**Hydrology First: FEMA, PTS, STARR II Call, 7/17/2025**

**Attendance:**

Mathew Mampara, Christina Lindemer, David Rosa, Geoff Uhlmann, Seth Lawler, Katie Gronsky, Haley Heinemann, Cara Williams, Hayden Edwards, Reuben Cozymer, Daniel Wright, Jon Pink, Zachary Herbert, Matthew Dirckson, Kyle O’Neil, David Bascom, Mohsen Tahmasebi

**Proposed Agenda:**

1. FEMA HQ Updates
   1. SOP Status
   2. Regional discussions
2. “From the Lab” Presentation- Dr. Daniel Wright and Ben Fitzgerald
3. Prospectus Overview and Execution Approach
4. Cadence and Next Steps

**Minutes:**

Bi-weekly cadence- is this still good? Monthly?

* Focus on knowledge sharing – 3 HUC4s across the country

Meeting is recorded

"From the lab" will be rotating, Dan Wright is this week

**Notes:**

1. **FEMA HQ Updates-**David Rosa
   1. **SOP Status**
   2. **Regional discussions**
      1. Conversations have been ongoing, HQ will support and provide a lot of guidance
         1. R2,6,8 would be starting these projects
   3. Questions/comments: Jon put in chat "Region 8 on their 3rd HUC 4" Geoff specified we could be doing more than 1 HUC/region if there is interest but tabling for now.
      1. Difference for these 3 they will be directly informed by latest SOP
2. **“From the Lab” Presentation- Dr. Daniel Wright and Ben Fitzgerald**
   1. **SLAM Approach**
      1. What is SST? Looking over larger surrounding region identifying larger collection of storms – use in FF analysis to improve flood risk data
      2. Transposition domains- could include large area in eastern US where there is less variability in geography/rainfall, and much smaller in west where there is more varied topography, etc. Rainfall climate needs to be the same
         1. Biggest gap- how do you define a transposition region? This is one of the goals of UNC/UW project
      3. Basic Requirements
         1. Transparency- open source, reproducible, scalable
         2. Objective- rainfall as basis rather than other weather data (humidity, temp, etc). Problem with other variables is where do you stop, makes it difficult to stick to objectivity
         3. Rooted in logic of SST – defining homogeneous rainfall regions is not new problem (Atlas 14/15).
      4. SLAM test- Spatial L-Moments of Annual Maxima
         1. SLAM is a hypothesis test- we can create a transposition domain, and then are able to say "we are X% sure that the domain has homogenous rainfall properties" using CI of choice
            1. L- moments: statistical framework used in Atlas 14
            2. SLAM compares L moments in transposed location with original location- what is the variability we think is possible- closer purple line is to blue on histogram, more similar
            3. Global significance level (GS) (p-value) : Smaller p-values = larger domains

Q about this relationship ^: when you go to a lower p-value, that's saying the purple line can be farther away from the blue.

* + - 1. Kanawha example
         1. rainyday
         2. Q: assumption that entire watershed would have to fit inside of that area, would this impact results-
         3. Q: How computationally expensive is this process? Quite but finding ways to speed up. For now just do a few and have a few authoritative data sets to work off
         4. Q: Other variables- no limit to these- have there been tests for including something like relative humidity? Dan's group has not
      2. Duwamish example results
         1. Transposition domain using SLAM much smaller (pacific NW)
         2. SLAM confirms basic logic of SST in this case- a way to diagnose where more attention is needed
    1. Scalability- can and have run for all HUC4s in lower 48
       1. Map shows area ratio- the area of transposition domain that SLAM identifies/ watershed area. How much larger is domain than watershed?
       2. Cheyenne ex
       3. Upper Hudson ex
          1. These are proposed HUC4s for hydro first
  1. **Remaining issues:**
     + 1. What GSL to use?
       2. Minimum domain size?
          1. P value concept behind, now thinking about minimum size for SLAM to produce a domain... 5x size?
       3. What is the right rainfall duration?
       4. One precip dataset or multiple??
          1. SLAM can't use Atlas 14/15 bc it needs rainfall records vs quantiles
          2. AORC is currently used, but CONUS404 is promising
       5. One transposition region or multiple? Multiple domains related to storm type?
          1. Mainly an issue related to tropical cyclones- shouldn’t be transposing far inland
     1. Summary
        1. Transposition domain is weakest link in SST work
        2. SLAM is objective, scalable, open source
     2. Questions
        1. Domains being contiguous- is there a reason they have to be? They don't have to be but are they actually similar for right reasons. Further screening
           1. For Cheyenne – may make sense to include non contiguous region is Rockies but not Wisconsin, etc
        2. Can reach out to Dan with q's

1. **Prospectus Overview and Execution Approach**
   1. January 2026 is current Period of Performance but March is likely end date.
   2. Should we add also include last 2 questions in section above Planned Activities based on convos: What data specifications should be included for deliverables to ensure interoperability and reuse of data in planned and future hydraulic analysis?
   3. New 1.9 task?
      1. Dave – yes agrees there is value in this
   4. Of our 9 tasks, need to split core subtasks amongst 3PTS- develop q's needed to answer for each subtask to operationalize SOP/execute or deliver on this task.
      1. Potential groups
         1. 1.1, 1.2, 1.3-
         2. 1.4 - Dan/Ben's team
         3. 1.5, 1.6-
         4. 1.7, 1.8, 1.9-
2. **Cadence and Next Steps**
   1. DR: a lot of this info will be in SOP, objective of this work is making a lot of progress on what does it look like to put this in G&S
   2. Mat to start email thread about splitting subtasks up with PTS
   3. FEMA and group are good with monthly cadence

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| **Primary Questions**(July 31)**:** Starting with the task description in the prospectus, create a list of questions that need to be answered to achieve the outcomes and objectives identified in the prospectus. |
| **Evaluate Resources**(July 31)**:**Who is in position to help answer the questions? This can by a person, position, organization, or publication. |
| **Recommend a deliverable**(August 14)**:**A table, report, flow chart, decision tree, library of resources, job aid?*Be specific: If a table, what columns will be in it? Flowchart: what is the scope of the elements* |
| **Crosswalk with the SOP**(August 28)**:**What information exists and what is needed to answer each primary question (provide actionable direction)? |
| **Define the approach to answer the question**(August 28)**:**Draft a brief narrative outlining the approach to answering each primary question. |
| **Schedule**(August 28): Create a schedule of delivery for each question. |
| **Answer the question**(Based on schedule)**:**Use the approach and resources to develop the recommended deliverables. |
| **Present results / outcomes**(Based on schedule): Rolling, as questions are answered. |