Earth Observation

Centre for Doctoral Training

SENSE EO CDT (FAO Ruth Amey)

School of Earth and Environment

University of Leeds

LS2 9JT

Quantifying the impact of the 2015/2016 El Niño event on regional wild-fire-induced ozone air pollution using Earth observation and modelling

Supervisor: Dr Richard Pope

Institute: University of Leeds

Department: School of Earth and Environment

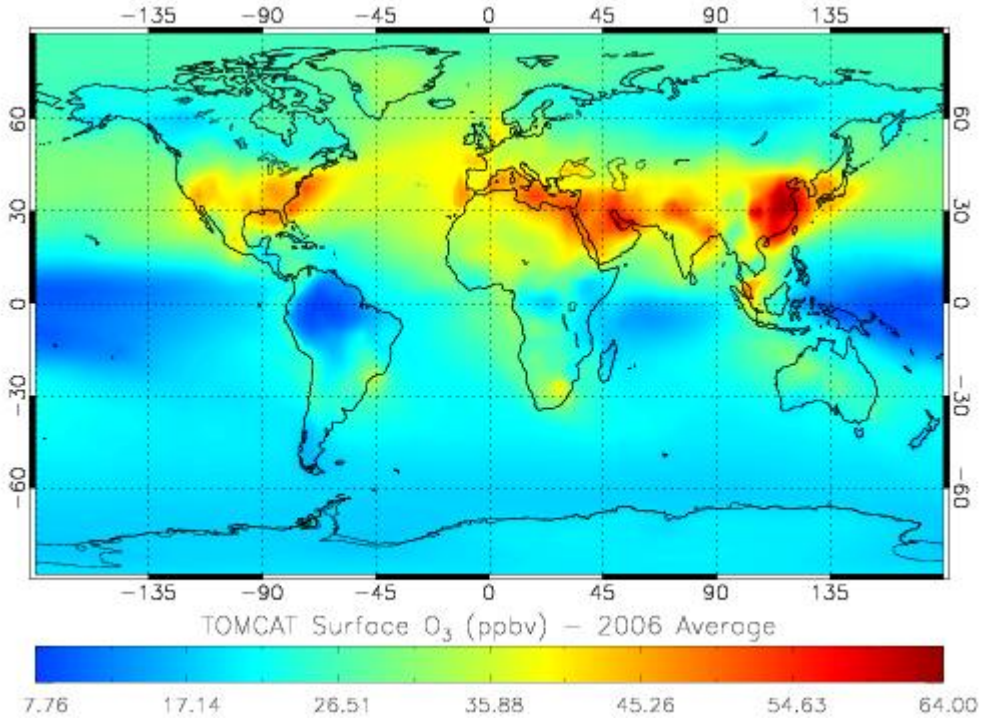

Figure 1 Example distribution of surface ozone from the TOMCAT model. Simulations and novel satellite data will be used to investigate the impact of the 2015/2016 El Niño event on tropospheric ozone.

The 2015/2016 El Niño event caused some of the largest drought conditions in South East Asia in recent decades causing widespread peat fires across the region dispersing vast amounts of pollutants. Fire-induced aerosol emissions travelled hundreds of kilometres exposing highly populated areas to hazardous levels of air pollution. These emissions have been estimated to have caused approximately 100,000 premature deaths. While much scientific and media attention focused on the aerosol pollution impacts on human health, there remains large uncertainty about the level of gaseous air pollutants directly emitted (e.g. nitrogen dioxide, NO2) or formed in the atmosphere (e.g. ozone, O3) as a result of these fires. Therefore, this placement aims to use state-of-the-art satellite measurements of tropospheric O3, provided by the Rutherford Appleton Laboratory (RAL), and existing simulations from the Leeds TOMCAT chemistry transport model, to investigate the impact of the 2015/2016 El Niño fire-induced emissions on O3 concentrations.