

5.3.20 Xian

The GHG emissions of Xian was 4.3 MtCO₂e in 1975, which escalated to 9.3 MtCO₂e in 1990 and 38.7 MtCO₂e in 2015. A majority of the GHG emissions in 2015 (Figure 5.58, top) were contributed by the industry sector (44%) and energy sector (33%), followed by the transport sector (12%) and residential sector (11%). As per the ICLAP model estimates (Figure 5.58, below), there would be an increase in emissions at 3.6% per annum, leading to 45.9 MtCO₂e in 2030 and 60.8 MtCO₂e in 2050.

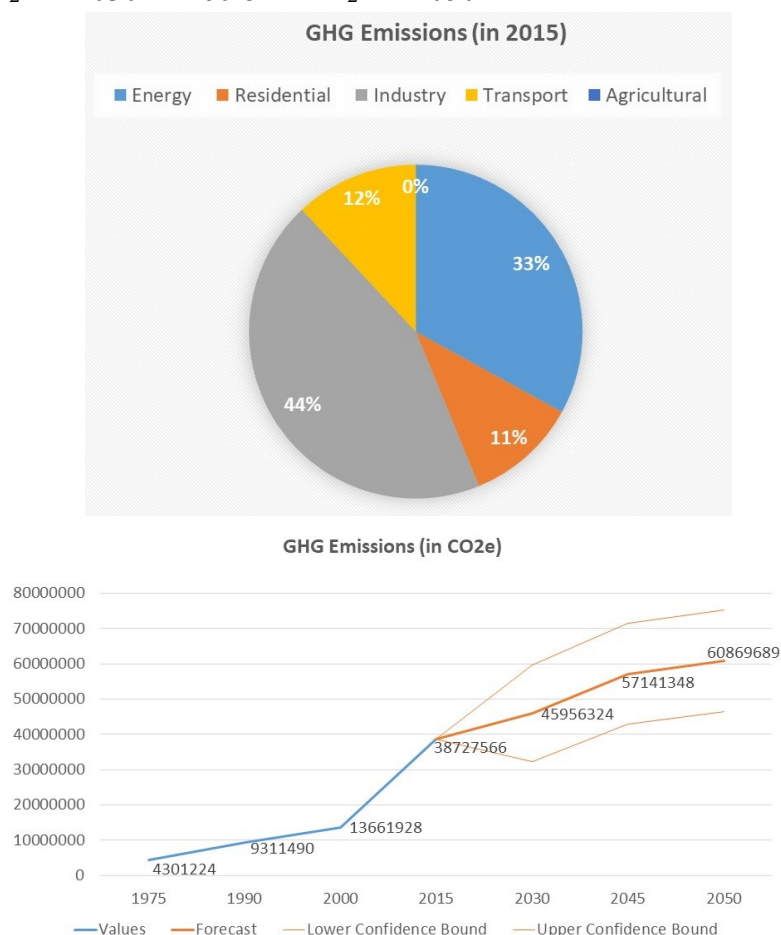


Figure 5.58: GHG contributions from different sectors in Xian (top); ICLAP model estimates for Xian GHG emissions till 2050 (bottom)

The results for climate variability in Xian indicate that depending on the emission scenarios, there would be a temperature increase of 1.6-4.1 degC from 2030-80s (Figure 5.59, top). 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), 2.1 degC in 2050s, plateauing to 2.6 degC during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.59 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) exhibits an increase of 1.8 degC during 2030s (above the 1980 baseline temperature), 2.9 degC in 2050s further rising sharply to 4 degC above normal up to 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.59 (bottom). Meanwhile, the precipitation change for Xian shows a very high variability in the long run, ranging from -60 to 280 mm from the normal (Figure 5.60, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245_MIROC6) exhibits an increase of about 80 mm during 2030s (above the 1980 baseline rainfall), declining to 70 mm in 2050s, rising again to 90 mm during

2070s and stabilizing around 95 mm during 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 5.60 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585_MIROC6) shows Xian city rainfall decline to around -50 mm (above the 1980 baseline rainfall) during 2030s, rising up to 80 mm in 2050s, declining to 280 mm in 2060s, rescinding to about 210 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 5.60 (bottom).

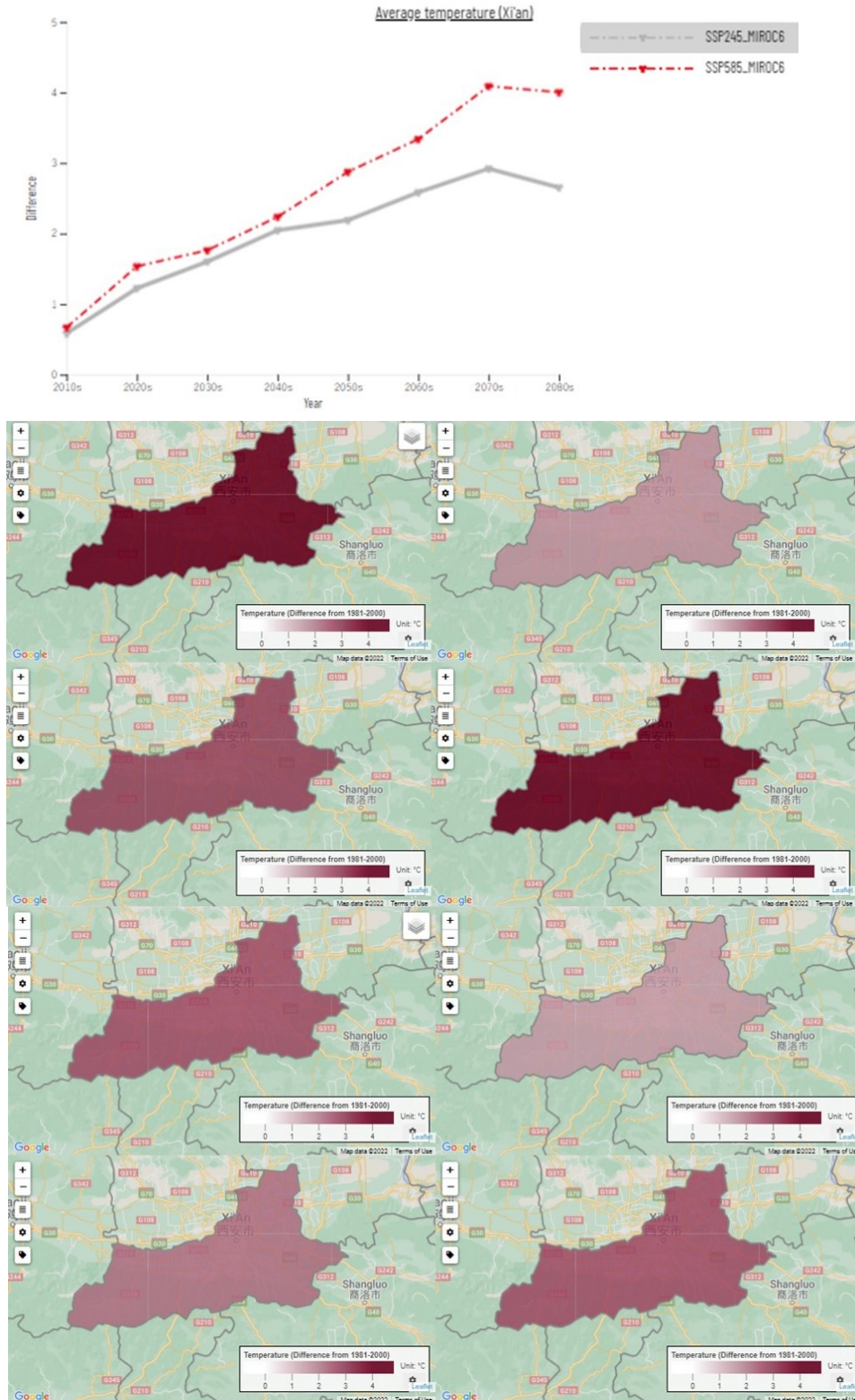


Figure 59: Temperature increase in Xian under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)

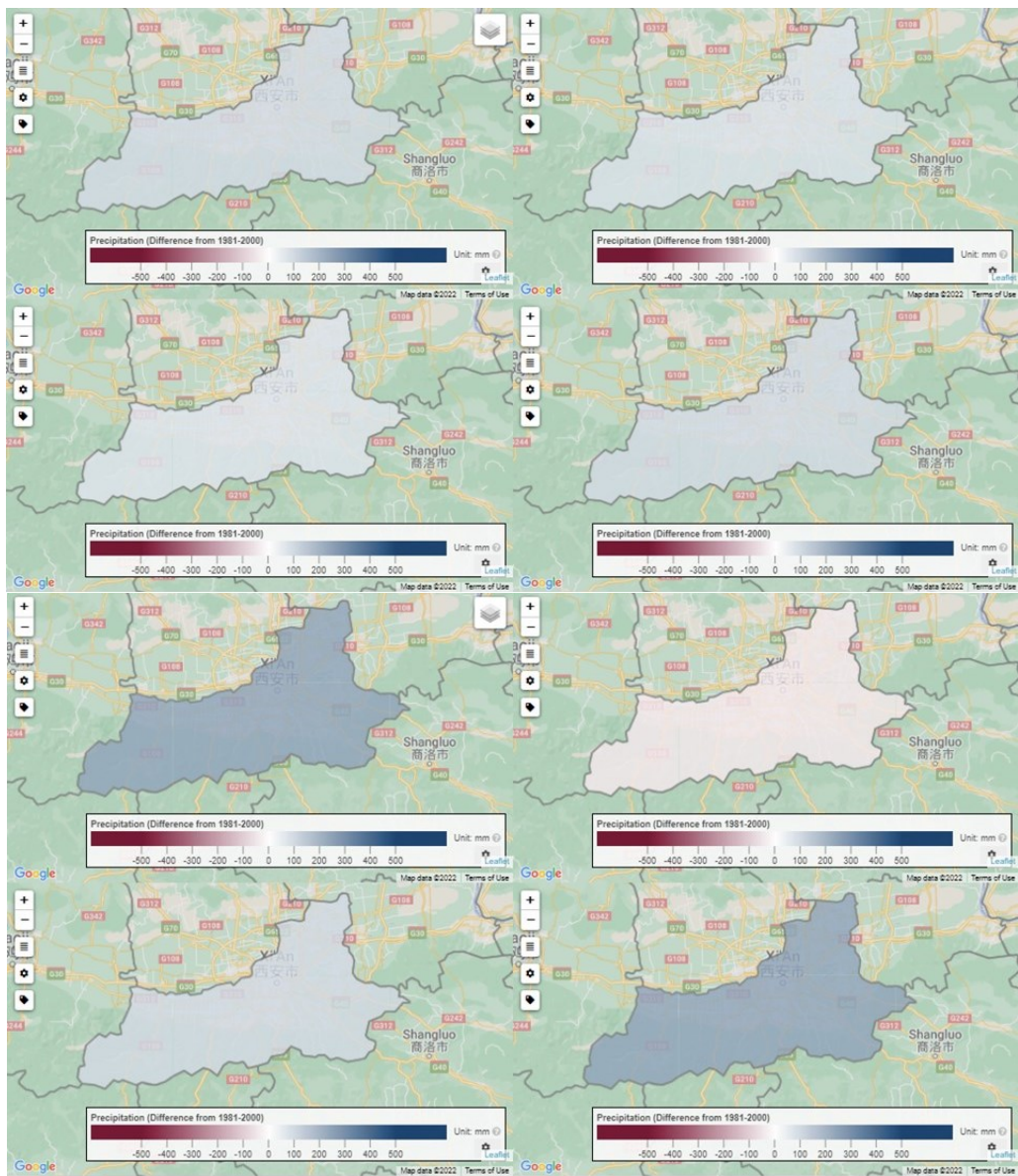
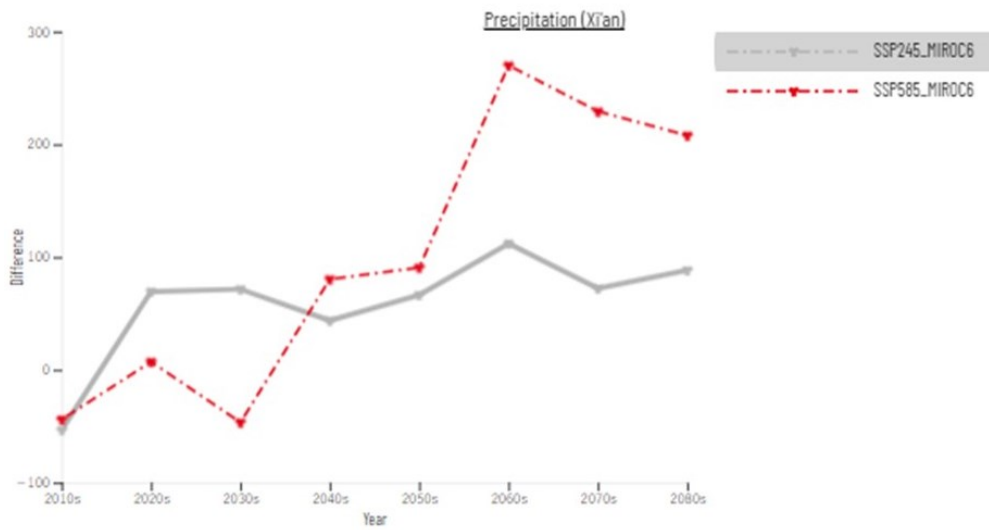


Figure 5.60: Precipitation variation in Xian under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)