**Quantifying Uncertainty in Ecosystem Studies**

**Draft Workshop Agenda**

March 14-15, 2011

Seaport Hotel, Boston, MA

Revised: 8 March 2011

**Sunday, March 13**

6:00 pm – Group dinner for those arriving early (meet in hotel lobby)

**Monday, March 14**

***Morning Session* – *Introduction and site presentations (facilitated by John Campbell)***

8:00 am – Welcome and introductions (John Campbell) (15 min)

8:15 am – Introduction to uncertainty (Mark Harmon) (15 min)

8:30 am – Flow chart – Steps in flux calculation for streamflow and precip (Carrie Rose Levine) (10 min)

8:40 am – Intro. to Kepler (John Campbell) (5 min)

8:45 am – Site presentations - Introduction

8:55 am – Hubbard Brook (Don Buso)

9:05 am – Fernow (Mary Beth Adams)

9:15 am – Coweeta (Jim Vose)

9:25 am – Sleepers River (Jamie Shanley)

**9:35 am – Coffee break (20 min)**

9:55 am – Biscuit Brook (Doug Burns)

10:05 am – Andrews (Mark Harmon)

10:15 am – Luquillo (Bill McDowell)

10:25 am – Marcell (Steve Sebestyen)

10:35 am – Niwot (Jordan Parman)

10:45 am – What data do we have? (Carrie Rose Levine) (30 min)

11:15 am – Forest Service Experimental Forest and Range database (Steve Sebestyen) (15 min)

11:30 am – Discussion (15 min)

**11:45 am – Lunch (1hr 15min)**

***Afternoon Session*** – ***Stream flux uncertainty discussion (facilitated by John Campbell)***

1:00 pm – Identify the aspects of uncertainty that we will consider (Ruth Yanai) (20 min)

1:20 pm – Aspects of uncertainty: How will we evaluate uncertainty in each of these aspects:

* HB rating curve example (Ruth Yanai)
* Model uncertainty (Mark Green)
* Instrument uncertainty (stage height, weir calibration, v-notch style) (Doug Burns)
* Analytical uncertainty (chemistry) (Don Buso)
* Stream flux calculations (Jamie Shanley)
* How to deal with groundwater (e.g. Marcell)

**3:00 pm – Coffee break (20 min)**

3:20 pm – What are we going to do?

* + - Last 10 years of data only (no change over time)
    - We will evaluate all major ions
    - Common approach or different approaches or approach comparisons or all of the above

**5:00 pm – Adjourn**

6:00 pm – Group dinner (meet in hotel lobby)

**Tuesday, March 15**

***Morning Session*** – ***Precipitation flux uncertainty discussion (facilitated by Mark Green))***

8:00 am – Identify the aspects of uncertainty that we will consider (Ruth Yanai) (20 min)

* Selection of model: Thiessen polygons, kriging, inverse-distance weighting, Doppler, PRISM, others? (Mark Green)
* Instrument uncertainty: what type of collectors are you using?
* Comparison of chemical collectors
* Bulk vs. wet deposition (co-located NADP and Bulk collectors)
* Blowing snow (e.g. Niwot)

**9:45 am – Coffee break (20 min)**

10:05 am – What are we going to do?

* Common approach or different approaches or approach comparisons or all of the above
* Last 10 years of data only (no change over time)
* We will evaluate all major ions
* We are not tackling dry deposition

**11:45 am – Lunch (1hr 15min)**

***Afternoon Session*** – ***Outcomes and products (Facilitated by Ruth Yanai)***

1:00 pm – Outcomes and Products:

* + - Discussion of cultural change
    - Round robin: What will you do to spread the good word?
    - ESA workshop, other opportunities for outreach?
    - ESA presentations
    - Website (Carrie Rose)

**3:00 pm – Coffee break (20 min)**

3:20 pm – Authorship and data use (John Campbell)

3:40 pm – Papers

* + - Hubbard Brook paper (Green, Buso, Campbell, Levine, Likens, Yanai)
    - Precipitation
    - Streamflow
    - Overall input-output budget paper
    - Monitoring efficiency?
    - Change over time?
    - Others?

**5:00 pm – Adjourn**

6:00 pm – Group dinner (meet in hotel lobby)

What we need:

* Spreadsheets or code showing exactly how the fluxes are calculated
  + Examples, could be one year, one solute, whatever’s easiest
  + E.g. Need to know how people deal with missing data, below detection limit, etc.
* Original rating curve data (stage height vs. discharge relationship)
* Make and model of precip collectors and stage height recorders
* Analytical uncertainty values

Attendees:

Mary Beth Adams (Forest Service)

Doug Burns (USGS)

Don Buso (Cary Institute)

John Campbell (Forest Service)

Mark Green (Plymouth State Univ/Forest Service)

Mark Harmon (Oregon State Univ.)

Trevor Keenan (Harvard Univ.)

Shannon LaDeau (Cary Institute)

Carrie Rose Levine (SUNY-ESF)

Bill McDowell (University of NH)

Jordan Parman (Univ. of Colorado)

Steve Sebestyen (Forest Service)

Jamie Shanley (USGS)

Jim Vose (Forest Service)

Ruth Yanai (SUNY-ESF)