

Climate change impacts on hydroxyl radical (OH) from the CiTTyCAT tropospheric chemistry model simulations

ABSTRACT

Hydroxyl radical, OH at the tropospheric level plays an important role as a cleansing agent in the atmosphere for atmospheric greenhouse and trace gases. Hydroxyl radical also prevents the enhancement of these gases. Without OH, the Earth's atmosphere chemical composition will be very different and might be harmful to living beings. In this study, the authors have explored the impact of regional climate change to the tropospheric OH in urban, rural and remote areas in Malaysia. This paper aims to develop a climate change scenario for A2 emissions over Malaysia using RCM PRECIS model and used the climate output as input to CiTTyCAT, a tropospheric chemistry model. In the 21st century, the surface temperature and precipitation are found to increase both during the wet season (winter season) and dry season (summer season). In response to climate change relative to the baseline OH concentration, tropospheric OH concentration has been found highly variable in the study locations over Malaysia. These projections were observed in both seasons. This study has suggested that tropospheric OH sensitivity is not only to climate change but other factors in response OH concentration variability as well.