AIR POLLUTION AND HEALTH

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Pollution Travels Long Distances:

*NASA Satellite Images of the Gobi Desert Dust Plume being Transported Across the North Pacific and into the U.S.*
Trans-Ocean Transport: Chinese Desert Dust Particles Travelled All the Way to NYC

(26th Street & 1st Ave)
GBD Study Updated with Improved PM2.5 Effect Estimates

The Global Burden of Disease Study 2010

The Lancet


Global estimates of PM$_{2.5}$ at 10km x 10km scale

Combined estimates from satellites (AOD), chemical transport models and ground-level measurements

Highest regional averages in East/South Asia - many breathe concentrations much higher than regional average

89% population in areas exceeding WHO Air Quality Guideline (10 µg/m$^3$ PM$_{2.5}$ annual average)
Ambient PM$_{2.5}$ among the leading global risks for mortality and lost years of healthy life in 2010

- Household PM

3.2 million deaths and 76 million DALYs
Health Co-Benefits of Climate Mitigation Can Be Large if Fossil Fuel Combustion Reduced

Figure 1. The Health and Associated Economic Benefits of Climate Change Mitigation\(^4\) a.) the premature mortality (due to Cardio-Pulmonary Disease, CPD, plus lung cancer) from PM\(_{2.5}\) in 2030 (deaths per year per 1000 km\(^2\)) avoided by climate change mitigation measures; b.) the range of associated marginal benefits ($/ton CO\(_2\)) by region (Red: High Estimate, Blue: Low Estimate), relative to the range of expected mitigation cost (Green lines) achieved by climate change mitigation. Reproduced from West et al.