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## Assessing the impact of the X-Press Pearl Ship Fire on air pollution in Western Sri Lanka

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The container cargo vessel X-Press Pearl caught fire on May 20, 2021 while anchored 9.5 km northwest of the Colombo Port. It carried 1,486 containers with toxic content including 25 tons of nitric acid, other chemicals, cosmetics, and lubricants, along with 78 metric tons of plastic nurdles. After burning for five days, the cargo exploded on 25<sup>th</sup> May and sank partially on 2<sup>nd</sup> June. After the explosion and fire, plumes of thick dark smoke were seen from miles away. We seek to see whether the air pollution from this disaster was detected on our ongoing instrumental measurements on the Western Coast and the Hills. We pose the questions: (i) were the wind conditions likely to lead to pollution over the locales in which our instruments were situated? and (ii) were particulate matter and other gases detected? The weather, wind and air-pollution data (fine particulate matter and Carbon Dioxide) reported here were recorded every few minutes. Pollution roses are a quick way to summarize the likely arrival of pollution at any place using the data from the period of the fires and the wind speed and directions. The pollution roses analyzed to 16 quadrants of the compass show that the arrival directions on average were preferentially from the ship's general locale to the Colombo, Puttalam and Nawalapitiya regions. However, the concentrations of fine particulate matter and Carbon Dioxide in these locations during the duration of the fire does not show significant peaks at the hourly time-step when compared with the readings for the last few years. While no significant anomalies have been detected at the hourly time step, work is ongoing with data collected every 5 minutes. As the instrument in Colombo, Puttalam and Nawalapitiya were 20 km, 106 km, and 84 km from the ship, there could have dilution and intermittent periods of the plume reaching each locale and the pollution could also be transported above these locales. As trace toxins and particulates could affect the cloud microphysics and chemistry, further analysis is warranted. Work on estimating the potential emissions and the modelled trajectories is being reported separately.

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