

7.3.3 Osaka

The GHG emissions of Osaka was 62 MtCO₂e in 1975, that escalated to 80.3 MtCO₂e in 1990 and 76.6 MtCO₂e in 2015. A majority of the emissions in 2015 (41%) were contributed by the energy sector (Figure 7.7, top), followed by industry (31%). On the other hand, GHG emissions from the residential sector (19%) and transport sector (9%) are relatively minor. As per the ICLAP model estimates (Figure 7.7, bottom), there would be an increase in emissions at 0.5% per annum, leading to 85.3 MtCO₂e in 2030 and 91.3 MtCO₂e in 2050.

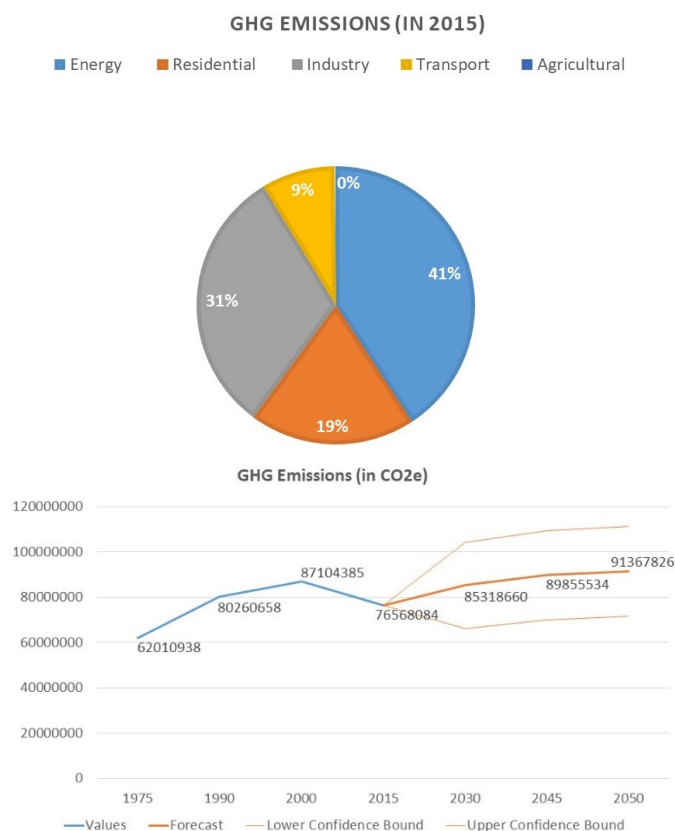


Figure 7.7: GHG contributions from different sectors in Osaka (top); ICLAP model estimates for Osaka's GHG emissions till 2050 (bottom)

The results for climate variability in Osaka indicate a temperature increase of 0.7–3.8 degC in the long run (Figure 7.8, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.6 degC during 2030s (above the 1980 baseline temperature) to 2 degC in 2050s, peaking to 2.7 degC in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 7.8 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.6 degC in 2030s (above the 1980 baseline temperature), 3 degC in 2050s further stabilizing to 3.8 degC above normal in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 7.8 (bottom). Meanwhile, the precipitation variation for Osaka ranges significantly from about -200 mm to 175 mm in the long run (Figure 7.9, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 50 mm during 2030s (above the 1980 baseline rainfall), rising to 100 mm to 2040s, diminishing to 130 mm below normal in 2060s, re-escalating to 50 mm above average during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 7.9 (middle). Meanwhile, the scenario corresponding to the pathway with the

highest GHGs (SSP585_MIROC6) shows there would be negligible precipitation change in 2030s (against the 1980 baseline rainfall), escalating to 170 mm in 2040s, declining again to negligible change from the normal in 2050s, further increasing to 100 mm during 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 7.9 (bottom).

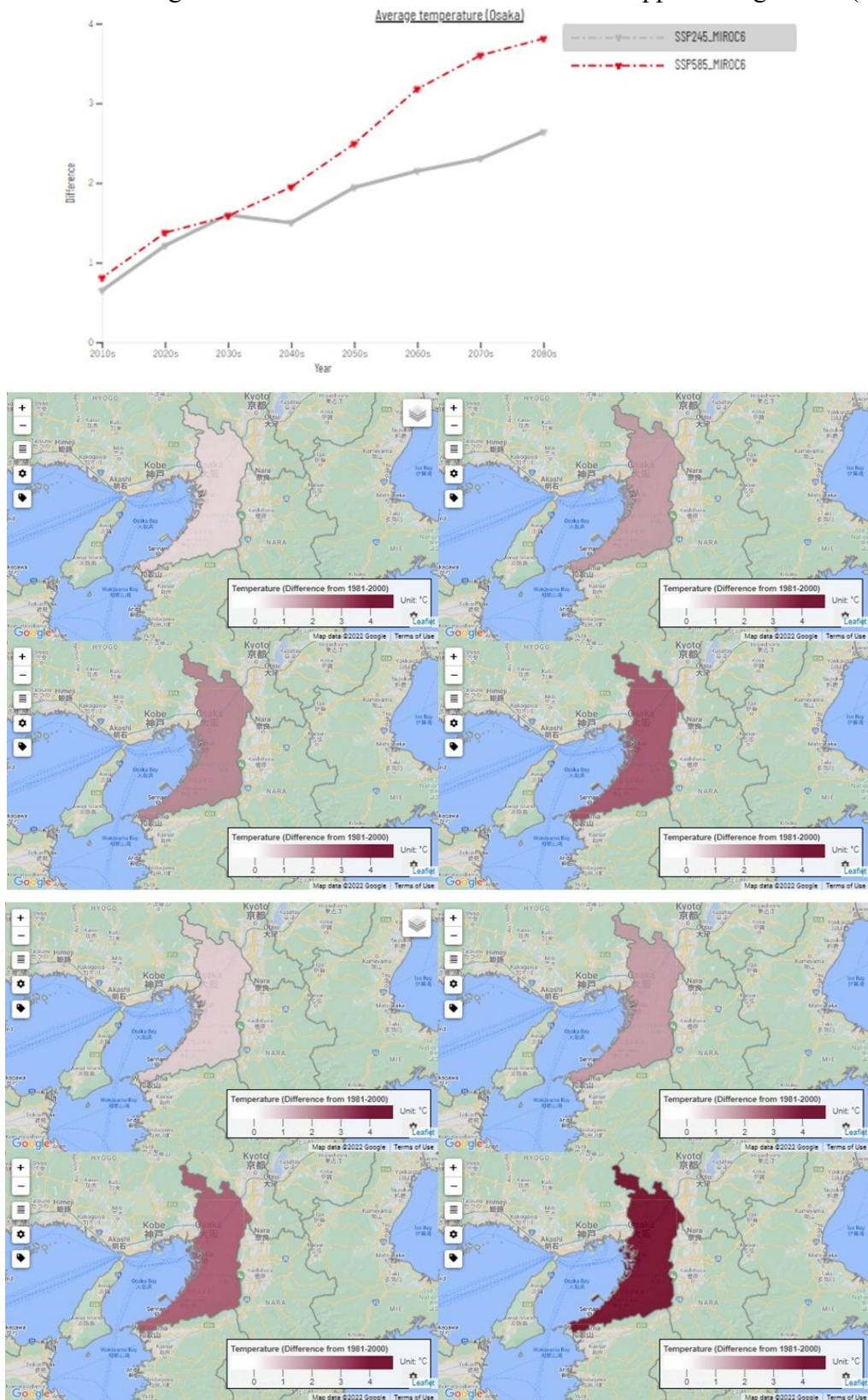


Figure 7.8: Temperature increase in Osaka under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

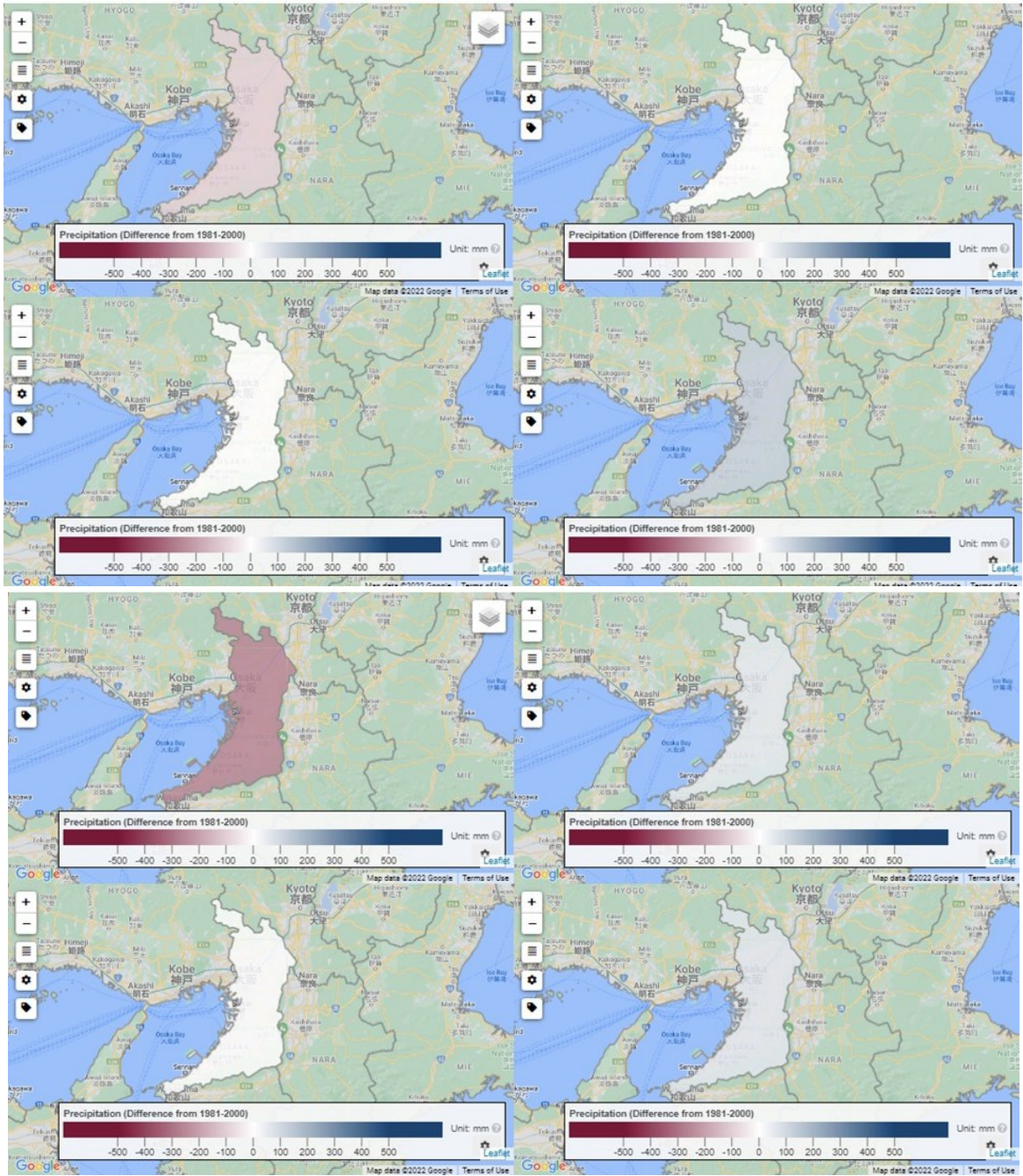
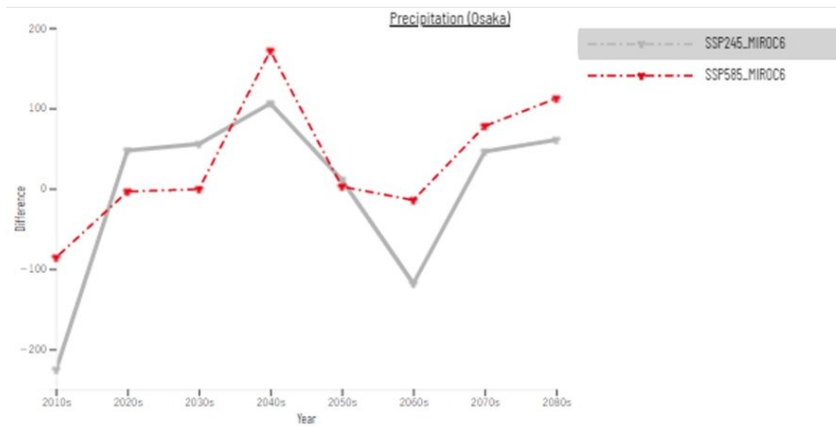


Figure 7.9: Precipitation variation in Osaka under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)