

5.3.5 Dongguan

The GHG emissions of Dongguan was 25.2 MtCO_{2e} in 1975, that escalated to 53.2 MtCO_{2e} in 1990 and 258.6 MtCO_{2e} in 2015. A significant proportion of the GHG emissions in 2015 (Figure 5.13, top) were contributed by the energy sector (46%), followed by the industry sector (35%) and transport sector (10%). Meanwhile, the emissions from residential sector (9%) and agricultural sector (~0%) were comparatively small. As per the ICLAP model estimates (Figure 5.13, below), there would be an increase in emissions at 6% per annum, leading to about 309.6 MtCO_{2e} in 2030 and 411.8 MtCO_{2e} approximately in 2050

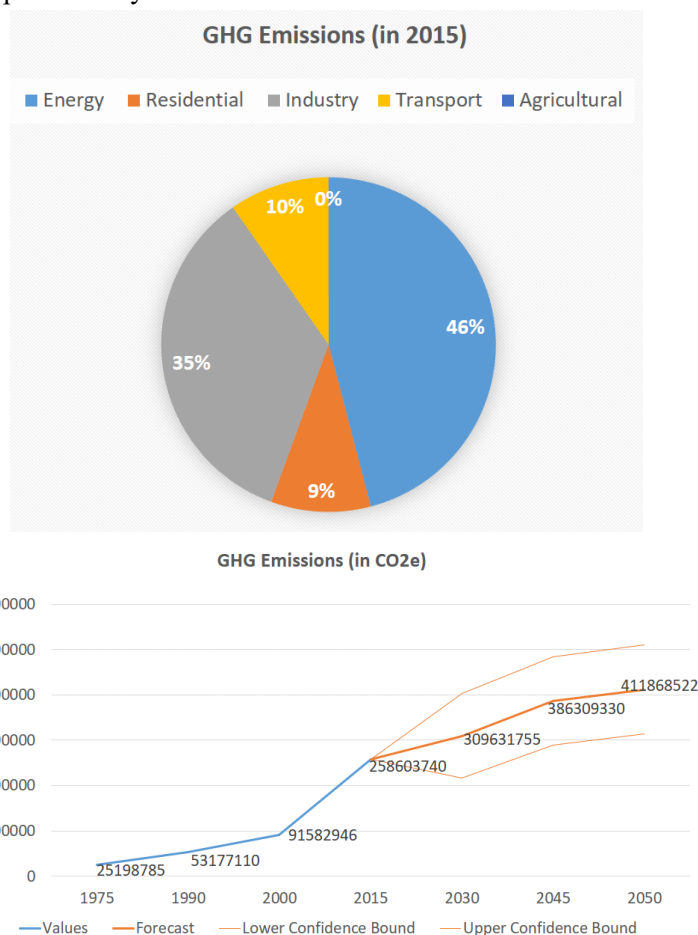


Figure 5.13: GHG contributions from different sectors in Dongguan (top); ICLAP model estimates for Dongguan's GHG emissions till 2050 (bottom)

The results for climate variability in Dongguan indicate that depending on the emission scenarios, there would be a temperature increase of 1.0–2.8 degC from 2030 to 2080s (Figure 5.14, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 1.0 degC in 2030s (above the 1980 baseline temperature), 1.3 degC in 2050s, peaking to 1.6 degC in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.14 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.0 degC in 2030s (above the 1980 baseline temperature), 1.8 degC in 2050s further rising to 2.8 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.14 (bottom). Meanwhile, the precipitation change for Dongguan shows a very high variability in the long run, ranging -20 mm to 380 mm from the normal (Figure 5.15, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 30 mm in 2030s (from the 1980 baseline rainfall), 130 mm in 2050s. The rainfall is expected to remain normal in 2060-70s, where after it re-escalates robustly to 220 mm above normal

in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.15 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Dongguan's rainfall to be above 80 mm (from 1980 baseline) in 2030s, decline to -20mm in 2040s, then rebound to +100 mm in 2050s and peaking to 380 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.15 (bottom).

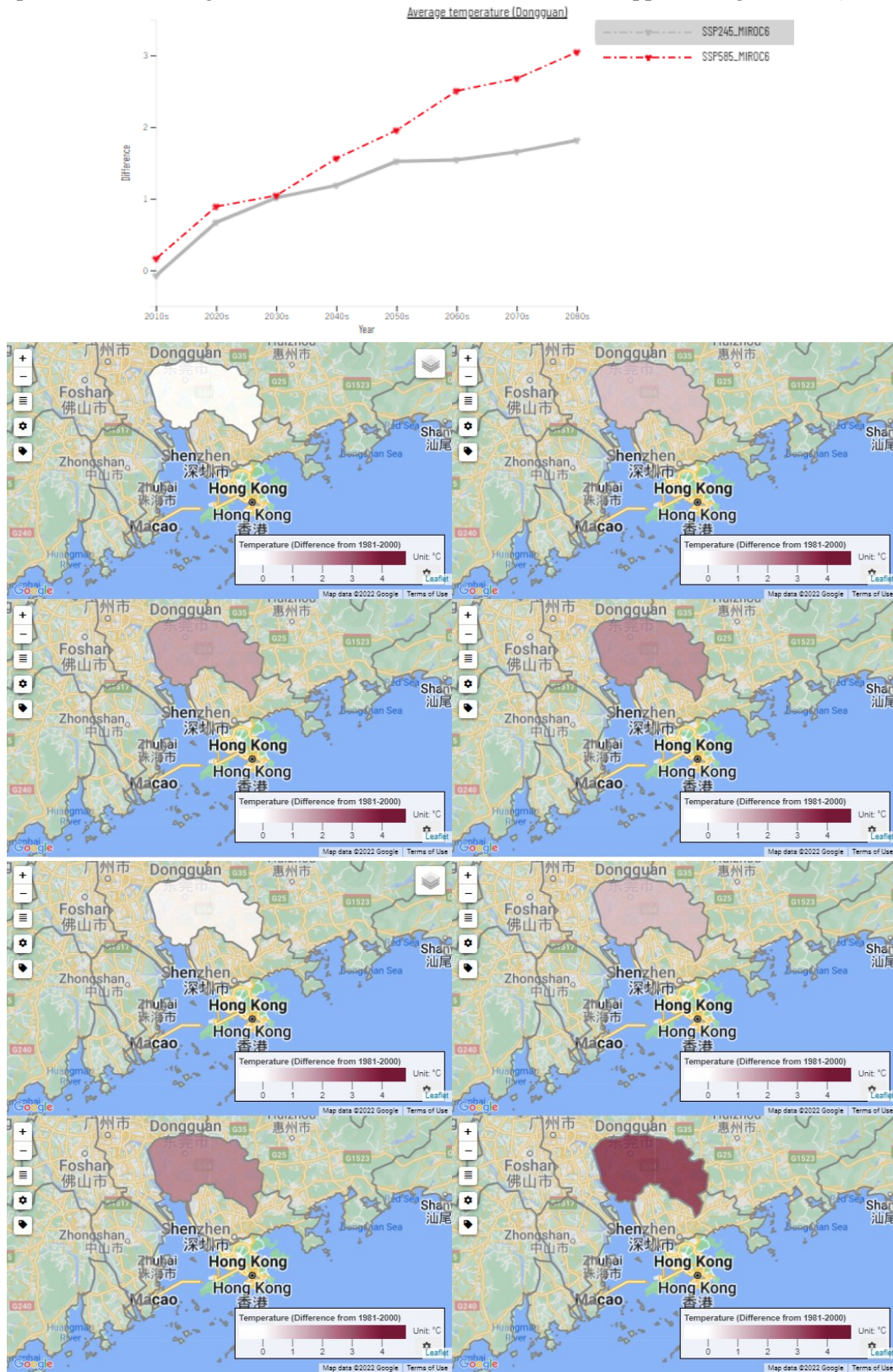


Figure 5.14: Temperature increase in Dongguan under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

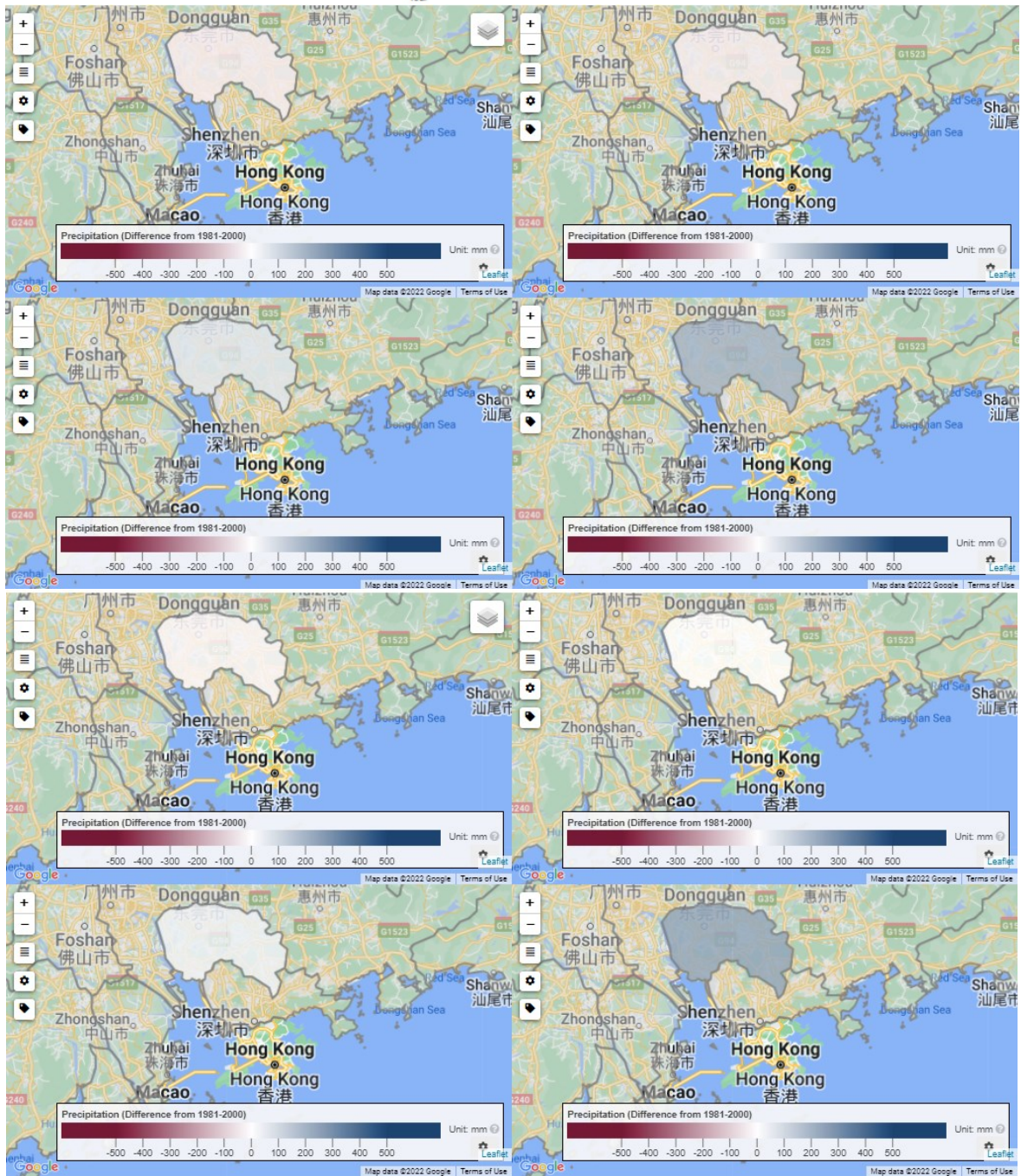
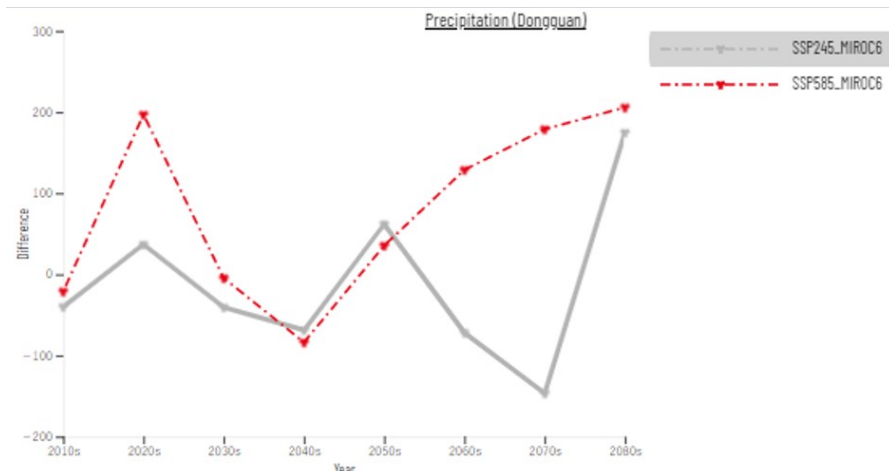


Figure 5.15: Precipitation variation in Dongguan under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)