



World Meteorological Organization

Working together in weather, climate and water

Space-based Earth Observations and the Importance of Open Data

Barbara J. Ryan
Director, WMO Space Programme
Geneva, Switzerland

40th Anniversary Landsat
Vienna, Austria
6 June 2012



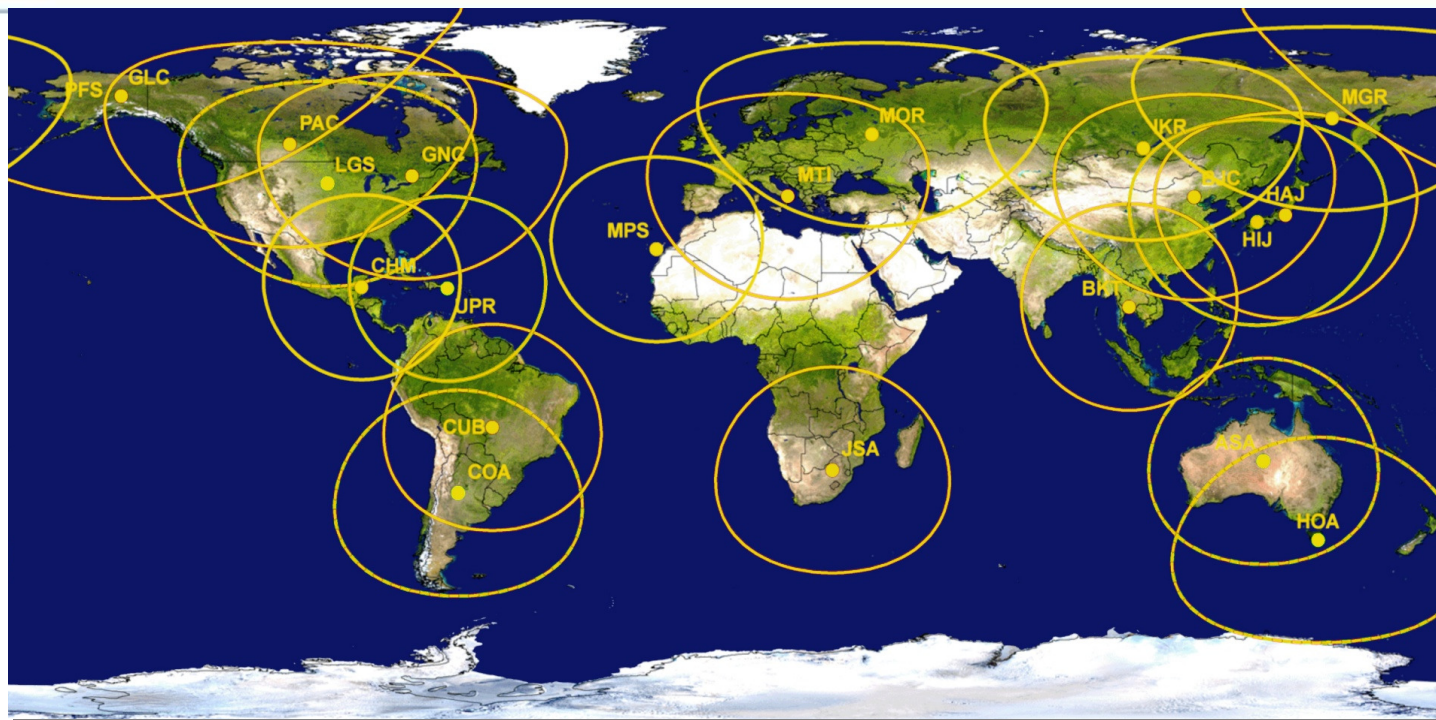
International Coordination Mechanisms

- Committee on Earth Observation Satellites (CEOS)
- Group on Earth Observations (GEO)

- International Charter for Space and Major Disasters (The Charter)
 - World Meteorological Organization (WMO)
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Landsat -- An International Partnership

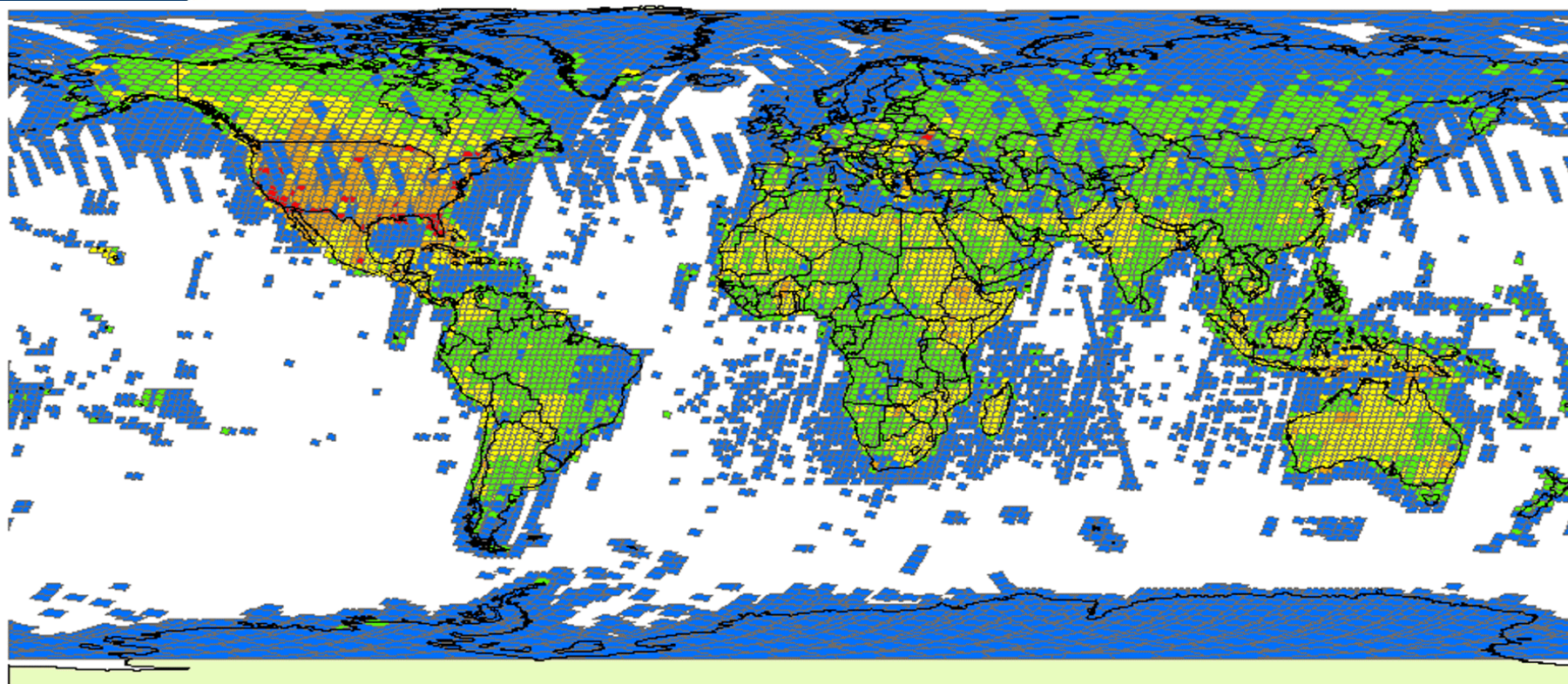


Landsat Ground Station Coverage

LGS	EROS	ASA	Alice Springs, Australia	HAJ	Hatoyama, Japan (JAXA)	MLK	Malindi, Kenya
ASN	Alice Springs, Australia	BJC	Beijing, China	HIJ	Hiroshima, Japan (HIT)	MOR	Moscow, Russia (ScanEx)
GLC	Gilmore Creek, Alaska	BKT	Bangkok, Thailand	HOA	Hobart, Australia	MPS	Maspalomas, Spain (ESA)
PF1	Poker Flat, Alaska	CHM	Chetumal, Mexico (DLR/Conabio)	IKR	Irkutsk, Russia (ScanEx)	MTI	Matera, Italy
SGS	Svalbard, Norway	COA	Cordoba, Argentina	JSA	Johannesburg, South Africa	PAC	Prince Albert, Canada
		CUB	Cuiaba, Brazil	KHC	KaShi, China	UPR	University of Puerto Rico
		DKI	Parepare, Indonesia	KIS	Kiruna, Sweden		
		GNC	Gatineau, Canada	MGR	Magadan, Russia (ScanEx)		



Landsat's Global Coverage



WRS2 Standard L1T Downloads
via User Interface and Bulk Users
October 01, 2010 through August 31, 2011
2,589,476 Cumulative Scenes Delivered
2,561,803 Total WRS2 Scenes Delivered
17,603 Unique WRS2 Locations

1 - 110 111 - 326 327 - 710 711 - 1588 1589 - 4307

Landsat 4-7



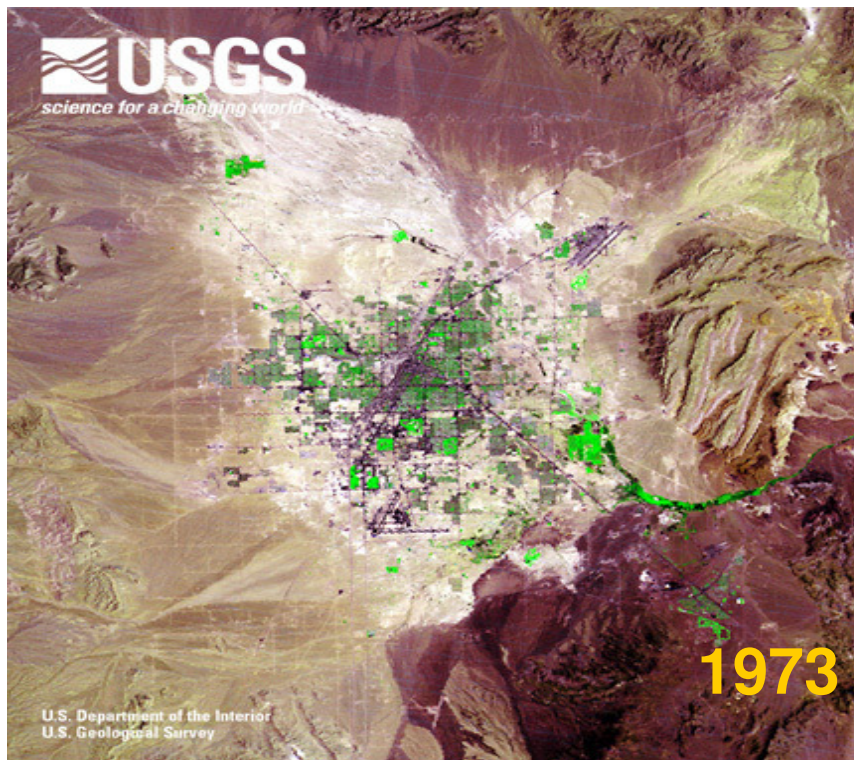
Landsat Applications

- USGS has over 2.4 million Landsat images that form a global, radiometrically accurate record of land cover available over the last 37 years
 - Agriculture
 - Carbon Inventory/Credits
 - Deforestation
 - Drought Monitoring
 - Ecosystem Monitoring
 - Famine Early Warning
 - Fire/Disaster Management
 - Flood management
 - Global Change
 - Insurance Risk Management
 - International Treaty Management
 - Land Use/Land Cover Mapping
 - Land Use Planning
 - Mapping
 - National Security
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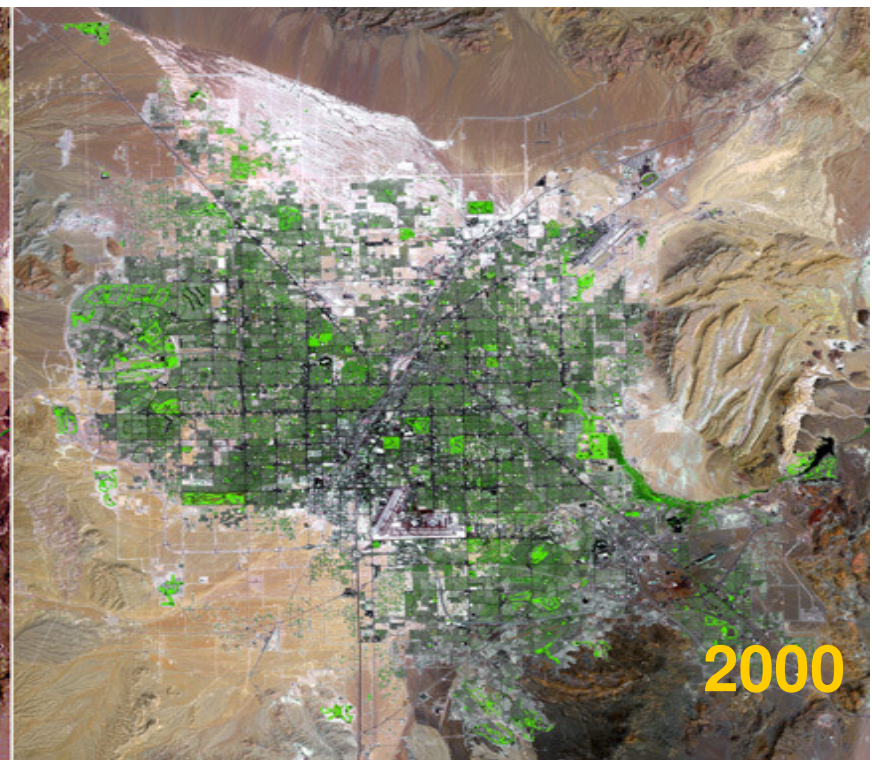


Land Use Change

<http://www.youtube.com/watch?v=xFzdyxwx50M&feature=youtu.be>



Population: 358,000

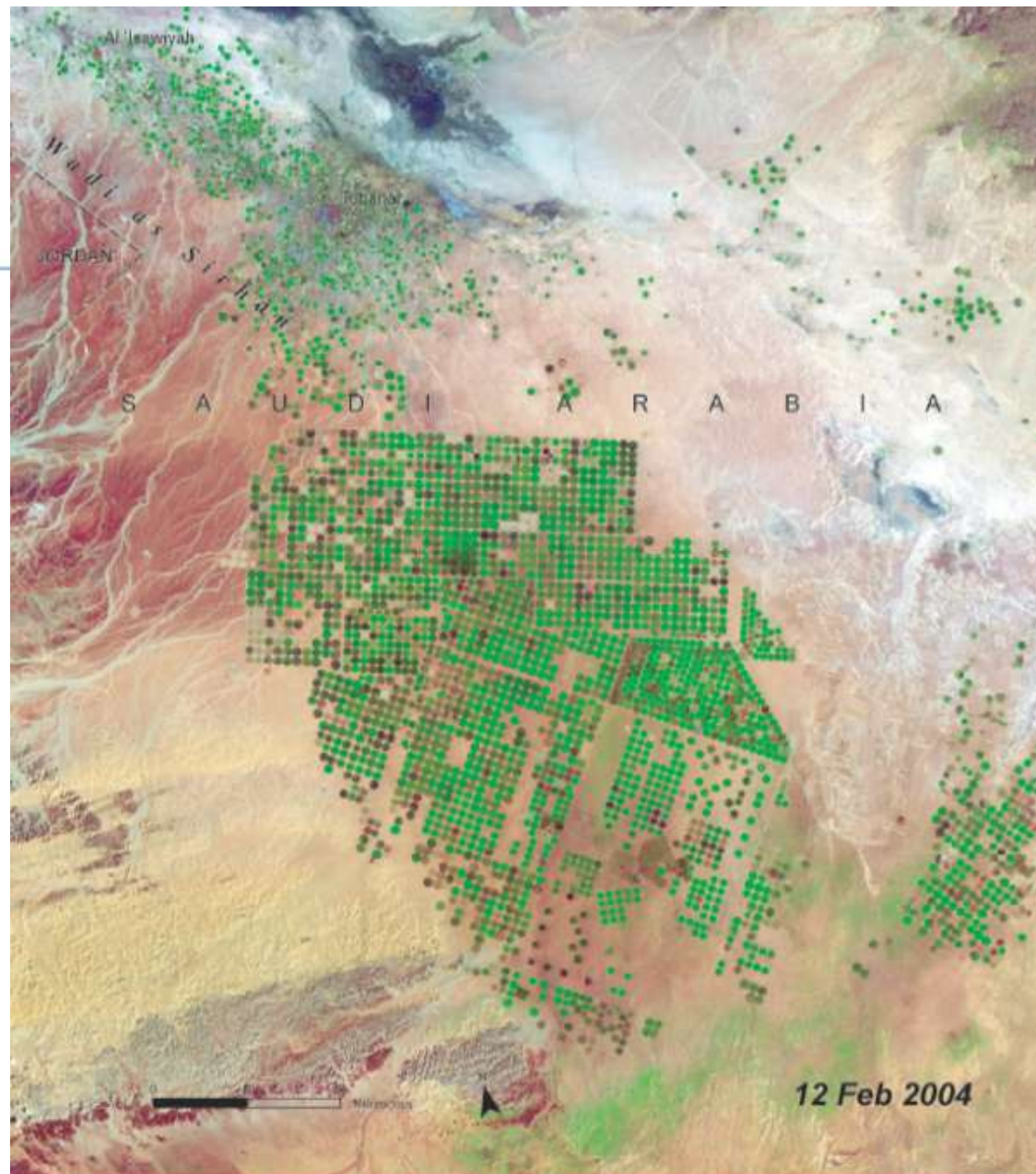


1,560,000

UNEP's Atlas of our Changing Environment

One Planet, Many People

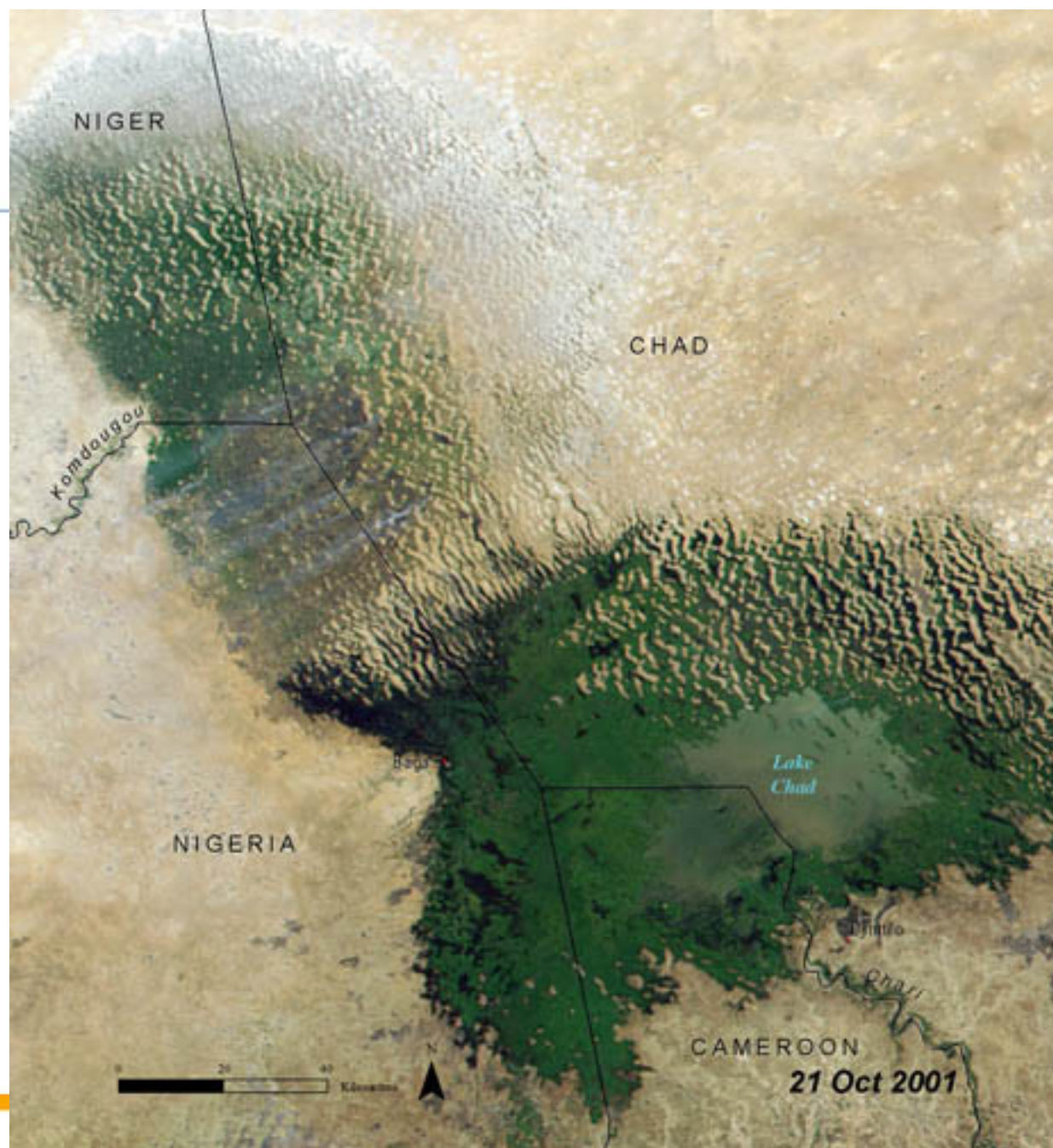
Al'Isawiyah Saudi Arabia



These three images, from 1986, 1991, and 2004, reveal the effects of this irrigation strategy in a vast desert region in Saudi Arabia known as Wadi As-Sirhan. This region was once so barren that it could barely support the towns Al'Isawiyah and Tubarjal that can be seen in the upper left of each image. Following the introduction of center-pivot irrigation, however, barren desert was gradually transformed into a greener, food-producing landscape.

The irrigation system draws water from an ancient aquifer—some of the water it contains may be as much as 20 000 years old. Judicious use of water resources, and climate-appropriate technology, has in this situation helped improve food production without being detrimental to the environment.

Lake Chad Africa





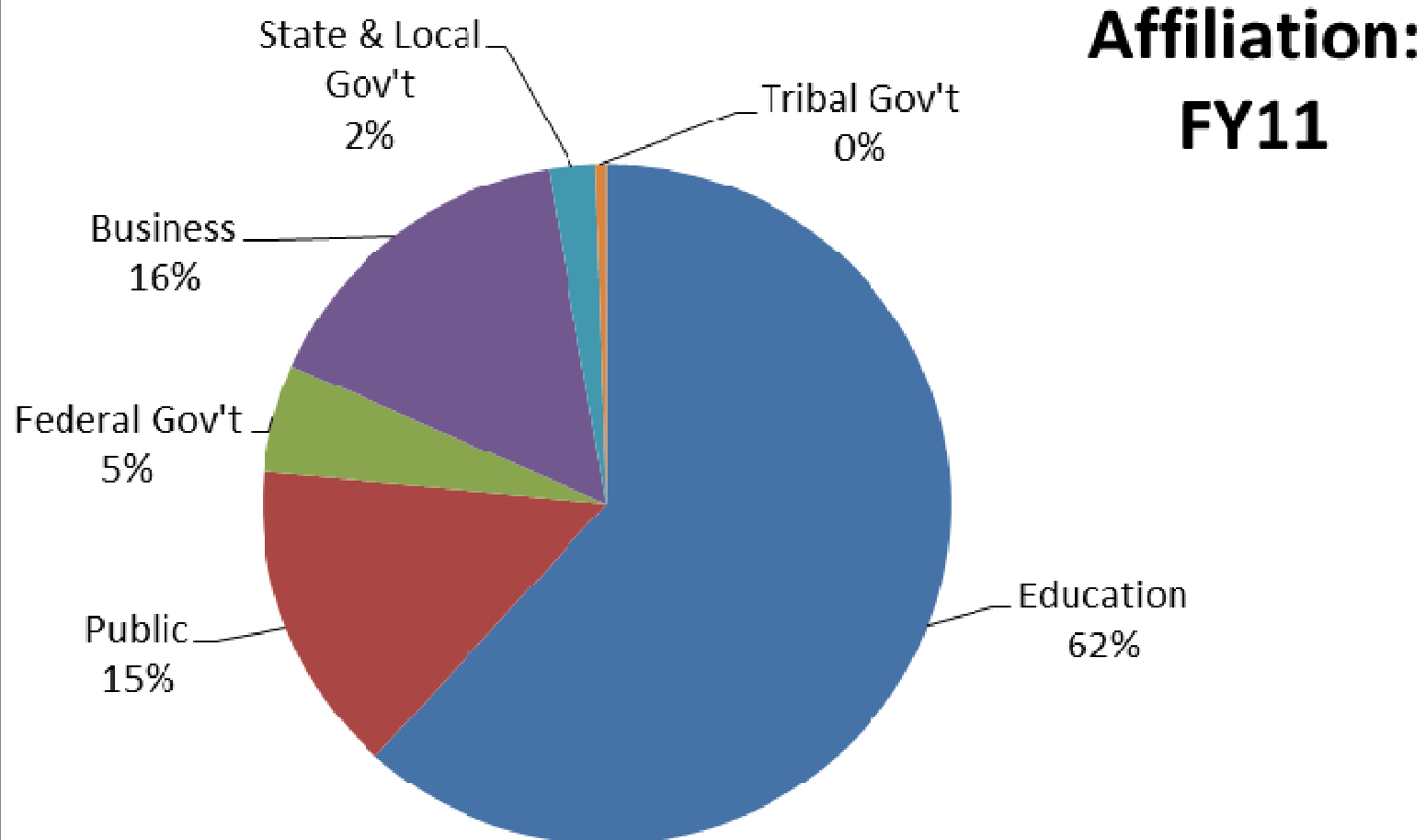
Monitoring Land Management Practices



Targhee National Forest (left) and Yellowstone National Park (right)

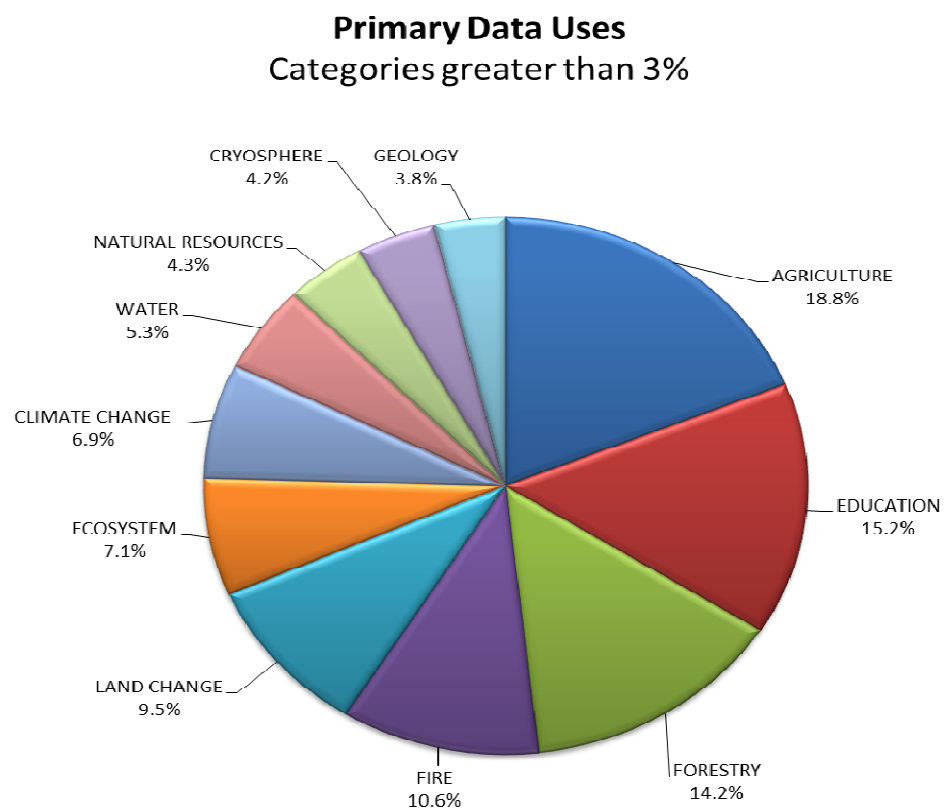


USGS Landsat Users

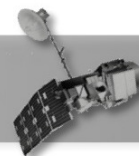




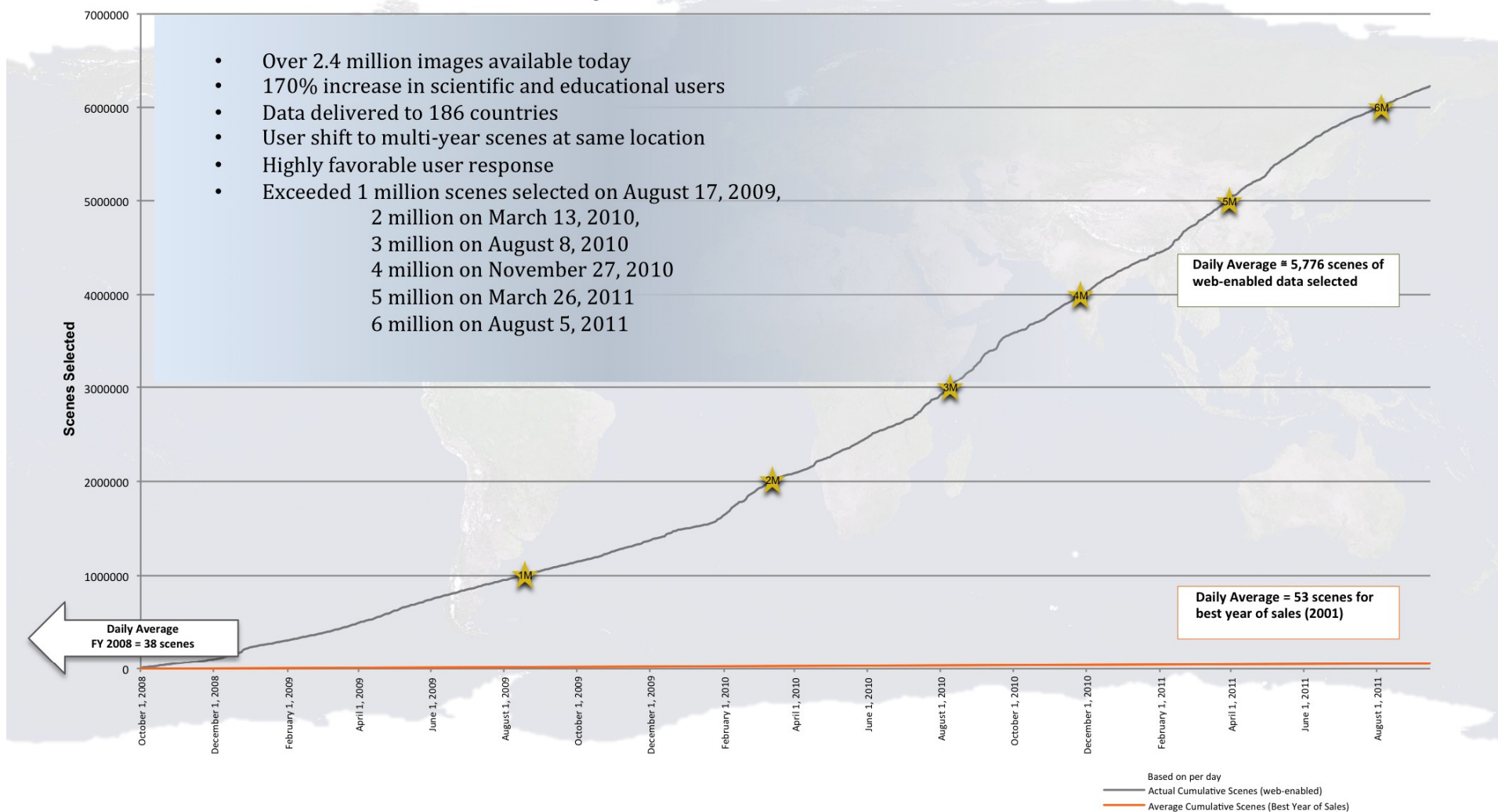
USGS Landsat Uses/Applications



Landsat Web-Enabled Imagery



Total Landsat Scenes Selected By Users Since October 1, 2008





International Coordination Mechanisms

- Group on Earth Observations (GEO)
 - Goals and principles aligned
 - International visibility
 - Helped lay the groundwork for GFOI, GEOGLAM, etc.
 - Committee on Earth Observation Satellites (CEOS)
 - International support
 - Acquisition planning
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Summary

- Can you imagine a world where Earth observation data and information was as readily available as weather information is today?
 - Not only what the weather was 100 years ago, what it is today, and what it will be in the future
 - The open-data policy for Landsat is helping create that world.
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