

6.3.9 Surat

The GHG emissions of Surat was 2.4 MtCO_{2e} in 1975, that escalated to 3.4 MtCO_{2e} in 1990 and 18.6 MtCO_{2e} in 2015. A majority of the GHG emissions in 2015 (Figure 6.25, top) were contributed by the industry sector (80%) and energy sector (18%), followed by transport sector (1%) and residential sector (1%). As per the ICLAP model estimates (Figure 6.25, below), there would be an increase in emissions at 5.2% per annum, leading to 21.5 MtCO_{2e} in 2030 and 28.6 MtCO_{2e} in 2050.

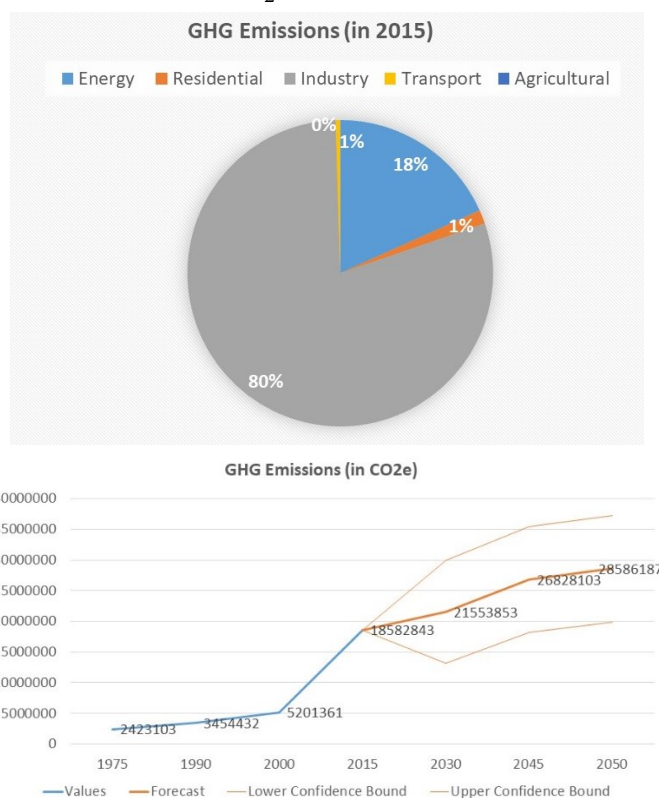


Figure 5.1: GHG contributions from different sectors in Surat (top); ICLAP model estimates for Surat's GHG emissions till 2050 (bottom)

The results for climate variability in Surat indicate that depending on the emission scenarios, there would be a temperature increase of 0.3–3.2 degC from 2030-80s (Figure 6.26, top). The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of 0.5 degC during 2030s (above the 1980 baseline temperature), 0.8 degC in 2050s, peaking to 1.3 degC during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 6.26 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 0.3 degC during 2030s (above the 1980 baseline temperature), 1.2 degC in 2050s further rising sharply to 3.2 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 6.26 (bottom). Meanwhile, the precipitation change for Surat shows high variability in the long run, ranging from 30 to 270 mm from the normal (Figure 6.27, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 140 mm during 2030s (above the 1980 baseline rainfall), increasing to 180 mm in 2050s and 210 mm during 2070s and declining to 190 mm during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 6.27 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Surat's

city rainfall increase to around 200 mm (above the 1980 baseline rainfall) during 2030s, rising up to 220 mm in 2050s, declining to about 240 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 6.27 (bottom).

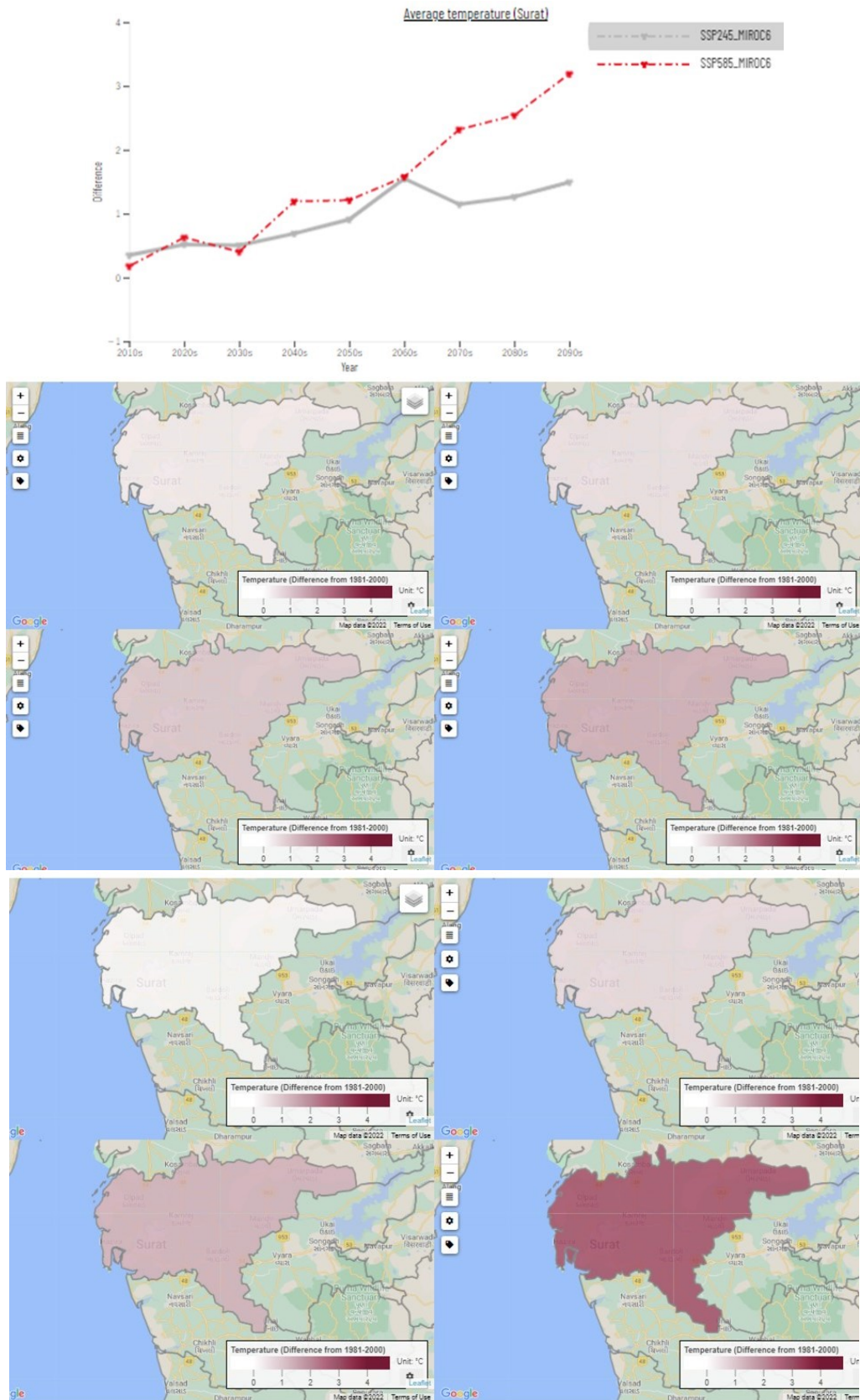


Figure 6.26: Temperature increase in Surat under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

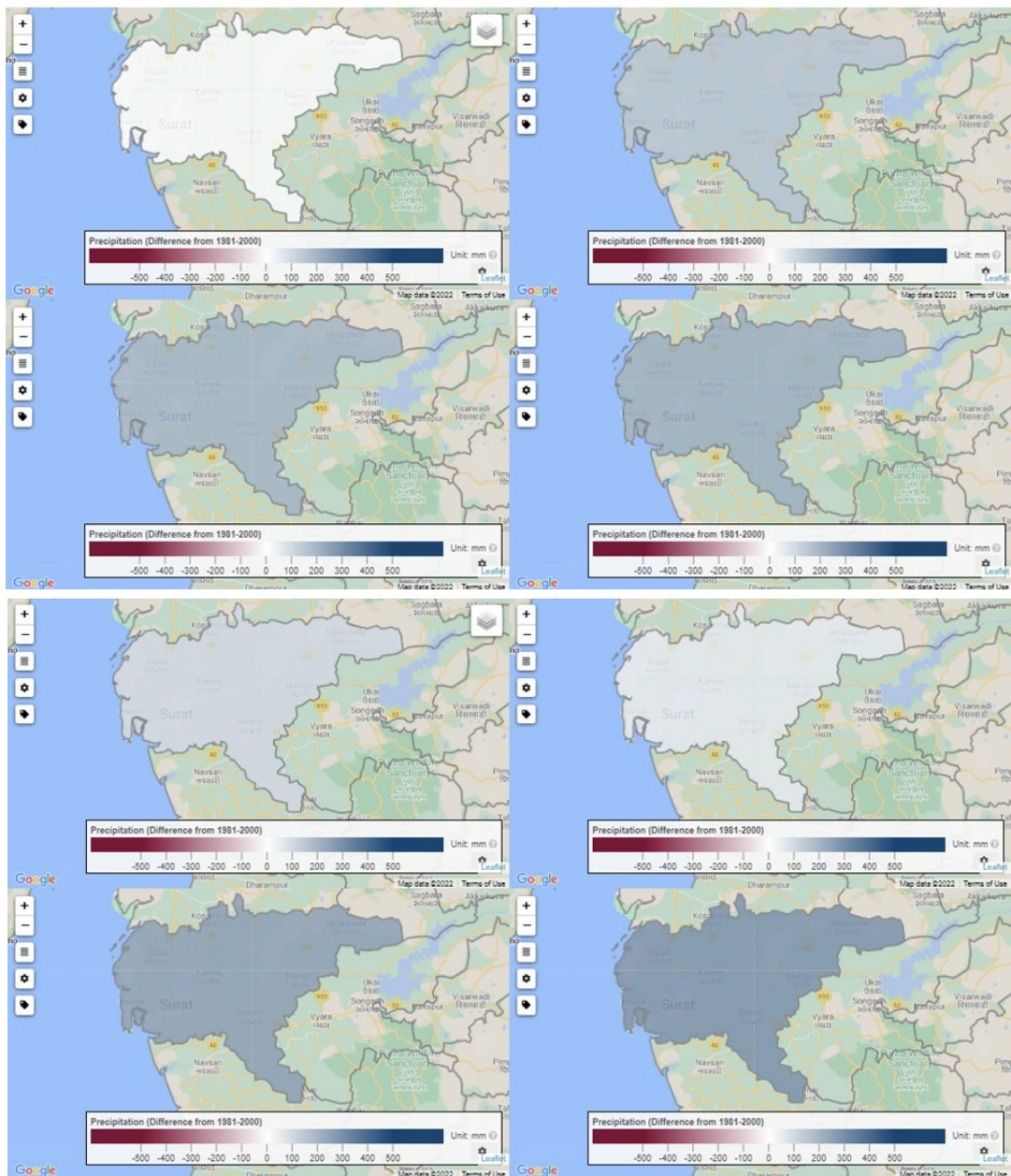
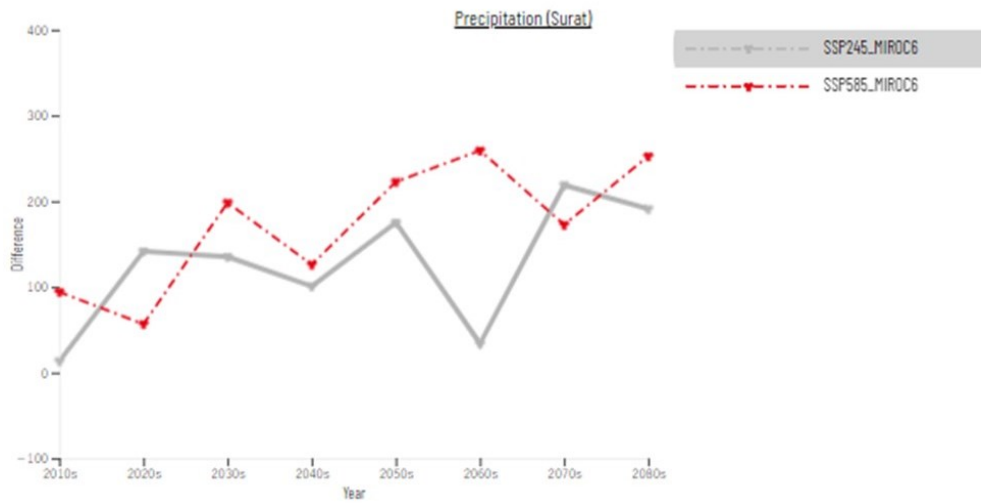


Figure 6.27: Precipitation variation in Surat under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)