

# Assessment of Remote Sensing Data Use by Civilian Federal Agencies

a report by the

**Governmental Affairs**

**Subcommittee on International  
Security Proliferation,  
and Federal Services**

**Senator Daniel K. Akaka, Chairman**

Presented by Dr. Sherri Stephan

January 14, 2003

If agency currently uses remote sensing, asked:

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- How are these technologies and data used?
- Where are the data obtained (commercial or government suppliers)?
- Do they have concerns with using remote sensing data and technology?
- Are the data shared within and outside the department or agency and **are there licensing concerns?**
- What budget do they have for obtaining and using remote sensing data and technology?

If agency does not currently uses remote sensing, asked:

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- How familiar is the agency with remote sensing technology and data?
- What are the reasons for not using remote sensing?
- Is the agency examining these issues?

Agencies reporting extensive use of remote sensing (11 of 19):

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USAID

USDA

Commerce (NOAA)

DOE

EPA

Interior

FEMA

Justice

NASA

NSF

State

Agencies reporting moderate use of remote sensing (4 of 19):

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HHS

HUD

Transportation

Treasury

No use (4 of 19):

Education

Labor

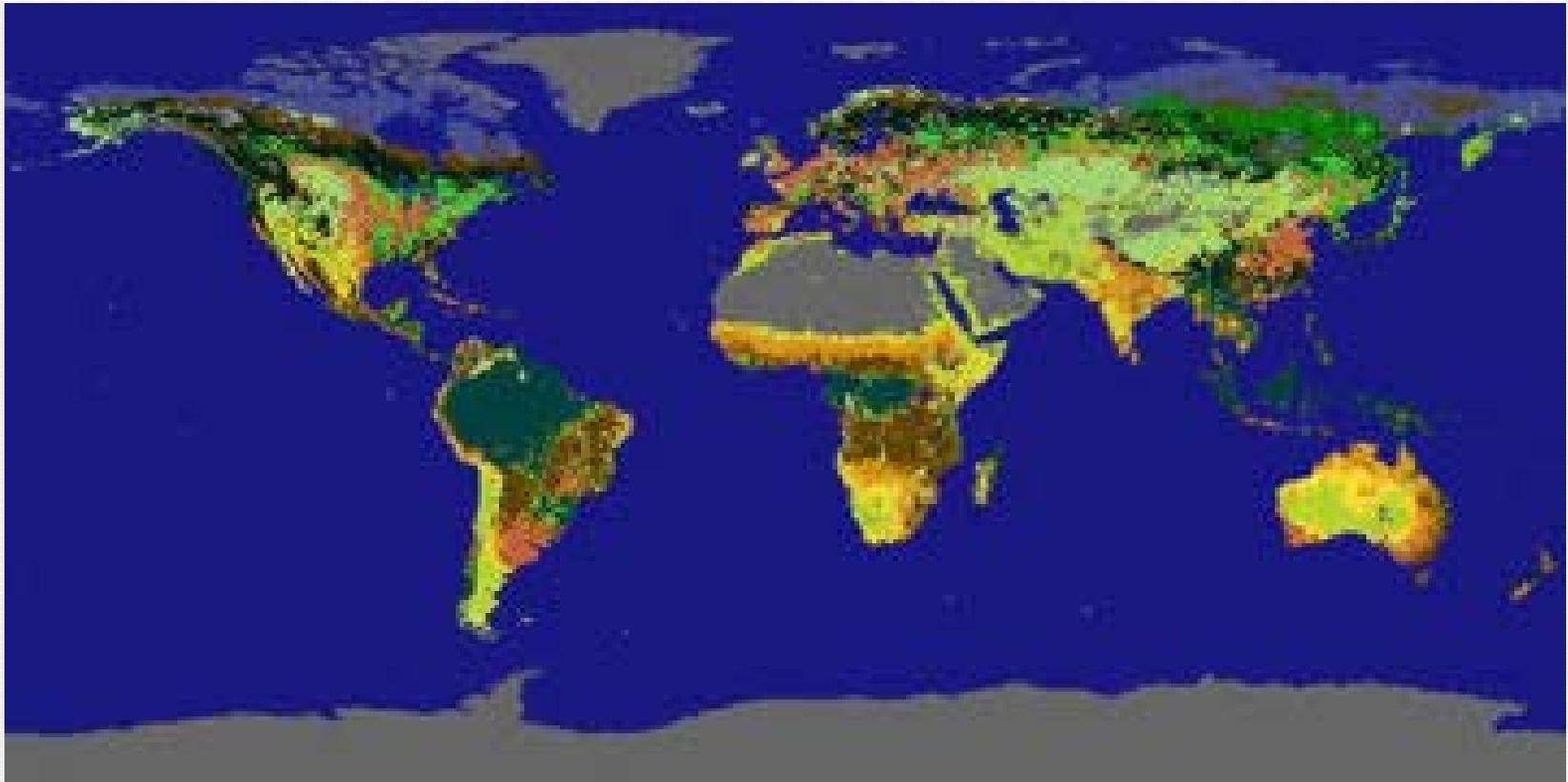
Amtrak

Peace Corps



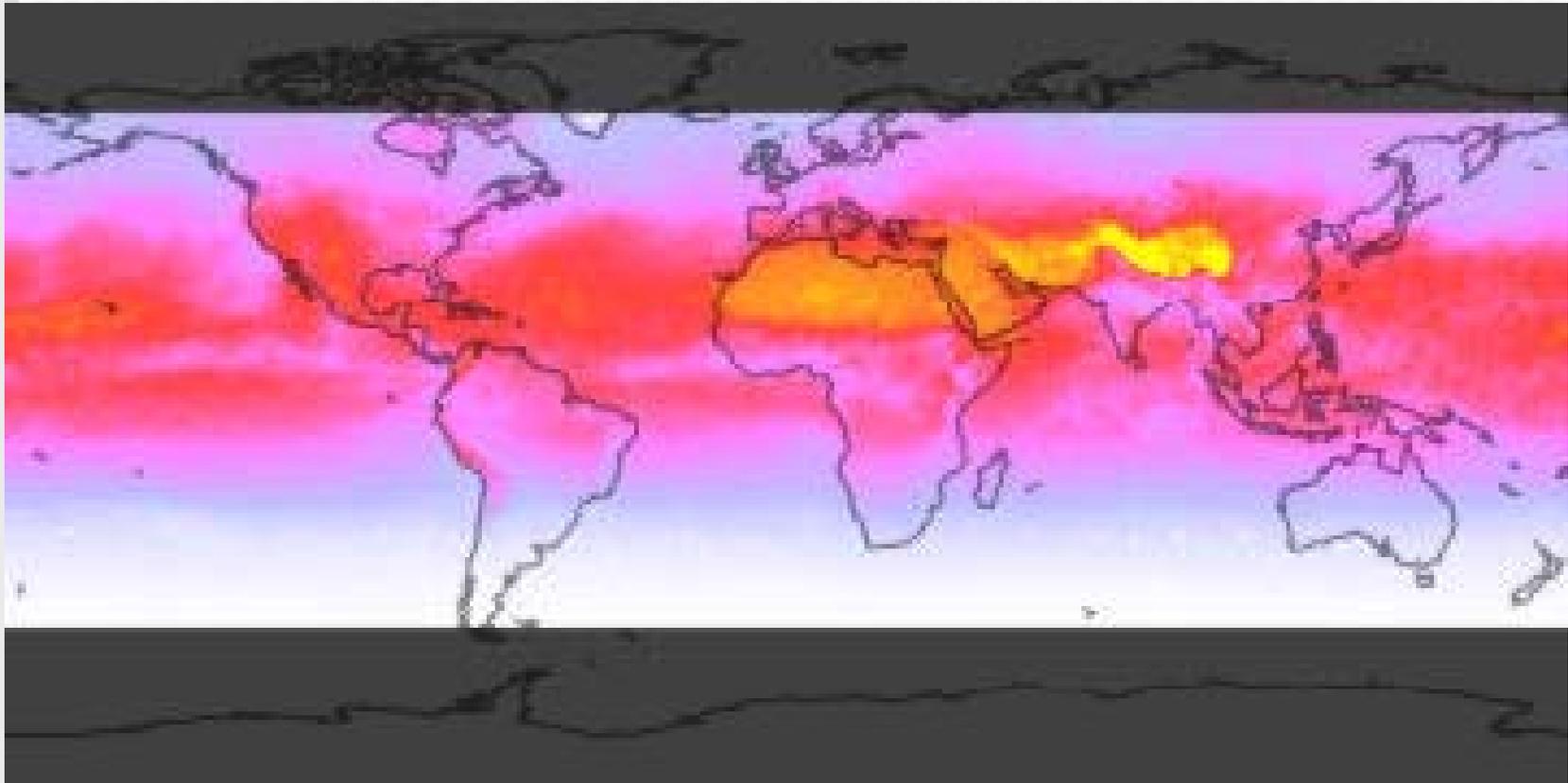
## Resource Management, Land Cover (NASA)

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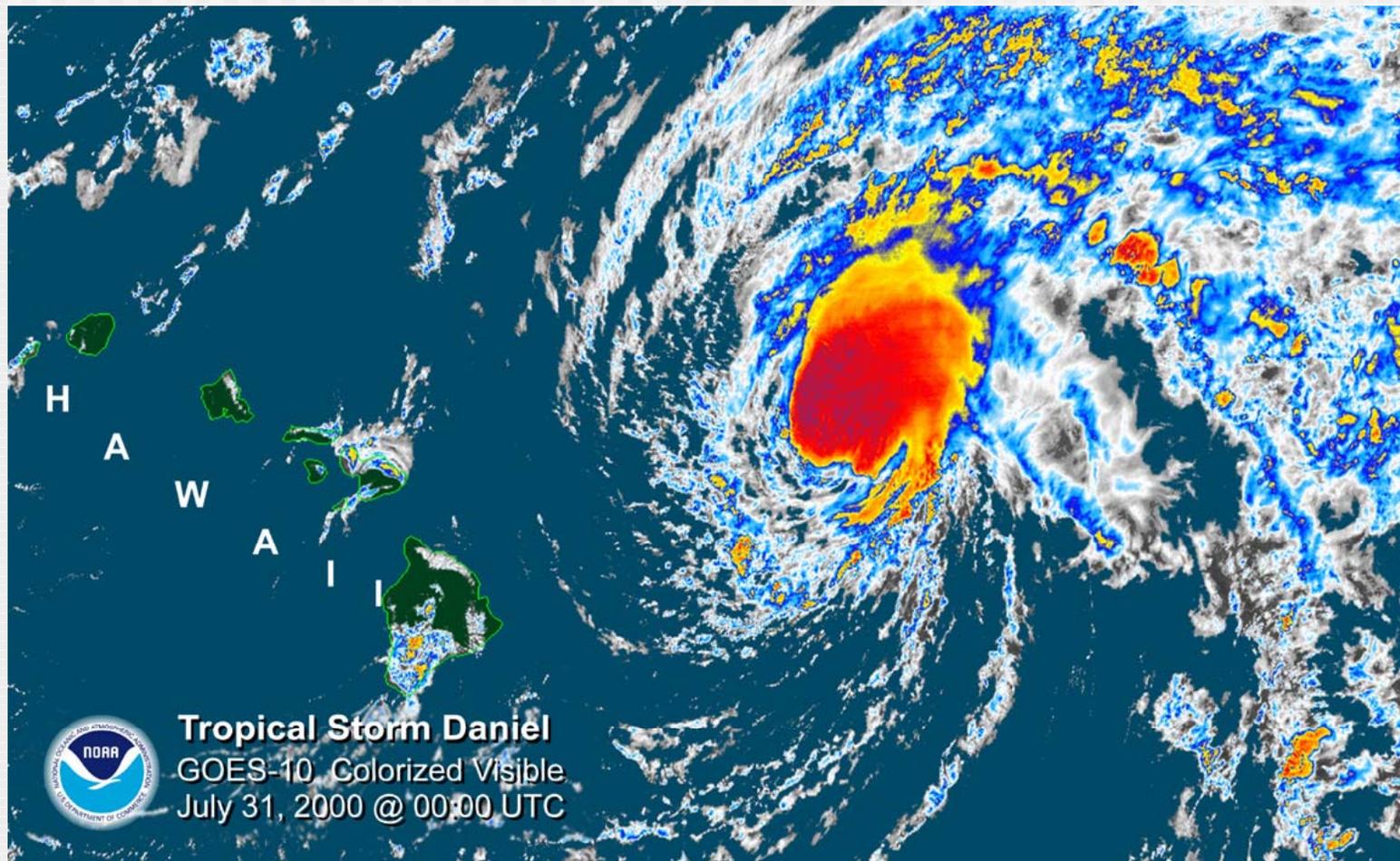


## Basic Research, UV Radiation Exposure (NASA)

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# Tropical Storm Daniel heading for Hawaii (GOES 10, NOAA)



## Data/Technology Use by Agencies:

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1. Natural Resource Management, Conservation, and Environment

USDA, FEMA, Commerce, Interior, State, USAID, EPA  
HHS, HUD, Transportation

2. Impacts from natural and man-made events

EPA, FEMA, Interior, USAID, State, USDA  
Transportation, HHS

3. Basic & Applied Research

NSF, USDA, EPA, Commerce, NASA, DOE

## Data/Technology Use by Agencies (cont):

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### 4. Mapping functions

USDA, FEMA, Interior, USAID, State

HUD

### 5. Early warning/mitigation of disasters

USDA, FEMA, State, Interior, USAID

HHS

### 6. Monitoring compliance/verification of laws, treaties, regulations

USDA, Justice, Commerce, State, EPA

Treasury

## Data/Technology Use by Agencies (cont):

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### 7. Agricultural use

USDA, Interior, USAID, Justice

HHS

### 8. Transportation and shipping

Justice, Commerce

Transportation

### 9. Conflict resolution

State

## Data Sources:

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U.S. Government:	NOAA, NASA, USGS USAF/DOD, NIMA aerial (NAPP), NRO
Non-U.S. Government:	ESA, CSA, Japan
U.S. Commercial:	Space Imaging, OrbImage commercial aerial
Non-U.S. Commercial:	SPOT, RADARSAT, IRS OKEAN-O

## Agency Concerns – Availability:

1. Relatively few satellites collecting data needed  
USDA, EPA, NSF  
Transportation
2. Time needed to get data in useful form OR  
availability of data from specific time period  
FEMA, NSF, Interior  
Transportation
3. Availability of aerial data (time/location)  
NSF, NASA, Interior, EPA
4. Continuity of specific data source  
USAID, USDA, Interior

## Agency Concerns – Availability (cont):

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5. Weather and cloud cover

Commerce, FEMA, NASA

6. Availability in proper format (digital vs. photography)

USAID, State

7. Reliance on complex and expensive technology or training not available globally

USAID, State

## Agency Concerns – Access:

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1. Cost of commercially available data  
Interior, USDA, EPA, NSF, FEMA, USAID, DOE  
Transportation, HHS
2. Licensing concerns in sharing commercial data  
Commerce, Interior, State, USAID, NSF, USDA  
Transportation
3. Classified, secure or sensitive data  
NSF, State  
Transportation
4. Cost of processing/value-added data  
Interior, DOE

## Agency Concerns – Effective Use:

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1. Lack of in-house expertise and difficulty in Attracting and retaining specialists  
EPA, USDA, Interior, USAID  
HHS
2. Calibration/ground truth problems  
(research agencies using commercial data)  
Commerce, NASA, NSF  
HHS
3. Lack of knowledge within agency of how data can be used  
EPA, Interior  
Transportation

## Agency Concerns – Effective Use (cont):

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4. Lack of equipment/software for analysis

EPA, Interior, State

5. Volume of data (storage, archiving, etc.)

NSF

6. Resistance within agency to change

EPA

## Agencies reporting no use:

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- 3 reported remote sensing is not relevant to their mission
- Education and Amtrak are not using and are not examining future use
- Labor partnering with NASA on education programs
- Peace Corp is familiar with technology and would like to use it except for difficulties/lack of availability of technology and infrastructure in local areas. Hope to use it in the future.

## Licensing concerns

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- Sharing data within organization
- Sharing data with other federal partners
- Sharing data with non-federal partners  
(public/private, local/state, domestic/foreign...)

Some agencies only use data that will allow full access between all partners (e.g. FEMA), while other enter into agreements with commercial vendors.

## Licensing concerns – agency examples:

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- USAID, USDA, Commerce, Interior, Transportation, NSF, State
- USAID –  
Cannot share purchased commercial data.  
Supports overseas activities with USDA and NOAA.  
Many international partners cannot afford licensing agreements.
- USDA –  
USDA Satellite Imagery Database  
National Resources Conservation Service and Forest Service find concerns greatly restrict their ability to share data with the public.

## Continue agency examples...

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- Commerce –

Data from non-NOAA satellites may be restricted to research use and not available for public distribution

- Interior -

License restrictions on private data limits public release and use for policy decisions or may make the use of data too costly for researchers.

- Transportation -

Licensing constraints severely limits the Coast Guard's ability to distribute products to other agencies.

## Continue agency examples...

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- State –

Distinction between intelligence and non-intelligence agencies within State results in multiple purchases of the same imagery.

- NSF –

Optimal data for research sometimes unavailable because of cost or restriction on satellite positioning and other technical factors.

## Conclusions

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- Many federal agencies use remote sensing data
- Agencies would like to use data more, and would like to be able to share data with partners
- Chief concern is cost of commercial satellite data
  - Data could be made more affordable OR
  - Agencies could have more funding for data OR
  - Some combination of these

## Since September 11<sup>th</sup>:

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- Remote Sensing community has responded to thousands of map requests and worked with officials to address:
  - What is the demographic impact?
  - Where are people displaced and in what numbers?
  - What is the impact to infrastructure?
  - How can impacted areas be accessed?
  - Where should displaced people go?
  - What is the thermal activity and displacement of debris field?
  - Etc...

## New concerns

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- Information needs to be provided quickly and in a format easily used by city and state officials
- Importance of interoperability between different data sets
- Security concerns...what domestic data should continue to be provided publicly, on internet, and what is too dangerous? Who decides?

## Contact Information

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Report available at:

[www.senate.gov/~gov\\_affairs/ispfs.htm](http://www.senate.gov/~gov_affairs/ispfs.htm)