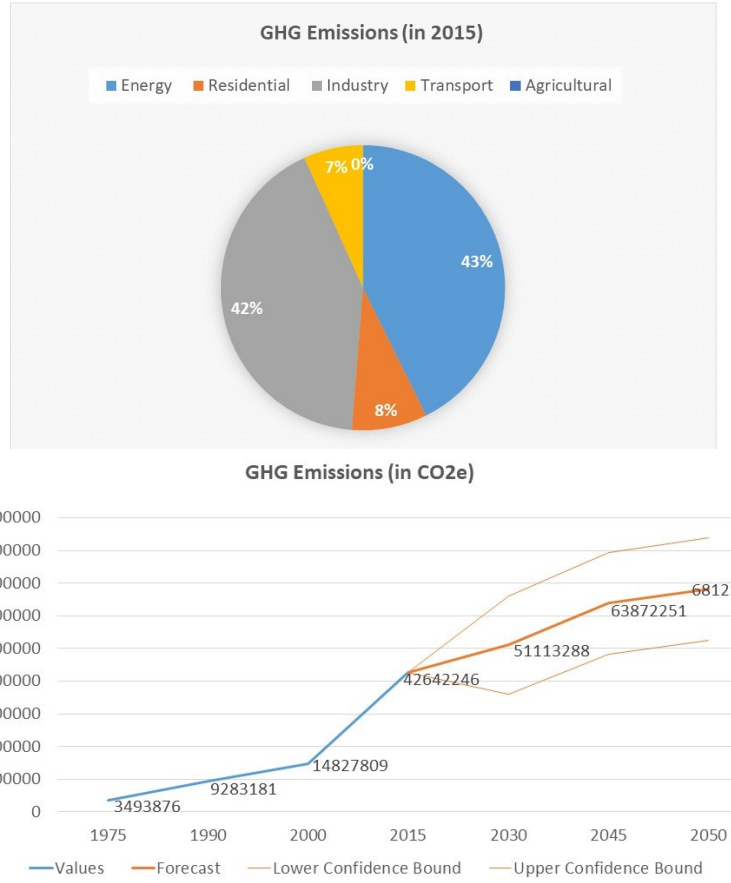

Figure 5.34: GHG contributions from different sectors in Nanjing (top); ICLAP model estimates for Nanjing's GHG emissions till 2050 (bottom)

The results for climate variability in Nanjing indicate that depending on the emission scenarios, there would be a temperature increase of 1.5–3.9 degC from 2030-80s (Figure 5.35, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.5 degC in 2030s (above the 1980 baseline temperature), 1.8 degC in 2050s, peaking to 2.0 degC in 2070s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.35 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.7 degC in 2030s (above the 1980 baseline temperature), 2.6 degC in 2050s further rising to 3.8 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.35 (bottom). Meanwhile, the precipitation change for Nanjing shows a high variability in the long run, ranging from -90 to 190 mm from the normal (Figure 5.36, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 60 mm in 2030s (above the 1980 baseline rainfall), increasing to 110 mm

in 2050s, reducing to -20 mm in 2070s and increasing to 80 mm in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.36 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Nanjing's city rainfall reducing to around -100 mm (above the 1980 baseline rainfall) in 2030s, rising to 140 mm in 2050s and 190 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.36 (bottom).

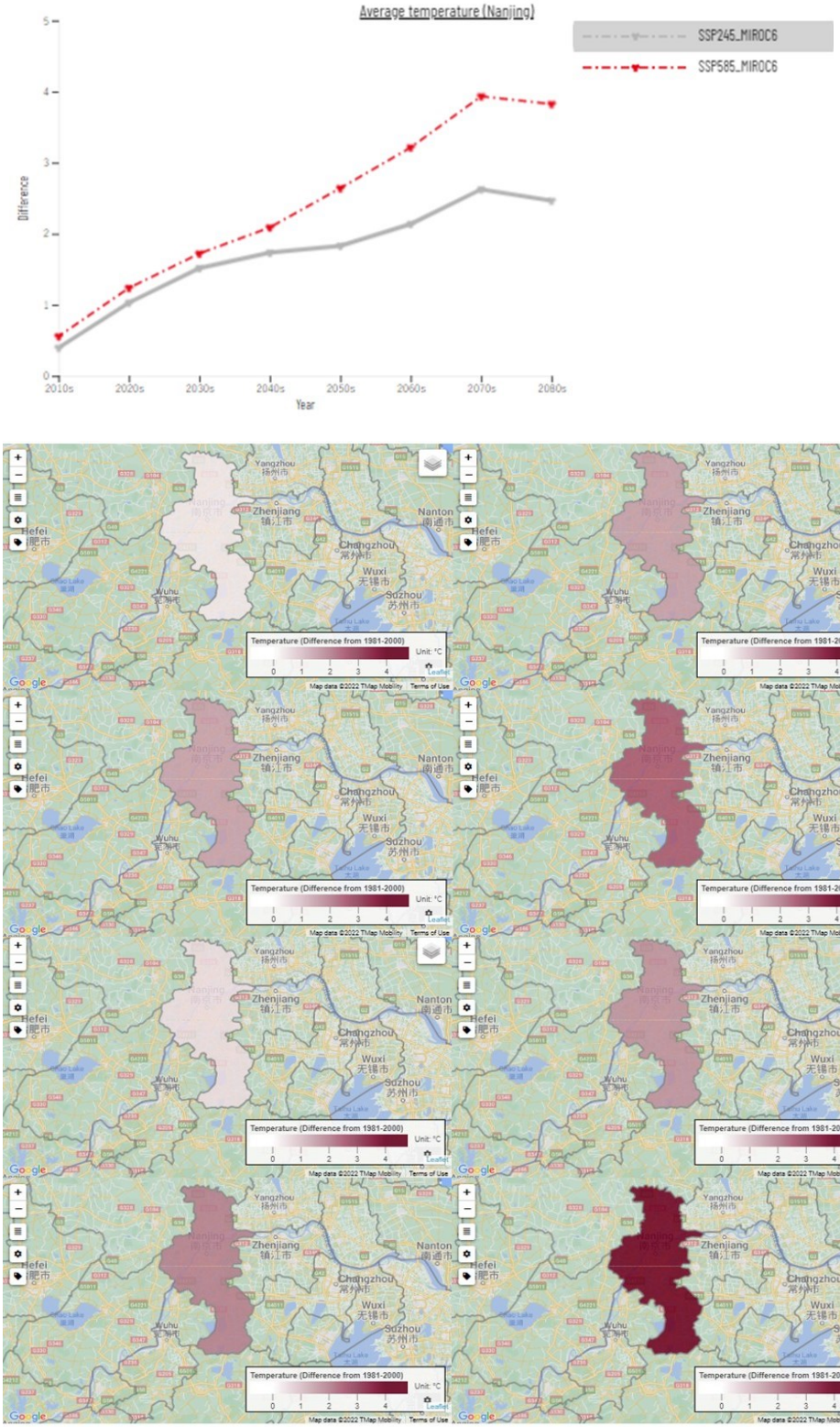

Figure 5.35: Temperature increase in Nanjing under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

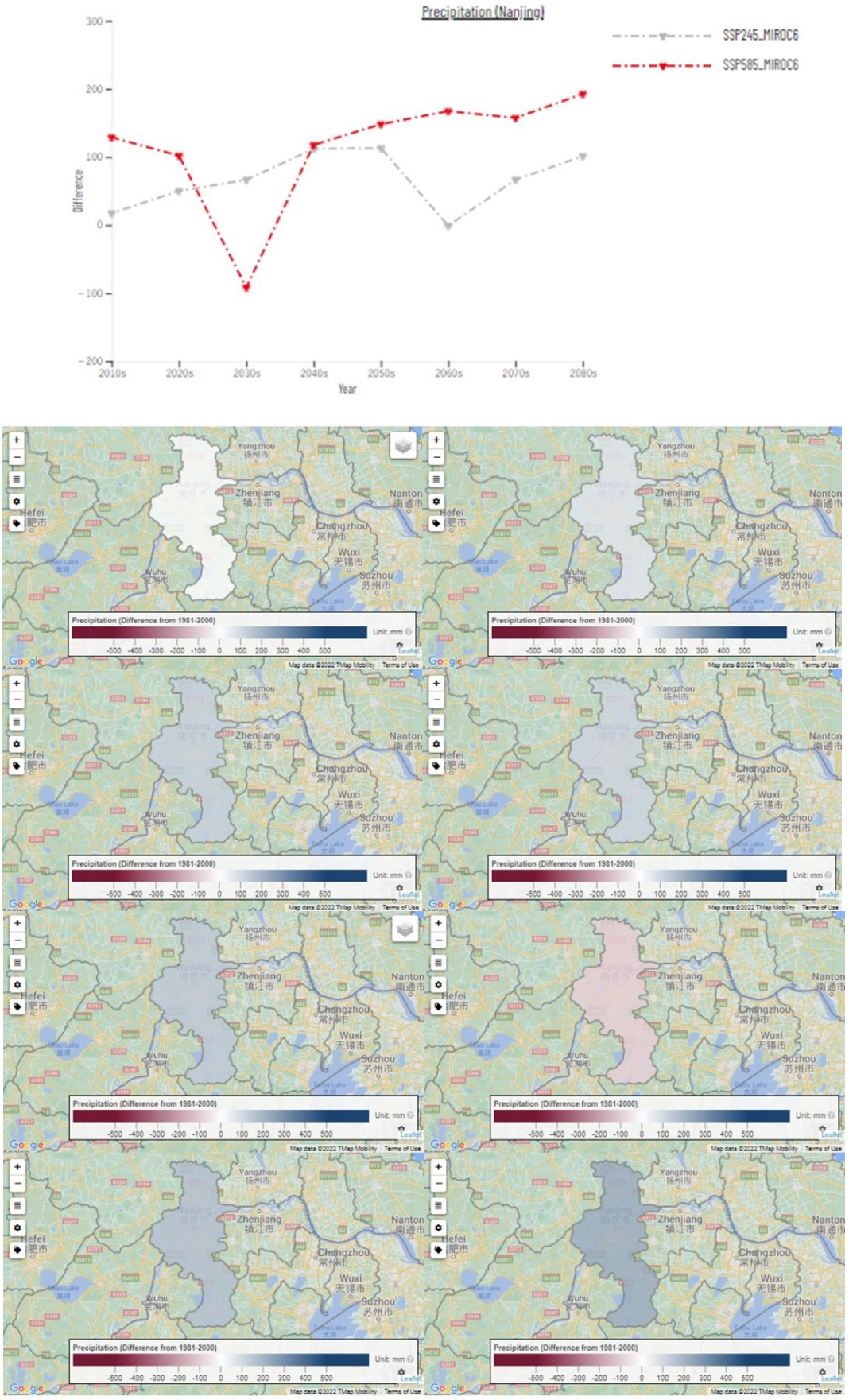

Figure 5.36: Precipitation variation in Nanjing under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)