

USDA-NRCS Agency Report
October 9th, 2008
NDOP Meeting

Anthony Kimmet
USDA-NRCS-NCGC

Topics

- **Orthoimagery Status**
 - Puerto Rico
 - Hawaii
 - Pac Basin
 - Alaska (Status, IFTN, NDOP/NDEP Meeting)
- **NRCS Funding Priorities and Acquisitions for FY 2009**

Puerto Rico and Virgin Islands

Puerto Rico and US Virgin Islands DOQ Status 2004



One Meter Natural Color collected by the ADS40

- Third Generation DOQ's were completed for Puerto Rico and the US Virgin Islands in 2004. NRCS financed this acquisition through APFO to the USACOE.
- First Generation of Orthoimagery with complete island coverage.
- In 2006, the NCGC completed mosaics both UTM zones 19 and 20 including sub-setting the data by municipality.
- Web Map Service created and available to SCA.

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Puerto Rico & US Virgin Islands 2006 -2007 Digital Orthophotos

Tile Layout



- Tile size = 1/16th of Standard USGS 7½' quadrangle
- 989 Tiles for RGB Orthophotos
- 234 Tiles for CIR Orthophotos

Puerto Rico High Resolution Orthoimagery 2007

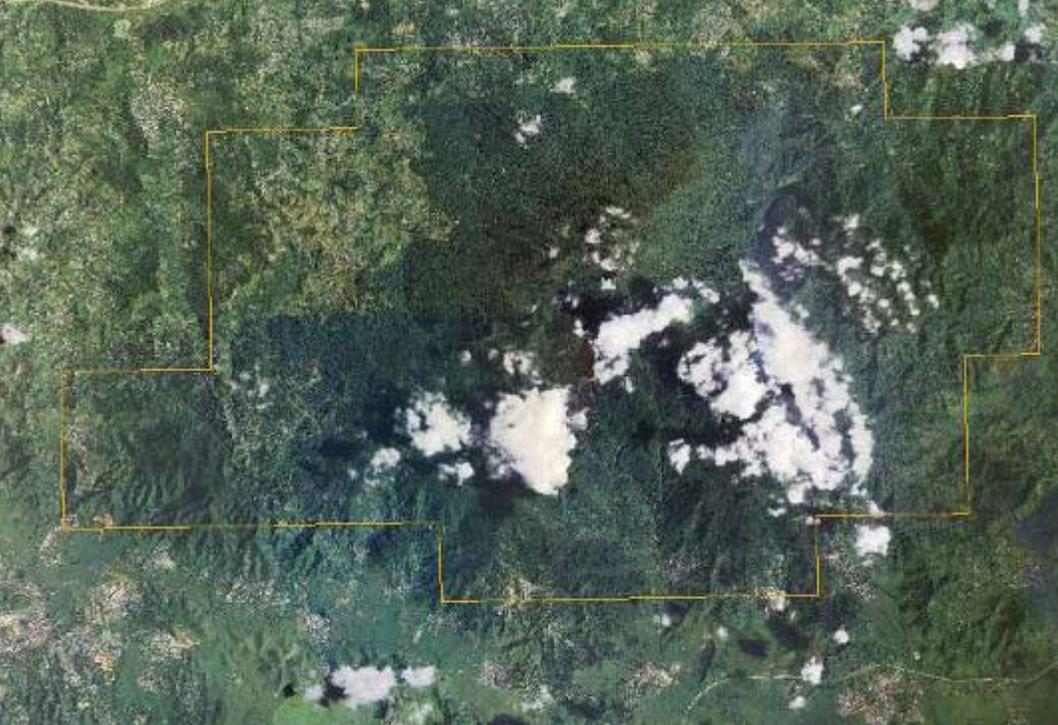


Please Note that US Virgin Islands were also completed but will not be processed until 1/2009

2007 Orthoimagery including El Yunque NF is slightly less cloudy than 2004.

**Puerto Rico
El Yunque National Forest**

2004, 1 Meter GSD



2007, 1 feet GSD



Puerto Rico, Northeast Coast (Scale = 1:1,000)



**Mosaics will be available on the public side of the Gateway in early 2009.
Web Map Service will also be updated.**

Hawaii and Pacific Basin

United States Department of Agriculture Natural Resources Conservation Service



State/Region	County/Island	Ground Condition Required	Geo/Ortho
American Samoa	Eastern + Western (Tutuila)	(0-4%)	Ortho
American Samoa	Manua	(0-4%)	Ortho
Micronesia	Pata, Tol, Polle	(0-4%)	Geo
Micronesia	Udot	(0%)	Geo
Micronesia	Fefan	(0-4%)	Geo
Micronesia	Parem	(0%)	Geo
Micronesia	Uman	(0-4%)	Geo
Micronesia	Dublon	(0%)	Geo
Micronesia	Moer	(0%)	Geo
Micronesia	Kosrae & Lelu	(0-4%)	Ortho
Micronesia	Pohnpei	(0-4%)	Ortho
Micronesia	Fais	(0%)	Geo
Micronesia	Asor & Falalop	(0%)	Geo
Micronesia	Yap Islands	(0-4%)	Ortho
Guam**	Guam	(0-1%)	Ortho
CNMI*	Saipan Island	(0-1%)	Ortho
CNMI*	Tinian Island	(0-1%)	Ortho
CNMI*	Aguijan Island	(0%)	Geo
CNMI*	Rota	(0%)	Ortho
CNMI*	Agrihan	(5%)	Geo
CNMI*	Alamagan Island	(0-1%)	Geo
CNMI*	Anatahan Island	(5%)	Geo
CNMI*	Pagan Island	(0-1%)	Ortho
Palau*	Ngiwal	(0-1%)	Ortho
Palau*	Ngatpang & Aimelikk	(0-1%)	Ortho
Palau*	Kayangel	(0%)	Geo
Palau*	Angaur	(0-1%)	Geo

Palau (aka Babeldaob* and Rock Islands**)	Melekeok*, Ailal*, Ngarchelong*, Ngardmau*, Ngaraard*, Ngchesar*, Ngeremlengui*, Toulomekang** Ulong**, Ngerukeid** Bailechegengel*, Ngercheu*	(0-1%)	Ortho
Palau	Peleliu	(0-1%)	Geo
Palau	Koror	(0-1%)	Ortho
Marshall Islands	Arno*, Majuro Malcelap*, Mill*	(0-1%) (0-4%)	Ortho
Palau add 1/2006	Rongelap, Ailinglapalap, Jaluit Kwajalein, Likiep, Wotje Aur, Enewetok Sonsorol, Hatohobei, Helen	(0-4%)	Geo

In addition USDA-NRCS has acquired the following in the Commonwealth of the Northern Mariana Islands:

- Asuncion, Guguan, Maug, Medinilla, Pajaros, and Sarigan (QuickBird, .6 Meter | Georeferenced Imagery from USDA-FS / NOAA / FEMA)

Highlighted Island(s):

Green = Completed, at the NCGC

Gray = Imagery Data at NCGC, Image Processing and Data Distribution In-Work

Yellow = In-Work/Satellite Tasking at Digital Globe, data not at the NCGC

Ortho = Four Band (IR, R, G, B) Orthoimagery at 1:50 K Accuracy

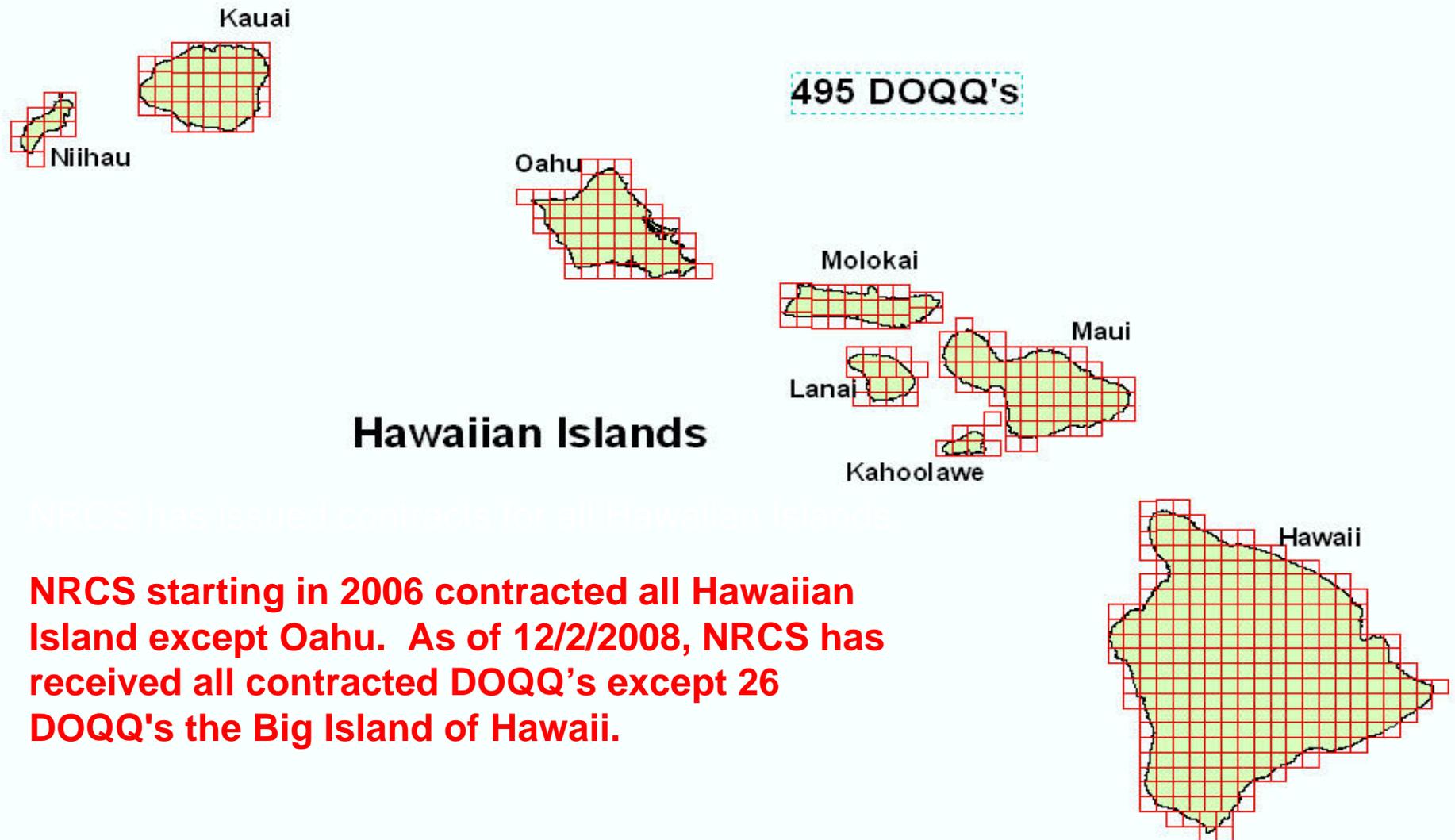
Geo = Digital Globe Standard Three Band (RGB) Georeferenced Product

NRCS has received complete coverage of the Pacific Basin Islands under contract except Kosrae and Alamagan Islands. These islands are now in production at DG. Final data delivery will be in early 2009.

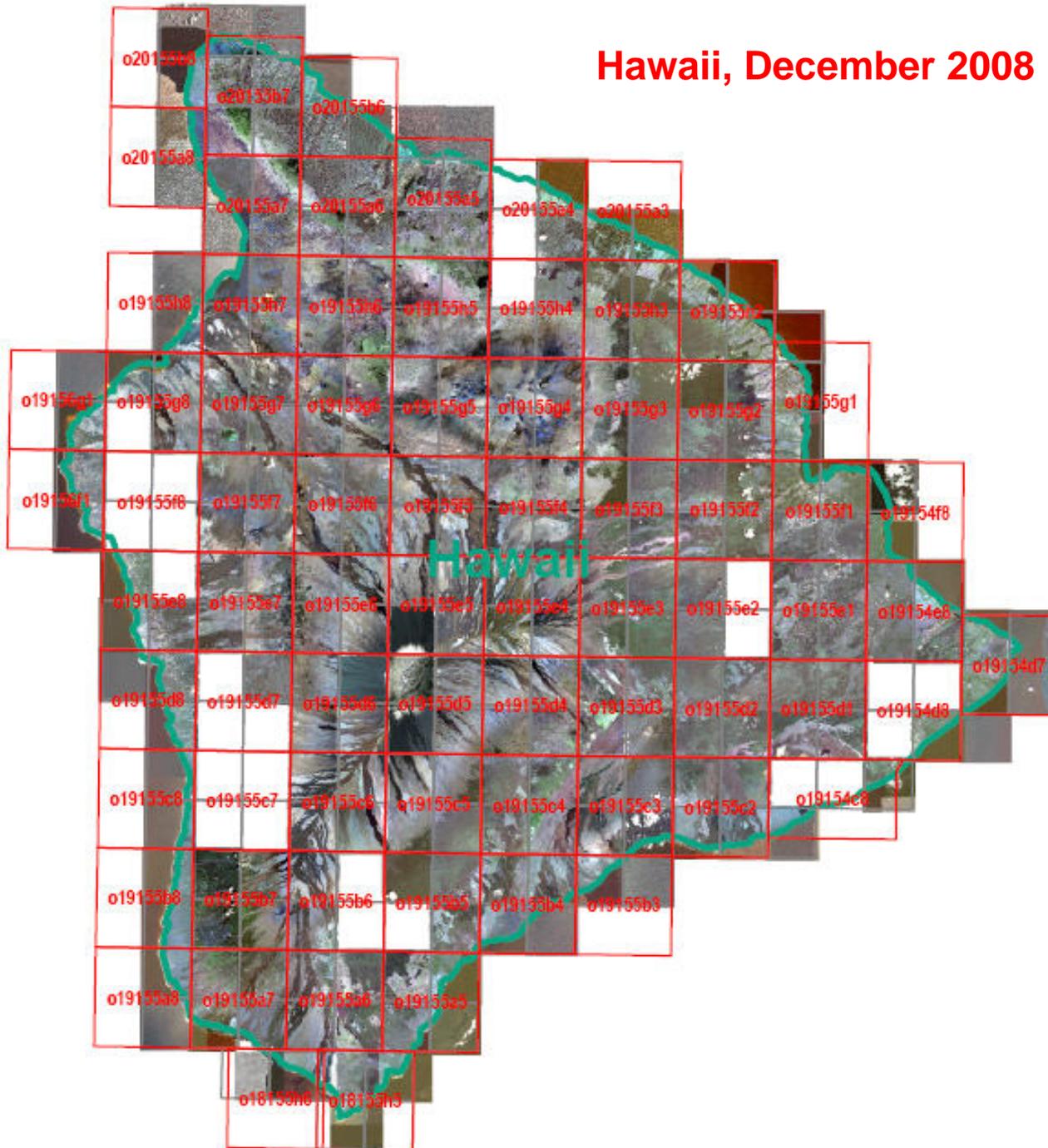
**American Samoa
Tutuila
Orthoimagery
Mosaic
New 2008 Version**



**Digital Globe Orthoimagery
.59 GSD**



Hawaii, December 2008



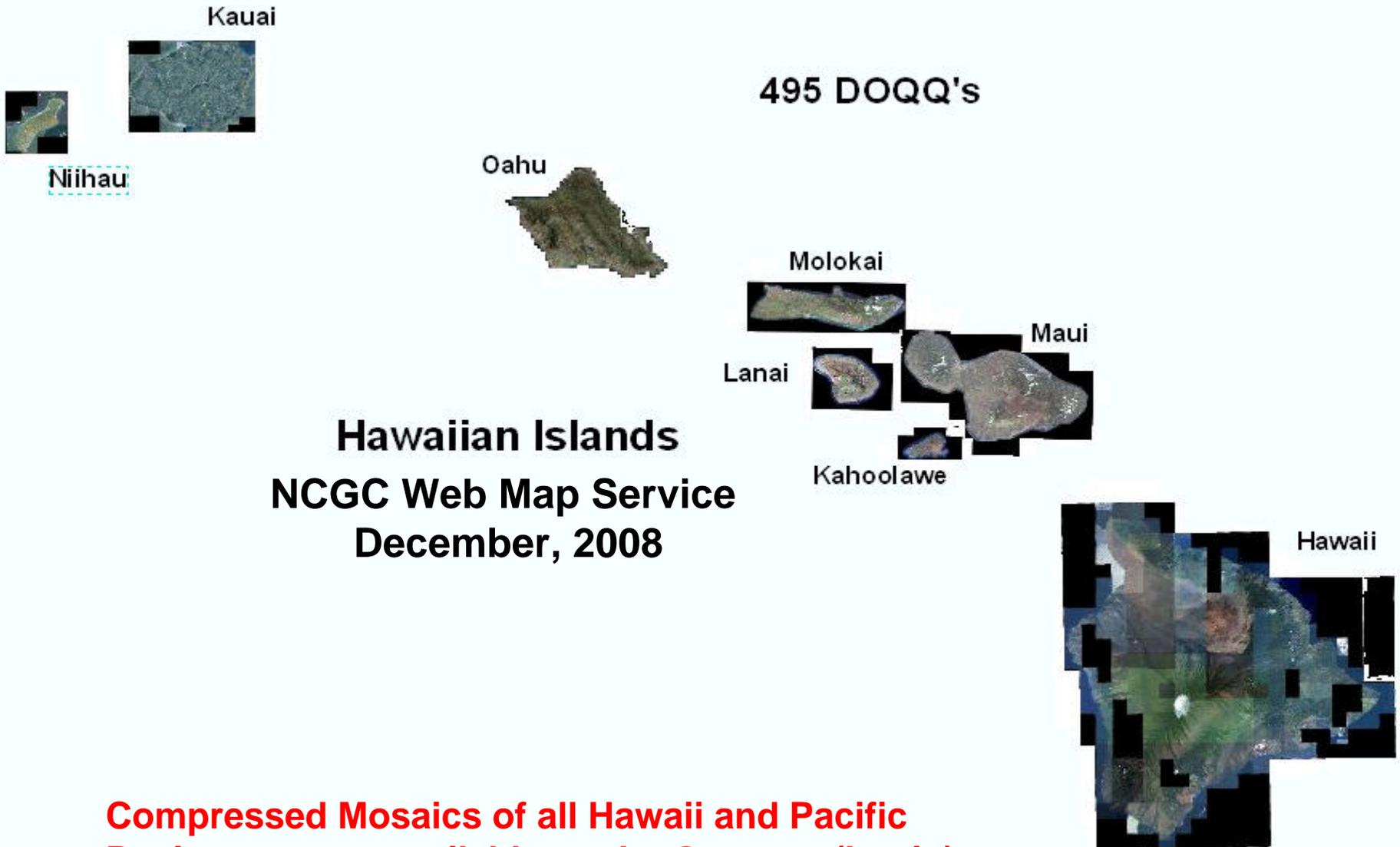
DG-QuickBird Status by DOQQ (12/02/08)

- Approximately 75% of DOQQ's received had 0-2% cloud cover

- Approximately 15% of DOQQ's received have 2% to 10% clouds.

- Remaining 26 DOQQ's if acquired from current achieve would have 5% to 75% clouds.

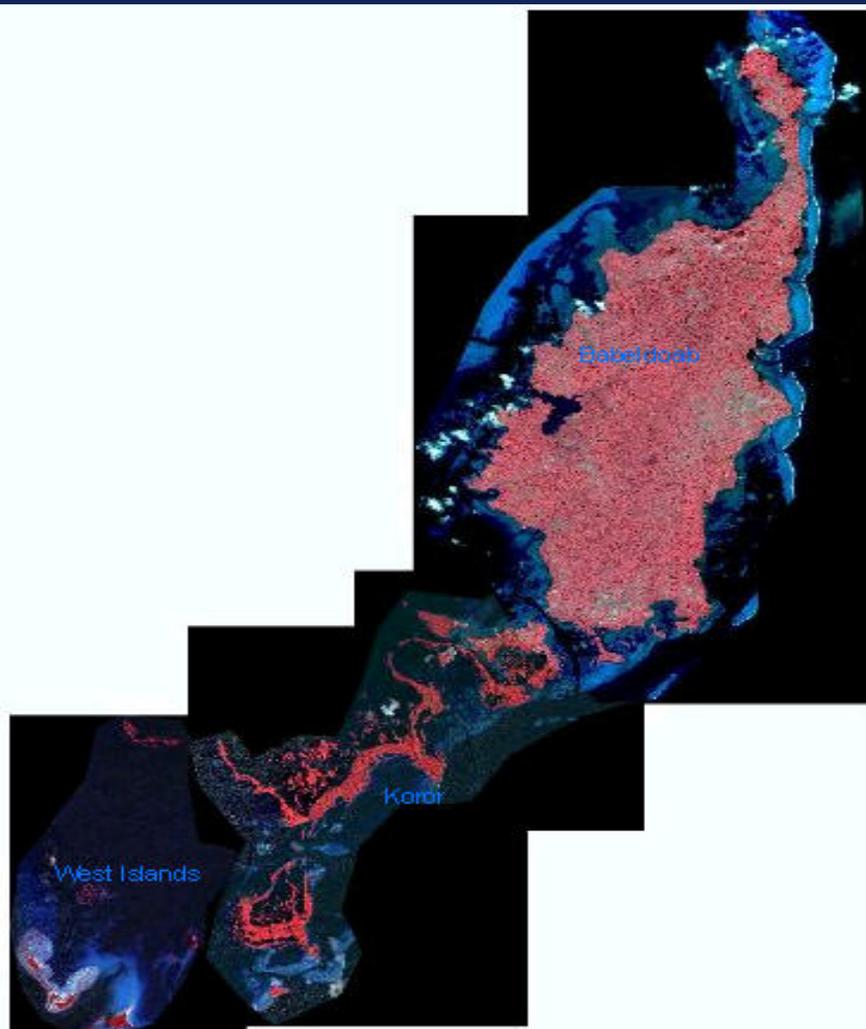
- Digital Globe put into production the remaining 26 DOQQ's in November, 2008.



**Hawaiian Islands
NCGC Web Map Service
December, 2008**

Compressed Mosaics of all Hawaii and Pacific Basin areas are available on the Gateway (Login)

Pacific Basin USDA-NRCS-NCGC CCM's and Web Map Services

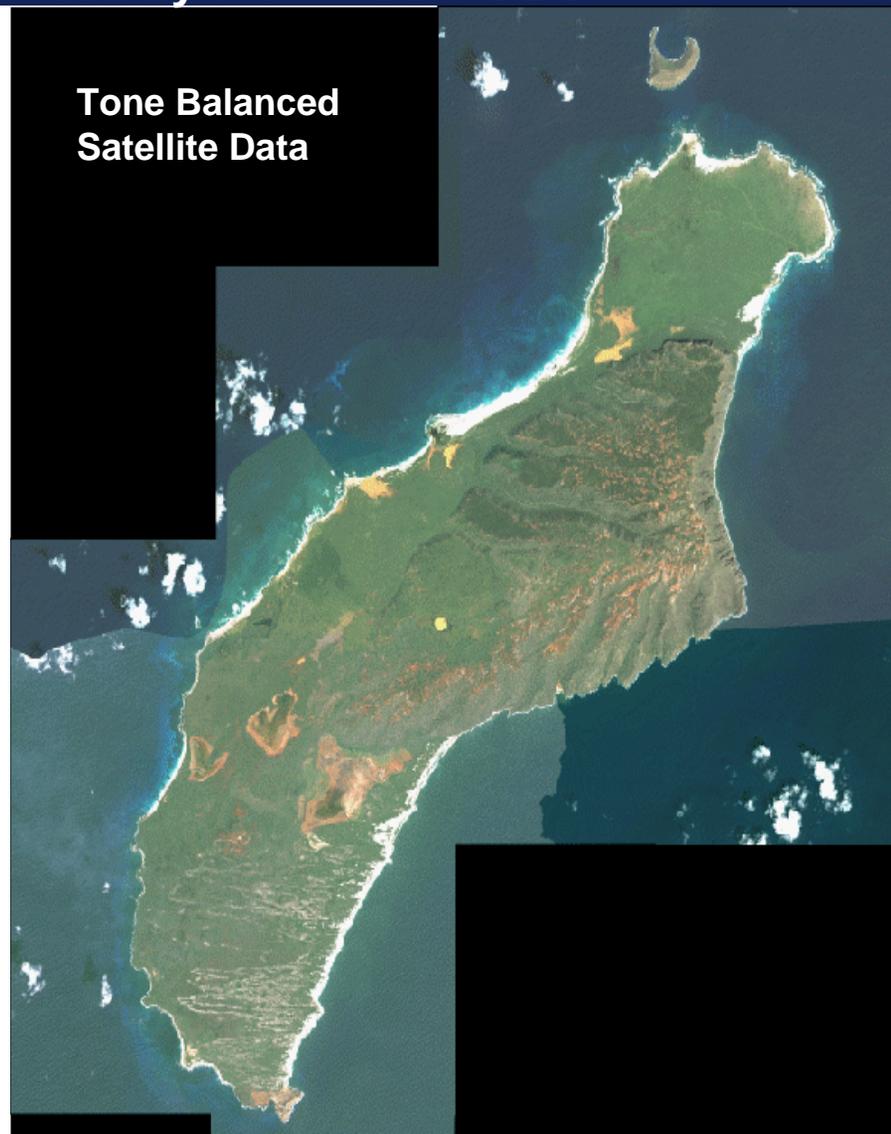
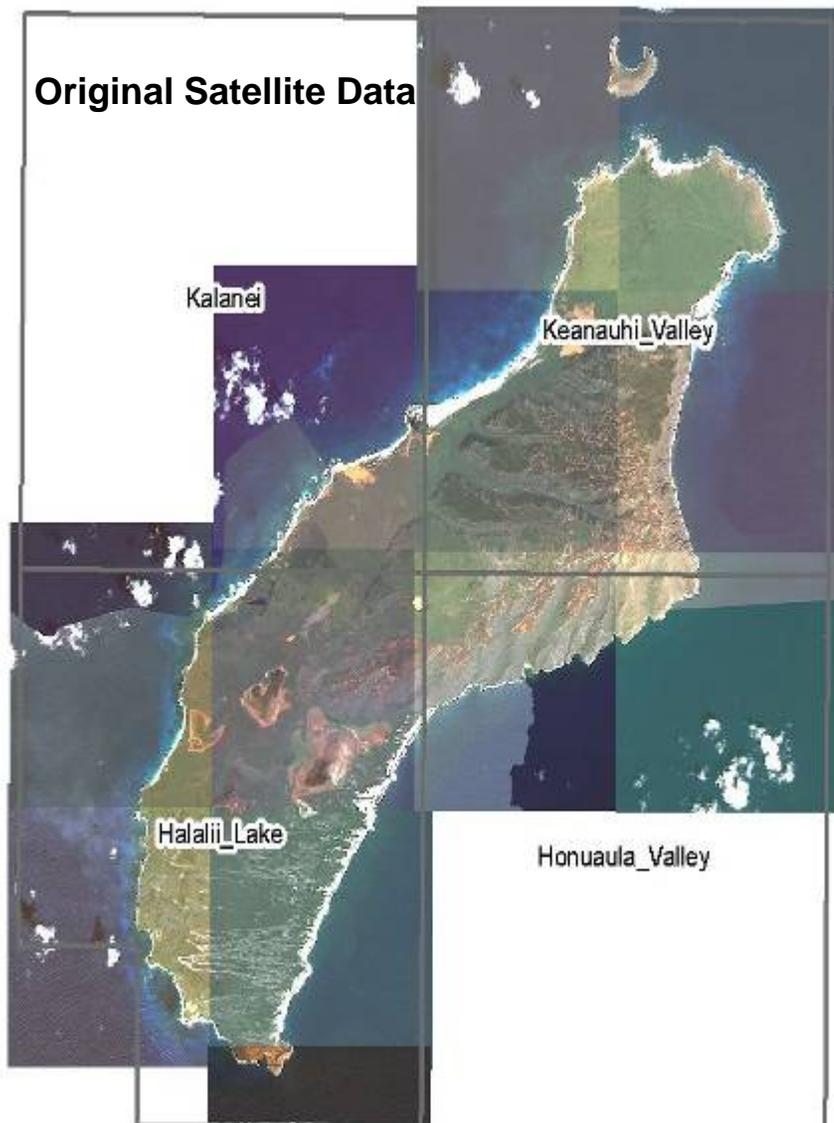


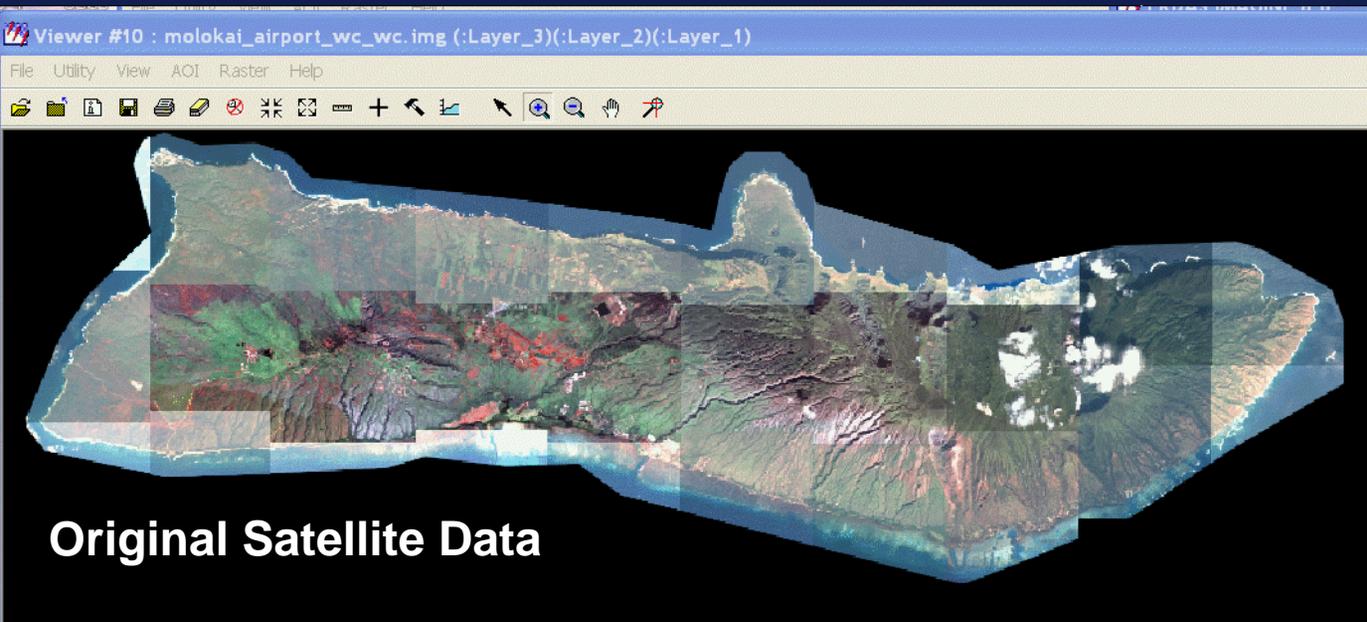
Created CCM/WMS

- Guam
- Commonwealth of Northern Mariana Islands
- Palau
- Federated States of Micronesia
- Marshall Islands
- American Samoa

Niihau, Hawaii

Web Map Service Tone Balanced by the NRCS-NCGC





Original Satellite Data



Tone Balance Satellite Data

Molokai, Hawaii

CCM's and Web Map Services
Tone Balanced

NRCS Web Soil Survey using NCGC Web Map Service

Web Soil Survey - Microsoft Internet Explorer

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Pacific Islands Area

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▶ Hawaii NRCS News

▶ Find a Service Center

Chief Arlen Lancaster Participated in the U.S. Coral Reef Task Force Meeting

Keauhou, HI, August 27, 2008 - Chief Arlen Lancaster visited the Big Island for the 2008 U.S. Coral Reef Task Force Meeting at the Outrigger Keauhou as part of the International Year of the Reef.

The meeting highlighted conservation strategies, successes, and challenges in Hawaii as well as provide a forum for the U.S. Coral Reef Task Force to hear about and discuss the priority threats facing reefs and innovative solutions and partnerships that can be explored to more effectively address these threats. Workshops included recreational stewardship, land-based sources of pollution, bridging communities and government, and climate change responses.

To showcase agency projects on the Big Island, Chief Lancaster visited Chris Robb's farm, Kahua Ranch, Island Dairy, and Ha Bananas with the field staff from Waimea and Hilo.

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Helping People Help the Land

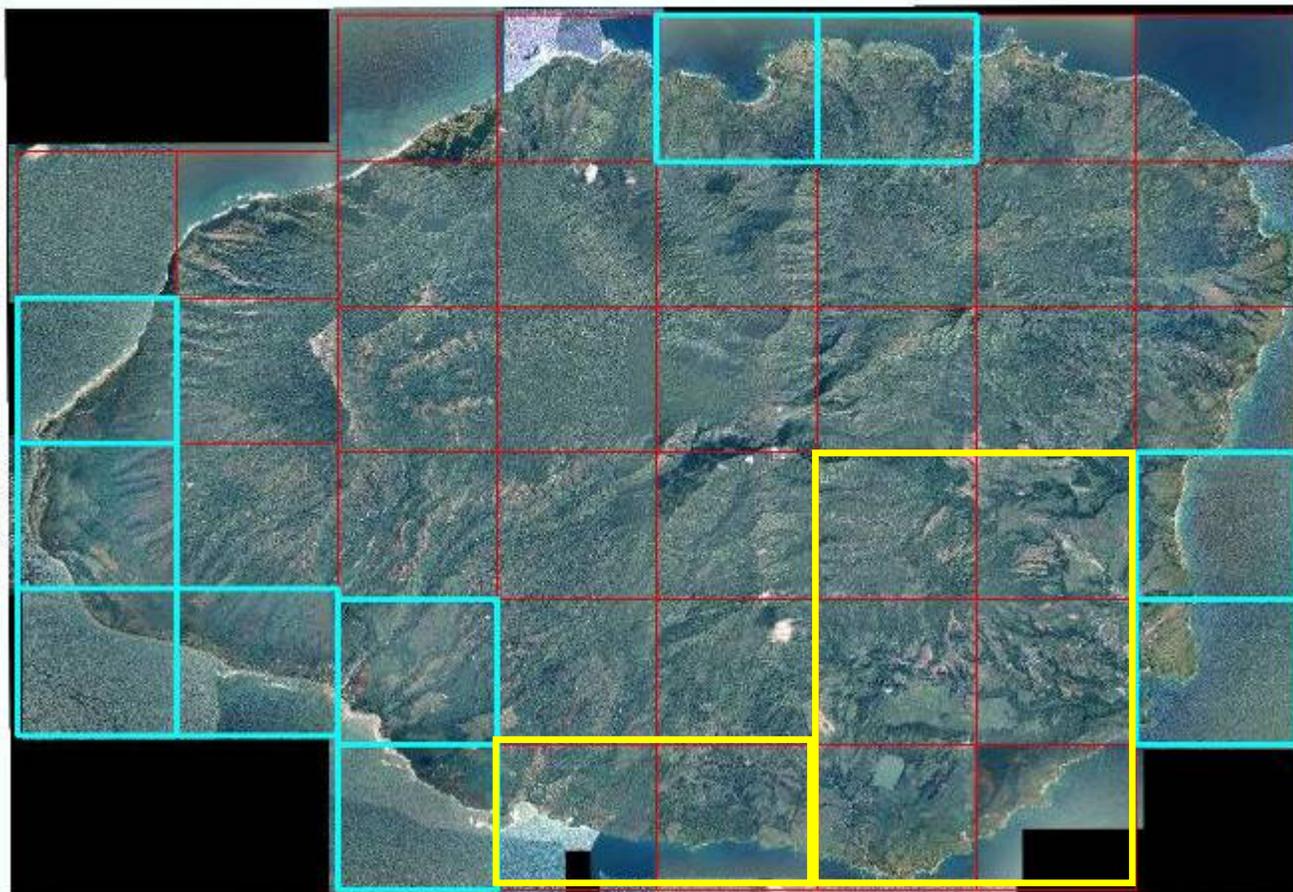
USDA is an Equal Opportunity Provider and Employer

New Hawaii and Pacific Basin Funding

- NRCS has about 55 K of funding available for purchasing new Satellite data in Hawaii and the Pacific Basin.
- Funding will be utilized by using Satellite contracts in place at USDA-FAS (ASRC) and USGS (MCMC).
- NRCS-NCGC has contacted USGS-Hawaii and NOAA about coordination of acquisition of new Orthoimagery.
- USGS/NOAA/USDA are working on a common set of DEM's and GCP's to be used in this area. This information will be provided to Satellite Companies as needed.
- USDA-NRCS-NCGC has access to NGA data via WARP/NextView. NRCS will work on Satellite Imagery issues such as mosaics, Orthorectification and License issues with Glenn Bethel, USDA Remote Sensing Advisor.

Kauai

Image Acquisition = 2002 - 2005



Kauai, Hawaii

Blue areas have new Imagery available and will likely be ordered via USDA-FAS.

Yellow areas may have new Imagery available.

Catalog ID: 1010010008D15700 Acq Date: Nov 15, 2008 Center Lat/Long: -156.022°/20.789°
Avg Off Nadir Angle: 23° Avg Target Azimuth: 246° Sensor: QB02 Band Info:

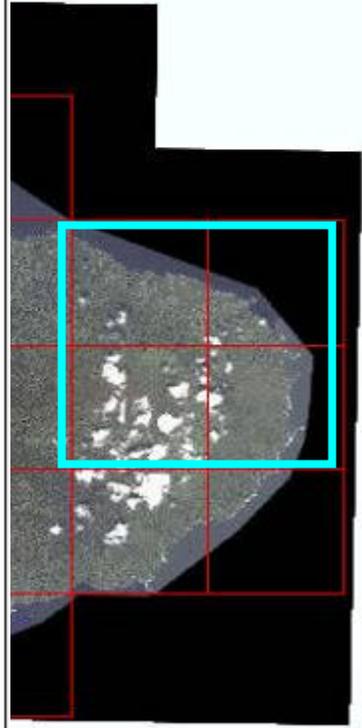


Map Zoom Level

Image Resize: 512x512

2 - 2005

Blue areas have newer imagery available and will likely be ordered via USDA-FAS.



	CatIDs	Island		
1				
2		Baker/Jarvis (same Island/AOI)		
3	1010010008AB8A01		no GCP collection available	
4				
5		Hawaii Kaula		
6	1010010008A72501		SINGLE SCENE	
7				
8		Wake Island		
9	1010010005A44501		(need to purchase new points 8)	
10	10100100073FC801		Patch out clouds with 73FC801	
11				
12		Palmyra Atoll		
13	101001000722FD01		(need to purchase new points 8)	CC% high around 25
14	10100100053A2A01		Patch using 53A2A01	
15				
16		nw_hawaii_pearl_atoll		
17	1010010007B9280B		no GCP collection available	AOI only 60% fulfilled
18	1010010005A7D901		Use majority of 7B92800	
19				
20		nw_hawaii_nihoa		
21	10100100072B3F01		no GCP collection available	
22				
23		nw_hawaii_litsianski		
24	1010010007A37502		no GCP collection available	
25				
26		nw_hawaii_laysan		
27	1010010008045000		no GCP collection available	
28				
29		nw_hawaii_ff_shoals		
30	1010010007B50D03		no GCP collection available	AOI only 80% fulfilled
31	1010010007E60A02			
32	10100100070BB801			
33	1010010005A5C902			
34				
35		Miday Islands		
36	1010010008918C01		(need to purchase new points 8)	
37			SINGLE SCENE	
38				
39		Micro_pohnpei_nukuoro		
40	no imagery			
41				
42		Micro_pohnpei_mokil		
43	no imagery			
44				
45		Micro_kuop_atoll		
46	1010010005983C0F		no GCP collection available	AOI 98% fulfilled
47	101001000581C20D			
48	1010010004D9230C			
49				



Pacific Basin Priority List 2008

NRCS is querying Satellite, GCP and Imagery Derived Products (IDP, Classified from NGA) for new areas in the Pacific Basin.

USDA-NRCS is coordinating with NOAA and USGS the following.

- Acquisition Areas
- IFTN Specifications
- Agree on what DEM's/GCP/IDP to be used.

Hawaii and Pacific Basin
USDA-NRCS
Potential Areas of Interest
Sample Images



© 2008 Europa Technologies
Image © 2008 DigitalGlobe
Image NASA

Google

Hawaii – Pacific Basin Imagery/IfSAR Acquisition Cost (December 2008)

Funding Contributions for Fiscal Year 2005-2008

USDA - NRCS	522,341
USDA - FSA	115,000
USDA – FS	72,000
Total Contributions	\$ 709,341

Funding Purchases in FY 2005-2008

DigitalGlobe/QuickBird (Imagery for Hawaii* and Pacific Basin)	555,065
InterMap (NextMap IfSAR DEM)	96,600
GeoEye/Ikonos (Imagery for Hawaii)	57,676
Total Purchases	\$ 709,341

Remote Sensing Contracts

USDA-FAS (ASRC)	\$ 460,047
USGS-MCMC	\$ 249,294

*Select Hawaii DigitalGlobe-QuickBird contracts are pending at USDA-FAS and USGS



Alaska

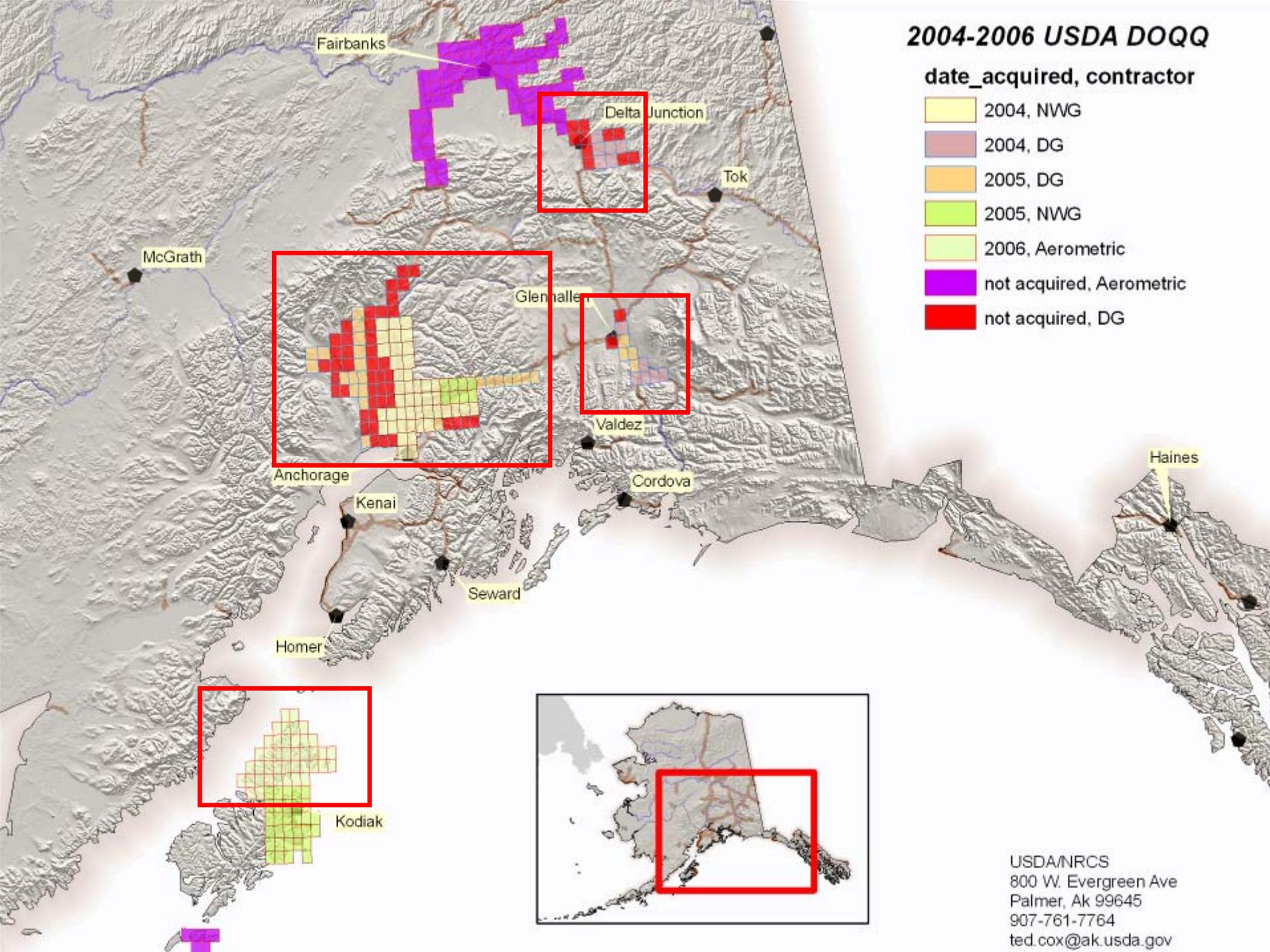
Alaska Update Landsat 7, Complete State Coverage, Mosaic



2004-2006 USDA DOQQ

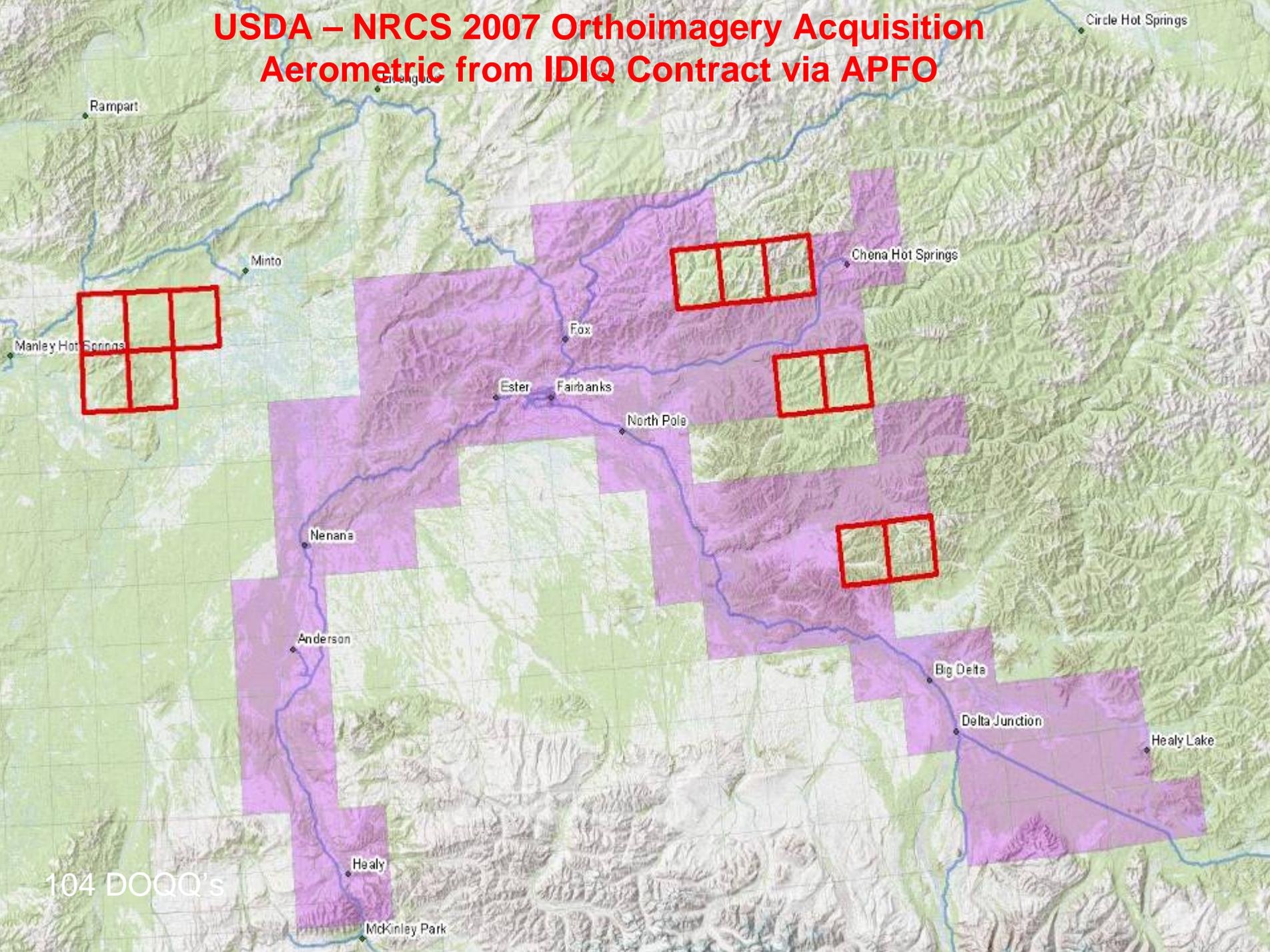
date_acquired, contractor

- 2004, NWG
- 2004, DG
- 2005, DG
- 2005, NWG
- 2006, Aerometric
- not acquired, Aerometric
- not acquired, DG



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USDA – NRCS 2007 Orthoimagery Acquisition Aerometric from IDIQ Contract via APFO



104 DOQQ's

**USDA-NRCS Alaska
Imagery Funding**

FY 2004	1,397,592
FY 2005	153,000
FY 2006	1,875,000
FY 2007	300,000
FY 2008	0
Total FY 2004-08	3,725,592

Alaska DEM and Orthoimagery Issues

- **NDOP and NDEP held a join meeting in Anchorage, Alaska in August 18 – 21, 2008.**
- **This meeting was attended by USDA (NRCS, FS), USGS, Census, DHS/FEMA, FAA, DOD (USAF, NGA), NOAA, F&W, NPS, BLM, State Government, University of Alaska-Fairbanks and native Alaskan groups.**
- **The main reason NDOP and NDEP held a join meeting in Alaska is the complex issues surrounding Orthoimagery and DEM's in Alaska.**

Alaska DEM and Orthoimagery Issues

- Currently there are no DEM's for the majority of Alaska that meets the National Map Accuracy standards for 1:24 K Data. Alaska DEM's are largely based on 1:63,360 Topo quads which produced 60 Meter NEDS for Alaska.
- The current NED for Alaska is both lower resolution and lower accuracy (both vertically and horizontally) than that for the contiguous lower-48 states.
- Vertical inaccuracies of hundreds of meters, entire mountain ranges are known to be horizontally misplaced by as much as two nautical miles, making it extremely difficult to use the NED for the simplest task Orthorectification of Imagery.
- AGDC and SDMI decided that a solution to Alaska's DEM issues must be addressed first and then Imagery.
- Two Alaska Geospatial Coordination Groups, the Alaska Statewide Mapping Initiative (SDMI) and the Alaska Geographic Data Committee (AGDC) have funded a survey via Dewberry to research and make recommendations on creation of DEM's to meet 1:24K standards (10/30 NEDS).

AGDC-SDMI-Dewberry Survey

Satellite Based Methods for collection of Elevation Data

Matching technology with requirements (20' contour interval accuracy)

Competing Satellite Sensor Systems with contour interval (CI) accuracy	Slope: 0° to 20° Accuracy _z at 95% confidence level and equivalent CI	Slope: 20° to 40° Accuracy _z at 95% confidence level and equivalent CI	Slope: >40° Accuracy _z at 95% confidence level and equivalent CI
ASTER Global DEM	20m (110-ft CI)	Unavailable	Unavailable
GeoEye's IKONOS, 1-arc-sec w/o GCPs 0.2-arc-sec w/1 GCP per stereo model	24 m (132-ft CI) 16.7 m (92-ft CI)	Unavailable	Unavailable
Digital Globe's WorldView-1, w/o GCPs	8 m (44 ft CI)	Unavailable	Unavailable
Spot Image Corp's SPOT-5, w/o GCPs	11.9 m (66-ft CI)	21.4 m (118-ft CI)	35.7 m (197-ft CI)
ASRC's Cartosat-1 w/9 GCPs/scene	6-9 m (33-50 ft CI)	10-20 m (55-110 ft CI)	Unavailable
MDA's Radarsat-2, w/minimal GCPs (see mode explanations below)	Slope: 0° to 20°	Slope: 20° to 40°	Slope: >40°
— Multi-Look Fine (MLF) beam mode	0-10°: 8m (44-ft CI)	21-30°: 15m (83-ft CI)	20m (110-ft CI)
	11-20°: 12m (66-ft CI)	31-40°: 17m (94-ft CI)	
— Ultra Fine (UF) beam mode	0-10°: 6m (33-ft CI)	21-30°: 11m (61-ft CI)	15m (83-ft CI)
	11-20°: 8m (44-ft CI)	31-40°: 12m (66-ft CI)	

AGDC-SDMI-Dewberry Survey

IfSAR Sensor Evaluation

Matching technology with requirements (20' contour interval accuracy)

Competing Airborne IFSAR Systems	Slope: 0° to 10° (Accuracy _z at 95% confidence level)	Slope: 10° to 20° (Accuracy _z at 95% confidence level)	Slope: 20° to 30° (Accuracy _z at 95% confidence level)
<u>Intermap's STAR-3/4/5/6</u>			
Type III DSM	6 m ≈33-ft contour accuracy	9 m ≈50-ft contour accuracy	12 m ≈66-ft contour accuracy
Type II DSM	1.8 m ≈10-ft contour accuracy	3 m ≈17-ft contour accuracy	4 m ≈22-ft contour accuracy
Type II DTM (untested, assumed equal to DSM)	1.8 m ≈10-ft contour accuracy	3 m ≈17-ft contour accuracy	4 m ≈22-ft contour accuracy
	Flat Terrain Yahoo County, MS	Moderate Terrain Southern California	Rolling Terrain Southeast Asia
<u>Fugro EarthData's GeoSAR</u> X-band DSM	1.8 m ≈10-ft contour accuracy	1.86 m ≈10-ft contour accuracy	8.78 m ≈49-ft contour accuracy
P-band DTM	≈10-ft contour accuracy	≈10-ft contour accuracy	≈49-ft contour accuracy
P-band foliage penetration (10-20m typical) is slope and foliage dependent			

LiDAR Technology was also evaluated.

General Conclusions to AGDC-SDMI Survey



Digital Elevation Model (DEM) Data for the
Alaska Statewide Digital Mapping Initiative (SDMI)

September 18, 2008

Prepared by:
David F. Maune, PhD, PSM, PS, GS, CP, CFM
Dewberry
8401 Arlington Blvd.
Fairfax, VA 22031-4666



- **Optical (Satellite, Spot etc..) DEM Solutions would not achieve the accuracy requirements as recommended by Dewberry.**
- **AGDC and Dewberry doubts that an Optical Solution can complete all of Alaska because of Weather Issues. SDMI (UA-Fairbanks) did not agree to opinion.**
- **LiDAR was recommended by NOAA but deemed too expensive for wide scale use in Alaska. Weather is also an issue with this technology.**
- **Combination of IfSAR Technologies were recommended as best from an accuracy and cost standpoint.**
- **RFI has be issued to determine cost of IfSAR acquisition.**

NDOP Recommendations

- NDOP will work with and support AGDC-SDMI on recommendations for DEM.
- NDOP will consider endorsing for IFTN in Alaska, both DEM and Imagery solution on final specifications (Technical etc..).
- Alaska may be the only state for IFTN that a DEM upgrade is necessary to achieve program goals for accuracy at one meter Orthoimagery.
- NDOP Technical Subcommittee will meet in Winter/Spring of 2009 to discuss this issue along with other IFTN specifications.
- AGDC-SDMI will have a Imagery related workshop in 2009 to create recommendations for Imagery for Alaska.
- NDOP will have an opportunity to participate in the Imagery Workshop.



NRCS 2009 Orthoimagery Priorities and Acquisitions

NRCS NAIP Funding

2003 = 2,500,000

2004 = 3,000,000

2005 = 2,600,000

2006 = 2,800,000

2007 = 500,000*

2008 = 500,000*

2009 = 1,750,000 (Proposed)

*** Plus addition funding via state partnerships**

NRCS has also funded in 2003-2008, High Resolution Orthoimagery for Hawaii, Pacific Basin, Alaska, Texas*, New Jersey, New York, West Virginia, Maine and Illinois.

Additional (Non-Funded) acquisitions by NCGC include Washington, Oregon, Ohio and Indiana, Puerto Rico, Virgin Islands, Utah, and Florida.

***NRCS Texas S.O.**

NRCS Digital Orthoimagery for FY 2009

Proposed by NCGC/RIAD

1) 8,190,000 NRI/WRP Total

2) 1,750,000 NAIP

3) 1,060,000 Other Orthoimagery Projects (Satellite for Hawaii/Pacific Basin, Leaf-Off Imagery, High Resolution etc..)

11,000,000 - Total Imagery Budget (NRI/WRP/NAIP/Other Orthoimagery or #1,#2 and #3)

Future NRCS Orthoimagery Issues

- Chief of NRCS and the RIAD Director supports the NAIP 3 Year (2009-2011) Acquisition Cycle. NAIP is the highest priority Orthoimagery Funding for the continental US.
- Tommie Parham, RIAD Director does have issues with Orthoimagery funding in general. Limited or insignificant funding from NRCS and/or USDA has been allocated for Alaska, Hawaii, Pacific Basin, Puerto Rico and the Virgin Islands.
- In general, there is no active Federally funded state-wide Leaf-Off or High Resolution Orthoimagery acquisitions. NRCS has been contacted about funding Leaf-Off Orthoimagery Acquisitions in Louisiana and Michigan. Both States contacted NRCS in April, 2008 and have told NRCS their preference for Leaf-Off Imagery over Leaf-On Imagery.

End of Presentation

Yellowstone National Park



Bison on Antelope Island in the Great Salt Lake



United States Department of Agriculture
Natural Resources Conservation Service



Digital Imagery Pilot Test

- **Current contract through 2009 allows only film products.**
- **Geoff Gabbott said that this test would have to be a separate solicitation.**
- **Jerry Harlow said that there will be approximately \$ 60,000 for a NRI-WRP Pilot.**
- **Test will be for 4-band, Orthorectified, 6”GSD.**
- **Tests would be in both NRI and WRP sites.**
- **WRP Sites test imagery would be open to review by the NDOP Technical Subcommittee.**
- **FY09 RFP in preparation for 2010 USDA Contract.**

NRCS Digital Orthoimagery for FY 2009:

Proposed by NCGC/RIAD

1) \$ 8,190,000 (NRI/WRP)

**2) \$ 2,810,000 (NAIP 1,, High Resolution Leaf-Off and
Satellite Orthoimagery)**

**\$ 11,000,000 (NRCS total proposed for Imagery related
projects #1 and #2)**

NRCS Orthoimagery Acquisition Funding for FY 2008

500,000 NAIP

55,000 Hawaii/Pacific Basin

555,000 Total for Orthoimagery Acquisition as of October, 2008

United States Department of Agriculture
Natural Resources Conservation Service



Orthoimagery Update



USDA-NRCS-NCGC Update

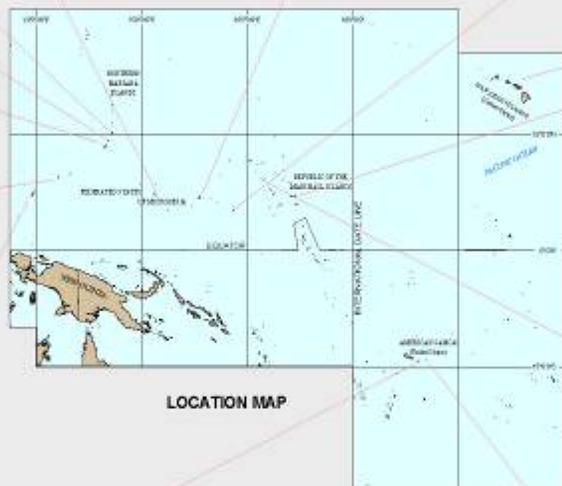
- 1) 162 DOQQ's for the Island of Hawaii was shipped to USGS, NOAA, NRCS/FSA and the State of Hawaii March 14th, 2007.
- 2) Mosaics (Natural Color/CIR) for Maui, Lanai, Kahoolawe and Molokai have been started. Mosaic for Hilo, Hawaii was completed recently.
- 3) Three DVD Discs with various Islands mosaics has been completed. Another DVD Disc will be completed by the end of June (American Samoa, CNMI- Pagan, Palau-Rock Islands, Micronesia- Yap/Dublon/Pohnpei)
- 4) NCGC is working on a Web Map Services for Hawaii and the Pacific Basin.
- 5) Mosaics on the Marshall Islands will start in June, 2007.
- 6) NGA is interest in "uplifting" the USDA-Civil Government License to the Military license.
- 7) NRCS-NCGC has been sharing data with any interested NDOP member!

Northern Mariana Islands



PACIFIC ISLANDS AREA

Federated States of Micronesia



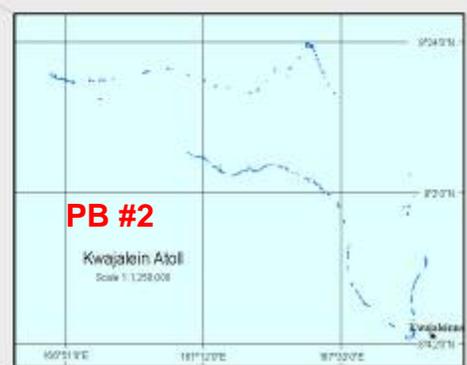
American Samoa



Hawaiian Islands



Republic of the Marshall Islands



Source: information generated from USGS 1:250,000 Quadrangles, Depths in fathoms and The National Oceanic and Atmospheric Administration (NOAA).

April 2007 1006735

Orthoimagery Update



2007 Alaska Orthoimagery Acquisition

1) Completed under an existing USDA-NRCS-IDIQ Alaska contract to Aerometric

- GSD = .6 Meter,
- Natural Color
- 3 meter Horizontal accuracy
- Color Positive Film Base

2)Funding

300,000 NRCS

75,000 Fairbanks/North Star Borough

48,000 State of Alaska

423,000 Total for New 104 DOQQ's

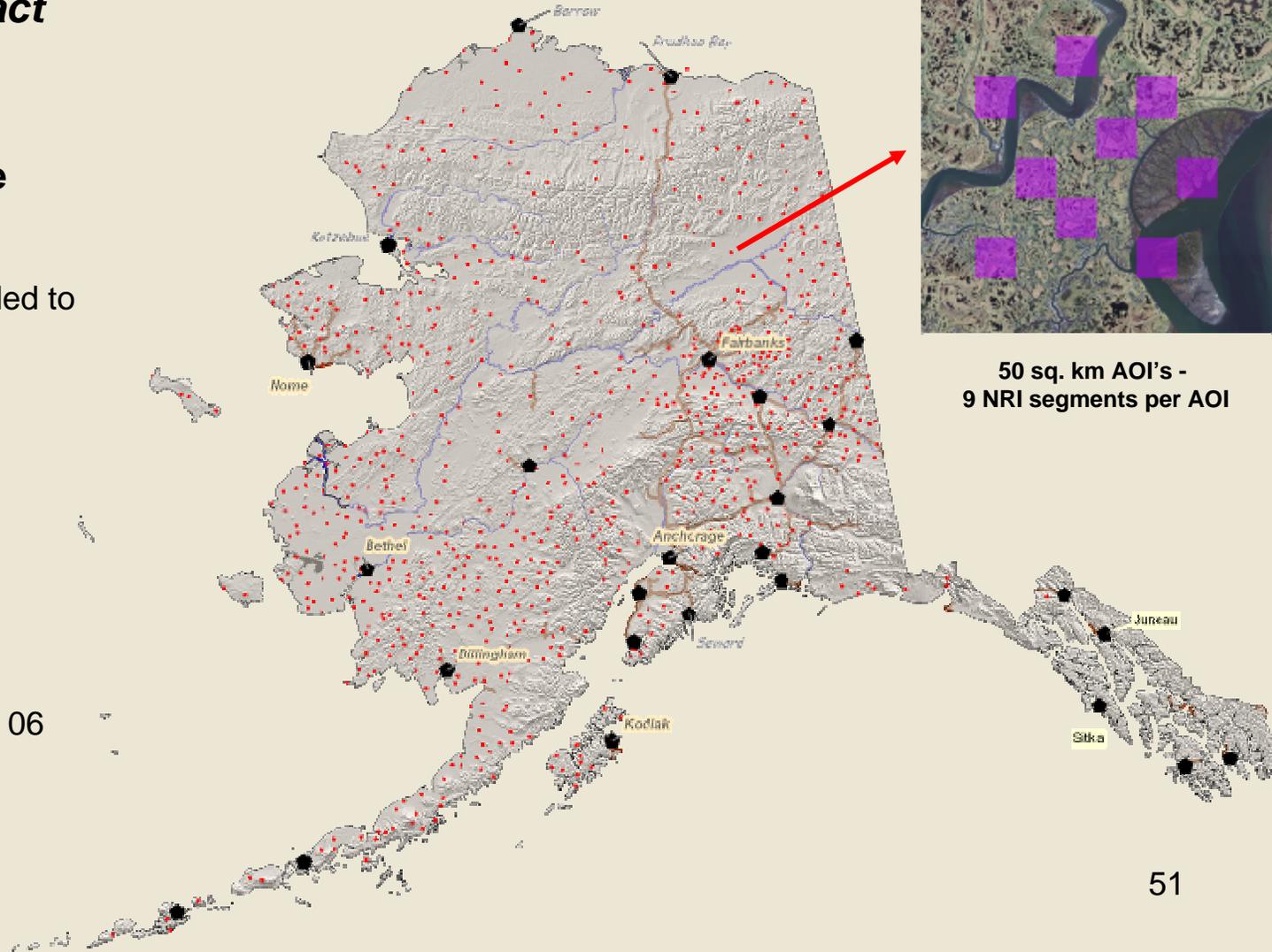
3) The USFS is looking to utilize the same IDIQ contract to obtain high resolution Orthoimagery over Chugach National Forest.



Other Tasking by NRCS Alaska – ASRC/FAS Contract

- **2006 NRI - Remote Segments**

- 854 AOI's awarded to GeoEye
- \$993,097
- 1:24000 NMAS
- 20% or less CC
- Tier 2 License
- 10% Delivered in 06



- NRCS has started to receive the contracted imagery.
- Total of 220 Villages under contract with an area of 30 to 600 Sq. KM.
- NRCS-RIAD has signed a waiver to allow the sharing of this imagery with other Federal, State and local users as Satellite License allows.

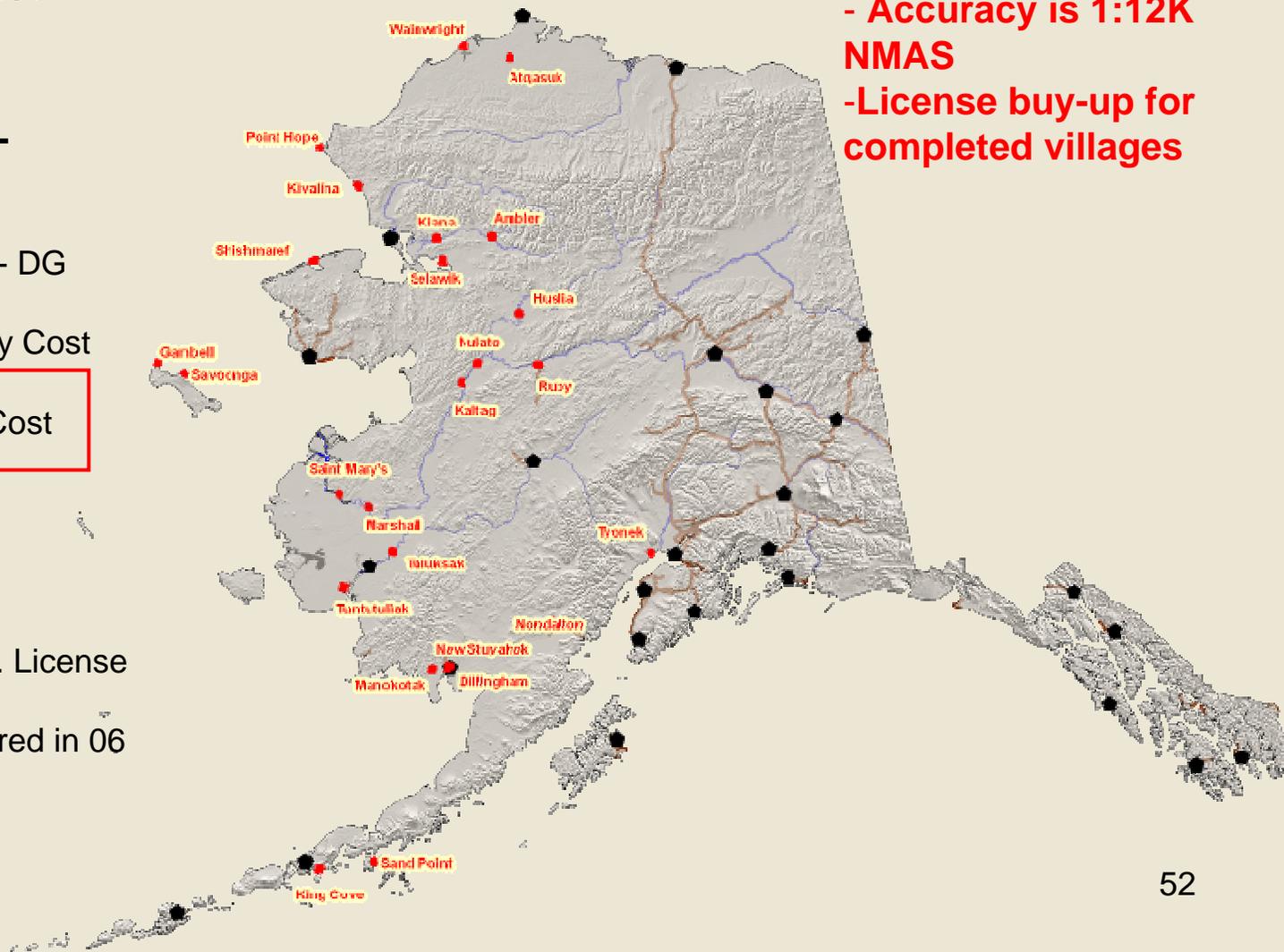


Other Tasking by NRCS Alaska ASRC/FAS Contract

- Average of 8 GCP's per Village.
- Accuracy is 1:12K NMAS
- License buy-up for completed villages

- **2006 NRI Villages - Acquired**

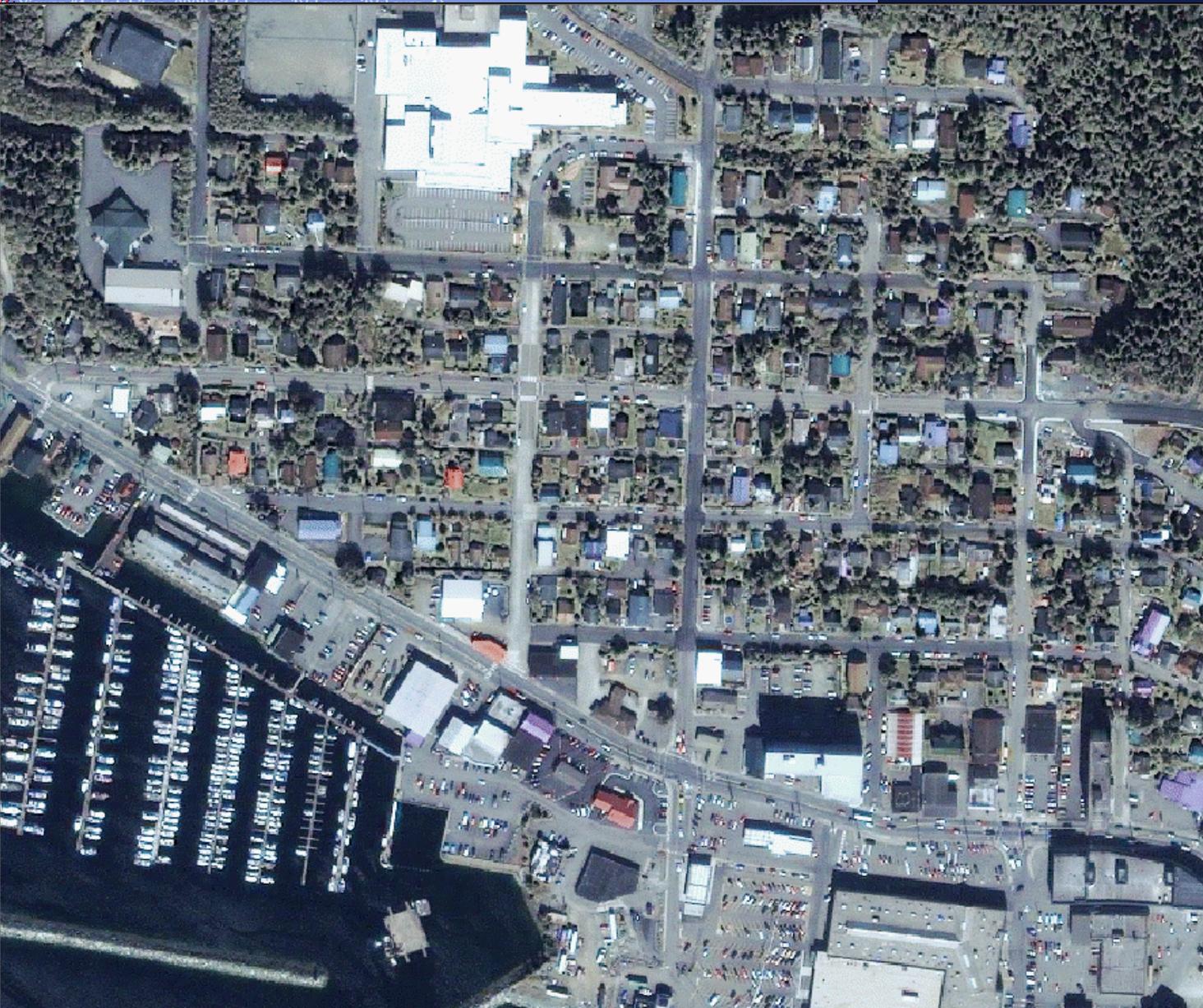
- 52 Village Areas - DG
- \$216,578 Imagery Cost
- \$ 220,792 GCP Cost
- 1:12000 NMAS
- 10% or less CC
- Federal Civil Org. License
- 25 Villages acquired in 06



Orthoimagery Update



Ketchikan, Alaska



NRCS NAIP-NDOP Activities

- **NRCS Kansas and NRCS Nebraska contracting w/ Surdex to produce a statewide 1m CIR from 2006 imagery outside the NAIP contract. Both flown with a digital sensor.**
- **Louisiana USACOE/USGS wants to cost share for new High Resolution Orthoimagery in 2008. GSD= 2 feet, CIR, Leaf-off**
- **Orthoimagery swap w/ state of Arkansas. NRCS will store/serve the high resolution collects.**
- **FY-07 earmark for New Mexico-CIR. Status update. Mexico (House Committee Mark Up language direct NRCS to use CCE funds to acquire 4-band digital imagery).**
- **Puerto Rico/VI Orthoimagery (HR) now under contract by USACOE.**
- **Continue to purchase satellite imagery and or NRCS IDIQ contract for AK, HI & PB.**
- **NAIP 2007 High Resolution Buyup (AZ, WV ?)**

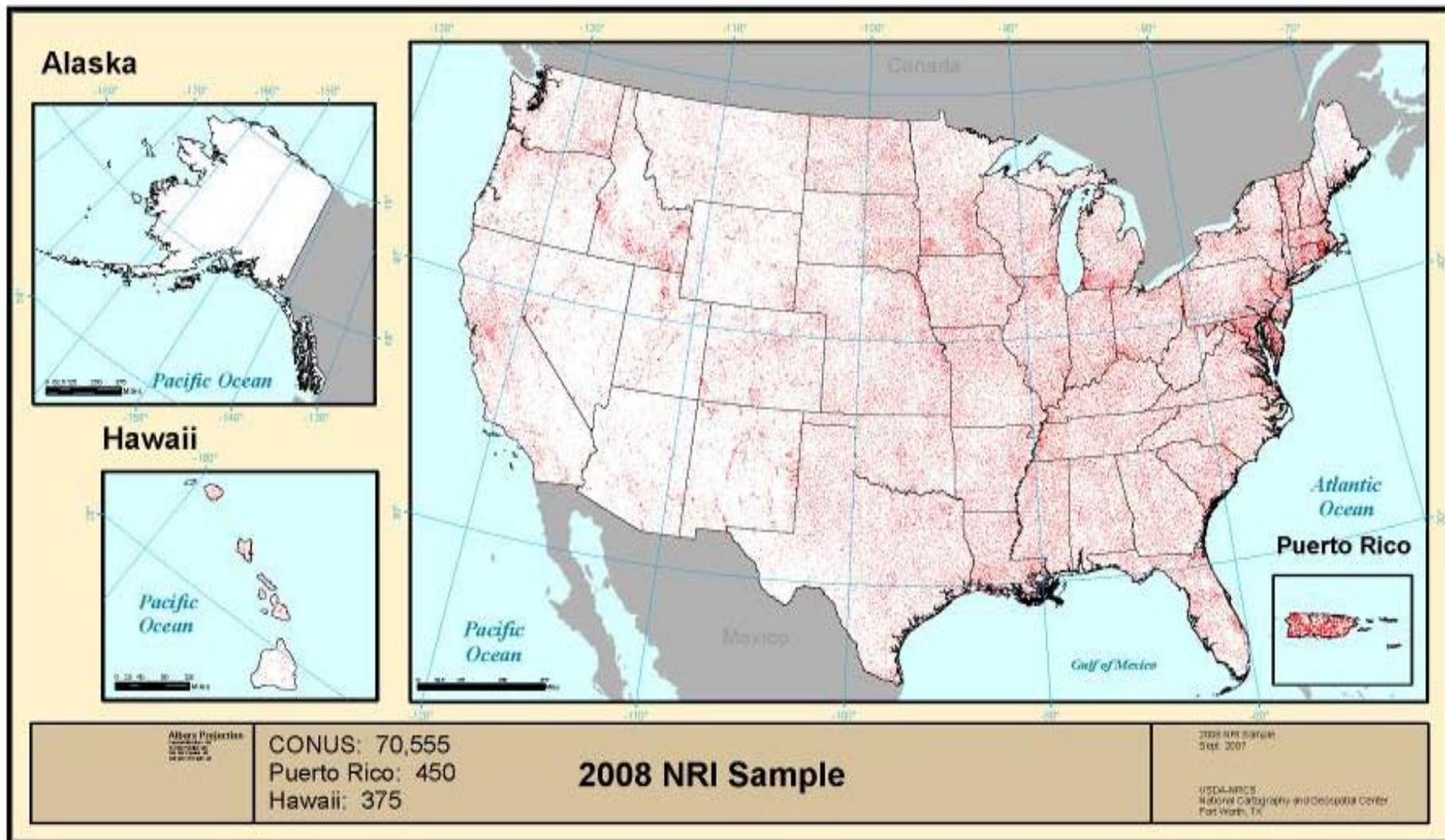


NRI-WRP Imagery Acquisition Issues

USDA Small Area Photography Contract Aerial Photography Services-NRI/WRP

- Indefinite Delivery Indefinite Quantity (IDIQ)
- Base year (2005) & four option years (2006-2009)
- Contracts awarded through task orders.
- Services: Flying, scanning & ortho-rectification.
- Standard scales: 1:4,000 to 1:15,840.
- Aerial film only, no digital sensors.
- Contract awarded to six vendors (Keystone, Midwest, Aerial Services, Blue Skies, Surdex, Photo Science,
- Administered by FSA-APFO

2008 NRI Sample



Why go digital?

- Elimination of film processing and scanning costs.
- More automated workflow.
 - Orthophotos/mosaics with little delay between capture and end-product.
- Twelve-bit-per-pixel radiometric resolution, or even higher, ensures better light sensitivity.

Digital Aerial Cameras



Zeiss RMK TOP 15 Film Camera
Approx. \$500K



Leica ADS40 Digital Scanner



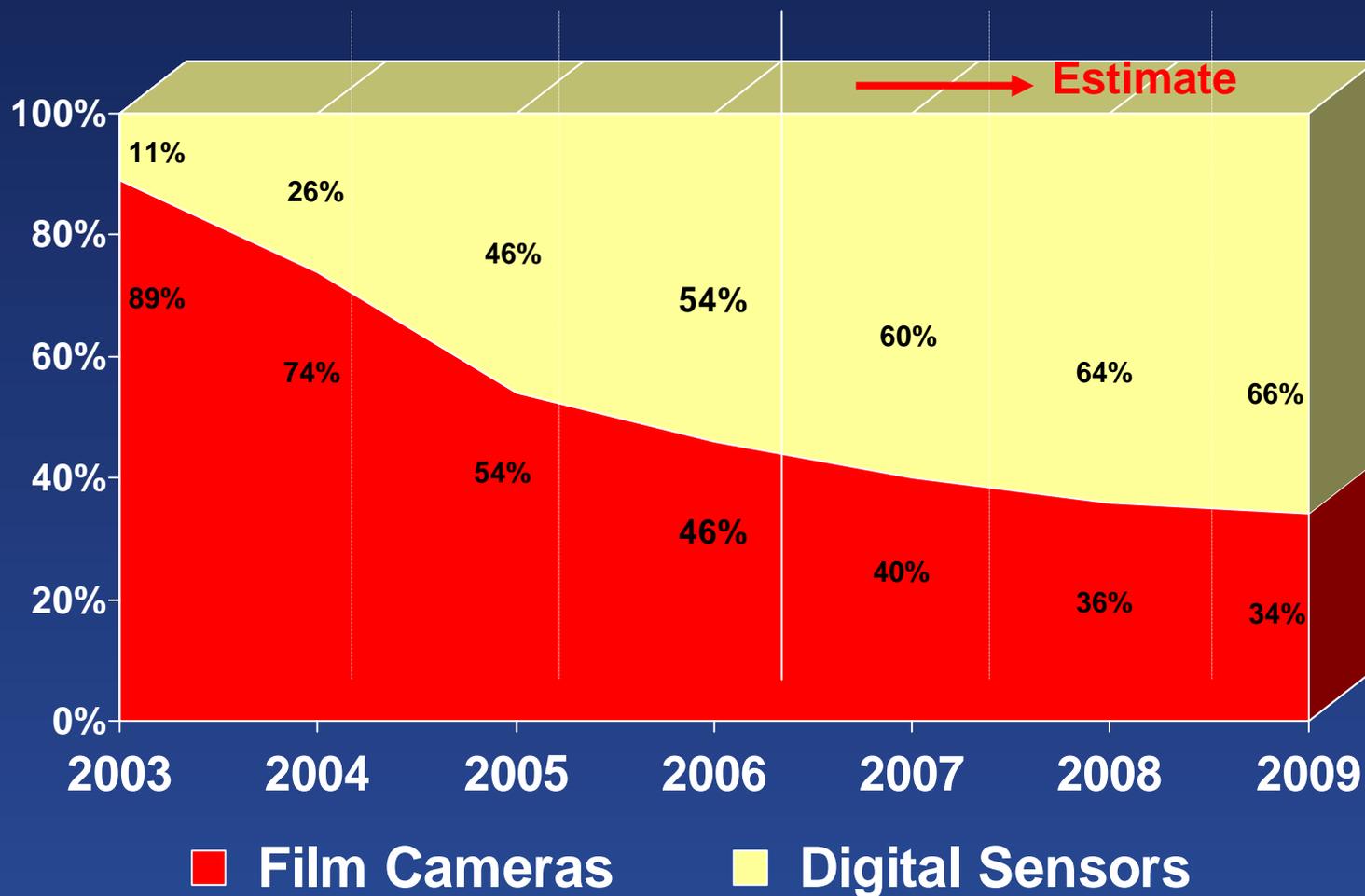
DMC Digital Frame Camera
Approx. \$1 million

NRI Contractor Comments

- Kodak raising film prices 5-10 % per year.
- Film is getting harder to find. Agfa may be the only source for film in the future.
- Rumor that Kodak is dropping CIR film.
- One vendor recommended that NRCS start looking at digital sensors now as in 4-5 years film and film cameras may not be available.

NAIP Camera Trends

Film Cameras vs. Digital Sensors



APFO Comments on Digital

- Going all digital with NRI-WRP will limit number of vendors and reduce capacity.
- Programs like NRI will have to use digital frame cameras not scanning sensors like the ADS-40.
- DOQs going to absolute control rather than relative to older DOQ.
- Need web based delivery of digital products.
- Real-time DOQ delivery isn't reality, at least for NAIP.
- Any digital acquisitions need to specify **4-bands**.



UltraCamX – Color and CIR – 8" GSD

United States Department of Agriculture
Natural Resources Conservation Service



United States Department of Agriculture
Natural Resources Conservation Service



Hawaii Islands Orthoimagery Status, October 2007



USDA has ordered DG - QuickBird Four Band Orthoimagery for the Molokai, Lanai, Kahoolawe, Maui, Molokini Crater and Hawaii

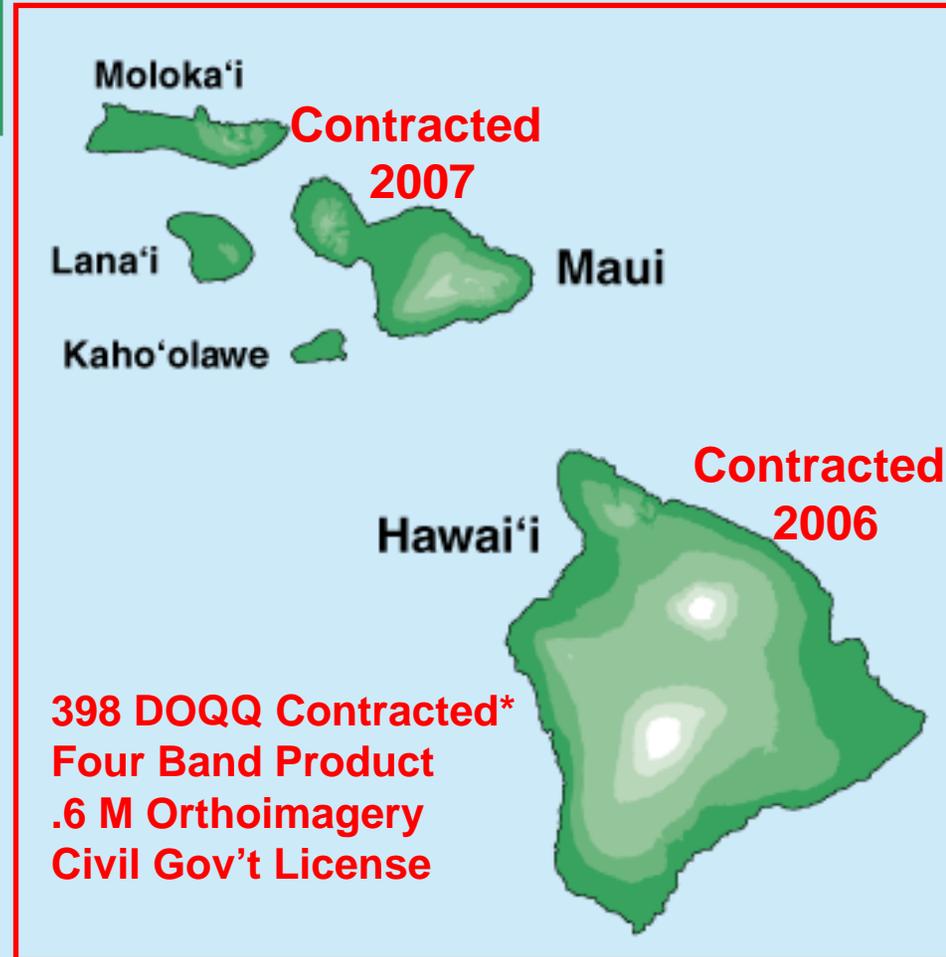
NRCS has already acquired complete island Orthoimagery (QB, .6m) for Niihau and Kauai in Natural Color and CIR.

The NCGC received 1 ft. Orthoimagery for Oahu. The mosaics are complete and will be on the Gateway soon. FSA-APFO will be offered these datasets.

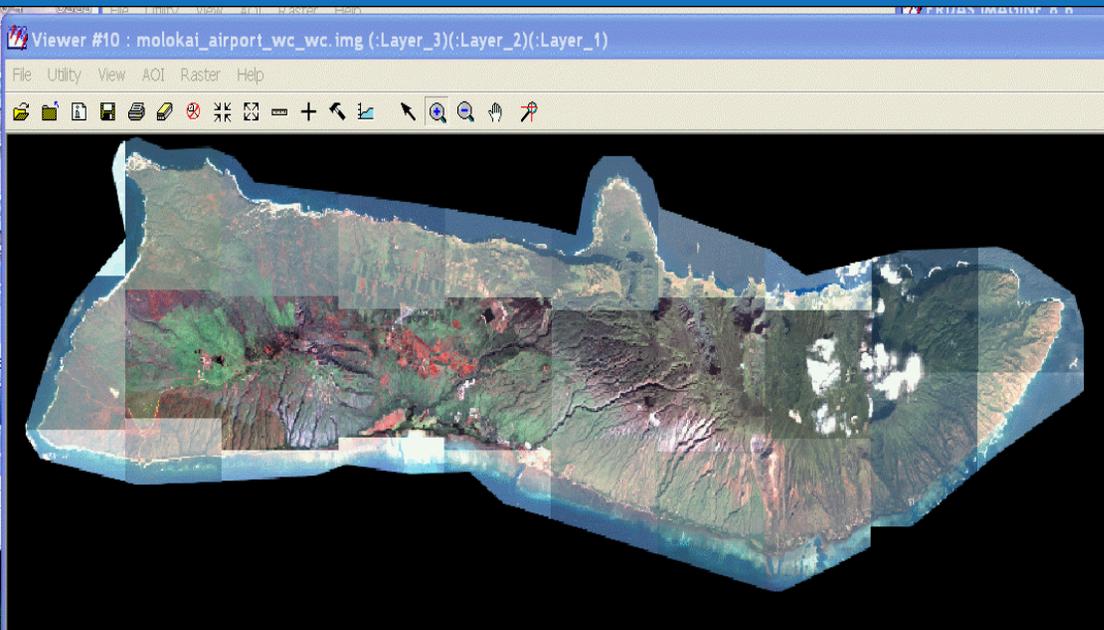
Update 10/9/2008

NRCS has received complete coverage for Hawaiian islands except DOQQ's for the Big Island of Hawaii in March, 2007

Received all contracted DOQQ's for Molokai, Lanai, Maui, Molokini Crater and Kahoolawe in May 2007.



* Select Hawaii DG-QuickBird contracts are pending (10/23/2006) at USGS



Original Source QB Imagery (Top) and Tone Balanced Imagery (Bottom)



Hawaii Orthoimagery Update

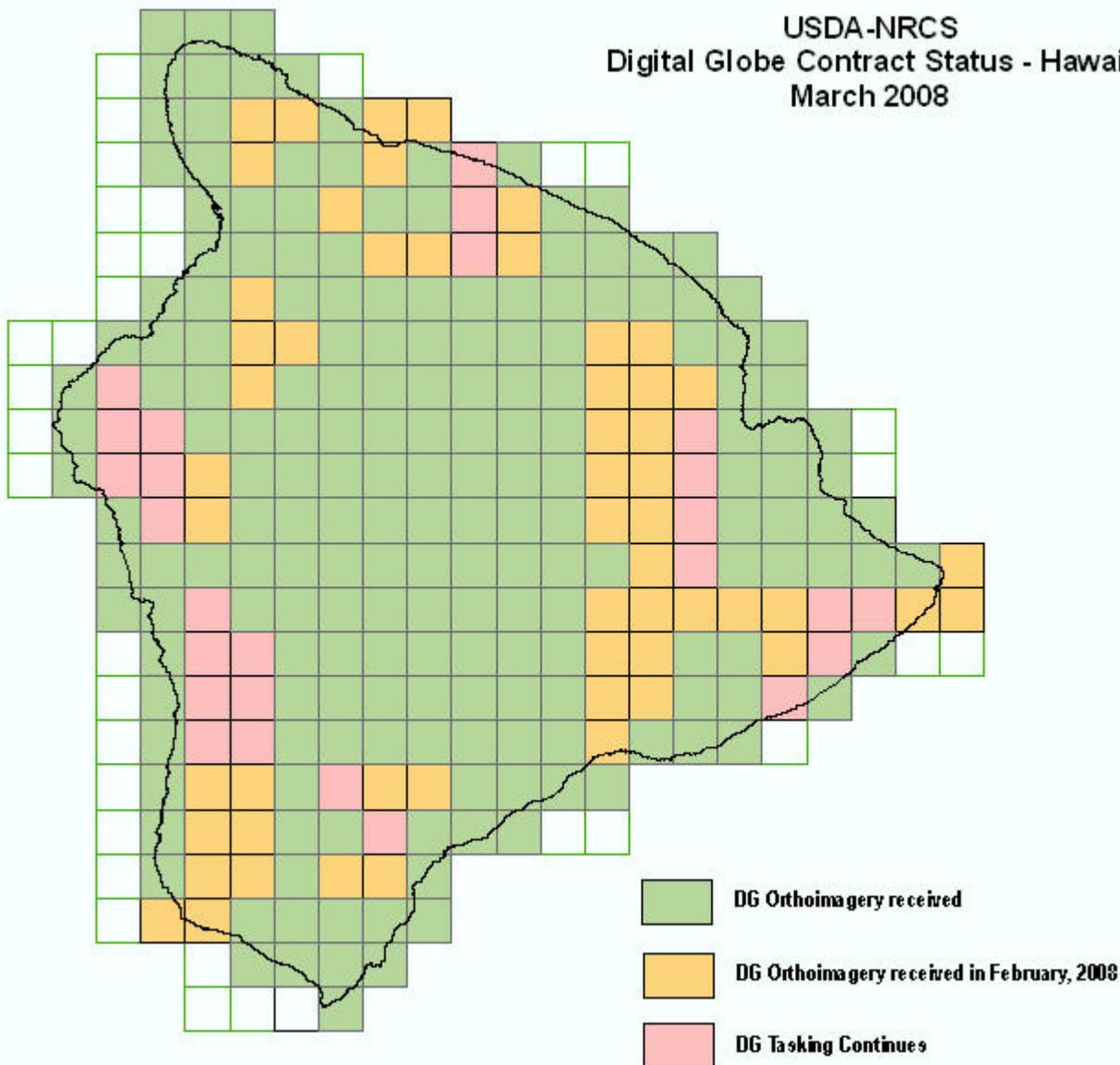
Tone matched, MrSID's Orthoimagery Mosaics (12;1) have been distributed for the following islands:

- Niihau (QB, .6 Meter, Natural Color, CIR)
- Kauai (QB, .6 Meter, Natural Color, CIR)
- Oahu (USGS Urban 133, 1 Ft. Natural Color)
- Maui (QB, .6 Meter, Natural Color, CIR), To be revised in 2008!
- Lanai (QB, .6 Meter, Natural Color, CIR)
- Molokai (QB, .6 Meter, Natural Color, CIR)
- Kahoolawe (QB, .6 Meter, Natural Color, CIR)

Hawaii is in progress!

- The NCGC has distributed the MrSID's mosaics to USGS, NOAA, NPS, USDA-FS, USDA-FAS and the State of Hawaii. FEMA (Dewberry) has requested this recently.

USDA-NRCS
Digital Globe Contract Status - Hawaii
March 2008



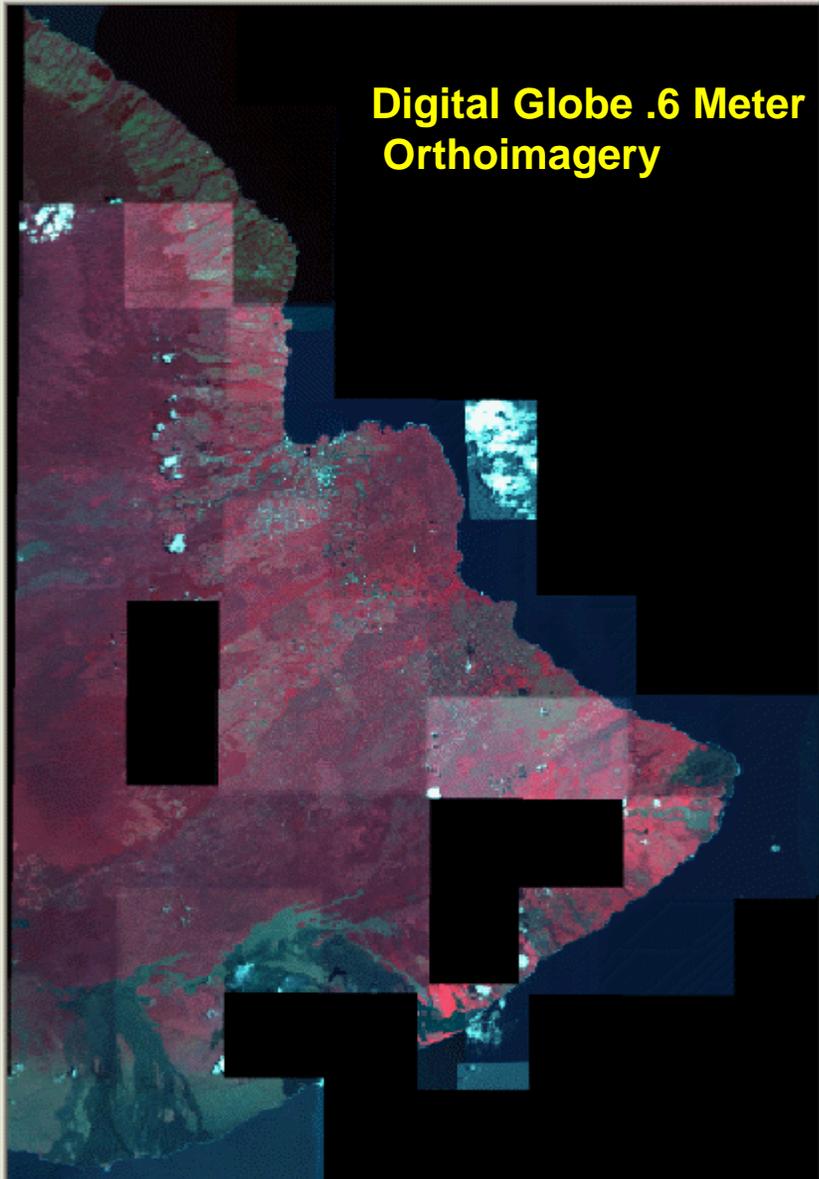
DG-QuickBird Status by DOQQ (03/2008)

All areas in Green and Orange have been received by USDA.

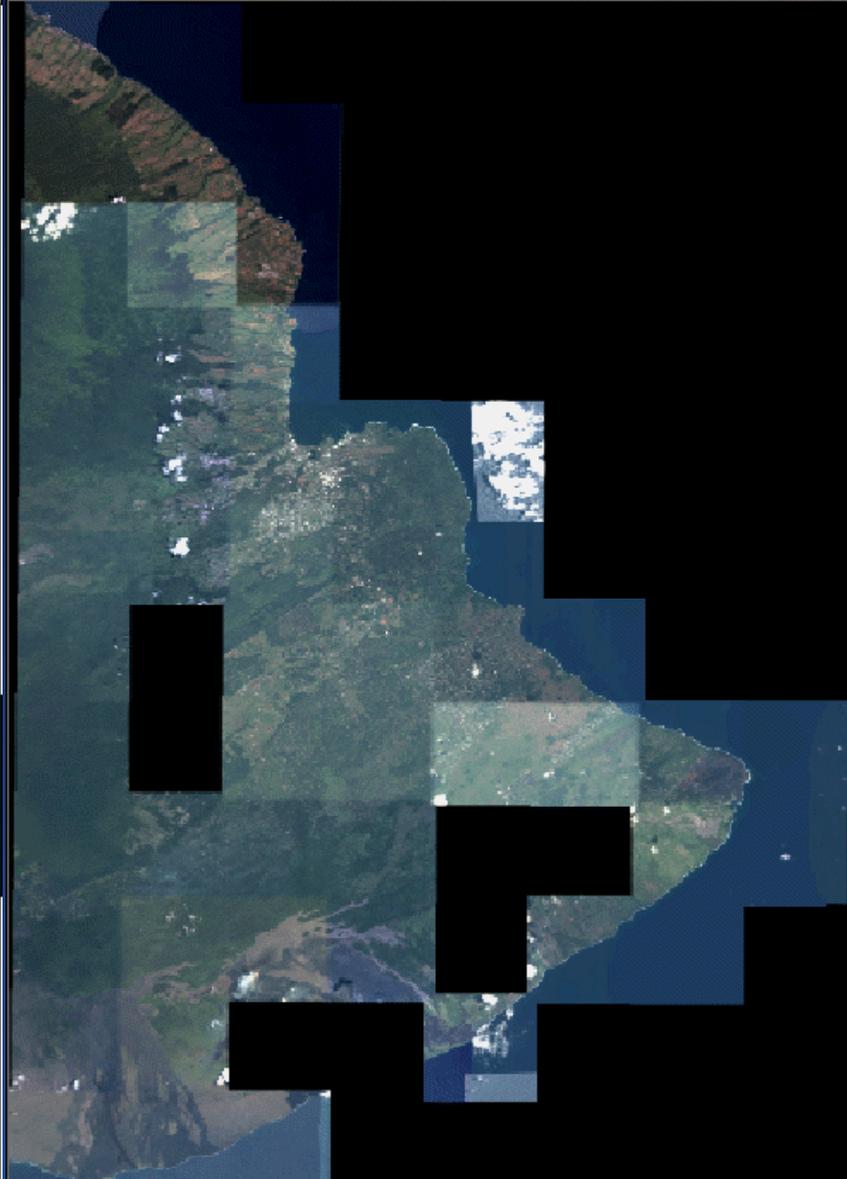
As of 3/07/2008....

- 247 DOQQ's have been received.
- 26 DOQQ are tasking.

Viewer #2: hi_east-redo_51img_sub_cir_v91_hp239.img (:Layer_3):(L



Viewer #1: hi_east-redo_51img_sub_rgb_v91_hp239.img (:Layer_3):(Layer_2):(Lay



Hawaii Orthoimagery Update

Tone matched, MrSID's Orthoimagery Mosaics (12;1) have been distributed for the following islands:

- Niihau (QB, .6 Meter, Natural Color, CIR)**
- Kauai (QB, .6 Meter, Natural Color, CIR)**
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- Maui (QB, .6 Meter, Natural Color, CIR), To be revised in 2008!**
- Lanai (QB, .6 Meter, Natural Color, CIR)**
- Molokai (QB, .6 Meter, Natural Color, CIR)**
- Kahoolawe (QB, .6 Meter, Natural Color, CIR)**

Hawaii is in progress!

The NCGC has distributed the MrSID's mosaics to USGS, NOAA, NPS, USDA-FS, USDA-FAS and the State of Hawaii. FEMA (Dewberry) has requested this recently.

USDA Funding Status for Hawaii and Pacific Basin

Hawaii – Pacific Basin Imagery/IfSAR Acquisition Cost (March 2008) Funding Contributions for Fiscal Year 2005-2007

USDA - NRCS	515,829
USDA - FSA	115,000
USDA - FS	47,000
Total Contributions	\$ 677,829

Funding Purchases in FY 2005-2007

DigitalGlobe/QuickBird (Imagery for Hawaii* and Pacific Basin)	523,553
InterMap (NextMap IfSAR DEM)	96,600
GeoEye/Ikonos (Imagery for Hawaii)	57,676
Total Purchases	\$ 677,829*

Remote Sensing Contracts

USDA-FAS (ASRC)	\$ 435,047
USGS-MCMC	\$ 219,294
USGS-EDC	\$ 23,488

*** New Acquisition Funding for FY 08 is 25-45 K**

USDA License Information DigitalGlobe- QuickBird Satellite Hawaii – Pacific Basin Imagery

- **Digital Globe data is not available with a Public Domain license.**
- **USDA purchased a Civil Government License. Department of Defense upgraded this license to DOD, Title 50 Level in Fall 2007.**
- **All Federal Government (Civil, Defense), State, Local and cooperators such as Universities can use this data.**
- **Original, GeoTIF files have been given to USGS(HI), NPS, USDA-FSA and NGA.**
- **USDA (Federal Gov't) cooperators (Land Owners etc..) can use this dataset.**
- **Imagery data can be used on Websites as long as the original source data is compressed (25 to 1) and cannot be downloaded.**
- **QuickBird data is NOT licensed for GIS/Mapping/Commercial companies that resell or repackage the imagery data in any way.**
- **- Like always, if you have a small amount of funding, I can utilize this for some Digital Globe/GeoEye acquisitions!!!!**

Orthoimagery Update



USDA Has received the following Marshall Islands
Four Band Orthoimagery

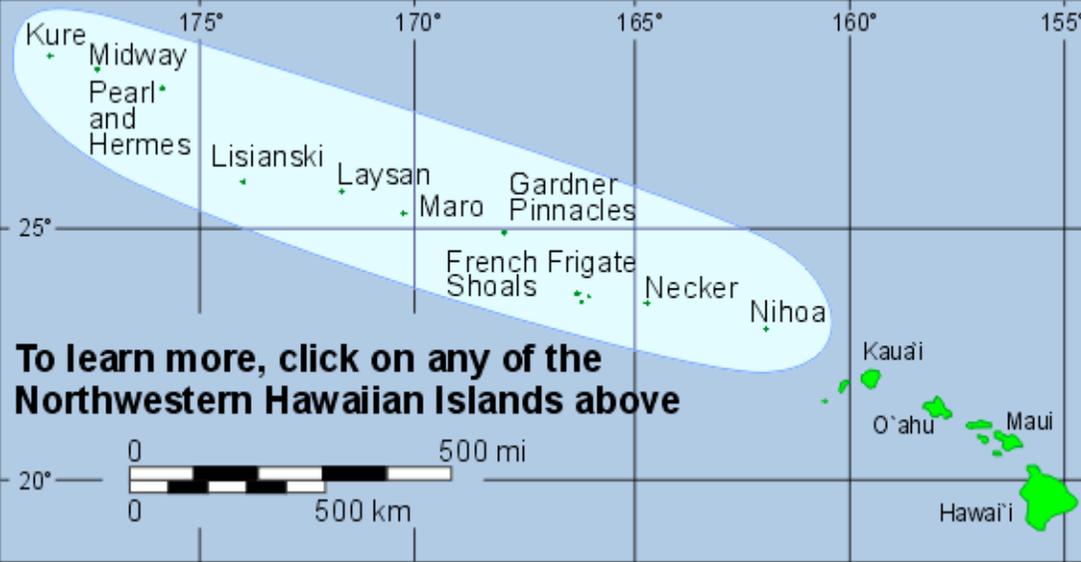
- 1) Arno
- 2) Majuro*
- 3) Maloelap
- 4) Mili*
- 5) Rongelap
- 6) Alinglapalap
- 7) Jaliut*
- 8) Likiep
- 9) Wotje*
- 10) Kwajalein*
- 11) Aur
- 12) Enewetok

All MrSID Mosaics are
Finished and distributed
to USDA-FSA, USGS,
NOAA and USFS.

Updated May 2008

Kwajalein, Marshall Islands



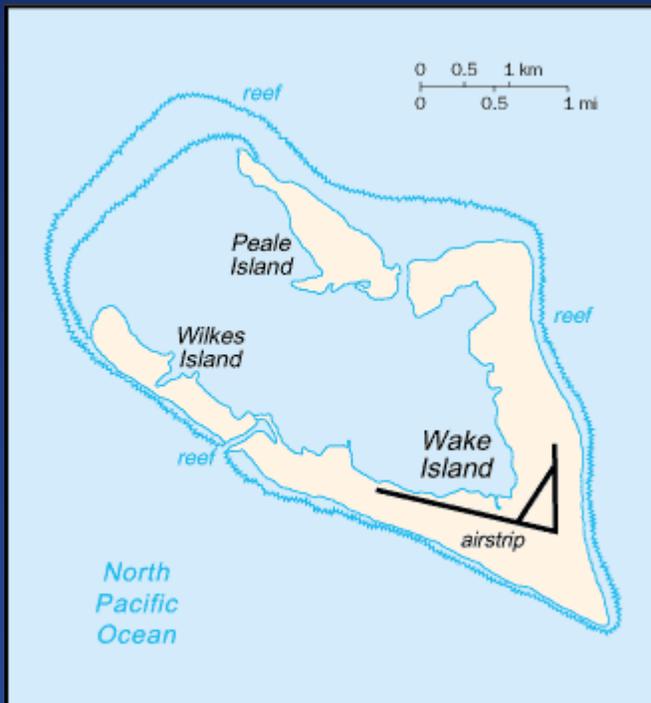


1) **The Northwest Hawaiian Islands: Kure Atoll, Midway Islands, Pearl and Hermes Atoll, Lisianski Island, Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island and Nihoa.**

2) **Kaula Island - southwest of Niihau**

3) **Outlying islands: Baker Island, Howland Island, Jarvis Island, Kingman Reef, Wake Island, Palmyra Atoll, Johnston Atoll**

4) **Kauai, Hawaii (Imagery is up to 6 years old)**



Orthoimagery Update



USDA priorities for the following Marshall Islands
Four Band Orthoimagery

1. Namorik
2. Aur*
3. Ebon
4. Mejit
5. Enewetak*
6. Lae
7. Bikar
8. Tangi
9. Ailinginae
10. Namu
11. Erikub
12. Taka
14. Ujelang

* Ordered 2007



Recommendations

- **NRCS aerial imagery programs need to be cautious in specifying digital imagery because of the smaller pool of vendors able to do the work.**
- **Fund and conduct a test to determine a good GSD specification for NRI-WRP.**
- **Imagery is required to be geometrically consistent from year to year.**
- **Jerry Harlow, NRCS-Resource Inventory Leader has requested NDOP/IAGIWG for information on Medium format cameras.**
- **Can IADIWG provide assistance for Medium Format Cameras.**
 - **Certification**
 - **Reports**
 - **Imagery/LiDAR Acquisition at same time?**
 - **Information at NDOP Meeting in October 2008 (Boulder, Colorado)**

NRCS funds NRI at \$ 5,000,000 + per year!

United States Department of Agriculture
Natural Resources Conservation Service



Fall 2007 NDOP Meeting in East Lansing, Michigan Priorities for FY 2008 are...

Oklahoma (2003)
Indiana (2003)**
Minnesota (2003)
New Hampshire (2003)
Vermont (2003)**
Massachusetts (2003)
Virginia (2003)
Texas (2004)**
Wisconsin (2005)
New York (2006, Not Completed)*
Idaho (2004)*
Michigan (2005)*
Pacific Basin (NW Hawaii, Wake, Marshall Islands)
Alaska (Selected Areas)

* Previous NAIP Acquisition Issues

** Likely to link future funding to 4 Band Acquisition

NRCS has requested \$ 1,500,000 from NRCS FY 2008 Budget for
Orthoimagery.

Orthoimagery Update



Puerto Rico

Puerto Rico – US Virgin Islands 2007 - 2008 United States Army Corp of Engineers

El Yunque
National Forest

Hey Bill!,
National Forest are
important to me!
TK

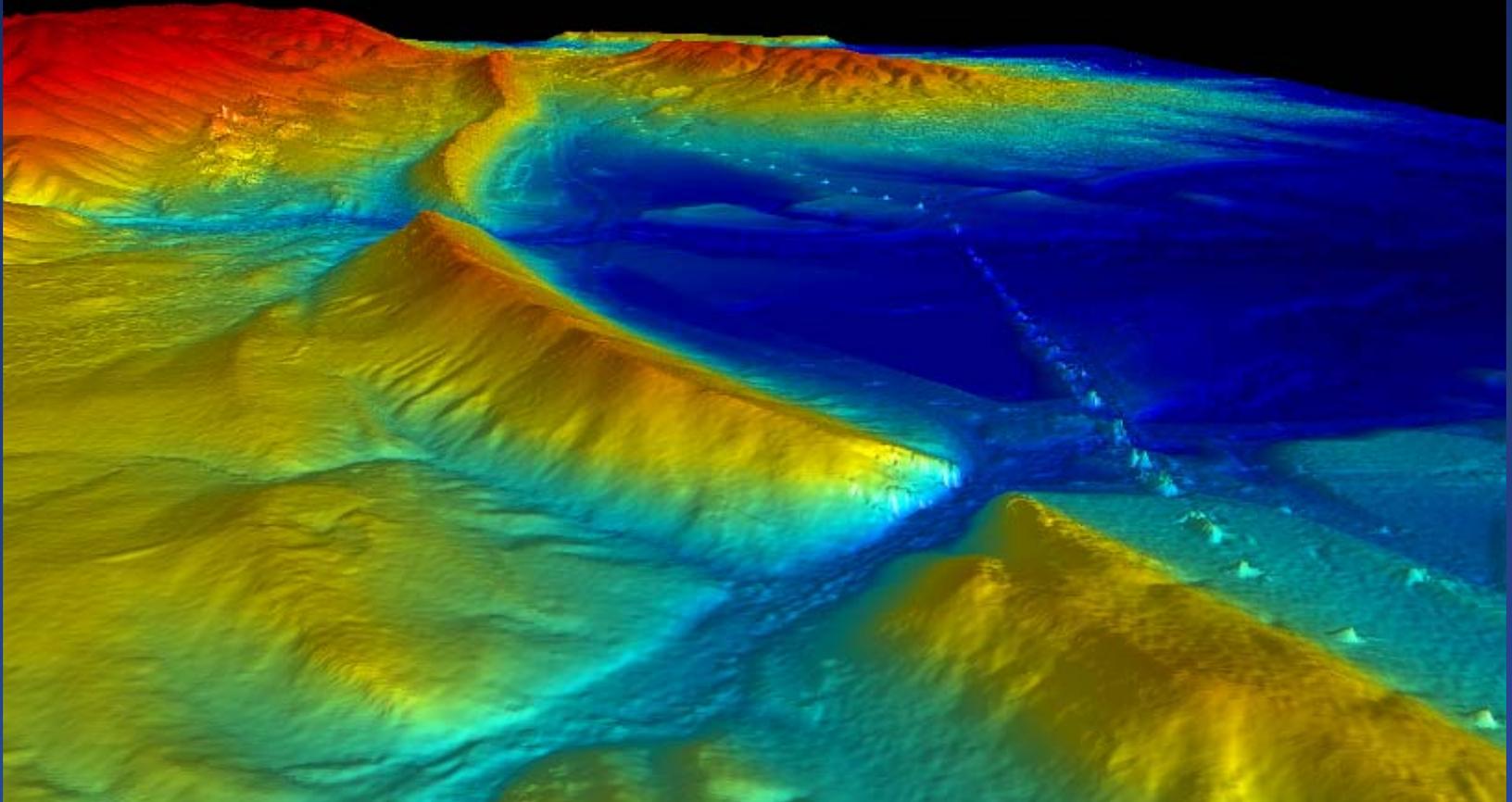


- One Ft. GSD, Natural Color for Puerto Rico and US Virgin Islands (St. Croix, St. Thomas and St. Johns).
- Imagery Acquisition is approximately 100% complete. USACOE received first shipment of Orthoimagery August 1, 2007. The rest from winter 2008 flights. USGS/USACOE have completed QA/QC of Orthoimagery (?).
- NRCS-NCGC just received complete island coverage for Puerto Rico.
- Funding for LiDAR Re-processing is still be pursued by USACOE.

NRCS 10m DEM Contract

- Level 2 DEMs, **hydro-enforced**
- DEMs 99% percent free of **artifacts**
- Besides DEM, contractor provides **contours** and **hydrography** for the quads
- Contract ended September 30, 2007
- Initial task order was 128 quads (States - ND, WI, IA, KS, and OK)
This task is complete.
- Oct 2006 task order is for 221 quads (States – AL, GA, ME, MS)
This task is still in progress. Tiles are at NCGC for review (April 2008).

NRCS IFSAR Status



- NRCS supports a multi-resolution and sensor approach to creating elevation for the nation
- We currently use Elevation Data from 30 & 10 meter NED to IFSAR 5 meter and LIDAR < 3 meter products
- We need assistance with standards and specifications and contract vehicles to purchase elevation products in FY2008 and beyond (Any Ideas Jim Mauck?)



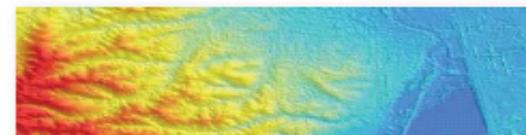
3D Digital Elevation Models

Intermap Technologies: providing geospatial professionals worldwide with reliable 3D digital elevation models (DEMs) that enable the timely and affordable development of innovative solutions.

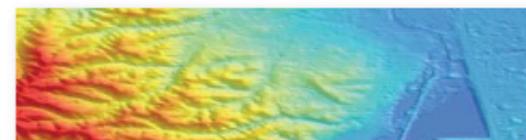
Proprietary Mapping Technology Creates Superior DEMs

The high-quality 3D digital mapping data afforded by our proprietary airborne Interferometric Synthetic Aperture Radar (IFSAR) technology meet the demanding needs of a wide range of geospatial applications. Our IFSAR DEMs are collected as part of our NEXTMap® countrywide mapping program at 5-meter post spacings, feature a vertical accuracy RMSE of 1 meter, and include:

- **Digital surface models (DSMs)** – a topographic model of the earth's surface that includes buildings, vegetation, roads, and natural terrain features. The key benefit of the DSM is that it provides a geometrically correct base map.
- **Digital terrain models (DTMs)** – a topographic model of the bare earth that has had vegetation, buildings, and other cultural features digitally removed, enabling users to infer terrain characteristics possibly hidden in the DSM.



Colorized DSM



Colorized DTM

Data Specifications

Vertical datum (geoid model):
Horizontal (geodetic) datum:
Projection/unit:
File format:

United States

NAVD88 (GEOID 99)
NAD83
Geographic latitude/longitude
32-bit floating point binary
grid format (.BIL)

Europe

NAP (EVRS)
ETRS89
Geographic latitude/longitude
32-bit floating point binary
grid format (.BIL)

Orthoimagery Update



Alaska Update Landsat 7, Complete State Coverage, Mosaic



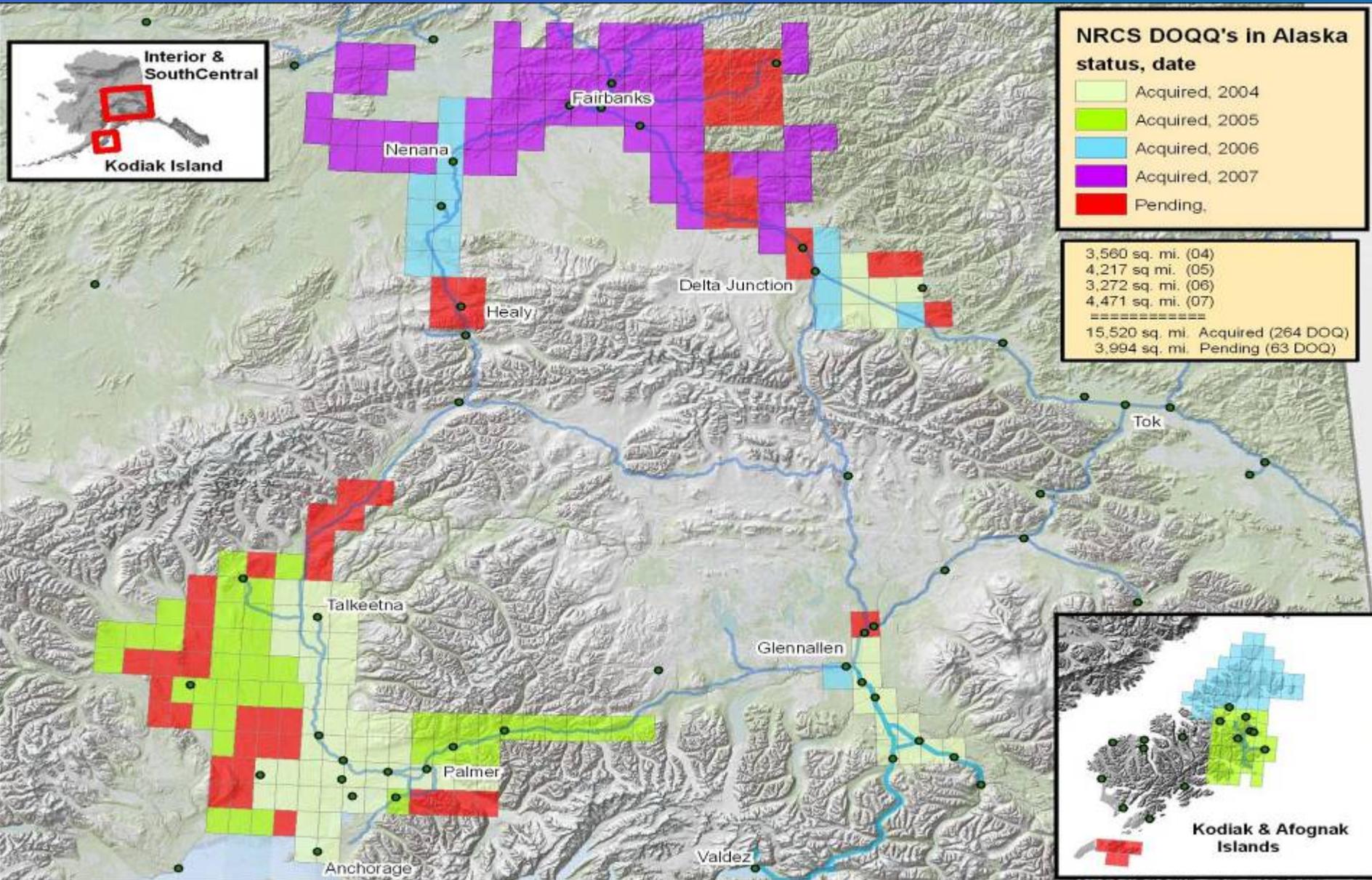
USDA-NRCS Alaska Imagery Funding*

FY 2004	1,397,592
FY 2005	153,000
FY 2006	1,875,000
FY 2007	300,000
FY 2008 <i>So Far...</i>	0**
Total FY 2004-08	3,725,592

* Does Not Include NRI !

** NRI Contracted for many PSU Sites in 2007-08

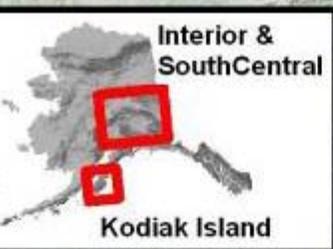
Orthoimagery Update



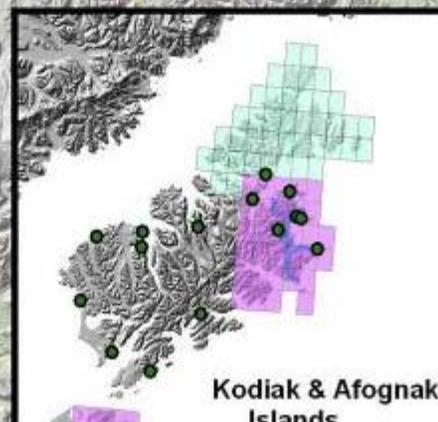
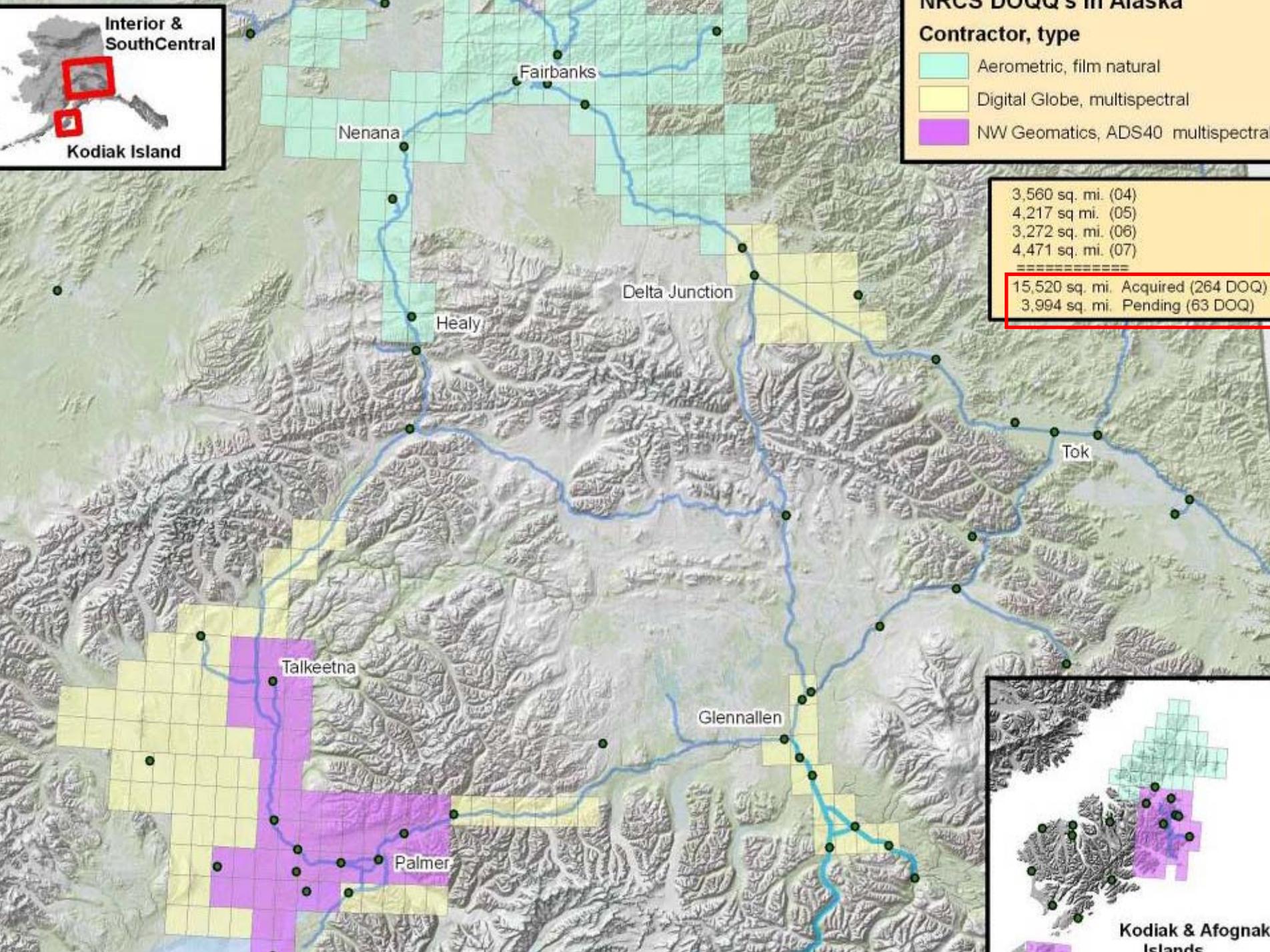
NRCS DOQQs in Alaska

Contractor, type

-  Aerometric, film natural
-  Digital Globe, multispectral
-  NW Geomatics, ADS40 multispectral



3,560 sq. mi. (04)
4,217 sq. mi. (05)
3,272 sq. mi. (06)
4,471 sq. mi. (07)
=====
15,520 sq. mi. Acquired (264 DOQ)
3,994 sq. mi. Pending (63 DOQ)



Orthoimagery Update



Satellite License Status from NRCS

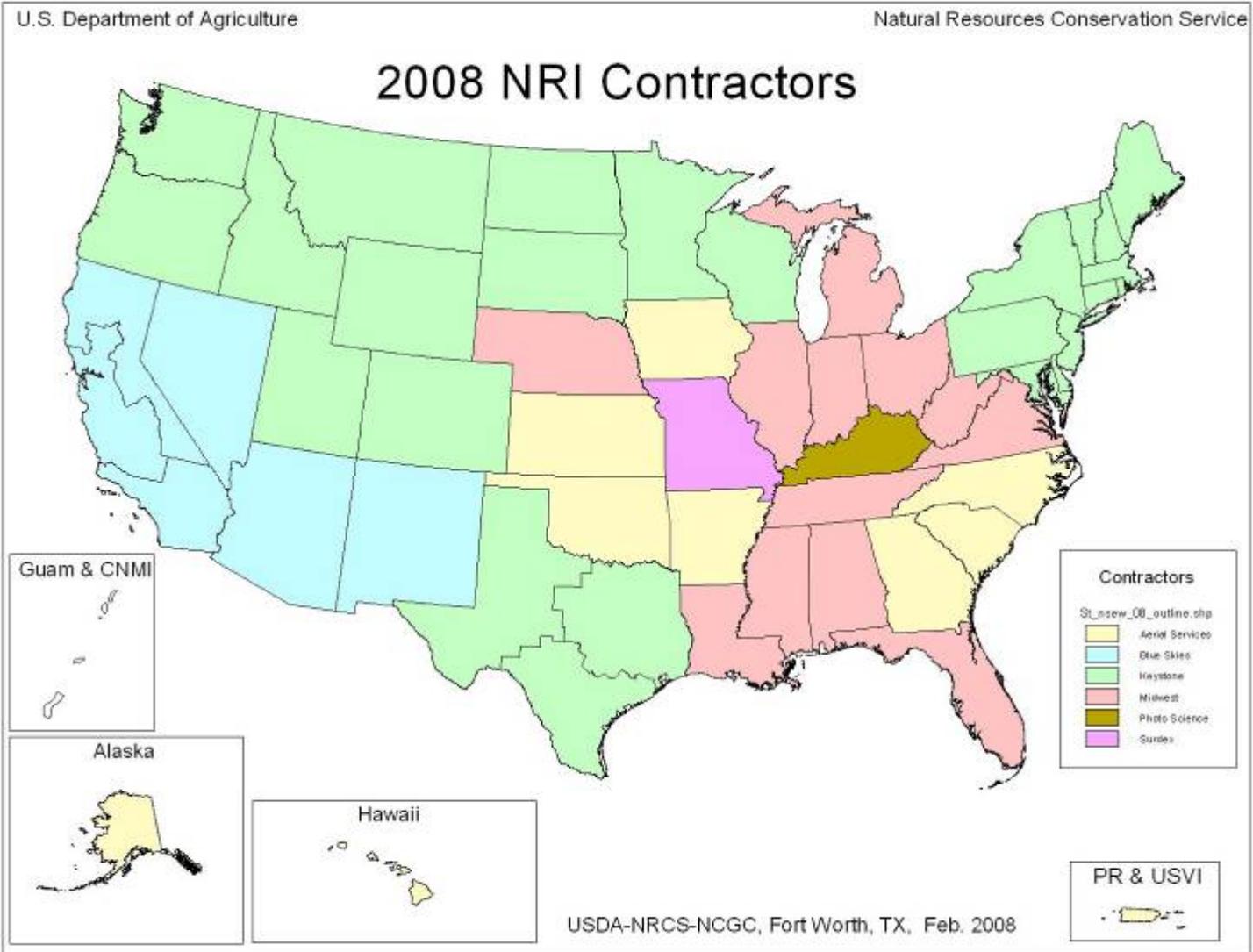
	Name	Status	License	Comment
1				
2	Amber Lake	Acquired 06	single	small area - cloud - not worth uplift
3	Anchorage	Acquired 06	single	Covers South Knik River that MSB would like
4	Aniak	Acquired 05	non-commercial	uplift by NRCS
5	Barrow	Acquired 06	single	June 16 2006, Some ice - otherwise nice image
6	Bethel Area	Acquired 05	non-commercial	uplift by NRCS
7	Chickaloon	Acquired 06	single	Subsequent coverage by DOQQ Buy in 04.
8	Chulitna	Acquired 06	single	uplift planned by SDMI
9	Cordova	Pending	single	
10	East Fbx	Pending	single	
11	Emmonak	Acquired 07	single	uplift planned by SDMI
12	Fort Yukon	Acquired 05	non-commercial	uplift by NRCS
13	Galena	Acquired 05	non-commercial	uplift by NRCS
14	Girdwood	Acquired 02	single	2002 scene - better coverage from Muni since
15	Haines	Acquired 05	non-commercial	uplift by NRCS
16	Healy_Denali	Acquired 04	non-commercial	uplift by NRCS
17	Homer	Acquired 07	single	uplift planned by SDMI
18	Juneau Area	Acquired 05	non-commercial	uplift by NRCS
19	Ketchikan	Acquired 04	non-commercial	uplift by NRCS
20	Klawock	Acquired 04	non-commercial	uplift by NRCS
21	Kotzebue	Pending	single	
22	McGrath	Acquired 02	non-commercial	uplift by NRCS
23	Mountain Village	Acquired 06	single	uplift planned by SDMI
24	Mouth of Little Su	Acquired 02	single	Small scene - may not be worth uplift
25	Nome	Acquired 05	non-commercial	uplift by NRCS
26	Petersburg	Acquired 05	non-commercial	uplift by NRCS
27	Pilot Station	Acquired 05	non-commercial	uplift by NRCS
28	Saint Marys	Pending	single	
29	Saint Paul	Acquired 06	single	June 2006 - Covered earlier in 02 or 03 by USGS
30	Salcha	Pending	single	
31	Seward	Acquired 05	non-commercial	uplift by NRCS
32	Sitka	Acquired 05	non-commercial	uplift by NRCS

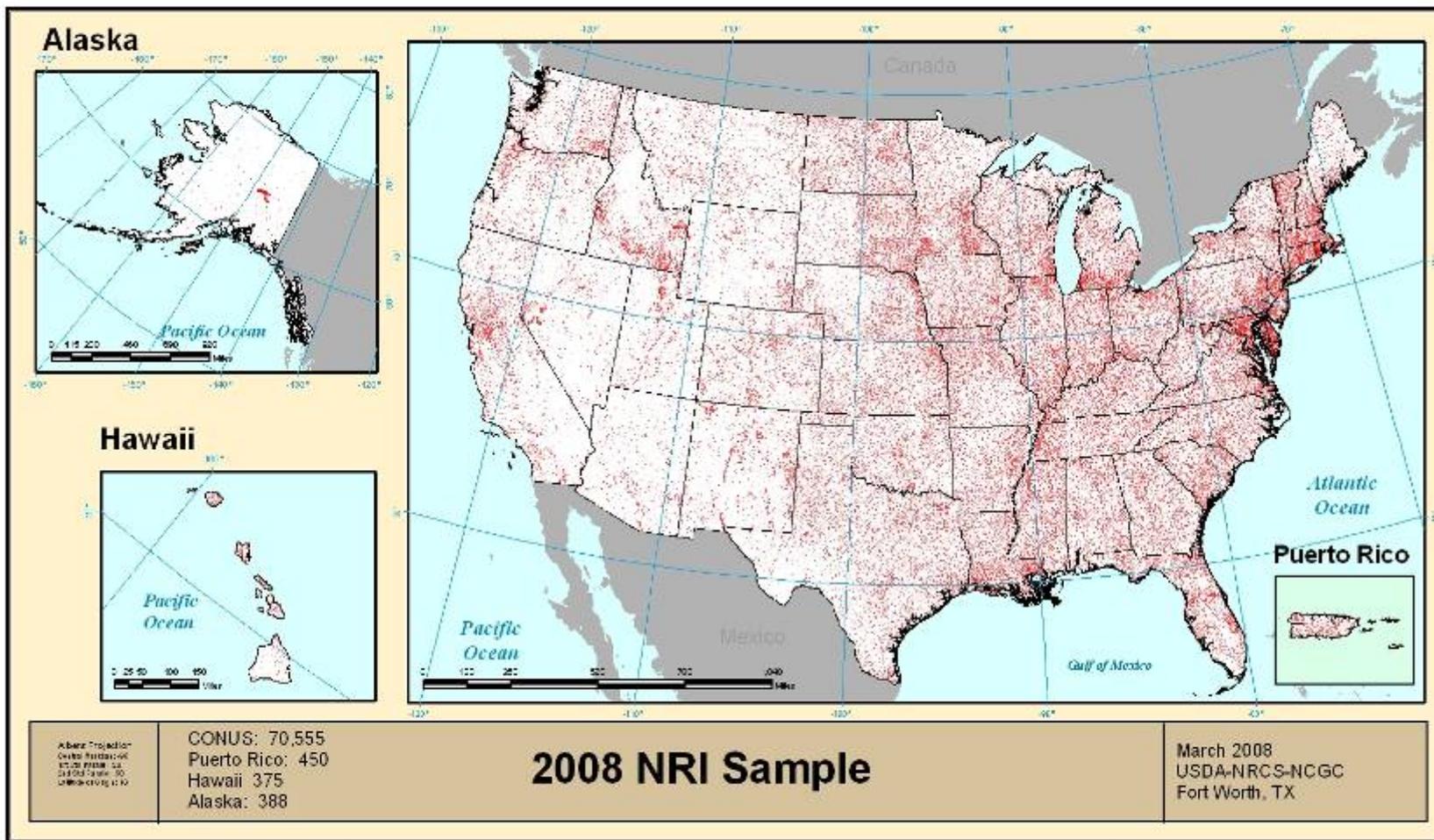
NRI Photography

- **USDA Small Area Photography Contract**
 - **5-yr IDIQ contract awarded in 2005**
 - **Flying, scanning, and ortho options**

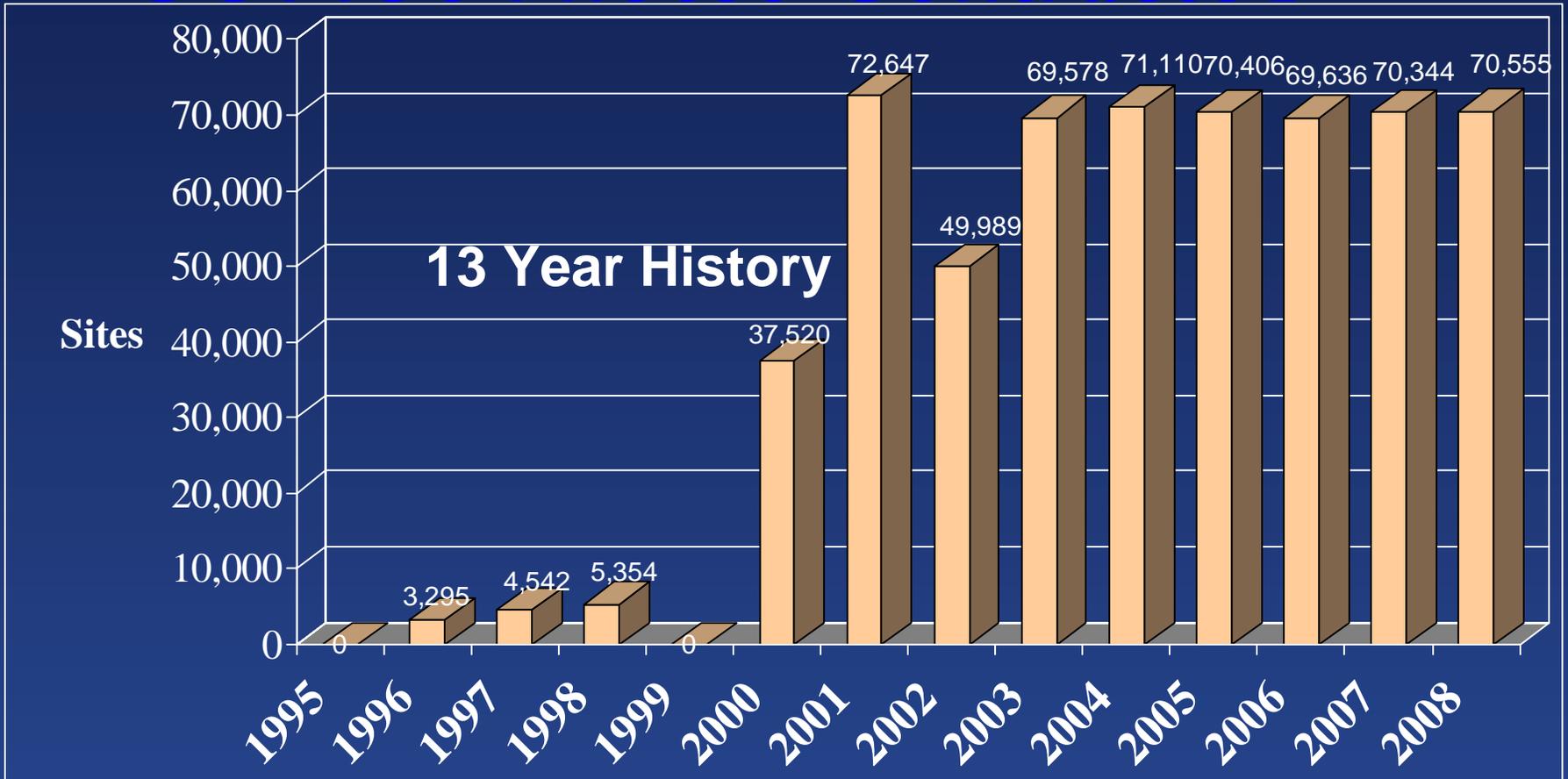
National Resources Inventory

- The NRI provides nationally consistent statistical data on the status, condition and trends of the non-Federal land of the United States.
 - Annual cycle beginning in 2003
 - Five year cycles in
 - 1982, 1987, 1992 and 1997
- 300,000 samples of 40 to 640 acres (segments) – most usual size 160 acres
- Typically 3 points per segment
- 70,000 sites collected per year with aerial mapping cameras
- 1:7,920 and 1:12,000 scale, natural color film



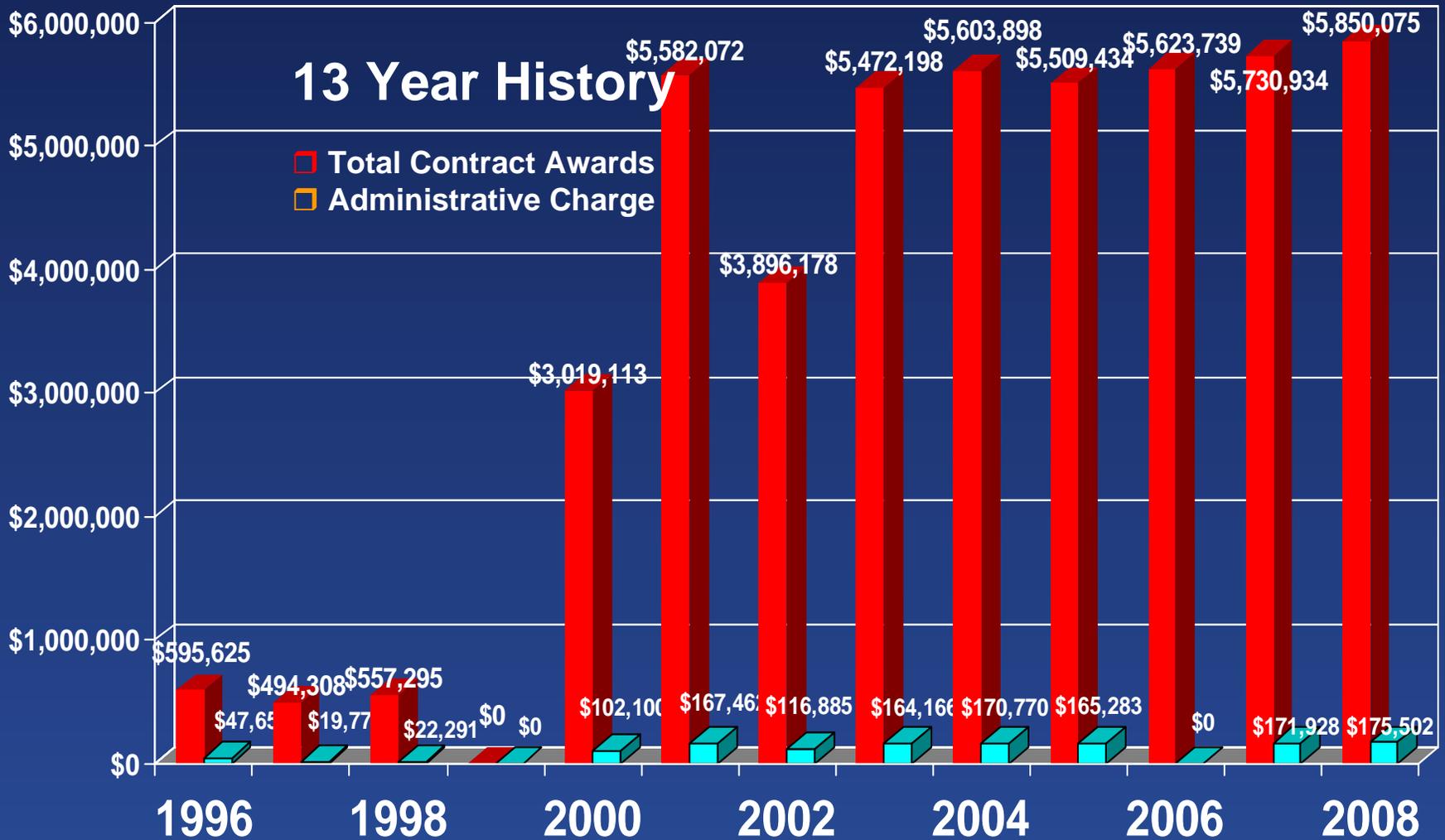


CONUS Photos Contracted

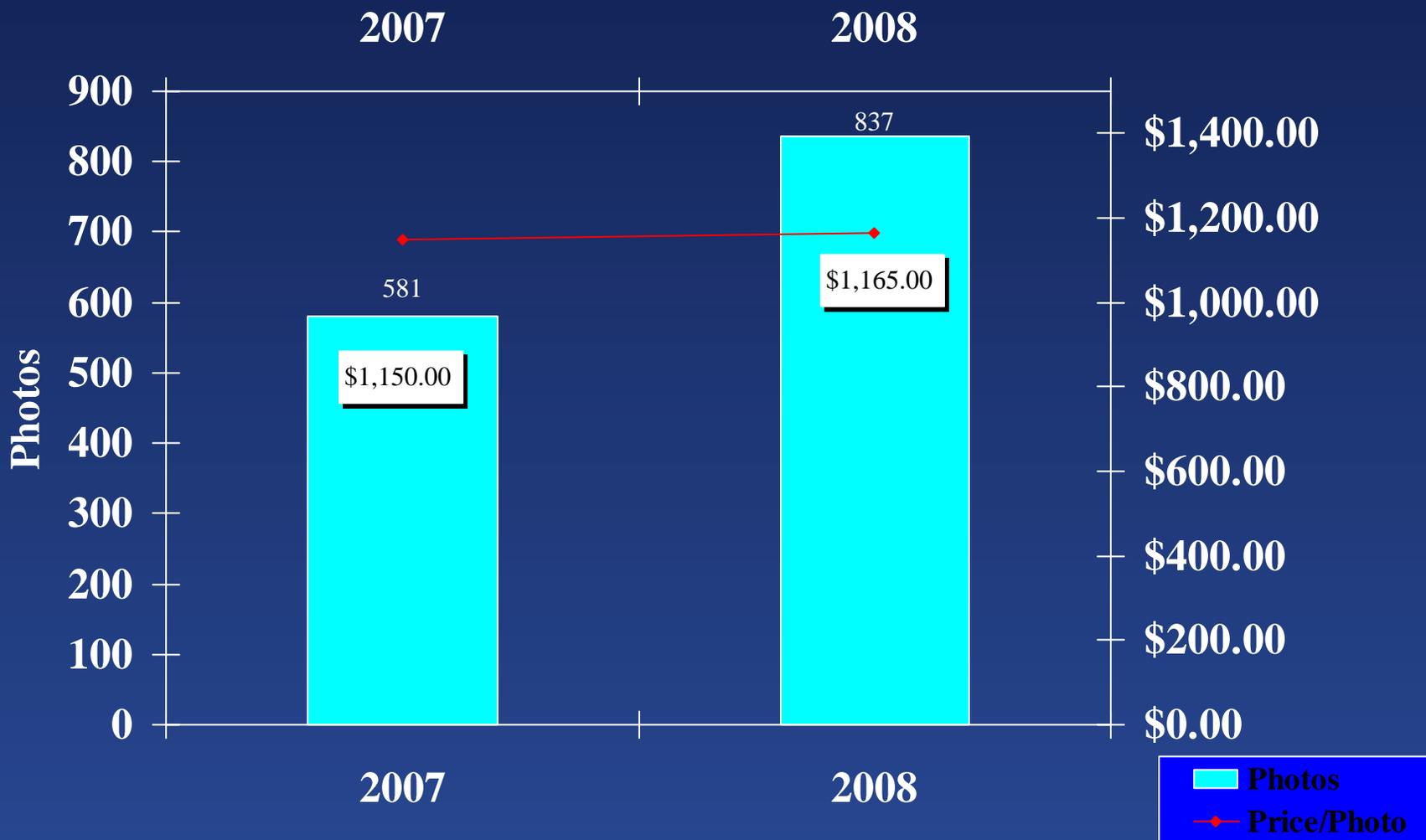


Includes NRI, WRP, and CEAP when contracted with NRI.

NRI CONUS Photo Contract Awards

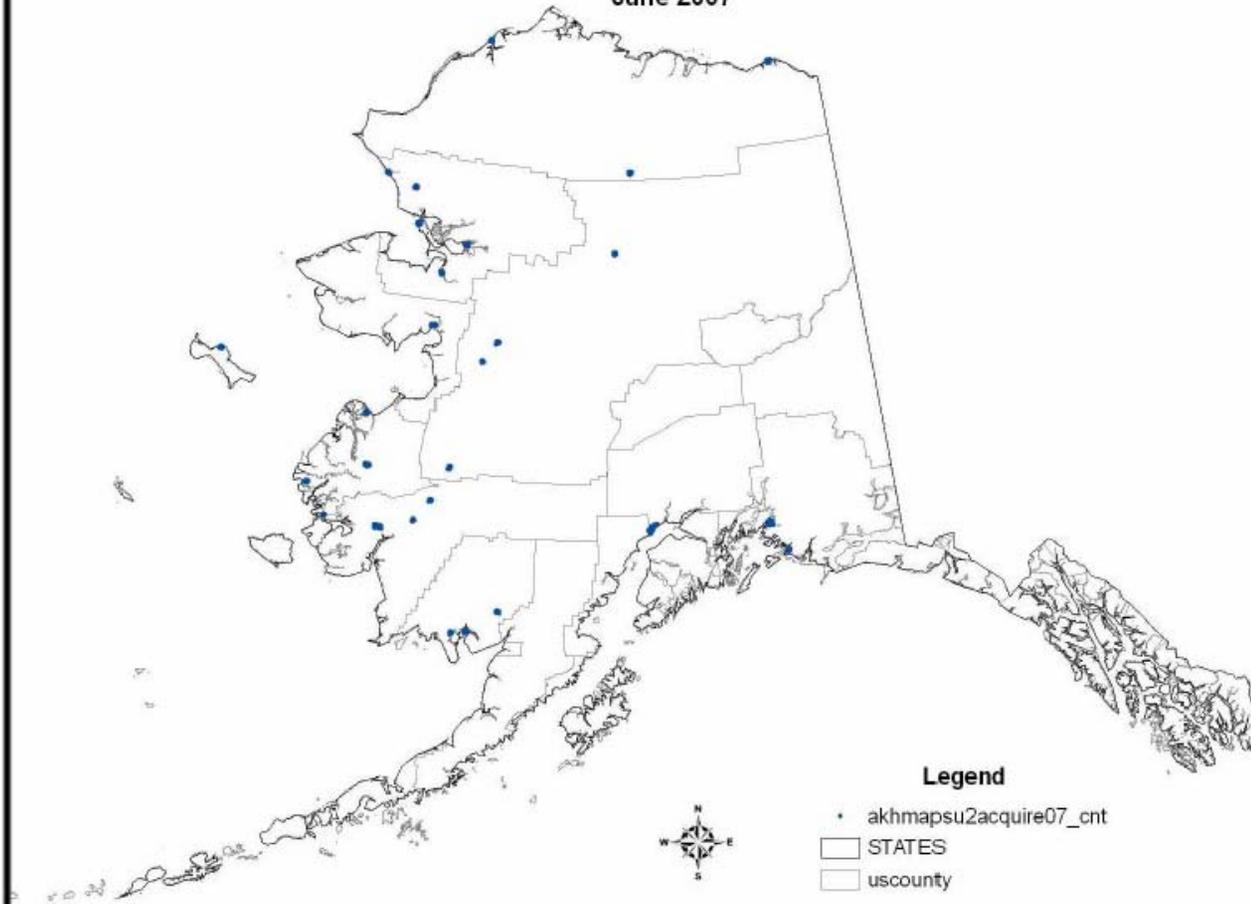


Alaska 2007 - 2008



Alaska 2007 NRI 1:7,920 Sites

June 2007

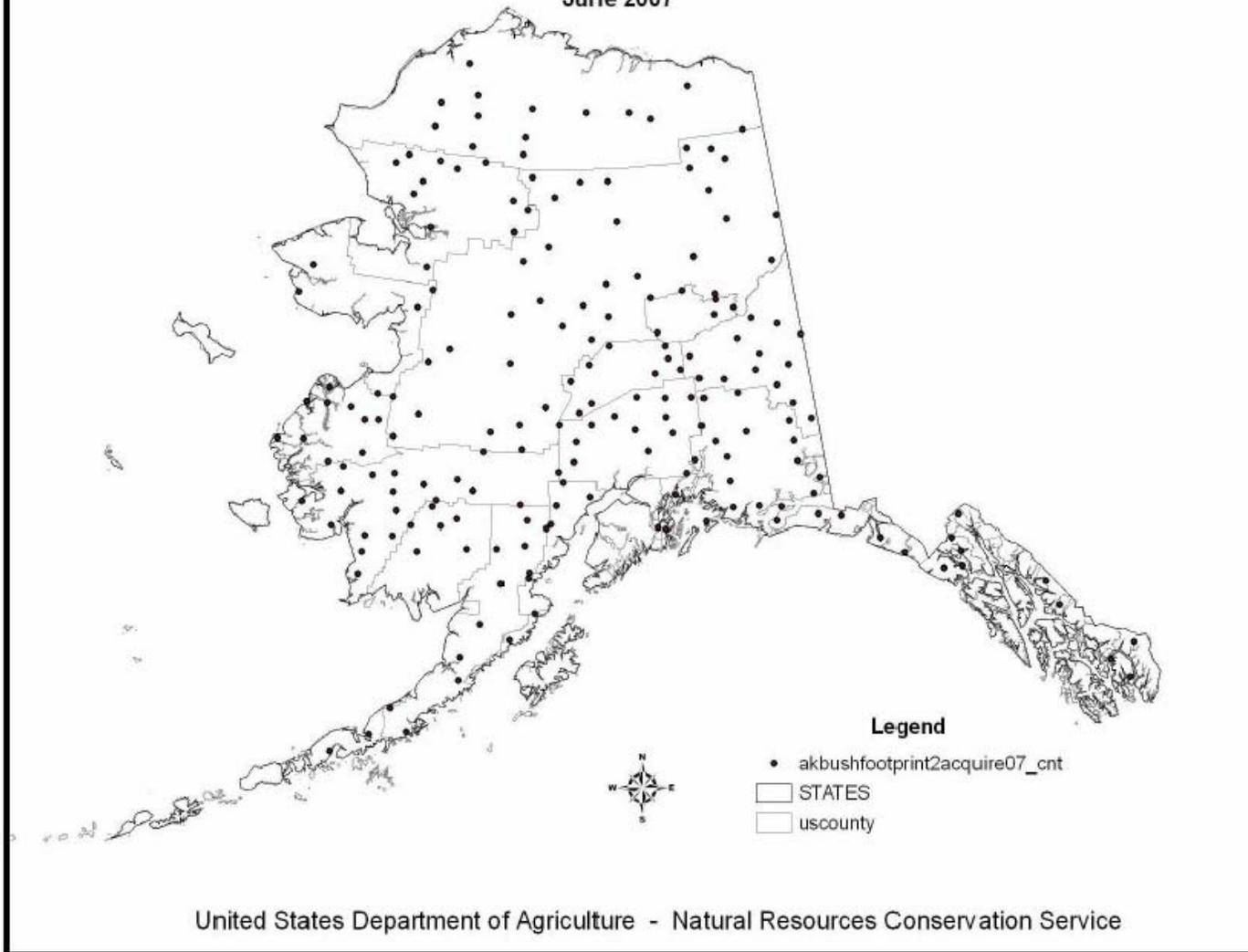


384 contracted

Status on
10/17/2007
334 flown

Alaska 2007 1:40,000 (Bush) Sites

June 2007

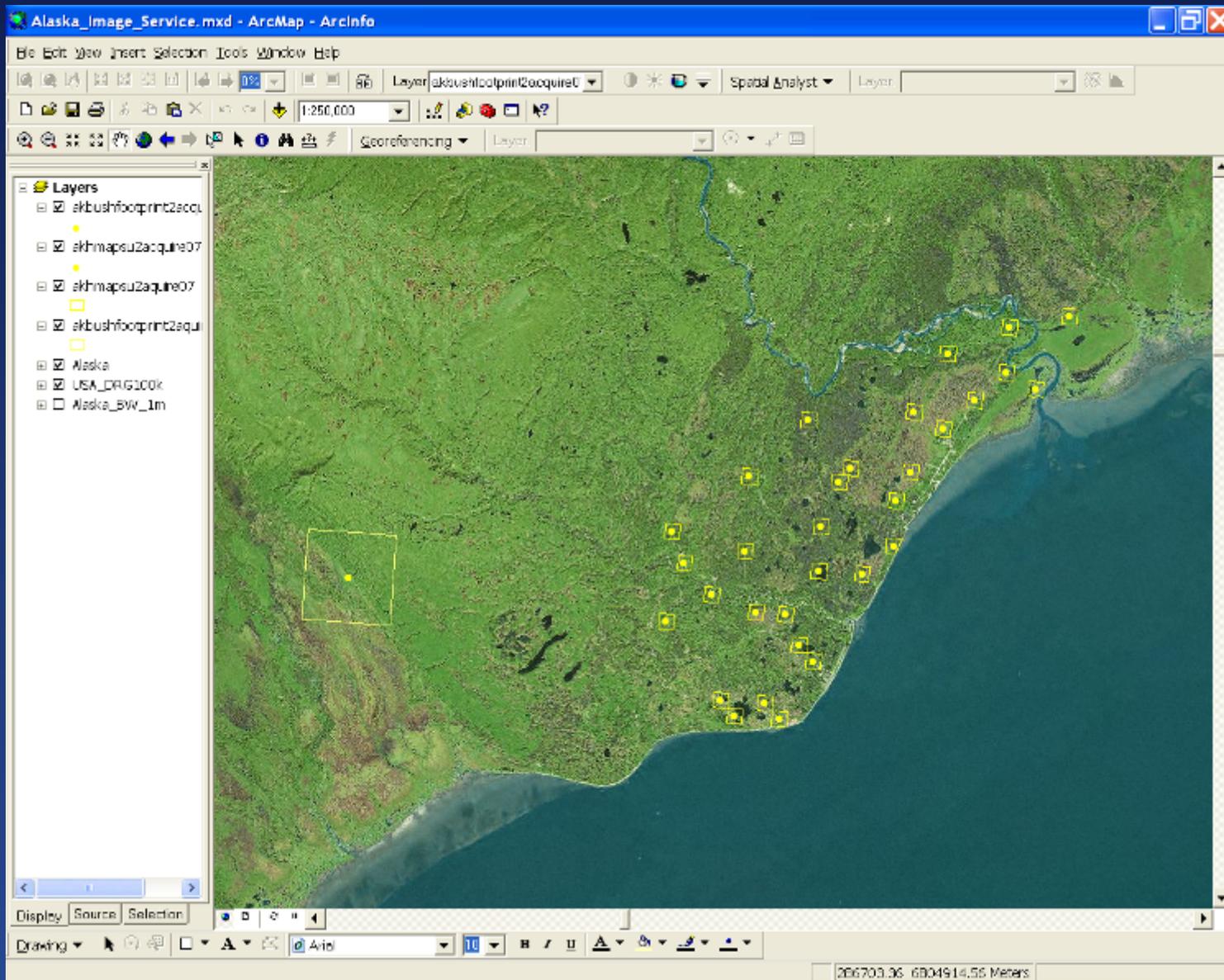


197 contracted

Status on
10/17/2007
72 flown

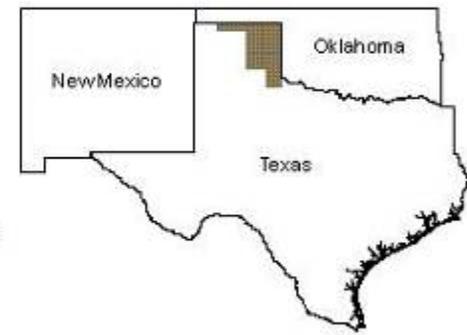
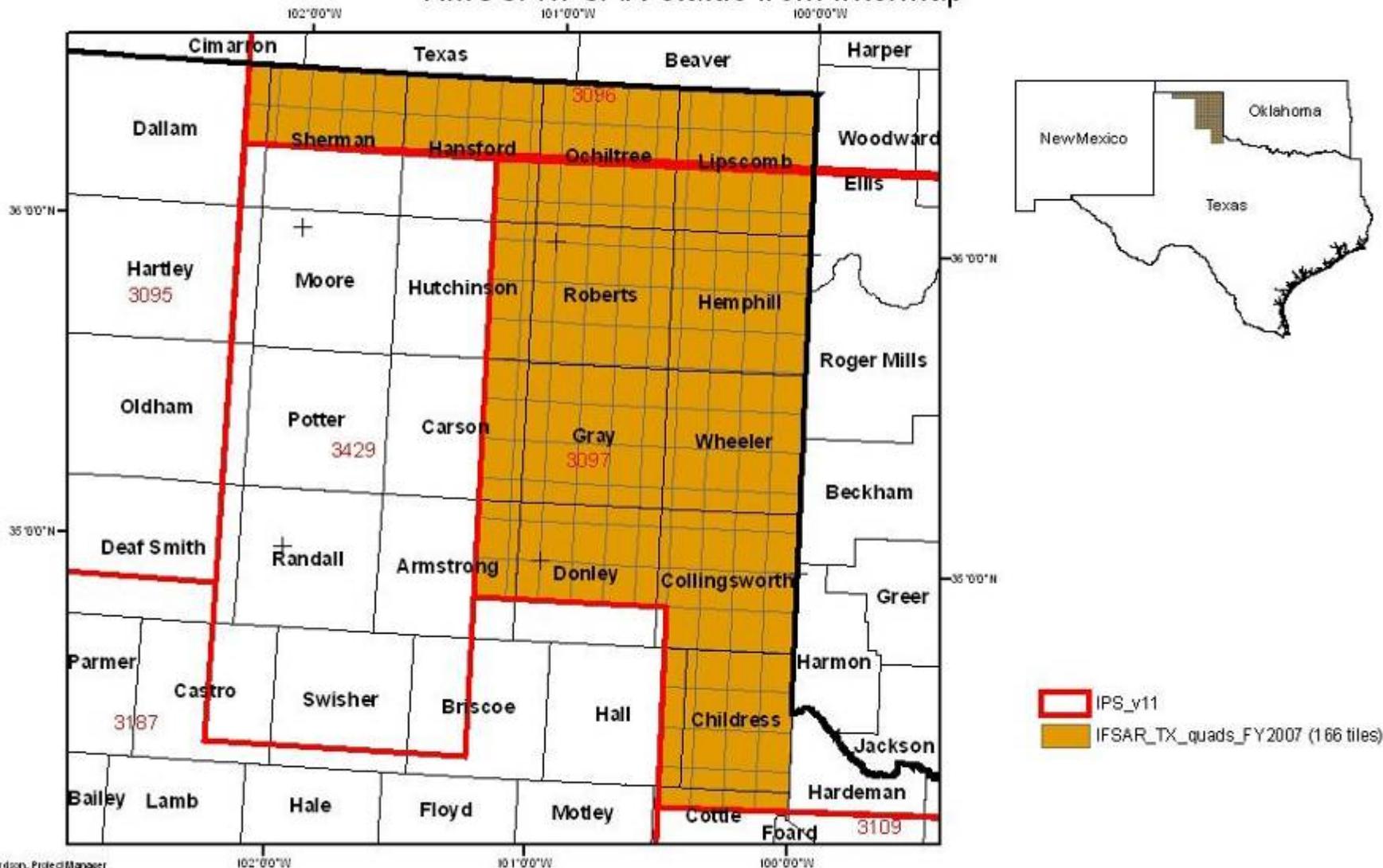
Alaska - ASI

- \$1,093 per photo
- \$12 per scan
- \$45 per ortho
- Total \$1,150 per site

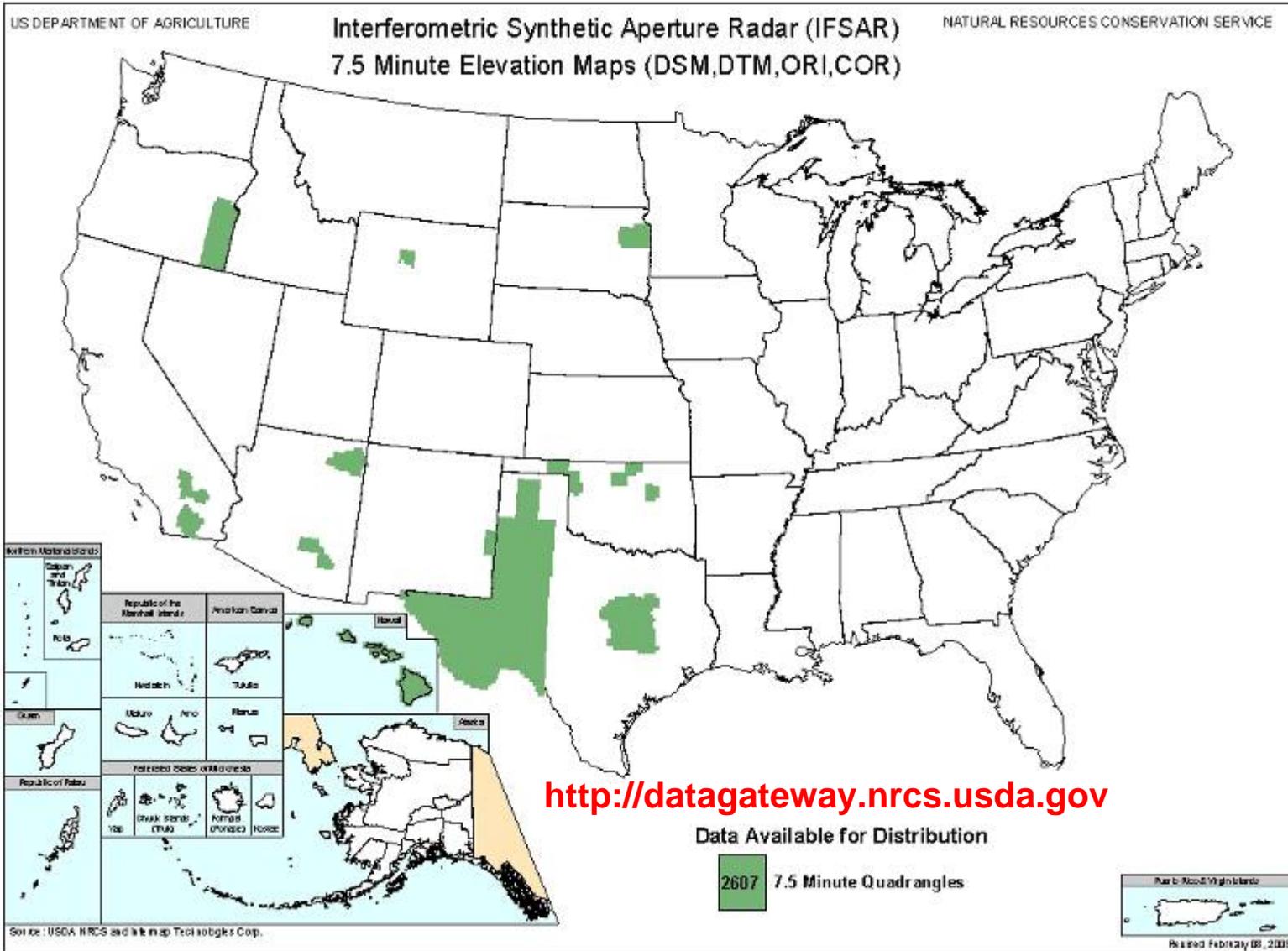


**Alaska
Image
Service**

NMUSA IFSAR status from Intermap



DATE: 8/19/2007
 By: Richardson, Project Manager
 Heritage Technologies, Corp.
 USDA NRCS IFSAR Program Progress Report



NCGC has a partnership with EROS to share the NED via ArcSDE Oracle Table Spaces on a bi-annual basis. The 1 & 1/3 arc second data service went live via the Geospatial Data Gateway April 2007. The gateway team is in the process of adding the 1/9 arc second.

Address <http://ned.usgs.gov/>

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science for a changing world

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National Elevation Dataset

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The USGS National Elevation Dataset (NED) has been developed by merging the highest-resolution, best quality elevation data available across the United States into a seamless raster format. NED is the result of the maturation of the USGS effort to provide 1:24,000-scale Digital Elevation Model (DEM) data for the conterminous US and 1:63,360-scale DEM data for Alaska. The dataset provides seamless coverage of the United States, HI, AK, and the island territories. NED has a consistent projection (Geographic), resolution (1 arc second), and elevation units (meters). The horizontal datum is NAD83, except for AK, which is NAD27. The vertical datum is NAVD88, except for AK, which is NAVD29. NED is a living dataset that is updated bimonthly to incorporate the "best available" DEM data. As more 1/3 arc second (10m) data covers the US, then this will also be a seamless dataset.



[The Seamless Data Distribution System \(SDDS\)](#) offers seamless data for a user-defined area, in a variety of formats, for online download or media delivery.

[Historic Digital Elevation Models \(DEMs\)](#) are now available.

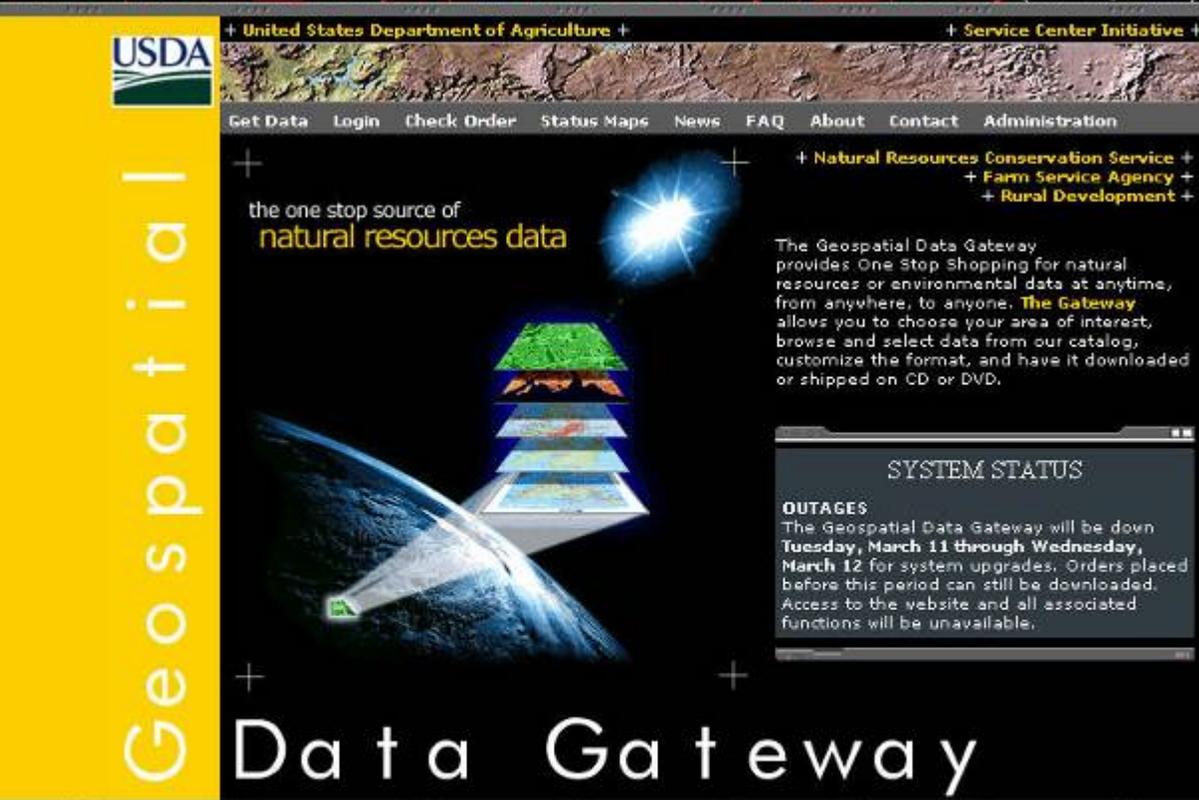
Accessibility FOIA Privacy Policies and Notices

[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)
URL: <http://ned.usgs.gov>
Page Contact Information: webmapping@usgs.gov
Page Last Modified: August 2006

[USA.gov](#)  

<http://datagateway.nrcs.usda.gov>

Internet Explorer users must check java options and use JRE 1.5 (or higher) before proceeding. (see FAQ item 2)



The screenshot shows the Geospatial Data Gateway website. At the top, there are navigation links: "Get Data", "Login", "Check Order", "Status Maps", "News", "FAQ", "About", "Contact", and "Administration". Below this is a header with the USDA logo and the text "the one stop source of natural resources data". A central graphic features a satellite view of Earth with a beam of light illuminating a stack of data layers. To the right, there is a "SYSTEM STATUS" section with a warning about outages: "The Geospatial Data Gateway will be down Tuesday, March 11 through Wednesday, March 12 for system upgrades. Orders placed before this period can still be downloaded. Access to the website and all associated functions will be unavailable." The main title "Geospatial Data Gateway" is displayed in large, stylized letters at the bottom of the page.

Minimum Requirements: Microsoft Internet Explorer 5.5 or Netscape Communicator 4.76 with Java enabled.

WARNING: This is a United States Department of Agriculture computer system, which may be accessed and used only for official Government business (or as otherwise permitted by regulation) by authorized personnel. Unauthorized access or use of this computer system may subject violators to criminal, civil, and/or administrative action. All information on this computer system may be intercepted, recorded, read, copied, and disclosed by and to authorized personnel for official purposes, including criminal investigations. Access or use of this computer system by any person, whether authorized or unauthorized, constitutes consent to these terms.

NED 1 and 1/3 arc second data services went live 16 April 2007.
NED 1/9 arc second data services went live 28 April 2008.

We would like to refresh Gateway data services from EROS every 6 months.

IFSAR data service is available only to NRCS & FSA. We distribute DTM, DSM, ORI & COR files in geotiff format

We current do not have LIDAR data services available from Gateway.

We have shared two LIDAR projects with EROS for incorporation into NED and also post the LAS at CLICK:

- Sallisaw, OK
- Essex, VT

How are the NED elevation on the Geospatial Data Gateway different from the USGS data services at <http://seamless.usgs.gov> ?

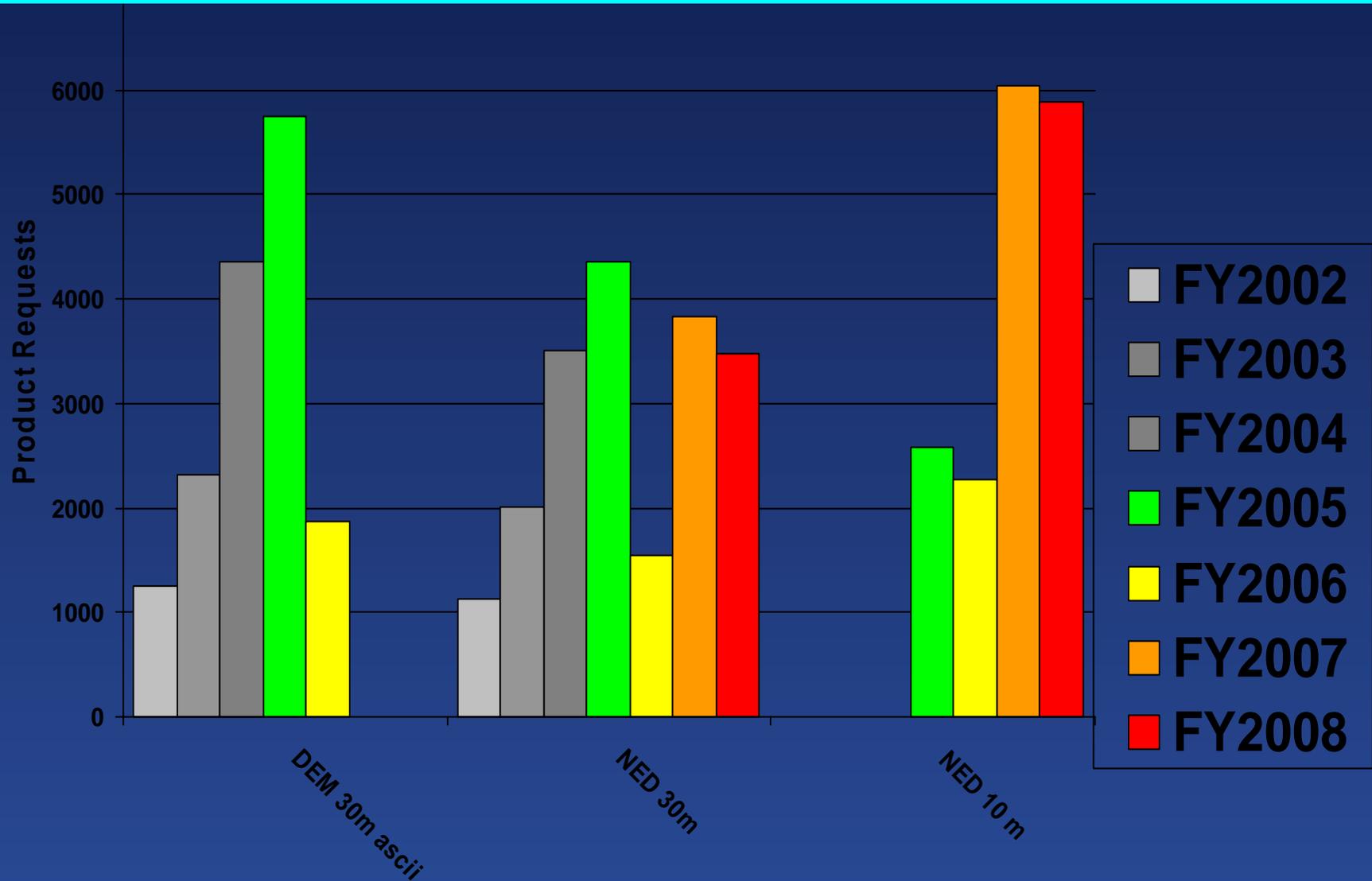
- NRCS has elected to *ONLY* serve NED 30 meter data in a UTM projection and in one degree quadrangles.
- NRCS has elected to *ONLY* serve NED 10 meter data which is 10 meter or better and not NED 10 which was resampled from 30 meter. NRCS also serves the maps in a UTM projection by 7.5' Quadtile.

Format: GeoTIFF

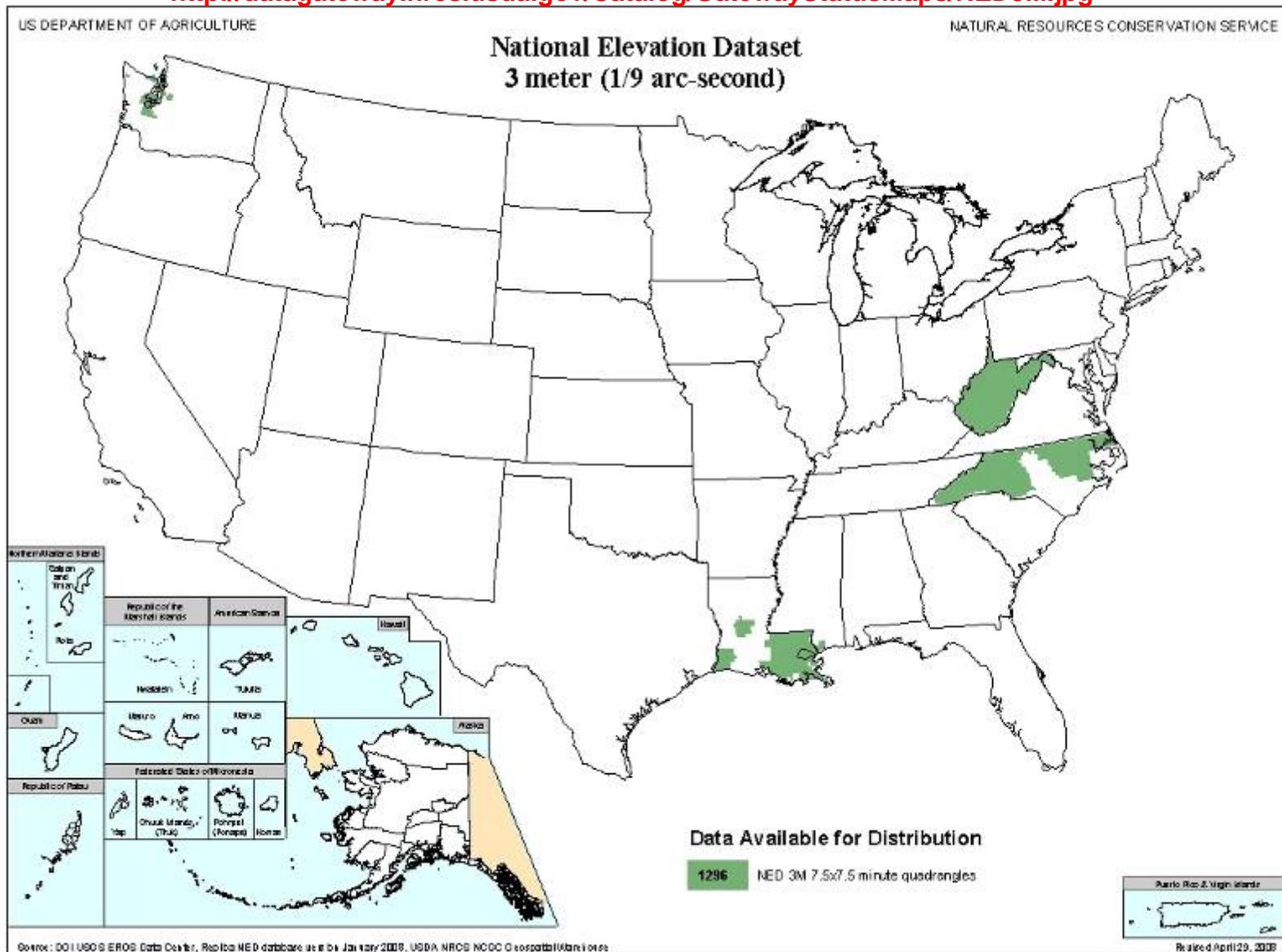
**Spatial Reference Information: Universal Transverse Mercator,
North American Datum 1983 (1927 for AK)**

Note: Currently NRCS does not restrict NED elevation data products from Gateway to non USDA customers. FTP is free for downloading. There is a charge for CD-ROM and DVD. Gateway has delivered 52,189 elevation products during FY2002-2008

USGS Elevation data served via Gateway



<http://datagateway.nrcs.usda.gov/Catalog/GatewayStatusMaps/NED3M.jpg>



USDA

United States Department of Agriculture
Natural Resources Conservation Service



**NDOP – Olympia, WA
Natural Resources Conservation Service (NRCS)
“NRCS Geospatial Technologies”**

Tommie Parham

May 8, 2008

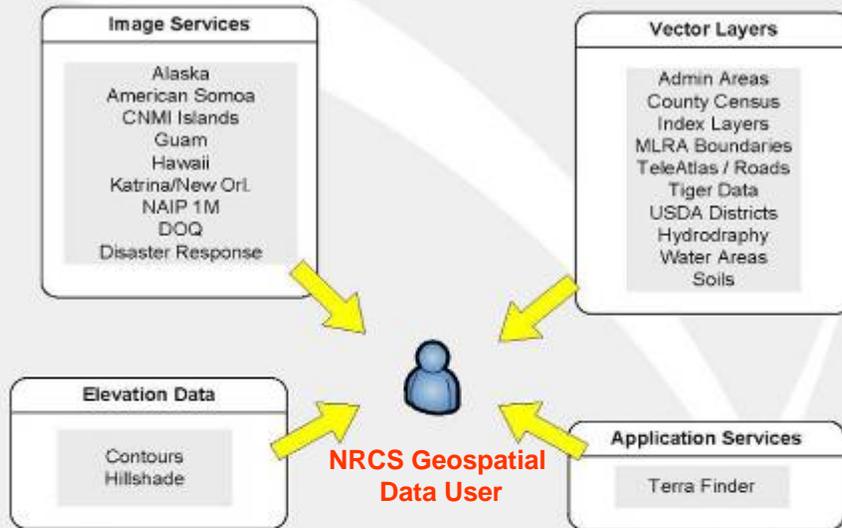
- NCGC Mission & Vision Handout
- NRCS-NCGC Imagery for Conservation Mission & Programs
- NRCS Geospatial Web and Map Services
- NRCS Disaster Response
- NRCS National Geospatial Report Update
- NCGC Geospatial Data Integrators
- NRCS Elevation Data Evaluations

- NRCS SUPPORTS NAIP 3 YEAR REFRESH CYCLE
- NRCS COMMITTED TO BE FULL NAIP PARTNER FY09 +
- NRCS LEVERAGING DATA FUNDING ACROSS ENTERPRISE
- NRCS NEED STABLE PRICING 1.0 TO 1.4 MILLIONS
- IMAGERY IS A CRITICAL DATA LAYER FOR NRCS
- NRCS INTERESTED IN ENTERPRISE LICENSE FOR IMAGERY PROCESSING SOFTWARE

Geospatial Data Delivery



NCGC Integrated Geospatial Data and Imagery Web Services



Geospatial Web Map Services (WMS) can provide many Geospatial Data Layers (Raster and Vector) to NRCS Geospatial Data users for their Business Applications needs.

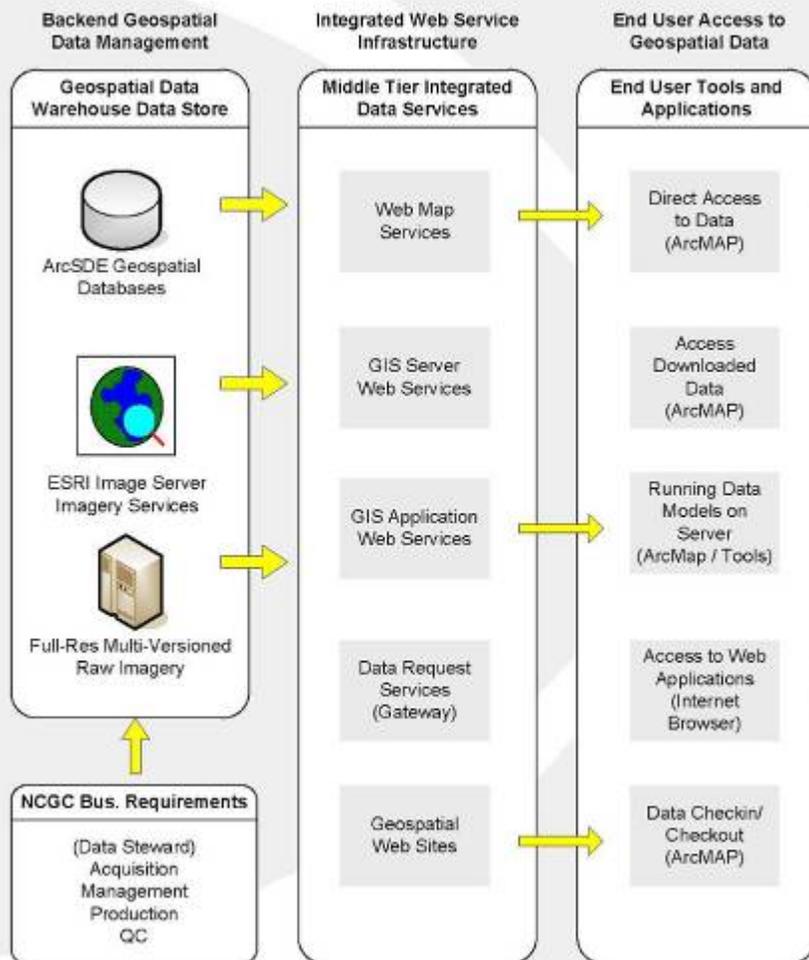
The NCGC is developing many WMS for use by NRCS Program and Scientific Functions such as...

- 1) Conservation Planning
- 2) Soil Survey
- 3) Natural Resource Inventory and Assessment
- 4) Disaster Response
- 5) Engineering Applications

Geospatial Data Delivery



NCGC Integrated Geospatial Data and Imagery Web Services



Geospatial Web Map Services can be created by...

- ArcSDE
- ESRI-Imageserver

Geospatial Data from a Web Map Service can be delivered via...

- Web Site
- ArcGIS Server
- ArcIMS
- ESRI-Imageserver

NCGC Integrated Geospatial Data and Imagery Web Services Document (PDF File) will be available for review.



Agency Approved Data is processed into....

Geospatial Mile Markers

Gateway
Delivery
2001

GIS Enterprise
License
2001

Geospatial Data
Warehouse
2002

Telecom
Enhancement
2003

NCGC Web Map
Services
2005

Geodatabases
ArcSDE
2006

Web Soil
Survey
2006

NRCS Geospatial
Framework
2007



Next
Geospatial
Strategy

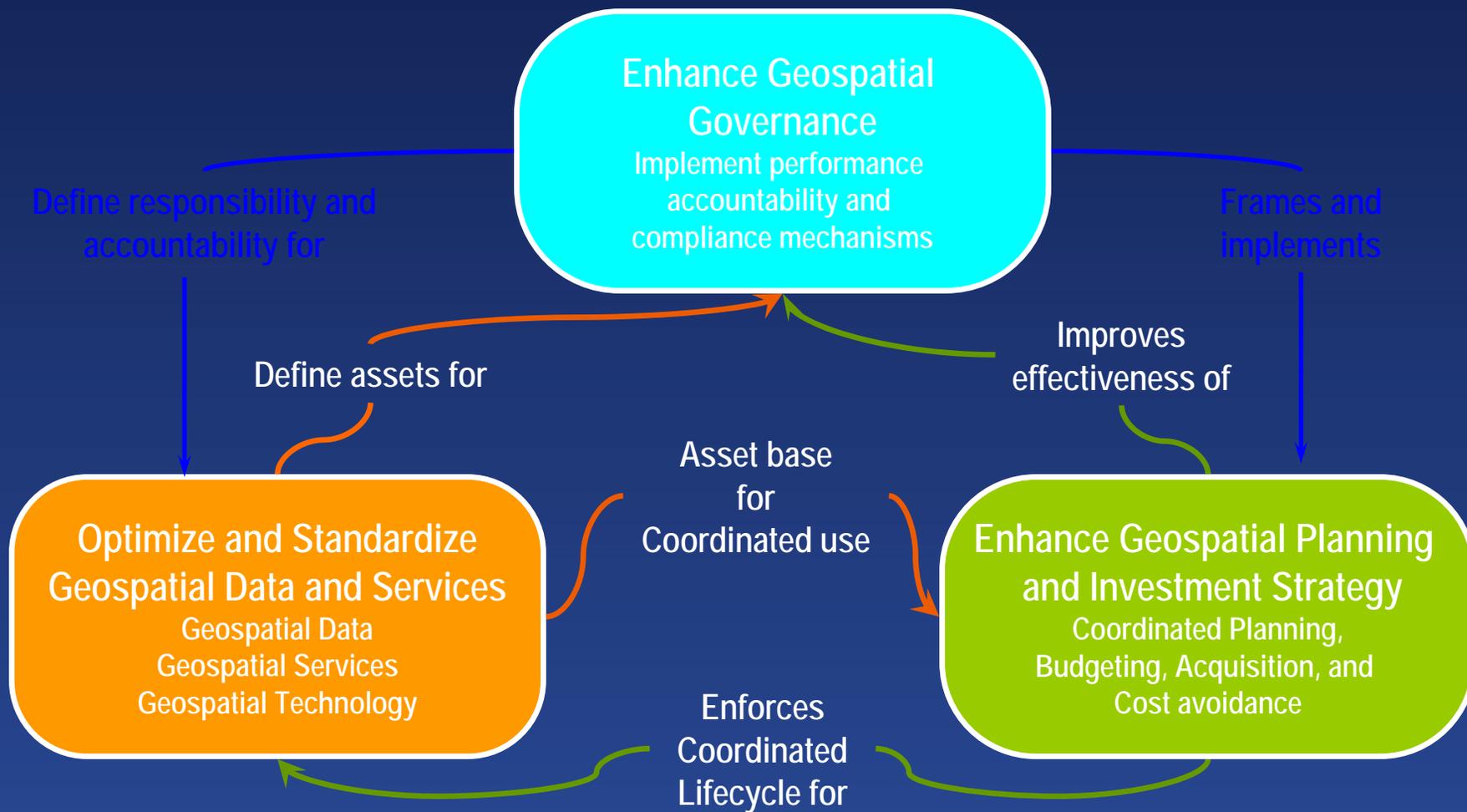
NRCS Geospatial Business Vision

- Supports the NRCS Business Lines
 - Conservation planning and technical consultation
 - Conservation implementation
 - Natural resource inventory and assessment
 - Natural resource technology transfer
 - Financial assistance
- Follows the model for the Federal Geospatial Line of Business (GLOB)
- In Sync with OMB directives for aligning and managing Federal geospatial services and data planning activities

Leveraging of NRCS Corporate Geospatial Assets

- Supports Improved Conservation Planning, Resource Decisions, & Technical Consultations
- Critical Data
 - Soils (Web Soil Survey)
 - Climate
 - Imagery
 - Other State Centric Layers
 - Elevation (LIDAR & IFSAR)
 - Cultural
 - Demographic
 - NRI & Monitoring

NRCS Geospatial Outcomes



Geospatially Enabling the Common Desktop & Mobile Offices



Optimize and Standardize
Geospatial Data, Technology
and Services

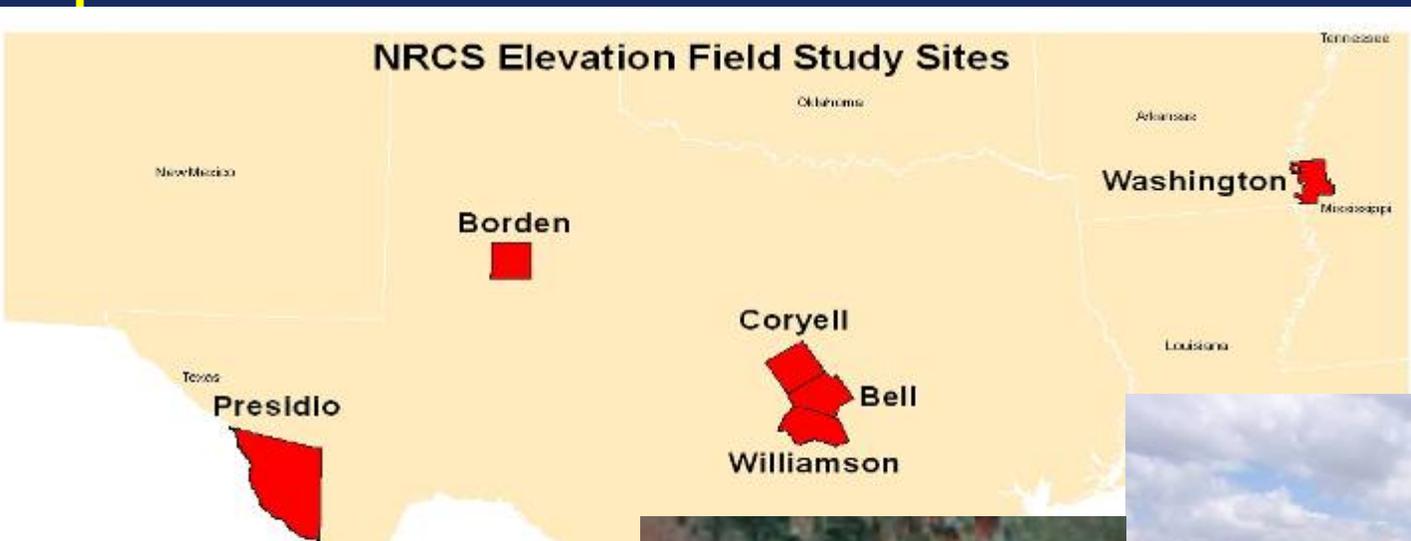
Component of NRCS
Geospatial Strategy

10,000+ USDA personnel on the landscape every day, using GPS to provide program assistance, service, and technical support to USDA customers and partners

- Safety-of-Life operations –Fire, Snow Survey
- Administration of the Farm Bill
- Conservation Planning and Application
- Natural and Cultural Resource Data Collection, Inventorying and Monitoring
- Landscape Characterization & Engineering Applications
- Soil Mapping



- Comparisons - IFSAR, LIDAR, & HA GPS
- Study areas - level terrain and low veg plus areas with non-ideal conditions



ArcGIS Image Server Processing

- **Enhancing imagery appearance**
 - Stretching
 - Pan sharpen
 - Convolution filter
 - Trend
- **Band organization**
 - Extract bands
 - Stack bands
- **Applying algebra to pixels and bands**
 - Classify pixel
 - Image algebra
 - NDVI
 - Convert pixel type
- **Changing output color**
 - Color map
 - Gray scale
 - Special matrix
 - Trend
- **Working with elevation**
 - Visualize elevation
- **Geometric processing**
 - Ground to image transforms
 - Affine, projective, warp grid
 - Orthorectification (optional extension)
- **Mosaicking methods**
 - By attribute (e.g., date or quality)
 - Closest to nadir (i.e., most top down)
 - By viewpoint (e.g., from south or west)
 - Lock raster (e.g., to a specified scene)
 - Seamline (optional extension)

Point of Contact

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- Steve Nechero Cartographer, NCGC
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- Wayne Griffin, GTB Branch Chief, NCGC
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Geographic

Photo Lab

Cartography

Services

Photogrammetry



National Cartography & Geospatial Center



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NCGC Home Page - <http://www.ncgc.nrcs.usda.gov>