7.3.2 Tokyo

The GHG emissions of Tokyo was 128 $MtCO_2e$ in 1975, that escalated to 174 $MtCO_2e$ in 1990 and 225 $MtCO_2e$ in 2015. The majority of GHG emissions in 2015 (60%) were from energy sector (Figure 7.10, top), followed by industry (21%) and residential sector (14%). On the other hand, GHGs from transport sector (5%) and agricultural sector (~0%) are negligible. As per the ICLAP model estimates (Figure 7.10, bottom), there would be an increase in emissions at 1.4% per annum, leading to 260 $MtCO_2e$ in 2030 and 302 $MtCO_2e$ in 2050.

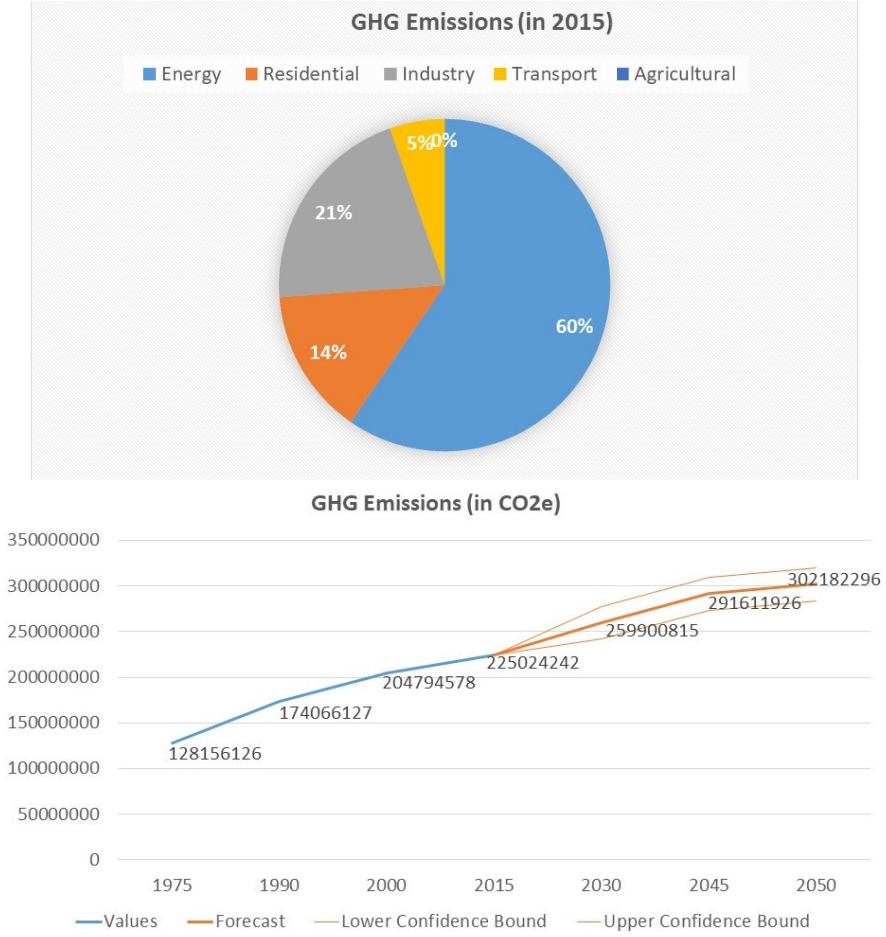

Figure 7.10: GHG contributions from different sectors in Tokyo (top); ICLAP model estimates for Tokyo's GHG emissions till 2050 (bottom)

The results for climate variability in Tokyo indicate a temperature increase of 1.7–4.0 degC in the long run (Figure 7.11, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.75 degC during 2030s (above the 1980 baseline temperature) to 2 degC in 2050s, peaking to 2.75 degC by 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 7.11 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.75 degC during 2030s (above the 1980 baseline temperature), 2.55 degC in 2050s further consolidating around 4.0 degC above normal during 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 7.11 (bottom). Meanwhile, the precipitation variation for Tokyo ranges from -100–150 mm in the long run (Figure 7.12, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits a rise to 75 mm during 2030s (from the 1980 baseline rainfall), falling back to near normal rainfall in 2050s. This declines further to about -65 mm during 2060s where after it

starts re-escalating to 100 mm above 1980 baseline rainfall in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 7.12 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits a decline of -90 mm in 2030s (from the 1980 baseline rainfall), increasing sharply to 150 mm above normal in 2040s. This declines significantly to -100 mm below the 1980 baseline rainfall in 2050s, rising again to 50 mm in 2060s and declining again -10mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 7.12 (bottom).

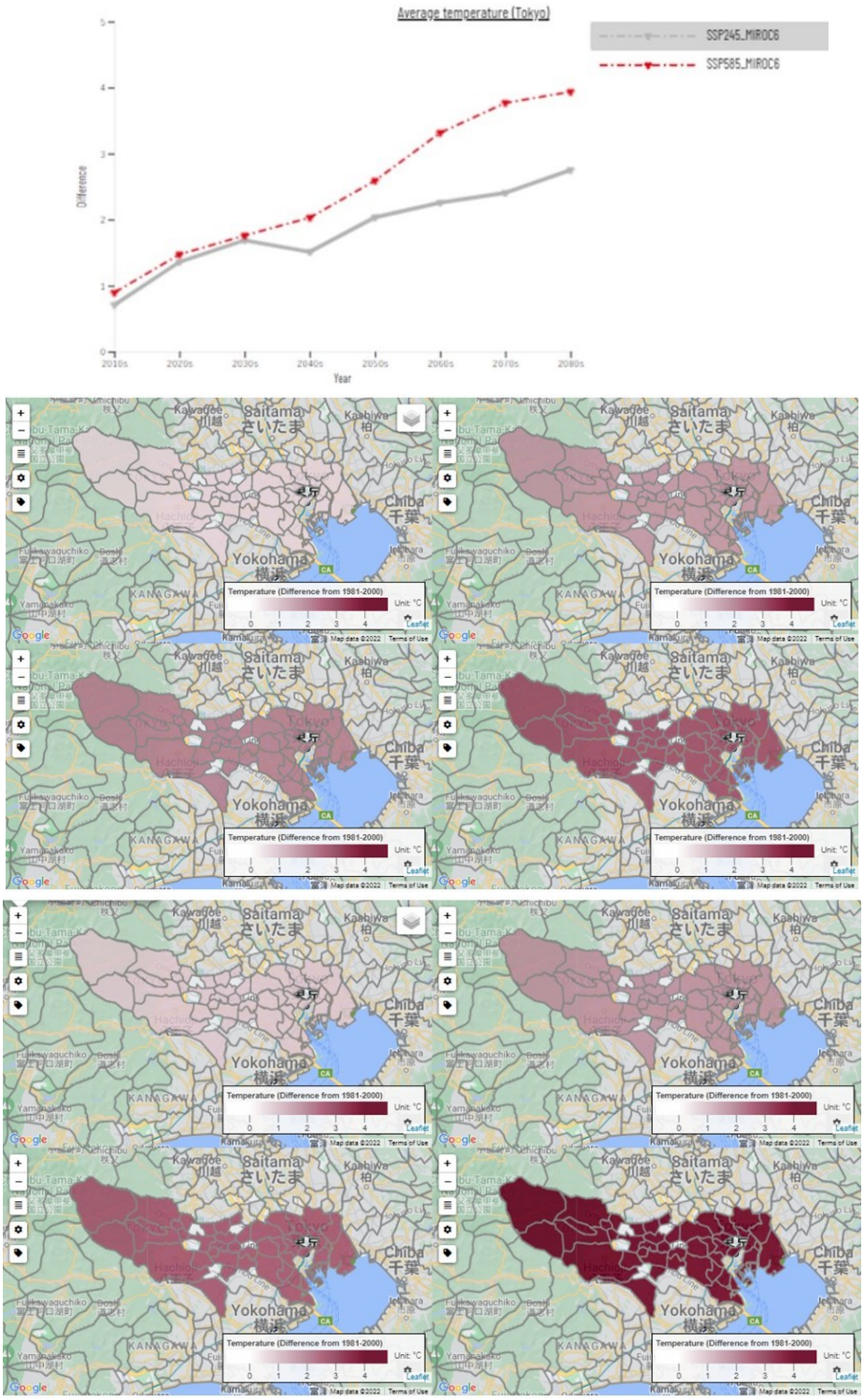

Figure 7.11: Temperature increase in Tokyo under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

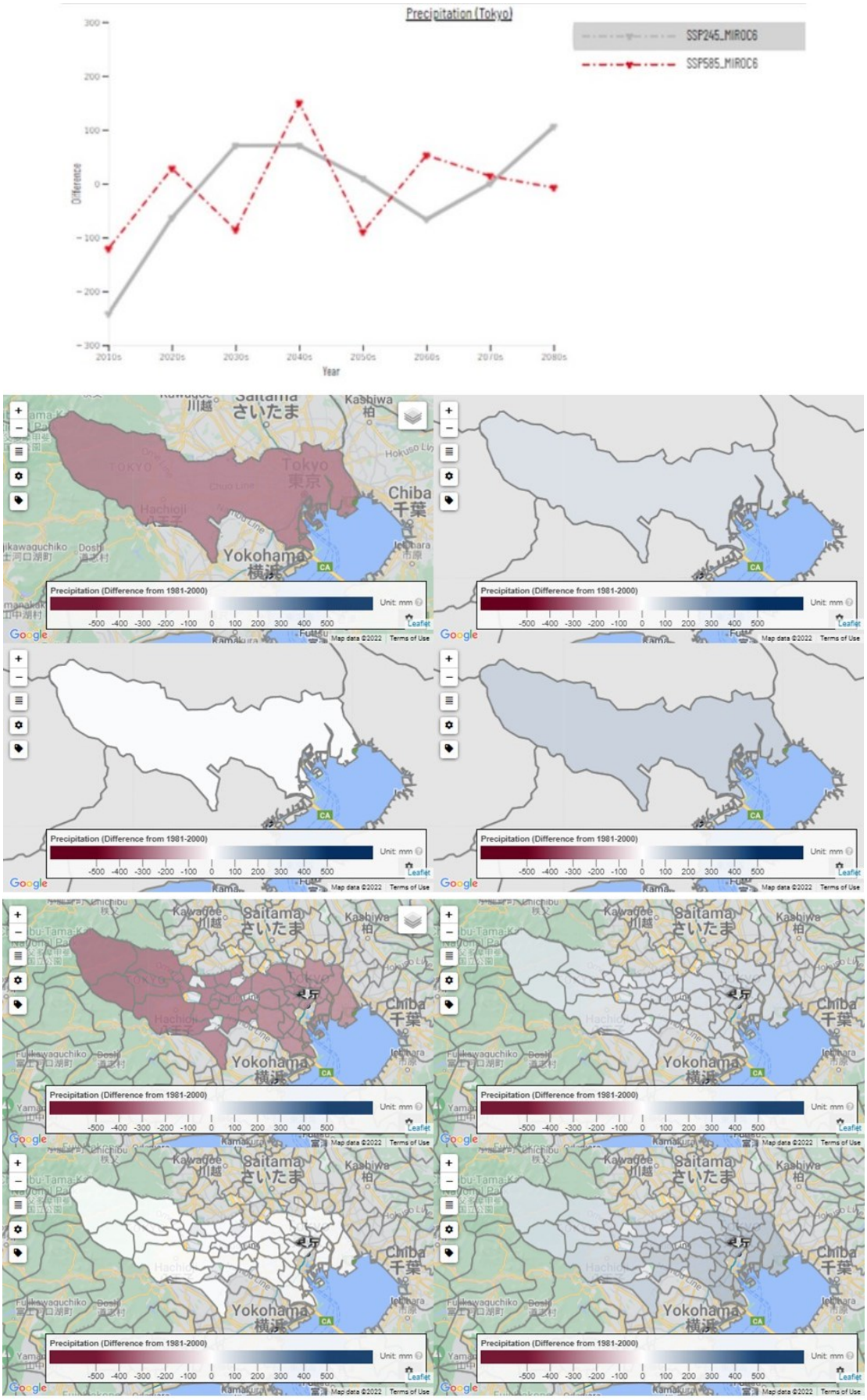

Figure 7.12: Precipitation variation in Tokyo under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)