

5.3.11 Jinan

The GHG emissions of Jinan was 2.8 MtCO₂e in 1975, that escalated to 6.3 MtCO₂e in 1990 and 22.2 MtCO₂e in 2015. A majority of the GHG emissions in 2015 (Figure 5.31, top) were contributed by the energy sector (55%) and industry sector (34%), followed by residential sector (6%) and transport sector (5%). As per the ICLAP model estimates (Figure 5.31, below), there would be an increase in emissions at 5.3% per annum, leading to 26.7 MtCO₂e in 2030 and 35.1 MtCO₂e in 2050.

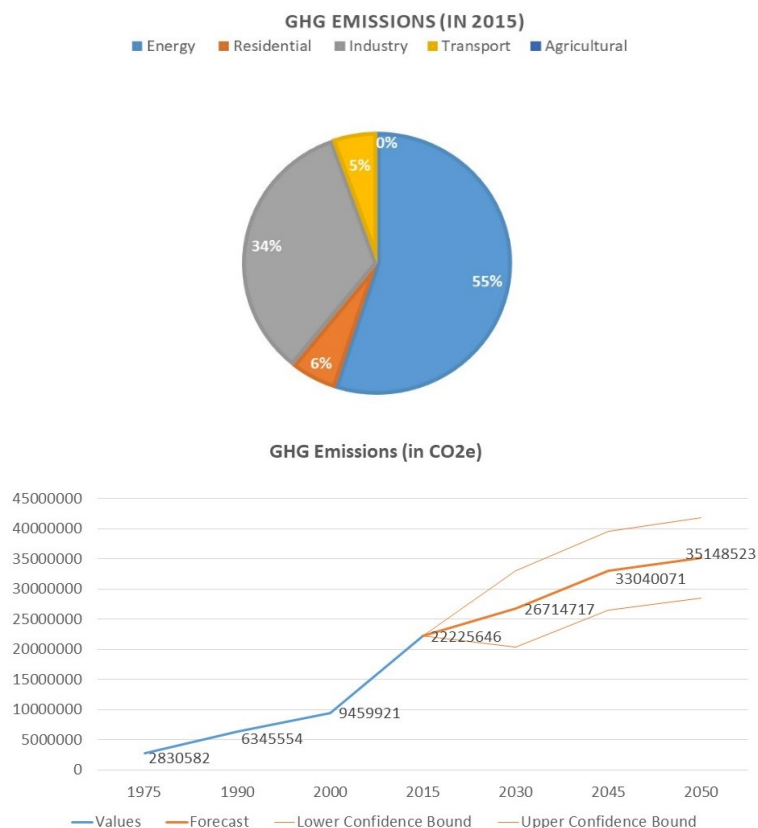


Figure 5.31: GHG contributions from different sectors in Jinan (top); ICLAP model estimates for Jinan's GHG emissions till 2050 (bottom)

The results for climate variability in Jinan indicate that depending on the emission scenarios, there would be a temperature increase of 1.3–4.0 degC from 2030-80s (Figure 5.32, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.3 degC in 2030s (above the 1980 baseline temperature), 1.8 degC in 2050s, peaking to 2.0 degC in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.32 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.8 degC in 2030s (above the 1980 baseline temperature), 2.7 degC in 2050s 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 5.32 (bottom). Meanwhile, the precipitation change for Jinan shows a very high variability in the long run, ranging from 80 to 220 mm from the normal (Figure 5.33, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 100 mm in 2030s (above the 1980 baseline rainfall), declining to -80 mm in 2050s, rising again to 220 mm in 2070s and dipping to 200 mm in 2080s. The spatial results for moderate scenario

over 2010-80s are mapped in Figure 5.33 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Jinan's city rainfall increase to around 95 mm (above the 1980 baseline rainfall) in 2030s, rising up to 140 mm in 2050s, escalating to 220 mm in 2060s, declining to about 200 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.33 (bottom).

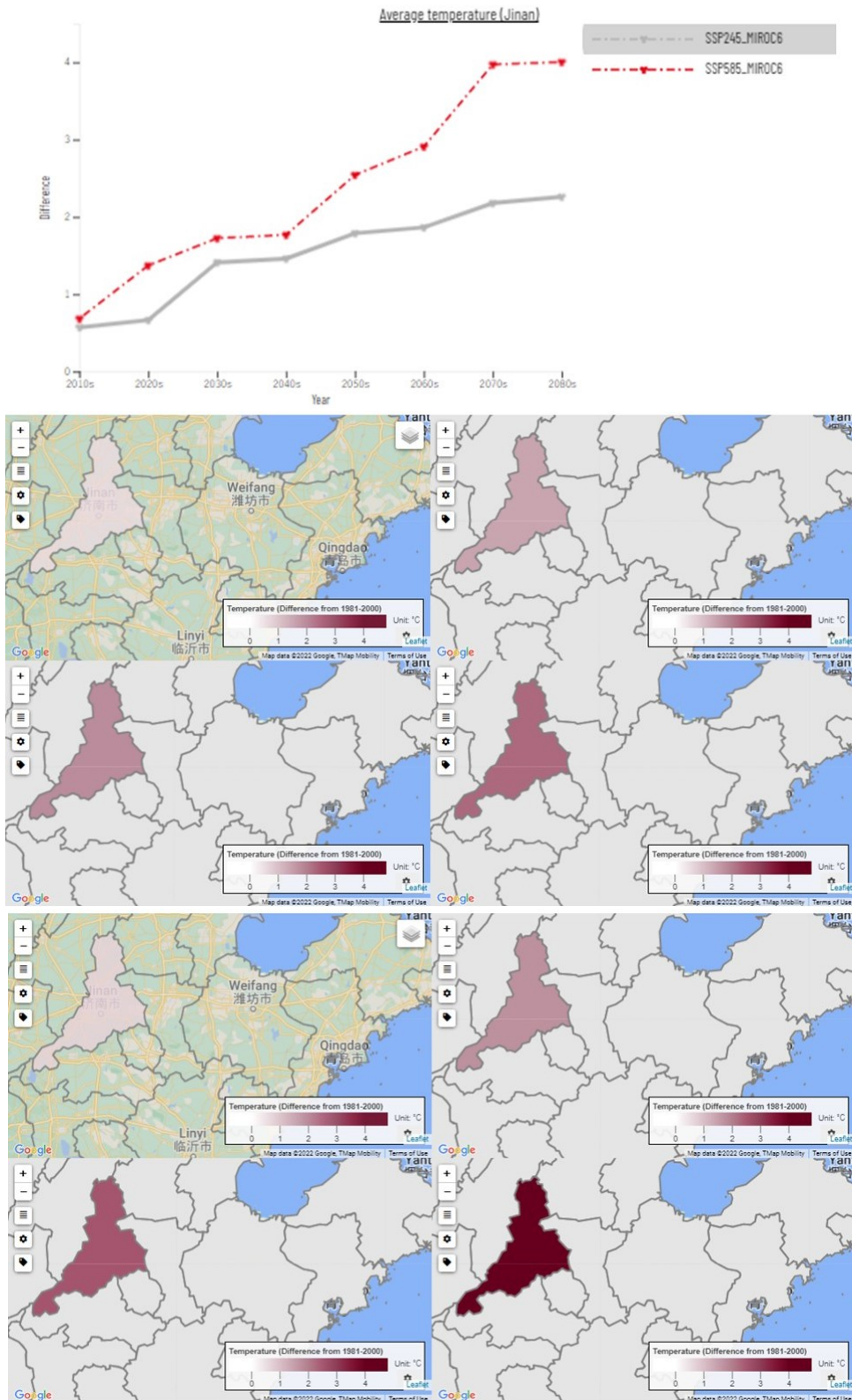


Figure 5.32: Temperature increase in Jinan under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

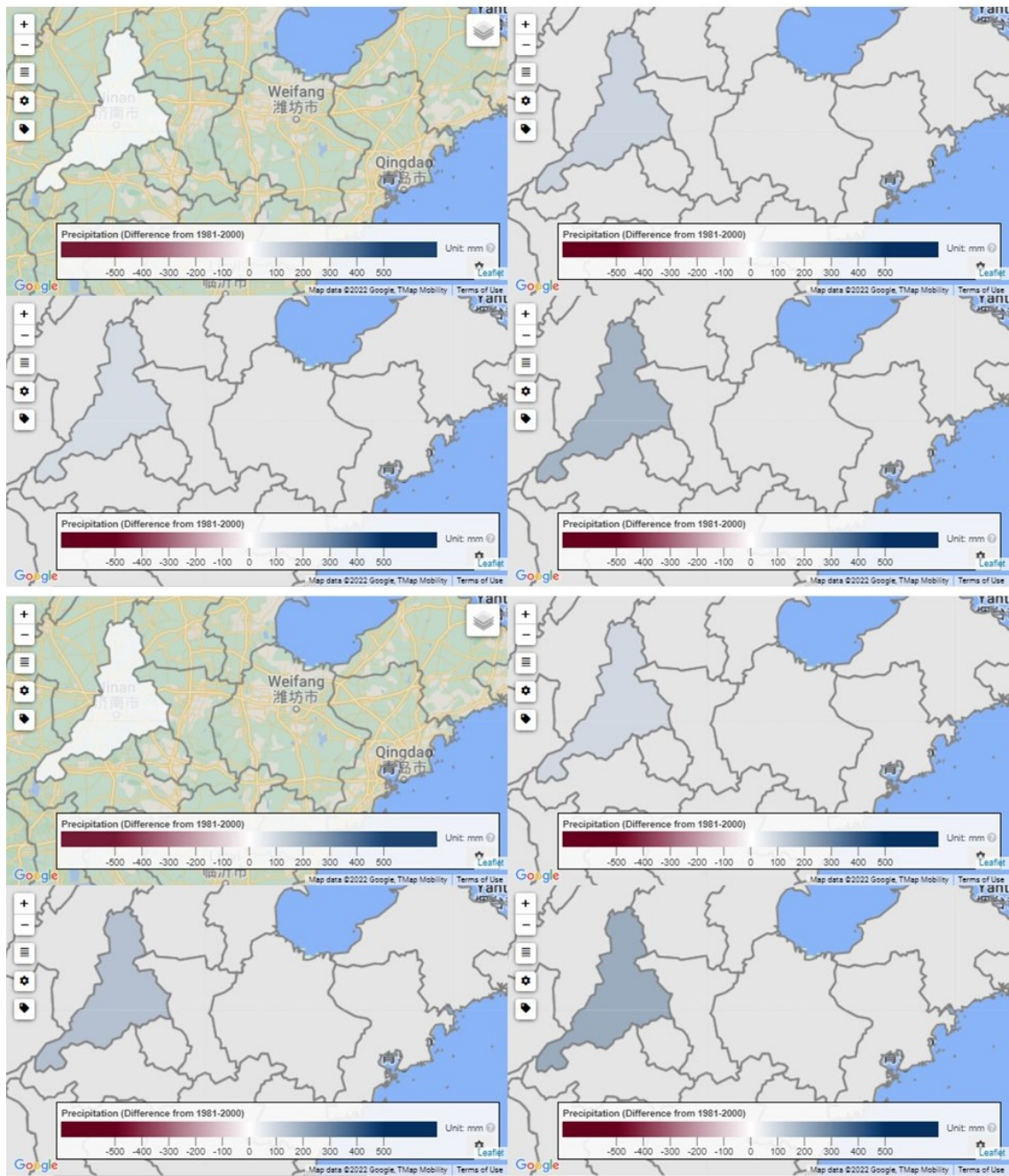
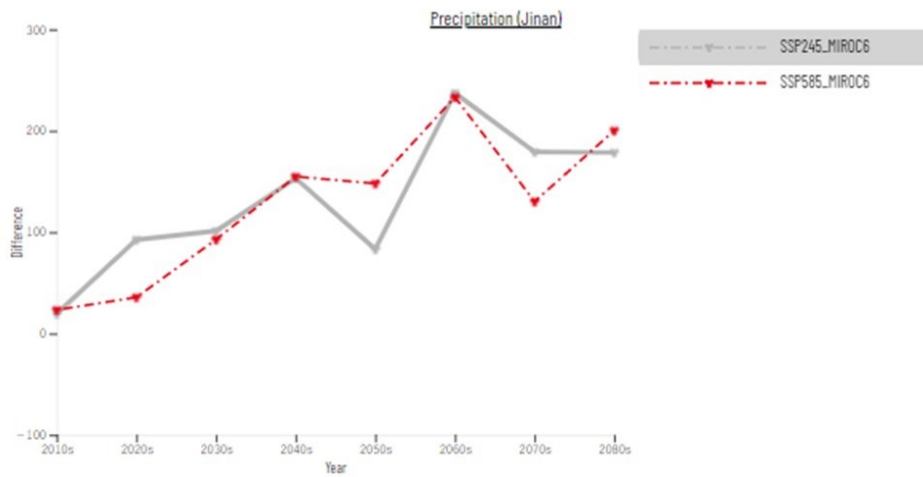


Figure 5.33: Precipitation variation in Jinan under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)