



**GOVERNMENT APPLICATIONS
TASK FORCE (GATF)**

**PILOT PROJECT SUMMARY
October 1996**

GATF Program Background



- MEDEA science investigations demonstrated applicability of National Technical Means (NTM) to civil issues
- The Government Applications Task Force (GATF) formed in FY94 recommended pilot project areas
- The Intelligence Community (IC) funded eight GATF pilot projects in FY95



GATF Mission Statement



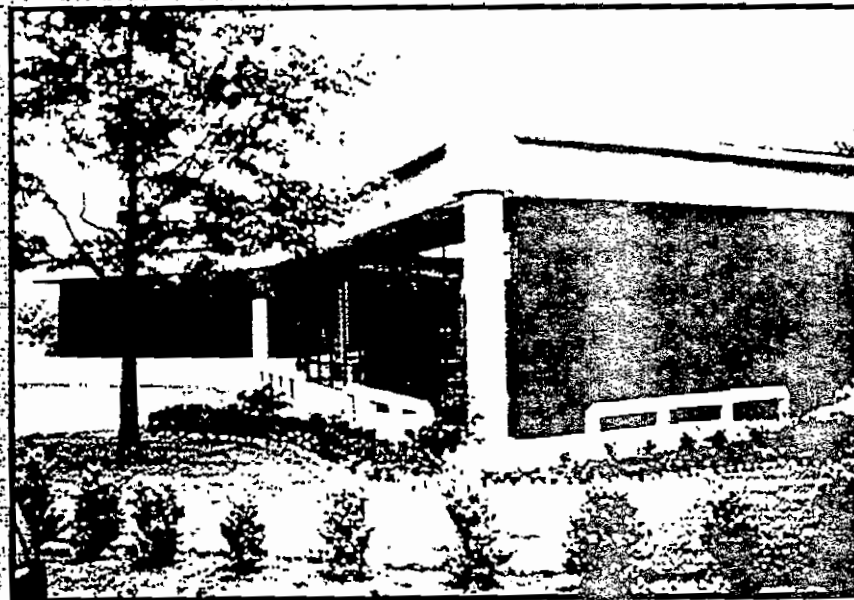
- Recommend cooperatively managed civil agency pilot projects that address operational use of national imagery assets in support of "Real World" civil missions
- Measure success by the ability to integrate all aspects of tasking, analyzing and storing national classified imagery in support of civil programs
- Implement changes as appropriate



GATF Process



- Civil Agency identifies unique requirement that can be satisfied by classified imagery systems
- Classified data requested by Civil Applications Committee (CAC) and transferred to the USGS Advanced Systems Center (ASC) in Reston, VA
- USGS ASC and Rocky Mountain Mapping Center (RMC) contain facilities for analysis of classified data and the creation of classified and unclassified derived products for field use



GATF PILOT PROJECTS



DOI	Wetlands Mapping
USDA	Estimation of Crop Yield
NOAA	Coastal Management
USCG	Bilge Oil Monitoring
DOE	Waste Site Characterization
EPA	Stream Remediation
DOD	Habitat Characterization
FEMA	Floodplain Mapping

Alaska Wetlands Survey

Department of Interior

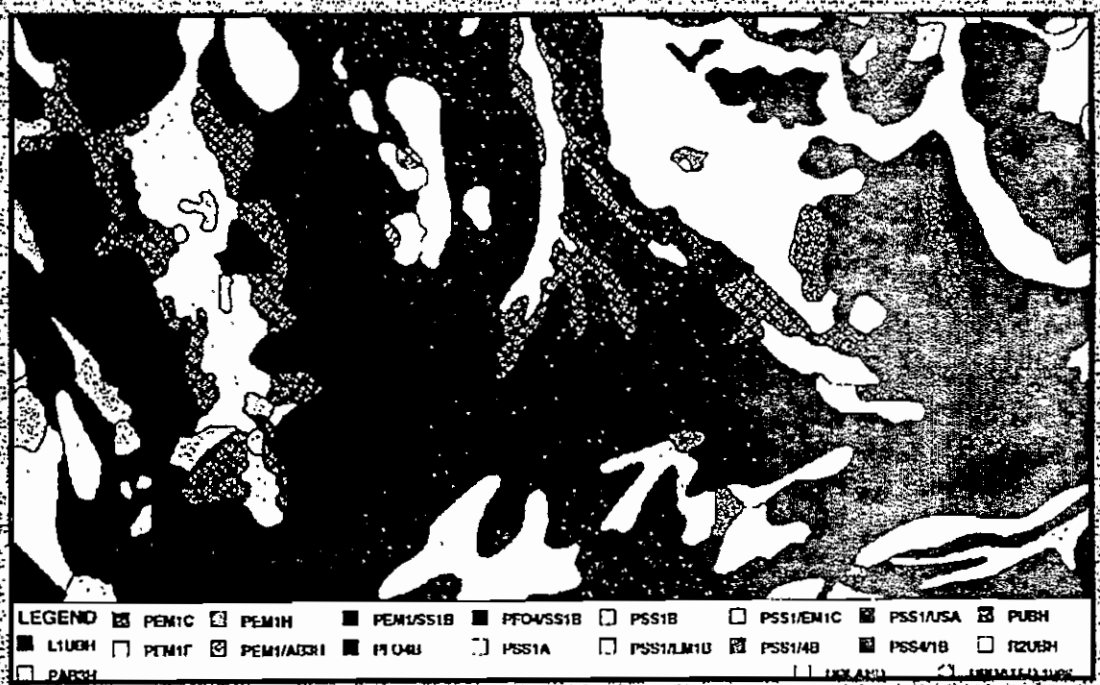


OBJECTIVE

- Improve evaluations of Alaskan wetlands areas and riparian habitats which were previously not possible due to the lack of timely, high resolution data

RESULTS

- Demonstrated utility of national systems to accurately identify and characterize wetlands in Alaska
- Unclassified derived products incorporated into National Wetlands Inventory



National Wetlands Inventory delineation and classification with updates for the Gulkana River region

Natural Resource and Crop Production Inventories

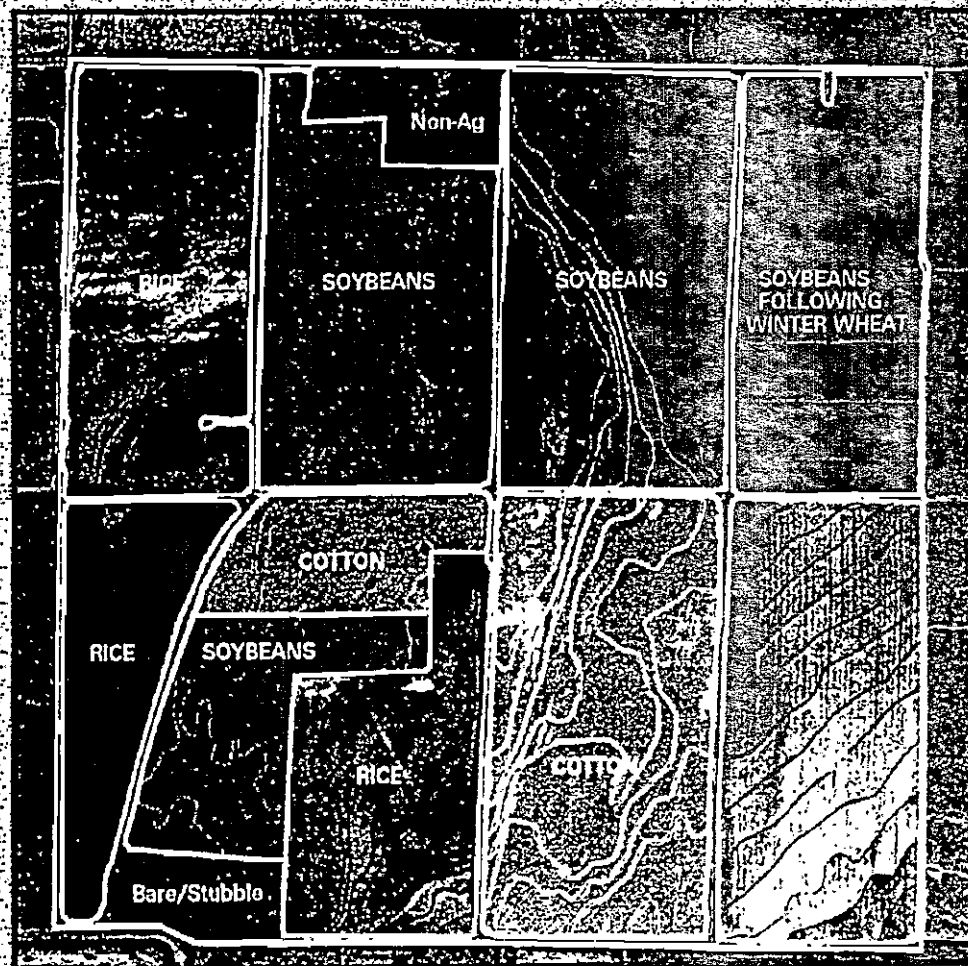
U.S. Department of Agriculture

OBJECTIVE

- Utilize national systems to support crop production estimates and natural resource inventories

RESULTS

- Used national systems to accurately characterize crop type, crop acreage, crop discrimination, row spacing, and plant population
- Reduced requirement for ground survey



Two meter multispectral data collected with a Daedalus scanner illustrating the utility of high resolution for estimating crop type and acreage.

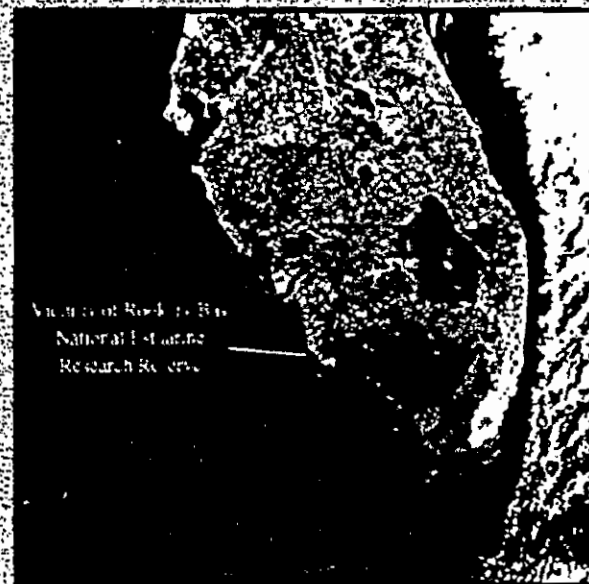
Environmental Management in the Coastal Zones

National Oceanic and Atmospheric Administration



OBJECTIVE

- Demonstrate the utility of national systems to obtain data needed under federal mandates to manage coastal environments such as land use, land cover, and aquatic ecosystem characteristics



RESULTS

- Demonstrated use of national systems as a valuable coastal management tool
- Developed multi-sensor coastal area signatures



South Florida regional climatic regimes documented by NOAA AVHRR. Project study sites are indicated.

Bilge Oil Monitoring

U.S. Coast Guard

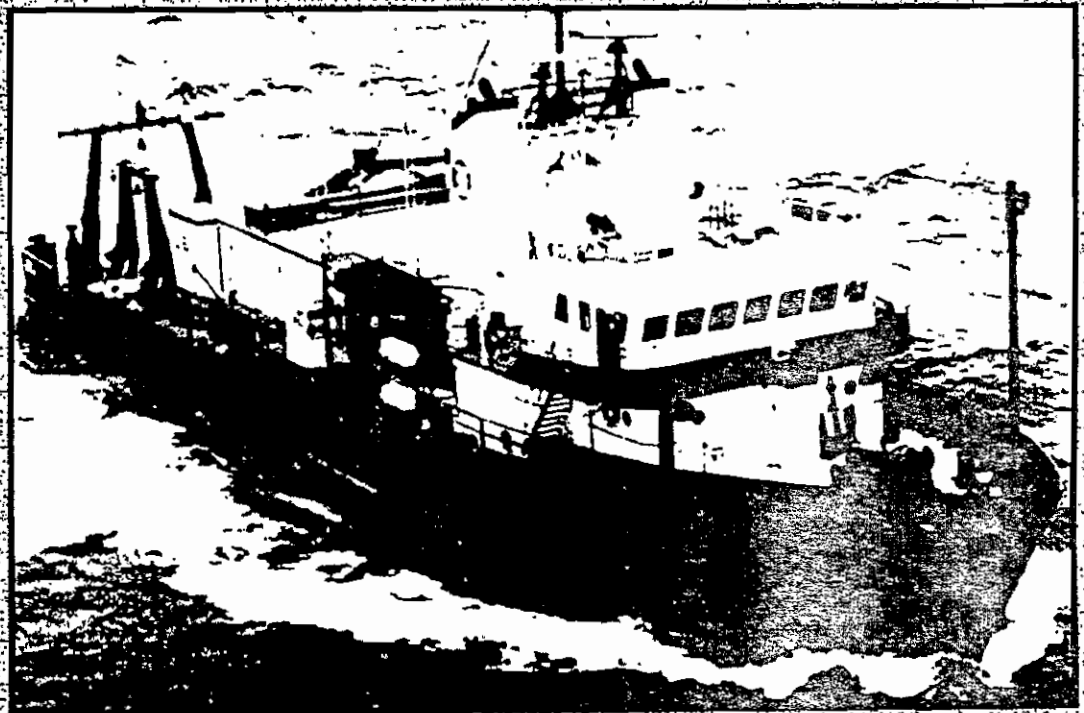


OBJECTIVE

- Improved techniques for the detection and classification of bilge oil discharges using remotely sensed data

RESULTS

- Experiment in Gulf of Mexico demonstrated capability of national systems for discriminating natural oil seeps from oil-laden bilge
- Demonstrated ability to characterize oil seeps and infer environmental conditions by monitoring of oil seeps over time



Photograph of the R/V GYRE underway during a field test performed in the Gulf of Mexico.

Buried Hazardous Waste Site Detection

Department of Energy

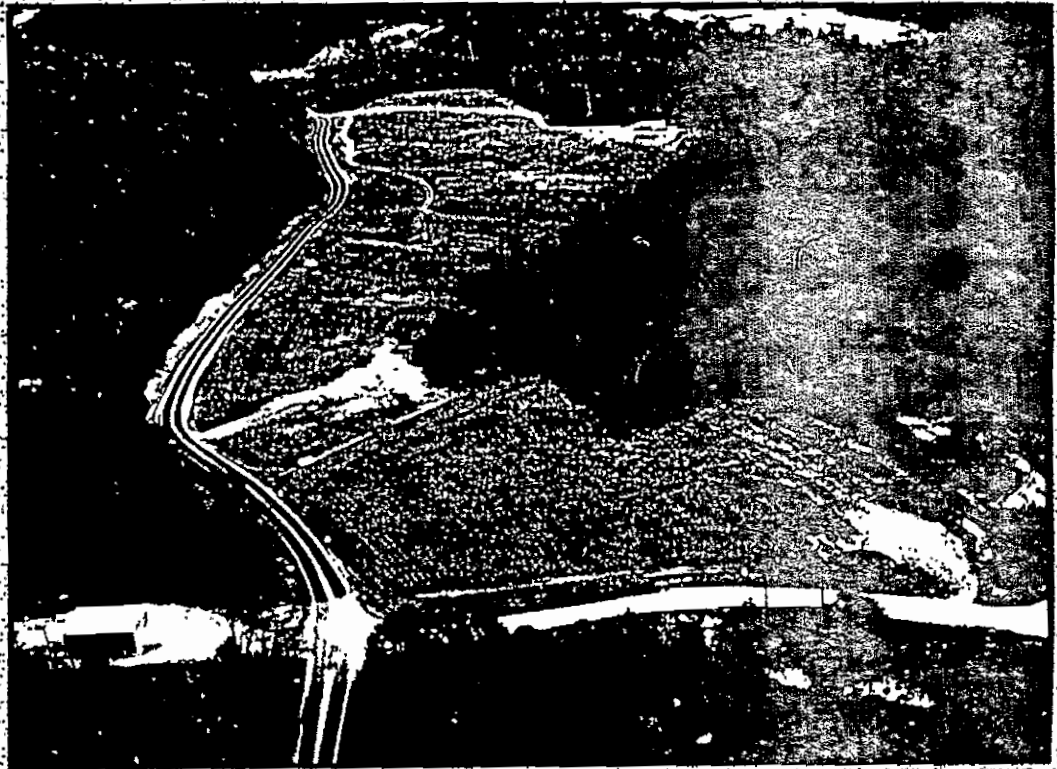


OBJECTIVE

- Support monitoring of contamination inflows of hazardous materials
- Detect buried trenches and pits which could be point sources for hazardous materials

RESULTS

- Located unreported waste sites
- Developed library of waste burial trench signatures
- Isolated surface-water contamination points
- Reduced on-site ground survey requirements



An aerial photograph of the Solid Waste Storage Area (SWSA-4) at Oak Ridge.

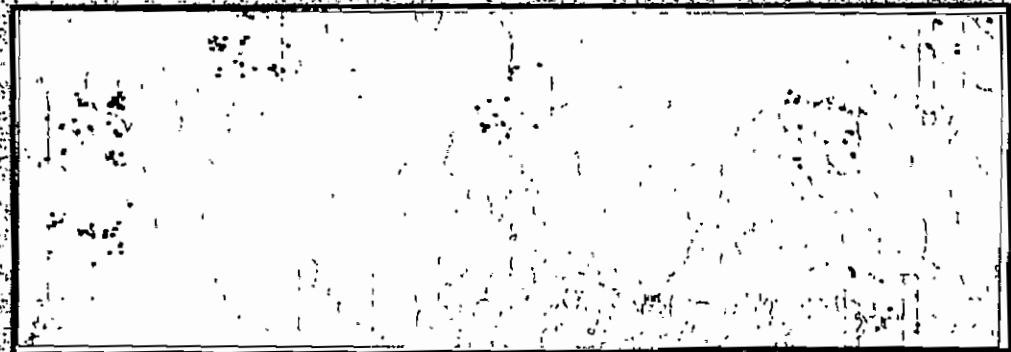
Mojave-Sonoran Desert Habitat Characterization

Department of Defense
US Army Corps of Engineers



OBJECTIVES

- Produce a GIS-based habitat model for the Mojave population of the desert tortoise and generate vegetation maps using both classified and unclassified-based methodologies



Tortoise Observations

RESULTS

- Eight layer GIS model created addressing tortoise presence, vegetation characteristics, and geological features
- Results shared with other agencies



Soil Types

Example layers from the Ft. Irwin GIS

Riparian Zone Analysis Project

Environmental Protection Agency

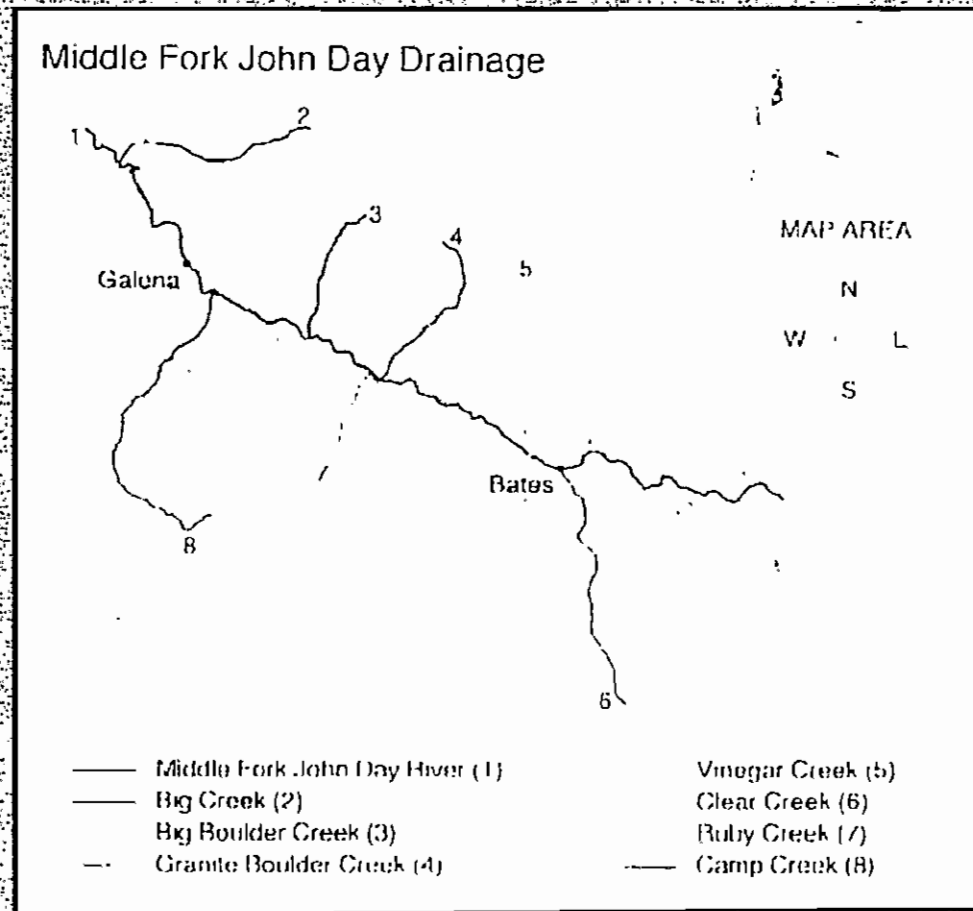


OBJECTIVES

- Assess the degradation of riparian vegetation and channel morphology which is the result of activities such as timber harvests, over-grazing, agriculture, floods, fires, and pest infestation

RESULTS

- Applied uniquely developed methodology to stream water temperature problem (Salmon Recovery Program)
- Water temperature models applicable to other watersheds



Middle Fork John Day drainage paths with study reaches delineated

GATF '96 Actions



- Civil Applications Committee modernization plan to address digital data distribution, and program management issues
- Training course on civil agency NTM tasking uses and security being developed
- Increase infrastructure at civil agency field locations
- Assist civil agencies in clearing and training additional personnel at all levels

Floodplain Digital Terrain Modeling

Federal Emergency Management Agency

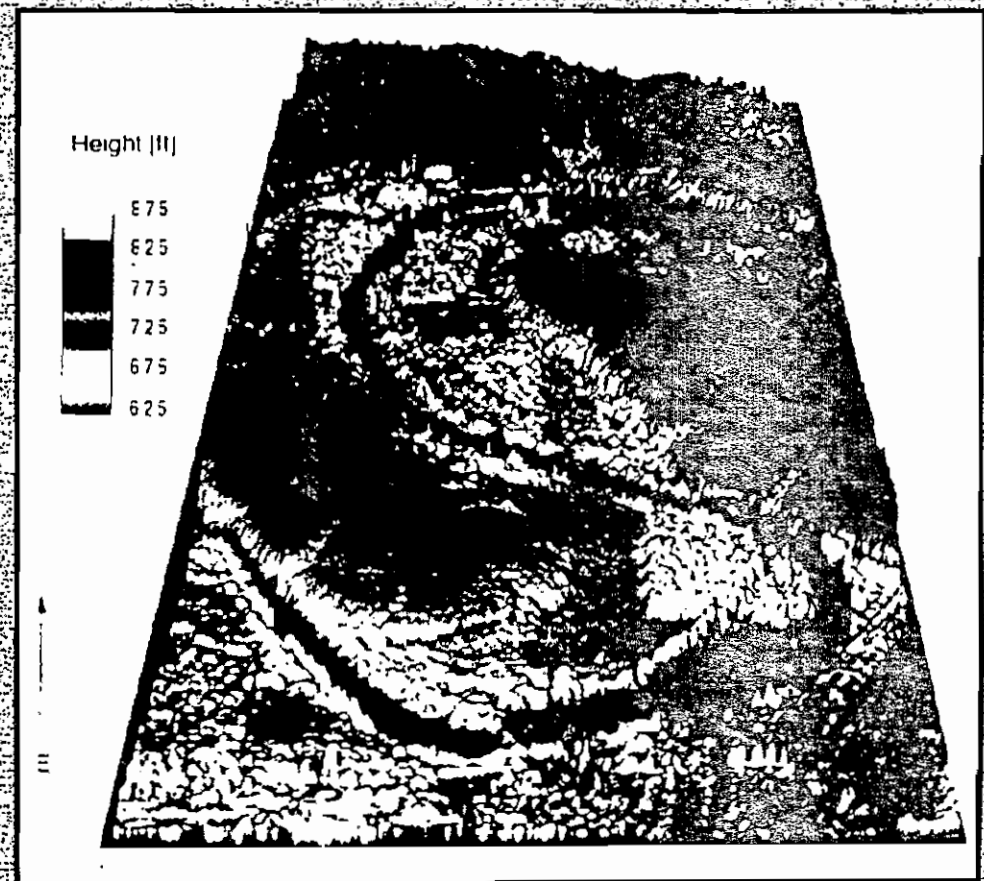


OBJECTIVES

- Develop and evaluate improved procedures for providing digital elevation models for floodplain management

RESULTS

- Re-tasked collections for 1996 in order to complete analysis of Glasgow, Missouri site



Precision digital elevation data used to determine floodplain boundaries - Iowa City, Iowa

GATF Lessons Learned



- Civil Applications Committee (CAC) infrastructure must grow to support civil agency operational use of classified systems
- Civil agencies require additional trained and cleared personnel at staff and coordination centers and field levels
- Civil agency field units require facility and equipment upgrades
- Civil Applications Committee must incorporate routine digital data distribution to requestors

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GATF PILOT PROJECTS SUMMARY

PROJECT TITLE	LEAD GOVERNMENT AGENCY	OBJECTIVE	RESULTS
Alaska Wetlands Survey	Department of the Interior (DOI)	Improve evaluations of Alaskan wetlands areas and riparian habitats which were previously not possible due to the lack of timely, high resolution data.	Demonstrated utility of national systems to accurately identify and characterize wetlands in Alaska. Unclassified derived products incorporated in National Wetlands Inventory. Wetlands mapping assists land transfer to state of Alaska.
Natural Resource and Crop Production Inventories	US Department of Agriculture (USDA)	Utilize national systems to support crop production estimates and natural resource inventories.	Used national systems to accurately characterize crop type, crop acreage, crop discrimination, row spacing, and plant population.
Environmental Management in the Coastal Zones	National Oceanic and Atmospheric Agency (NOAA)	Demonstrate the utility of national systems to obtain data needed under federal mandates to manage coastal environments such as land use, land cover, and aquatic ecosystem characteristics.	Demonstrated use of national systems as a valuable coastal management tool through successful characterization of coastal feature signatures.
Bilge Oil Monitoring	US Coast Guard (USCG)	Improved techniques for the detection and classification of bilge oil discharges using remotely sensed data	Experiment in Gulf of Mexico demonstrated capability of national systems for discriminating natural oil seeps from oil laden bilge. Demonstrated ability to characterize oil seeps and infer environmental conditions by monitoring of oil seeps over time.
Buried Hazardous Waste Site Detection	Department of Energy (DOE)	Support monitoring of contamination inflows of hazardous materials; detect buried trenches and pits which could be point sources for hazardous materials	Located unreported waste sites; developed waste burial trench signatures; isolated surface water contamination points; reduced on-site ground survey requirements
Riparian Zone Analysis Project	Environmental Protection Agency (EPA)	Assess the degradation of riparian vegetation and channel morphology which is the result of activities such as timber harvests, over-grazing, agriculture, floods, fires, and pest infestation	Utilized national systems data, DEM, hydrography data, and FLIR data to provide EPA's GIS-based riparian model with information about vegetation type, height, and proximity, topographic shading, local slope, cold water seep locations, and woody debris in the area.
Mojave-Sonoran Desert Habitat Characterization	Department of Defense (DOD), US Army Corps of Engineers	Produce a GIS-based habitat model for the Mojave population of the desert tortoise and to generate vegetation maps using both classified and unclassified-based methodologies.	Eight layer GIS model created addressing tortoise presence, vegetation characteristics, and geological features.
Floodplain Digital Terrain Modeling	Federal Emergency Management Agency (FEMA)	Develop and evaluate improved procedures for providing digital elevation models for floodplain management	Re-tasked collections for 1996 in order to complete analysis of Glasgow, Missouri site.

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CONGRESSIONAL MANDATES SUPPORTED BY GATF PILOT PROJECTS

PROJECT TITLE	LEAD GOVERNMENT AGENCY	MANDATE	DIRECTIVE
Alaska Wetlands Survey	Department of the Interior (DOI)	Emergency Wetlands Resource Act	DOI is required to monitor, inventory and evaluate wetlands in Alaska.
Natural Resource and Crop Production Inventories	US Department of Agriculture (USDA)	Various Congressional Mandated Crop Reporting acts.	<ul style="list-style-type: none"> - USDA is required to estimate worldwide crop population - USDA is required to provide a natural resources inventory every five years
Environmental Management in the Coastal Zones	National Oceanic and Atmospheric Agency (NOAA)	<ul style="list-style-type: none"> - Coastal Zone Management Act - Clean Water Act - Emergency Wetlands Resource Act - Marine Protection, Research, and Sanctuaries Act 	NOAA is required to inventory, characterize and monitor marine sanctuaries.
Bilge Oil Monitoring	US Coast Guard (USCG)	<ul style="list-style-type: none"> - Marine Pollution Act - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") - National Contingency Plan 	USCG has the responsibility to monitor, detect, classify and map bilge oil discharge and natural seeps.
Buried Hazardous Waste Site Detection	Department of Energy (DOE)	<ul style="list-style-type: none"> - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund") - Federal Facilities Compliance Act - Resource Conservation and Recovery Act 	<ul style="list-style-type: none"> - Federal government is authorized to clean up toxic or hazardous contaminants at closed or abandoned waste dumps. - DOE is required to control the migration of hazardous materials beyond DOE reservations.
Riparian Zone Analysis Project	Environmental Protection Agency (EPA)	Clean Water Act	EPA is required to monitor and remediate waterways affected by pollution and loss of vegetation.
Mojave-Sonoran Desert Habitat Characterization	Department of Defense (DOD), US Army Corps of Engineers	<ul style="list-style-type: none"> - Endangered Species Act - Mohave-Sonoran Ecosystem Management Initiative 	DOD is required to protect endangered species within DOD facility perimeters.
Floodplain Digital Terrain Modeling	Federal Emergency Management Agency (FEMA)	Robert T. Stafford Disaster Relief and Emergency Assistance Act	Federal government is authorized to respond to disasters and emergencies in order to provide assistance, save lives, and protect public health, safety and property.

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