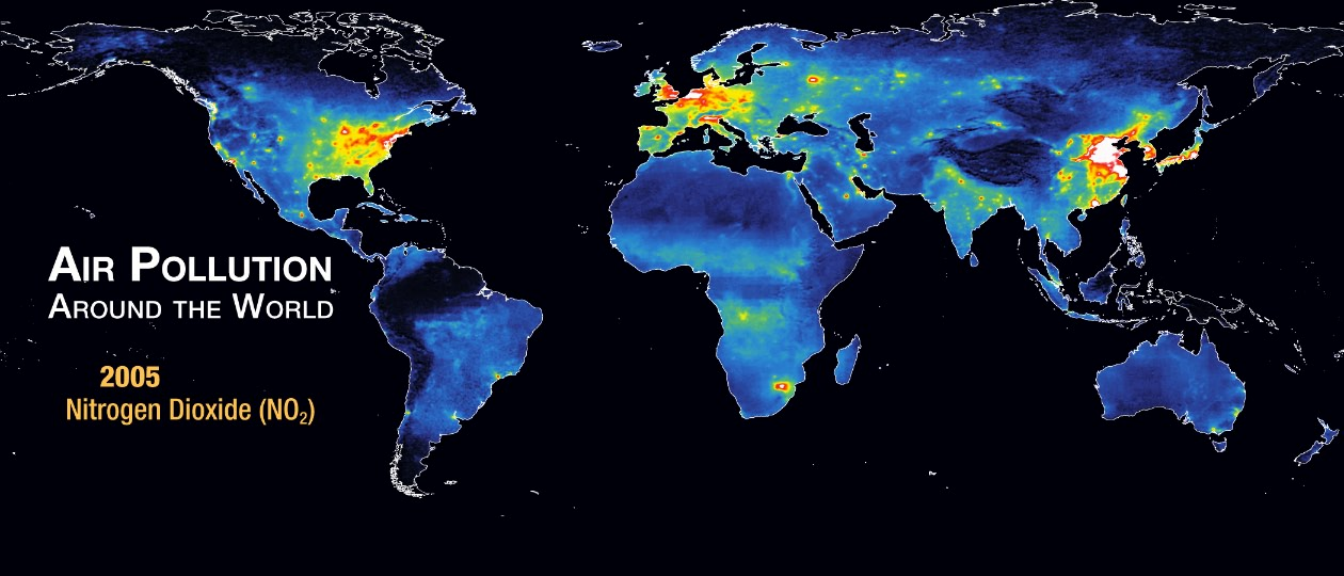
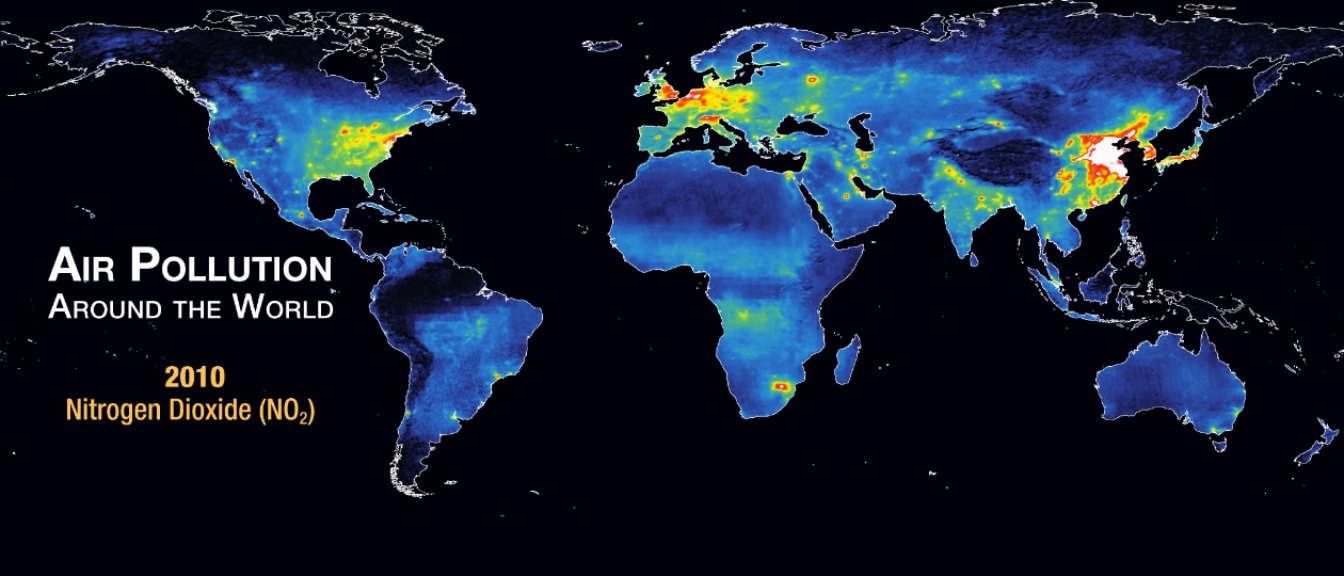
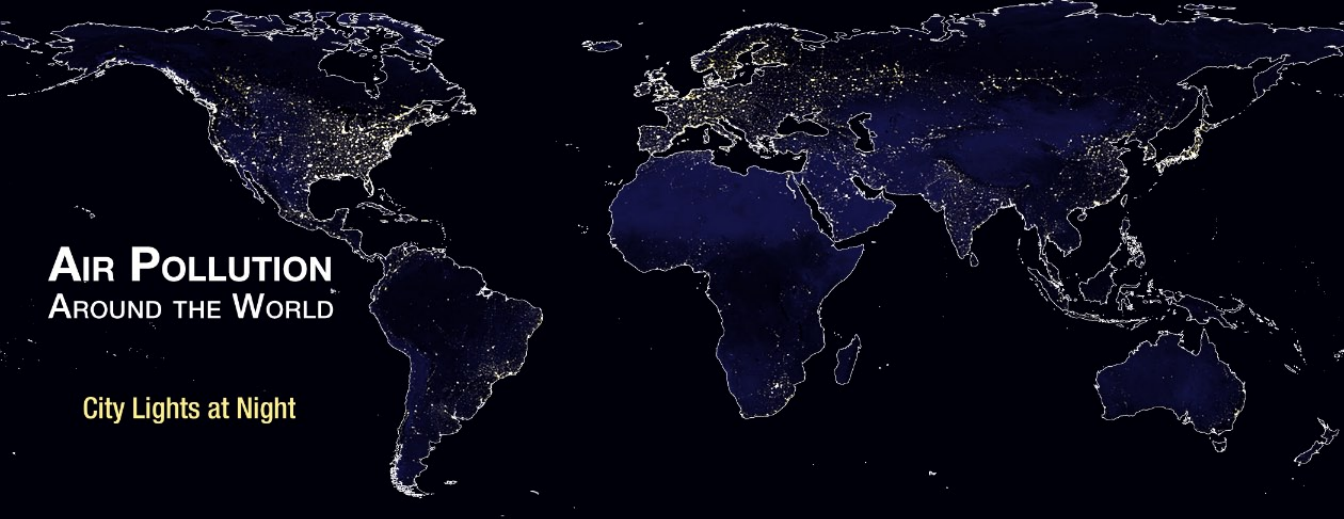
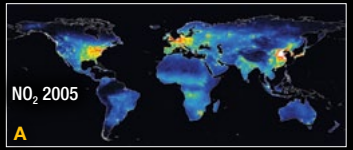
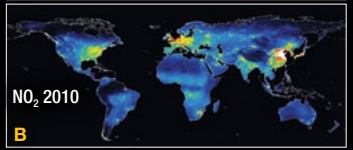

AIR POLLUTION
AROUND THE WORLD
2005
Nitrogen Dioxide (NO_2)


AIR POLLUTION
AROUND THE WORLD
2010
Nitrogen Dioxide (NO_2)


AIR POLLUTION
AROUND THE WORLD
City Lights at Night





Is Air Quality Improving Where You Live?

National Aeronautics and Space Administration

The Ozone Monitoring Instrument (OMI), onboard NASA's Earth-observing satellite, Aura, measures the air pollutant nitrogen dioxide (NO_2) from high above Earth's surface. NO_2 is released into the air by burning coal, gasoline, and biofuels, such as wood. Maps **A** and **B** show annual mean observations of NO_2 in 2005 and 2010. Notice the large increase in NO_2 in China because of its rapidly growing economy. At the same time, there was a large decrease in the United States by 2010 due to federal and state regulations of NO_X ($NO_X = NO + NO_2$) emissions from power plants and cars. NO_X emissions are regulated because NO_2 is unhealthy to breathe and NO_X reacts with other gases to produce ozone, which is also unhealthy to breathe.

In the tropics and subtropics, NO_2 is much lower despite the fact that about half the world's population lives there. For instance, India has over 1 billion people, four times the population of the U.S., but Indians burn much lower amounts of fossil fuels per person than Americans or Europeans. In fact, the only noticeable "hotspots" of pollution in the tropics and subtropics are heavily industrialized areas in South Africa and southern China.

The Defense Meteorological Satellite Program Operational Linescan System measures the intensity of city lights from space (see map **C**). This intensity reveals a strong correlation with pollution, where the brightest lights coincide with the highest pollution. It is also an excellent indicator of industrialized areas in the United States, Europe, and East Asia. Less industrialized areas in the tropics and subtropics have lower intensity of lights and less pollution.

For more information, visit: **aura.gsfc.nasa.gov**

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