

Forum On Earth Observations IV™

Climate, Energy, and National Security: Meeting the Environmental Information Challenge

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“Environmental Information for Sound Decision Making”

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Good morning. It's my Pleasure to speak today about the steps the DOI is taking to promote the use of environmental information for sound decision making.

First and foremost, Deputy Secretary David Hayes sends his apologies for not being able to talk with you himself, but as I am sure you know, his full attention is focused on the Gulf oil spill right now.

I'd like to tell you about the work that our Department does in providing the science, information, and management expertise to

wisely manage our lands and resources in the midst of our changing climate, and in response to emerging threats to our ecosystems and societies.

We face unprecedented challenges to our natural environment. Our planet's ecosystems are critically threatened by thinning Arctic ice, rising temperatures, diminished forests, and increasingly polluted seas.

“The time is now right and urgent to apply space technology towards the solution of many pressing natural resource problems being compounded by population and industrial growth.”

I'm sure you'll agree with this statement, but it is not a new one. It was issued by then-Secretary of the Interior, Stewart Udall, **in 1966**. Forty-four years later, these words remain a motivating force for our Department.

The Department of the Interior is responsible for management of 20% of the territory of the United States, and for 1.76 billion underwater acres of the U.S. Outer Continental Shelf. The American people have entrusted us with the wise use and management of

these areas to preserve our remaining wilderness for future generations, protect native species and their habitats, provide recreational opportunities for the public, and ensure safe and responsible natural resource and energy development.

Because of our distributed nature, and our trust responsibilities for protecting natural, cultural, historical, and human resources, we are strongly dependent on Earth Observations- and we are a major collector of observations as well- both in-situ as well as air and space-borne observations.

The Department of the Interior was one of the original drivers for Earth observation, due to the technology's ability to support the Department's mission. People like William Pecora, former Director of the U.S. Geological Survey and Deputy Assistant Secretary at the Department of the Interior, saw pictures taken by the early astronauts and knew that such images would offer resource managers a valuable source of information. Pecora subsequently convinced then-Secretary Udall of the imagery's value.

The need for actionable information is probably even more important today than it was in Pecora's time. Our ecosystems are threatened by the changing climate, urbanization, and both natural

and man-made disasters. Today, our society urgently needs to maintain and enhance the health of our ecosystems, at land and at sea. Scientific information, derived from ground-based, aircraft and satellite imagery, is required for wise stewardship of our nation's lands and resources, and for mitigation of, and adaptation to, changes in land use, human population patterns, energy use and extraction- and the recently observed impacts of an additional stressor- climate variability and climate change.

[show accompanying imagery]

On April 20, 2010, the Deepwater Horizon oil platform exploded, resulting in the loss of eleven lives and the continued release of enormous amounts of oil into the Gulf of Mexico -- the worst oil spill in America's history. Since the onset of this disaster, both radar and optical satellite and aerial imagery have been valuable tools in mapping and monitoring the oil spill. Imagery from the Landsat 5 satellite shows the expansion of the oil slick during the month of May.

We expect that Earth observations will continue to be an essential tool to the United States, both in our immediate disaster response and in our long-term environmental remediation efforts.

[show accompanying imagery]

Thanks to a series of Landsat data from 1972 until the present day, we are able to observe and better understand the scope and environmental impact of urbanization. This pair of images, from 1973 to 2006, illustrates 33 years of land change in the rapidly growing Las Vegas area. Landsat data is unique in its ability to monitor such changes, and their environmental and socioeconomic impacts, over long periods of time.

[show accompanying imagery]

We are able to witness and better understand the impact of climate changes and human activity on precious water resources. One of the most drastic examples of these impacts has been the steady disappearance of Africa's Lake Chad over a 34-year period, due to warming temperatures, drought conditions, population pressures, and increased irrigation for agriculture.

[show accompanying imagery]

We have also been able to observe and better understand deforestation in the world's tropical regions. This pair of Landsat satellite images shows the progression of deforestation in Bolivia

from 1975 to 2003, due to population resettlements and large-scale agricultural development.

This striking imagery, conveyed by satellites, has galvanized governments worldwide to slow deforestation and to develop more sustainable agricultural and land use practices. Thanks in part to information from Landsat, the Brazilian Government has reduced deforestation rates in the Amazon by 75% over the past five years. I should emphasize that information such as this can only be obtained through long-term, continuous satellite observations – thus the need for long-term, stable funding of Earth observation missions.

However, satellite information is only valuable if it can be easily accessed and shared by governments, companies, and citizens alike. It is for this reason that the Department recently made a major change to its pricing and access policies for satellite data. We no longer charge users for the nominal cost of reproducing and delivering a Landsat image (formerly about \$500 per scene) and Landsat imagery is now freely available over the Internet to users at no charge.

With this change, in less than two years, we have witnessed an enormous growth in demand as more than two million individual

Landsat scenes have been provided to users. We have gone from delivering just over 50 scenes per day on average during our best sales year, to delivering more than 3,000 scenes per day in 2010. There has been a seven-fold increase in scientific and educational use, strengthening our science and technology base and equipping students with new skills for future careers. We are witnessing a shift from single scene purchases of one area to multi-scene, multi-year acquisitions of scenes over a single area – evidence of long-time series analyses of landscape and environmental change.

Our new policy applies not only to Landsat data, but also to a variety of aerial and satellite-derived land imagery owned and managed by the U.S. Government. All these data are available over the Internet from our Earth Resources Observation and Science Center in Sioux Falls, South Dakota. These data have gone not only to U.S. users, but also to foreign users in 186 countries worldwide. The Department's efforts have enabled the United States to exert worldwide leadership in more open data policies for land imaging. And I must stress that the Brazilian Space Agency and the European Space Agency have or are developing similar policies for their land imaging satellite data. We hope other remote sensing agencies will adopt these same policies in the future.

These examples illustrate the important links between changes in the land surface -- for example, urbanization, water resources, and forested areas -- and changes in the Earth's climate. So we are now on the cusp of a global revolution in the use and application of land surface imagery for environmental monitoring and adaptation to changing climate conditions. The Department of the Interior will be at the forefront of these efforts in the use of Earth observations to better manage our public lands and natural resources, and to support state, local, and tribal authorities in their comparable efforts.

However, the benefits of this land imaging revolution can only proceed if satellite missions are sustained. We will continue our new data policy for the Landsat Data Continuity Mission (or Landsat 8), which we are developing with NASA for a December 2012 launch. Given the cost, complexity, and time to develop new missions, we need to begin planning now for the next mission. This is why the Department is enthusiastically supporting an initiative for another U.S. land imaging mission, Landsat 9.

A major objective of this conference involves the discussion of ways to partner across the governmental and private sectors- with data sharing in an open and transparent way. At DOI we have initiated Secretarial Order 3289- an Order that mandates all of us at

the Department to work together within a DOI-wide climate change enterprise. This enterprise is not just for DOI- its primary intent is to facilitate the coordination, communication, and sharing of all types of information relevant to dealing with climate change and its impacts.

Consequently, we are standing up a series of 29 centers across the country that will interface with both the public and private sector, and will include participation by both sectors in the design and execution of science, modeling, decision support- and an integrated observations framework- as well as the framework for data integration and dissemination so that all information is available to all users and partners.

And we are not starting from scratch; we already have strong partnerships with NOAA, USDA, and other Federal agencies as well as States and private sector and a wide host of Native American organizations.

We intend to assure the long-term availability of data essential to support U.S. strategic interests in fields such as National Security, the establishment of National and global carbon estimates and the evolving field of mitigating and adapting to the impacts of climate

variability and climate change. DOI, especially through our science wing, the USGS, is helping to equip all of us with the tools we need to make better environmental choices for tomorrow. These environmental choices can slow global warming, improve water resource management, and sustain and protect the ecosystems upon which we all depend.

Earth Observations from ground-based monitoring systems, aircraft and satellites will enable and empower sound decision-making and allow us to make the cost-effective, and societally- and environmentally sound choices for ourselves and for future generations.

Thanks again for allowing me the opportunity to be part of this wonderful meeting and for your role in helping to promote the sustainability and growth of earth observations-- the lifeblood of our response to natural and human-induced changes that affect our planet Earth.