New ways to get more and faster data on the Web

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Monday, April 25, 2016
Ventura County FWS

- All Flood Warning System information is web based.
- Forecast models are updated every 4 hours.
- Displays are data driven documents – generated in the browser.
- Continually monitored by the District, OES, NWS and the public.
- Adjacent counties ALERT data was received by radio, now imported via SHEF.
Rainfall Totals
Stream/Forecast Flows
VCAHPS SITE DISPLAY

VCAHPS Map Display

Shows current observed data (blue) along with the HSPF (green), VCWPD HEC-1 (cyan) and NWS River Forecast Center - Sacramento Model (magenta).

Potential flooding
Web site traffic

Sessions: 119,811
Users: 60,400
Pageviews: 174,051
Pages / Session: 1.45
Avg. Session Duration: 00:01:26
Bounce Rate: 80.26%
Additional Products

- Regional rainfall through California, Southern Nevada, and Desert areas.
- Weather Map shows Airports, RAWS, and Private Weather Stations.
- Water temperature maps shows readings from buoys coastal ports.
- Snow depth maps show Sierra snow pack depth.
- **All data goes through the Basestation.**
Overloaded Basestation

MADIS

APRS Wx

VC APCD

CDEC

NOS Tide

Scripps

Coast Guard

Army Corps Engineers

GOES

LA County SHEF

San Bernardino SHEF

Santa Barbara SHEF

San Luis Obispo SHEF

ALERT/ALERT2

Hydrology Section
Problems

- Data Import would occasionally get stuck where no external data was being imported (Database Locked).

- Export reports/JSON files were taking 4 minutes per cycle.

- Used backup system to also create 2nd set of reports but updates could not occur any faster than every 5 minutes.

- Database sync would occasionally fail.

- High CPU use on primary Basestation.
Solution (Part 1)

- Use Python scripts to pull data and create summary JSON files directly bypassing Basestation.

- Use data from MesoWest for non-ALERT weather stations.

- Use CA/NV RFC for non-local/non-ALERT rain totals and snow depth data.

- Use National Buoy Data Center for water temperature.

- Write NOS Tide data directly to webserver.
Results from Part 1

- Reduces the amount of data going into the system.

- Reduces the number of sensors from 2,723 to 1,440. A 47% reduction.

- JSON report files time reduced to just over 2 minutes.

- Database locked issues have been eliminated.

- Database replication has improved and faster to fix.
Additional Improvements

- CA/NV rainfall only shows rain totals between 1 hour and 5 days. Would be nice to see 28-day and seasonal totals. Hint! Hint!

- MesoWest data uses a web script used by the MesoWest map display. This can change at any moment. Would be nice to use NWS LA, Fire Snooper product or better data access at some point from MesoWest.

- Look for other sources of the remaining non-local data.

- Test other ways to export data from Base stations.....
Solution (Part 2)

- Export last 2 hours of data to text file (~2 seconds).
- Copy text file to remote servers (identical table structure).
- Database Triggers assure no duplication.
- Generate files (JSON/text) using existing database queries.
- Repeat every 4 minutes (2 minute update with 2 basestations)
- Data is as current as possible (2 minute TDMA)
### Converting from events to Intervals in SQL

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Monday, April 25, 2016

Watershed Resources and Technology Division

Slide 14
Converting from events to Intervals in SQL
Final Format - GeoJSON

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Common Format – Multiple Tools
CartoDB
Common Format – Multiple Tools
QGIS