

Spatial-temporal analysis of NO₂ in the Metropolitan Region of São Paulo

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Abstract: Nowadays, several methods of monitoring air pollutants exist, however few allow a large spatial and temporal coverage. Sentinel-5P is a satellite dedicated to atmospheric monitoring with a high spatial-temporal resolution, offering a large data of miscellaneous chemical species. Nitrogen oxides (NO and NO₂), emitted by anthropogenic activities into the atmosphere - in large urban centers their main emitting source is vehicles - need particular attention, , in addition to being primary pollutants, they are precursors for formation of other chemical species due to photochemical reactions, mainly tropospheric ozone. These photochemical interactions of NO_x stimulate to reduce its lifetime in the atmosphere. Furthermore, these pollutants are used as air quality indexes. The Metropolitan Region of São Paulo (MRSP) has more than 30 cities, being an important economic center for the state of São Paulo. The MRSP has highways with high circulation of light and heavy vehicles, industries and also a high population density. Such factors make this region a favorable area for a satellite study. Thus, the present work uses Sentinel-5P NO₂ L2 data in order to analyze the evolution of concentrations throughout 2019.

Keywords: Air pollution; Nitrogen dioxide; Pollutant monitoring.

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