

8.3.2 Seoul

The GHG emissions of Seoul was 23.8 MtCO_{2e} in 1975, that escalated to 75.3 MtCO_{2e} in 1990 and 87.8 MtCO_{2e} in 2015. A majority of the GHG emissions in 2015 (Figure 8.28, top) were contributed by the industry sector (33%), residential sector (28%) and energy sector (28%), followed by transport sector (11%). As per the ICLAP model estimates (Figure 8.28, below), there would be an increase in emissions at 3.3% per annum, leading to 119.8 MtCO_{2e} in 2030 and 147.8 MtCO_{2e} in 2050.

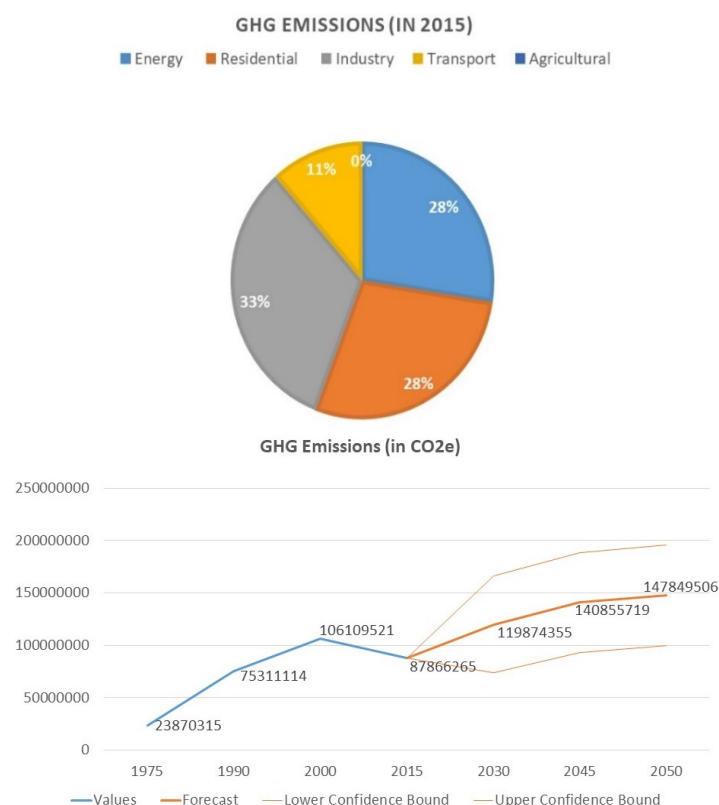


Figure 8.28: GHG contributions from different sectors in Beijing (top); ICLAP model estimates for Seoul's GHG emissions till 2050 (bottom)

The results for climate variability in Seoul indicate that depending on the emission scenarios, there would be a temperature increase of 1.8–4.5 degC from 2030-80s (Figure 8.29, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.8 degC during 2030s (above the 1980 baseline temperature), 2.1 degC in 2050s, peaking to 2.6 degC during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 8.29 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.8 degC during 2030s (above the 1980 baseline temperature), 3.0 degC in 2050s further rising sharply to 4.5 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 8.29 (bottom). Meanwhile, the precipitation change for Seoul shows high variability in the long run, ranging from -120 to 180 mm from the normal (Figure 8.30, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 50 mm during 2030s (above the 1980 baseline rainfall), declining to -20 mm in 2050s, rising unevenly to 100 mm in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 8.30 (middle). Meanwhile, the scenario

corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Seoul's city rainfall decrease to -120 mm (above the 1980 baseline rainfall) during 2030s, rising up to 30 mm in 2050s and to 170 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 8.30 (bottom).

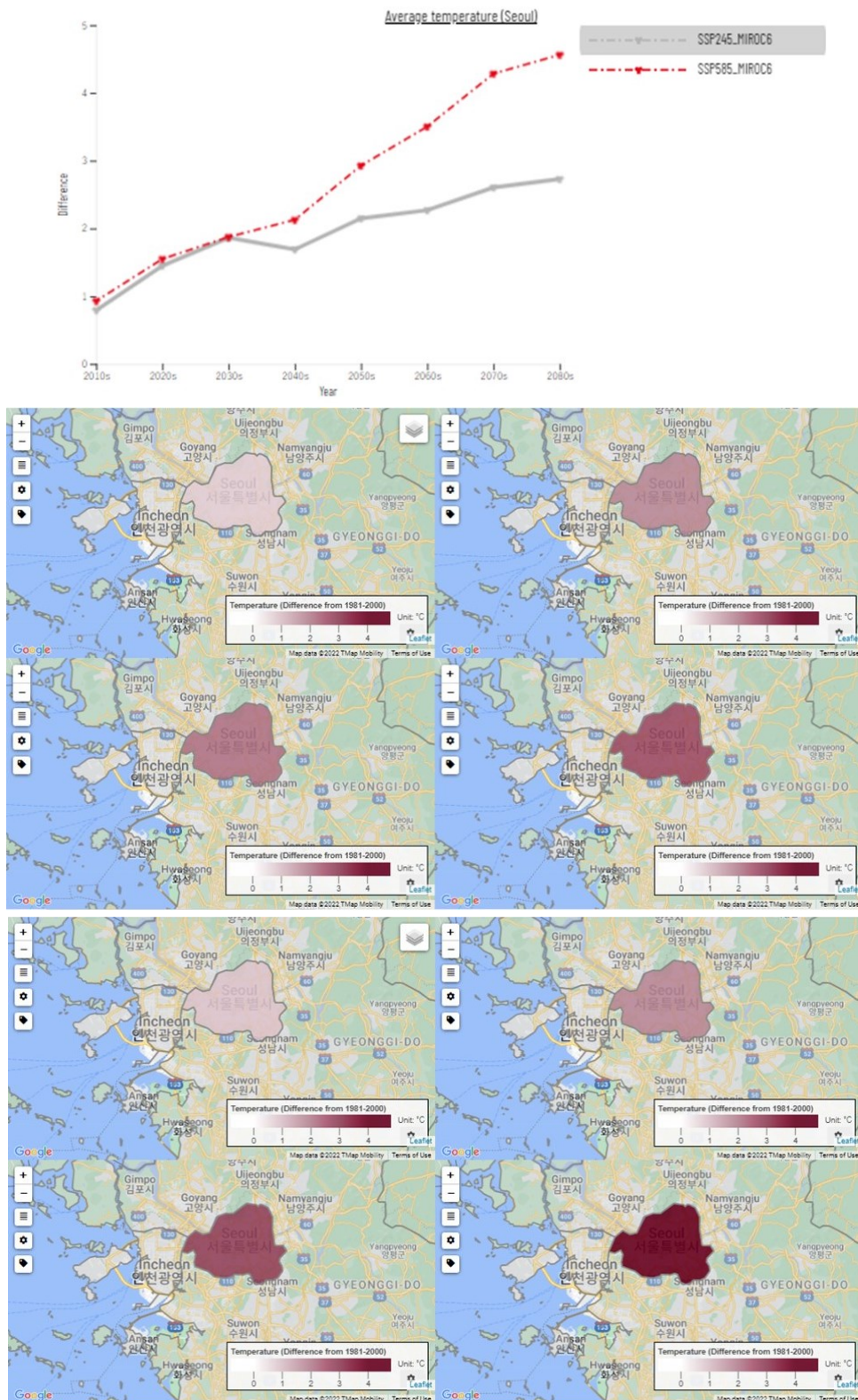


Figure 8.29: Temperature increase in Seoul under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

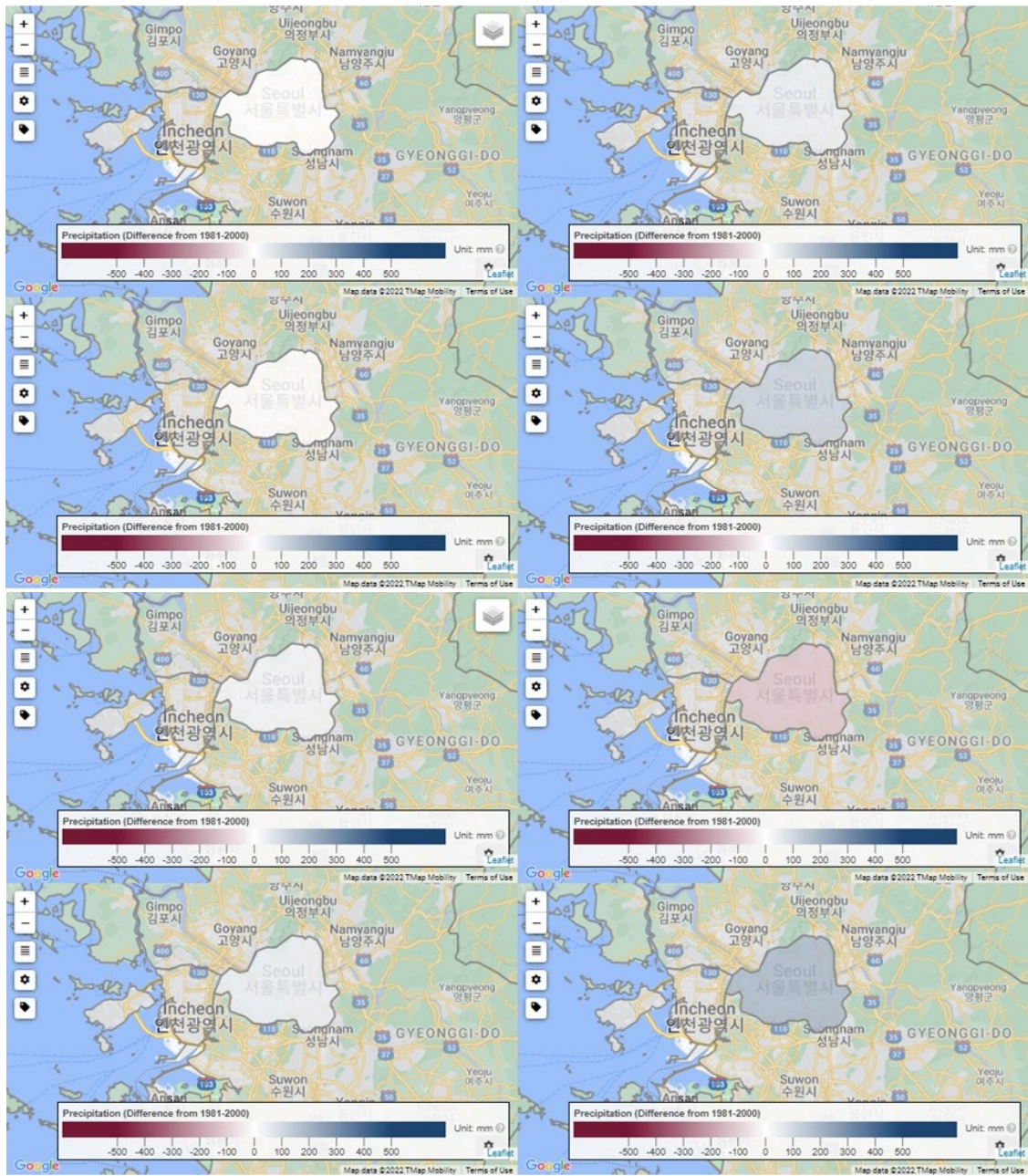
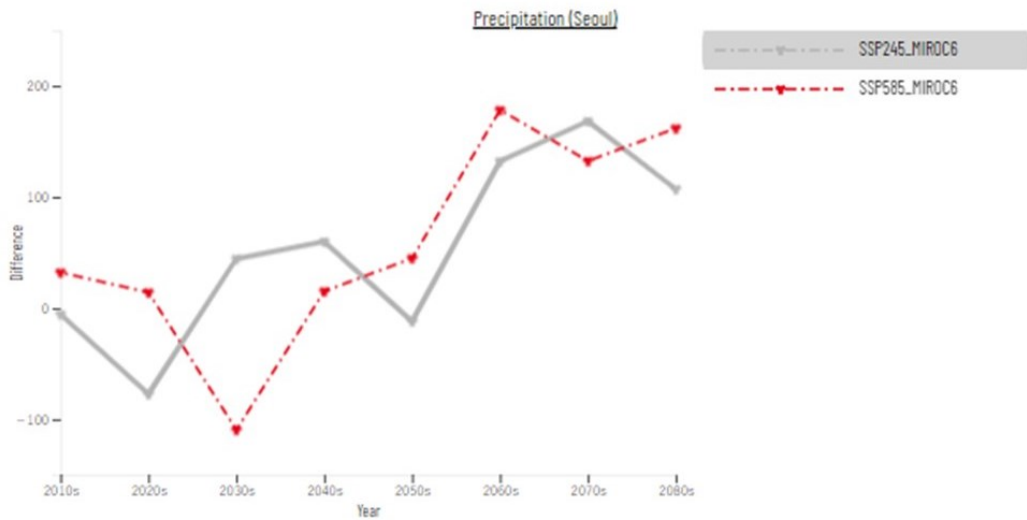


Figure 8.30: Precipitation variation in Seoul under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)