**CNH Team Teleconference, 11/4/16**

**Meeting Minutes**

In attendance: Pat, Paul, Hillary, Kevin, Weizhe, Cayelan, Chris, Nicole, Joe, Julia, Kathie, Armen, Mike

1. Welcome & items from the team
2. Model updates
   1. Cycles – Armen
      1. Working on the nitrogen cycle right now, modeling nitrogen movement and cropland activities
      2. Haven’t tackled water cycle yet
      3. Plan to talk with PIHM and GLM teams to see how to do coupling, coupling require detailed conversation about model calibration and data quality
      4. Cayelan: what’s the year range of Mendota lake?

Answer from Armen: no limitation in the year range, no preference of year range in Cycles, don’t need to select year right now

* + 1. Cayelan: Is year range 2003-2013 possible? Have nitrogen data to Mendota?

Answer from Armen: yes

* + 1. Cayelan will send Charlie the nitrogen inflow data.
  1. SDP – Cayelan for Kelly
     1. Working with output with Charlie
     2. In the process of SDP model construction
  2. PIHM – Chris
     1. Made a lot of progress after the workshop at the end of September
        1. Lele completed the data and posted it on the website
        2. Geo-spatial data now available
        3. Yu zhang is working on the model implementation, 3-side Mendota is involved, models for Mendota are closer to end on model calibration, but models for Sunapee have a lot of problems
     2. Problems in the current research
        1. Have a lot of data for Mendota from Hillary, like size of gate opening, wide open, lake level, etc. Still trying to figure out part of model calibration.
        2. Yu Zhang has to make some modification to model, inflows are great, still trying to figure out outflows
        3. Computing time is a problem due to large watershed, in the stage of trying different implement solutions to make it faster, Yu Zhang needs time to improve the speed
        4. Visualization tool: hope it is user friendly enough
  3. GLM – Cayelan, Paul, Nicole
     1. Mendota – Cayelan
        1. Have met with PIHM team and have a calibrated, coupled PIHM-GLM
        2. Get into the right format and input to drive GLM. Looks good on inflows, still trying to figure out outflows
        3. Excited to have scripts in R which can take data into PIHM, trying to figure out scripts in R which can take GLM output and produce summary statistics for every year
        4. By Christmas 2016, trying to finish all R scripts, which can take input from PIHM, produce output from GLM, and get the results to be an input into hedonic analysis
     2. Sunapee data – Nicole
        1. Working with Kathie on research technique
        2. Bring together different data sets and working on the driver data
        3. The problem with Sunapee is it’s more robust than Mendota, trying to figure out how to use simple but robust relationship. Sunapee has double the number of streams, which add lots of complexity, a lot of models can use to create water budget.
        4. By Christmas 2016, trying to get the driver data done and start Sunapee simulation
  4. Hedonic modeling – Kevin & Weizhe
     1. Have another graduate student working on the literature and techniques of hedonic model
     2. Trying to find a good way of model coupling
  5. Social science – Mike
     1. In the final process of site visit. Has been to Wisconsin and New Hampshire.
     2. Working on preliminary data collection
     3. Interview with lake association is useful since lake associations differ a lot in different places. One lake association in New Hampshire just focuses on a fishery, another lake association in Wisconsin is brand new and has a different business model than traditional models.
     4. In Sunapee: talk with people to examine perceptions of lake association
     5. Problems: Available resources differ from different organizations in different places. Sometimes, it’s difficult to find out whether lake associations exist or not. Some research groups don’t have a connection with lake associations when they’re doing research.
     6. These visits can give us a big picture of what we are going to do. We can take a first look to see whether those resources are available or not and then decide the challenges we may face.
     7. In the process of graduate student recruitment. Has a few applicants, but none of them can start in January, may have to wait for next fall to have a student to participate in the project.
     8. Fun facts:

1. Met with Paul in Madison, Paul is learning to be a better twitter.

2. Paul: Have a great time with Mike in Madison. It’s good to talk with Mike in the context of history of watershed. We can see what the priorities are, we can see different organization have different visions and we can relate the modeling to the narrative of communities to get a powerful story.

* 1. Scaling up – Pat & Joe
     1. Joe:
        1. Working on the preliminary analysis by taking different lake characteristics into account
        2. In the process of familiarizing himself with LAGOS and other datasets
     2. Pat:
        1. Still don’t have the picture of data input and output
        2. Need think about the detailed modeling of data
        3. Cayelan: we have input-output table on ODS, please fill in and answer the questions (one to-do item)
  2. Broader impacts – Kathie
     1. Graduate training: working with Nicole
     2. Connection between work we are doing and the work of lake associations
     3. Critical to have visualization and get feedback from the whole team
     4. Suggestions for the workshop: explore the broader impacts of work including work association, visualization and graduate training
     5. Cayelan: aim to have informational video for project every year. Think what kind of visualization is best to embedded in the video, feedback will be awesome.
     6. Suggestions for Mike: Can play the video to each lake association
     7. Cayelan: we can put together video and research results to give stakeholders or lake associations a big picture?

Framework paper - Cayelan

* 1. Kelly and Cayelan have put together outline and introduction
  2. Have talked to editor of *Ecosphere*, will submit as an Innovative Framework article
  3. Kelly is in the process of cleaning up the references and will send out emails to potential authors with suggested contribution

1. Graduate student review paper - Nicole
   1. Have finalized search criteria and database we use
   2. Got recommendations for journals from Kelly and Mike and have feedback from PIs
   3. Will screen abstracts of papers they’ve identified in database and see if they can included based on criteria. Each paper will reviewed by two people to double check. Aim is to be done by the end of December
   4. Identify Joe as a potential co-author
2. Administrative items
   1. Year 2 workshop timeline and tasks
      1. Expectations - Cayelan
         1. Pass data from different models and link with each other
         2. Have the entire cycle finished by March, 2017
         3. First scenario: Reduce fertilizer use by 30%, propagate this scenario through the full loop of models
         4. Complete first scenario by April, 2017
         5. During the workshop: Address challenges in coupling models for the scenario; develop more efficient ways to pass data; have feedback on science questions; discuss project with all involved
      2. Chris: come up with a second scenario, consider weather dryer or other climate change
      3. Cayelan: aim to have year range between 2003 and 2013 to include records of both dry and flood. Include climate variability.
      4. Armen:
         1. Consider baseline fertilizer
         2. Targeting in a uniform rate for every kilometer in the lake
         3. Consider spatial distribution where fertilizer (or others) are applied
         4. Consider main fertilizer application
      5. Cayelan:
         1. Calibrate, pass data back and forth
         2. Simulation take a bit time to run
         3. We can think about workflow and how we can provide a proof of concept
         4. Specialize in details of scenarios
         5. Have some guidelines of group efforts on the workshop
      6. Paul: we can reach the expectation!
   2. Annual NSF report
      1. Kelly has sent out the emails, if you have any questions, email her
      2. Pat and Paul have done the report, Armen is working on it.
      3. Report can include activities of different graduate students.
      4. If different teams can work together that will be great.
   3. CNH lake product guidelines and funding attribution
      1. Cayelan: the guideline has been send out, please read through it. It’s a starting point to handle different cases
      2. Kathie: it’s useful. NSF doesn’t get credit for funding or research unless you mentioned them in acknowledgement. It’s important to do it.
      3. Cayelan: the guideline has included different from disciplines. Let her know if you have any comments.