### Hashtags: #earth, #anitaairnow

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### Tags: Data Visualization, Imagery, Model

**Challenge Description**

Create an app that shows how large-scale international air quality events relate to daily Air Quality Index (AQI) data. The app could ingest data and information from NASA satellites, the National Center for Atmospheric Research (NCAR) air mass hysplit trajectories, and chemical transport model outputs. This information could empower citizens to mitigate some of these conditions and make the air cleaner, or air quality managers could use the information to formulate policy measures that take into account daily influences on the Air Quality Index.

**Background**

The AQI tells you how clean or polluted your air is and what associated health effects might be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air. The AQI is calculated from for five major air pollutants: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. AirNow has been in operation since 1997 and provides AQI information to several media outlets.

AirNow has state-of-the-art software for air quality data management and information dissemination. The AirNow system provides real-time AQI observations and forecasts to help inform the public about the quality of the air they breathe. The software, including worldwide mapping and multi-language capability, allows the system to be implemented in cities and regions around the globe. AirNow also provides a robust app that provides daily and forecast AQI for the US.

AirNow encourages participation in a worldwide community that shares ideas and promotes air quality awareness. AirNow-International (AN-I) helps countries around the world create a more reliable source of real-time air quality information. This allows decision makers to better communicate about air pollution, health, and sustainability goals, and to involve the public in efforts to improve air quality. The AirNow-International Community includes AN-I system users and other people interested in international air quality. The AirNow-I Community is a group of international organizations and agencies that: (1) provides direction, standardization, and scientific understanding for the collection, sharing and dissemination of air quality data and forecasts; and (2) promotes AirNow-I development and growth in a self-sustaining and self-supporting environment. The benefit of this app is that it could help the public understand how local or large scale events relate to unhealthy AQI levels.

**Primary Data and Models**

MODIS and MISR for fires and pollution outbreaks; Models – HYSPLIT for trajectory predictions, GEOS-Chem (Stratospheric intrusions), NRL-NAAPS, SmartFire Secondary Data; and CALIPSO, OMI for vertical resolution and volcanic eruptions.

**Solution Ideas**

Here are some ways for you to frame this solution:

The app can ingest data from AirNow, NASA satellite data, and other information such as NCAR air mass hysplit trajectories and chemical transport model outputs.

The app can relate the AQI data to episodic and long range transport events; display the pathway of the pollution from the source to the location of interest; and Document the assumptions and methods for comparing the data.

Find creative ways to visualize the data.

**Sample Resources**

MODIS (Moderate Resolution Imaging Spectroradiometer): <http://modis.gsfc.nasa.gov/data/>

MISR (Multi-angle Imaging RadioSpectrometer): <http://www-misr.jpl.nasa.gov/getData/accessData/>

OMI (Ozone Monitoring Instrument): <http://disc.sci.gsfc.nasa.gov/Aura/data-holdings/OMI>

CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations): <https://eosweb.larc.nasa.gov/project/calipso/calipso>

NCAR Hysplit (HYbrid Single-Particle Lagrangian Integrated Trajectory) model: <http://www.arl.noaa.gov/HYSPLIT_info.php>

GEOS-Chem: <http://geos-chem.org/>

NRL-NAAPS (Navy Aerosol Analysis and Prediction System): <http://www.nrlmry.navy.mil/aerosol/>

SmartFire: <http://www.getbluesky.org/smartfire/dataviewer/index.cfm>