Abstract

RealEarth is a data discovery and visualization platform developed at the Space Science and engineering Center at the University of Wisconsin-Madison to support outreach and collaboration efforts of scientists. This poster introduces RealEarth and provides information about its features.

What began as an effort to bring near real-time weather information and land remote sensing visualization together in one intuitive map interface has expanded to offer time-series animation of aerial photography and early warning notifications for hazards and severe weather.

The core infrastructure is comprised of 12 servers hosting 18 virtual machines (VMs), but its federated and modular architecture is extensible and scalable. New VMs are added regularly. Now over 550 imagery products are processed and available for display at any given time.

Visit https://www.ssec.wisc.edu/realearth It supports a robust API and several mobile apps for both iOS and Android.

Background

RealEarth started with a desire to put atmospheric, oceanic, and terrestrial data and imagery into a common GIS-compatible interface for easy merging and comparison. The goal is to provide simple visualization of complex information in intuitive interfaces with a well-documented API.

Architecture

RealEarth is designed to be scalable and extensible. New hardware and virtual machines (VMs) can be added and arranged as needed. This provides redundancy, load balancing, and access options for specific user needs.

Inputs
- GeoTIFF
- Shapefile
- GeoJSON
- McIDAS Area

Outputs
- Tile services (Web Mapping)
- WMS (GIS software)
- KML (Google Earth)
- THREDDS (IDV, McIDAS-V)

Manage Products

RealEarth provides a management interface for defining product lifespan, appearance, legends, and data-probe tools. Documentation is available for the User Interface, User Tools, and the API.

Add Data

- Researchers send products to be ingested with a simple upload script accessible through command line or through a web form
- Animation is facilitated by providing date and time at ingest
- Forecast data animations are supported

Share Visualizations

- Users can share their custom animations and discoveries through social media (Facebook, Twitter, Web links, etc.)
- Users can create mp4 movies and animated GIFs from their display with a single click
- Users can share their entire display in real-time in a live “Web-Ex-like” browser display.

The RealEarth™ App

Mobile access to all products available on RealEarth. Invaluable during field campaigns and site-specific research. Animate, pan, and zoom!