



## **2009 Earth Science Senior Review**

### **National Interests Panel *Report to Senior Review Science Panel***

***Lawrence Friedl, Panel Chair  
NASA Headquarters  
ESD Applied Sciences Program***

***May 12-14, 2009***



# Earth Science Senior Review

## National Interests Panel

### Overall Recommendations from National Interests Panel \*

Rating	Definition	Missions
Very High Utility	These missions have one or more very relevant and highly valued data products which are routinely used by one or more of the participating organizations for important activities. Loss of the data product(s) would have a significant negative impact on national on national agencies and organizations.	<i>Aqua, Terra, QuikSCAT, TRMM, Jason-1, GRACE</i>
	These missions have one or more data products which are routinely used	

\* Note: These are the initial findings and recommendations. The full report will explain the rationale for the ratings, including any caveats to these recommendations.



# Earth Science Senior Review

## *National Interests Panel*

### **National Interests of the proposed mission extension**

The National Interests panel assessed the contributions of the missions, sensors, and core data products to national objectives

Panel to convey the value of the missions and data sets for “applied and operational uses” that serve national interests, including:

operational uses, public services, business and economic uses, military operations, government management, policy making, non-governmental organizations’ uses, etc.

Essentially, this panel represented users of the data sets for primarily non-research purposes.

Panel met April 28-29, 2009



# Earth Science Senior Review

## *National Interests Panel*

### **National Interests – Pre-panel Assessment Factors & Rating**

Each organization assessed three primary factors and one overall rating:

Factor: Value

Overall value of the data products to the range of applied and operational uses within the organization. Value for those times the data is used, independent of frequency of use, latency of receipt, etc

Factor: Frequency of Use

Frequency the organization currently uses the data products in the range of applied and operational applications.

Factor: Latency

Current timeliness in which the organization accesses and/or receives delivery of the data products to meet the range of applied and operational uses.

Overall rating: Utility

Overall *utility* of mission and data products to national interests



# Earth Science Senior Review

## *National Interests Panel*

### **Panel Operations**

35 minutes allocated for each mission (70 min. for Terra/Aqua/Aura)

Primary Reviewer introduced mission and his organization's ratings.  
Showed table with all the organizations' ratings.

Round-table panel discussion.

Panel Consensus on an overall utility rating for the mission/sensor

- Identify any major minority opinions (for report)
- Determine any questions to suggest to Science Panel

Following discussions of all the missions, each organization separately ranked each mission according to its post-panel view of *national interests*

Primary Reviewers prepared Panel Summaries

Panel discussed overall results and recommendations

Panel Chair preparing panel report (early June delivery)



# Earth Science Senior Review

## *National Interests Panel*

### **Panel Members**

#### Civil Agencies

Tom Carty

Michael Cosh

Kevin Schrab

Al Powell

Paul DiGiacomo

Federal Aviation Administration

US Department of Agriculture

NOAA-National Weather Service

NOAA-NESDIS

NOAA-CoastWatch

#### Military/Homeland Security

Kim Richardson

Mark Zettlemyer

Marty Eckes

Naval Research Lab (Monterey)

Air Force Weather

Department of Homeland Security

#### States/NGOs/Private Sector

John Lyon

John Musinsky

Bill Burgess

Rick Ohlemacher

ASPRS

Conservation International

National States Geographic Information Council

AIAA & Space Enterprise Council Remote

Sensing Working Group



# Earth Science Senior Review

## *National Interests Panel*

### **Panel Members**

#### Observers

Interior/US Geological Survey

Federal Aviation Administration (support to Panel Member)

National Geospatial-Intelligence Agency

National Reconnaissance Office

#### Panel Member Cancellation

US Environmental Protection Agency



# Earth Science Senior Review

## National Interests Panel - Report

Rating	Definition	Missions						
<b>Very High</b>	NASA 2009 Earth Science Senior Review							
	<i>Overall Utility Rating from National Interests Panel, by Organization &amp; Mission/Sensor</i>							
	Mission / Sensor	Overall Rating	Civil Agencies		Military / Intelligence Community	Homeland Security	State & Locals	Private Sector / NGOs
			<b>National Interests Panel: TRMM</b>					
			<b>Panel Overall Utility Rating: Very High Utility</b>					
			Organization Type	Organization	Individual Factors			Overall Utility Rating
					Value	Frequency of Use	Latency	
			Civil Agencies	NOAA NWS	High	Routine	NRT	Very High Utility
				NOAA NESDIS	High	Routine	1-2 Day	High Utility
				NOAA CoastWatch	High	Routine	1-2 Day	High Utility
				FAA	Medium	Indeterminate	Indeterminate	High Utility
				USDA	High	Routine	1-2 Day	Very High Utility
			Military / Intel. Comm.	DoD-NRL	High	Routine	NRT	Very High Utility
				DoD-Air Force Weather	High	Routine	NRT	Very High Utility
			Homeland Security	DHS	Low	Indeterminate	Indeterminate	Not Applicable
			State/Locals	NSGIC	Indeterminate	Indeterminate	Indeterminate	Not Applicable
			Private Sector / NGOs	Conservation Intl.	High	Routine	NRT	Very High Utility
				ASPRS	Medium	Occasional	Week/Month	High Utility





# Earth Science Senior Review

## 2009 National Interests Panel

### Overall Recommendations from National Interests Panel \*

Rating	Definition	Missions
<b>Very High Utility</b>	These missions have one or more very relevant and highly valued data products which are routinely used by one or more of the participating organizations for important activities. Loss of the data product(s) would have a significant negative impact on national on national agencies and organizations.	<b><i>Aqua, Terra, QuikSCAT, TRMM, Jason-1, GRACE</i></b>
	These missions have one or more data products which are routinely used	

*\* Note: These are the initial findings and recommendations. The full report will explain the rationale for the ratings, including any caveats to these recommendations.*



# Earth Science Senior Review

## 2009 National Interests Panel

Overall Utility Rating from National Interests Panel, by Organization & Mission/Sensor

Mission / Sensor	Overall Utility Rating	Civil Agencies					Military / Intelligence Community		Homeland Security	State & Locals	Private Sector / NGOs	
		NOAA NWS	NOAA NESDIS	NOAA CoastWatch	FAA	USDA	NRL	AWFA	DHS	NSGIC	Conservation Intl.	ASPRS
ACRIMSAT	Some	N/A	Some	N/A	N/A	N/A	High	N/A	N/A	N/A	N/A	N/A
Aqua	Very High	Very High	Very High	Very High	High	Very High	Very High	Very High	Some	Very High	High	Very High
AIRS/AMSU	High	Very High	High	N/A	High	N/A	Very High	Very High	N/A	N/A	N/A	N/A
AMSR-E	High	Very High	Very High	Very High	Some	Very High	Very High	Very High	Some	N/A	N/A	N/A
CERES	Some	Very High	Very High	N/A	N/A	N/A	Some	N/A	N/A	N/A	N/A	N/A
MODIS	Very High	Very High	Very High	Very High	High	High	Very High	Very High	Some	Very High	High	Very High
Aura	High	Very High	Very High	N/A	High	N/A	High	High	Some	Some	N/A	Very High
HRDLS	N/A	N/A	Very High	N/A	N/A	N/A	Some	N/A	N/A	N/A	N/A	N/A
MLS	Some	Very High	Very High	N/A	Some	N/A	High	N/A	N/A	N/A	N/A	N/A
OMI	High	Very High	Very High	N/A	High	N/A	Some	Very High	Some	N/A	N/A	Very High
TES	Some	N/A	N/A	N/A	Some	N/A	Some	Very High	N/A	N/A	N/A	N/A
CALIPSO	Some	Some	Very High	N/A	Some	N/A	Very High	N/A	N/A	Some	N/A	Very High
CloudSat	High	High	High	N/A	Some	N/A	Very High	High	N/A	Some	N/A	Very High
EO-1	Some	Some	Some	N/A	N/A	Very High	High	N/A	Some	N/A	Some	Very High
GRACE	Very High	N/A	Very High	N/A	N/A	N/A	Some	N/A	Some	Very High	N/A	Very High
ICESat	Some	Some	Very High	N/A	N/A	N/A	Some	N/A	Some	Very High	N/A	Very High
Jason-1	Very High	Some	Very High	N/A	Some	Some	High	N/A	N/A	N/A	N/A	Very High
QuikSCAT	Very High	Very High	Very High	Very High	Some	N/A	Very High	Very High	N/A	Some	N/A	Very High
SORCE	High	High	Very High	N/A	N/A	N/A	Very High	High	N/A	N/A	N/A	N/A
Terra	Very High	Very High	Very High	Some	High	Very High	Very High	Very High	Some	Very High	Very High	Very High
ASTER	High	N/A	High	N/A	Some	High	High	High	N/A	High	Very High	Very High
CERES	Some	Very High	Very High	N/A	N/A	N/A	Some	N/A	N/A	N/A	N/A	N/A
MISR	Some	N/A	High	N/A	Some	High	High	N/A	N/A	N/A	N/A	N/A
MODIS	Very High	Very High	Very High	Some	High	Very High	Very High	Very High	Some	Very High	Very High	Very High
MOPITT	Some	N/A	High	N/A	N/A	N/A	High	N/A	N/A	N/A	N/A	N/A
TRMM	Very High	Very High	High	High	High	Very High	Very High	Very High	N/A	N/A	Very High	High

### ***Post-Panel Discussion Ranking of Missions***

Mission	Overall Score	Average	Std Dev.	Range		Panel Utility Rating
				High	Low	
Aqua	149	12.4	0.79	13	11	Very High
Terra	138	11.5	1.62	13	8	Very High
QuikSCAT	107	8.9	2.64	13	5	Very High
TRMM	98	8.2	3.66	12	2	Very High
Jason-1	90	7.5	3.06	12	2	Very High
Aura	87	7.3	2.38	10	3	High
GRACE	82	6.8	3.27	11	2	Very High
EO-1	69	5.8	3.72	11	1	Some
CloudSat	64	5.3	2.02	9	2	High
CALIPSO	64	5.3	2.84	11	1	Some
SORCE	61	5.1	3.50	12	1	High
ICESat	51	4.3	2.60	8	1	Some
ACRIMSAT	32	2.7	1.92	6	1	Some

## Post-Panel Discussion Utility Rating of Missions, by Organization

Panel	ASPRS	NOAA NESDIS	NRL	NOAA NWS	Conservation Intl.	AIAA	NSGIC	USDA	AWFA	USGS	NOAA Coast Watch	FAA	DHS
Aqua	Aqua	Aqua	Aqua	QuikSCAT	Terra	Aqua	Terra	Terra	Aqua	EO-1	Aqua	Aqua	Terra
Terra	Terra	Terra	Terra	Jason-1	TRMM	SORCE	Aqua	Aqua	TRMM	Terra	QuikSCAT	Terra	Aqua
QuikSCAT	CALIPSO	Jason-1	TRMM	Aqua	Aqua	EO-1	GRACE	TRMM	QuikSCAT	Aqua	Jason-1	TRMM	EO-1
TRMM	GRACE	QuikSCAT	QuikSCAT	Terra	SORCE	GRACE	QuikSCAT	EO-1	Terra	Aura	TRMM	Aura	GRACE
Jason-1	Aura	GRACE	CloudSat	TRMM	QuikSCAT	QuikSCAT	Aura	Jason-1	SORCE	ACRIMSAT	Terra	CALIPSO	Aura
GRACE	EO-1	TRMM	Jason-1	Aura	EO-1	Terra	Jason-1	ICESat	Aura	ICESat	ICESat	CloudSat	Jason-1
Aura	ICESat	SORCE	Aura	SORCE	GRACE	TRMM	CALIPSO	Aura	CloudSat	CALIPSO	CALIPSO	QuikSCAT	ICESat
CloudSat	QuikSCAT	ACRIMSAT	CALIPSO	CloudSat	Aura	Aura	CloudSat	GRACE	Jason-1	GRACE	GRACE	ICESat	ACRIMSAT
SORCE	CloudSat	CloudSat	SORCE	ICESat	CloudSat	Jason-1	EO-1	QuikSCAT	CALIPSO	SORCE	EO-1	SORCE	QuikSCAT
EO-1	Jason-1	CALIPSO	EO-1	CALIPSO	CALIPSO	ACRIMSAT	SORCE	CALIPSO	GRACE	TRMM	CloudSat	GRACE	CloudSat
CALIPSO	TRMM	Aura	ACRIMSAT	EO-1	ICESat	ICESat	ACRIMSAT	CloudSat	EO-1	Jason-1	Aura	EO-1	TRMM
ICESat	ACRIMSAT	ICESat	ICESat	GRACE	Jason-1	CloudSat	TRMM	ACRIMSAT	ICESat	QuikSCAT	SORCE	Jason-1	CALIPSO
ACRIMSAT	SORCE	EO-1	GRACE	ACRIMSAT	ACRIMSAT	CALIPSO	ICESat	SORCE	ACRIMSAT	CloudSat	ACRIMSAT	ACRIMSAT	SORCE

**Very High**

**High**

**Some**

**Not Applic./Neglig.**



# Earth Science Senior Review

*National Interests Panel*

**Individual Missions**



## 2009 Senior Review – National Interests

### ***Aqua: Very High Utility***

#### **Rationale**

Loss of data from Aqua would have some significant negative impact on ALL organizations in the panel. Widespread use of MODIS alone ensures highest rating; AMSR-E and AIRS/AMSU also important and CERES' value recognized.

#### **Ratings**

Eight rated Terra Very High; One High; One Some

#### **Uses**

AMSR-E: Numerical weather prediction, defense trafficability, sea ice, TC location/structure/track; rain estimates for active/global TCs; operational marine forecasts; wind and wave conditions over open ocean;

- Polar winds used in oper. systems by 11 num. wx. pred. centers in 7 countries
- HAB Bulletins and Fisheries ecosystem assessments



## 2009 Senior Review – National Interests

### ***Aqua: Very High Utility***

#### **Rationale**

Loss of data from Aqua would have some significant negative impact on ALL organizations in the panel. Widespread use of MODIS along ensures highest rating; AMSR-E and AIRS/AMSU also important and CERES' value recognized.

#### **Sensors**

**MODIS**                      **Very High Utility**

**AMSR-E**                    **Very High Utility**

contributions to applied and operational uses

USDA prefers Terra/MODIS to Aqua/MODIS due to AM pass (fewer clouds)



## 2009 Senior Review – National Interests

### ***Terra: Very High Utility***

#### **Rationale**

Easily reached consensus rating of Very High Utility, primarily due to the great practical utility of MODIS for a wide range of applications. Value of other sensors, especially ASTER (despite loss of SWIR), added to utility rating.

#### **Ratings**

Nine rated Terra Very High/High; Two rated it Some

#### **Uses**

ASTER used for numerous applications by state/local governments: landscape change, unpermitted construction, disasters, watershed assessment, etc.

AST14 used NRT for Indonesia parks for illegal logging/encroachment alerts

#### **Other Views**

NOAA CoastWatch ocean color is only risk redux for Aqua, MERIS  
Utility of ASTER limited by difficulties in tasking and accessing data





# 2009 Senior Review – National Interests

## *Terra: Very High Utility*

### **Rationale**

Easily reached consensus rating of Very High Utility, primarily due to the great practical utility of MODIS for a wide range of applications. Value of other sensors, especially ASTER (despite loss of SWIR), added to utility rating.

### **Sensors**

**MODIS**                      **Very High Utility**

**ASTER**                      **High Utility**

If DAS Modulator on MODIS fails (sensor has lost redundancy), it would have a significant impact on the utility of this mission by nearly all panel participants.



## 2009 Senior Review – National Interests

### ***QuikSCAT: Very High Utility***

#### **Rationale**

Breadth of disciplines that use QuikSCAT and multitude of applications  
Very High also since data available on reliable basis in near-real-time

#### **Ratings**

Half rated QuikSCAT Very High; None High; Half rated Some/Not Applic.

#### **Uses**

All 5 of NOAA's Mission Goals have ocean vector winds priority 1 (mx critical)  
Gap winds events (and climatologies for gap winds analysis)  
Tropical cyclone recon., formation/dissipation, center fixing/tracking, intensity

Note: Question about ability to get winds closer to coast; very desirable by applied/oper. orgs.



## 2009 Senior Review – National Interests

### ***TRMM: Very High Utility***

#### **Rationale**

Tremendous use for each of TRMM's sensors and data products.

Primary benefits with Tropical Cyclones (TC), flood, hazardous weather, fires, hydrology, forecast modeling

Synergies with data sets from other satellites support additional applications

#### **Ratings**

Most of panel (9) has TRMM at Very High or High; not applicable by others

#### **Uses**

TC location and structure at NWS and DOD Joint Typhoon Warning Center, especially when TC circulation center not visible in geostationary imagery

Rainfall monitoring and impacts of land-falling TCs; Precipitation forcing to hydrologic operations; US & overseas modeling agencies assimilate TMI, VIRS

LIS lightning helps FAA, NOAA, Air Force monitor growth and decay of storms; supports aircraft icing conditions; NCEP Aviation Weather Center uses

CI's NRT Fire Risk System uses TRMM daily in forest flammability; 3B42RT in rainfall duration & 3B42 for historical analysis of fire risk; pair with MODIS

#### **Other Views**

Two panelists indicated no direct TRMM use in their organizations, though they realized they may derived indirect benefits from better forecasts

Panel lamented that TRMM's inclination limits coverage to tropics & lower US



## 2009 Senior Review – National Interests

### *Jason-1: Very High Utility*

- Rationale** Data products central to oceanographic & weather communities, but reduced utility for other communities. Thus, lower of those in Very High category.
- Ratings** Half considered Jason-1 Very High or High; Half considered Some/Not Applic.
- Uses**
- Hurricane intensity forecasts
  - Wave-height conditions/forecasts; warnings to mariners
  - Habitats (fronts, eddies) that large pelagic animals use; larval transport models
  - USDA uses in global Reservoir/Lake monitoring for water storage assessment
  - Combination with Jason-2 (increased spatial coverage) had particular appeal for potential applications (but specific apps. are yet to be determined)
  - Climate studies and SSH seasonal/interannual variability
  - Synergies with other satellites' data sets (e.g. GRACE, MODIS, QuikSCAT)
- Other Views** USDA has transitioned to Jason-2 data product, so value of Jason-1 is reduced  
If Jason-2 can support new NGS geoid, value of maintaining Jason-1 is less
- Note:** This mission had the most contentious debate within the panel (High vs. Very High).  
Question about skills/abilities to estimate rivers and river discharge (section 1.5.3).



## 2009 Senior Review – National Interests

### ***GRACE: Very High Utility***

#### **Rationale**

Very High due to mapping and charting that provide indirect benefits to all the organizations. However, most agencies do not use the data directly.

New American vertical datum critical to mapping applications & land surveys

#### **Ratings**

Three rated GRACE Very High; Two Some; Half rated Not Applic.

#### **Uses**

National Geodetic Survey (NGS) – implementing new gravimetric national reference system (geoid vertical datum) by 2017; datum updated approx. once each decade and entire community relies on consistent reference standards

States currently implementing height modernization programs with NGS and dependent on derivative products produced by NGS

GRACE data supported JB2008 density model [accepted at 2008 COSPAR Scientific Assembly] so data supports updates of this standard, which contributes to space protection (satellite orbits, debris collision risks)

NWS testing GPS-RO data for operational data assimilation at NCEP

Combination GRACE and Jason support sea level rise

#### **Other Views**

No direct use in most orgs; if NGS wasn't doing new vertical datum the utility would have been lower



## 2009 Senior Review – National Interests

### *Aura: High Utility*

#### **Rationale**

Rating primarily reflects use in volcanic ash advisory. Where MLS is used operationally, it is high utility.

Air Quality aspects were underrepresented on panel.

#### **Ratings**

Half rated Aura Very High/High; Half rated Some/Not Applic.

#### **Uses**

Volcanic activity and ash detection. Volcanic cloud forecasting (especially in combo with AIRS plume detection); information used in real-time by Volcanic Ash Advisory Centers

Assimilated in Global Forecast Model as additional source of ozone profile

Use in monitoring stratospheric ozone; MLS especially valuable in polar regions

NCEP currently testing assimilation of OMTO3 total ozone NRT product

#### **Other Views**

If the Aura data sets were made available more near real time, their use for forecast models and the use of trace gases would progress farther than it has.

The proprietary-like nature of KNMI control of OMI data was lamented

Note: Utility may be bias low due to cancellation of EPA representative on panel and their air quality perspectives



# 2009 Senior Review – National Interests

***Aura: High Utility***

## **Rationale**

Rating primarily reflects use in volcanic ash advisory. Where MLS is used operationally, it is high utility.

Air Quality aspects were underrepresented on panel.

## **Sensors**

<b>OMI</b>	<b>High Utility</b>
<b>TES</b>	<b>Some Utility</b>
<b>MLS</b>	<b>Some Utility</b>
<b>HRDLS</b>	<b>Negligible Utility/Not Applicable</b>



## 2009 Senior Review – National Interests

### ***CloudSat: High Utility***

#### **Rationale**

Variety of useful applications for weather/clouds; though only a few vocal orgs. Near-real-time data needs and utility very useful where demonstrated, but latency needs to be improved for real utility for other users.

#### **Ratings**

Five rated CloudSat Very High/High; Two Some; Four rated Not Applic.

#### **Uses**

NRL using operationally in near-real-time; physical improvement of models' ability to predict light rain

Air Force Weather using for cloud characterization to refine cloud analysis and forest algorithms; validate/calibrate cloud forecast models

Vertical cloud structure, cloud development. NESDIS said the parameters are important but 'second tier'

Cloud layers & height for modeling/forecasting support; support to aviation wx

Also cited was support to water/energy cycle, aerosols, climate variability; often it is research results feeding operations

#### **Other Views**

Limited value to some orgs. (unavailability and unfamiliarity using the products)

Synergy with A-Train (AMSR, MODIS) promotes utility of products

Air Force Weather would use in operational forecasting if available in NRT





## 2009 Senior Review – National Interests

### ***SORCE: High Utility***

#### **Rationale**

Based on recognition of the value for Space Weather & Protection capabilities, including the indirect benefits that all users of satellite data products derive from better space weather forecasts. Also, for contributions to climate change

#### **Ratings**

Ranged from Very High/High for 4; not directly applicable for others

#### **Uses**

Directly used by organization do space weather forecasting, especially near-real-time monitoring of solar flare events, inputs to USAF modeling, value and uses for airlines (arctic routing, personnel/passenger safety)

Value is also as a back-up to primary GOES XRS sources; NESDIS plans to use SORCE XPS if GOES-14 not available when GOES-10 is shut down

Contributions to climate records (though no specific application identified)

#### **Other Views**

Few organizations directly use the data products; they recognized the value they derive from protection of the satellites they are more interested in

SORCE was more of interest than ACRIMSAT, primarily because of XPS and SIM/spectral

Note: There was a question whether part of SORCE (e.g., XPS) could be extended and funded, if the entire mission cannot.



# 2009 Senior Review – National Interests

## ***EO-1: Some Utility***

<b>Rationale</b>	Utility of data high for knowledgeable users, though most had no use currently. If data was more available and tasking easier, rating could be high/very high.
<b>Ratings</b>	Three rated EO-1 Very High/High; 4 rated Some; 4 rated Not Applic.
<b>Uses</b>	<p>Some applications: Crop residue, post fire-burn severity mapping; forest health; tornado path identification; flooded area</p> <p>NESDIS uses for special events: fires, volcanic eruptions. Use as a validation point in algorithm development projects</p> <p>USDA uses for research purposes; USFS uses data for post-fire burn severity mapping and assessment</p> <p>Significant contributions are no-cost-to-customer availability and on-board data processing</p>
<b>Other Views</b>	<p>Many panelists cited difficulty in gaining access to taskings and inability to gain access to data.</p> <p>Need for an operational level data stream in formats useable to customers</p> <p>Desire for increased transparency in tasking of EO-1</p>



# 2009 Senior Review – National Interests

## ***CALIPSO: Some Utility***

### **Rationale**

Current user community has limited application of the data products. Narrow swath and latency makes data primarily of use for scientific development.

Rating impacted by difficulty getting data in timely fashion and data format

### **Ratings**

Three rated CALIPSO Very High; Three Some; Half rated Not Applic.

### **Uses**

“We would have used it if we had had it”  
  
- NRL Representative

here; use in

ultimate applied

### **Other Views**

~~Data format not easy to use; half orbit increments was noted as inhibitor to applying the data (proposals efforts to improve that were welcomed)~~

Latency limits use (needs to be under 3 hours for most operational apps.)

Narrowness of swath inhibits use in operations except to parameterize models

Note: Utility may be bias low due to cancellation of EPA representative on panel and their air quality perspectives



## 2009 Senior Review – National Interests

### *ICESat: Some Utility*

#### **Rationale**

Use is primarily by research arms of the organizations (e.g., validation efforts). Utility for applied & operational uses yet to be established.

If data was more routinely collected and available or coverage extended, overall utility would be higher.

#### **Ratings**

Three rated ICESat Very High/High; Three Some; Half rated Not Applic.

#### **Uses**

Some measurements and products might offer value in carbon issues related to biomass and forest characteristics

Some saw value for carbon budget issues (e.g., canopy height and structure); US Forest Service has used in part of effort to quantify woodland resources

Some sense of utility for climate change and trends

Some indications that intelligence community uses data products

#### **Other Views**

No direct use in most orgs

Limited timeframes of data collection limit use of ICESat



## 2009 Senior Review – National Interests

### ***ACRIMSAT: Some Utility***

#### **Rationale**

No direct operational uses of ACRIMSAT identified by panel.

Panel agreed on Some Utility based on premise that TSI was important for climatology studies and desire for multiple satellites recording overlapping data provides a better understanding of variances

#### **Ratings**

Ranged from Some/High for 2; not directly applicable for all others

#### **Uses**

NRL Solar Operations said High value but no specific uses identified



# Earth Science Senior Review

*National Interests Panel*

## Overall Findings



# Earth Science Senior Review

## *National Interests Panel*

### **Overall Findings**

Overall sense of utility is biased low

- Secondary/tertiary users aren't necessarily aware how they indirectly use the mission data products

Where does research end and applied/operational uses begin

- Does use by researchers at operational agency for applied-oriented improvements constitute research or applied/operational uses?

NRT aspects of missions made significant differences in use & utility

Frustration about tasking and acquisition

- Have become use to standard data products and delivery
- Tasking/Access issues with EO-1, ASTER
- Access/Latency issues with CALIPSO, CloudSat, ASTER

Some overall ratings represent very vocal, invested communities, even though the data products may not be used widely



# Earth Science Senior Review

## *National Interests Panel*

### **Overall Findings**

Combination of data products adds significantly to utility

Some examples:

- TRMM & AMSR-E: Fire risk & forest flammability
- Jason & GRACE
- ASTER and MODIS for thermal anomalies
- CloudSat (track on top) and AMSR-E (background) – tropical cyclones
- Jason with MODIS and QuikSCAT – tropical cyclones  
and sometime with TRMM overlaid on top also
- SORCE and GOES





# Earth Science Senior Review

*National Interests Panel*

**Back-up Materials**



# Earth Science Senior Review

## *National Interests Panel*

### National Interests Panel

- 1) Enable NASA to take into account the views of organizations (agencies, private sector, NGOs, etc.) that use the NASA satellite data products for applied and operational uses in the national interest
- 2) Gather organizations' individual and collective comments and recommendations for NASA on the satellite missions
- 3) Provide an opportunity for organizations to learn about additional data products they might exploit and to learn about uses by other organizations working in the national interest



# Earth Science Senior Review

## *National Interests Panel*

### **National Interests – Pre-panel Assessment Factors**

Each organization assessed three primary factors and one overall rating:

#### Value of the Data Product (independent of other factors)

- Very High
- High
- Medium
- Low

#### Frequency of Use

- Routine (daily to weekly)
- Occasional (few times a month)
- Rarely (few times per year or less)
- Never

#### Latency (the current access/delivery of the product)

- Near Real Time
- Within 24-48 hours
- Weekly/Monthly
- Archival