### Hashtags: #earth, #apictureisworth

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### Tags: Data Visualization

**Challenge Description**

Import satellite imagery from NASA’s Global Imagery Browse Services (GIBS) to show how Earth has changed in the last two years. Load the data into a mapping platform of your choice and add additional data or imagery, and keep your eyes peeled for insights, mashups, and any improvements that would help others create mashups. Combining information like this can put data into context to tell a compelling story or unearth an interesting insight.

Mashups could combine several types of information for a variety of purposes, for example:

1) Combine tracks of migratory whales with space-based measurements of ocean surface temperature to examine relationships between them.

2) Is that volcano erupting? Compare volcano webcams to satellite measurements of sulfur dioxide and see how bad it is.

3) Tell a story of how a natural event affected people on the ground by combining hurricane, wildfire, or snowstorm imagery with geolocated instant messages, pictures, and videos of those who experienced it.

4) Provide farmers, foresters, and other land managers with an interactive tool to visually compare NASA’s multispectral satellite images with do it yourself methods near infrared images taken from kites, balloons, airplane windows, or very tall hills.

**Background**

NASA maintains and contributes to a collection of hundreds of terabytes of Earth observation imagery from our numerous satellites. NASA makes that imagery available to scientists and the public to help to improve our understanding of Earth systems and climate. It supports applications in air quality, volcanic ash and smoke plumes, drought, dust storms, fires, floods, severe storms, shipping, and vegetation, among others. Some of this imagery is currently made available in its full, native resolution through NASA’s Global Imagery Browse Service’s (GIBS) public API. GIBS provides daily, global images covering mid-2012 through present for 100+ visualized data parameters, with ongoing activities to expand throughout the entire historical record of each product. Many imagery products are continually updated throughout the current day with the latest imagery (often available within four hours of acquisition from the satellites), providing the capability to address problems that are time-sensitive. The NASA Worldview browsing tool provides an interface to interactively pan and zoom the entire set of imagery available in GIBS. In addition, GIBS and Worldview can view imagery from Arctic and Antarctic perspectives to provide “full Earth” coverage.

Some potential sources of data or information for the storytelling “mashup” include:

1) Combining Earth imagery with social data.

2) Linking ground-based networks to space-based observations: Several other government agencies maintain a network of ground-based measurement stations for important data collection sites. NASA space-based observation data might be mashed up against some of this ground-based observation data as well. (e.g., National Oceanic and Atmospheric Administration (NOAA) buoy data [http://www.ndbc.noaa.gov](http://www.ndbc.noaa.gov/) , Environmental Protection Agency (EPA) air quality stations, etc.).

3) Combining powers with citizen scientists: Look for ways to include the many citizen science projects conducted globally. There are examples of aerial imagery of Gulf Coast coal terminals, coastal oil spills, northeast urban waterways post-Hurricane Sandy, rangeland in the mountain west, etc. Other examples show snapshots of birds and species. Projects could compare the spatial and temporal resolution of these diverse data sources, and explore ground validation workflows.

**Solution Ideas**

Here are some ways for you to frame this solution:

1) A description of the mashup: What does the mashup seek to tell us? Why are these data comparisons important? What value do these pieces of information add to one another?

2) Other data/ imagery sources: What other information is NASA data/imagery being combined with in the use case? Provide links to the other information.

3) A prototype of the mashup itself using a platform of your choice. Feel free to use your own website to host and demonstrate the mashup; otherwise there are free hosting options which can be used. The mashup could be as usable as possible, but wireframes or storyboards are acceptable if technical/ data accessibility hurdles make the creation of a specific solution impossible.

4) Other open source tools: Identify other open source tools that the prototype builds upon or uses.

5) Recommendations for improvements to the accessibility of NASA imagery: Teams could list specific recommendations for improving the accessibility of NASA data for mashups. Teams could list specific hurdles they encountered. Teams must list the specific data source they were working with.

**Sample Resources** :

* <https://wiki.earthdata.nasa.gov/display/GIBS/GIBS+Available+Imagery+Products>
* <https://wiki.earthdata.nasa.gov/display/GIBS/GIBS+Access+Methods>
* <https://wiki.earthdata.nasa.gov/display/GIBS/GIBS+Supported+Clients>
* [h](https://wiki.earthdata.nasa.gov/display/GIBS/GIBS+Supported+Clients) [ttp://modis-atmos.gsfc.nasa.gov/products.html](http://modis-atmos.gsfc.nasa.gov/products.html)
* <http://modis-land.gsfc.nasa.gov/>
* <http://airnow.gov/index.cfm?action=airnow.legacy_archives>
* <http://www.epa.gov/bpspill/water.html#data>
* <http://www2.epa.gov/toxics-release-inventory-tri-program/tri-basic-data-files-calendar-years-1987-2012>
* [http://www.ndbc.noaa.gov](http://www.ndbc.noaa.gov/)
* <http://publiclab.org/archive>
* <http://budburst.org/results.php>
* <http://ebird.org/content/ebird/>
* [https://www.inaturalist.org](https://www.inaturalist.org/)