

# Geospatial Resources for Agricultural Field Research

## Helpful resources and links for using geospatial tools for agricultural research

### Basic GIS software

- ESRI ArcGIS (version 9.2 is most recent) – Windows-based GIS program for beginning-to-advanced GIS analysis (available to UCCE through UC Davis)
- ESRI ArcView GIS (version 3.3 is most recent) – Windows-based GIS program for beginning-to-advanced GIS analysis (available to UCCE through UC Davis)
- Google Earth – a Windows- and Mac-based program that allows viewing of imagery and information from local to global scales. The Plus version costs \$20/year and allows you to add your GPS points from your GPS unit. The Pro version costs \$400/year and allows you add your GIS data (all types) and your GPS points from your GPS unit (<http://earth.google.com/>).
- Quantum GIS (QGIS) – a Windows- and Mac-based free GIS program for beginning-to-intermediate GIS analysis (<http://www.qgis.org/>).

### Programs and extensions for transferring GPS data between your GPS device and your computer

- Minnesota's Dept. of Natural Resources Garmin applications: <http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>  
Works only with Garmin handheld units. Allows integration with ArcGIS – you can save as a shapefile and automatically add to ArcMap.
- Garmin's Trip and Waypoint Application (comes with all Garmin GPS units): <http://www.garmin.com>
- MxGPS - ArcMap Extension : <http://www.mxgeo.com/>
- GPS Utility: <http://www.gpsu.co.uk/>
- AV Garmin extension for ArcView GIS 3.x: <http://arcscripts.esri.com/details.asp?dbid=-962379091>  
Works only with ArcView GIS 3.x and Garmin handheld units.
- Waypoint+: <http://www.tapr.org/~kh2z/Waypoint/>

### How do I get more information on GPS and GIS?

#### *Good GIS websites:*

- ✓ GIS.com: <http://www.gis.com/>
- ✓ Wikipedia: [http://en.wikipedia.org/wiki/Geographic\\_information\\_system](http://en.wikipedia.org/wiki/Geographic_information_system)
- ✓ GIIF website: <http://giif.cnr.berkeley.edu/gis.html>

#### *Good GPS websites:*

- ✓ Trimble's GPS Tutorial: All About GPS: <http://www.trimble.com/gps/>
- ✓ University of Texas, Austin GPS information: [http://www.colorado.Edu/geography/gcraft/notes/gps/gps\\_f.html](http://www.colorado.Edu/geography/gcraft/notes/gps/gps_f.html)
- ✓ History of GPS: <http://www.beyonddiscovery.org/content/view.page.asp?I=464>
- ✓ Trimble GPS training: <http://www.gps-trainer.com/>
- ✓ GIIF website: <http://giif.cnr.berkeley.edu/gps.html>

### How do I get more training in GPS and GIS?

- The GIIF is hosting GPS and GIS workshops in 2007 specially designed for Cooperative Extension advisors and specialists, with funding from RREA 2006/07. The workshops are free to Cooperative Extension colleagues. Visit <http://giif.cnr.berkeley.edu/RREA/> to sign up for a course!
- The Bay Area Automated Mapping Association website lists colleges and universities around the Bay Area-Delta Region which offer GIS instruction. Visit <http://www.baama.org/education/> for more information.
- ESRI hosts a virtual campus at their website: <http://campus.esri.com/>, where you can take courses online or in-person with an instructor, for any of the software.
- Many websites exist online for GPS and GIS training. One example is <http://www.gps-trainer.com/>.

## Where do I get geospatial data and imagery?

California is lucky to be one of the most thoroughly mapped places in the world, with most of the geospatial data available for free on the web. While statewide and national datasets are readily available, they might be lacking in the resolution needed for applications such as agricultural field research. For this reason, it is a good idea to know about certain high-resolution data sources (denoted below with **HIGH RES!**)

- California Spatial Information Library (CaSIL): <http://gis.ca.gov/data.epl>  
This is the State of California's geospatial data repository, and contains political, cultural, and physical data for the entire state.
- California Department of Forestry's Fire Resource and Assessment Program (CDF-FRAP): <http://frap.cdf.ca.gov/infocenter.html>  
This website has an excellent collection of geospatial data, including a large amount of land cover, forestry, fire history, and fire-related geospatial data for the whole of and parts of California.
- California GAP Analysis Project: [http://www.biogeog.ucsb.edu/projects/gap/gap\\_data2.html](http://www.biogeog.ucsb.edu/projects/gap/gap_data2.html)  
Hosted by UC Santa Barbara's Biogeography Lab, this site holds all GAP data for the State of California, which includes land cover data, as well as other political and physical data for the whole of and parts of California.
- Geospatial Imaging & Informatics Facility (GIIF): <http://giif.cnr.berkeley.edu/data.html>  
The GIIF lists geospatial data available by topic, location, and availability, and is updated frequently.

### More Links for Imagery:

- NAIP: [http://new.casil.ucdavis.edu/casil/remote\\_sensing/naip\\_2005/](http://new.casil.ucdavis.edu/casil/remote_sensing/naip_2005/) **HIGH RES!**
- NextMap: <http://www.intermap.com/corporate/california.cfm> **HIGH RES!**
- USGS: <http://seamless.usgs.gov/> **HIGH RES!**
- IKONOS, Space Imaging: <http://www.spaceimaging.com/products/ikonos/index.htm> **HIGH RES!**
- Quickbird, Digital Globe: <http://www.digitalglobe.com/about/quickbird.html> **HIGH RES!**
- OrbView-3, OrbImage: [http://www.orbimage.com/corp/orbimage\\_system/ov3/index.html](http://www.orbimage.com/corp/orbimage_system/ov3/index.html) **HIGH RES!**
- You can also fly your own true-color or color-infrared (CIR) air photos (CIR contains near infrared data for vegetation mapping):
  - Northern California: HJW Geospatial & Pacific Aerial Surveys (<http://www.pacificairial.com/>)
  - Southern California: I.K. Curtis Services (<http://www.ikcurtis.com/>)
- Landsat 7 imagery: CaSIL: <http://gis.ca.gov/casil/gis.ca.gov/landsat7>
- Landsat TM imagery:
  - [http://www.biogeog.ucsb.edu/projects/gap/gap\\_data\\_state.html](http://www.biogeog.ucsb.edu/projects/gap/gap_data_state.html)
  - <http://gis.ca.gov/spot10.epl>
  - <http://www.dfg.ca.gov/itbweb/gis/spot.htm>
- Imagery processed with Indices for Vegetation, Coral Bleached, Precipitation, Wind, Heat, etc.: <http://www.osdpd.noaa.gov/>
- United States Geological Society (USGS):
  - Earth Resources Observation & Science (EROS): <http://edc.usgs.gov/>
  - Earth Explorer: <http://edcns17.cr.usgs.gov/EarthExplorer/>
  - PhotoFinder: [http://edcns17.cr.usgs.gov/finder/finder\\_main.pl?dataset\\_name=NAPP](http://edcns17.cr.usgs.gov/finder/finder_main.pl?dataset_name=NAPP)
  - Global Visualization Viewer: <http://glovis.usgs.gov/>
  - LiDAR: <http://lidar.cr.usgs.gov/> **HIGH RES!**
  - Imagery for Land Processes: <http://edcdaac.usgs.gov/main.asp>
- International satellite data: <http://glcfapp.umiacs.umd.edu:8080/esdi/index.jsp>

