



CUAHSI

universities allied for water research

CUAHSI Board Meeting Minutes

January 9-10, 2020

Roll Call

15 members are present, 10 needed for quorum. “X” indicates present

Term expires 12/31/2020

Al Valocchi, University of Illinois Urbana-Champaign X

Amir AghaKouchak, University of California-Irvine X

Jesus Gomez-Velez, Vanderbilt University X

R. Edward Beighley, Northeastern University X

Term expires 12/31/2021

Gordon Grant, Oregon State University X

Steve Loheide, University of Wisconsin-Madison (Chair) X

Jeanne VanBriesen, Carnegie Mellon University (Past Chair) X

Gretchen Miller, Texas A&M University X

Alejandro Flores, Boise State University X

Greg Characklis, University of North Carolina Chapel Hill X

Term expires 12/31/2022

Aditi Bhaskar, Colorado State University X

Anne Jefferson, Kent State University X

Anne Nolin, University of Nevada-Reno X

Ashok Mishra, Clemson University X

Jay Zarnetske, Michigan State University X

Officers: (terms expire 12/31/2020)

Audrey Sawyer, Ohio State University (Treasurer)

Adam Ward, Indiana University (Secretary) X

CUAHSI Staff Present: Jerad Bales

Guests: L. Lautz (National Science Foundation), J. Lawrence (NSF), I. Padilla (NSF)

Minutes prepared by Ward

9-Jan-2020

08:00 EDT Call to Order

1. Introductions
 - a. VanBriesen welcomed the Board and introduced Loheide as the incoming Chair.
 - b. Loheide reviewed the CUAHSI mission, and led introductions of the Board. He reviewed expectations for the Board.
2. Report from Executive Director (Folder 01)
 - a. Staffing and organization
 - i. Bales reviewed current staff, noting high turnover in 2019. He attributed turnover to a host of individual decisions rather than any systemic issue in CUAHSI as an organization.
 - ii. Bales presented a proposed organizational chart to the Board for discussion. The reorganization was motivated by a need to improve management of multiple projects and organize strategic groupings of services as the organization grows.
 - b. Outstanding proposals & current projects
 - i. Bales reviewed the suite of current, funded projects, reporting over \$1.8M in funds above and beyond the NSF Cooperative Agreement. He also reviewed pending proposals, including one led by CUAHSI as well as those where CUAHSI has a collaborative or subawardee role.
 - c. 2020 Priorities
 - i. Bales described his priorities for CUAHSI in 2020 in two groupings.
 1. Data Services:
 - a. Implement formal project management
 - b. Improve HydroShare search functions
 - c. Modernize HIS and integrate EPA IWN. Bales noted the IWN integration will bring thousands of real-time sensors into the CUAHSI database.
 - d. Harden HydroShare and CUAHSI infrastructure
 - e. Develop marketing plan. Bales emphasized the need to understand the niche and market for CUAHSI, which was a commitment made to NSF in the cooperative agreement renewal.
 2. Other:
 - a. Hire deputy director. Bales envisions hiring a person who can help grow the educational activities in CUAHSI, with emphasis on data-driven education. He also envisions this being a PhD-level scientists who would add scientific depth to the organization.
 - b. Hire DevOps engineer
 - c. Improve administrative services and reduce administrative costs
 - d. Pursue funding for education and mentoring activities. Bales indicated that activities in this space are currently limited by staff time, and ultimately funding. Expanding in this space is a strategic area of growth. Bales also

suggested that CUAHSI serving a role in training mentors is also strategic.

ii. Discussion of strategic plans.

1. The group discussed whether increasing diversity was appropriate to include as a priority activity in 2020. Bales responded this is an overarching theme that cross-cuts all activities, as opposed to a tangible activity with a completion date in 2020. Bales indicated, for example, the mentoring activities and undergraduate services in education are both advancing diversity efforts. Bales also noted that finalizing the Diversity, Equity, and Inclusion plan will occur in early 2020, followed immediately by an implementation plan.
2. Grant asked about efforts that increase use of CUAHSI's data services as a priority. Bales responded that the priority items related to data services contribute to this objective directly, and this will always be an overarching theme for CUAHSI services.
3. The group discussed development of HydroShare and HIS, with interest in ensuring development is strategic and well-integrated.
4. Flores asked for an update on the Internet of Water project. Bales reported that he has been involved in this project since its inception at the Aspen Institute, and is on the IoW Advisory Board. He described CUAHSI as being "joined at the hip" with IoW, emphasizing strategic partnerships. He is working with IoW to position CUAHSI as a central catalog for data for state and federal timeseries data, likely beginning with discharge.
5. Grant asked about the role of CUAHSI in advertising or promoting itself as the home of the CZ data, or any expanded database. He suggested CUASHI might have a role in advertising the availability of data to the community. Bales indicated that these sorts of accomplishments are highlighted on CUAHSI's website, social media, and newsletter. He also suggested that a strategic plan for advertising these accomplishments would be of interest. Grant suggested there is opportunity for CUAHSI to help make a splash when these accomplishments are achieved by, for example, helping the community understand what is now possible thanks to CUAHSI's effort.
6. Padilla suggested that the sustainability of the organization is important to consider, suggesting emphasis on what is uniquely provided by CUAHSI related to any accomplishment.
7. Lautz asked what commitments are made by CUAHSI when PIs approach for a letter of support. Bales responded that the letters where no funding exists generally include HydroShare as a data repository, hosting of a CyberSeminar, Virtual University modules, or other relatively minor and routine services. Lautz suggested CUAHSI's education and outreach activities may also be a niche where PIs could invest funding in return for impact.

8. The group discussed funding for data services from PIs on individual awards. Nolin suggested NASA's distributed archive centers (DACs) encourage PIs to allocate funds for the DACs to support data curation and storage. One cost in that model for the DACs is the review and QA/QC of data that are uploaded to the system. Bales noted that the DACs bring value-added services to the community, and suggested this might be a potential future for CUAHSI.
 9. Loheide initiated a discussion of the role of the Deputy Director position. The group discussed the allocation of this position to management of ongoing activities vs. exploration of new activities. Consensus was the position should have a blend of both areas of responsibility. The group discussed career trajectories and mentorship if an early-career scientist were hired in this role.
3. Committee Reports (Folder 02)
- a. The Board was joined by Naomi Tague (Informatics committee chair), Emad Habib (Education and Outreach committee chair), Diana Karwan (Instrumentation committee chair), and Jon Pollak (CUAHSI).
 - b. Informatics (Board Liaisons: Beighley, Gomez-Velez)
 - i. Tague reported key activities including oversight and advising to informatics-related programs at CUAHSI and review of hydroinformatics fellowships.
 - ii. Tague indicated that HydroShare and HIS could be more broadly known in the community, and the committee discussed strategic opportunities to expand awareness and visibility. The committee also brainstormed opportunities to foster a HydroInformatics community.
 - iii. The group discussed the success rate for HydroInformatics fellowships, noting that the current success rate was fairly low. Tague indicated funding a larger number of proposals would be helpful. Loheide also asked if \$5,000 was a strategic amount, or if a larger or smaller amount was appropriate. Tague replied that supporting a student for a summer (2-3 months) would perhaps be more logical, but the number of applications suggests interest is still high.
 - iv. Padilla asked how diversity is considered in the HydroInformatics selection process. Tague responded that the selection process targets a diverse group of institutions. Pollak reported 18 applications for the current round span perhaps 16 institutions. Padilla asked if demographic information was considered in the review process. Pollak responded this has not been explicitly considered. Pollak reported demographic data have not been collected to-date. Beighley suggested the funds are not well matched to the scope of work, and may be acting more as a recognition of effort than directly supporting activity.
 - v. The group discussed sustainability of tools or services that are developed. Consensus was generally that this needs to be reviewed as tools and services are generated. Gomez-Velez suggested that sustainability of the

tools would be challenging for awardees, and perhaps code and responsibility could be transferred to CUAHSI. Bales noted CUAHSI has a policy of app maintenance being primarily the responsibility of the developer.

- vi. Nolin asked about the review and decision-making process, seeking additional transparency in the process. She also suggested that each proposal be considered in terms of leveraging other resources. Tague replied that a rubric does exist, but the process could be more completely described. Nolin also suggested a discussion of diversity, equity, and inclusion occur at the beginning of each meeting.
 - vii. Zarnetske also suggested the Board could set priorities to more clearly define a strategic scope, as opposed to a wide open RFP.
 - viii. The group also discussed providing feedback to applicants as an essential element of proposal review.
- c. HydroShare ad-hoc committee (Board liaisons: Valocchi)
- i. Pollak reviewed the charge to the committee and its recent activities.
 - ii. Key activity in 2019 included identification of strategic opportunities and risks. In summary, opportunities include (1) facilitation of active collaboration by teams of researchers, (2) supporting reproducible science, (3) education on HydroInformatics, and (4) accessibility of computational models and tools. Key risks include sunk costs in development, perceptions of low rates of adoption for various tools and services, and identification of the appropriate level of service provision.
 - iii. Pollak proposed a survey of the committee, and eventually external stakeholders, to identify opportunities, risks, and user issues.
 - iv. Loheide and Pollak discussed the opportunity to improve analysis tools via HydroShare as an educational opportunity, as opposed to use cases that rely upon downloading data and analyzing it with other tools. Bales also noted that a HydroLearn project is currently advancing the educational goals.
 - v. Bales discussed the inherent but healthy tension between provision of services vs. advancing novel research objectives and extensions. Bales indicated that it is possible that not every product of the HydroShare research project may be adopted in the final CUAHSI HydroShare operational system.
- d. Education & Outreach (Board Liaisons: AghaKouchak)
- i. AghaKouchak reviewed the charge to the committee focused on three major activities: (1) the Pathfinder Fellowship program, (2) review of proposals for hands-on training workshops, and (3) Hosting of a Cyberseminar Series on Emerging Advances in Hydrologic Education.
 - ii. AghaKouchak indicated an approximately 50% funding rate for the Pathfinder Fellowship program. The group supported 7 of 13 workshop proposals, providing feedback to those that were declined.
 - iii. Valocchi noted national lab participation and leadership in the training course series as a new development for CUAHSI.

- iv. AghaKouchak outlined committee plans in 2020 including collaboration with complementary activities (e.g., HydroLearn, WaterHackWeek), training in data science, and explicit linkages to undergraduate education. It may also be appropriate for the committee to engage in the administration of the Virtual University program.
 - v. The group discussed opportunities for hosting CyberSeminars. Bales indicated that there is existing capacity for CyberSeminars that is available and oversubscription is not an issue. He indicated, however, that there could be oversaturation if too many seminars are offered.
 - vi. Nolin discussed accessibility to CyberSeminars for hearing impaired individuals, where captioning via YouTube can be added.
- e. Instrumentation (Board Liaisons: Flores)
- i. Karwan reported the instrumentation committee managed the Instrumentation Discovery Travel Grant program in 2019. She noted that early career researchers and students are prioritized in this program. She reported a success rate of about 25% for the program. The committee records no other demographic information for applicants.
 - ii. Karwan reported that the committee is updating the listing of Hydrologic Instrumentation Facilities on the CUAHSI website.
 - iii. In 2020, the group intends to discuss an instrumentation sharing model that would link researchers to strategically share instrumentation. Karwan also expects discussion of the role of CUAHSI in the data-to-instrumentation pathway.
- f. The Board accepts the 2019 reports and the 2020 plans for the Board Standing Committees. The Board commends the Standing Committees on their outstanding work in 2019 and encourages them to continue to make important contributions in 2020.**
- i. Motion: Miller**
 - ii. Second: Nolin**
 - iii. Discussion:**
 - 1. Nolin indicated that in the future she would like to see documentation of the process by which decisions were made in making recommendations for awards including advertisement, demographics, review, and decision-making. Lawrence suggested this should include implicit bias training.**
 - 2. Jefferson expressed concern that the HydroInformatics success rate was low despite data services being a major area of emphasis for the organization.**
 - 3. Grant reported that the activities of the standing committees was reviewed in 2019. He noted that in approving the reports there is some implication that the Board is approving their scope of work and prioritization.**
 - iv. Vote: Approved (unanimous)**
- g. Valocci advised the group that he would like to rotate off of the HydroShare committee.

4. Diversity, Equity, and Inclusivity (DEI) Strategic Plan Review and discussion of Implementation Plan (Folder 03)
 - a. Loheide introduced CUAHSI's efforts related to DEI. While this was initiated prior to the most recent NSF cooperative agreement, the cooperative agreement does require development of the DEI Strategic Plan followed by an Implementation Plan. Loheide noted that strategic plan has been developed and feedback has been solicited from the community. He expects the strategic plan to be finalized in the coming months. Thus, this meeting serves to advance development of the implementation plan. Loheide introduced the objective for the meeting as brainstorming possible strategies for CUAHI staff related to the six goals in the strategic plan by building from implementation strategies suggested by the ad hoc DEI strategic planning committee..
 - b. Miller provided a brief overview of the DEI development over the past 12 months. She noted three themes emerged from the committees' work reviewing CUAHSI and peer organizations: (1) quantifiable metrics; (2) training; and (3) expanded membership of CUAHSI. Miller reported that the committee emphasized the strategic plan as setting broad goals rather than providing prescriptive plans. She reported the plan was presented at the annual membership meeting and is currently open for comment and input from the community before the plan is finalized.
 - c. Miller reported the committee used working definitions for DEI from definitions used by 500 Women Scientists (<https://500womenscientists.org/inclusive-scientific-meetings>), briefly reviewing these definitions for the Board.
 - d. Miller reported that the committee who developed the DEI strategic plan recommends formation of a standing committee.
 - e. Miller initiated an interactive brainstorming session for implementation ideas related to each goal in the strategic plan.
 - f. Bales anticipated providing a draft implementation plan to the Board in March, with collaboration with Loheide and Miller as the draft is prepared.
5. Strategy for Data Services Implementation and Outreach Plan (Folder 04)
 - a. Loheide reviewed the terms of the NSF Cooperative Agreement that define the requirement for a comprehensive, performance-based assessment for CUAHSI's water data services.
 - b. Bales presented a summary of existing metrics for data services and trends in usage. The group discussed potential metrics including connections from published papers, working to make HydroShare a database that is suggested or pre-approved by publications, and similar efforts. Bales indicated that current metrics are able to demonstrate some measures of success, but not all metrics are possible because of system design (e.g., login or complete user profile not required, unable to know how many DOIs for papers cited an individual data set in HydroShare).
 - c. The group discussed taking on the role of mapping NSF data management plans to HydroShare entries to help NSF ensure that data management requirements were being met.

- d. Bhaskar noted that currently HydroShare may be primarily used as a repository, where upload of data is the primary interaction, as opposed to HydroShare being a source of data for subsequent analysis.
 - e. Flores suggested a partnership with a few users to understand how much of their current workflow could exist on HydroShare as a way to identify high value development tools.
 - f. Several Board members discussed using participants in fellowships, training programs, and other activities to run through tutorials or examples and provide feedback. Loheide also suggested a Virtual University module focused on HydroShare.
 - g. Miller initiated a discussion about clearly scoping the user base and goals for HydroShare as a way to set clear metrics. She suggested, for example, that numbers like “how many hydrologists are there?” would be informative in helping define a potential userbase and community.
 - h. Bales summarized comments to-date, noting that the immediate order of business is preparation of a plan for data services, as opposed to testing many different ideas that have been discussed.
 - i. Grant suggested proactively engaging data managers at federal and state agencies to grow both the database and user population.
 - j. Beighley suggested adding search functionality by watershed or waterbody.
 - k. Valocchi suggested the Board should have a point-person for this effort.
- 6. Strategy for Data Services Implementation and Outreach Plan (Folder 05)**
- a. 2019 Activity Review (Outcomes)
 - i. VanBriesen summarized the 2019 effort to review each CUAHSI program and activity. She indicated this was useful to the Board in understanding the programs and their workings as well as brainstorming some metrics for assessment. VanBriesen summarized the activities that were reviewed in 2019 and how resources from NSF are aligned with services, and how CUAHSI balances activities and makes decisions about priorities in the portfolio.
 - ii. The group discussed the goal of increasing success rates for funding applications to CUAHSI. Gomez-Velez suggested strategically recruiting applicants for various CUAHSI programs or the ability to jointly review applications might be useful.
 - iii. Grant suggested that we focus on which portions of the community are being served by each program, and suggested we should perhaps use this perspective to organize priorities and identify underserved parts of the community.
 - iv. The group discussed how various programs oriented toward students might limit the populations that are able to apply, and how selections should be made across disciplines, needs, and institutions. One common theme was access to support for a broad group of students.
 - v. Miller suggested revisiting existing award programs may be worthwhile, suggesting a focus on interdisciplinary collaborations would be one plausible direction.

7. New work elements in renewed proposal (status update)
 - a. Bales reviewed the new work elements in the current NSF cooperative agreement. Major categories include (1) integration of HIS and HydroShare, (2) expanding and enhancing water data services, (3) support for community modeling, and (4) sustainability of water data services.
 - b. VanBriesen initiated a discussion of how these activities map to the strategic plan. Bales noted this was explicit in the proposal and will add this mapping from future presentations to the Board.
8. Meetings
 - a. 2019 Biennial Update
 - i. Gomez-Velez presented a summary of the planning for the 2020 Biennial Meeting, including a timeline of milestones for meeting planning.
 - ii. The group brainstormed workshops, panel discussions, and other organizational elements of the meeting.
 - iii. The group discussed the potential of hosting a panel discussion as a synthesis for the conference.
 - iv. The group discussed the importance of engaging federal agencies. Bales emphasized not only extending direct invitations, but considering a federal agency panel as a workshop or evening session.
 - b. AGU Hydrology Section / CUAHSI meeting; Future of CUAHSI Science meetings 2021 and beyond
 - i. The first anticipated AGU-CUAHSI Spring conference for hydrology is planned for 2022, then in subsequent even-years (i.e., 2024, 2026, and so on).
 - ii. Loheide initiated a discussion of CUAHSI's future plans for meetings, noting that our past patterns have even-year biennial meetings and odd-year hydroinformatics meetings. The current pattern would have a hydroinformatics meeting in 2021.
 - iii. Bales suggested that hosting the HydroInformatics conference in 2021 along with the summer workshop would be possible and would be efficient for staff. It was also suggested that taking off a year from hosting would be possible. Jefferson suggested a workshop focused on hydrologic education, possibly with a component of strategic planning for future proposals and/or forging a collaboration with another organization.
 - iv. **CUAHSI to host a 2021 workshop focused on data science and informatics in hydrology education.**
 1. **Motion: VanBriesen**
 2. **Second: Grant**
 3. **Discussion:**
 - a. **Beighley suggested an emphasis on elements of data services or data science.**
 - b. **Nolin expressed a need for the workshop to be matched to the highly invested goal of advancing use of data services. She suggested an emphasis on data science in hydrology education.**

4. Vote: Approved (unanimous)

9. Fiduciary Responsibilities (Folder 06)

- a. 2019 and proposed 2020 budgets
 - i. Bales reviewed the funding allocation in Year 1 of the current NSF cooperative agreement. Budgetary categories were organized to reflect functional areas of CUAHSI's efforts. Additional detail was provided on salaries given that this is the largest expense of the organization. Bales reviewed the proposed budgets for 2020 using the same categorization.
 - ii. VanBriesen asked about the balance of core services vs. data services in the cooperative agreement and other projects. Bales reported that funds from the cooperative agreement are more than 58% allocated for data services, whereas community services represent about 38% of expenditures and governance requiring 4% of the CCA budget. .
VanBriesen expressed a need for continued focus on the routine provision of data services in addition to community services. Flores suggested that the community may perceive data services to be NSF-supported (via the cooperative agreement) whereas community services may be perceived as above and beyond those core services. VanBriesen suggested one risk to the organization is the challenge of raising external funds to sustain core data services for the organization.
 - iii. Zarnetske asked about efforts to endow or underwrite CUAHSI's data services efforts. A brief discussion followed about possibilities as well as the requirements that would be needed to accept funding in the form of endowments.
 - iv. Bales summarized that spending is broadly proceeding according to anticipated expenses, with possible underspending of funds for the first year of the cooperative agreement. He had not yet agreed upon a timeline for the second fiscal year budget to be provided to the NSF.
- b. The board commended the effort of the Executive Director
- c. **The Board concurs with the proposed spending plan as presented by Bales and provided in the meeting briefing.**
 - i. **Motion: VanBriesen**
 - ii. **Second: Nolin**
 - iii. **Discussion:**
 1. **Valocchi clarified that there is budget for the Deputy Director for six months in the current fiscal year. Bales anticipated advertising for this position within one month, and expects to engage the Board in reviewing applicants.**
 - iv. **Vote: Approved (unanimous)**

17:39 EDT Adjourned

10-Jan-2020

08:12 EDT Call to Order

10. Interactions among the hydrologic community, CUAHSI, and NSF: Executing the Cooperative Agreement

- a. Loheide briefly introduced and reviewed the cooperative agreement between CUAHSI and the NSF.
- b. Lautz reflected on the strategic relationship between the NSF and CUAHSI, describing her vision for the future of the relationship. She encouraged the new Board members to review the cooperative agreement as well as current and past CUAHSI proposals and the associated reviews.
- c. Lautz reflected on emerging trends in hydrologic science, including:
 - i. Integrated hydro terrestrial modeling, stemming from the Fall 2019 workshop. She discussed the role of NSF and the academic community as part of the multi-agency working group, and suggested engagement with any subsequent initiatives if they occur. CUAHSI could have a role in organizing the academic hydrology community in this group. CUAHSI is hosting a cyberseminar series in Spring 2020 on the IHTM effort, with presentations by federal agency staff.
 - ii. Coastlines and People is an emerging, interdisciplinary program that likely has a hydrologic component.
 - iii. The Dynamics of Integrated Socio-Environmental Systems program – the next generation of the CNH call – has a potential hydrologic sciences component.
 - iv. The Cyberinfrastructure for Sustained Scientific Innovation (CSSI) program and Geoinformatics program both have support for sustainability of services and support for community infrastructure. She suggested sustainability of CUAHSI services as a potential area of interest.
 - v. The Frontier Research in Earth Sciences is also a plausible program for supporting hydrologic science.
- d. Lautz reflected on CUAHSI's existing and ongoing efforts, and her comments were echoed by Padilla and Lawrence.
 - i. She praised the success of the community programming and the strong engagement of the community.
 - ii. Lautz highlighted the buy-in from other agencies, such as the diversity of funding sources that support the community activities. Lautz suggested tracking how the community is engaging with CUAHSI to help make a case for the roles that CUAHSI provides.
 - iii. Lautz underscored the continuing goal of NSF for data to be open, accessible, and searchable. She encouraged CUAHSI to take advantage of this push and become the go-to service. Lautz was pleased that CUAHSI has a role that makes data archival possible and does not add an unfunded mandate to proposals. She encouraged CUAHSI to engage with the community on how to fulfill this role.
 - iv. Lautz challenged CUAHSI to define a plan for sustainability. She suggested defining the niche for CUAHSI's services, as opposed to being

all things to all scientists at all times. Defining the audience for CUAHSI's services is important to this role.

- v. Lautz noted it was clear that the group has put substantial effort into the DEI strategic plan, and praised the effort. She looks forward to the implementation plan and watching CUAHSI weave this into the fabric of the organization.
- vi. Lautz expressed interest in the joint CUAHSI-AGU meeting, noting this is an opportunity for CUAHSI to be seen as a community leader.
- e. Lawrence suggested the artificial intelligence institute as a plausible future direction for the organization.
- f. Padilla praised the work of the standing committees and encouraged the Board to take their input seriously and to listen to feedback from the committees.
- g. Padilla suggested constant assessment of activities, strategic planning, and identification of future needs. She suggested an understanding of users as important to this process.
- h. Padilla suggested that understanding the barriers to data sharing are important to understand and address. She recommended CUAHSI work to understand the barriers and strategies to facilitate proactive data sharing and removing barriers.
- i. Bales asked about the role of community storage and computing facilities in the earth sciences, noting a whitepaper that was generated detailing the bifurcation of computing across many disciplines. He noted that CUAHSI has strategic, emerging partnerships with EarthChem focused on interoperability. Lautz suggested CUAHSI understand the community needs from the data use side, suggesting the data repository function is fairly clear. She asked what repositories were most useful and why they are the preferred sources. Padilla emphasized that NSF is community-driven and encouraged CUAHSI to represent its community in proposing new services. She suggested an RCN focused on earth systems data would be one way to advance this area of services.
- j. VanBriesen noted that tighter integration of community and data services is important. She suggested that the established networks of senior researchers give an advantage in access to data via their personal relationships, and emphasized the data discovery function of HydroShare. Grant concurred, noting that community and data services are described separately for organizational efficiency, but are mutually reinforcing efforts.
- k. Lawrence highlighted the forthcoming Catalyzing Opportunities for Research in the Earth Sciences (CORES) study from the National Academies, noting that this would likely have a role in shaping future investments in the earth sciences.
- l. Lautz discussed the differences between long-standing disciplinary programs that persist and provide a core of support, and shorter-lived projects that emerge and sunset. She suggested shorter-lived programs as creating interdisciplinary opportunities and catalyzing new collaborations, but noted that they cannot all persist as a budgetary necessity.
- m. Loheide reflected on the role of CUAHSI in helping catalyze and rally hydrologic sciences around emerging opportunities. He suggested that the Sustainable Urban Systems area in one such example. Lautz concurred, noting that CUAHSI has a

role in rallying support around emerging areas, and also suggested that CUASHI might have a role in helping the community envision how their work might fit within various NSF opportunities.

- n. Ward asked about the potential of CUAHSI helping connect program officers to the community, potentially inviting program officers to help explain their calls to the audience. Lautz, Padilla, and Lawrence indicated an interest in connecting to the community and were generally supportive of this idea.
 - o. Flores emphasized the opportunity for CUAHSI to help the community get out ahead of emerging areas. He cited the upcoming CyberSeminars organized around IHTM as one such area.
 - p. Padilla emphasized the need for CUAHSI to provide sustained services in a niche that is not linked to programs that emerge and sunset. While those are opportunities, there is also a need for a sustained core of services that persist.
 - q. Nolin differentiated between data and information, challenging CUAHSI to help set a trajectory of providing information and products.
 - r. Nolin asked about the balance between serving an academic research community vs. a broader audience, and the perception of CUAHSI as a data service provider vs. an information generator. Lautz reflected on challenges in data storage, curation, and accessibility across local, state, and regional levels.
 - s. Lautz emphasized the opportunity for CUAHSI to leverage its tools and infrastructure to strategically generate products for broader communities or provide services to other funders. Lawrence suggested the GOALI mechanism might be another area to forge strategic partnerships.
 - t. VanBriesen asked if the convergence accelerator funds have a direction of support for DEI efforts via the NSF INCLUDES efforts. The group discussed how to frame DEI in convergence research.
 - u. Lautz concluded the discussion by emphasizing that the program officers exist to advocate for the community and her desire to engage with CUAHSI and individual PIs.
11. Role of the standing committees
- a. VanBriesen initiated a discussion of the role of standing committees in CUAHSI's operations and her reflections on speaking with each committee chair in the past six months. She reviewed her efforts since 2018 in organizing the role and structure of committees, which was provided as a meeting briefing.
 - b. VanBriesen reported that committee chairs and members would benefit from a deeper understanding of CUAHSI's organization, structure, and function. She suggested clearly using strategic planning documents to frame discussions.
 - c. VanBriesen make four recommendations based on her efforts:
 - i. The board should consider setting clear expectations for the committees so the board liaisons are more similar in how they interact with their committees and in what level of information and guidance they provide. A board discussion to clarify this is advisable.
 - ii. Increase professional development for committee chairs and committee members with respect to CUAHSI programs and objectives. Consider an

annual meeting of the committee chairs with the executive director and executive committee to increase alignment. Consider inviting committee chairs to one of the board meetings in 2020.

- iii. Encourage board liaisons to connect with committee chairs between committee meetings to provide briefings of board and organization activities.
- iv. Increase the size of committees to engage more members of the community. Consider sub-committee structures for specific activities (e.g., review of various fellowships).
- d. Beighley reported that the charges and reporting have been successful in his view, increasing engagement and organization.
- e. Bales asked if CUAHSI staff support is adequate, or if there are areas where service could be improved. Consensus was that staff support has been excellent, with several noting excellence from Pollak in organizing and managing meetings.
- f. Loheide suggested that it is not always clear who is responsible for scheduling meetings between staff and liaisons, and this could be clarified. Bales reported that he has requested staff help schedule meetings.
- g. VanBriesen asked the extent to which the Board wants input from the committees on discussions or ideas that were not specifically requested. She noted this would potentially mean the Board would reject some suggestions and accept others.
- h. Grant suggested that the committees do not likely understand the degree to which the Board relies on their efforts. He suggested an onboarding for committees to help them see their role in the organization. Grant also suggested that, in many organizations, committees are empowered to generate new ideas and present them to the Board. He endorsed this model as successful and wanted to enable agency by the committees.
- i. Loheide was pleased with the reports from the committee chairs and intends to include this as a regular form of engagement in future meetings. Jefferson suggested inviting the chairs to participate in the July face-to-face meeting.
- j. Loheide suggested that some tasks or ideas that are generated could be led by a Board member who would engage proactively with committees for support.
- k. Beighley initiated a discussion about the role of standing committees vs. ad hoc committees as a way to maintain engagement and be nimbler.
- l. Jefferson suggested increased openness in committee engagement and participation, helping the community learn how to engage with the committees.
- m. The Board discussed the balance of committees performing assigned tasks vs. being empowered to generate ideas. Flores and VanBriesen suggested the role of liaisons to the Board would have to include guiding directions and alignment of proposed activities with CUAHSI's strategic plan. The group was broadly interested in the community being able to generate new and innovative ideas, but it was not clear the mechanism for these to be shared with the Board.

- n. Assignment of Board liaisons to committees.
 - i. Informatics: Beighley (through July 2020), Gomez-Velez, Mishra
 - ii. HydroShare: Gomez-Velez, VanBriesen
 - iii. Education & Outreach: AghaKouchak (through July 2020), Nolin, Zarnetske
 - iv. Instrumentation: Flores, Jefferson

12. Board Logistics

- a. Spring ExCom and Board meeting dates
 - i. Mondays, 12-1pm Eastern time. ExCom 4th week of each month Board meeting the 2nd week of each month.
- b. Summer Board meeting (Biennial)
 - i. Starting afternoon on Wednesday, 29-July through 17:00 on Thursday, 30-July.
- c. 2020 Chair Election
 - i. Loheide opened the floor to nominations for the Board of Directors Chair Elect. Miller was nominated.
 - ii. Votes were cast by secret ballot, tallied by Ward and verified by Flores.
 - iii. Miller was elected to the chair elect.
- d. New ExCom member election
 - i. Loheide opened the floor to nominations for the election of two at large members to the Executive Committee of the Board. Beighley and Valocchi were nominated.
 - ii. Votes were cast by secret ballot, tallied by Ward and verified by Flores.
 - iii. Beighley and Valocchi were elected to the executive committee of the Board.
- e. Review of Action Items
 - i. Loheide reviewed action items that have resulted from the meeting.

13. Board Discussion of Membership Community (Folder 07)

- a. Unpaid members
 - i. Bales reviewed membership status and summarized organizations with outstanding dues. Staff and Loheide will reach out to members with lapsed dues.
- b. Recruitment of new members
 - i. Loheide requested all Board members consider potential new members and help recruit them to the organization.
- c. Report from affiliate discussions
 - i. VanBriesen summarized her efforts from 2019 in discussing membership with current affiliate members. She noted the language in the bylaws indicates that a full member must have a graduate program in hydrologic sciences. She also noted this has been generously interpreted in terms of subject matter, but the requirement of graduate degrees have been strictly enforced. She also reported affiliate membership has been open to institutions without graduate programs, and attempted to contact all current affiliates.

- ii. VanBriesen indicated most current affiliate members did not have concerns about their status as affiliate members vs. full members.
 - iii. VanBriesen summarized past Board discussions about the exclusionary nature of the current language and the potential of changing this language to open full membership to undergraduate institutions.
 - iv. VanBriesen indicated this language is limiting membership by undergraduate focused institutions that are contributing to research, education, and community-building missions of CUAHSI.
 - v. Bales also asked about the role of international members and their membership class in the organization. VanBriesen suggested this could also be considered.
 - vi. Several Board members reported anecdotal support of expanding membership.
- d. **The Board appoints an ad hoc committee to explore the best approach for inclusion of undergraduate institutions as CUAHSI members, including potential bylaws changes, dues structure, and other issues.**
- i. **Motion: Jefferson**
 - ii. **Second: Valocchi**
 - iii. **Discussion:**
 - 1. **VanBriesen reminded the Board that a change will ultimately require a modification to the bylaws, which will require clear communication to the community.**
 - iv. **Vote: Approved (unanimous)**
14. Board goals and priorities for 2020
- a. The board synthesized key events and activities for 2020 including:
 - i. DEI implementation plan development and execution
 - ii. Data services implementation and outreach plan development and execution
 - iii. 2020 Biennial success
 - iv. Strategic partnership with AGU
 - v. Clarifying the role of undergraduate institutions in CUAHSI (which is closely linked to the DEI plan)
 - vi. Defining the community that CUAHSI serves (which is closely linked to the DEI and data services efforts)

11:54 EDT Adjourned

Action items generated during the Jan. 2020 BoD meeting

1. Board to continue to brainstorm DEI implementation plan items and share them via the google document provided. (All, by Wed Jan 15)
2. Finalize DEI Strategic Plan for approval by the Board in February 2020. (Bales)
3. Bales and CUAHSI Staff to draft DEI implementation plan for presentation to the Board in March 2020. Miller has volunteered to assist Bales in drafting DEI implementation plan as needed. Suggestion was made to contact Jill Karsten at AGU and SACNAS.
4. Bales and CUAHSI Staff to draft Data Services Implementation and Outreach plan for presentation to the Board in March 2020. Lejo Flores has volunteered to assist Bales in drafting the Data Services Implementation and Outreach plan as needed.
5. Grant will work with AGU Hydrology to try and gain access to diversity data for that community.
6. Greg Characklis will be the “point person” for leading the fellowship program review activity. Bring findings to face-to-face Board meeting in July for discussion of what audiences and subsets of communities are not being served by current fellowship proposals.
7. Gomez-Velez to share Biennial development with Ainsley for inclusion on the website and advertisement.
8. Board members assist with Biennial Planning.
 1. Workshops:
 - i. Beighley approaches coordinator(s) for a “remote sensing in hydrology” workshop, including NASA, SWOT, SnowX, ... TBD
 - ii. Ward coordinates Student/Post-doc/Early Career workshop (professional development focus)
 - iii. Jefferson - find coordinator for science communication workshop
 - iv. Gomez-Velez - reproducibility (need to ID a leader)
 2. Grant chairs interdisciplinary panel discussion.
 3. Flores (w/ help from Grant, Nolin) - chairs agency panel. (invites NSF/DOE/NASA reps)
 4. Zarnetske - chairs session with student fellowship and grant winners. (possibly a committee chairperson or a past recipient - get help from Ainsley)
 5. Flores (Kaiser) - coordinate game night, movie night.
9. Stand up a CUAHSI service award nomination committee. Awardees should be identified by April 2020. (Loheide, AghaKouchak)
10. CUAHSI staff to lead scheduling quarterly or bi-monthly meetings for 2020 for standing committees.
11. Board and staff to collaborate and develop a presentation to provide an overview of CUAHSI's structure, strategic plan, the role of the committees, and expectations, plus defining a standard operating procedure.
12. CUAHSI staff to send invitations for: Mondays, 12-1pm Eastern time. ExCom 4th week of each month Board meeting the 2nd week of each month.
13. Bales, Loheide to reach out to members with lapsed dues to solicit feedback.
14. Loheide to propose a chair for an ad hoc committee to explore membership of undergraduate institutions.