



# GROUP ON EARTH OBSERVATIONS

## **GEO User Interface Committee Status of Task US-09-01a**

**UIC Member Task Lead:  
Lawrence Friedl, USA-NASA**

**UIC Co-Chair Task Lead:  
Ellsworth LeDrew, IEEE (Canada)**

**Task Coordinator:  
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***14<sup>th</sup> UIC Meeting • Reading, England  
3-March-2010***



# Group on Earth Observations

## *Task US-09-01a*

### **GEO Task US-09-01a:**

**Establish a GEO process for identifying critical Earth observation priorities common to many GEOSS societal benefit areas, involving scientific and technical experts, taking account of socio-economic factors, and building on the results of existing systems' requirements development processes.**

#### **Resources to Support Task**

**Website:** <http://sbageotask.larc.nasa.gov/>

**Email address:** geo-task-us-0901@lists.nasa.gov



# Group on Earth Observations

## Task US-09-01a

### Current Status

**Climate** Final Report delivered

**Disasters** Final Report delivered on Earthquakes, Landslides, Floods.

USA/NASA sponsoring Analyst for additional Disaster report (Disasters II) on Wildfires, Volcanoes, Tropical Cyclones

*Will need to combine the two Disaster reports*

**Ecosystems** Final Report delivered on forest health, coastal, watersheds

USA/NASA sponsoring Analyst for additional Ecosystems report (Ecosystems II) on Deserts, Grasslands, Tundra, Ocean islands, and Inland waters

*Will need to combine the two Ecosystem reports*

**Energy** Final Report delivered

**Health** Final Reports delivered (Aeroallergens; Air Quality; Infectious Disease); some edits based on Analysts meeting may occur



# Group on Earth Observations

## *Task US-09-01a*

### **Current Status**

#### **Water**

Report in final draft review; expected March

#### **Weather**

Final Report delivered;  
some edits based on Analysts meeting may occur

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#### **Agriculture**

UIC Member did not deliver report on Ag/Forests  
USA/NASA sponsoring Analyst to prepare reports  
- one report on Agriculture, one on Forests/Forestry

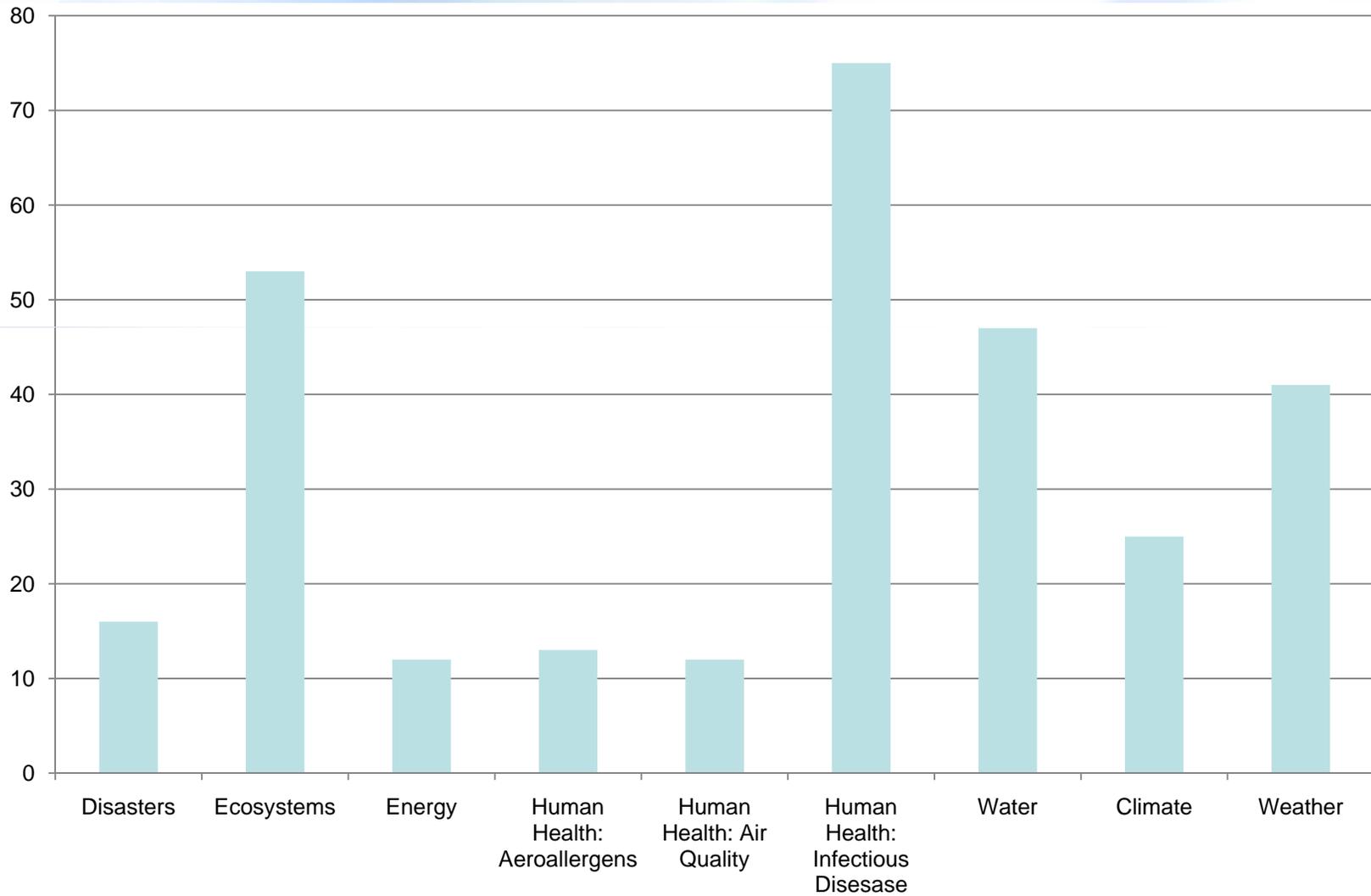
#### **Biodiversity**

Report delivered does not identify Earth observations  
Task team plans to attempt to remedy this situation.  
Will attempt to identify a new Analyst who can take the  
information already gathered and deliver an adequate report.



# Overview of Completed SBA Reports

# Priority Parameters in the SBA Report



\*\* Excludes Forests, Agriculture, Biodiversity, and follow-on Ecosystems & Disasters Reports



# Priority Parameters

Final SBA Documents designated a total of 187 “unique” parameters, such as surface air temperature,

- Need to exclude some non-Earth Observation (EO) parameters
  - e.g., 11 human dimension parameters such as poverty distribution
  - e.g., poultry movement outside traditional definition of EO
- Some parameters are inter-related, derived
  - e.g., Ecosystems designated “direct” and “indirect” parameters
  - e.g., land cover relies on spectral classification and multiple other parameters

May need to do some **“parameter cleaning”** ...

...will end up with **~150** parameters to prioritize.

List of Final Priority Parameters for UIC will **be >10 but <150.**



# Parameter Cleaning

- Combine **duplicate terms** for nearly identical parameters
  - E.g. topography and elevation
- Treatment of **modeled or derived parameters**
  - E.g., snow cover, relies on topography, SAR images, cloud cover, and land cover classification
- Treatment of **broad topics** (rather than parameters)
  - E.g., Deforestation, from HH: Infectious Diseases SBA Report
  - E.g., Hydrology, from Ecosystems SBA Report
- Treatment of reports that **considered current technology**



# Preliminary Example Results

*do not cite or quote*

**Initial analysis for Analysts discussion:**

**Assumes equal SBA weighting, with very little parameter cleaning**

Parameter	Rank	Parameter	Rank
Land Cover	1	Net Primary Productivity (NPP)	13
	2		14
Precipitation		Ambient Nitrogen Dioxide Concentration	
	3	Ambient Particulate Matter Concentration (course)	15
Elevation		Ambient Sulfur Dioxide Concentration	16
Air Temperature	4		17
Normalized Difference Vegetation Index (NDVI)	5	Direct Normal Irradiation (DNI)	
Relative Humidity	6	Global Horizontal Irradation (GHI)	18
Soil Moisture	7	Bathymetry	19
Wind Speed	8	Pollen Counts	20
Ambient Ozone Concentration	9	Spore Counts	21
Ambient Particulate Matter Concentration (fine)	10	Soil Composition	22
Water run-off	11	Slope Angle	23
Land Surface Temperature	12	Cloud Cover (cloud index)	24



# Group on Earth Observations

## Task US-09-01a

### Current Task Schedule

Final reports from 7 SBAs	Dec.2009 - Feb. 2010
Meta-analysis across SBAs and existing reports	Jan-April 2010
2 <sup>nd</sup> Meeting of the Analysts	February 2010
Preliminary Reports on Agriculture, Disasters II, Ecosystems II	April 2010
Preliminary Cross-SBA US-09-01a Report *	April/May 2010
Preliminary Report on Ag/Forests	May 2010
Initial Final Cross-SBA US-09-01a Report *	July 2010
Final Reports on Agriculture, Disasters II, Ecosystems II	July 2010
Final Report on Ag/Forests	August 2010
Amended Final Cross-SBA US-09-01a Report	September 2010
Gap Analyses	TBD
Plenary GEO VII	November 2010

*\* these Cross-SBA reports will not include Agriculture, Forests, Disasters II, and Ecosystems II*



# Group on Earth Observations

## *Task US-09-01a*

### **Cross-SBA Report Template/Outline**

#### **Summary**

##### **1. Introduction**

- GEO, GEO Task US-09-01a, Purpose of Report, Scope of Report

##### **2. Methodology**

- Task Process, Analyst and Advisory Group, Methodology

##### **3. Societal Benefit Areas**

- SBA Descriptions, Sub-areas, Documents, User Types

##### **4. Earth Observations Priorities for each SBA**

- Brief summary of each SBA report

##### **5. Priority Earth Observations for the SBA**

- Table(s) of the observations

##### **6. Additional Findings**

##### **7. Comments and Recommendations**

- Process and Methodology, Challenges, Recommendations

#### **Appendix & Bibliography/References**



# Group on Earth Observations

*Task US-09-01a*

## **Future Considerations, UIC Discussion, and Decisions**



# Group on Earth Observations

## Task US-09-01a

### Current & Future States of Critical Earth Observation Priorities

*Results of Gap Analysis can be shown in such a diagram.*

Critical Earth Observation Priorities		Currently Available	
		Yes	No
Available in Future	Planned	Good situation	In waiting
	No Plan	Possible crisis	Major gap

Is this because the science & technology isn't mature?



# Group on Earth Observations

## Task US-09-01a

### Future Considerations for UIC on Task US-09-01a

The Task Lead (with others) is preparing an over-arching report across all the SBAs. The Task Lead will deliver this report to GEO UIC, which can deliver it to GEO as partial fulfillment of task US-09-01a.

#### Suggested Follow-on Activities

1. Assess the Advisory Group members *vis a vis* GEO MC/POs and CoPs
  - *Identify potential new countries and organizations GEO could recruit*
  - *Identify potential new members for GEO CoPs*
2. Presentations to announce the results of priority Earth observations
  - *GEO UIC presentations to GEO committees, C4, GEO Sec., others*
3. Perform a gap analysis regarding the current/future availability of the “priority Earth observation parameters” (see next chart)
  - *Note: This action is not specified in the task, yet seems the next logical activity.*
  - *GEO UIC could initiate this activity outright or GEO could create a new task*
4. User Requirements Registry



# Group on Earth Observations

## *Task US-09-01a*

### **Summary Information for UIC on Task US-09-01a**

1. US-09-01a information to include in report & presentation to Plenary VII
2. UIC approach on gap analyses
  - Gap analysis on information in GEOSS
  - Gap analysis on availability (current and future) observations that serve the observation priorities
3. GEO UIC release all the individual SBA reports in conjunction with the over-arching US-09-01a report
  - Primary US-09-01a deliverable is the over-arching report with Earth obs common to many SBAs



# Group on Earth Observations

*Task US-09-01a*

## **Back-up Materials**



# Group on Earth Observations

## *Task US-09-01a*

### **GEO UIC US-09-01a Process: Nine Steps**

-The process lists the steps serially, yet some of them can be done in parallel.

Step 1: UIC Members identify Advisory Groups and Analysts for each SBA

Step 2: Determine scope of topics for the current priority-setting activity

Step 3: Identify existing documents regarding observation priorities for the SBA

Step 4: Develop analytic methods and priority-setting criteria

Step 5: Review and analyze documents for priority Earth observations needs

Step 6: Combine the information and develop a preliminary report on the priorities

Step 7: Gather feedback on the preliminary report

Step 8: Perform any additional analysis

Step 9: Complete the final report on Earth observations for the SBA

When all SBA reports are complete, the Task Lead (and others) will perform a meta-analysis on the 9 SBA reports & parameter lists. They will write an overarching report, including a parameter list on “Earth observation priorities common to many SBAs.” The report will include lessons learned and recommendations. 16