**CNH Teleconference Call**

**Meeting Minutes, 3/4/2016**

In attendance:

Kevin Boyle

Cayelan Carey

Kelly Cobourn

Chris Duffy

Paul Hanson

Armen Kemanian

Jen Klug

Lars Rudstam

Mike Sorice

Kathie Weathers

Weizhe Weng

Summary of Action Items

* **Amy** will schedule virtual sessions within the next month with team members to review ODS and assist in building task structure.
* **Kathie and Mike** will discuss the potential role of social network analysis for the human dimensions component of the project.
* **Kathie** will send LSPA land use change modeling results to Chris.
* **Mike** will set upinitial phone/Skype conversations with the lake association liaisons **(Amy/Lars, Kathie, Paul)**
* **Cayelan** will follow-up with Yu, Chris, Kathie and Mandy regarding Sunapee PIHM simulation.
* **Cayelan** will follow-up with Chris and Paul regarding April PIHM-GLM workshop. **Kelly** to send headcount to Chris.
* **Chris** will invite Yu to future monthly meetings.
* **Kelly** will send instructions for booking May workshop travel through required travel agency.
* **All** email Kelly, Cayelan, and Amy with May workshop agenda items by Thursday, March 24th.

Meeting Minutes

1. Welcome
   1. Topics from the team to add to agenda?
      1. How should new tasks be structured in ODS?
         1. Amy will schedule virtual sessions within the next month with team members to review ODS and assist in building task structure.
         2. Mike is developing social network analysis to gauge team interdisciplinary and interconnections.
            1. Survey will be distributed to the team prior to the May workshop and at end of project.

Kevin suggested applying for human subject approval in the event we decide to use the data in a publication in the future.

Kelly noted this will likely qualify for IRB exemption, but good to check anyway in case we want to use these data for a publication.

1. Modeling Conversations
   1. Human dimensions (Mike)
      1. Perform primarily a qualitative assessment with some quantitative dimension to understand capacity and effectiveness of lake associations
         1. Why are lake associations good at what they do and are there links to water quality? Has it changed over time? Has social trust been developed which potentially benefits communities and strengthens these organizations?
         2. Activities
            1. Document analysis of archives (documents, charters, media): what are their priorities over time and do they correlate with changes in water quality?
            2. Focus groups, 1-on-1 interviews with those who understand group evolution; link with document analysis to triangulate mission
      2. No integrated model
         1. Set-up initial teleconference meetings with lake association liaisons (Kathie, Paul, Lars/Amy) in Spring 2016
         2. Visit lake associations in Fall 2016 to discuss capacity and effectiveness though focus groups and one-on-one interviews (Mike and Kevin)
         3. Survey – 2018
            1. Results will be used to inform policy scenario development for coupled models
         4. Examine lake association archives (i.e., charters, documents, media articles, etc.)
         5. Link surveys to models through policy scenarios
            1. Is there a disconnect between lake association activities and the policies that have the greatest effect on water quality?
      3. Feedback
         1. Kathie – how will time series correlation between lake association activities and water quality account for rapid changes outside of lake associations’ purview?
            1. Kevin – can’t say change in water quality due to lake association activities, but can link lake associations with important changes in policy (zoning, etc.) that are likely to change water quality.
            2. Paul – CLA raises awareness and affects ordinances
            3. Kevin – lake association activities related to policy change may include education, taxes, subsidies, development (all variations on a theme)
         2. Kathie and Mike will discuss the potential role of social network analysis for lake associations.
         3. It’s important to carefully define effectiveness which could be counterintuitive in relation to water quality based on the goals of lake associations.
         4. Additionally, it’s important to determine lake water quality metrics to assess effects on local ordinances and policies.
         5. In Wisconsin (Eric Olson) and potentially elsewhere, there is interest in ways to quantify and manage the effectiveness of lake associations.
            1. How do you do this research?
            2. What are the outcomes?
         6. Chris – important to account for changes in land use in the watershed – this is turning out to be a huge driver of water quality (more so than climate)
            1. Kathie will send LSPA land use change modeling results and P loading to Chris.
   2. Data Collation (Cayelan)
      1. Hilary, Amy, Bethel, and Mandy are collecting watershed and lake variables for 1979-2013 for 3 catchments which will drive models.
      2. Data collection should be complete by May workshop.
      3. Data will be available online for team.
      4. Working with Chris on watershed delineations
         1. All lakes have sent delineations to Chris and Yu
         2. PIHM mesh for each catchment will be used to extract landscape characteristics, which will become part of the immutable datasets stored for the project.
         3. 1979-2009 and additional years (to 2013) will be pulled from HydroTerre
         4. NLDAS climate data will be posted – these should be used for all modeling activities
         5. Corinna working to post immutable datasets
         6. Status update: PIHM running for Mendota and Oneida; GLM models running for limited timeframes for 3 catchments.
   3. GLM-Hedonic (Kevin)
      1. Requesting all observed hydrological and limnological data as a first step. Can work with disaggregated data to aggregate in different ways.
      2. Aggregate data with assistance, as needed.
      3. Conduct data mining to understand relationships between water quality metrics and property values which are typically nonlinear
         1. Identify which relationships are best correlated to property values
      4. Potentially develop new two-stage estimation equation – use water quality data to explain variation in secchi depth readings; then model response of property values to variation in secchi depth. Brings important attributes of lake chemistry into analysis. This is novel.
      5. Perform robustness checks
      6. Address essential management variables
      7. Determine role of observational versus modeled data
         1. How well does one substitute for another?
         2. This is an important validation question. Plot observational versus modeled; ideal is 45 degree line.
      8. Investigate spatial dynamics of water quality data (i.e., distance from shore (Sunapee), inflows (Oneida), and other waterbodies (Mendota) in relation to property values.
      9. Early (basic) model will be used as a platform to determine EMVs.
      10. this analysis will be an iterative process.
   4. PIHM-GLM
      1. Chris status update – coupling proceeding in 2 steps
         1. They have taken watershed model and put a space in for GLM; this is done and working; creates state variable for lake level, can simulate water budget or insert GLM, haven’t tested passing data yet, linked through several variables
      2. Paul – CCC working to make sure information is passed well between the models, ensure data structures work for both.
      3. Next steps include testing interactions between PIHM and GLM.
         1. Discussion about which lake to start with.
         2. Agreed to start with Mendota because there are working models and they have stage information (sent to Chris or Yu)
         3. CCC notes that Oneida and Mendota are proceeding at same pace
         4. Chris working to nail down output formats
         5. Some questions for CCC, Paul about operating rules, etc. for Mendota
      4. Cayelan will follow-up with Kathie and Mandy regarding Sunapee PIHM simulation.
      5. Cayelan will follow-up with Chris regarding April workshop.
      6. Chris will invite Yu to future monthly meetings.
   5. Cycles-EconSDP-PIHM (Kelly, Chris, Armen)
      1. Investigate changes in crop yields based on decisions by farmers.
      2. Structure of integration between Cycles-PIHM-GLM should be similar to that of Cycles-EconSDP-PIHM
         1. Choose locations in watershed to run Cycles
         2. Representative of land class
         3. Yields management simulations of nutrients
2. Final items
   1. Chris needs final numbers for workshop in April.
   2. Kelly will send instructions for booking May workshop travel through required travel agency.
   3. Additional transportation will likely be organized. More to follow.
   4. This week, Mike Vanni visited Virginia Tech and discussed ideas for scaling-up which will be reviewed on a future call.
3. Next meeting
   1. Monday, April 1st 2:00 p.m. EDT
   2. Please email Kelly, Cayelan, and Amy with ideas of items you would like to learn more about at the May workshop.