

Developing Collaborative Solutions for Continental-Scale Integrated Water Prediction

COASTAL COUPLING COMMUNITY OF PRACTICE

MAY 12-13, 2020

VIRTUAL - Join with Google Meet
meet.google.com/yjn-abkv-kdu

Chrome add-on extension for grid view

<https://chrome.google.com/webstore/detail/google-meet-grid-view/bjkegbgpfpgpikgkfidhcihhiflbgjfic/relatedmeet>



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Meeting Goal

The goal of the meeting is to maintain engagement between Federal agencies and model developers that supports collaborative solutions for continental-scale integrated water prediction. To identify the priorities for engagement, participants will discuss technical advocacy points and data needs (Day 1). To continue the engagement efforts over the last year, participants will engage in a facilitated discussion informed by experience- and research-guided best practices (Day 2).

Objectives

1. Review the community progress to date.
2. Determine community needs and how to address them.
3. Discuss the need for shared consistent data sets, what data is needed, and the methods to achieve a centralized repository.
4. Discuss gathering stakeholder requirements and how to translate this into model requirements.
5. Identify future engagement opportunities and the timeline for sustained engagement.

Read-Aheads and Meeting Materials

1. [A summary of the activities to date](#)
2. [Strawman summary of needs](#) based on feedback from our sessions and try to match these with existing programs and questions on this
3. [Strawman CC CoP annual engagement plan](#), a few questions of what worked well, what do you want to see in the future.

Meeting Contact

Cayla Dean: 865-254-4098 or cayla.dean@noaa.gov

Meeting Facilitators

Cayla Dean
Audra Luscher
Brenna Sweetman
Karen Bareford
Murielle Gamache-Morris - Notetaker

Ground Rules

- Come prepared to the meeting
- Avoid email and other distractions during the meeting
- Please use video - this increases the effectiveness by 92% over audio only
- One person speaks at a time on calls
 - Keep the discussion relevant, add new topics to the chat box with your name, you will be called on according to topics
 - Say your name before you speak
 - Remember to use mute/unmute
 - Speak loudly and clearly

- Share information on Google docs
- Poll Everywhere - put your name next to your question

Agenda

Tuesday, May 12th (All times are CT)

- 9:50 ALL | Begin Gathering
The meeting room will be open, giving people the opportunity to test software and chat with others before we begin promptly at 10 am
- 10:00 CAYLA DEAN | Welcome
This will include an overview of the meeting objectives, ground rules, and technical introduction.
- 10:15 ED CLARK | Welcome
- 10:30 JESSE FEYEN | Keynote: What's going on at GLERL
- 10:45 JOHN WARNER | Keynote: What's going on at USGS
- 11:00 FACILITATED | Community Needs - Help us Help you
The CC CoP has been engaging for a year now. We have hosted several events and provided opportunities for CC CoP members to voice their needs to address this challenging work of coastal coupling. In this session, we will reflect on what we've heard over the last year, gather community input on what things we may have missed, and coalesce our ideas helping to guide forward progress in a more proactive and less reactive manner.
- What are the CC CoP's highest priority needs to conduct coastal coupled modeling?
 - Does this accurately reflect your needs?
 - What needs have we missed?
 - How do we work as a community to fulfill those needs?
 - Are there any programs already in place that can address some of these needs?
 - If no program exists, what are your thoughts on how to achieve these needs?
- 12:00 ALL | Break
- 12:15 FACILITATED | Building our Data Infrastructure [Breakout Sessions]
One need that we have heard repeatedly is the need for access to shared and consistent data sets in formats that are readily usable for experimentation. There are several data types that are relevant to the modeling community. Some we have heard include topo/bathy, specifically as we go up rivers, data for model initialization, validation, and verification, and results of model development. This session will address this specific need and brainstorm on how this group can help to get such a dataset.
- BREAKOUT | What data do you need?

12:45 CLINT DAWSON (UT Austin) /JERAD BALES (CUAHSI) /DEBRA HERNANDEZ (SECOORA)/DOUG MARCY (OCM) | Lightning talks on example data repositories

- Design Safe (Clint Dawson) <https://www.designsafe-ci.org/>
- SECOORA (Debra Hernandez) <https://portal.secoora.org/>
- HydroShare (CUAHSI, Jerad Bales) <https://www.hydroshare.org/>
- Digital Coast (Doug Marcy, OCM) <https://www.coast.noaa.gov/digitalcoast>

1:05 BREAKOUT | What are you willing to contribute?

1:35 ALL | Break

1:55 BREAKOUT GROUP REPORTERS | Report Out

2:20 AUDRA LUSCHER | Path Forward

2:25 ALL | Adjourn

Wednesday, May 13th (All time are CT)

9:50 ALL | Begin Gathering

The meeting room will be open, giving people the opportunity to test software and chat with others before we begin promptly at 10 am

10:00 CAYLA DEAN | Recap from Day 1

10:20 FACILITATED | Developing Capabilities to Serve our Stakeholders

In the CC CoP kick-off meeting, one of the topics that we achieved a consensus on was that stakeholder requirements should be our starting point for future model development in the coastal zone. The ultimate goal of this group is to provide data, products, services to serve stakeholders (decision-makers, state/local govt, the public, etc.) to enable informed decisions. This session will discuss some prior efforts to gather stakeholder requirements and use this case to determine best practices to continue this effort moving forward.

BRENNA SWEETMAN (NOAA OCM) /LISA LUCAS(USGS) /TOM SHYKA (NERACOOS) |
Lightning talks on different perspectives of gathering stakeholder feedback

FACILITATED DISCUSSION

What stakeholders do you serve or engage with in relation to coastal coupling work?
How can the CC CoP better understand and address the needs of stakeholders?

11:45 ALL | Break

12:00 FACILITATED | Annual CC CoP Engagement Plan

We have hosted a number of scientific sessions and town halls around coastal coupling and community modeling that have been very well-received. While we have done a good job thus far at engagement, we can do a better job with coordination being transparent and clear on our work and plans for the future as a community. In an effort to accomplish this, this session addresses our first annual engagement plan.

- How might CCCoP continue to be active in the upcoming year? Options include:
 - In-person meetings (e.g., Summer Institute Capstone Meeting (Tuscaloosa, AL, July 26, 2019); 2019 AGU Fall Meeting (San Francisco, CA, December 9-13, 2019); 2020 Ocean Sciences Meeting (San Diego, CA, February 16-21, 2020)
 - In-person technical meetings
 - Newsletters
 - Webinars
 - Open source file archive

1:20 CAYLA DEAN | Wrap-up, Parking Lot, Action Items

2:00 ALL | Adjourn

Summary of CC CoP activities - The Year in Review

Over 100 million people living in US coastal areas do not have access to accurate water quantity and quality forecasts. In these regions, contemporary operational forecast models do not appropriately capture the complexity of combined freshwater, estuarine, and coastal processes. This challenge is too great for any single agency to undertake alone. The scientific community has the knowledge and computer resources to support this goal but must work together as a community across organizational boundaries to leverage each other's resources and capabilities.

COMMUNITY OF PRACTICE INCEPTION

To address this challenge, the Coastal Coupling Community of Practice (CC CoP) held its kick-off meeting on May 7-9, 2019, and included participants from NOAA, USGS, USACE, NRL, state government, and academia. This meeting focused on forming a community around the coastal coupling of models by opening communication pathways, building relationships among members, and enabling opportunities for future engagement around model development. Since the kick-off meeting, we have continued to engage as a community and build our membership. After one year, the CC CoP has 135 members.

CROSS-AGENCY GUIDANCE

One of the first actions following the kick-off meeting was the formation of a multi-agency Steering Committee affectionately known as the Super Friends. This group meets quarterly and focuses on planning and priorities. Members include Pat Burke (NOAA/CO-OPS), Trey Flowers (NOAA/OWP), Harry Jenter (USGS), Rick Luettich (UNC), Chris Massey (USACE), and David Vallee (NERFC). The charter for the CC CoP has been written and approved by the Super Friends.

SUSTAINED ENGAGEMENT

In July 2019, we hosted the first in a series of webinars. To date, we have had 3 webinars that covered the following topics: SCHISM model, National Bathymetric Source Project, Continually Updated Shoreline Product, and gathering stakeholder feedback. The presentations and notes from these webinars are available online. The CC CoP has expressed interest in the following topics for future webinars: data availability, updates of ongoing projects, physics informed artificial intelligence, vertical referencing in the models, and data scraping automation.

We have had a strong presence at conferences over the last year. At the 2019 AGU Fall Meeting we hosted a town hall session titled "Community-based Coupled Coastal Modeling in Support of Total Water Prediction". A summary can be found online. There was also a scientific session entitled "Continental-Scale Modeling: Process Heterogeneity from Summit to Sea" with over 70 presentations. We also had a session at the 2020 Ocean Sciences Meeting titled "Inland-Coastal Model Coupling Using a Community-Based Approach" with 17 presentations.

COP COMMUNICATION

We have also launched the CoP website as a repository for all materials that this group would like to have highlighted. It is the best resource for all things CC CoP. The website will continue to be

updated with news stories, events, publications, presentations, meeting materials, and anything else relevant to the CC CoP.

Community Needs - Help us Help you

The CC CoP has been engaging for a year. During this time we have hosted several events and provided opportunities for CC CoP members to voice their needs to address this challenging work of coastal coupling (see “A Year in Review”). To better work together as a community, we reflect on what we’ve heard over the last year, gather community input on what we may have missed, and coalesce our ideas helping to guide forward progress in a more proactive and less reactive manner.

COP NEEDS

Below is a summarized list of the items we have heard so far that the community can advocate for.

- Stakeholder needs to inform model development - recognizing that there are different spatial and temporal scales needed by different stakeholder groups
- Common definitions for ambiguous terminology
- A well-defined grand challenge
- Governing framework to establish guidelines and/or best practices for cooperative methods and technical collaboration (including guidelines for open source code)
- Collaborative environment (e.g., testbed, code repositories) with interdisciplinary teams working together
- Easily accessible, open-source, quality-controlled data at high resolution that is updated with a regular frequency for model initialization, data assimilation, verification, and validation
- Well-organized documentation of use or test cases
- Flexible architecture to add new models in a coherent framework
- Transparent pathway to transition models into operations
- 3D modeling in the coastal transition zone

Based on the needs above and your professional experience, please fill out [this survey](#) on your thoughts for what is needed to perform the coastal coupling task. Please indicate how important this need is for you and your work (1= high, 2= medium, 3= low priority). In addition, please share any additional clarifications on each need or a program that may already be working in this area. Your feedback is very important to us and will help inform our discussion at the upcoming meeting.

WE’VE HEARD YOU

Two of the needs we have heard most often are the need for access to data and stakeholder engagement as a starting point for model development. We are going to have separate sessions on each of these two items. Please think about how your work can benefit from these two needs.

DATA NEEDS

One need that we have heard repeatedly is access to shared and consistent data sets in formats that are readily usable for experimentation. There are several data types that are relevant to the modeling community which can include the following:

1. Data (observations) that model developers need to build, test, validate some aspects of the earth system model (ocean, land surface, land subsurface, etc)
2. Data (observations or other predictions/boundary conditions/forcings) needed operationally to support model forecasts. This can include observations to assimilate into the models as

they run, other model fields for boundary or initial conditions, or for validation/verification during development

3. Results of model development efforts so that other members of the CoP can build on those results

The first step toward an authoritative dataset is determining the following answers to gauge the magnitude of the problem:

1. **What data is needed?**
2. **What is well served and accessible?**
3. **And what isn't?**

The next step is to catalog the needed data that exists. Moving forward there needs to be an expectation that the community will share their data and metadata in a standardized format. The community can work together to determine an agreed-upon standard beginning with something that is already accepted.

Finally, we can ask the question: How do we go about getting the data that isn't well-served?

STAKEHOLDER NEEDS INFORMING MODEL DEVELOPMENT

In the CC CoP kick-off meeting, one of the topics that we achieved consensus on was that stakeholder requirements should be our starting point for future model development. The ultimate goal for this group is to provide data, products, and services to serve stakeholders (decision-makers, state/local govt, the public, etc.) to enable informed decisions.

Some questions to consider from your professional experience include the following:

- **What stakeholders do you serve or engage with in relation to coastal coupling work?**
- **How can the CC CoP better understand and address the needs of stakeholders?**

The CC CoP stakeholders are a subset of those for the National Water Initiative. The above questions can help us to determine a small number of user groups to focus on over the next year. As we continue to develop our modeling capabilities, we can expand the user group in the coming years.

Annual Engagement Plan

We have hosted a number of scientific and town hall sessions around coastal coupling and community modeling that have been very well-received. Thus far, we have done a good job with our engagement and gotten a high level of response. However, we can do a better job with aligning our engagement efforts in a clear and transparent way for the future as a community. **It is very possible, without a plan, to have multiple groups conducting similar sessions or meetings that overlap in scope resulting in inconsistent messaging and competing resources for participants to attend.** In our current unpredictable travel situation, it is essential for the CC CoP to be on the same page for how we engage with the broader scientific community on coastal coupling work.

The goal of this document and the associated session is to help us determine as a community where we want to invest our time over the next year and generate ideas to continue engaging. Based on the CC CoP feedback, we will create an Annual Engagement Plan that identifies upcoming meetings where we will have scientific sessions, town halls, and other engagements.

TENTATIVE CONFERENCE PLAN

We envision that one organization or office would volunteer to take the lead for each session or town hall proposal based on expertise. Below is a first-cut suggestion on some of the conferences that we should focus on and leads for these sessions. Once leads for each conference session are determined, other members have the opportunity to get involved as co-conveners and ensure we have well-rounded representation at these meetings including a diversity of ideas and consistent messaging. The session proposals would be sent to the larger group for feedback ensuring consistency in messaging.

Conference	Organization
AGU Fall Meeting	NOAA National Water Center
AMS Annual Meeting	NOAA Environmental Modeling Center
AGU Ocean Sciences Meeting	NOAA National Ocean Service

The following session proposals have **already been** submitted for upcoming conferences

- AGU: [CC CoP town hall](#), [NWC town hall](#), [Continental-scale modeling session](#) (abstract submissions open in June)
- AMS: [Operational modeling session](#)

NON-FORMAL ENGAGEMENT

In addition to formal conferences, there are non-formal engagement methods that will be beneficial for the CC CoP to be aware of and participate in. Some of those that have been brought to my attention over the last year include the following:

- Sharing relevant webinars, meetings, and training sessions through the website
- Bi-monthly webinars
- Hack weeks
- CUAHSI Summer Institute

Updates on the community engagement including news stories and other updates are on the [CC CoP website](#). Some other platforms for continued engagement that the CC CoP has expressed interest in include code repositories (e.g., GitHub) and an online discussion platform (e.g., Slack).

HOW TO STAY INFORMED

The final document envisioned to come out of this session is a calendar of events that will be posted on the website and updated monthly with a link to the full annual engagement calendar. At this point, this is a rough draft of the ways we want to engage as a community. In order to gather your feedback on additional engagement opportunities, please fill out [this survey](#). This information will be added to a calendar and sent out to all participants prior to our meeting. During the associated session at the Annual Meeting, we will continue to gather feedback to improve this document. Afterward, this draft will be updated and sent to the community for additional comments.