

## ABOUT THE COVER

It is virtually impossible to find an upside to the Covid 19 pandemic in the light of the global human loss and tragedy it has left in its wake. Perhaps in reality, that concept is a stretch even for the most optimistic; but is there at least some evidence that could give environmental hope to the world if fossil fuel consumption significantly decreased?

From the NASA Scientific Visualization Studio (<https://svs.gsfc.nasa.gov/4810>) –

“These recent improvements in air quality have come at a high cost, as communities grapple with widespread lockdowns and shelter-in-place orders as a result of the spread of COVID-19. One air pollutant, nitrogen dioxide (NO<sub>2</sub>), is primarily emitted from burning fossil fuels (diesel, gasoline, coal), coming out of our tailpipes when driving cars and smokestacks when generating electricity. Therefore, changes in NO<sub>2</sub> levels can be used as an indicator of changes in human activity. However, care must be taken when processing and interpreting satellite NO<sub>2</sub> data as the quantity observed by the satellite is not exactly the same as the NO<sub>2</sub> abundance at ground level. NO<sub>2</sub> levels are influenced by dynamical and chemical processes in the atmosphere. For instance, atmospheric NO<sub>2</sub> levels can vary day-to-day due to changes in the weather, which influences both the lifetime of NO<sub>2</sub> molecules as well as the dispersal of the molecules by the wind. It is also important to note that satellites that observe NO<sub>2</sub> cannot see through clouds, so all data shown is for days with low amounts of cloudiness. If processed and interpreted carefully, NO<sub>2</sub> levels observed from space serve as an effective proxy for NO<sub>2</sub> levels at Earth's surface.

NASA's air quality group is also monitoring other air pollutants, such as sulfur dioxide (SO<sub>2</sub>). Major anthropogenic activities that emit SO<sub>2</sub> include electricity generation, oil and gas extraction, and metal smelting. SO<sub>2</sub> is emitted during electricity generation if the coal burned has sulfur impurities that are not removed (or not “scrubbed”) from the plant’s exhaust stacks.

For more information on what pollutants NASA satellites observe, visit the [NASA Air Quality website](#).”

These data were gathered in March 2020 and comprise the latest public release on the NASA website.

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