

## **Annual LTER Information Management Committee Report (2018-2019)**

**Date:** April 23, 2019

**Name of Committee:** Information Management Committee (IMC)

**Names and affiliations of the Committee co-chairs:** Suzanne Remillard (AND), Stevan Earl (CAP)

**Current IMC members:** Dan Bahauddin (CDR), Stace Beaulieu (NES), Sven Bohm (KBS), Emery Boose (HFR), Renée Brown (MCM), James Connors (CCE, PAL), Jason Downing (BNZ), Stevan Earl (CAP), Sarah Elmendorf (NWT), Mark Gahler (NTL), Hap Garrit (PIE), Gastil Gastil-Buhl (MCR), Corinna Gries (NTL), Kris Hall (SEV), Don Henshaw (AND), Brian Herndon (CWT), Jamie Hollingsworth (BNZ), Hsun-yi Hsieh (KBS), Darren James (JRN), Ed Johnson (CWT), Li Kui (SBC), Jim Laundre (ARC), Mary Martin (HBR), Greg Maurer (JRN), An Nguyen (BLE), Margaret O'Brien (SBC), John Porter (VCR), Suzanne Remillard (AND), Michael Rugge (FCE), Adam Sapp (GCE), Stephanie Schmidt (AND), Wade Sheldon (GCE), Chris Turner (NGA), Kristin Vanderbilt (FCE), Jonathan Walsh (BES), Tim Whiteaker (BLE), Yang Xia (KNZ).

*At the time of this writing, the Luquillo (LUQ) LTER is working to identify an Information Manager.*

**How membership is determined:** Membership and roles are outlined in the LTER IMC Bylaws (v.3 ratified 2018-04-27). Membership includes an Information Manager from each site that serves as the primary site information management contact. Additional members may be identified by individual sites, by the LTER Network Communications Office (NCO), and by the Environmental Data Initiative (EDI) from among site or project personnel who are involved with information management. The Information Management Executive Committee (IM-Exec) is the steering committee for the IMC. IM-Exec members, including the IM-Exec Chair or co-Chairs and representative to the LTER Network Executive Board (EB Representative), are nominated and ratified by the IMC committee as outlined in the IMC Bylaws.

**Current Information Management Executive Committee (IM-Exec) members (LTER site, term end-date, and role (if relevant) in parentheses):** Dan Bahauddin (CDR, 2021, EB Representative), Renée Brown (MCM, 2021), Jason Downing (BNZ, 2020), Stevan Earl (CAP, 2021, co-chair), Suzanne Remillard (AND, 2021, co-chair), and Tim Whiteaker (BLE, 2021)

**Meeting frequency:**

- The IMC meets annually, including at the LTER All Scientists' Meetings and typically in conjunction with a related meeting (e.g., Earth Science Information Partners), to which attendance is strongly encouraged, in non-ASM years.
- In addition to the annual in-person meeting, the IMC meets monthly via video conference to discuss key Network topics. Information Managers from all LTER sites are invited and encouraged to participate in these typically well-attended meetings.
- The IM-Exec meets monthly via video conference to plan events, consider key Network topics, and coordinate cross-site activity.

**Major activities or accomplishments for the year:**

- The IMC addressed a wide range of topics during their monthly Virtual Water Cooler (VWC) sessions. Some major topics addressed during this past year focused on planning for and review of the ASM, status and development of the LTER bibliography, preparing for the LTER decadal review, design and update of the LTER Information Management website, and working group updates. Agendas and notes from all meetings are posted to the LTER Information Management website (<http://im.lternet.edu/home/meetings/virtualupdates>).
- The 2018 annual LTER Information Managers meeting was held at Asilomar, CA in association with the LTER All Scientists' Meeting. Meeting materials and reports are always made available on the LTER IM website (<http://im.lternet.edu/meetings/annIMCmeetings>) but following are highlights and products of the meeting:
  - LTER Information Managers, LTER Network Communications Office (NCO) representatives, Environmental Data Initiative (EDI) representatives, and other guests gathered to discuss issues related to LTER information management, the working relationships among the newly formed organizations (i.e., NCO, EDI), and information management in this new era. Particularly, information managers and guests conducted a visioning exercise to identify collective visions for how the community should navigate the rapidly evolving LTER, information management, and technology landscapes.
  - A panel of NSF officers featuring J. Burns, P. McCartney, J. Schade, C. St. Mary, and S. Hampton discussed their visions of and for information management in the LTER and ecological sciences broadly. The audience had the opportunity to ask questions of the panel, and members of IM-Exec, particularly, had the opportunity to express their strong support of EDI's critical infrastructure and resources for managing LTER Network data.

- The IMC held a closed-session business meeting at which R. Brown (MCM) and T. Whiteaker (BLE) were elected to serve on the IM-Exec, and S. Remillard (AND) and S. Earl (CAP) were elected to serve as IM-Exec co-Chairs.
- IMC members organized eight workshop or discussion sessions at the meeting, including:
  - Workshop, "Dataset Annotation in EML 2.2", organizers: M. O'Brien (SBC LTER, EDI), J. Porter (VCR LTER)
  - Panel Discussion, "Semantic Approaches to Improving LTER Data Discovery and Interoperability: A Panel Discussion", organizers: K. Vanderbilt (FCE LTER, EDI), J. Porter (VCR LTER)
  - Workshop, "Harmonizing ecological community survey data for reuse", organizer: M. O'Brien (SBC LTER, EDI)
  - Workshop, "Data preparation for synthesis – reuse scripts, collaborate, learn", organizers: C. Smith (EDI), K. Vanderbilt (FCE LTER, EDI)
  - Workshop, "Soil Organic Matter Vocabulary discussion", organizers: M. O'Brien (SBC LTER, EDI), M. Schildhauer (UCSB, NCEAS), S. Earl (CAP LTER)
  - Collaboration Discussion "IM Vocabulary Working Group and Guests: Collaboration Discussion", organizer: K. Vanderbilt (FCE LTER, EDI)
  - Workshop, "Making LTER Data Accessible and Useful for Students and Educators", organizers: A. Berkowitz (Cary Institute of Ecosystem Studies), K. O'Connell (OSU), M. O'Brien (SBC LTER, EDI), P. Snow (HFR LTER), S. Grossman-Clarke (EDI), K. Vanderbilt (FCE LTER, EDI)
  - Workshop, "Making Your Data Work Harder: Using Shared Data to Enhance Your Research", organizers: S. Earl (CAP LTER), M. Martin (HBR LTER), J. Porter (VCR LTER)
- The ClimDB/HydroDB working group, which features numerous LTER information managers, and representatives from the EDI, Forest Service, and other entities held a workshop March 12-14 in Albuquerque, NM. The working group developed a plan to harmonize climate data from all sites, including the current ClimDB database, into the CUAHSI ODM format, and archive them in the EDI data repository. The meteorological data will all be in the same format with common parameters, units, and timestep to facilitate synthesis. The data will also go into CUAHSI's hydrologic information system where tools to use and visualize the data are available. The current ClimDB system will be retired.

- LTER information managers led or contributed to several EDI community webinars, including:
  - GCE Data Toolbox to automate environmental data (W. Sheldon, GCE)
  - Going static with LTER websites (T. Whiteaker, BLE)
  - PostgreSQL to EML (L. Kui, SBC)

### **Subcommittees or working groups (WGs):**

- *IMC Website Improvement & REDesign (WIRED)* This WG is tasked with updating the IMC website (<http://im.lternet.edu>).
- *EDI EML Congruency Checker (ECC)* This EDI-led WG is tasked with implementing new or revised data-quality checks for the PASTA+ platform used by the LTER and other groups to submit data to the EDI data repository. During this year, the WG developed and implemented several new checks related to the size and identification of submitted files that will improve the accuracy and consistency of LTER data submitted to the EDI data repository.
- *Drupal Ecological Information Management System (DEIMS)* This WG consists of seven LTER sites that employ the Drupal-based DEIMS tool as the foundation for their information management system. This group is considering enhancements to the current version, and developments required to accommodate compliance with the newest version of Drupal (version 8).
- *EDI Semantics* This EDI-led WG was established to address how EDI may improve data discoverability by adopting appropriate vocabularies, ontologies, or other registries of resources that have permanent identifiers. Projects the working group may pursue include (1) collaborations with developers of semantic resources such as EnvThes and the ENVO Ontology, (2) aligning vocabularies already in use (e.g, the LTER Controlled Vocabulary) with other resources, (3) structured descriptions of measurements, including units and dimensions, (4) best practice recommendations for dataset annotation, and (5) organizing workshops and hack-a-thons for applying semantic tools.
- *ClimDB/HydroDB* This WG is tasked with identifying long-term solutions for standardizing and archiving climate and hydrologic data from LTER, and other research sites and organizations.
- *IM Orientation* This WG developed from tea-with-the-Chair sessions in which the IM-Exec Chair fielded questions, particularly from new Information Managers, regarding LTER information management tools, approaches, and best practices.
- *Core Metabase* This WG is tasked with continuing development of the LTER-core-metabase, a database schema and accompanying tools that can be implemented as the backbone (or enhancement to) the Information Management System (IMS) of LTER sites, or other groups or investigators.

- *GIS* This WG is tasked with improving the curation and use of geospatial data.
- *Zotero* This WG seeks to develop best practices for using Zotero as a reference manager for LTER sites to facilitate (1) sharing key products with the LTER Network bibliography, (2) submitting product citations to Research.gov for NSF reporting, and (3) enabling a searchable bibliography for an LTER site's website.

**Planned activities for the coming year:**

- The annual IMC meeting will be held July 15, 2019 in advance of the summer meeting of the Earth Science Information Partnership (ESIP) (July 16-19, 2019) in Tacoma, Washington, which LTER Information Managers will also attend.
  - Members of the IMC are preparing to lead or co-lead sessions at the ESIP meeting. The IM-Exec and IMC will plan a fruitful annual IMC meeting, and coordinate IMC participation in the ESIP meeting.
- Working groups with agenda for the coming year (outlined below) will work to meet identified goals. New working groups may form in the coming year to address particular issues or events not identified at the time of this writing.
  - *IMC Website Improvement & REDesign (WIRED)* The WG is considering a proposal to transition the website platform from Drupal to GitHub. This is scheduled to be a topic for discussion at the 2019 annual IMC meeting.
  - *EDI EML Congruency Checker (ECC)* This WG will consider several proposed data-quality checks for inclusion in PASTA+.
  - *EDI Semantics* This EDI-led working group is considering options and strategies for developing a workshop around this topic.
  - *ClimDB/HydroDB* This WG will work to further plan and implement the strategies identified during their March 2019 workshop.
  - *Core Metabase* This WG is actively developing LTER-core-metabase, which will be a featured topic at the 2019 annual IMC meeting. The group is planning to adapt the schema to EML 2.2 (expected release summer 2019); is developing R scripts for generating EML from LTER-core-metabase content; and is working with the EDI to incorporate the EMLassemblyline R package/workflow. As the philosophy of LTER-core-metabase is to capture the most commonly used entities in EML, one or more additional working groups focused on common EML profiles may coalesce.
- The next version of the Ecological Metadata Language (EML 2.2) is tentatively scheduled to be released summer 2019. Several LTER Information Managers have been contributing to the development of EML 2.2. When released, the IM-Exec, EDI, and EML 2.2 developers will implement approaches, trainings, and implementations that will enable all LTER information managers to take

advantage of new and improved features. These contributions will also benefit data providers beyond the LTER Network.

- Information Managers are working with the NCO and LTER Executive Board to document activities and metrics related to Information Management for the decadal review.

**Upcoming changes in leadership, purpose, or process:** Goals and processes will remain unchanged, and the current composition of LTER IMC leadership (i.e., IM-Exec) will remain unchanged until 2020 when J. Downing's (BNZ) term ends. Mr. Downing will be reelected or a replacement member identified at the IMC annual meeting, tentatively planned for summer of that year.