

8.3.5 Karachi

The GHG emissions of Karachi was 1.2 MtCO_{2e} in 1975, that escalated to 3.0 MtCO_{2e} in 1990 and 8.6 MtCO_{2e} in 2015. A majority of the GHG emissions in 2015 (Figure 8.16, top) were contributed by the industry sector (47%) and transport sector (29%), followed by residential sector (16%) and energy sector (8%). As per the ICLAP model estimates (Figure 8.16, below), there would be an increase in emissions at 4.9 per annum, leading to 10.7 MtCO_{2e} in 2030 and 14.0 MtCO_{2e} in 2050.

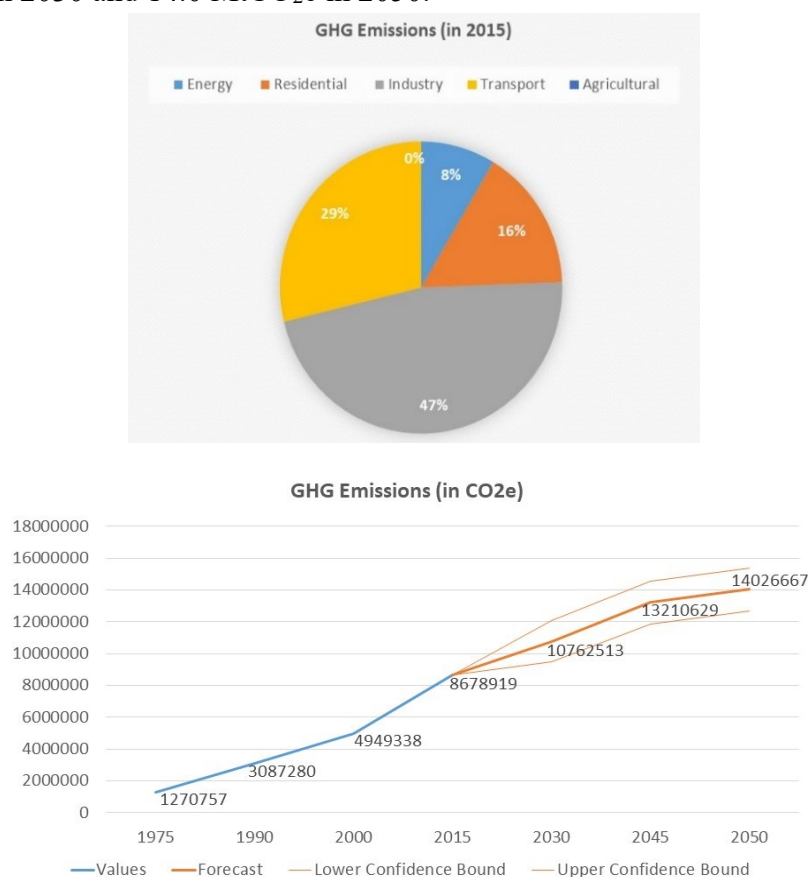


Figure 8.16: GHG contributions from different sectors in Beijing (top); ICLAP model estimates for Karachi's GHG emissions till 2050 (bottom)

The results for climate variability in Karachi indicate that depending on the emission scenarios, there would be a temperature increase of 0.75–3.25 degC from 2030-80s (Figure 8.17, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 0.75 degC during 2030s (above the 1980 baseline temperature), 1.4 degC in 2050s, peaking to 1.75 degC during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 8.17 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.0 degC during 2030s (above the 1980 baseline temperature), 1.9 degC in 2050s further rising sharply to 3.25 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 8.17 (bottom). Meanwhile, the precipitation change for Karachi shows a very low variability in the long run, ranging from -70 to 90 mm from the normal (Figure 8.18, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits a marginal rise of 5 mm during 2030s (above the 1980 baseline rainfall), then negligibly to 15 mm in 2050s, declining to -50 mm during

2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 8.18 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Karachi's rainfall declines to -15 mm (above the 1980 baseline rainfall) in 2030s, to -20 mm in 2050s, then rising and stabilizing to 20 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 8.18 (bottom).

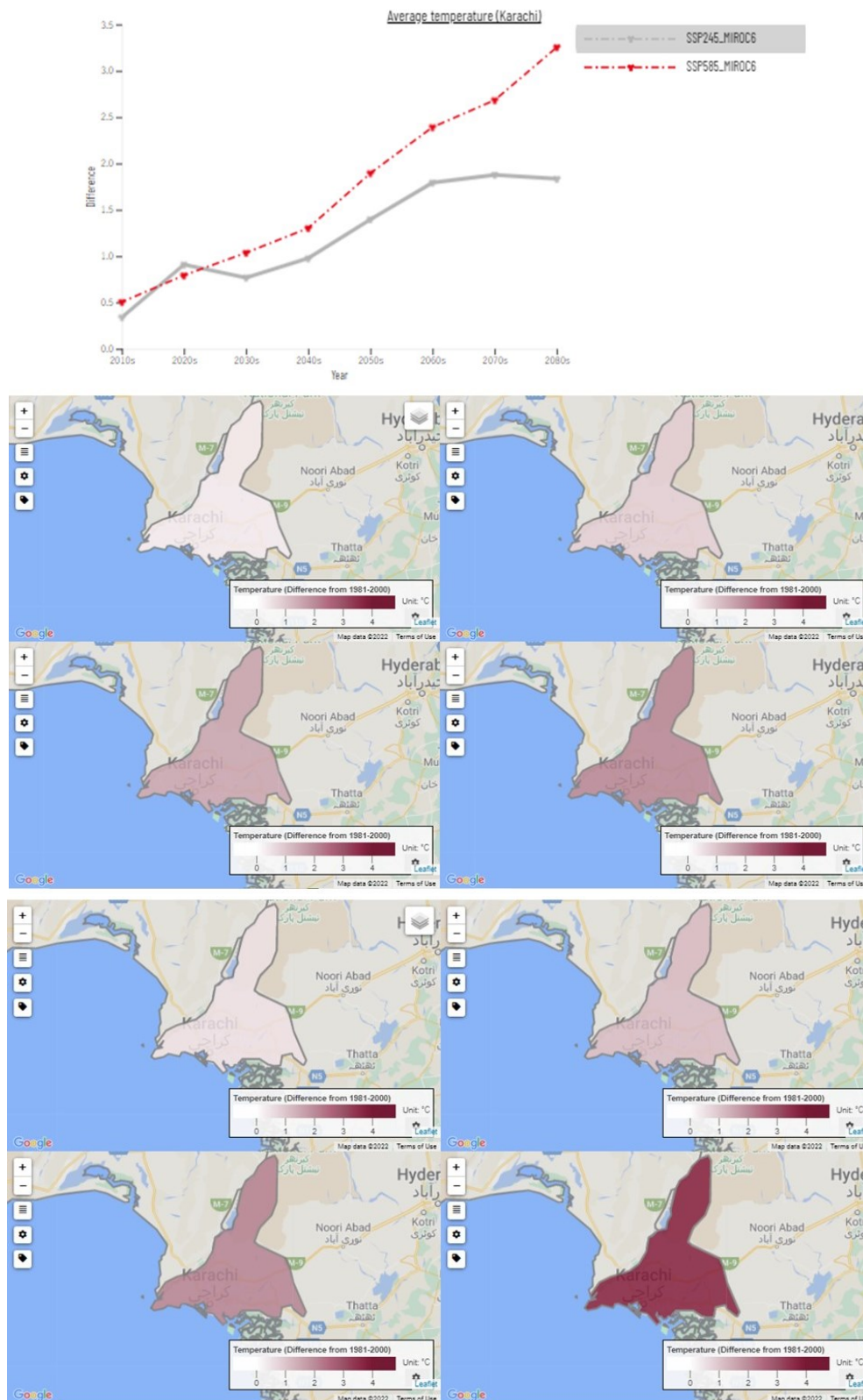


Figure 8.17: Temperature increase in Karachi under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

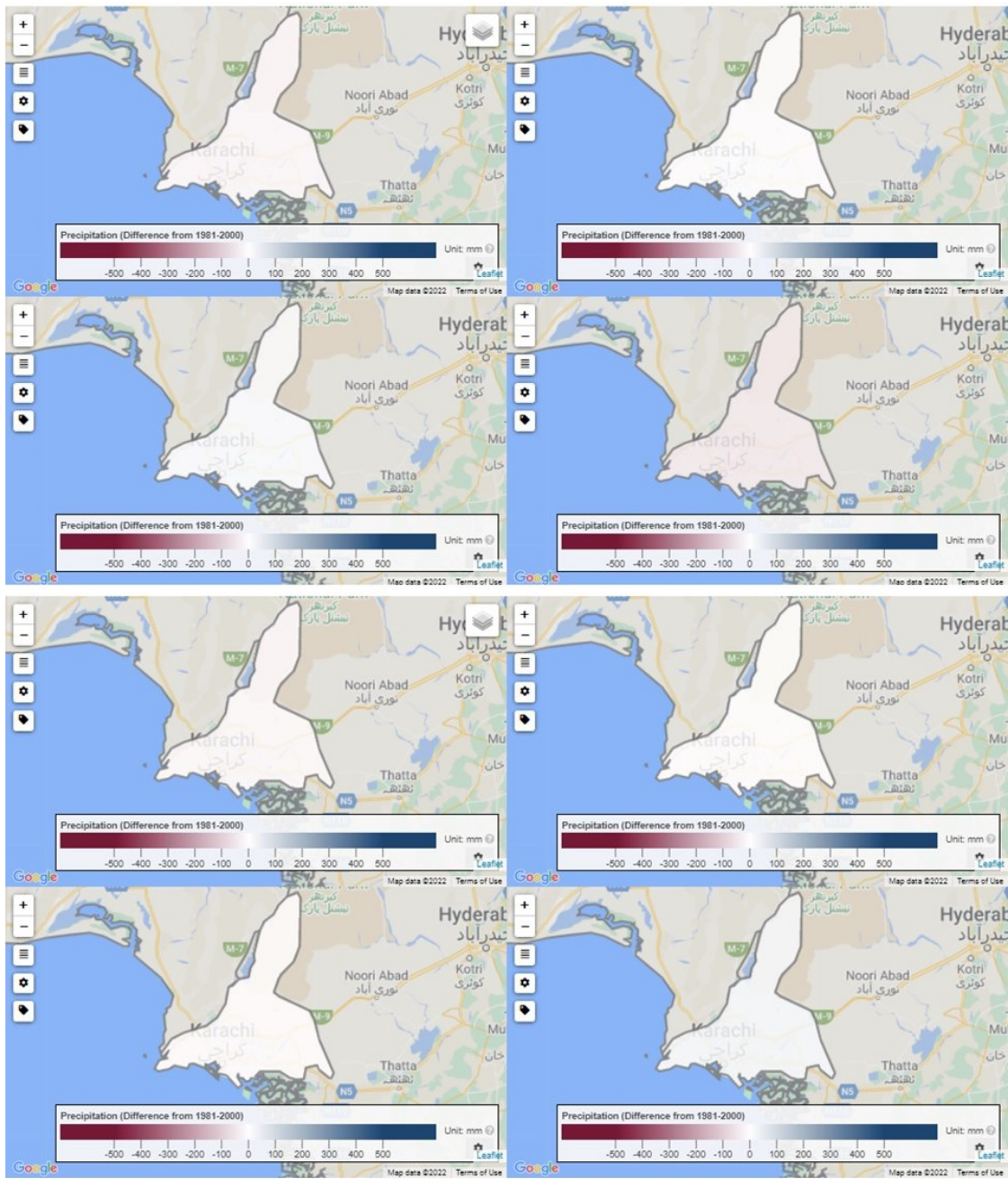
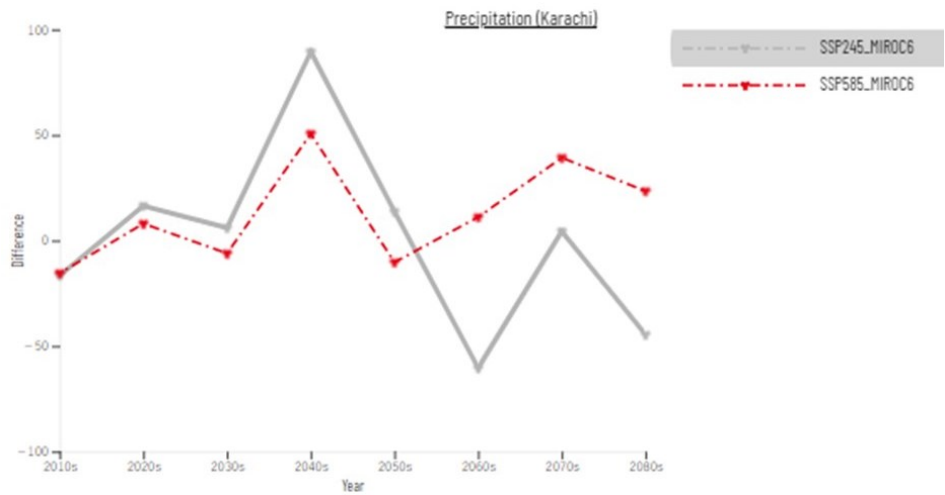


Figure 8.18: Precipitation variation in Karachi under medium (grey) and high (red) emission scenarios till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)