

**ICEMM**  
**October 25 Call Minutes**

**Attendees:** Ken Bagstad (USGS), Tom Nicholson (USNRC), Karl Rockne (NSF), Kathy Cottingham (NSF), Billy Johnson (USACE), Carolyn Olson (USGS), Tony Castronova (CUAHSI), David Lesmes (DOE, OSTP/SWAQ), Jennifer Saleem-Arrigo (USGCRP).

**I) Chair's report (ICEMM accomplishments and activities, Requests)**

Publication of [EOS article](#) on ICEMM and our last annual meeting. EOS was well received and led to several follow-ups and new ICEMM members (Kathy Cottingham, Carolyn Olson).

April 2018 ICEMM presentations were added to the USGS [ICEMM](#) web site.

Thanks to Jennifer Saleem-Arrigo, Pierre Glynn and Brenda Rashleigh made new connections with the US Global Change Research Program (USGCRP), hosted under the Office of Science, Technology, and Policy. Pierre and Brenda attended several webinars, and had several visits and calls with Mike Kuperberg (USGCRP Executive Director), Virginia Burkett (USGCRP Chair), and members of the following [USGCRP](#) working groups:

Interagency group on integrative modeling (Chair: Gerald Geernaert)

Indicators Interagency Working Group (Chair: Susan Aragon-Long)

Social Science Coordinating Committee (Co-Chairs: Jia Li and Libby Larson)

Interagency Water Cycle Group (Co-Chairs: David Lesmes, Stacey Archfield)

Pierre (and David Lesmes) also attended the USGCRP annual working group meeting on Oct. 11

Thanks to Brenda Rashleigh, ICEMM connected with NIH/NBIB and Grace Peng and the Interagency Modeling and Analysis Group ([IMAG](#)). Gave a presentation to IMAG (Oct. 2) on ICEMM goals and structure, and on the creation of records of engagement for participatory modeling. Featured results from Glynn et al. (2018 IEEE ISTAS paper) and Voinov et al., (2018) PM methods and tools selection paper.

Pierre is requesting support from ICEMM members to help hold webinars, and to suggest webinar presenters. USNRC (Tom Nicholson) offers support. Others are also welcome to contribute. Jennifer Saleem-Arrigo also made the welcome suggestion that some of the webinars could be held as part of USGCRP or IMAG or other interagency (or individual agency) webinar series.

**II) Agency/Organization updates (Current interests, Ideas for next ICEMM annual meeting, Possible ICEMM (or USGCRP or IMAG) webinars)**

**CUAHSI**

Summer innovators program. Working with NWM. Lowering the barrier for using the NWM. Citizen Science ideas. Participatory modeling.

**DOE** (David Lesmes, Ming Zhu on travel)

David Lesmes: Tom Torgerson to help put together spring workshop (May 2019) on integrated modeling. To be driven by use cases. Compilation of white papers. Creation of Water Sub-Committee; use case important (hypoxia and nutrients, flooding, water and drought in the west)...Lots of interest on coastal change, including at NSF. DOE interest on the Delaware River basin. Use of models for risk and socio-economic assessments. Use of different types to

**EPA** (Brenda Rashleigh):

Possible Annual Meeting topic suggestions:

- Join up with USGCRP possibly on scenarios...
- Fate and transport of chemicals
- Adverse Outcome Pathways and ecosystem functions and services...
- Integration of geospatial technologies, data, and modeling (but already done in April 2018)
- Socioecological systems, translational science (working with stakeholders throughout a modeling process), cooperative federalism,

Possible Powell Center proposal coordinating water ecological models across agencies

**NSF** (Karl Rockne)

NSF's current major interests and initiatives are described well by the "10 big ideas" NSF [report](#) that was recently released. First solicitation (\$30M; upto 3M/proposal) today "Navigating the new Arctic" (implications of changing arctic). Sensing through ice. Lots of interesting technologies. Cross-disciplinary approach. Technology development in sensing and monitoring the environment. Builds on earlier Signals in the Soil (SIT) initiative. La Jolla Workshop on the SIT topic was held 3 months ago. Understanding the biogenome ...

MSRI Mid-scale research infrastructure (meets mid-scale need – 6M -19.9M - between MRI and Major Research Infrastructure). MSRI are getting ready to go....

Karl is interested in environmental modeling and would also like to be apprised of workshops, meetings, conferences in the topical areas of Environmental Modeling and Monitoring (EMM), environmental pollution prevention/minimization/mitigation/remediation, emerging pollutants, and fate and transport.

**Annual meeting suggestions:**

Likes USNRC suggestions. Also interested in PFAs. Interested in building on Signals in soil initiative, beyond agriculture. Possibility of getting DOE interested in joint solicitations?

**USACE**

1) USACE Civil Works (CW) Mission is being evaluated for possible transfer to the Department of Interior and Department of Transportation. Right now, USACE HQ is monitoring the situation.

2) USACE got an increase in CW project funding this year.

3) ERDC continues to work with USBR to explore areas for collaboration.

4) ERDC-EL talked to EPA Office of Water about their renewed interest in development of Water Quality Models."

Joint collaborations between USACE and BuRec. Also working with USEPA on water quality models. Plus-up for civil works R&D efforts. Sensors and robotics important.

**Annual meeting suggestions:**

"Merging modeling and sensors" (similar to USNRC suggestion).

**USGCRP**

"USGCRP established an Integrated Water Cycle Interagency Group (IWCG) in April 2018. The IWCG seeks to:

- coordinate research relevant to understanding the integrated water cycle, how it changes in response to short-term and long-term perturbations, and the associated local, regional and global impacts and feedbacks of those changes;
- advance capabilities and research infrastructure that support water cycle observation, modeling and predictability at a range of scales; and
- develop approaches to translate and apply our understanding of the integrated water cycle to inform decisions concerning resilience and water security.

The IWCG seeks an end-to-end, integrative approach from science to decision support through three subcommittees: Climate Water and Energy eXchanges (CWEX), Hydrology and Watershed Systems (HWS), and Resilience, Adaptation, INformation, and Social Sciences for decision makers (RAINSS).

USGCRP's annual meeting took place on October 11th. In it, agencies identified cross-cutting issues to seed new research coordination discussions: coastal systems, climate resilient infrastructure, urbanization, and data and information for stakeholders. Federal roundtables to explore some of these issues will be scheduled over the next few months. The coastal group in particular is exploring a workshop on the broad topic of advancing integrated modeling across the coastal zone, assessing what agency efforts and capabilities exist, and function to help identify and pull together disparate information – perform a synthesis of data-model integration at multiple scales and with multiple models.

Activities being developed by IWCG that could be of interest/ relevant to ICEMM interests include:

- a workshop on precipitation metrics for global and regional climate models
- development of a set of scenarios to inform needed capabilities for integrated hydroterrestrial modeling for different stakeholders
- discussion of developing and contributing to soil moisture data repositories
- a webinar series on risk communication

The next USGCRP IWCG Quarterly meeting is scheduled for November 19<sup>th</sup> and is open to any federal participant. Please contact Jennifer if you are interested in attending and/or joining an IWCG list-serv.

The USGCRP IWCG will also hold a Town Hall at the AGU Meeting on Thursday, December 13<sup>th</sup> at 12:30 PM.

Integrated modeling of coastal systems (across scales, bringing in different types of process information)...

**Annual meeting suggestions:**

Joint mtg with Scenarios group? Or with IGM, or with IWCG?

**USGS** (Pierre Glynn)

Possible next Annual Meeting topic suggestions:

- Join up with USGCRP possibly on scenarios...
- Socioecological systems, translational science (working with stakeholders throughout a modeling process), cooperative federalism,
- Modeling with Stakeholders (i.e. Participatory Modeling), Records of engagement and decision tracking.

- Building integrated frameworks of policy decisions and management actions as receptors of integrated modeling and monitoring

USGS science directions:

- Integrated monitoring (NGWOS)
- Integrated modeling (NWM and 2WP)
- Integrated Assessments (IWAS)

Response to NAS

Personal interest: In addition to RoE and “Decision and management use” frameworks, working on a paper on water accounting integrating water and economic information.

Working with ASU CSPO on science/policy issues and the RoE and “decision and management use” topics.

Ken Bagstad and USGS SDC recently published a paper on "global customizable models" that use semantic web technology to assemble the best data and models for your particular phenomenon, time, place, and scale of interest. The system is capable of incorporating multiple modeling paradigms and linking models together. I've presented to ICEMM on its basics before, but we now have a publication and a working web explorer that lets nontechnical users run models through an internet browser, coupled with a separate interface for modelers to design more complex and customizable models. The focal area is ecosystem services but there's also some overlap with natural hazards, i.e., riverine flooding and landslide susceptibility, and the framework is intentionally generalizable to other modeling topics. The paper is here; <https://www.sciencedirect.com/science/article/pii/S0048969718338737>.

### **USNRC (Tom Nicholson)**

U.S. NRC staff is evaluating risk significant events involving abnormal leaks/spills of radioactive contaminants into the environment. We also assess residual radioactivity in the subsurface at nuclear facilities, particularly during dismantling and decommissioning of those facilities. Recent NRC regulations require licensees to minimize contamination to the subsurface. Both monitoring and modeling technologies are involved in those assessments and determination of risk significance to the public health and environment. Decision-making on risk significance and the possible need of remediation relies on the coupled monitoring and modeling of the environment. A key issue is the formulation and testing of Conceptual Site Models to understand the contaminant sources and their migration; hydrogeologic flow and transport features, events and processes; bio-geochemical processes affecting contaminant migration behavior; and effectiveness of remediation methods when implemented.

#### **Annual meeting suggestions:**

“to focus on use and confidence in environmental models in conjunction with designed monitoring and sampling programs to support and verify those models used in decision making.” Risk assessments and decision-making (in connection to monitoring and modeling). Need to know microbiology, hydrology, geochemistry on various scales. How to couple monitoring and modeling.

### **III) Upcoming Events**

USNRC: November 7, 2018 **Federal Remediation Technologies Roundtable (FRTR)** meeting (at the USGS in Reston, VA) may be of interest. Please go to: <https://frtr.gov/meetings1.htm> for details. See attached agenda.

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USGCRP: Jennifer Saleem-Arrigo offers USGCRP conference room for ICEMM face-2-face meeting during AGU week (Dec. 10-14, 2018). ICEMM mtg date: TBD.

The USGCRP IWCG will also hold a Town Hall at the AGU Meeting on Thursday, December 13th at 12:30 PM.