



RSAC Update on NIROPS- Related Activities

NIROPS 2010 Closeout Meeting

November 3-4, 2010



USDA Forest Service, Remote Sensing Applications Center,
FSWeb: <http://fsweb.rsac.fs.fed.us>
WWW: <http://www.fs.fed.us/eng/rsac/>

Presentation Outline

- RSAC Program Restructuring
- Future Sensors
 - Airborne sensors -> NIROPS
 - Satellite sensors -> Active Fire Mapping Program
- N182Z Update
- NIROPS Website Status
- 2010 Firehawk Support Summary



RSAC Organization and Functional Areas

CENTER DIRECTOR

USDA Interagency Coord.

Outreach & Marketing

WO/CIO Coord.

GAC Membership

RSSC Membership

Conference / Wkshop
Planning & Admin

Intra-agency Coord.

GMO Leadership

Center Leadership

RSAC Operations

ODAA
(Roadless, ARRA...)

RDAS (Rapid Disturbance Assessment & Services)

Active Fire Mapping

NIROPS

IR Interpreter

Incident & Asset Mgmt

MTBS

BAER

RAVG

Disaster Response

UAVs /
New Platform Evaluation

Sensor Evaluation

RMIM (Resource Mapping, Inventory & Monitoring)

FIA (TRSB Projects)

MTLC

CMIM / Veg Mapping

TEUI

Statistics, Sampling
Design & Support

RSEAT (Remote Sensing Evaluation, Application & Training)

RSSC Projects

RS Helpdesk

LEI

RS Training
Development & Delivery

FHP

Tech Transfer
Development & Distribution

DASM

Disturbance Mapping

UAVs /
New Platform Evaluation

Sensor Evaluation

ED&S (Enterprise Data & Services)

Clearinghouse

RS Software Acquisition
& Development

Geospatial Software
Management

Enterprise Data Center
Management & Coord.

Geospatial Hardware
Eval. & Benchmarking

CIO Coord.

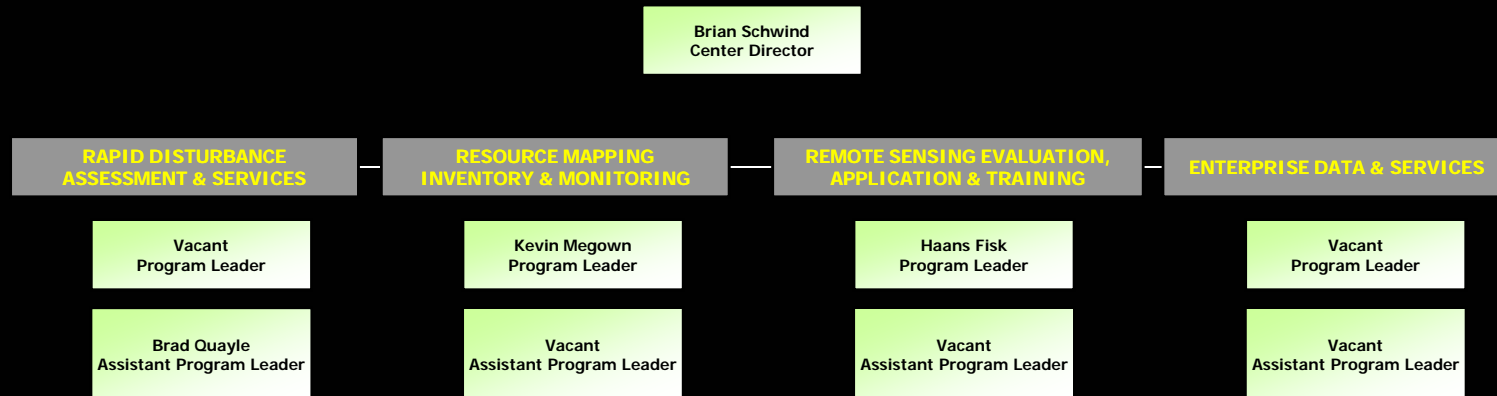
Desktop Support

IT Admin Coord.

Web Application
Development and Hosting



RSAC Program Areas - Points of Contact



- RDAS POCs:

- Brad Quayle (Assistant Program Leader)
 - bquayle@fs.fed.us/801-975-3737
- Tom Zajkowski (Remote sensing/GIS specialist)
 - tzajkowski@fs.fed.us/801-975-3758
- Jan Johnson (Remote sensing/GIS specialist)
 - jvjohnson@fs.fed.us/801-975-3762

- RSEAT POC:

- Haans Fisk (Program Leader)
 - hfisk@fs.fed.us/801-975-3760



Presentation Outline

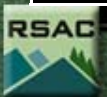
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NIROPS Airborne Sensors

Future Airborne Sensors for Pre-fire, Active and Post-fire Assessment

Sensor	Type of Sensor	Spectral Resolution	Field of View	Spatial Resolution	Targeted Platform	Designer/Agency
WAI	Wide angle step-stare mirror	VIS/NIR/SWIR/TIR (6 bands)	90°	1.5-3.5m	144Z	Xiomas/NASA
AMS	Line scanning spectrometer	VIS/NIR/SWIR/TIR (12 bands)	85.9°	3 – 50m	182Z	NASA
GPSAR	Broadband, synthetic aperture radar	All phases & frequencies between 300MHz – 3,000 MHz	N/A	~1m	UAV and helicopter platforms	Mirage Systems/NASA
TMAP	LADAR Multispectral	EO/IR/LADAR	18°	~1m	UNK	Lockheed Martin
UAV_IR	EO/IR Gimbal	EO/IR	45°	2m	UAV	USFS RSAC/NRS



Forest Service AFM Program Satellite Sensors

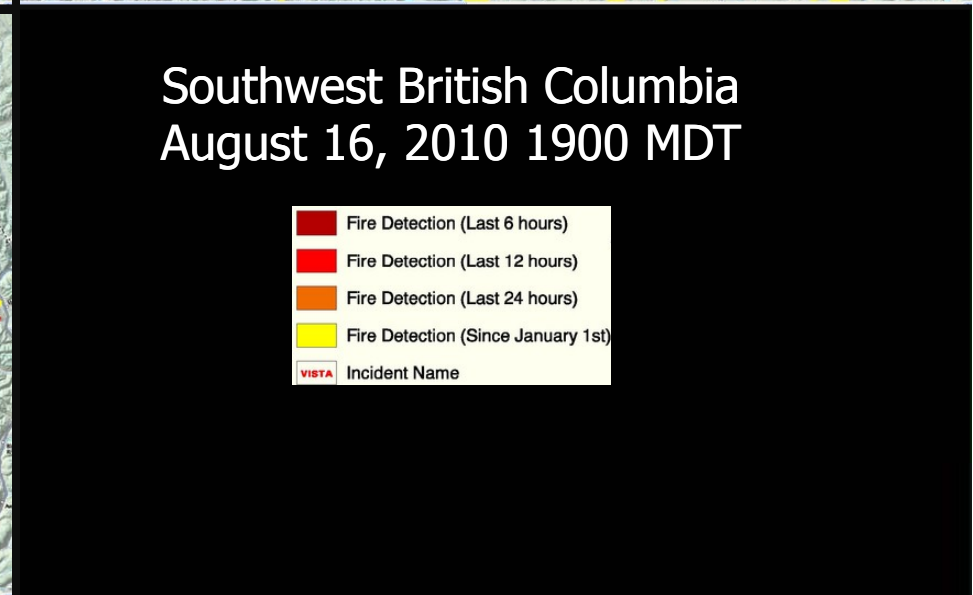
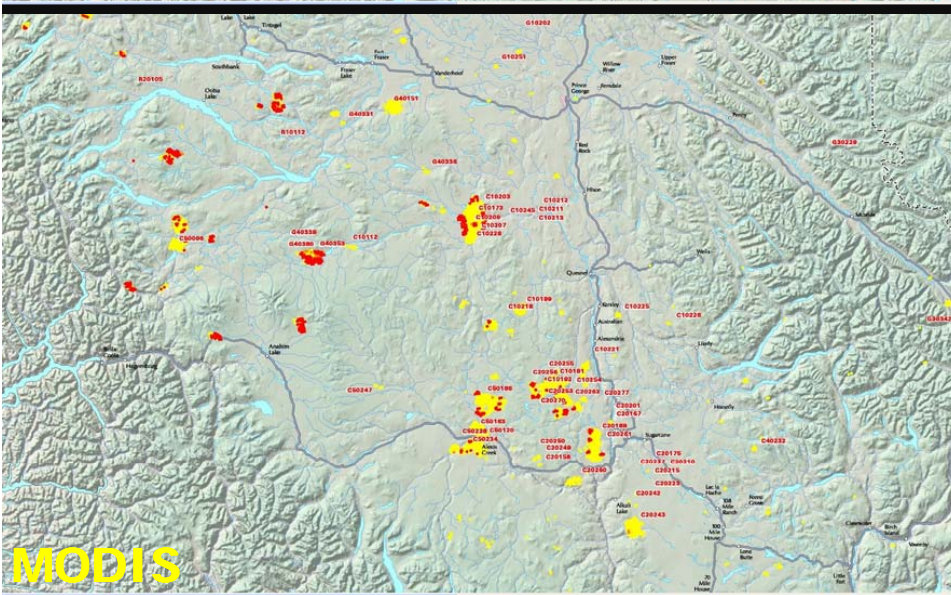
Currently Leveraged Satellite Sensor Assets w/Thermal Capabilities

Sensor	Platform (Type)	Spatial Resolution (Reflectance/TIR Bands)	Temporal Resolution (per instrument)	Fire Algorithm	Data Source
MODIS	EOS Terra & Aqua (Polar orbiting)	250m, 500m, 1km/1km	2 times daily	MOD14/MYD14	Direct Readout; NASA Rapid Response System
AVHRR	NOAA 15, 18, 19, MetOp-A (Polar orbiting)	1.1km/1.1km	2 times daily	FIMMA	NOAA Direct Readout via NOAA NESDIS
GOES Imager	GOES 11/13 (Geostationary)	1km/4km	4 times hourly	WF-ABBA	NOAA NESDIS

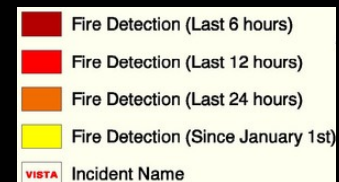
- AVHRR swath width: ~2,500 km
- MODIS swath width: 2,330 km



MODIS, AVHRR and GOES Comparison



Southwest British Columbia
August 16, 2010 1900 MDT



Forest Service AFM Program Satellite Sensors

Potential Future Satellite Sensor Assets w/Thermal Capabilities

Sensor	Platform (Type)	Spatial Resolution (Reflectance/TIR Bands)	Temporal Resolution (per instrument)	Launch Date(s)	Fire Algorithm	Data Source
VIIRS	NPP, JPSS, DWSS (Polar orbiting)	375m/750m	2 times daily	2011 2015 ...	TBD	Direct Readout; Rapid Response
SGLI	GCOM-C (Polar orbiting)	250m, 1km/500m	Daily to once every 2 days	2013 2017 2021	TBD	Direct Readout; NASA/JAXA
AVHRR	MetOp (Polar orbiting)	1.1km/1.1km	2 times daily	2006 2012 2017	FIMMA	Direct Readout; EUMETSAT/NOAA NESDIS
SLSTR	Sentinel-3 (Polar orbiting)	500m/1km	Daily to once every 2 days	2013	TBD	European Space Agency
GOES-ABI	GOES R/S (Geostationary)	500m, 1km/2km	4 to 12 times hourly	2015 2017	based on WF-ABBA	Direct Readout; NOAA NESDIS



- VIIRS swath width: 3,000 km
- GCOM-C SGLI swath width: 1,400 km
- AVHRR swath width: ~2,500 km

- Sentinel-3 SLSTR swath width: 1,675 km
- MODIS swath width: 2,330 km

NPOESS VIIRS Status

- National Polar-orbiting Operational Environmental Satellite System (NPOESS) has been restructured (February 2010)
 - NOAA/NASA -> Joint Polar Satellite System (JPSS)
 - Afternoon orbit
 - Sensors: VIIRS, CrIS, ATMS, OMPS, and CERES/ERBS
 - Launch dates: 2015 for first JPSS launch
 - DoD -> Defense Weather Satellite System (DWSS)
 - Early morning orbit
 - Sensors: VIIRS and SEM-N
 - Launch dates: 2018 for first DWSS launch
 - Note: DMSP will continue for one, possibly two, more launches (2012 and 2014)
 - NPOESS Preparatory Project (NPP) will still be launched
 - Afternoon orbit
 - Sensors: VIIRS, CrIS, ATMS, OMPS, and CERES/ERBS
 - Launch date: September 2011

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- **N182Z Update**
- NIROPS Website Status
- 2010 Firehawk Support Summary

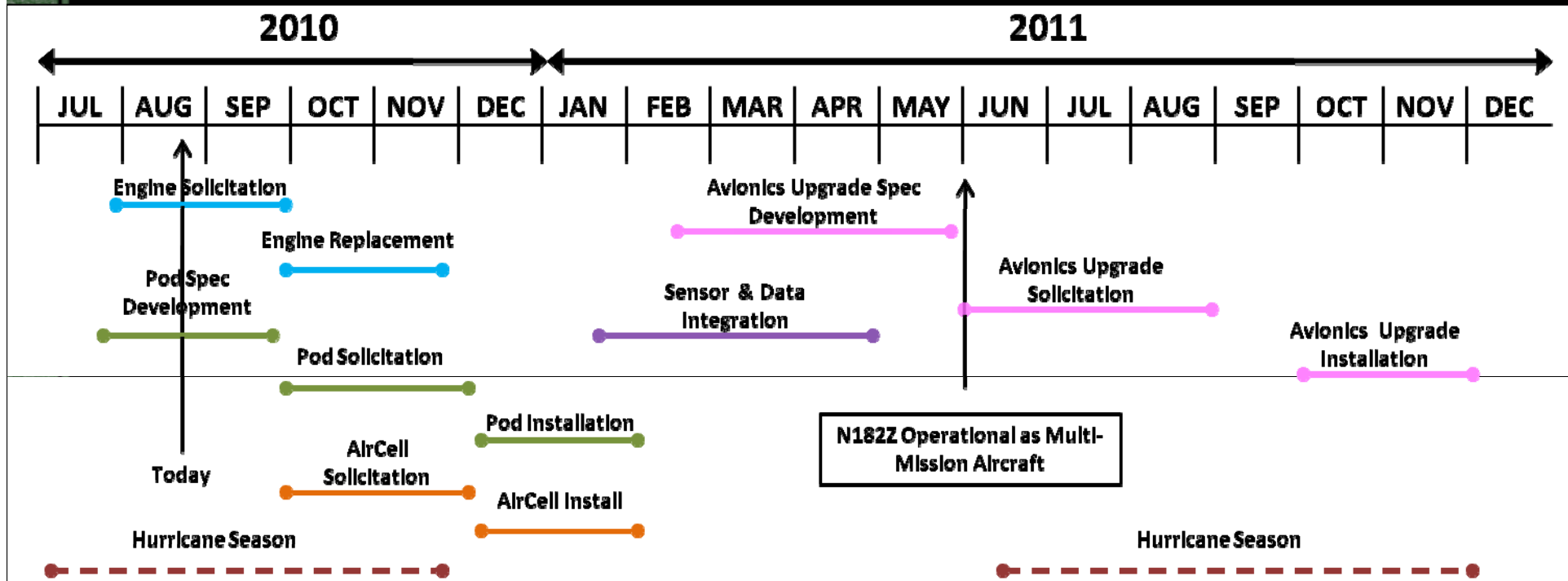


N182Z

- Beechcraft B200 King Air stationed in USFS Region 8
- WO F&AM is working to upgrade and equip as a “multi-mission” aircraft
 - Engine replacement
 - Avionics upgrade
 - RVSM certification
 - Pod
 - AirCell
- Operational plan and MOU between WO F&AM and R8 will be developed
 - Address deployment schedule and prioritization for western U.S. fire seasons and R8 operational needs
- Working group to formulate 5-year plan
 - R8, WO F&AM, RSAC
 - Ensure support for multiple sensor/systems integration into the future



N182Z Multi-Mission Transition Schedule



- RSAC is monitoring upgrade schedule status and providing necessary coordination/support to facilitate transition
 - Technical consultation on AirCell solicitation/installation
 - Technical assistance w/development of N182Z 5-year plan
 - Coordination with NASA on testing and delivery of sensor systems
 - Coordination of implementation and operational plans for sensors



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- **NIROPS Website Status/Updates**
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NIROPS Website Usage Summary for 2010

January 1 – October 11, 2010

- 10,849 visits by 3,264 unique visitors
- 71,169 pageviews



- Frequently accessed content:

Pages	Pageviews	% Pageviews
/cdekml/popup.html	18,341	25.8%
/rcr/newScanner/request/view/a	15,098	21.2%
/rcr/newScanner/map	9,944	14%
/rcr/newScanner/	5,889	8.3%
/rcr/newScanner/logout	3,756	5.3%

Infrared Field Users Guide and Vendor Listing



United States
Department of Agriculture
Forest Service—Engineering

Remote Sensing
Applications Center

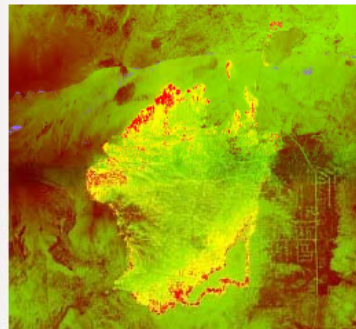
October 2010 (DRAFT)
RSAC-1309-RPT3

Infrared Field Users' Guide (2010 Draft)

Thomas Zajkowski, Everett Hinkley
Remote Sensing Applications Center
Salt Lake City, Utah

Lloyd Queen
The Department of Forestry Management
University of Montana
Missoula, Montana

Darrell VanBuren
National Interagency Fire Center
Boise, Idaho



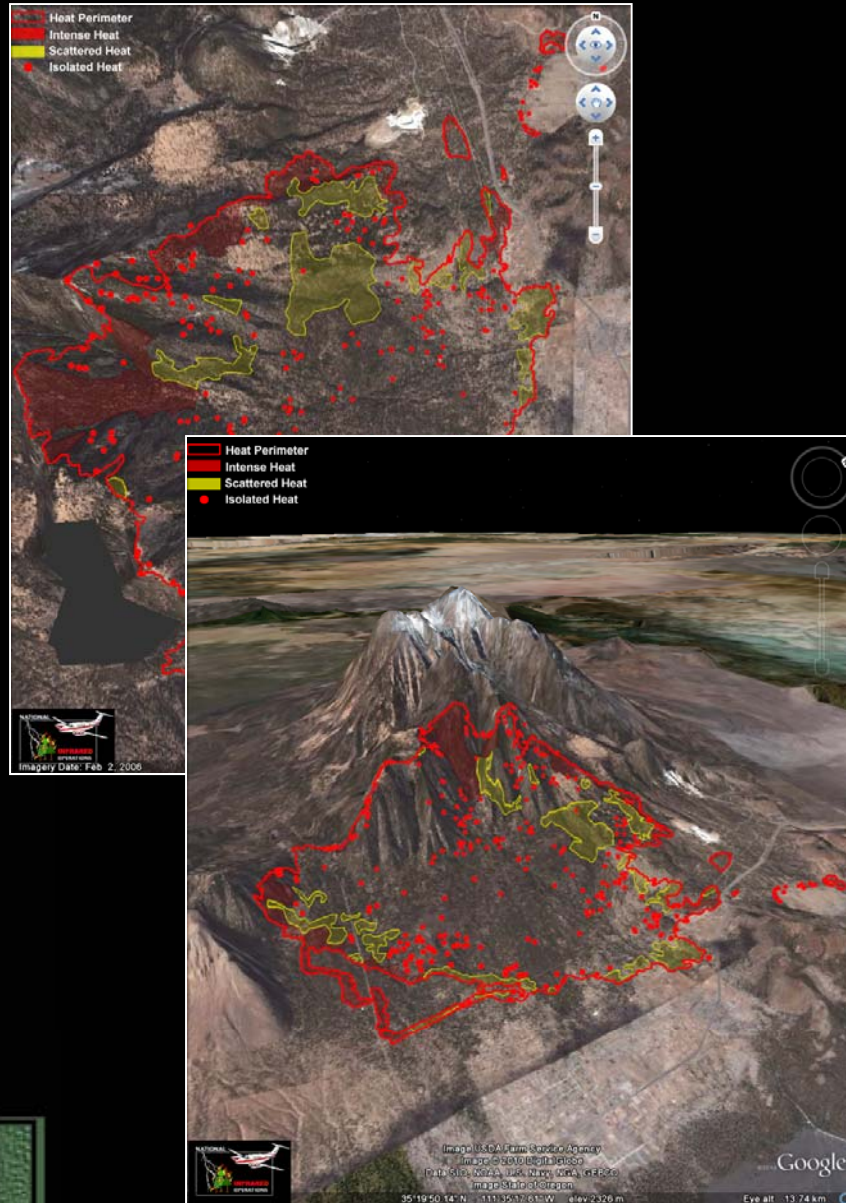
- Updated for 2010 (draft)
- Available from NIROPS website
 - See “Reports” link
- Phone and email inquiries to vendors in summer 2010 (last update – 2008)
 - Added one vendor
 - Patriot Technologies LLC, Type 3a
 - Seven vendors removed
 - Out of business, out of IR business, platforms only,...
 - Both fixed-wing and rotor-wing

IR Online Ordering Interface

- Modifications to the form for 2010 season
 - Perimeters from GeoMac now display in Google Map interface
 - Lat/Lon coordinates display on “rubber band” box corners in map display
 - Form retains original submit time and most current update time
- No major issues identified during 2010 season
 - Update/maintenance issues to be addressed over the winter
 - Slight modifications to the user interface
 - Enhancements to the “How to” guide
 - Currently looking at a work around for the BLM Twitter block
- Modifications for 2011 season?
 - Submit your requests ASAP so we can compile a list for the programmer

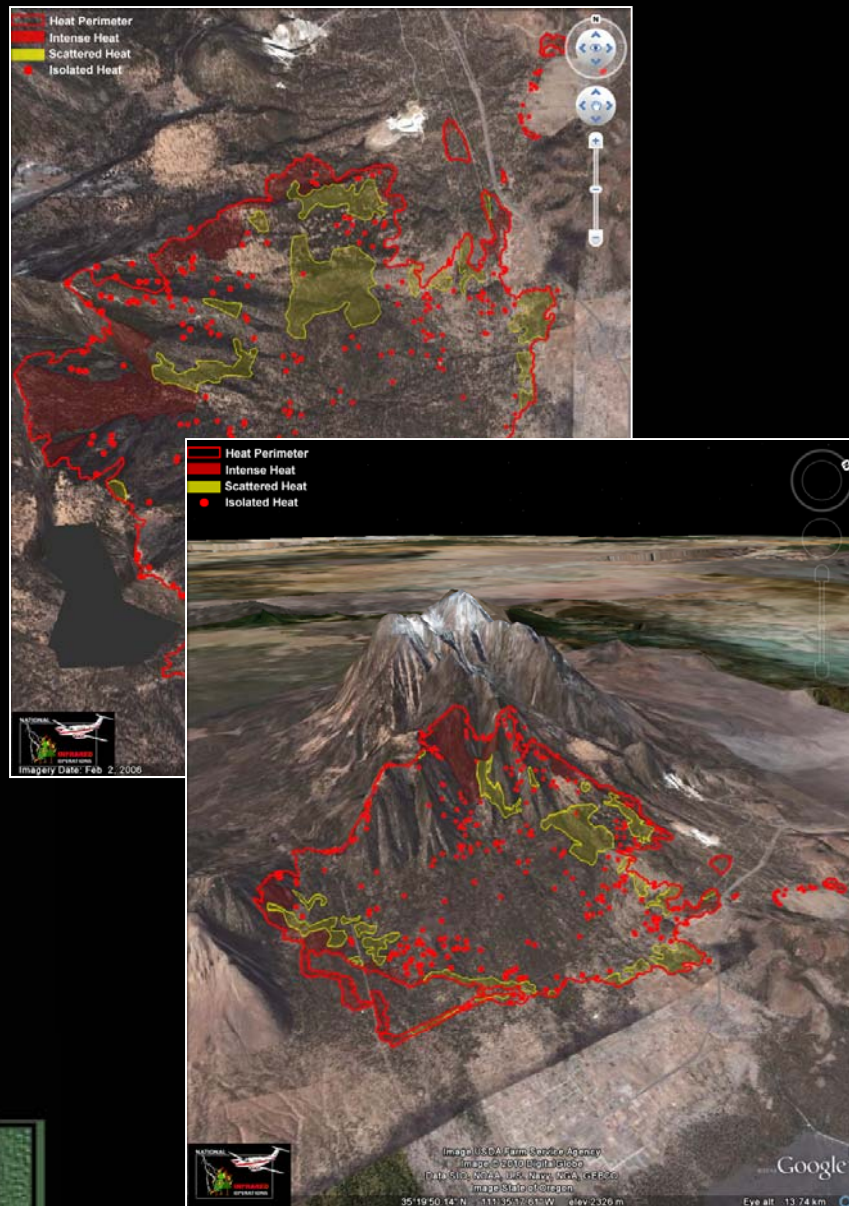


NIROPS Product KMZ Tool



- Tool to generate GE KMZs from standard NIROPS datasets
 - Heat Perimeter
 - Intense Heat
 - Scattered Heat
 - Isolated Heat
- Address issues with administrative access on BLM computers
- Tool will be available soon from NIROPS website/FTP site

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Alternate NIROPS FTP Site

- Nirops.org has gone away
- Will now utilize fsgeodata.net
 - FTP Server: <ftp.fsgeodata.net>
 - FTP Username: nirops@fsgeodata.net
 - FTP Password: Yes, there is a password
- Primary ftp site will remain <ftp.nifc.gov/nirops>

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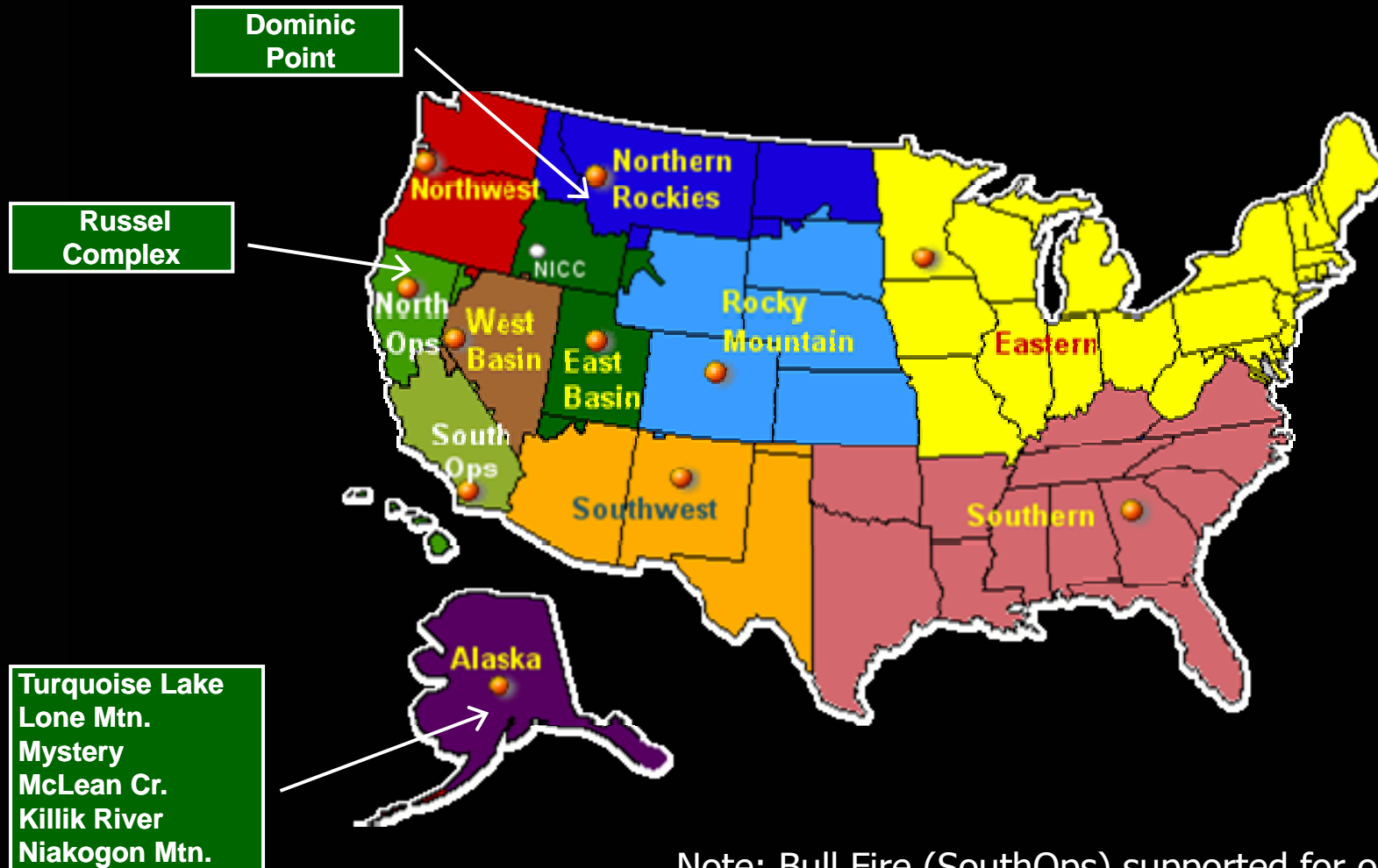


Firehawk 2010 Summary

- Alaska incident support started on June 1
 - Request for activation to support Alaska GACC came from Alaska GACC IR Liaison
 - N149Z and IRINs in Fairbanks supporting other Interior fires
 - Firehawk covered fires in SW Interior (McGrath area)
 - Support continued until June 7
 - Two Brooks Range fires requested late
 - Killik R., Niakogon Mtn.
- Other GACC support
 - Aircraft “gap filler” requests
 - Russel Complex, North Ops
 - Dominic Point, Northern Region
- Data exploitation conducted at USGS-Denver



Firehawk 2010 GACC Support



Note: Bull Fire (SouthOps) supported for one night on July 27 in anticipation of the potential lack of availability of 144Z

Firehawk 2010 Incident Support

Incident	No. of Fires	GACC	No. Days Support ^a	UTF-Weather	UTF-Other	Acres ^b
Killik River	1	Alaska	2		1	400
Lone Mtn	1	Alaska	3	1		51,996
McLean Cr.	1	Alaska	3		3	14,099
Mystery	1	Alaska	3	2	1	18,952
Niakogon Mtn.	1	Alaska	2		1	580
Turquoise Lk.	1	Alaska	6	1		91,885
Russel Complex	1	NOPS	1	1		300
Dominic Point	1	Northern Rockies	2		1	894
	8		22	5	7	179,106

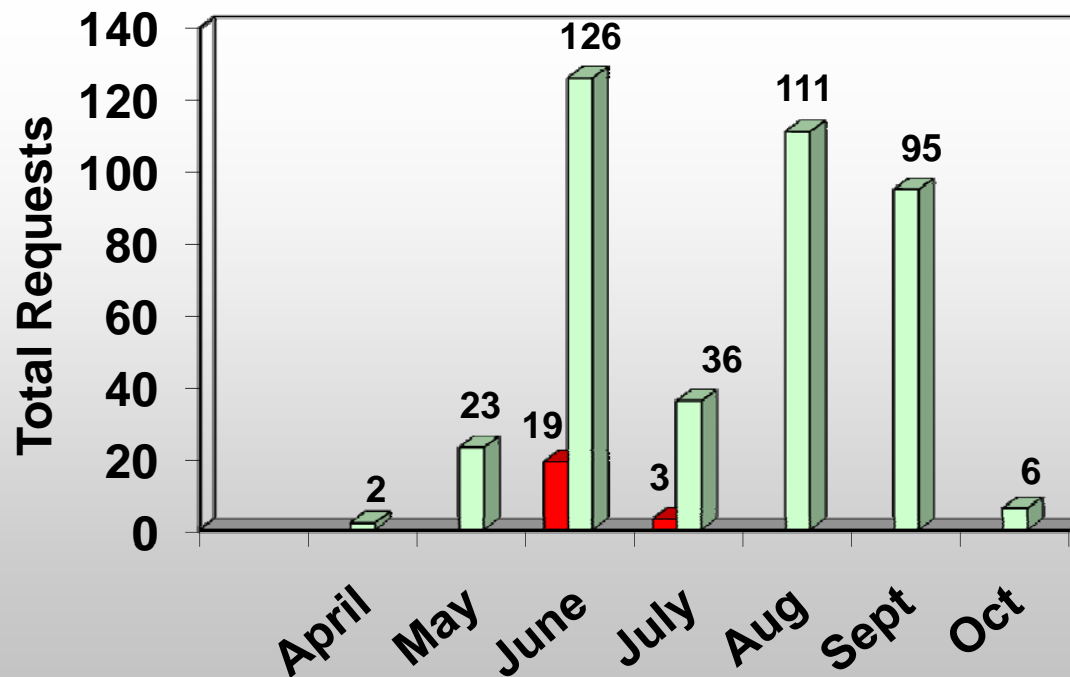
a. AK Support started on 1 June

b. Acreages from Alaska, North Ops, Northern Rockies GACCs

(Through October 18, 2010)



Firehawk and NIROPS 2010 Support



Apr: n/a
May: n/a
Jun: 15 %
Jul: 8 %
Aug: n/a
Sep: n/a
Oct: n/a

Through October 19, 2010

5.5% of the 399 support requests in 2010 were assigned to Firehawk





Thanks

Comments/Questions?



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WWW: <http://www.fs.fed.us/eng/rsac/>