

US Forest Service

Caring for the land and serving people



Fire & Aviation Management

Region 5 Fire & Aviation Management GIS Lab



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October 2014
Esri Pacific UC





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FAM GIS Lab History:

3 Managers since 1995 (CA R5 Fire GIS Lab was the first, and still only, GIS Fire Lab)

Initial Activities:

- Preparedness – direct incident support
- GIS Training – now GIS S-341 (NWCG)
- GIS/GPS Technology on Incidents
- Started with Fire Suppression
- Operations Support – GISS CD/DVD (pre hard drive), Incident Support, Plotters,
- Data Development



The Integrated GIS Technical Specialist



FIRESCOPE GIS Specialist Group



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FAM GIS Lab History (cont.):

Continuing/Expanding Activities:

- Support - **PLANNING - SUPPRESSION - REHABILITATION**
- Support All Hazards
- Modeling support
- Analytical services
- Mobile Devices
- Technology Contracts – computers, printers, plotters, NAS, etc.



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FAM GIS Lab Collaboration – Reaching In & Out:

Internal USFS Outreach:

External Outreach:

- But fire doesn't respect boundaries...

Federal
Wildland Fire Management
Policy



CALIFORNIA
WILDFIRE
COORDINATING
GROUP

FIRESCOPE





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Incident Support – the equipment & pre-staging (North & South Ops:



**Working on new
plotters for
2015!!**





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Incident Support – the tools, operating procedures, products:

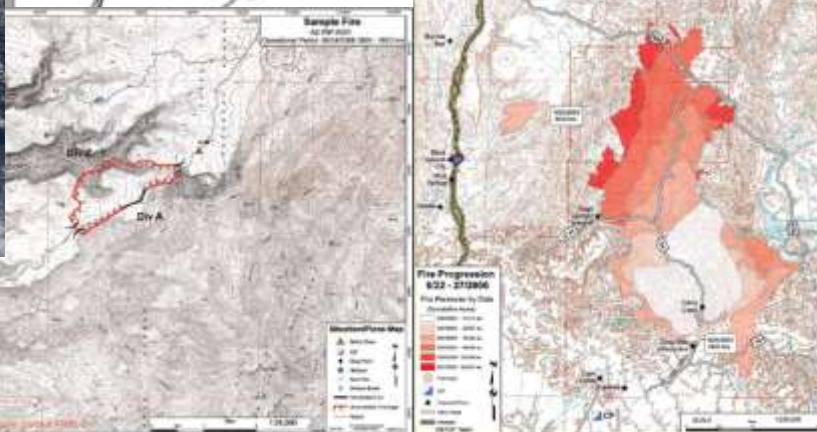
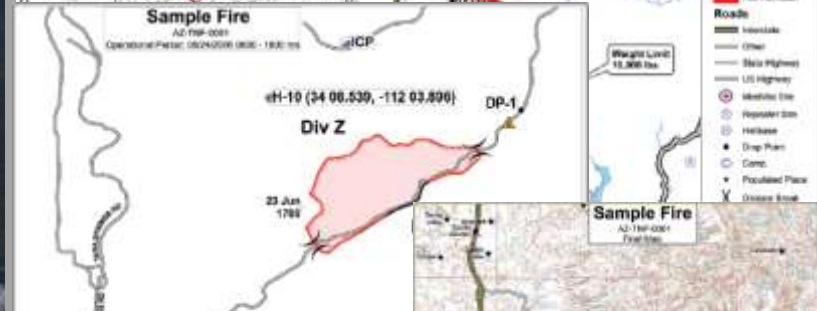


- FIMT_Templates.mdb
- History
 - Hist_AssignmentBreak
 - Hist_FireLine
 - Hist_FirePoint
 - Hist_FirePolygon
 - Hist_PerimeterSector
- Incident
 - AssignmentBreak
 - FireLine
 - FirePoint
 - FirePolygon
 - PerimeterSector
- FIMT_DedinationList
- FIMT_FieldNames
- FIMT_IncidentInfo
- FIMT_LayerInfo
- FIMT_PointInput

- Create Incident
- Open Incident
- Switch Incidents
- Edit Incident
- Incident Information
- Copy Incident to History
- Create Incident Layer to File Folder



2014 Final out & in use!!
<http://gis.nwcg.gov/>





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Incident Support – training completed/planned 2012-2014:

GIS Specialist for Incident Management:

- 2012 – 34 students trained
- 2014 – 42 students trained



Intermediate GISS:

- 2012 – Wildland Fire Training Center (24 – 18 virtual)
- 2013 – Wildland Fire Training Center (18 – 32 virtual)
- 2014 – Wildland Fire Training Center (25 – 42 virtual)



GPS For Fire Management Management:

- 2012 – 2014 – 7 classes across CA over 230 students





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Incident Support – models, models, models:

- Calculating Fuels or Loading – ArcFuels, etc.
- Data Classification, Storage or Loading – LANDFIRE, WFAT, etc.
- Emission/Smoke Mgmt/Air Quality –FOFEM, etc.
- Predicting Fire Effects – WFAT, WEPS, etc.
- Prescribed Fire Planning – FARSITE, WFAT, etc.
- Projecting Growth & Fire Behavior – FSPro, FARSITE, FlamMap , ROMAN, etc.
- Vegetation Growth/Dynamics – FBS, FFE, etc.





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FAM GIS Lab Data – Fire Data Stewardship & Support:

- Fire uses & consumes all imagery, all roads, parcels, ownership, etc.
- Fire Retardant Avoidance – Hydrology, Threatened, Endangered, Sensitive species – More later
- Fire Perimeters & History (Standards – USFS & NIFC)
- Fire Occurrence (FIRESTAT) – Point of Origin (Standards – USFS, NIFC, CAL FIRE)
- Fire Management Units (FMU) (Standards – USFS & NIFC)
- Fire Base Stations
- Direct Protection Areas (DPA) – All federal agency protection areas
- Aviation Hazards (Standards – USFS & NIFC)
- Wildland Urban Interface (WUI) (Standards – USFS & NIFC)
- Fire Engine Water Sources (Standards – USFS & NIFC)
- Burned Area Emergency Response/Rehabilitation
- Fire Ecology / Fire Severity Atlas / RAVG/Burn Severity
- Landscape data & Fuels – Strategic Decision Support
- And more to come.....





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**FAM GIS Lab Data – Projects & Analysis –
Just a few from this year's projects:**

- **Converting USGS GeoPDFs to GeoTIFFs**
- **Aviation Hazards Maps & Night Operations**
- **Fire Retardant Avoidance – mobile technology**
- **Direct Protection Areas/State Responsibility Areas Analysis**

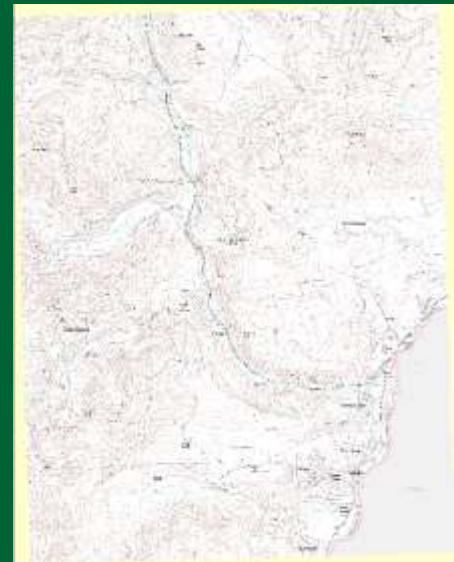
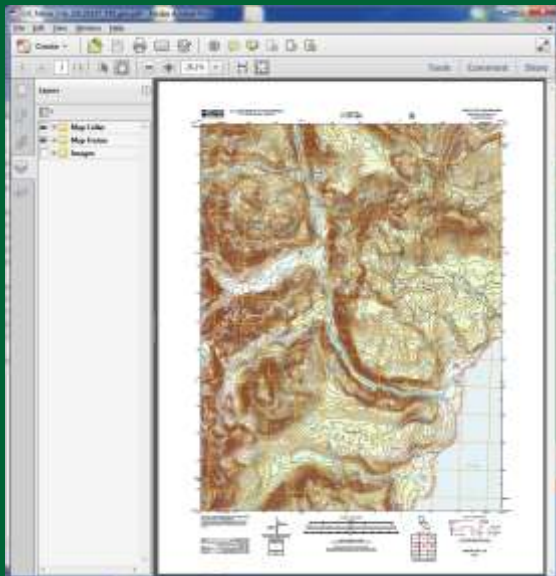




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Converting USGS GeoPDFs to GeoTIFFs:

- Old USGS quads are 60+ years old
- New USGS quads ArcMap can't open without specialized extension
- **Goal:** Convert all GeoPDFs to GeoTiffs for use on All Hazards
- Global Mapper – script to remove forest tint, clip to quad boundary, no imagery, no hillshade.





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Converting USGS GeoPDFs to GeoTIFFs:

Status – June 2014

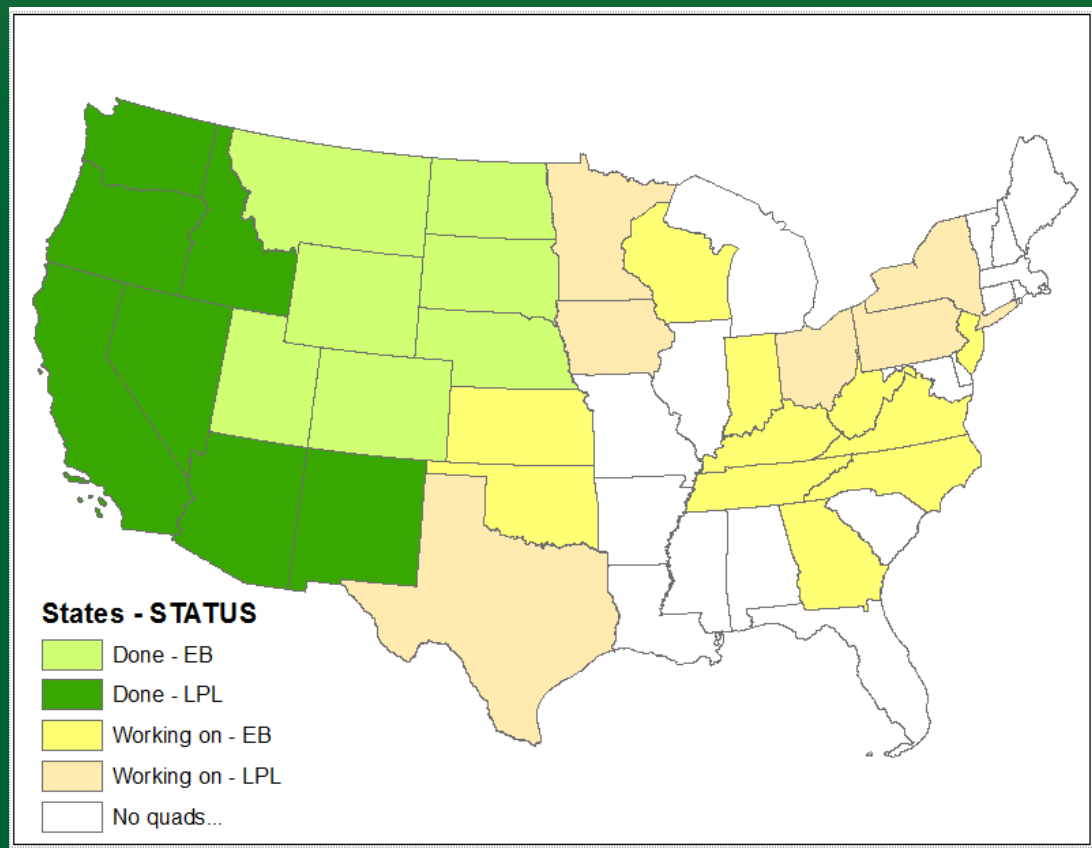
Green completed

Delivery – TB Hard Drives to:

- States
- Emergency responders
- Major Fire programs
 - NIFC
 - GISS
 - IRIN

Future Delivery – USGS
Hazards Data Distribution
System (HDDS) -

<http://hddsexplorer.usgs.gov/>





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Converting USGS GeoPDFs to GeoTIFFs:

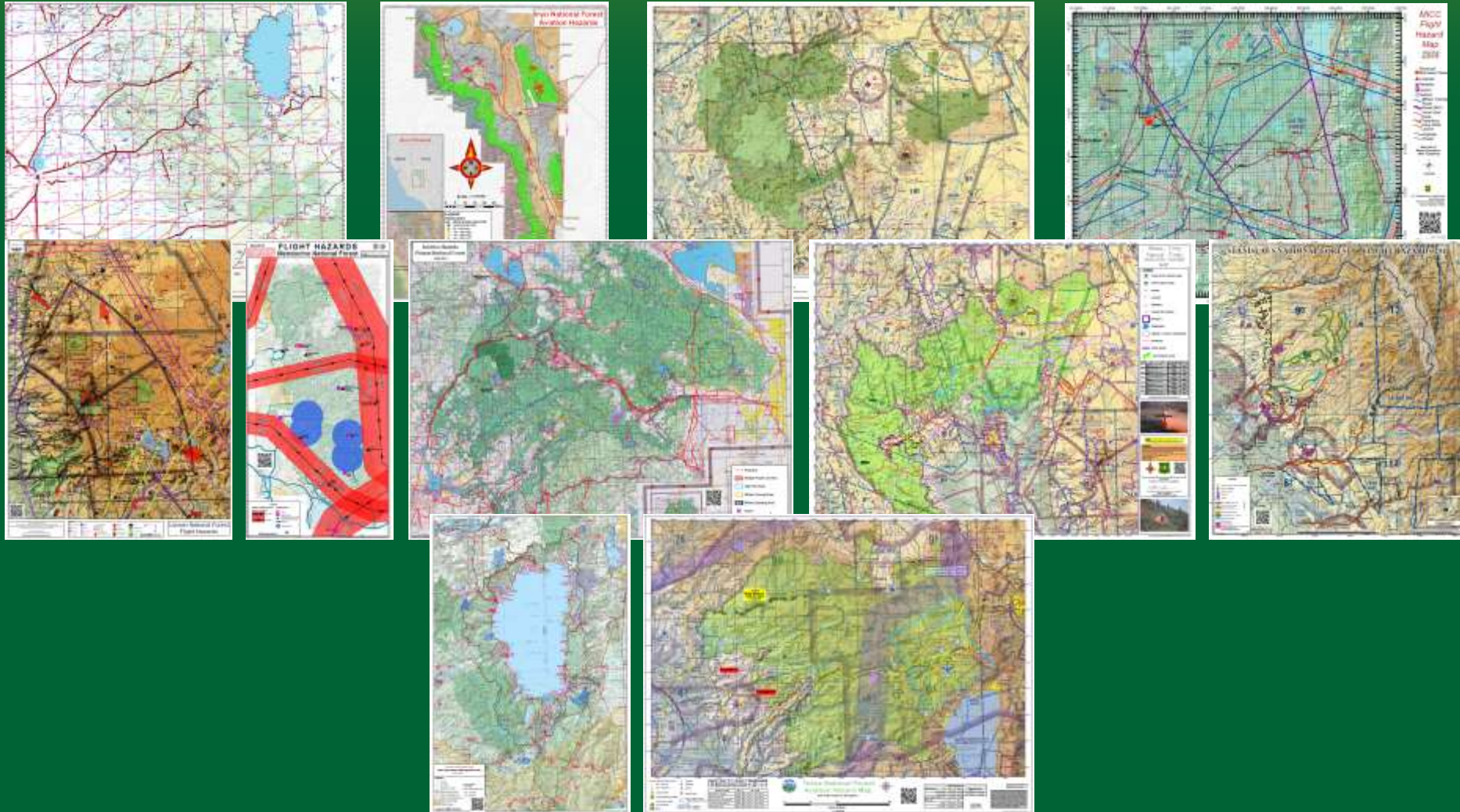
Future Delivery – USGS Hazards Data Distribution System (HDDS) - <http://hddsexplorer.usgs.gov/> How to sheet available!

A screenshot of the USGS Hazards Data Distribution System (HDDS) Explorer web application. The interface is divided into several sections. On the left, there is a 'Search Criteria' section with a heading '1. Enter Search Criteria'. Below this heading, there is a text box for 'Address/Place' with 'Festara' entered, and a 'Coordinates' section with a 'No coordinates selected' message. The 'Date Range' section shows a search from '01/01/1920' to '06/26/2014'. On the right, there is a 'Search Criteria Summary' section with a map of North America. The map shows a search area over the Pacific Northwest region. The interface includes navigation controls like 'Home', 'Login', 'Register', and 'Feedback', and a 'Page Expires in 1:59:56' indicator.



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Aviation Hazards Maps – mixed standards in Region 5:





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Aviation Hazards Maps – all available on line in 2014:



Web, iOS, & Android usable – tip sheet(s) available:



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- Best Maps for Multimedia Application
- New Technology & New Media Award
- Technology Innovation Award for Mobile Mapping

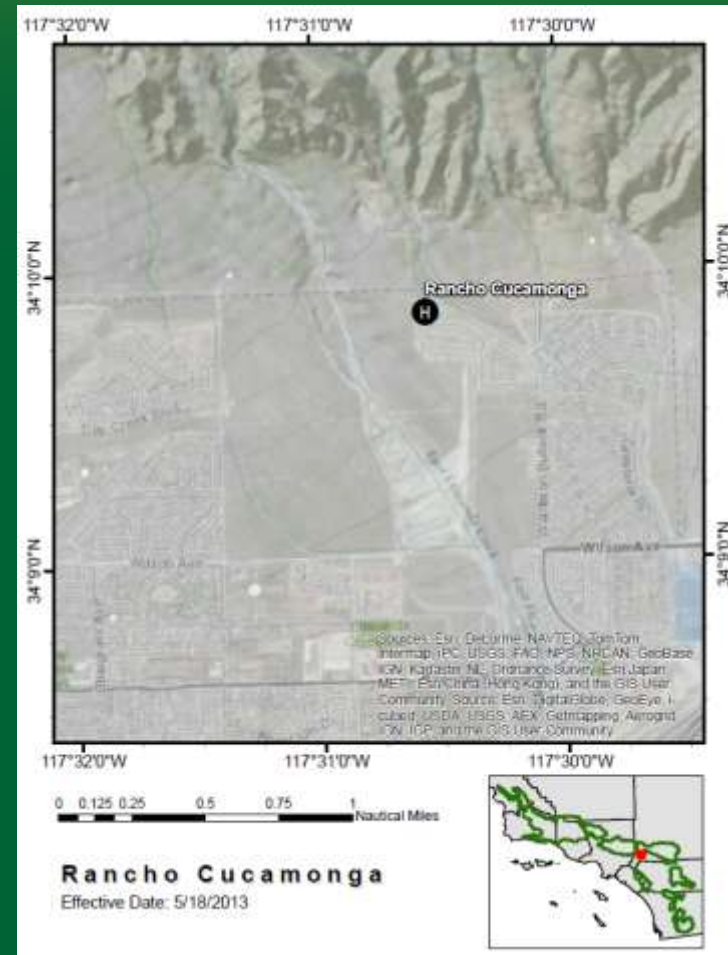
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Aviation Night Operations – San Bernardino:

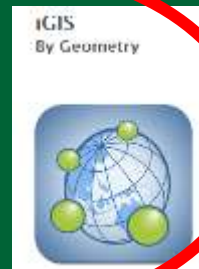




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Mobile Technologies

- What about mobile technology?
 - Requirements?
 - Be mobile,
 - Map/graphics cached locally – no internet available
 - Easy to use
 - What's being used?
 - ForeFlight,
 - TopoMaps
 - Security? Technical Approval (waiver) – WiFi

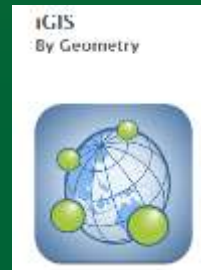




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Fire Retardant Avoidance

- iPad/iTouch testing & deployment



- Future options –
 - Google Earth on IOS
 - Apple Maps
 - ESRI map caching?
 - ArcGIS Collector



- What we want – secure network integration, ArcGIS Online access with caching AOI, and allowing for preloading of AOI.



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Fire Retardant Avoidance

The screenshots illustrate the application's interface for Fire Retardant Avoidance. The top-left screen shows a map of California with two layers: '2013FireRetAvd' and 'California'. The top-middle screen shows a map with green overlays. The bottom-left screen shows a 'Layers' menu with the following items:

- 2013FireRetAvd Comment
- TES_2013_v1
- DPAonlyUSFS_12_3
- USFSOwnOnly2012

The bottom-right screen shows a map with red overlays and a 'Location' bar at the bottom with coordinates 113397, -14826.



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NIFC Enterprise Geospatial Portal (EGP) – Dashboard & Situation Analyst:

Also as Google Fire Globe & HTML 5 (mobile devices)

NATIONAL INTERAGENCY FIRE ENTERPRISE GEOSPATIAL PORTAL

The screenshot displays the NIFC Enterprise Geospatial Portal interface. At the top, there are navigation links: FIRE EGP HOME, ABOUT EGP, NIFC HOME, and CONTACT US. The main header features the National Interagency Fire Center logo and a sign-in section with fields for Username and Password, and buttons for Sign In and Log In. Below the sign-in section, there are links for Register, Forgot User, and Reset Password.

The central part of the dashboard is a map of Northern California. A sidebar on the left contains a table of Active Incidents:

Name	Percent Contained	Acres Burned	ICS-209 Cost To Date	ICS Threatened Structures	Assigned Personnel
HAPPY CAMP COMPLEX	97 %	133k	\$89M	0	111
ARIZONATE	80 %	459	\$0	0	0

Below the table is a 'Cumulative Cost Comparison' chart showing a bar for HAPPY CAMP COMPLEX and a line for ARIZONATE. A sidebar menu on the left lists various layers and tools, including:

- Active Incidents
- Active Fire Parameters
- Historical Fire Data
- USFS Historical Fire Data
- IncWeb
- NECRAD Radar
- MODIS Fire Detection
- Resource Bases
- Federal Lands
- Administrative Boundaries
- USFS Hazardous Fuel Treatment
- US National Grid

At the bottom left, there is a section for 'Other Regions with incidents' listing Northern Rockies, Northwest, Southern, and Southwest. At the bottom right, there is a 'Notifications' section with links for Map Legend, Find Resources, Find Incidents, APP Login, Printing, Find a Location, and Log Out. A 'Change Password' link is also present.

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QUESTIONS

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(<http://www.lapeltz.com/Wordpress/>)

