USArray Applications of Antelope PHP web technologies: ANF.UCSD.EDU

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Abstract

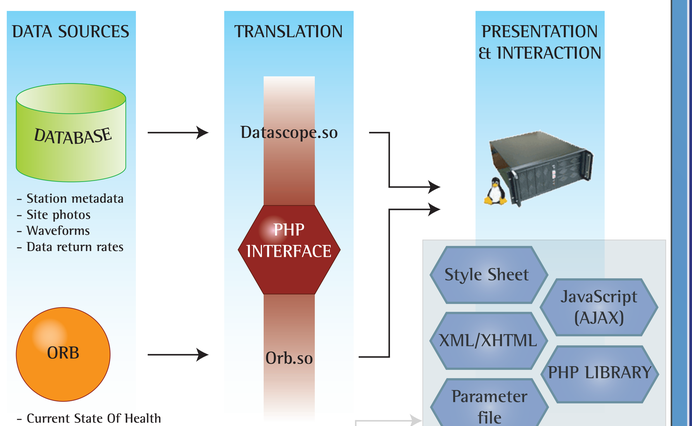
The Array Network Facility website (http://anf.ucsd.edu) displays a variety of diverse meta-data associated with the USArray Transportable and Flexible Arrays. A suite of online tools has been developed to allow visual and interactive exploration of the data and meta-data from the array stations.

The website is partitioned into public and administrative areas. The public area provides dynamic maps of station locations, along with network affiliations, communication providers, hardware configurations, associated latencies and event maps. The public pages also show waveform data returned for the last 1, 2 and 24 hours. This allows rapid assessment of array health from anywhere with internet access. Graphical representations of state-of-health parameters are generated nightly for each station, creating a searchable archive. The station maps and metadata details are fully dynamic, updating immediately based on changes in the underlying databases and streaming data returned. The password-protected administrative area provides access to a searchable database of station-maintenance email from field personnel, filed by station, as well as upload and search facilities for digital photos of field sites integrated with the Flickr photo-sharing facility at http://www.flickr.com.

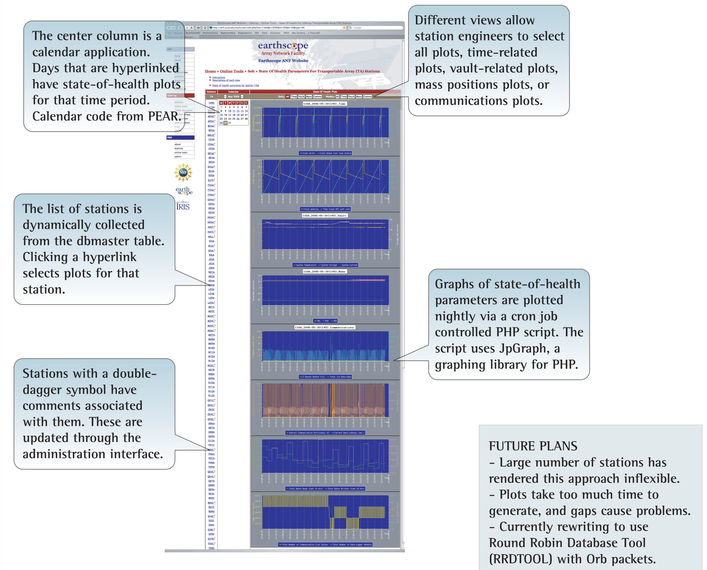
The underlying architecture of this dynamic environment is the Datascope RDBMS, part of the Antelope Environmental Monitoring System (http://www.brtt.com), in combination with the PHP Hypertext Processing (PHP) scripting language. This configuration provides an easily extensible platform for real time environmental monitoring, with many re-usable components.

We present the various types of data available from the ANF website, in addition to simple descriptions of how these data were collected and displayed. We also outline upcoming tools that we are currently developing to improve monitoring as this already large array continues to grow.

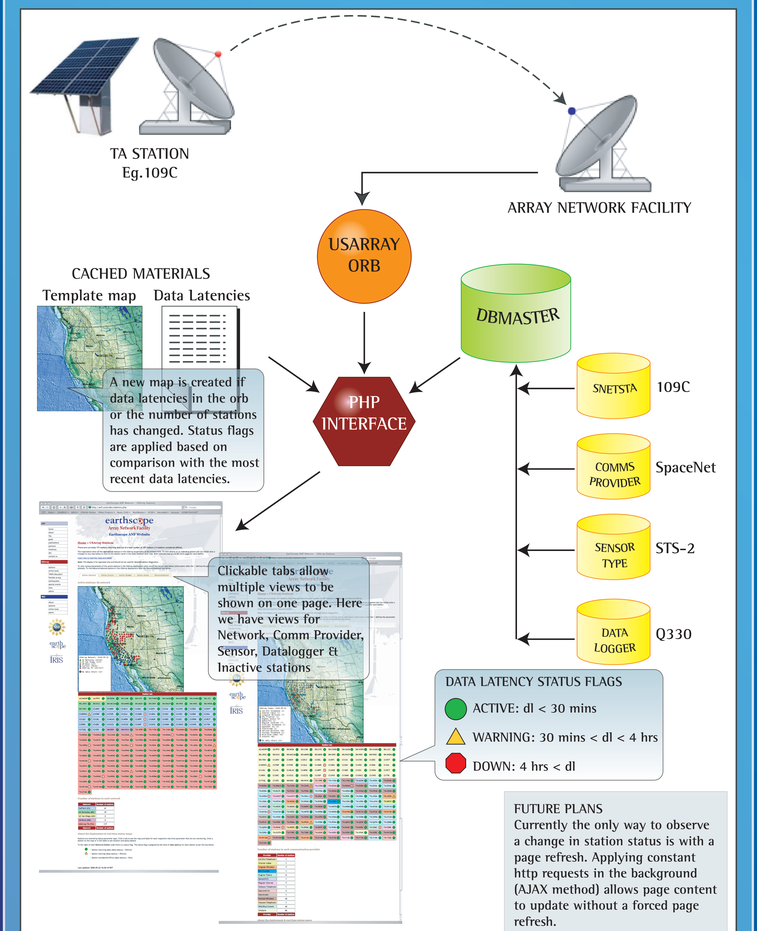
Websites with the PHP Interface to Datascope (Antelope)



Station status state of health plots

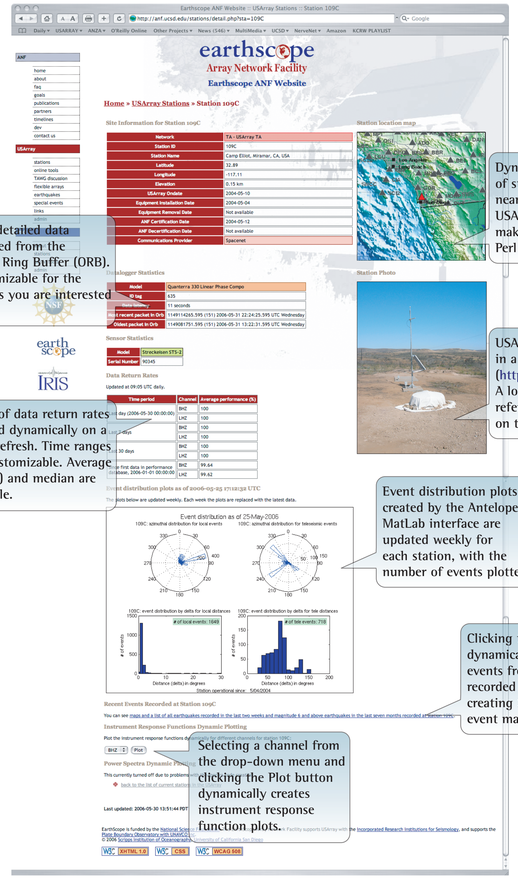


Web representation of real time USArray station status



Station performance metrics on the web

Clicking a station symbol on the map, or the station code table entry takes you to the station details page, which provides station meta-data and performance metrics:



More detailed data returned from the Object Ring Buffer (ORB). Customizable for the metrics you are interested in.

Dynamically created maps of station location and nearby stations in the USArray using make_dbrecenteqs_map Perl script in contrib

Table of data return rates created dynamically on a page refresh. Time ranges are customizable. Average (mean) and median are possible.

USArray photos are stored in a Flickr Pro account (http://www.flickr.com). A local sitephotos database references static images on the Flickr site.

Event distribution plots created by the Antelope-MatLab interface are updated weekly for each station, with the number of events plotted

Clicking the hyperlink dynamically retrieves all events from the database recorded at this station, creating 2' and global event maps and tables

Selecting a channel from the drop-down menu and clicking the Plot button dynamically creates instrument response function plots.

Datalogger status and current waveforms on the web

Antelope's environmental monitoring tools Datalogger monitor (dlmon) and Orb monitor real-time display (orbmonrtd) are executed under Virtual Network Computing (VNC) xterm windows. A screen dump argument to the tools execution command results in a real-time screenshot of the data coming in to the ANF. These are displayed on the website with hyperlinked anchors added to the orbmonrtd dump. This allows users to anchor their browsers to a specific station of interest.