

Office of Science and Technology Policy

Achieving and Sustaining Earth Observations : A Preliminary Plan Based on a Strategic Assessment by the U.S. Group on Earth Observations

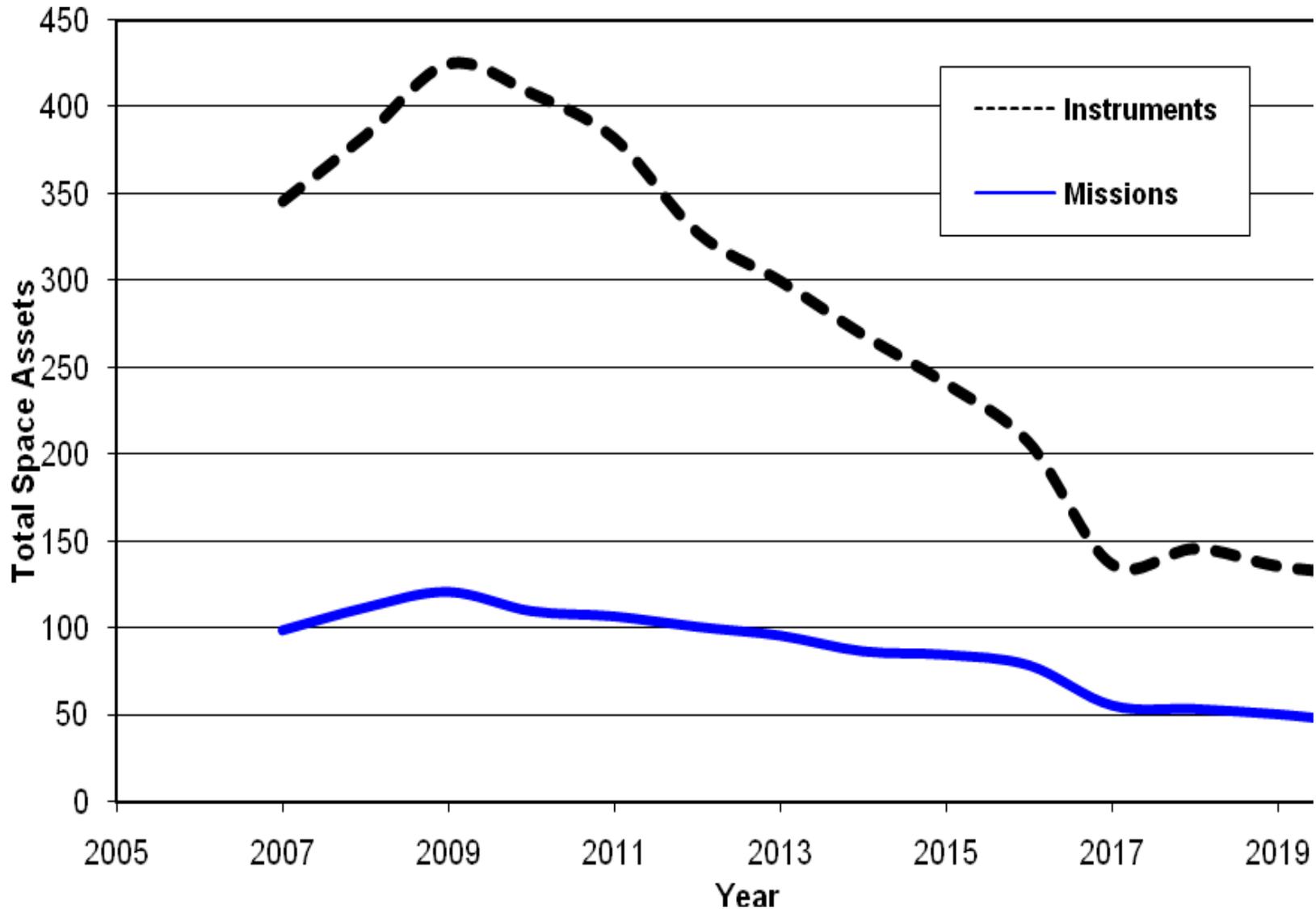
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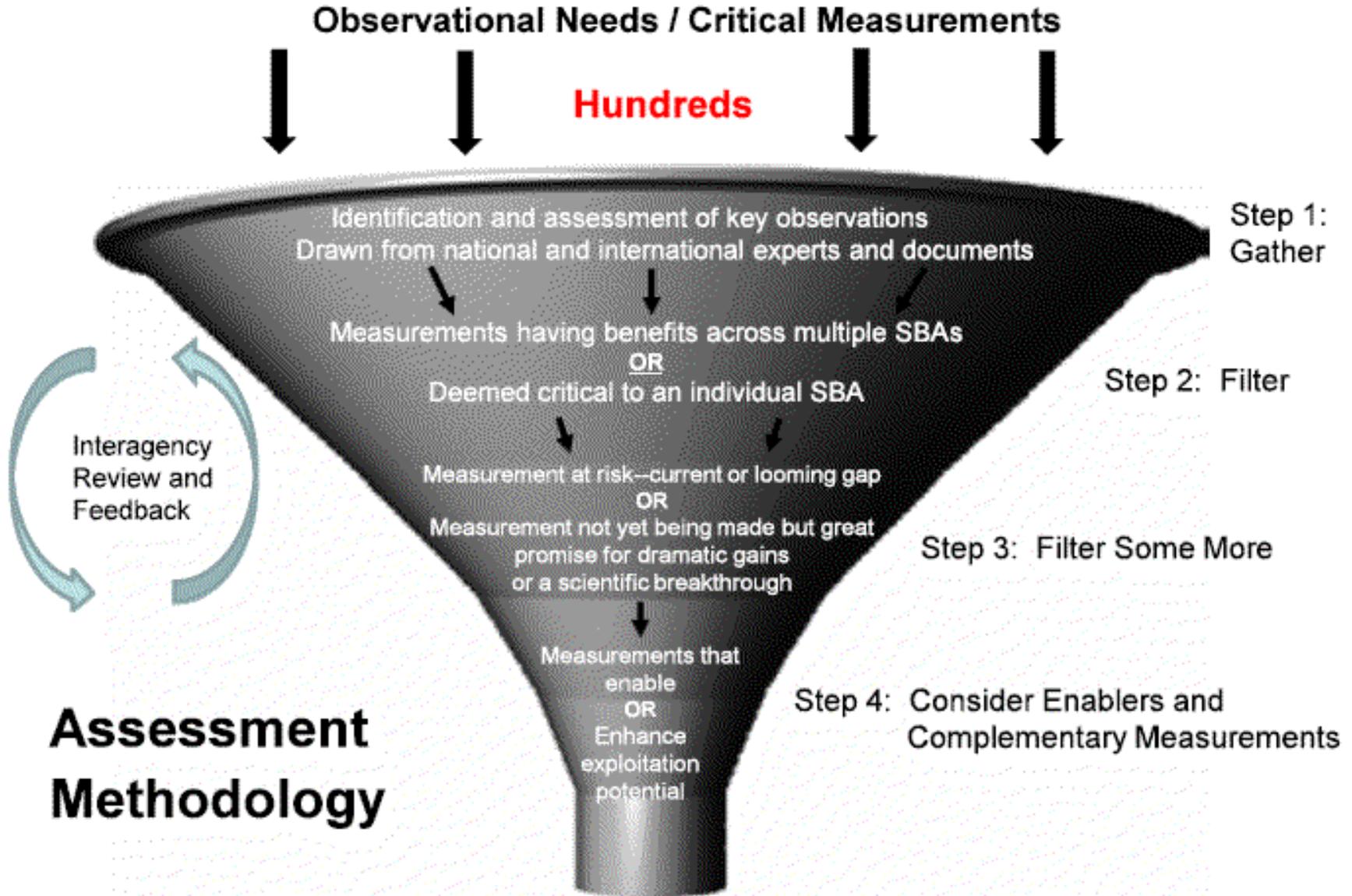
USGEO Strategic Assessment Group

- Background
 - Formed: Sept 2007
 - Charge:
 - To deliver a strategic portfolio
 - of high priority national Earth observation investment recommendations
 - for existing and future capabilities
 - to inform decision-makers,
 - » including OSTP, OMB, Congressional Committees, and Agencies' budget planners
 - and improve decisions regarding national investments in Earth observations

Status of Civilian Space Assets



Assessment Methodology



Recommendations

Measurement	Space-Based Recommendations and Status	<i>In situ</i> Recommendations and Status	Rationale	Linkages
Fires	Ensure the VIIRS instrument is sufficient for maintaining the fire climate data record. A spatial resolution to 100 meters for visible/infrared bands, and 500 meters for the thermal bands, with coverage every 6 hours is highly desirable. Develop LDCM data at a 30 meter spatial resolution.	Support the continued development and deployment of <i>in situ</i> fire monitoring capabilities and sensors for manned and unmanned aerial platforms supporting tactical fire management and fire research at USDA, NIST, and NOAA.	There is a potential degradation in capability in satellite-based fire detection and monitoring. Manned aircraft are an important data source for tactical fire information such as active fire perimeters, hotspots, and fire spread; information that is critical for incident management. Unmanned aircraft are a useful capability.	Disasters, Wildfires, Public Safety, Forestry, Ecosystems

NRI and FIA

Measurement	Space-Based Recommendations and Status	<i>In situ</i> Recommendations and Status	Rationale	Linkages
Biodiversity	See Landscape Characterization/ Vegetation	Support the Smithsonian Institution Global Earth Observatories (SIGEO), the National Ecological Observatory Network (NEON), the Long Term Ecological Research (LTER), and Experimental Forests and Ranges (EFR). Ensure the continuity of trending data collection programs like the Forest Service's Forest Inventory and Analysis (FIA) Program and the Natural Resources Conservation Service's National Resources Inventory (NRI). Continue to support NOAA's ocean and coastal living marine resource and ecological/ecosystem surveys. The 2011 Budget provides funding to sustain the above programs.	<i>In situ</i> data are critical to measure ecosystem processes and disturbances such as invasive species, wildland fires, and altered phenology patterns. Existing programs such as the Global Biodiversity Information Facility, the Forest Inventory and Analysis (FIA) Program, and the National Resources Inventory (NRI) are vital in monitoring such ecosystem processes and effects, and assess their natural range of variations in relation to ongoing climate change and land management activities. Developing a National Phenology Network would strongly complement these activities. These networks are effective for this purpose but are currently too limited in scope to provide maximum management effectiveness and decision support.	Ecosystems, Pharmaceuticals, Climate, Agriculture, Health

Landsat, NAIP, IFTN

Measurement	Space-Based Recommendations and Status	<i>In situ</i> Recommendations and Status	Rationale	Linkages
Landscape Characterization/ Vegetation	<p>Continue improvements to the Visible/Infrared Imager Radiometer Suite (VIIRS) instrument scheduled to be deployed on NPP and JPSS.</p> <p>Evaluate an operational moderate-resolution satellite program that would meet the land imaging needs of U.S. civil agencies and society, in accordance with the OSTP-led Future of Land Imaging Interagency Working Group's recommendations in the 2007 document "A Plan for a U.S. National Land Imaging Program." Planning for Landsat-9 is being undertaken by the USGS and NASA, in cooperation with other stake-holders. This planning, however, must look beyond Landsat 9 and lay out requirements for an operational Landsat program. Recommendations for future Landsat-like instruments include a spatial resolution of at most 20 meters, at least a 5-day repeat cycle, increased daily acquisition rates, and possibly additional visual shortwave infrared and thermal infrared spectral bands. Additional higher spatial-resolution imagery will still be required to understand field-level</p>	<p>Sustain the National Agriculture Imagery Program (NAIP) and the follow-on program Imagery for the Nation (IFTN). The 2011 Budget continues NAIP.</p>	<p>There is an imminent gap in the Landsat series of satellites. Landsat has provided land images used for global land cover mapping, estimating agricultural production, and estimating forest diversity. The utility and importance of moderate-resolution land imaging data have been well proven but the Nation has no permanent, operational Landsat-like land-imaging program. The current Landsat 5 and 7 missions are already past their nominal design life, and the next Landsat in the series, the Landsat Data Continuity Mission (LDCM), is not expected to launch until late 2012. The looming gap in this 38-year record will impact not only agriculture and forestry, but also our understanding of the carbon cycle, and ecosystem monitoring.</p> <p>Science missions, which by their nature do not provide sustained data over time, are not a reliable source of the earth observations that are critical to land-use and change research. Operational limitations coupled with the poor continuity of a Landsat data</p>	<p>Ecosystems, Climate, Agriculture, Disaster Response, Wildfire Assessment</p>

Landsat with more spatial / spectral resolution

Evaluate an operational moderate resolution satellite program that would meet the land imaging needs of U.S. civil agencies and society, in accordance with the OSTP-led Future of Land Imaging Interagency Working Group's recommendations in the 2007 document "A Plan for a U.S. National Land Imaging Program." Planning for Landsat-9 is being undertaken by the USGS and NASA, in cooperation with other stakeholders. This planning, however, must look beyond Landsat 9 and lay out requirements for an operational Landsat program.

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Recommendation

- Sustain the National Agriculture Imagery Program (NAIP) and the follow-on program Imagery for the Nation (IFTN). The 2011 Budget continues NAIP.

SNOTEL

Measurement	Space-Based Recommendations and Status	<i>In situ</i> Recommendations and Status	Rationale	Linkages
Water Quantity and Quality	<p>NASA should continue its observations of gravity fields from GRACE-1 and follow-on gravity missions for ground water storage and ice sheet mass variations. In addition, NOAA and NASA seek international partnerships to complement JPSS's ability to understand ground water and snow water equivalent (e.g., the AMSR-2/3 instruments on JAXA's GCOM mission).</p>	<p>Support the modernization of the Nation's 7,000 stream gauges by replacing obsolete telemetry to ensure continued real-time operations and provide more timely information needed for better water management. Consider supplying more opportunities to study large river basins. Investigate and implement new technologies to measure sediment in rivers. Also support the Advisory Committee on Water Information, and the National Water Quality Monitoring Council plan for sustaining and enhancing the Nation's capability to monitor water quality. Continue to improve snow moisture measurements such as SNOwpack TELemetry (SNOTEL) and the NOAA Operational Hydrology Program to increase understanding of source water from snow and runoff. The FY 2011 Budget supports these efforts through the WaterSMART initiative, which invests an additional \$9 million for a multi-year, nationwide study of water availability and use.</p>	<p>Full understanding of the quantity and quality of our waters, and particularly our ability to locate problems and provide timely and accurate warning to the public depends on a robust monitoring system.</p>	<p>Water Availability, Water Quality, Flood, Streamflow, Water Resources Forecasting, Health, Agriculture, Hydroelectric and Biomass Renewable Energy Production, Sustainable Growth</p>

- No new interactions on USGEO SAG for 2 years.
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