

INVESTIGATION OF AIR POLLUTION IN SRI LANKA USING SATELLITE OBSERVATIONS

P.L.S. Liyanage¹, M.A.M. Minsar¹, P.T. Munasinghe¹, M.T.M. Nishad¹, R.M.G.R. Rajapaksha¹, S.M. Wettewa¹,
R.S. Mallawarachchi², and A.P. Kaduwela³

¹ Undergraduate Student, Department of Civil and Infrastructure Engineering, Faculty of Engineering, South Asian Institute of
Technology and Medicine (SAITM), Sri Lanka

² Senior Lecturer, Department of Civil and Infrastructure Engineering, Faculty of Engineering, South Asian Institute of
Technology and Medicine (SAITM), Sri Lanka, Email: rajeev.saitm@gmail.com

³ Research Scientist, Air Quality Research Center, University of California at Davis, United State of America, Email:
apkaduwela@ucdavis.edu

ABSTRACT

We demonstrate that satellite data can be used effectively to study the air pollution in Sri Lanka where results of ambient air quality measurements are not freely available either to the research community or to the general public. A nested grid structure has also been defined for future metrology and air quality simulations in Sri Lanka. In this study, nitrogen dioxide (NO₂) was used as an key- indicator of air pollution in Sri Lanka. The extracted data and the images generated for absolute concentration and spatial extent of NO₂ show a significant increase in Air Pollution in Colombo area since the conclusion of the civil war, most probably due to the increased development activities. The weekend NO₂ concentrations have also increased, indicating that people are traveling to Colombo more during the weekends compared to the previous war-ravaged years. However, we do not see evidence of much-reported increased air pollution in Kandy although people perceive Kandy to be one of the highly air polluted cities in the island. We do not see the source signatures of the new coal power plant at Norochcholai or the new harbor at Hambantota either. This may be due the limited resolution of our images. As the study continues, we will extract more satellite data and generate images at a much higher resolution to study air pollution trends in several other areas of the island.

Keywords: Sri Lanka, Air pollution, Satellite images, Oxides of nitrogen

