

# 2010 IMC Meeting

**September 21-24 at Kellogg Biological Station** (main meeting, September 22-23)

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Welcome to the 2010 LTER IMC meeting at KBS. We have two full days planned (Wednesday and Thursday), plus some optional activities on Tuesday evening and Friday morning that we hope you will plan to attend.

IMExec has identified three focus topics, and organized the meeting around these. There will be opportunities for work on other topics as well. The optional last half-day (Friday) was suggested by several IMC members to take advantage of our face-time and move projects forward. The focus topics for 2010 are:

- IMC Governance
- EML Dataset Contributions to the NIS
- Redesign of Network Databases

For each topic, there are breakouts planned to give everyone the opportunity to present and discuss issues (on Wednesday). On Thursday, after report-back from Wednesday, the respective working groups will meet simultaneously in breakouts for their own product-oriented activities. On Friday morning, we have optional breakouts which may be an extension of Thursday's work, or used to plan new projects. IMC work groups not related to the three focus topics are also invited to schedule breakouts on Thursday or Friday. WG chairs should contact IMExec if you have not already heard from them.

Other activities:

- First-evening dinner for whomever is available. This year's discussion topic will be "Decision-making for data contributions to the NIS" (Tuesday evening)
- Tour of the KBS station, which will be organized by the KBS staff, and we will be joined by Phil Robertson, KBS-LTER PI and chair of the LTER Executive Board and Science Council (Wednesday)
- VTC with NSF program managers and Phil Robertson (Thursday)
- Poster and Demo sessions (Wednesday and Thursday evenings)

## 2010 IMC Meeting Participants

Alexander, Preston (NTL), Bahauddin, Dan (CDR), Baker, Karen (CCE, PAL), Bohm, Sven (KBS), Boose, Emery (HRF), Brunt, James (LNO), Campbell, John (HBR), Chamblee, John (CWT), Conners, James (CCE, PAL), Costa, Duane (LNO), Doll, Julie, Douce, Travis (GCE), Downing, Jason (BNZ), Friggens, Mike (SEV), Garritt, Hap (PIE), Gastil-Buhl, Gastil (MCR), Gries, Corinna (NTL), Hamilton, Steve (KBS), Henshaw, Don (AND), Hollingsworth, Jamie (BNZ), Humphries, Hope (NWT), Kaplan, Nicole (SGS), Kortz, Mason (PAL, CCE), Kunkle,

Justin, Laundre, Jim (ARC), Melendez, Eda (LUQ), O'Brien, Margaret (SBC), Porter, John (VCR), Powell, Linda (FCE), Ramsey, Ken (JRN), Remillard, Suzanne (AND), Robertson, Phil (KBS), Rugge, Mike (FCE), San Gil, Inigo(LNO), Servilla, Mark (LNO), Sheldon, Wade (GCE), Sippel, Suzanne (KBS), Skibbe, Adam (KNZ), Stephenson, Aaron (NTL), Tarrant, Phil (CAP), Valentine, Theresa (AND), Vanderbilt, Kristin (SEV), Vande Castle, John (LNO), Walsh, Jonathan (BES), Welch, Sue (MCM), White, Marsh (LNO), Xia, Yang (LNO)

## 2010 IMC Meeting Logistics

We will be meeting at the [Kellogg Biological Station LTER](#) **September 22-24, 2010**

**Travel days: 9/21 and 9/24 (afternoon)**

All meals and lodging will be provided by the station (<http://www.kbs.msu.edu/visit/conference-center>).

The closest airport is Grand Rapids, Michigan (airport code: GRR). Ground transportation will be organized with University vans. If you plan to be at KBS for dinner at 6:30, you should arrive in Grand Rapids by 5pm. Ride time is about 45 minutes from the airport to the station.

**\*\*\* Corinna sent out the shuttle plans this week. If you expected to see your name, but did not, be sure and contact her soon.\*\*\***

[Directions](#) and other information about the station can be found [at the KBS website](#).

As usual, if your travel is paid by the LNo (one IM per site) please make your arrangements as soon as possible:

- Call or e-mail Rio Grande Travel with your requested arrival/departure schedule (request to speak with a UNM representative and alert them that you are attending an LTER hosted meeting). Contact info: [corporate@rgtravel.com](mailto:corporate@rgtravel.com), by phone 1-800-778-6861 or local: (505) 768-7979.
- Rio Grande will contact the Network office for authorization and payment. You will need to approve your itinerary once it has been set up by Rio Grande.
- You may also purchase the airline ticket yourself and e-mail your itinerary to [ggarcia7@unm.edu](mailto:ggarcia7@unm.edu). Airfare will be reimbursed at an equivalent dollar value of an economy/coach ticket purchased through Rio Grande Travel.
- If you are driving you will be reimbursed at \$.50/mile. You will only be able to be reimbursed up to the price of a round trip ticket.

If you fund your own travel here are the prices for staying at the station:  
KBS accepts MasterCard, VISA or check payable to MSU. Payment is due upon check in. Please e-mail Corinna if you need a personal invoice.

- Facility fee - \$21.00 per person per calendar day includes meeting room, all day coffee/water service, standard AV equipment and morning and afternoon snack service
- \$9.50 breakfast
- \$11.50 sandwich lunch
- \$16.75 dinner
- Lodging - Apartments and/or Orchard Dorm Suites
- \$47.00 double occupancy per person per night

## 2010 IMC Meeting Agenda

### IMC Meeting, KBS

Meals: All meals are in the KBS Cafeteria

### Tuesday September 21 evening

Arrivals: See [Logistics page](#) for info

6:00 Pre-dinner mixer (Carriage House)

6:30 Dinner

7:30 Mixer and rotating discussion (Carriage House)

Subject: Decision-making for data contributions to the NIS

Starting questions:

1. Given limited resources, how do you prioritize data contributions? How are your PIs involved in this process?
2. Do you give a lot of attention to a few datasets or limited attention to a lot?
3. Do you deliver derived or raw data?

Format: 1hr Round robin; 4 tables, 8-10 people per table, rotating approx every 20 minutes, with each session focusing on a start-question. Facilitator stays with the table (Don, Corinna, Karen, Margaret).

Short report-back

finish the evening around the fire in the fire pit close to the Carriage House (weather permitting)

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### Wednesday, 22 September

8:00 Welcome (Auditorium)

- o Year in review (Margaret)
- o Legacy Data Prospectus (Phil Robertson)
- o Agenda review, Introduction to Focus Topics for all-IMC Breakouts (Don)

8:45 - 10:45 **Breakout session I**- Governance (Karen, Nicole, Eda)

10:45 *break (30 min)*

11:15 - 1:00 **Breakout session II**- EML Dataset Contributions to NIS (Margaret, Corinna, Wade)

1:00 - 2:00 *Lunch*

2:00 - 4:00 **Breakout session III**- Network DB redesign (James B, Mason, James C)

4:00 - 6:00 KBS Field tour (with Phil Robertson, Steve Hamilton)

6:00 - 7:00 *Dinner*

7:00 - 9:00 Mixer and Demos/Posters

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**Thursday, 23 September**

8:00 Agenda Review (Don)

8:15 - 8:45 Phil Robertson - review NSF topics

8:45 Introduction to Product-oriented breakouts (Margaret, other WG's leaders)

9:00 - 10:15 **Breakout Session IV**- Product-oriented IMC working groups

- GIS (Theresa)

- Controlled vocabulary (John P)

- Web Services (Mason)

10:15 *Break (15 min)*

10:30 - 12:00 **Breakout Session V**- Product-oriented IMC working groups

- EML Best Practices (Margaret)

- Governance (Nicole/Karen)

- Network DB redesign and Web services (Mason)

12:00 - 1:00 *Lunch*

1:00 - 2:00 Business meeting (Don/Margaret)

2:00 - 3:00 NSF VTC o Todd Crowl, Matt Kane, Nancy Huntly(NSF), with Phil Robertson and Steve Hamilton (KBS)

3:00 - 3:30 *Break*

3:30 - 5:00 Action items and Wrap up

5:00 - 6:00 *Not scheduled*

6:00 - 7:00 *Dinner*

7:00 - 9:00 Mixer and Demos/Posters

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**Friday September 24: 0800-1300**

Product-oriented working groups, planning activities, or ad hoc

**08:30 - 10:30 Breakout Session VI**

- LTERMapS WG (Theresa)
- EML Dataset Congruency Checker (Duane, Margaret)
- Units Registry (Mason)
- Drupal for metadata management (Inigo)

**11:00 - 12:30 Breakout Session VII**

- LTERMapS WG (Theresa)
- Initial planning for attribute standardization and dictionary (Move initial discussions to VTC)
- Relational Data model comparison (Gastil)

12:30 *Lunch*

12:30 - 5pm Departures: See Logistics page for info

## **2010 IMC Meeting Business Meeting Items**

**Elections:**

Representatives are needed for

- IMexec (3 yr term): to replace Hap Garritt who is rotating off
- NISAC Nominations (3 yr term): 2 people are rotating off (Wade Sheldon, Kristin Vanderbilt)
- Network Executive Board non-voting IM rep (3 yr term): Corinna is rotating off in Spr 2011.

**IMC Working Groups:**

- Active: Unit Dictionary, Controlled Vocabulary, Governance, GIS, EML metrics, EML Best Practices, and Web Services
- Inactive:

**Databits:**

- Define length of editor roles.
- Confirm Fall 2010 editor (Gastil) and those in line (Phillip, \_\_)

**Training Schedule:**

- Our comments to the LNo OP suggested that these be vetted by the IMC
- Suggestions for 2011

**SIP Review:**

Comments due to Don and Margaret by Sep 28 (single response from IMC due to Phil by Sep 30)

### **Review of IMC/WG Events:**

*2010 IM events (for reference)*

Feb 2010: IM Exec Annual Meeting

May 2010: LTERMapS map server developed at LNo (post-ASM funding)

May 2010: Science Council Meeting at PIE; IMExec and local IMs attended

Jun 2010: EML BP WG meeting (product-oriented WG, LNo OP)

Spr 2010: UnitDB migration from UCSD to LNo (post-ASM funding)

Spr 2010: ClimDB/HyrdoDB migration from AND to LNo (LNo OP)

### *Upcoming events*

Oct 2010: Drupal for LTER IMs (training, LNo OP)

\_\_\_ 2010: Network DB redesign (product-oriented WG, LNo OP)

\_\_\_ 2011: EML Congruency Checker (product-oriented WG, LNo OP)

### *Suggested events*

Attribute Standardization and dictionary (product-oriented WG, LNo OP)

ClimDB/HydroDB integration into PASTA (product-oriented WG, LNo OP)

### **Active PASTA Tiger Teams:**

Metadata Management Suite

Workflow Manager and Metadata Factory

## **Abstracts for Posters and Demos at the 2010 Annual IM Meeting**

### **Mining ClimDB, USGS and NCDC databases using the GCE Data Toolbox**

Type: Demo

Authors: Wade Sheldon

The GCE Data Toolbox is a MATLAB software library that supports metadata-based analysis, visualization, transformation and management of ecological data sets ([http://intranet.lternet.edu/im/project/gce\\_toolbox](http://intranet.lternet.edu/im/project/gce_toolbox)). This software can be used for a broad range of IM tasks, but this demo will focus on support for mining climate data from the LTER ClimDB/HydroDB, USGS NWIS and NOAA NCDC databases over the Internet. Both interactive GUI forms and batch-mode scripting approaches will be demonstrated, as well as use of metadata templates for metadata generation, column renaming and post-harvest QA/QC. Transforming and exporting data for use in other programs or submission to ClimDB will also be described. Note that the GCE Data Toolbox is being re-factored for release under a GPL3 license in Fall 2010, and source code is available now on the GCE Trac web site ([https://gce-svn.marsci.uga.edu/trac/GCE\\_Toolbox](https://gce-svn.marsci.uga.edu/trac/GCE_Toolbox)).

[http://intranet.lternet.edu/im/files/im/GCE\\_Data\\_Toolbox\\_Datamining\\_Demo\\_Sep2010.pdf](http://intranet.lternet.edu/im/files/im/GCE_Data_Toolbox_Datamining_Demo_Sep2010.pdf)

## **Navigating the Andrews LTER Administrative Interface**

Type: Demo

Authors: Suzanne Remillard, Andrews LTER, Oregonstate University

The Andrews LTER Administrative Interface (LAdI) is a web application for accessing and managing information related to the Andrews LTER. LAdI has a secure, encrypted login system and is composed of modules that allow access to personnel, study database, research project and publication information. The personnel module controls the information that is displayed on the Andrews LTER Members web page. Each member of the Andrews LTER will have access to update their own contact and biographical information in addition to selecting key publications that will display on the web page. The study module allows for updates to high level metadata (title, abstract, methods, keywords, personnel, etc.) of a study to which the member is associated. The project module is newly developed and will replace the current method of submitting research applications to the Forest Director. Once the online form, which is based on the current Word document application, is filled out and submitted, an email is sent to the Forest Director who will follow-up as usual. The added benefit is that the submitted information is in the database and is the start to improved research project tracking and future data products. Once submitted, the researcher or other research project associate has the ability to update the research project as activity, methods, sites, or dates change. The final module is for publications, which is not fully developed. The aspiration is that authors would have the ability to submit publication citations through LAdI and online visibility and access will be greatly improved. In general, LAdI gives Andrews members and researchers immediate access to update information that pertains to their research and increases the efficiency of updating this important information.

## **LTERMaps**

Type: Demo

Authors: Theresa Valentine, Adam Skibbe, Jamie Hollingsworth, Jonathan Walsh

The LTERMaps application was developed to provide a common internet mapping application for all LTER sites, using information collected in Network databases (SiteDB).

Core team members include Theresa Valentine, Jamie Hollingsworth, Adam Skibbe, Jonathan Walsh, and John Carpenter. The group would like to highlight Phase 1 of the project (currently operational at the LNO), share plans for Phase 2, and get feedback from the Information Managers.

The objective of Phase 2 is to provide detailed information for each LTER site using a common mapping interface for all sites. The following data will include: all information mentioned in

phase one plus, digital elevation model (DEM), roads, hydrography, and research plot locations of core research plots, structures, and imagery. The group is developing processes for initial and updated local data, examining data structure options, and developing map templates for a consistent look and feel.

The core team will be meeting on Friday September 24th to begin working on Phase 2.

## **Tallest Trees at the HJ Andrews Experimental Forest**

Type: Poster

Authors: Theresa Valentine (US Forest Service, Corvallis Forest Research Laboratory), Keith Olsen (Oregon State University)

The Andrews Forest was surveyed using LiDAR in 2008. The tallest trees were determined by subtracting the bare earth DEM from the highest hits DEM. There are several trees that are over 90 meters tall, with the tallest at 95 meters (312 feet). These trees are over 500 years old. The individual and cross section views of the trees are views of the raw point cloud data, as visualized using Fusion LiDAR software.

## **SBC's extension of the OBOE measurement ontology**

Type: Poster

Authors: Margaret O'Brien, Shawn Bowers, Matt Jones, Mark Schildhauer, Ben Leinfelder

SBC is developing a dictionary of its ecological and environmental measurements as an extension of the OBOE ontology, in an NSF project, "Semtools" (DBI-0743429). This poster will highlight some of the features and uses of the ontology. There will also be a demonstration of software being developed for annotating and searching EML datasets, and for editing the ontology itself using a Protege plug-in for OBOE.

## **Anatomy of a REST Web Service**

Type: Poster

Authors: Mason Kortz, James Connors

With the move towards web services for communication with and between NIS modules, understanding the mechanics of client/web service communication becomes an important goal. This poster shows the general processes and subsystems involved in a web service model as well as the communication between these subsystems. The poster also briefly covers the larger view of networks of web services. The goal of the poster (along with other material from the Web

Services Working Group) is to create a common framework for discussion and development of web services by site and network office participants as well as by collaborative working groups that span sites and networks.

## **Unit Registry Interface & Service Demo**

Type: Demo

Authors: Mason Kortz, James Conners, Ken Ramsey, Sven Bohm

This demo covers the interfaces into the LTER Unit Registry, as well as a look behind the scenes at the inputs and outputs of the web service itself. The first part of the demo covers the query (read-only) interface and the management (read-write) interface. The second party of the demo shows how messages can be created in code, in this case JavaScript, to pull specific units out of the registry in various formats. Ken Ramsey and Sven Bohm will then discuss their experiences integrating the Registry into the JRN and KBS data systems.

## **Metadata database models and EML creation at LTER sites**

Type: Poster

Authors: M.Gastil-Buhl (MCR) from contributions by D.Henshaw & S.Remillard (AND), J.Laundre (ARC), J.Walsh (BES), P.Tarrant (CAP), K.Baker, M.Kortz & J.Conners (CCE/PAL), D.Bahauddin (CDR), J.Chamblee (CWT), L.Powell (FCE), W.Sheldon (GCE), J.Campbell (HBR), E.Boose (HFR), K.Ramsey (JRN), S.Bohm (KBS), A.Skibbe (KNZ), E.Melendez-Colom (LUQ), S.Welch (MCM), C.Gries (NTL), H.Humphries (NWT), H.Garritt (PIE), M.O'Brien (SBC), K.Vanderbilt (SEV), N.Kaplan (SGS), J.Porter (VCR), I.San Gil (LNO/NBII)

This poster includes diagrams of metadata data models and a survey of all sites asking

1. which relational DB management system (RDBMS) they use to store metadata
2. how do they create EML
3. past or potential collaboration with other LTER sites
4. if they participate in the Drupal Environmental Information Mangement System (DEIMS) group
5. if they use EML to populate their local data catalog
6. multiplicity of data tables per dataset

The purpose of this survey is to gather materials to start discussion.

As we prepare for data integration we will each examine our IM System to ask if it will meet potential new metrics, such as Metadata-Data Congruency, to meet future network-level synthesis needs.

Some LTER sites already have such IM Systems in place. Those sites have succeeded because their architecture undergoes continuous development. Although those systems have proven agile enough to evolve with their own sites increasing needs, how tightly coupled are they to their DBMS and scripting language? Can we port existing models to other LTER sites?

Metadata-data congruency can be enhanced when the data are included within an architecture that coordinates data and metadata databases. However, this poster focuses only on metadata, not the data per se, as a starting point.

All LTER sites share some common things ("entities" in database design jargon):

- Publications
- People
- Sites
- Taxa
- Keywords
- Studies or Projects
- Datasets
- Data Tables
- Measurements
- Units
- Attribute Names

The Entity-Relationship Diagrams (ERD) show how these relate to each other. Three ERDs are shown in the poster as examples of different designs that model the same relationships.

All sites need to present metadata on websites and EML documents and other uses.

#### Longevity and Continuing Design

Some LTER sites' models designed in the 1990s are still in use today, such as at VCR and AND, having migrated to new servers and new applications with changing technology. They remain useful because their schemata inherently model the characteristics of metadata and through continuing design to keep pace with evolving standards.

GCE Metabase, the AND Metadata Database, and DataZoo at CCE/PAL are three examples of mature models, in production, and part of a larger IM System at these LTER sites. These models continue to undergo improvements. Web page display is just one of their uses. EML is currently generated by scripts from all three of these metadata databases. The AND and GCE metadata model designs pre-dated EML; the extraction of EML was developed after the initial design. EML is just one of several metadata standards these systems were designed to serve. All three undergo continuing development.

EML generated from the constrained model of a database is more likely to meet future metrics, especially if the data itself is filtered through a connected system.

Web services are changing our options for development and use of data and metadata. The Unit Registry web service will soon be followed by the Controlled Vocabulary of Keywords and then subsequently by the NIS Administrative modules (bibliography and personnel). With this approach, sites may connect to services, replacing or synchronizing those parts of their local database. How will this affect our metadata database architecture?

Several sites are looking to participate in future development of metadata data models.

The GCE Metabase has been adopted by CWT and is planned to be ported to PostgreSQL for use by MCR and SBC.

Six LTER sites (LUQ, SEV, PIE, ARC, NTL, VCR) have pooled resources to develop a Drupal-based metadata storage, display and EML creation system. Legacy EML from LUQ, SEV, and NTL has been uploaded to the Drupal back-end database. This is now in use to serve web pages for these sites. PIE and ARC are in line next. Export to EML is being programmed currently.

The scope of this poster is limited to metadata data models, not storage of research data, even though the coupling of these is important to this discussion. Only relational databases are included, although some sites use native XML databases, such as eXist at CAP. GIS metadata is not discussed beyond <geographicCoverage>.

Generic metadata ERD ppt files attached below

[http://intranet.lternet.edu/im/files/im/generic\\_metadata\\_ERD.ppt](http://intranet.lternet.edu/im/files/im/generic_metadata_ERD.ppt)

[http://intranet.lternet.edu/im/files/im/Poster\\_Gastil\\_et\\_al\\_IMC2010.pdf](http://intranet.lternet.edu/im/files/im/Poster_Gastil_et_al_IMC2010.pdf)

[http://intranet.lternet.edu/im/files/im/MCR\\_generic\\_metadata\\_ERD.ppt](http://intranet.lternet.edu/im/files/im/MCR_generic_metadata_ERD.ppt)

[http://intranet.lternet.edu/im/files/im/Metadata\\_Data\\_Model\\_Discussion.pdf](http://intranet.lternet.edu/im/files/im/Metadata_Data_Model_Discussion.pdf)

[http://intranet.lternet.edu/im/files/im/IMC\\_Session\\_VII\\_notes\\_mob.pdf](http://intranet.lternet.edu/im/files/im/IMC_Session_VII_notes_mob.pdf)

[http://intranet.lternet.edu/im/files/im/GCE\\_generic\\_metadata\\_ERD.ppt](http://intranet.lternet.edu/im/files/im/GCE_generic_metadata_ERD.ppt)

[http://intranet.lternet.edu/im/files/im/Data\\_models2010\\_jpNotes.doc](http://intranet.lternet.edu/im/files/im/Data_models2010_jpNotes.doc)

## **showDataset, a tabbed view of EML from metacat for your local catalog**

Type: Demo

Authors: Margaret O'Brien (SBC) and M. Gastil-Buhl (MCR)

The Network [data catalog](#) displays EML documents from all LTER sites with the same XSLT transform to HTML, which provides the public with a uniform view. In response to our PI's request for more user-friendly views of datasets in our local data catalogs, SBC and MCR now

present their EML in a “tabbed view” instead of linearly. The code was easily adapted for two sites' use. Additionally, we found that the same code could be easily redeployed for a slightly different purpose: to display an EML dataset directly from the fileserver so that our scientists are able to view datasets in the draft stage the same way they will appear when published. The demonstration will show how any

## **Managing your site with Drupal**

Type: Demo

Authors: Marshall White, Kristin Vanderbilt, Eda Melendez, Corinna Gries, Preston Alexander, Kyle Kwaiser, Inigo San Gil

Limited and dwindling resources are here to stay, however, technology advances at a faster pace. We looked around for a *better wheel* - that is, a technological complement that would enable a site with limited resources cope with the demands of information management.

Content management systems (CMS) are a good solution for practical purposes - a blog, a mom-and-pop store, a university portal, etc. However, most of the content management systems seem to be limited to their special niche application, providing a sense of a small black box pack.

The Drupal CMS provides the developer sufficient control to build a robust solution for the LTER information manager. Drupal web share is 1% and growing. The CMS is open source, and ample support in forms of videos, tutorials, snippets and specific tools abound one google search away.

A group of LTER site's information managers, the web dude at the LNO, and OBFS information manager and the NBII/LTER liaison person set to used the tools offered by this community. A "Five Star" rating module? check. Facebook/Tweeter apps? check. EML metadata editor? check. Tagging system via hierarchical controlled vocabularies? check. Ajax? check. Easy styling with tons of templates? check. No need for frameworks/software to manage the CMS? check. No programming expertise? No problem. No knowledge of databases? check. LDAP? check. Revisions/Subversion? check... etc, etc.

We recently received some NSF supplemental support to further this work, we are adding PIE and ARC to the list of sites that are rolling the solution presented here. We also have the support of the IM Committee to host a training in the LNo next fall.

Note, we do not have any other official support, other than the time that the authors can put into this. This does not seem to be much of a problem, since we re-use the work of hundredths of developers.

Come to our demo on Thursday to see what is all about, see whether this solutions are meant for you.

On Friday (dawn to noon-ish), we will have an all morning meeting for project status, discussions and next developments.

Some links of the current work

<http://tierra.unm.edu> (SEV)

<http://umbs.lsa.umich.edu/research/> (UBMS)

<http://gorilla.ites.upr.edu> (LUQ)

<http://inigo.lternet.edu/prototype> (Common Site)

<http://lter.dnsalias.net/site/> (NTL)

<https://microbial.lternet.edu/> (Microbes @ LTER)

Some publications about this work:

<http://databits.lternet.edu/spring-2010/drupal-developments-lter-network>

<http://databits.lternet.edu/spring-2010/developing-drupal-website-ims-lu...>

Project Repository: (mirrors at LNo too)

<http://code.google.com/p/deims/>

## 2010 IMC Meeting Notes

**Focus topic I - IMC Governance:**

[2010 Meeting Materials](#)

[Governance WG page](#)

**Focus topic II - EML Dataset Contributions to the NIS:**

[2010 Meeting Materials](#)

[Best Practices WG view](#)

[EML Metrics/Congruency Checker WG view](#)

**Focus topic III - Network DB Redesign and Web Services:**

[2010 Meeting Materials](#)

[Web services WG page](#)

**Business meeting:**

**Other:**

Breakout Sessions I, II, III see above

Breakout Session IV

- - GIS (Theresa)
- - Controlled vocabulary (John P)
- - Web Services (Mason)

Breakout Session V

- - EML Best Practices (Margaret)

- - Governance (Nicole/Karen)
- - Network DB redesign and Web services (Mason)

#### Breakout Session VI

- - LTERMapS WG (Theresa)
- - EML Dataset Congruency Checker (Duane, Margaret)
- - Units Registry (Mason)
- - Drupal for metadata management (Inigo) Breakout Session VII
- - LTERMapS WG (Theresa)
- - Relational Metadata Data Model Comparison (Gastil)

## Focus topic I - IMC Governance:

### 2010 IMC Mtg: IMC Governance Agenda Items and ToR Template/Issues&Tasks

June VTC Notes: <http://intranet.lternet.edu/im/node/617>

#### GOVERNANCE AGENDA ITEMS:

Wednesday, 22 September

8:30 - 10:30 Breakout session I- Governance (Karen, Nicole, Eda)

8:30-9:00 Intro and review of issues, as well as opening the floor to new issues, which we will attempt to categorize as sub issues under our 4 existing issues - need leaders and note taker for each break-out group

9:00-9:30 Review terms of reference categories; existing draft and outline  
Issue: Update Vision Statement

9:30 - 10:15 4 Breakout groups each with one issue and two tasks to start discussion

We envision each breakout group having three levels of work

- 1) recommend resolution of their two tasks
- 2) review, edit and augment the text in the whole ToR document
- 3) consider additional categories or items to add to the ToR

1. Issue: Define IMC process (communication to decision making) for tasks

- Leader: IMExec Member

-issue 1, task 1: Describe IMExec role for IMC and be explicit about the type of decision required

-issue 2, task 2: Develop membership categories (ie associates, affiliates)

2. Issue: Discuss relations with other committees except for NISAC (NISAC covered in issue 3 and includes previous issue 5)

-Leader: [Linda? Don?]

-Task 1: Define selection process for EB representative from IMC to EB

-Task 2: Describe partnership with SC

3. Issue: Determine number of reps and length of term for NISAC membership

-Leader: Wade as NISAC chair (NISAC members participate)

-Task 1: Describe membership in ToR for NISAC (formal)

-Task 2: Describe communications with NISAC and more formalized activity review IM, IMC, EB communication processes with NISAC

4. Issue: Terms of Reference for other WG's?

Leader: [John? Theresa? Emery? ]

-Task 1: Describe provisions for WG's to have a ToR? Which WGs might want ToR?

-Task 2: Process to construct them (can be short or long description)

10:15 -10:30

-breakout leaders talk with GWG leaders; we would all synthesize

-break group note-takers - to stimulate discussion across the break out groups; group participants; share experience in break-out group

bring back any issues to GWG members

[http://intranet.lternet.edu/im/files/im/GWG\\_agendaIMC2010\\_final.pdf](http://intranet.lternet.edu/im/files/im/GWG_agendaIMC2010_final.pdf)

[http://intranet.lternet.edu/im/files/im/TermsOfRef\\_IMCV3%5B1%5D.doc](http://intranet.lternet.edu/im/files/im/TermsOfRef_IMCV3%5B1%5D.doc)

Tue, 01/18/2011 - 11:53am — [cgries](#)

The IMC Governance Working Group's charge is to identify:

- How decisions have been made by the IMC and IM-Exec in the past
- How we govern ourselves currently
- How we might improve governance

An initial goal is to explore, document and learn from the ways the IMC participants have conducted their governance. This effort involves identifying elements of governance by reviewing governance structures, practices, and decision-making in the formal and informal work we do.

## **Focus topic II - EML Dataset Contributions to the NIS:**

### **2010 IMC Mtg: EML Dataset Contributions to the NIS**

EML Best Practices v2 (2010) Draft is attached below.

At the 2010 IMC meeting, this topic is featured in these breakout sessions:

**Session II, Wednesday (2hrs)**

Who: everyone, in 3 breakout rooms (Corinna, Margaret, Wade)

Goal: inform all the sites about the EML data congruency checker project and glean from them what features of EML datasets are important to report on. There will be a short introduction in the main room.

**Session V, Thursday (90 min)**

Who: EML Best Practices group, and interested others (Margaret)

Goal: process feedback received on the usefulness of the draft. We will use this time to edit the document, create additional examples, and/or outline the plan for completion and publishing.

**Session VI, Friday (90 min)**

Who: EML Dataset Congruency Checker group and interested others (Duane, Margaret)

Goal: Outline use cases for the congruency checker based on input from Session II.

<http://intranet.lternet.edu/im/files/im/emlbestpractices-2-20100901-DRAFT.pdf>

[http://intranet.lternet.edu/im/files/im/EML\\_metrics\\_wg.pdf\\_0.pdf](http://intranet.lternet.edu/im/files/im/EML_metrics_wg.pdf_0.pdf)

<http://intranet.lternet.edu/im/files/im/emlbestpractices-2.0-DRAFT.doc>

## **Focus topic III - Network DB Redesign and Web Services:**

### **2010 IMC Mtg: Network Database Redesign**

Workshop materials:

[http://intranet.lternet.edu/im/LTER\\_Network\\_Databases\\_0.pdf](http://intranet.lternet.edu/im/LTER_Network_Databases_0.pdf) (from Sept VTC)

[http://intranet.lternet.edu/im/news/committees/working\\_groups/webservices](http://intranet.lternet.edu/im/news/committees/working_groups/webservices)

[http://intranet.lternet.edu/im/files/im/LTER\\_WSRecs\\_draft.pdf](http://intranet.lternet.edu/im/files/im/LTER_WSRecs_draft.pdf)

This topic is featured in these breakout sessions:

**Session III, Wednesday (2hrs)**

Who: everyone, in 3 breakout rooms (Facilitators: James Brunt, James Connors, Mason Kortz)

Goal: Collect use cases from the entire group on needs from the sites vis-a-vis the Network databases. Some suggested discussion questions are also attached below (IMC2010\_NetworkDB\_Discussion.pdf) and will also be handed out during the breakout session.

**Session IV, Thursday (90 min)**

Who: Web Services Working Group and interested others (Facilitator: Mason Kortz)

Goal: Discuss web services as part of the network database redesign effort, with a focus on creating recommendations for web service developers. A draft web services recommendations document will be presented for feedback (link above).

**Session V, Friday (90 min)**

Who: Web Services Working Group and interested others (Facilitator: Mason Kortz)

Goal: Using feedback from sessions III and IV, create a draft specification for a web service interface to one or more the network databases discussed in session III.

[http://intranet.lternet.edu/im/files/im/IMC2010\\_NetworkDB\\_Discussion.pdf](http://intranet.lternet.edu/im/files/im/IMC2010_NetworkDB_Discussion.pdf)

## **2010 IMC Breakout Notes**

### **2010 IMC meeting: GIS and LTERMapS working group notes**

Attached are the original notes for the 2010 IMC GIS working group breakout as taken by Jonathan Walsh.

#### Attendance

John Chamblee	CWT
Theresa Valentine	AND
Ken ramset	JRN
Travis Douce	GCE
Hope Humphries	NWT
Jonathan Walsh	BES
John Campbell	HBR
Adam Skibbe	KNZ
Hap Garritt	PIE
Mike Friggens	SEV
Suzanne Sippel	KBS
Aaron Stephenson	NTL

- Adam Skibbe will be new chair
- GIS data management

- Need a document to explain what this group is about
  - Need to set up a chain of communications to reach GIS people at sites
- LTER GIS Strategies draft - need to discuss
- Projects or subgroups we could form, such as LTERMaps
- Workshop upcoming at the Andrews for GIS metadata
- What kind of training do sites need for GIS - we need to discuss so we can facilitate it

#### New/suggested topics

1. What kind of GIS software do we all use
2. What kind of, if any, geodatabase
3. Note - Would be good idea to hire a GIS specialist at each site, not just the information manager

Jamie went to EB meeting - was asked to put together a document of what kind of resources the IMC could use ... Asked to think big

So members of LTERMaps did a brainstorm and put the document together in July. (See LTER GIS strategy document)

Review of salient points of this document follows

- 10 sites seem to have no GIS
- We should provide numbers for ten sites
- Information managers could benefit from training . So we provided baseline numbers budget for that, using LTER data, specifically - custom training
  - o Note - Would be good idea to hire a GIS specialist at each site, not just the information manager
- GPS Units
- Fund GIS people to attend annual meeting
- Fund GIS person for LNO
- LIDAR data for all sites

#### Comments/Review

Support for GIS person on site

Any other avenues to tun this into a proposal?

This should be on the SIP? No, too specific. Maybe add a sentence or two.

John C - We need to beef up the discovery aspect of this increase in GIS capability -

One option would be a web services driven approach

So instead of a thick client, like ESRI, you have a thin client that uses coordinate data and links back to the thick client at the site - Main point is we need to spearhead the discoverability aspect of this.

Theresa: NSF should like a template approach - cartographic templates. But ESRI templates don't match our sites

John C: There is a GIS guy for each site built into the proposed SIP... Three info managers for each site - a lead, a remote sensing guy, and a programmer/technician

Whatever we add to SIP needs to be reduced to say, one sentence. This is not information we can put into the SIP. It doesn't fit the format or timing

Question: Is LIDAR really needed?

Next topic:

Back to fitting items/requests into the existing LNo budget, not the SIP

Training: Any requests for training?

- Base line LTER gis training with a specialized instructor
- LIDAR session
- Web tools?
  - o API's, server stuff
- ARC GIS general course online - 170 bucks
  - o Esp good for learning projections and coordinate systems which is important for new users to understand
- Travel to ABQ - forces you to concentrate and focus your time
- Turning Metadata into EML
- GPS class -
  - o Forest Service offers a good, useful, popular one
- Training at Andrews in November 2010 - hand out paper, put \$1000.00 from your supplement into this
- 

Priorities

Should poll sites.

What kind of software ? SPECIFICALLY - Arc 9? Arc 10

Are you using server GIS

If so what kind, give us link

Still using file based or geodatabase, if so what back end

Are you using image server?

What resolution LIDAR might you want

Do you have a GIS person, if so what percentage of FTE. Contact info

IM - are you interested in the base training or other potential training (we will list some typical training scenarios including in person at another site)

Do you have a GPS unit, if so, does it meet your needs, what resolution is it.

People interested in being contacted about meeting further about this: Ken Ramsey

## **Controlled Vocabulary Working Group at 2010 IMC meeting**

Attached are 1) powerpoint presentation used at the meeting, incorporating brief outline of discussion and action items and 2) breakout group notes from Emery Boose

2010 IMC meeting

John Porter

- Focus on next steps for this project.
- Basic problem: little commonality in current LTER keywords.
- Past accomplishments: list of 650 terms based on widely-used LTER EML keywords, auto-completion feature added to Metacat.
- Goal is to include at least one LTER keyword in each LTER EML file.
- HIVE = helping interdisciplinary vocabulary engineering. Duane transformed list and synonym ring into SKOS format, created HIVE-RS (restful service), created service to identify candidate LTER keywords from an EML file (uses sophisticated algorithms developed by HIVE project).
- Reliability & efficiency are key concepts for librarians: Is document well represented? Are the results useful? As a rule of thumb, it can be 60:40 either way.
- See prototype at: <http://scoria.lternet.edu:8080/lter-hive-prototypes/emlTagger.jsp>
- Needed activities:
- Draft “vocabulary management plan”. Who will oversee updates?
- Develop or adapt database structure and tools for managing the list, synonym ring and hierarchical relations.
- Develop a polytaxonomy for placing terms into a hierarchical framework. This will result in new terms added to the list. Four or five levels would be desirable. Ideally lowest level search would return ~ 10 datasets.
- How can the HIVE keywording tool be enhanced to enable its use by LTER sites?

- Different scopes for site and network vocabularies.
- Current focus on general science vocabulary. Also a need for taxonomic and place vocabularies.
- Keep core list to a reasonable size. List of synonyms may grow as needed.
- What is the best way to incorporate suggested terms back into site systems? Ideally one would select from suggested terms (after other metadata is entered) and these would be added to the EML file.
- How can the vocabulary be incorporated into searching and browsing?
- Possible relationships: preferred term, alternate term, related term, broader / narrower term.
- Also a web service to return HIVE info for a single term.
- Discussion:
- Creating a polytaxonomy is a priority. A series of taxonomies (habitat, etc).
- Kristin created a taxonomy browser for SEV using Drupal.
- Margaret is creating ontologies for SBC. Working from bottom up.
- Adapt other taxonomies?
- Need relational database to hold content.
- How to map polytaxonomies to EML? One could include only lower level terms, since these imply higher levels.
- SKOS is good at broader, narrower, and related. OWL handles more relationship types: is a member of, is an owner of, etc.
- Tools include Protégé (full featured), MindMap (simple, easy).
- Polytaxonomy or hierarchy? If lower terms occur in more than one tree, then it's a polytaxonomy.
- Next steps (drafts by Jan 1):
- Vocab organization and governance, procedures for modifying.
- Polytaxonomy creation.
- Tools for ingestion & searching.

[http://intranet.lternet.edu/im/files/im/Vocab2010\\_0.pptx](http://intranet.lternet.edu/im/files/im/Vocab2010_0.pptx)

## **IMC 2010 Network DB Redesign and Web Services Breakout Session Notes**

### **Session IV - Web Services Recommendations**

#### **SUMMARY (Mason Kortz)**

This breakout session focused on reviewing the LTER Web Services Recommendations documents, gathering feedback, and planning for future revisions and new documents. The initial discussion was about the nature of REST web services and whether or not they were sufficient for use in the NIS. This was followed by a review of the

Recommendations document itself with suggestions on how to improve it. The final part of session was focused on how to continue work on this and future documents. A decision was reached to collaborate using the IM website.

### **NOTES (M.Gastil-Buhl)**

Not whether use ws or not, or what bkend should look like.

So this is a part of whole ws rec doc.

Web services working group. Lter ws recommend doc.

Like an RFC?

Interface client to server is what this doc covers

Only covers REST (because Mason famil w/REST not SOAP rpc)

Matlab now has built-in rest ws. Ability to read from a url.

The google api is REST.

LNo has adopted REST, as has GCE, CCE/PAL.

1st draft written by Mason Kortz. Want it to be re-written by IMC, LNO.

Mark S: REST sufficient for NIS.

Coming from structured programming past, fam with function calls.

REST diff: deal with objects. Pass objects. Action on object embed in http verbs.

To insert a doc into nis, pass \_ in \_ body. ..pass off to lower business logic.

If not dealing with services. Just want to change state of server system.

Rest operates statlessly.

Philosophically different

REST broadly defined.

REST is not an architecture; broader. Even a philosophy.

Goal of Rec. doc is to find our place w/in this philosophy.

#### 2.2 URL Syntax

rather than a URL having a GET,

you contact a URL and send it a request to get.

Whatever representation (format) the info is sent in, it should be the same info.

Felding's thesis.

Purpose of this WG is to get feedback on this Recommendation.

Straw Draft.

KB: a lot of the devel to come will use WS. Is this a Best Practice?

MK: no this is a straw draft of rec.

Came out of discussion w/Mark S. on how will interface with PASTA.

Similar-looking URL structure so learn how to use faster.

Use someone else's service. Helps to uniformize style. □

This rec may be more restrictive than needed.

James Connors: don't want a web crawler accidentally deleting things.

One URL = one thing, unambiguous.

Hierarchic services: separate by /

If response format is only one format, use that extension, ie .html

If multi formats, don't use an extension.

Mark S: that limits future change. Use the mime type instead.

MK: If linking web services, hard to link header info.

WS: even if only one representation, could have stable parameter that represents that

format. Visible format type option.

MK: a way to encode the mime type in URL that does not limit future develop.

WS: a parameter or a \_\_ in path.

MS: or a default if left off.

Format should be indicated in the URL either as param or extension.

Name of resource in URL; parameters in query params.

Id a resource versus interacting w/ it.

Scope issue.

If at network level, then site is a parameter.

At single-site level, site may be part of resource definition.

Can be polymorphic. People/gce or people/?param=gce

2.2.2 Readability

2.3 Requests from client

idempotent - multiple identical requests should return the same thing

POST: post a new resource under a parent

Accept: we will mostly deal with html, xml, text

Cache-Control: most things have a 30sec cache

2.3.3 Request Message

2.4 Responses

2.4.1 Response Codes

WS: these should be an appendix. This is handled by the coding framework.

2.4.2 Response Headers

Content-Encoding for zip, gzip, tar

Location - when you created a new resource, rtn that.

2.4.3 Response Message

When to use which of these web services?

WS: add kml to that list.

3 Documentation of WS

WSDL 2.0 - for machine discovery of ws

MGB: can we have a Usage type error mssg.

WS: this is intended as living document. Set up project on website or forum. Put content in IMC Drupal, or svn.

MK: easiest to load doc into IMC drupal.

JBrunt: do version it in snapshots. Archive the versions as docs in archive.

WS: add examples of working things.

Have a forum associated with this as a project on the IMC website.

Add example applications of these WS uses.

MK: this rec doc is targeted at WS developers.

There will be more users than developers.

Next topic: something for Users of WS.

MGB: Unit registry WS as example.

MS: can show controlled vocab example client WS.

A WSDL is overkill.

WSDL helps automate interaction btwn WS.

SvenB: at some point will need WSDL for programs to know something.

WS: in gce use, mechanics of wkg w/ WS are simple. Must understand representation of

schema of resource. This leads to how we use the resource. Know what I will get back.

JB: will have have human-readable description of the interface, like a function argument signature.

MK: for unit registry, have a human-readable thing, definition of how URL should look, with examples.

Client developers may be assured their GET request will do no harm.

Generic converters: php data structure into JSON, text or html.

If happy with xml, could focus on nice xml. Other formats later.

May recommend that xml be the primary response format, for structured data returns.

Whenever applicable, eml.

WS: use established schemas whenever possible, first EML.

Clearly communicate which schema is used. If not, then provide the xsd.

KB: a catalog of available WS.

IMC vs LNO.

MS: a catalog of products the LNo provides not just NIS and PASTA. In the preplanning stage now.

WS: get a prelim catalog posted on IMC website for now. Later more complete one at LNO.

JB: put it under the IM Guide?

CG: or put it on the NIS Drupal site?

KB: umbrella for Network efforts, LNo efforts?

MS: NIS project website currently focused on PASTA

KB: this WS is the bridge btwn LNo and IMs at sites development. A 'Site Network Model'.

MK: WS is a technology. A 'bridging technology'. More a web than a bridge.

SR: not under IM Guide yet because in-progress.

MS: could be a forum on NIS site.

Add this under WS Working Group, in current state.

## **Session V - Web Services and Network Database Redesign (1)**

“Framing the re-design of the network databases within web services”

Independent or shared databases for the network services?

Cons:

- Referential integrity must be maintained in business logic
- Reduces overall development time
- Prohibits independent release and development of logically distinct components?

Pros:

- Development can proceed independently
- Overcome development inertia

Question for discussion: Opinions on independent vs. shared database design?

- Independent design loses the support for integrity that RDBMS provide
- Independent design does provide for independent/parallel development
- Design/development teams can be more distributed with independent model
- Both models can work - really depends on who's developing, what part, and where

Where should development begin?

- Personnel database?
  - Most agree- Already a good existing model
  - Personnel also provides the source material for most of the other network databases
  - Make sure an awareness of the other interacting service models are kept in mind
- Seeing that the majority agree that the personnel database should be the first to re-design, what is the

scope/role for this service? Use cases?

- Use in situ, use local copy with synchronization
- There are core use cases at LNo (within the NIS) that need to be considered as well as the individual site use cases
- Most (almost all) sites maintain records of non-LTER personnel

What type of personnel model are we discussing: comprehensive site-level support or a more focused

model target at network specifics?

- We need a review of whats required at the network level. James Brunt?
- Needs to at least support the personnel (party) schema within EML
- The EML party is a pretty shallow schema that would be a good start
- A good idea would be to send out a basic set of fields to support and to solicit possible other fields

How should we proceed with development?

- Something needs to happen soon
- It's agreed that a beta version of the existing personnel database that just simply provides web-service exposure to existing content is the best way to move forward

Should the Web Services Working Group be charged with the network DB redesign?

- Some agree, yes
- It's a joint effort with LNo and the web services working group
- It's not yet decided what individuals are going to do the actual work on this project
- Are there bureaucratic constraints that affect this decision?
- There are funds available for IM release for hiring the developers for this project (James Brunt)

Plans:

- Get together a list of existing and potential schema properties
- Work on proposal for product-oriented working group, through IMEXEC
- Post materials and organize online
- Start planning time-line
- Sites to send existing site-used models for personnel, etc.
- Create an area and organize above materials online also
- Start working on topics/activities for training curriculum

Volunteers for developers:

LNO:

- James B.
- Xung

Client/Testing:

- Wade
- Aaron

Service:

- Mason
- James C.

## Session V - Web Services and Network Database Redesign (2)

- where should we begin in terms of focusing on databases
- if you model data, databases can grow - without web services
- need unifying schema first
- loose strong foreign keys, referential integrity
- still need to agree on business logic wherever we enforce them
- mashups of google maps,
- can work either way - lets talk about development panel
- Personnel seems an obvious first place
- source for anyother resource in the network
- sites need to synchronize and manage
- will help flesh out authority issues etc.
- relatively well understood model
- can d--modeling on other things at same time
- where should we start with personnel
- have some informal use cases
- can d--iteratively
- talk about goal
- we all have personnel databases
- used for different functions
- what is vision
- summaryof use cases
- want read-write service
- capable of containing personal information for current and previous personnel
- some want to replace local service with web service
- others want to update and augment locally
- improve interoperability between NIS and local system - get LTER Network IDs
- reconciliation of IDs
- most site personnel databases have superset of LTER folks
- query and augment locally
- first iteration focus on read
- list of IDs based on site etc.
- dump of inf--based on ID
- EML party is basic need
- core service is nonredundance personnel information
- can expose full record - let people substitute
- I'd like something simple tomorrow rather than something better 6 months from now
- start getting experience
- quick BETA

--training and sample client would help  
--should personnel database model be extensible for site stuff  
--don't want to burden scientists - best to match up from other sources  
--contacts at different levels of hierarchy  
--LN--may want to consider other inf--at sites in redesign  
--need help on roles  
--Core information model can be built out....  
--have 10 lookup tables right now  
--group - should be product-oriented working group  
--gives access to travel and meeting funds  
--joint effort between LN--and Web services working group  
--not clear wh--will d--the specific programming tasks  
--funding issues  
--need proposal from IMC to LNO, reviewed by NISAC  
--would be good to have proposal for training agenda etc.  
--volunteers  
--prototype clients  
--Wade  
--Aaron  
--John P  
--servers  
--sven  
--modeling and utility  
--Wang  
--James  
--solutions for relating to publications  
--unique person ID is really helpful  
--LN--will work through some use cases  
--web services training  
--if its really going to be about coding web service client, need to focus on one or a few common languages  
broadest potential uses - web2.0 approaches  
--AJAX  
--Iframe  
--doesn't require coding  
--dropdowns  
--styled queries  
--application stubs - search personnel database  
Javascript libraries  
--transfers well to JSP, Python, Perl  
--CURL or WGET are simple ways  
--a lot of developer work is interacting with the XML that comes back  
good to publish good list of training resources

## 2010 Sep 21-24: EML Best Practices WG Report from 2010 IMC meeting (KBS)

The following is primarily a summary of discussions in the WG at the IMC annual meeting at KBS (September 2010). Links to other pertinent notes and reports are in Related Materials section.

The following table shows a grid created during 2010 IMC Meeting (KBS), which was suggested to replace the “EML Metadata Levels” in previous versions of the EML Best Practice Recommendation. Whereas the earlier levels described only metadata, this view includes stages of data/metadata usability. It was intended to convey that although any schema-valid data package can be contributed, only packages that can be ingested into PASTA can be used for synthesis. Table 1 reflects data as it advances from Level 0 (at sites) to Level 1 (in the NIS data cache), and not the usability of data for synthesis. Possibly this additional state could be included by expanding the table to the right and/or down. In this context, “data usability” means ingestion into the PASTA “data cache”, which is assumed to be a relational DB table. The current “catalog” is Metacat. Boxes in the left column refer to metadata, and on the right to data, and usability increases to the right, and down.

	Data Usability >	
Metadata Usability ∨	<b>Schema Valid</b> Examples: a. no dataTable node, minimal EML content (old “Identification” and “Discovery”, levels) b. Data cannot be read, EML content varies	<b>Undocumented, clean data</b> Examples: a. dataTable can be ingested to data cache, but has minimal EML content b. measurementScale set to “nominal” with apparently numeric data (TDB - this is actually ‘poorly documented’ data)
	<b>Catalog Ready</b> Examples: a. certain pre-determined elements are present and filled in (list TBD) b dataTable can be read, but not ingested to cache. EML quality undetermined. c. URL present and readable, but otherEntity with no attributeList	<b>PASTA Ready</b> Examples: a. complete EML, data can be ingested to data cache b. uses LTER terms and attribute features (e.g., units)

The EML Best Practices Group has determined list of action items and schedule:

1. Jan 31 2011: Create ToR (pending completion of the template by the Governance WG)
2. 15 Jan 2011: Comments due from IMC
3. 15 Feb 2011: Document available as PDF on IMC website
4. 15 Apr 2011: Final Review due from IMC
5. 1 June 2011: Publish HTML version on IMC website

[http://intranet.lternet.edu/im/files/im/EML\\_best\\_practices\\_WG\\_report\\_IMCsep2010.doc](http://intranet.lternet.edu/im/files/im/EML_best_practices_WG_report_IMCsep2010.doc)

Notes assembled from IMC on EML BP doc content and organization notes from breakout group 2 (Corinna) Note takers: Mason Cortz and John Porter

EML Best Practices Feedback

1) 'as granular as possible' should be 'as granular as necessary'

EML Congruency Checker

General Comments

- Checker should report errors but continue when possible (no fail-on-first-error)
- Checker should include a data file row number for each error
- Errors should include a brief description of the tag/entity that is in error (user friendliness for users who are less familiar with the EML schema)
- EML levels should not be used by the checker but importance for
  - o needed for discovery
  - o needed for use
  - o needed to assess suitability for use
  
- Start with CSV files

Checker Features

- 1) Link to data is present and live
  - a. Option to provide data file/URL and continue (congruency checker)
  - b. Location should follow EML best practices
- 2) File format must be as described in data table and parsable
  - a. Priority is for text formats
  - b. Secondary concerns are externally defined formats
- 3) Number of columns defined in EML match the number of variables in file
  - a. Defines which rows have the wrong column count (if not all rows)
- 4) Match EML columns to file columns by order and/or header names
  - a. Check ordering first, then match to headers or fall back to ordering if no header is defined (whether ordering or name-matching takes precedence should be addressed in EML best practices)
  - b. Have to define numHeaderLines, recordDelimiter, and physicalLineDelimiter for this feature
- 5) Check that storage type in EML matches assumed type from data file
  - a. Defined missing values that are not in the specified storage type are still okay (e.g. NA is okay in a numeric column if it has been defined in the EML as a missing value)
- 6) Check that the ranges in the EML document conform to the storage type
- 7) Check that the values in the file fall within the ranges
  - a. Exceptions made for defined missing values
- 8) Check the date/time in file matches format string defined in EML attribute
- 9) Check that values for code columns are defined in codeDefinition
  - a. Future feature: check external code sets if given in parsable format

- 10) Check for existence of fields required by the EML best practices but not by schema parser
- Is a field 'important'? Does it help with 1) discovery 2) ingestion/use or 3) explaining suitability for particular use e.g. check for geographic, taxonomic coverage, pub date, methods
  - Error if fields are filled out in one entity but not another (e.g. geographic coverage present for organization but not for project)
  - Return a report on optional fields that are not present in the EML document
  - Future feature: check against NetworkDB for units, controlled vocabularies, personnel

## **LTER IMC Governance working group**

The IMC Governance Working Group's charge is to identify:

- How decisions have been made by the IMC and IM-Exec in the past
- How we govern ourselves currently
- How we might improve governance

An initial goal is to explore, document and learn from the ways the IMC participants have conducted their governance. This effort involves identifying elements of governance by reviewing governance structures, practices, and decision-making in the formal and informal work we do.

## **EML Metrics Working Group - 2010 activity, post IMC mtg report**

Memberships:

LTER: Margaret O'Brien (chair), Corinna Gries, Emery Boose, Dan Bahauddin, James Brunt, Mark Servilla, Duane Costa

Ecoinformatics group: Mark Shildhauer, Ben Leinfleder, Matt Jones, Jing Tao

This group was formed at the All Scientists Meeting in 2009 at Estes Park.

As of late 2010, the EML Metrics and Congruency working group has met several times:

Sep 2009, ASM: formation at the LTER All Scientists Meeting, Estes Park

Jan 2010, VTC: with the entire IMC

Jan 2010, VTC: with Data Manager Library programming group

Feb 2010, LNO: with IM Exec

Sep 2010, KBS. with the entire IMC in breakout sessions, and as a working group [See below!]

Oct 2010, VTC: with the Data Management Suite Tiger Team

Below is a report of this group's activities to date, which focuses on organizing the list of tasks for the congruency checker.

Members: Margaret O'Brien (chair), Corinna Gries, Emery Boose, Dan Bahauddin, James Brunt, Mark Servilla, Duane Costa, Mark Shildhauer, Ben Leinfleder, Matt Jones, Jing Tao

#### Introduction:

As of late 2010, the EML Metrics and Congruency working group has met several times (usually in part).

Sep 2009, ASM: formation at the LTER All Scientists Meeting, Estes Park

Jan 2010, VTC: with Data Manager Library programming group

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The following is primarily a summary of discussions with IMC groups, although it incorporates concepts from all meetings. It also serves as the report for the WG activities at the IMC annual meeting at KBS (September 2010 events, above). Links to other meeting notes and reports are in Related Materials section. There is also significant overlap with the activities of the EML Best Practices group.

Table 1 shows a grid created during the EML Metrics WG at the 2010 IMC Meeting (KBS), which was suggested to replace the "EML Metadata Levels" were used in previous versions of the EML Best Practice Recommendation. This 'straw man' view shows four stages of data/metadata usability. It was intended to convey the fact that although any schema-valid data package can be contributed to the NIS, only packages that can be ingested into PASTA will be available for synthesis. Table 1 reflects data as it advances from Level 0 (at sites) to Level 1 (in the NIS data cache). It does not include the usability of data for synthesis, but possibly this additional state could be included by expanding the table to the right and/or down. Data packages will fall into one of the four cells, with the goal of all contributed data packages being "PASTA Ready", i.e., falling into the lower-right cell.

General suggestions or requests for the congruency checker tool(s):

1. It was generally requested that the Congruency Checker not stop at first error, but report all errors together if possible. This might not be possible, since by default XML schema checkers and DB insert statements both terminate at the first error. We would have to decide to explicitly create preliminary checking programs instead of using pre-existing libraries.

2. Features which are simple to implement (i.e., “low hanging fruit”) were encouraged to be considered, even if those are not specifically listed here.

3. An initial interface could take two forms:

a) Command line tool much like the EML parser available with the EML schema checkout.

b) Web interface where a user uploads an EML document and receives a report. The interface could replace or be added to the current EML parser (at <http://knb.ecoinformatics.org/emlparser.html>). Because of this potential use, LTER should construct its interface keeping in mind that the basic functions (ie, those not LTER-centric) should be contributed to the larger EML and Ecoinformatics community. LTER-specific functions should be separated from general EML functions.

4. Certain policies are still required to be established. First, what are access policies for data submitted to NIS? Are there certain access rights implied by submission? Do access rules written into EML (with <access> node) supersede those implied? If so, when?

**Table 1.** Usability of data packages and correspondence to PASTA-readiness (to be contributed to EML Best Practices WG). In this context, “data usability” means ingestion into the PASTA “data cache”, which is assumed to be a relational DB table. The current “catalog” is Metacat. Boxes in the left column refer to metadata, and on the right to data, and usability increases to the right, and down. The line between “Schema valid” and “catalog ready” may be somewhat blurry.

		<b>Data Usability →</b>	
<b>Metadata Usability →</b>	<b>Schema Valid</b>	<b>Undocumented, clean data</b>	
	Examples: a. no <dataTable> node, minimal EML content (old “Identification” and “Discovery” levels) b. Data cannot be read, EML content varies	Examples: a. <dataTable> can be ingested to data cache, but has minimal EML content b. measurementScale set to “nominal” with apparently numeric data (TDB - this is actually ‘poorly documented’ data)	
	<b>Catalog Ready</b>	<b>PASTA Ready</b>	
	Examples: a. certain pre-determined elements are present and filled in (list TBD) b <dataTable> can be read, but not ingested to cache. EML quality undetermined. c. URL present and readable, but <otherEntity> with no <attributeList>	Examples: a. complete EML, data can be ingested to data cache b. uses LTER terms and attribute features (e.g., units)	

Tables 2 through 4 are lists of the tasks for the congruency checker that have been collected to date. They have been accumulated from various sources: the meetings listed above (and see References), personal communications, and observations/experiences of those creating programming tools for EML. The three tables correspond to groups of features: Simple checks and data report for the Metadata and Data management subsystems (Table 2), LTER-specific checks (Table 3), checks which are concerned with the relationship of the data entity to all metadata (i.e., the entire EML document, Table 4).

**Table 2.** List of simple checks. Accumulated from various sources (see References). Although these are general checks, they have been listed as pertaining to either the LTER NIS PASTA Metadata Management Suite or the Data Management Suite, since those two sub-systems will address different parts of the dataset’s metadata (ResourceGroup and EntityGroup).

	<b>Metadata Management Suite acts on high-level elements</b>	<b>Data Management Suite acts on the EntityGroup (initially, the dataTable node)</b>
minimum	XML valid EML valid (2.0.x) URLs not 404	<url function=download> return data column/row count comparison with metadata
General reporting	TBD	Data ingest failed. Return position (row and col) of value that that failed, interpret reason if possible.
“		Data successfully loaded. Proceed with simple reporting
“		Report delimiters, number of rows, columns,
“		report character encoding
“		report data typing: show the user, attribute/name and attribute/measurementScale (e.g., badly-described data can ‘hide’ under nominal scale)
“		If header row = 1, compare header row to attribute/name (also: if header row > 1, compare last row to attribute/name)
“		display the first few rows of data
“		measurementScale/dateTime: col content agrees with dateFormat
“		if <enumeratedDomain enforce = yes>, list values which are not in the domain
“		data ranges are within stated bounds (respect XML attribute exclusive=”yes no”)
“		print out duplicate records
“		are missingValue codes used for all missing values, e.g., return a count of empty fields (no data, no missing value)

**Table 3.** List of checks which are LTER-specific. Accumulated from various sources (see References)

	<b>Metadata Management Suite</b>	<b>Data Management Suite</b>
LTER specific checks	presence of certain elements (list TBD, specify in EML best practices) check for content if EML 201.	units from unit dictionary
	keywords from LTER CV	
	people from personnelDB	
	semantic checks (TBD)	

**Table 4.** Informational reports, checks and comparisons that involve both EntityGroup and higher level elements, or more than one dataEntity

	compare data ranges to bounds specified for coverage nodes (temporal, geo, taxonomic)
	Which EML elements are most often used, which never used?
	are dataEntity constraints adhered to?
	other qualitative evaluations TBD

Related material:

Report from the “EML Metrics” ad hoc Working Group at the 2009 ASM:

[http://asm.lternet.edu/sites/asm.lternet.edu/files/working\\_groups/778/report/EML\\_metrics\\_wg.pdf.pdf](http://asm.lternet.edu/sites/asm.lternet.edu/files/working_groups/778/report/EML_metrics_wg.pdf.pdf)

Notes from IMC VTC January 2010: [http://intranet.lternet.edu/im/news/virtualupdates/2010\\_01\\_11](http://intranet.lternet.edu/im/news/virtualupdates/2010_01_11)

IMExec notes: Feb 2010: [http://intranet.lternet.edu/im/news/committees/im\\_exec/notes/2010\\_02\\_23](http://intranet.lternet.edu/im/news/committees/im_exec/notes/2010_02_23)

## **2010 Units Registry Breakout Summary**

The Unit Working Group held a meeting during breakout session VI of the 2010 IMC meeting, on Friday, September 24th. The meeting was attended by co-chairs Mason Kortz and Linda

Powell, Suzanne Remillard, Sven Bohm, and Jason Downing. The meeting began with a presentation summarizing the previous year's activities:

Highlights of the year in review include:

- Change in co-chair: Linda Powell is now a co-chair and the lead for the content group
- Post-ASM funding: The working group was awarded post-ASM funding to hold site visits focused on implementing the Unit Registry
- Unit Best Practices revised
- Unit Registry developed and deployed to LNO
- Unit Registry populated (6 sites) and implemented (4 sites)

Following the presentation, the group discussed useful next steps. The following goals were identified:

- Contact each IM individually to request custom units for the Unit Registry (Linda Powell)
- Set up VTC training sessions on use and management of the Unit Registry (Mason Kortz/Linda Powell)
- Further revise Unit Best Practices: include explicit support for non-compliant units, abbreviations and definitions, assigning quantities, and the vetting process (Unit Working Group)
- Create a Unit Working Group Terms of Reference (Mason Kortz)
- Create a Metacat search on attribute names that would return a list of units used for that particular attribute (discussed but not assigned)

Finally, discussion was held on incorporating the Unit Registry into a training session, possibly the proposed Web Services training session.

## **IMC 2010 Breakout Group X o Drupal Covenant o Meeting Notes**

The Drupal group met the last day of the IMC 2010 Meeting, during a lovely friday morning. The meeting extended all morning until noon.

**In attendance:** Corinna Gries and Preston Alexander (NTL), Eda Melendez (LUQ), Kristin Vanderbilt (SEV), Hap Garritt (PIE), Jim Laundre (ARC), Kyle Kwaiser (Umich), Marshall White (LNO), Yang Xia (LNO) and Inigo San Gil (LNO).

### **General Items:**

- Status Reports o Where are we at? Where do we want to be, and what is needed to get there.
- Drupal Workshop Agenda

- Special topics. Data query by Preston. A nice interface to expose data and metadata to Drupal, and a custom advance query page.  
Gmaps, OpenLayers, Geo
- The data model

## IMC meeting 2010 at Kellogg Biological Field Station

21 submitted surveys

**How would you rate the overall organization and effectiveness of this year's meeting?**

Excellent (13)

Good (5)

No response (3)

**How would you rate the field station accommodations for hosting this meeting?:**

Excellent (13)

Good (5)

Fair (2)

No response (1)

**Would you be in favor of meeting at other LTER sites (either at the field station or its affiliated institution) in every third year?**

Yes (21)

No (0)

**If yes, can yours accommodate us? Would you be willing to investigate local facilities?**

- Yes
- Yes, though we would need to house some people at the station, some at a hotel
- We do not have field station but we could find a place to host the meeting
- Yes, PIE field station is too small. Woods Hole could work but depends upon time of year as our local facilities are subject to major conferences, Spring, Summer and Fall. Cost will be a factor depending upon time of year also.
- Konza may be able to host in the future. Currently we have on site meeting facilities which could accommodate this number of people. There are also on campus options. The major factor here would be housing, which currently, on site, would not be sufficient. Depending on housing increases on site or staying in town (15 minute drive to site) we could make it work. Possibly, down the road.
- Yes, the Andrews has great facilities and can accommodate a meeting of this type - although September is somewhat problematic for scheduling.
- Yes
- We have the facilities (library and auditorium that is divisible into 3 rooms) to support meetings and breakouts, but this would need to be vetted by our site leadership. We do not yet have accommodations at our field station, yet. We have held field tours in the past, but they eat a lot of time as our research site is almost an hour from campus and our experiments are widely dispersed over a large area. I am open to investigating the use of our facilities to host the IM meeting at our site in the future.
- Difficult for a group this size. Meeting room is large enough but not enough beds on site, no large hotels nearby.
- Yes
- PAL and CCE don't have a traditional field station, rather a city by the sea

- I can certainly look into hosting a meeting. Unfortunately, although it is easy to get in and out of Miami via the International Airport, the accommodations in town can be pricey.
- Although willing in spirit, Moorea is an expensive place to host large meetings. Not just expensive and long flights, but also the hotel there is budget busting. UCSB, our host university, is a nice place for meetings. UCSB is hosting the 2011 EIMc.
- BNZ would most likely have no trouble accommodating the IMC meeting and would be glad to check on facilities at any time. Unfortunately we have been told the overall travel costs would be too high so we are not really an option for the IMC.
- We can accommodate an IMC meeting at our main institution. Not at the field station, though, which doesn't have the meeting rooms and is so far from any airport that it would turn into a logistic nightmare. I'd be willing to be the local host and organize the facilities.
- We have a suitable conference facility at Hubbard Brook, but the site is not close to an airport and people would have to stay at a nearby hotel. There is a Days Inn about 5 miles from the site.
- Although I think this is a worthwhile goal, it may be impractical in many cases. For example our field site does not have sufficient meeting space and our home institution is 300 miles away, and would not provide any more "site" flavor than any other academic venue.
- My site is located at a university, and meeting rooms are generally easy to get. The university can provide housing for meeting-groups on campus at certain times of the year (e.g., summer). At other times, there are hotels nearby and transportation would need to be considered.
- I am certain we could arrange enough meeting spaces at the University of MN and lodging near by. Our field site is a 45 minute drive from campus, and has room enough for breakout groups, if we wanted to spend half a day there.
- With enough forward planning we would be able to accommodate the meeting and breakout sessions as we have one large meeting room plus several smaller rooms. Most of these rooms have full audio-visual facilities. However, accommodation would have to be in a local hotel of which there are several close by campus. There are plenty of good restaurants in the area.

**Do you have any comments regarding the current rotation and/or venue of the annual meeting, i.e., ASM, EIMC, field station or other site?**

- I like the current rotation mix.
- I think the exploration of other sites goes a long way in both team building across the personnel in the group as well as general appreciation for the LTER as a whole. I have been fortunate to visit 2 additional sites this past year (KBS, AND) and with those experiences have a heightened respect for the network and our goals. It's easy to become site centric when you are only ever exposed to the goings on of your own site, so I do feel it is important to engage other options as they are available.
- Good
- I am not sure we should limit ourselves to LTER sites. I would be interesting in knowing any issues encountered by Sven in this year's meeting. I know that some home institutions do not reimburse their people for local meal expenses and this and other concerns can potentially limit the local site IM(s) from interacting with other site IMs as much as if they were not hosting the

meeting. I enjoyed the meeting and thought it was very productive. It was very interesting to see another LTER research site and get an overview of the science program at KBS.

- Current rotation is good.
- I would prefer it be thought of as 1) ASM, 2) professional associated meeting, 3) field station site, where the second in the rotation of three is a broader category allowing information managers to explore various professional arenas.
- I personally prefer not to attach our meeting with a larger venue as I feel that we don't get as much accomplished as a group.
- So far seems great. I think the IMC-only may be my favorite of the 3 venues.
- I like getting to visit the different site locations and think this a great idea.
- I like the current rotation
- I think this strikes an effective balance between internal and external engagement for our community. Our regular VTC briefings, working groups and LNO collaborations on working groups and Tiger Team effectively makes up for the lost face time in the ASM and EIMC years.
- Generally, I like the 3-year rotation. It seems that in the 2 years we meet with other groups (asm, eimc), that the IMC activities have to be planned carefully to make sure that appropriate topics are all covered.
- I liked the space of the main meeting room at KBS. Last year at ASM we were crammed into a room that was too small.
- I find great value in integrating the IMC meeting with the ASM every third year. However, while there is value to the interaction with the greater IM community when meeting with the EIMC, I feel it is not worth the loss of focused LTER IMC time.
- The rotation is fine as long as we are willing to make the effort to host the EIMC meeting.

**How do you feel about the overall length of this year's meeting?:**

Adding the third half day was just right (14)

Three full days would be preferred (4)

Two full days would be preferred (3)

**How do you feel about the length of the meeting day considering the fullness of the schedule and considering early starts and evening presentations?**

- Meeting day length with evening activities was fine (12)

- Keep at least one workday evening open (8)

- Keep all workday evenings open (2)

- Provide more free time during the days (2)

**Is one full day adequate to accomplish LTER IMC-based activities in years of ASM or EIMC meetings?**

- No
- Probably not.... but adding two days to an already full ASM schedule might just burn us out.... :(
- Yes
- One day is probably adequate considering how much time is available during ASM and EIMC. However I really think hands on time with IMs to discuss/have workshops is extremely important for our collaboration and we have not this

as much with the new rotation format. However it is difficult to add on more workshop time considering the time already associated with the ASM and EIMC.

- In short no. As with most others I'm part of several working groups and even in a full meeting as with this year it is difficult to cover everything that we set out to accomplish (even though we couldn't go much longer without burn out). That said, the 1 day meetings, as truncated as they are really impede progress, in my opinion.
- It would be nice to have a full day and an evening before for a mixer. It's productive to mix the mixer with some sort of business. One day should be adequate to deal with IMC-based activities especially with our VWC sessions. ASM and EIMC do provide opportunities for IMC activities, if necessary.
- No. The IMC would be more productive if we have 2 day IMC meetings in conjunction with both ASM and EIMC. If one evening is kept open at our IM meetings, this would allow site IMs time to discuss inter-site IM efforts or identify new areas of collaboration.
- Probably not. Maybe add a second day for EIMC meetings.
- I don't know, I haven't attended those meetings yet.
- No 1 full day is not enough if we want to remain inclusive of all. Seems a minimum of 2 days and the mixer given the number of activities and working groups.
- No, I don't think this is enough time as I mentioned in the previous question regarding venues.
- No. At ASM it was OK because much of the ASM time offered IM-focused WG time. But I think at the EIMC it will feel like a choice to miss EIMC to meet to do IM collaboration. Cant say yet tho. This will be my first EIMC in 2011.
- I don't think so.
- Yes, I think so, because during the ASM we can still do IMC activities and the EIMC is all about IM issues and very important to our operations.
- Yes
- Yes, as long as we take full advantage of VTC and working group funding to handle information exchange and move projects forward.
- One full day works as long as the other tasks we have to accomplish can be accommodated by the rest of the meeting schedule. At the ASM, this usually means that IMC folks propose workshops for the meeting. This helps to get our scientists involved in the IM-process, which is great. During EIMC years, it would help to have some of the meeting organized in a discussion/workshop/breakout format, and not all in plenary talks.
- Yes, otherwise the length of time that people would need to stay for the combined meetings would be too long.
- Yes, at the ASM, as sessions hosted by IM's allow IMC members to discuss specific issues being dealt with at our sites. One day during an EIMC year is a bare minimum time frame.
- I am not sure as I have only attended this year's meeting.
- Not really. A full day without the business meeting would give us more time, particularly since we usually have visitors and that part of the meeting is closed to visitors. Perhaps the business meeting could be scheduled within the ASM context on those years.

**What do you think about the amount of time devoted to breakout groups at this year's meeting?**

Amount of breakout group time was appropriate (20)

Would have preferred more breakout group time (1)

**Were the breakout group topics for this year's meeting appropriate? What topics did we miss?**

- The biggest problem was that I wanted to be in more than one of the breakout groups. If time permitted, it would be good to have some round-robin things where groups A & B meet and group C splits into those groups, then groups A & C meet and group B splits, then groups B & C meet and A splits up.....
- Yes, I thought the breakout groups were great. Unfortunately many were concurrent with others so it was difficult to stay informed/participate in all the breakout groups of interest.
- Appropriate given the current scope of interest of the IMC
- Topics seemed appropriate
- Yes, I thought the breakout group topics were appropriate and timely. More time to participate would have been useful.
- Topics were good.
- Topics were good this year.
- Yes, I feel that the breakout group topics were very appropriate this year.
- I had to choose between Controlled Vocab versus Web Services and wanted to attend both. I wanted to attend EML Best Practices but also Network DB redesign. Then Friday morning it was again a hard choice. So I would have liked more sessions - or better - to clone myself.
- They were fine, except Friday morning seemed a bit cramped with too many overlapping activities. Those two hour sessions were effective for getting something started but not to accomplish anything in an established working group. I think we should devote this time to either one of those but not try to do both. Probably the best is to get something started in the morning for a short period and then let the working groups meet in the afternoon if they have the budget to stay another night, like the GIS group did.
- I thought it was great. There were clearly defined topics and some products have come out of the work (e.g., Terms of Reference). I think it is better to do a few things well, rather than go off in too many different directions.
- I think the topics were appropriate.
- I had hoped to have time for attribute standardization. But even if there had been time (ie, another half-day?) I think the group's energy was waning.
- I thought it was a very appropriate set of topics.
- The breakout topics were useful and timely.
- Group topics were interesting. Unfortunately, it is inevitable with parallel activities that there will occasionally be a difficult choice to be made about which session to attend.

**Are there changes you would make to the business portion of the meeting or the nomination/election process (i.e., IMExec, NISAC, EB reps)?**

- nomination/election process: Is OK if it is structured, BUT allow for last minute nominations.
- No
- No
- No
- Perhaps a notification setup on outgoing members and online based nomination system would be good. The only thing I can think of is allowing a little more time for individuals to consider if they are interested in the positions and allow the voters time to think about it.
- Seemed fine and efficient.
- I would prefer that we give new members a chance to meet their fellow IMs before calling for nominations or holding the elections. Having 2 day IM meetings in conjunction with the ASM and EIMC would let us hold the nominations and elections on the last day of the IM meeting every year. This would encourage interaction amongst IMs at the meeting prior to holding the business meeting and elections. VTCs are very useful, but they do not provide the IMC community building or room for new discussions and inter-site IM collaborations that face-to-face meetings support.
- Recommend soliciting and circulating nominations at least one day before the election.
- Yes, as we've been talking about for the ToR
- None
- Seemed ok. I was glad other IMs knew the Rules of Order and kept the meeting on track.
- Have some sort of web page with a candidate list and maybe election office info so we can see clearly which positions are available and who is interested in running before the moment of voting. Something like a longer and slightly more official and transparent nomination process that could still extend into the start of the meeting would help the site reps to better inform their decisions and invite participation. After nominations close, I would suggest we print some form of a ballot to better tabulate and officiate the votes.
- No
- I like the idea of giving advanced notice for nominations. I don't feel that we should require that nominations be in advance of the meeting, but I think it is good to give people the option so they have time to think about the commitment.
- No
- I believe I understand the reason why nominations in 2010 were made in advance and in secret. I believe this led to some confusion, and perhaps too few nominations for some positions. It might be better to have open, public nominations, but continue to close the nomination process for all positions before any voting for any position takes place.
- Confirming the candidates earlier could facilitate the printing of ballots with instructions so as to avoid the confusion re the process that we had this year.
- The new IMC ToR statements regarding nominations and elections are good.

**How would you rate the importance of meeting with NSF officers during the meeting?**

Very important (17)

Important (2)

Somewhat important (2)

**How important is a discussion (likely a virtual discussion) with the LTER Chair on a regular basis at this meeting?**

Very important (17)

Important (2)

Somewhat important (2)

**Do you have any other comments regarding what you liked or did not like or suggestions for future meeting?**

- The balance achieved between demos and working groups is impressive; denotes great organization skills of the two chairs. Good job!
- I missed most of it so i do not have a lot of comments
- The field trip was an excellent side trip. It was great to see the research and meet some of the scientists.
- I see no reason to link meeting survey summaries to individual survey responses. Summaries of responses which may include some of the individual responses (without identifying respondent) that could not be easily summarized, are more useful. I am not sure that it is okay to post identifying information for survey respondents on a public website.
- Given that our meeting budgets are limited and travel costs usually outweigh accommodations, we should try to take advantage of every opportunity of meeting face-to-face by making our meetings longer rather than shorter as long as the meetings remain productive.
- Overall, I like the product oriented meetings. I hope as we restructure our committee and meetings that we can preserve the inclusiveness and openness of our group to new ideas and approaches.
- The days felt too jam-packed and too long. Although I kept caffeinated and stayed awake and attentive, and I enjoyed spending time with everyone, I felt my mood worsening as the week wore on. I, and I'm sure others, need time away from people to recharge; being with people for 14+ consecutive hours over several days is exhausting for those of us who are not extroverts.
- I thought the IMC really benefitted from the time and effort put into preplanning. The mixer worked out very well.
- I thought the IM co-chairs and IMEXEC did a very nice job with this year's meeting and I especially liked having the meeting at Kellogg LTER. I also was happy to have a chance to take a short field trip of the site...very interesting.
- Phil R.'s input was very interesting. Overall it was a good meeting size, especially with the opportunity to work in small groups then the whole group. The best part of the meeting was the friendly people all sharing a common goal.
- I like the demo presentations very much but I thought it may be better for some if they were not all in the evening sessions and we could slip more of this into the daylight hours. It was really good to have these when everyone was in the room and not like breakouts because it really seems to lead to informative group discussions.

- I was really impressed that Phil Robertson spent so much time with our group. It would be nice in the future to have similar interactions with other PIs.
- Overall this was the best of the six IMC meetings I've attended!

**In the future, should this survey be completely anonymous?**

Yes, anonymous (6)

It doesn't matter (4)

No, public responses are fine (4)

No opinion (5)

No response (2)