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SATELLITE-BASED AIR POLLUTION MONITORING IN BOLIVIA DURING THE QUARANTINE OF COVID-19

Abstract

Air pollution is a mixture of particulate material (PM) and gases in the air, such as nitrogen dioxide (NO2), ozone (O3), and sulfur dioxide (SO2). Some of the air pollutants are toxic, and inhaling them can increase the chances of developing health problems, such as respiratory infections, cardiovascular diseases, strokes and lung cancer. According to the World Health Organization (WHO), in 2016, one in nine deaths worldwide was related to air pollution, which caused 4.2 million premature deaths. On the other hand, in 2019, was recorded that 99On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a global pandemic. Likewise, in Bolivia, on March 21, 2020, a total quarantine was proclaimed throughout the Bolivian territory to prevent the spread of COVID-19. Together with other factors, this situation has impacted the levels of air pollution in the country. The present study has the main objective of analyze air pollution variation in Bolivia to identify and quantify the impact of social isolation due to COVID-19 on air pollution. For monitoring the air pollution, remote sensing data from the Sentinel 5 Precursor satellite was used, which allow us to obtain measurements of aerosol, nitrogen dioxide, sulfur dioxide, ozone, methane, and carbon monoxide. The results of this analysis show an essential reduction of aerosol pollution in different departments of Bolivia, especially in the principal departments of the country. Thus, the first step of a future monitoring system of air pollution was developed since the inhabitants need to be aware of contamination levels because many children are suffering from very severe health problems due to the constant exposure to this contamination.