

Dynamic Map Service Integration

Displaying Spatial PUR data

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CA Environmental Health Tracking Program (CEHTP)

- Last year Eric Roberts gave a presentation on the Central Valley/South Coast pilot project looking at relationships between environmental hazards such as pesticides with childhood health
- Today I will describe another project from this program -
- Displaying PUR and other data on maps in a web browser

CA Environmental Health Tracking Program (CEHTP)

- In 2001, SB 702 started a process to create an Environmental Health Surveillance System to track potential links between environmental exposures and chronic disease
- The SB 702 workgroup recommended that "environmental health tracking data need to be shared and integrated in a standardized manner and communicated to researchers and the public."

CA Environmental Health Tracking Program (CEHTP)

- CEHTP is a collaborative initiative between DHS, Cal/EPA, and UC.
- Funded by the U.S. Center for Disease Control in 2002
- Goal is to develop an environmental health tracking network to integrate data on environmental hazards with data on chronic diseases that have possible links to environment exposures.

CA Environmental Health Tracking Program (CEHTP)

- Facilitate transformation of data to “information” that is more usable/actionable by researchers/stakeholders
- Identified 40+ databases/systems of interest

CA Environmental Health Tracking Program Staff

- Paul English (PI main grant)
- Eric Roberts (PI pilot projects)
- Michelle Wong, Svetlana Smorodinsky, Eddie Oh, Yu Kuwabara, Lucia Somberg, Maile Newman
- IT/GIS Staff: Craig Wolff (PI drinking water project), Makinde Falade, Liang Guo

Map Visualization Principles

- CEHTP and/or system owners provide easy, systematic, and standards-based access to GIS data for dynamic interactive mapping
- CEHTP and/or system owners maintain maximal control over look-and-feel of GIS data
- CEHTP and/or system owners focus resources on data within their jurisdiction

How a Typical Interactive Map Works

- Browser-based client has controls that take zoom, pan, layer visibility, etc. parameters and process into request to map server
- Map server receives request for map
- Map server processes request into an image file
- Browser-based client displays image file

Google/Hackers Redefine Browser-Based Interactive Mapping

- Google Maps API makes it tremendously easy to put dynamic maps with basemap and high-res satellite imagery on any* website with no non-standard plug-ins
 - See <http://www.google.com/apis/maps/>
- Hackers figure out how to integrate WMS content in Google Maps API
 - See <http://blog.kylemulka.com/?p=287>

*Commercial sites must pay

Google API Drawbacks

- Map client can only display 2 overlapping image tiles simultaneously (“Hybrid”)
- Even if one of those tiles was non-Google data (ie. your own tile data), image opacity is not consistently or elegantly supported across browsers
- Multiple tiles must be overlaid on server-side

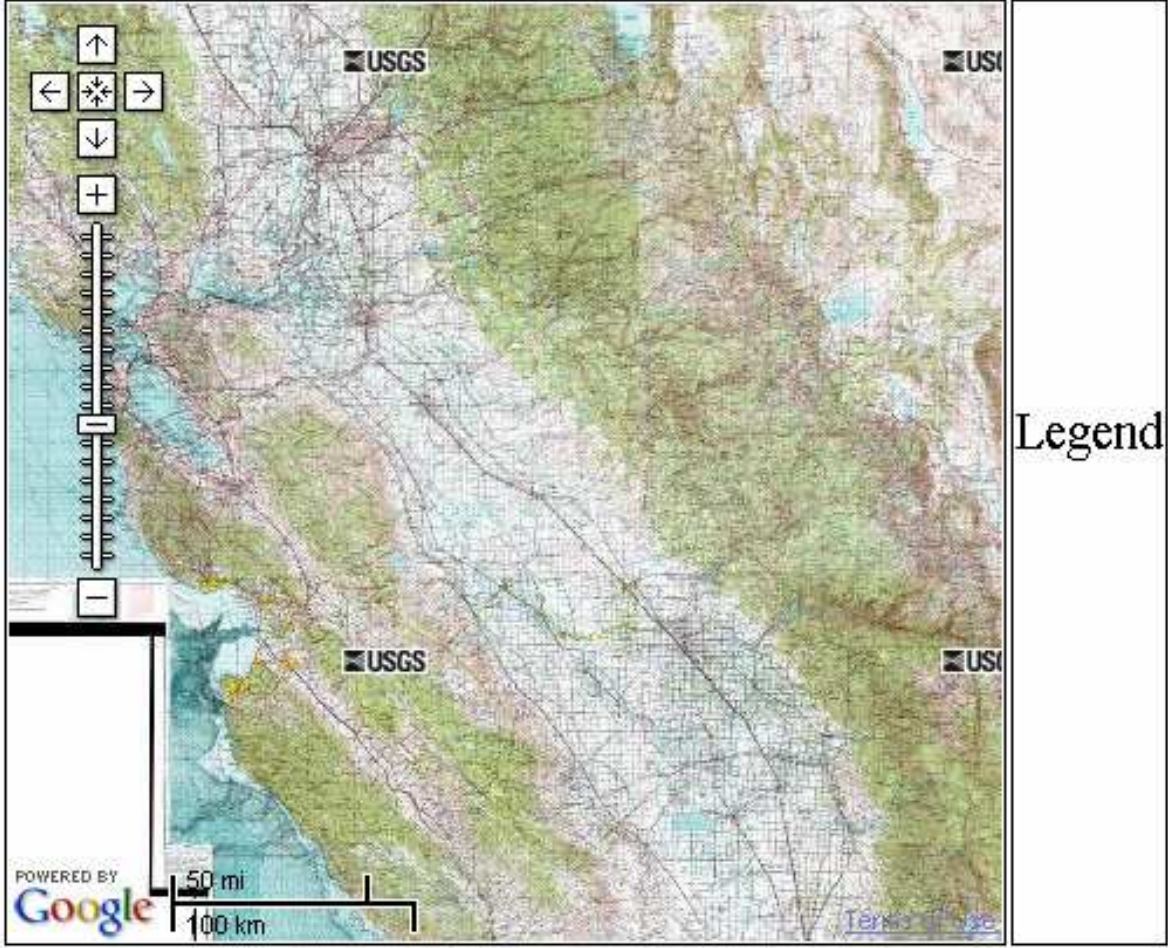
CEHTP Custom WMS Layering

- Develop server-side utility that overlays multiple map server image tiles
- Support for consuming most popular map server output (ie. ArcIMS, WMS, UMN MapServer, ArcWeb services)
- Support for individual layer transparency and opacity
- Support for server-side caching (~Google speed)
- Invocation interface is WMS (ie. standard URL access)



CEHTP Dynamic Map Service Integration Demo

Background Layer Options View Map Build Web Page



The map interface includes a navigation toolbar on the left with directional arrows, a zoom-in (+) and zoom-out (-) button, and a vertical zoom slider. The map itself shows a topographic view of California with labels for 'USGS' and 'USI'. A legend panel is located on the right side of the map. At the bottom left, there is a 'POWERED BY Google' logo and a scale bar showing 50 miles and 100 kilometers. A 'Terms of Use' link is visible at the bottom right of the map area.

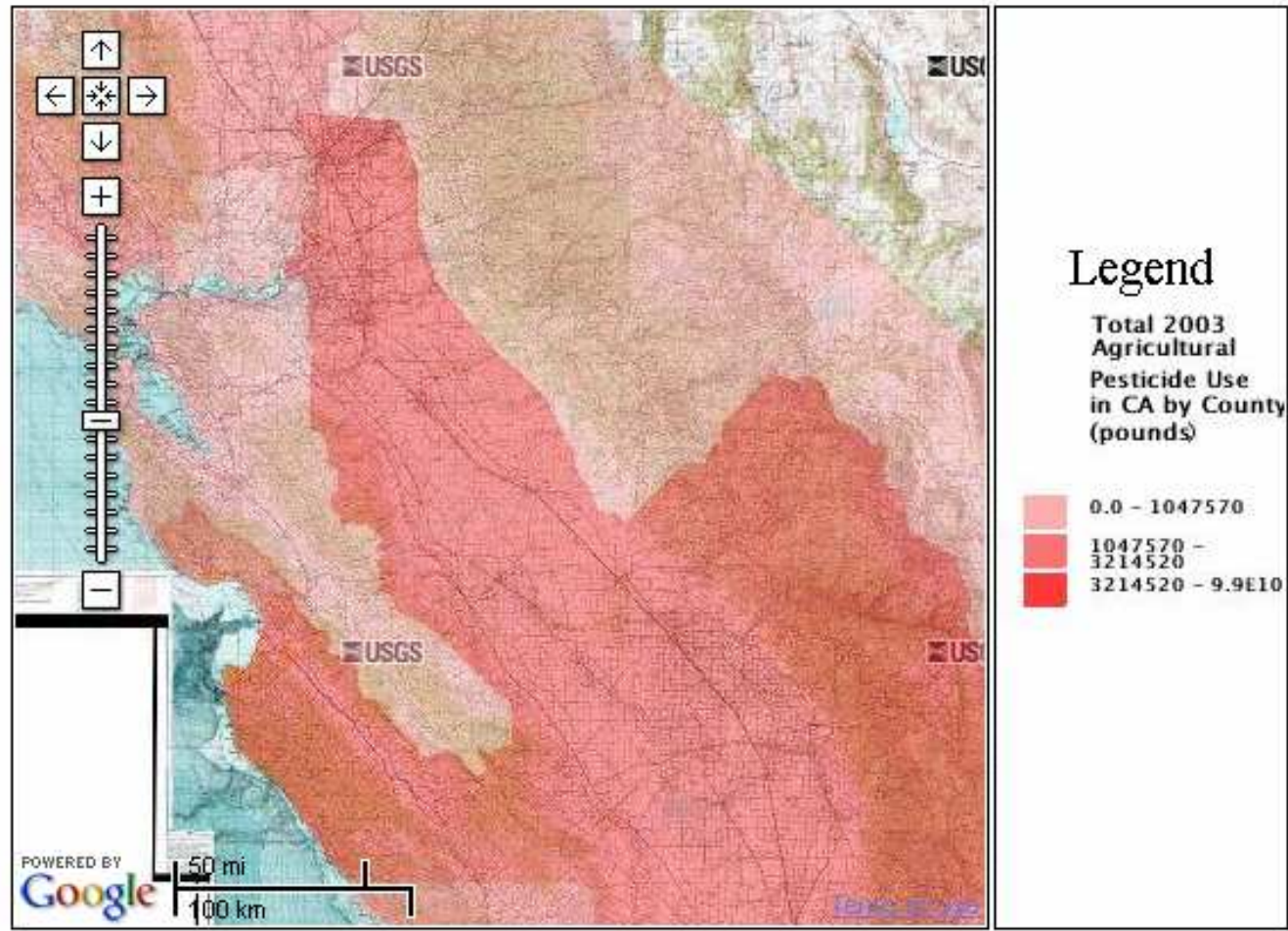
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Layer Options

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Legend

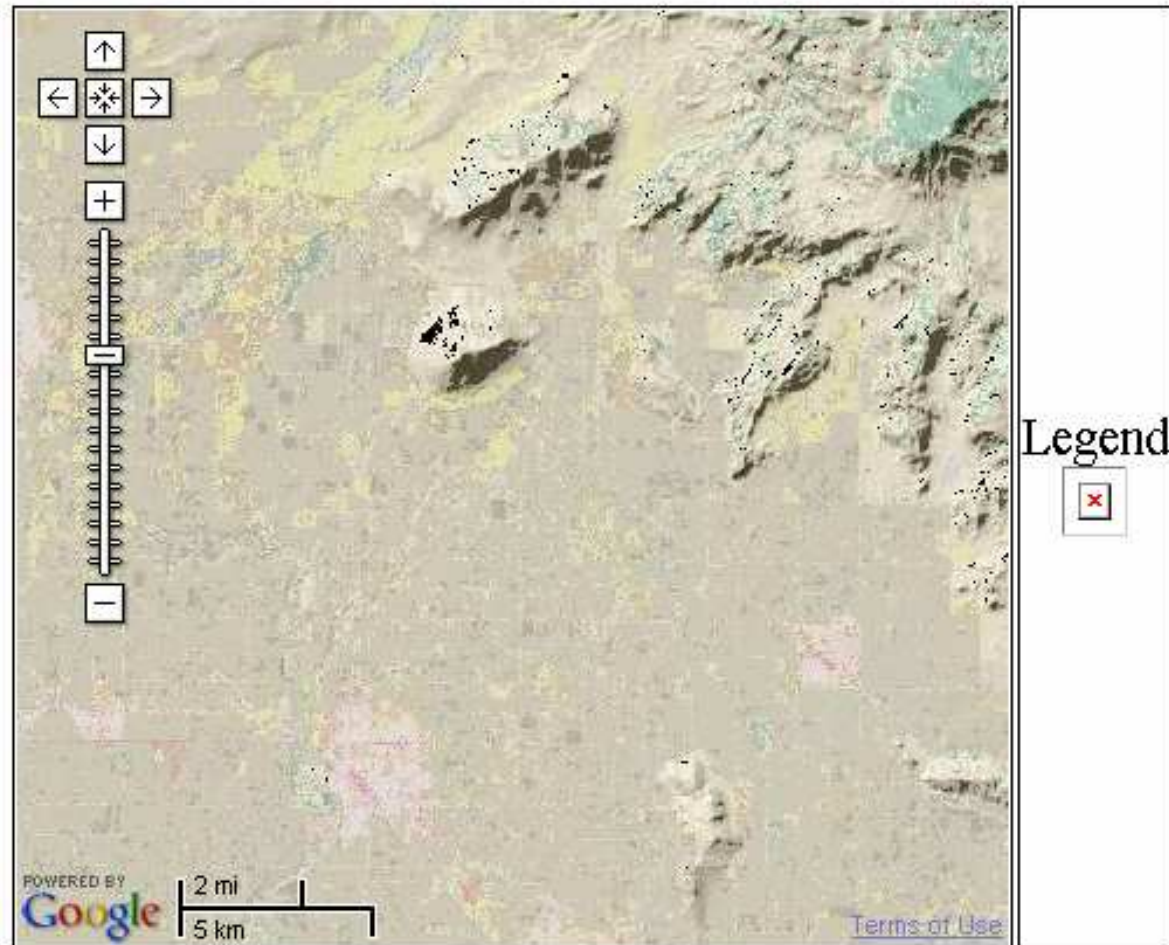
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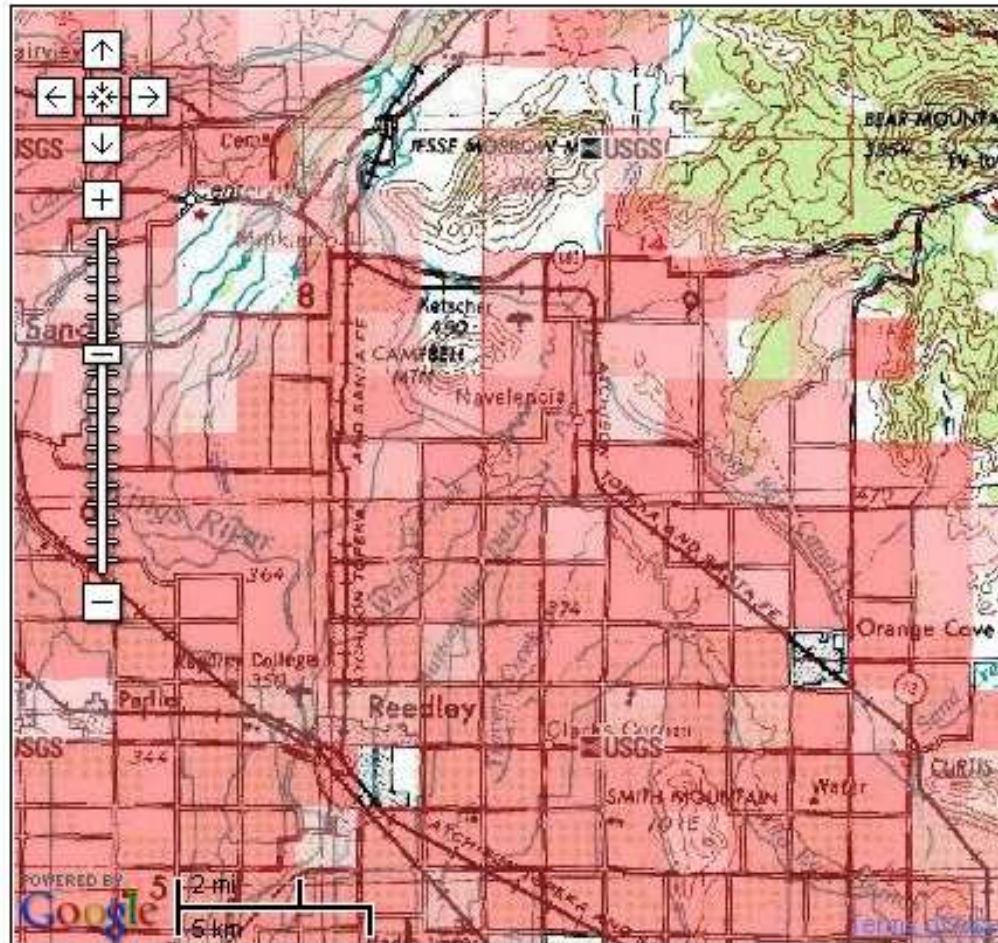
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Legend

Total 2003
Agricultural
Pesticide Use
in CA by
Section
(pounds)

