

Google Earth Uses and Benefits Summary

At the last Enterprise GIS Meeting we had Jason Cain and Deborah Hafford from Google visit and they shared the different ways Google can share geospatial data with us. Upon completion of their presentation and discussion we decided to take survey/vote of DWR GIS users on a few items. An email was sent out to the DWR GIS mailing list asking:

1. Are you using these types of Google products currently?
2. How are they impacting your program? (we're looking for both cases and uses) and,
3. Additionally, if you have any further comments or preferences about pursuing a relationship with Google and Google Earth Enterprise, include them as well.

The arrival of many responses from the DWR GIS mailing list addressing topics not directly related to the questions signifies perhaps the questions could have been asked better. The responses varied but the following is a list, summarizing different ways the respondents are using Google Earth products.

- ArcGIS Extension for the Google Maps API as a web interface for giving public access to DWR maps.
- Geotagging field photos and with Google Sketchup Pro, georeferencing Sketchup renderings.
- Locating existing and potential field sites, well completion report locations, levee sections, creating directions to field locations, and familiarizing field staff with landmarks for navigation.
- Accessing a cross-departmental environmental monitoring data guide provides information on hundreds of sites in California and surrounding states, including meteorology, water quality, and river stage.
- Visualization, exploration, and searching. This interaction with Google Earth is additionally documented by screen shots and exported views in site plans, powerpoints, demonstrations and reports.
- Dissemination of information to non-ArcGIS users, including summarizing information for supervisors and executives with no need to become proficient with ArcGIS, and Program Managers outside of our agency.
- Flyover tours have been given using tools within Google Earth in presentations to DWR and outside audiences.
- As a communications tool, while members of a work group cannot be counted on to have access to ArcMap or the equivalent viewing software, they can easily obtain and more likely already have Google Earth.

ArcExplorer is never going to get used by the non-GIS rank-and-file the way Google is. Not saying that's right or wrong, but it is just a patent fact – a superbly skilled ArcGIS user

Respondents mentioned these benefits from the use of these products:

- *Superb imagery. Some users have taken Google Earth base imagery as background to their ArcGIS maps. Oftentimes the imagery tends to be better and may be more accurate/timely for identification of land use/land cover changes.*
- *User friendly feel to products. ArcIMS and even ArcGIS Server interactive maps have always had that GIS Desktop feel, great for GIS professionals but not so great for non-GIS users as it is not necessarily an intuitive layout.*
- *Brand and layout awareness. The vast majority of (non-GIS) employees are already dyed-in-the-wool Google users. Most people using Google Earth don't even know ArcExplorer exists or that it does essentially the same thing. Google Earth is more widely used than ArcGIS, especially outside DWR, enabling better interagency coordination.*
- *Faster refresh rates than ArcGIS with similar data/layers makes referencing Google Earth more convenient for qualitative work.*

- Google Earth is simpler to learn and use than ArcGIS. *Google Earth spatial products are made available to a larger group of end-users because of its simplicity. The majority of stakeholders can navigate Google Earth with no GIS experience and basic computing skills.*
- Sharing subsets of the GIS data. *Map creators don't have to worry about "sharing" data as much because they are just sharing snippets.*
- Locating existing and potential field sites and well completion report locations. *Google Earth was repeatedly noted as the quickest way to see what is in the immediate area. Other users mentioned how quick they could get coordinates or grab a screen shot of the surroundings. Additionally, respondents appreciated how easy it is to measure relative positions and distances between geographical features, data sources and infrastructure.*
- Google Earth files can easily display associated data in a user-friendly interface.
- Creating KML/KMZ files (Google Earth's file format) enables sharing of information with internal and external stakeholders. *Greener than printing paper maps for requesters, KMZ files can be easily transmitted via email for non-ArcGIS users while reducing both printing and delivery costs.*
- Access to cross-departmental information allows for rapid discovery of pertinent data.
- Google Earth's "terrain" setting allows quick reconnaissance of watersheds to become familiar with "the lay of the land" before more detailed analysis with other tools.
- These products were noted to have lowered the threshold of effort needed to get things done, and/or enabled new approaches or investigations that would not have been undertaken otherwise. *The result is a more robust, better-informed water quality monitoring program at a lower cost to the general public and water contractors.*

Interactive examples of Google Earth/Maps/API current uses:

- The CIMIS (California Irrigation Management Information Systems) program is currently using Google Maps, see <http://www.cimis.water.ca.gov/cimis/cimiSatStationLocation.jsp>
- The Northern Region maintains an interactive KMZ file delineating water quality sampling sites. Clicking on a point opens a pop-up containing site attributes and a link to retrieve data via the Water Data Library \\Lassenpk\dfsroot\RAID1\Wqb\Maps & Google Files\Google\DWR-Northern Region Water Quality Sampling Runs.kmz (this link assumes you have Google Earth on your computer)
- The DES (Division of Environmental Services) is moving their old Bay Delta and Tributaries (BDAT) System to a new platform and toolset with Google Earth being the web interface displaying location and specification information for the water testing and collection sites.
- The Delta Modeling Unit in the Bay Delta Office uses integrates bathymetry data with geographical information, and technical users can link additional bathymetry data using an online tool. The DSM2 Model and DSM2 Grid Map Tools can be viewed at <http://dsm2bathymetry.appspot.com> and <http://dsm2grid.appspot.com> respectively. One advantage of linking the geographical information to the model elements is that the edit of any model element location or data triggers the recalculation of all effected parts of the model using the latest information.
- CalSim study results are displayed in a Google Maps viewer, see <http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSimIII/OutputWebDataViewer.cfm>
- CalSimHydro developed a Google Maps GUI with NASA, see <http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSimIII/HydrologyPreprocessor.cfm>

Some respondents mentioned they specifically don't use Google Earth for the following:

- Map production
- When a query needs to be run on/from the data
- Technical documentation