



## DATA & APPLICATIONS ONLINE

# Satellite-Derived Environmental Indicators

### Overview

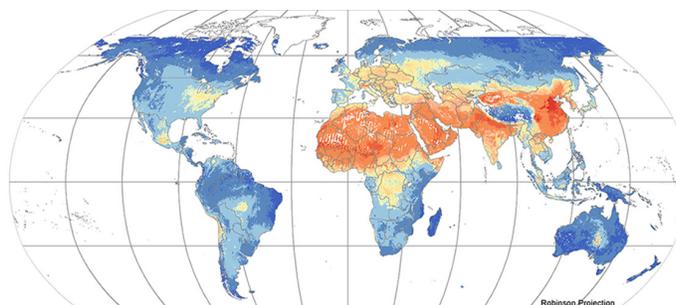
Environmental indicators simplify complex information about the state of the environment and human-environment relationships, identifying problem areas and revealing underlying trends. Satellite data have many worthwhile characteristics, including broad spatial coverage and consistent measurement over time. The development of a scientifically robust set of satellite-derived environmental indicators may inform policymaking that protects the environment and human health.

Exposure to fine particles is associated with premature death as well as increased morbidity from respiratory and cardiovascular disease, especially in the elderly, young children, and those already suffering from these illnesses. The World Health Organization guideline for average annual exposure to fine particulate matter of 2.5 micrometers or smaller ( $PM_{2.5}$ ) is less than or equal to 10.0 micrograms per cubic meter, whereas the US Environmental Protection Agency (EPA) primary standard, designed to protect public health with an adequate margin of safety, is less than or equal to 12.0 micrograms per cubic meter.

For this data set, estimates of annual  $PM_{2.5}$  concentrations over a 10-year period (2001–2010) were generated using a model developed by Dalhousie University researchers. The grids were derived from NASA MODIS, MISR, and SeaWiFS satellite data.

### About the Data

Together the grids provide a continuous surface of concentrations in micrograms per cubic meter of particulate matter of 2.5 micrometers or smaller ( $PM_{2.5}$ ) for health and environmental research. The raster grids have a grid cell resolution of 6 arc-minutes (0.1 degree, or approximately 10 km at the



equator) and cover the world from 70°N to 55°S latitude.

### Data Access

Go to [bit.ly/1TgCaga](http://bit.ly/1TgCaga) to download data, maps, and information.

### References

van Donkelaar, A., Martin, R. V., Brauer, M., and Boys, B. L. 2015. Use of satellite observations for long-term exposure assessment of global concentrations of fine particulate matter. *Environmental Health Perspectives* 123:135-143. <http://dx.doi.org/10.1289/ehp.1408646>.

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