

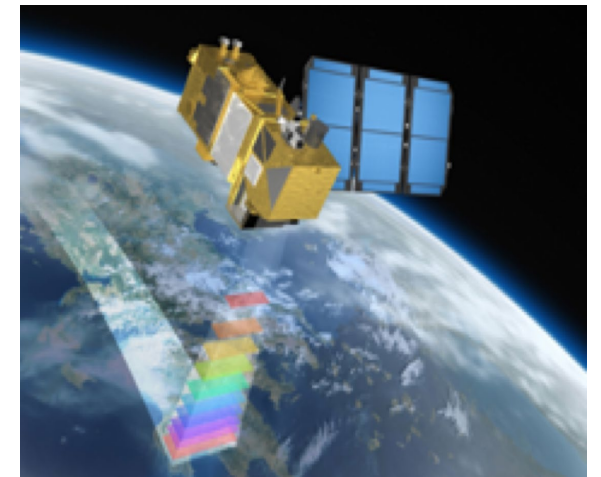
GATEWAY TO
GLOBAL
AGING
DATA

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Air Pollution Initiative

Air Pollution: Our Approach

- Harmonized estimation strategy: Data Integration Model for Air Quality (DIMAQ)
 - Modeling exposures can provide more comprehensive exposure information than measured data that provide information only for a selection of towns and cities
 - Used by WHO and GBD for estimating global burden of disease (10km x 10km)
- Data we combine:
 - ground measurements
 - satellite remote sensing
 - chemical transport models
 - land-use (roads, altitude)
 - weather (temperature, wind)



Air Pollution: Progress so far & Plan for the future

Progress

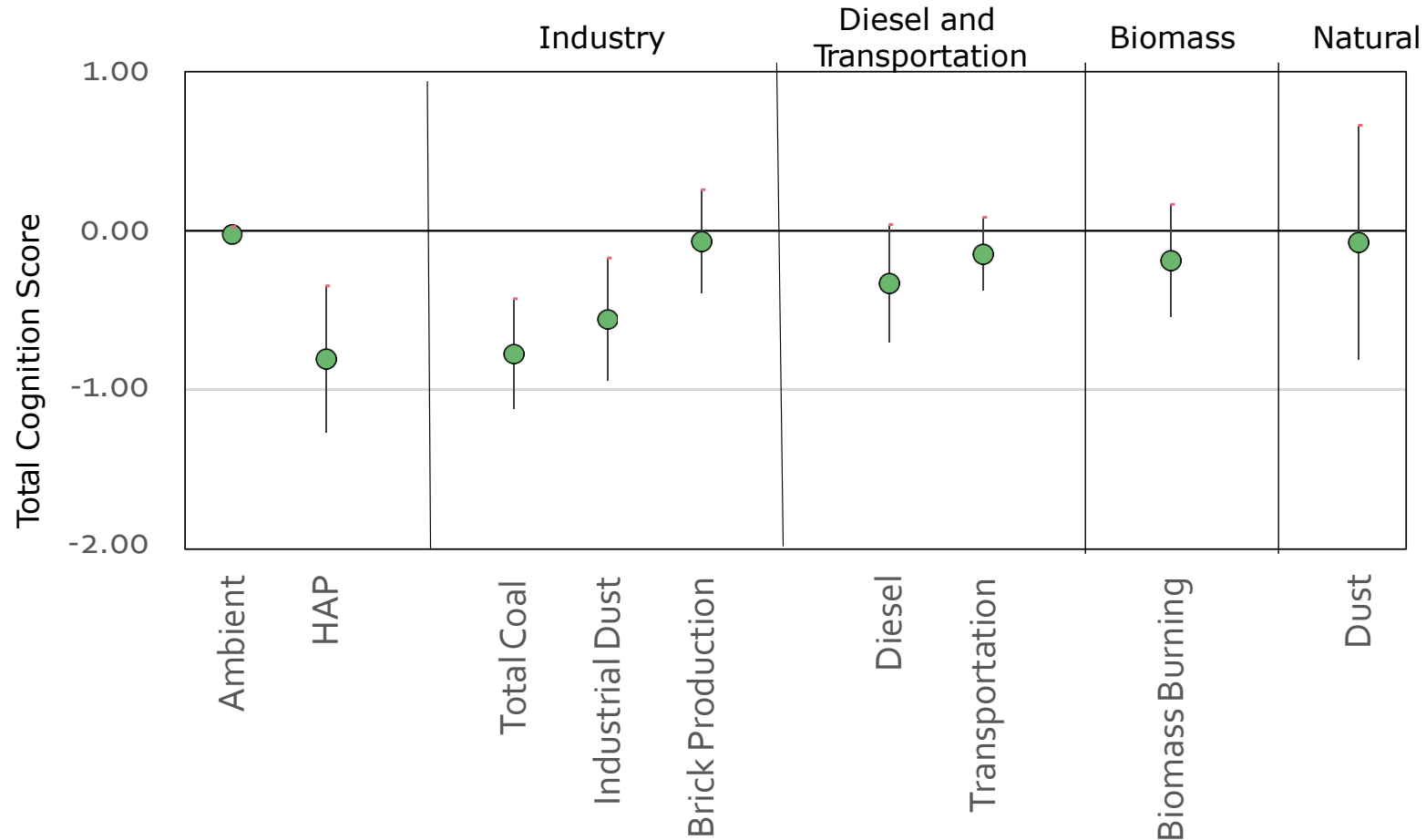
1. We estimated **annual** exposure to **PM_{2.5}** at **1 km x 1 km** from 2010 through 2016 for the U.S., England, India, and South Korea
2. We estimated annual exposure to **NO₂** for England from 2010 through 2016
3. We **linked** the air pollution estimates to the survey data based on geographic information for **the U.S., England, and India**
4. We're conducting parallel analysis of the relationship between cognition and exposure to **PM_{2.5}**

Next Steps

1. Improve **spatial** and **temporal resolution**
2. Expand time horizon from 2010-2016 to **2000 – 2020**
3. Study **source-specific** air pollution
4. Expand to **China** and **Ireland**

Preliminary comparison of different emission sources of PM_{2.5} (2017-2019 LASI)

Change in cognition score per 5 $\mu\text{g}/\text{m}^3$ ~ 3 years of age



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Thank you

