Great Lakes Watershed Investigations Teacher Institute ~ July 14-16 & July 14-18, 2014
Michigan Tech Great Lakes Research Center - Room 104

Questions to address?
- How do impacts to local watersheds impact the Great Lakes?
- How can we address Great Lakes watershed issues using data and environmental service-learning?
- How can teachers and students create projects that meaningfully address Great Lakes watershed issues and stewardship needs?

SCHEDULE – for Teachers
Monday July 14
8:00 am  Course Overview & Introductions (104 GLRC)
   --Jan Sneddon, Earth Force; Shawn Oppliger, Lloyd Wescoat, Joan Chadde, LSSI/WUPC
   o Collaborative partners - Earth Force, LSSI/GLSI, SAMPI, NOAA
   o Earth Force Service Learning Program (ESLP) Goals
   o Great Lakes Stewardship (GLSI) Goals
   o Institute Goals - related to the expectations and questions (Jan)
   o Institute Logistics & 5-day Institute Credit Requirements/WET Activity Presentations
   o Describe a time when you used data to make a decision - ask questions, gather data, and create solutions.
   o Parking Lot/Bike Rack for questions
   o Participant Introductions - Teacher interviews around institute expectations/questions
   o Ed Camp Introduction

9:00  The Great Lakes Watershed: A Global System (104 GLRC)
   --- Dr. Alex Mayer, Michigan Tech Dept of Civil & Environmental Engineering

9:30  How Do Scientists Assess the Health of the Great Lakes (104 GLRC)
   --- Marcel Dijkstra, PhD candidate, MTU Dept of Civil & Environmental Engineering

10:00  Break

10:15-10:45  Great Lakes Floor Map (1st floor lobby of GLRC)
   --Joan Chadde
   o Place-based education set up
   o Get a sense of place, using SL as a tool
   o 3-dimensional way to see how a watershed is delineated

10:45-Noon  Earth Force Service-Learning Model (Jan Sneddon)
   1. Introduction to EF - 10 mins
   2. SL Overview - did get a reading - 15 minute (Lloyd)
   3. Overview of Process - 10 min
   4. Launch - 15
   5. Step 1 - 25 minutes

Noon-12:30 pm  LUNCH at GLRC (pickup from 5th & Elm)

12:45-2:30  Scientific Excursion aboard R/V Agassiz: Temperature Light, Water Chemistry, Plankton, Benthos
   -- Marcel Dijkstra, PhD candidate, MTU Dept of Civil & Environmental Engineering

2:45-4:45 pm  Michigan Environmental Education Curriculum Support (MEECS) Water Quality Unit
   - Joan Chadde, Western UP Center for Science, Mathematics & Environ. Education, LSSI, MTU
   o How Much Water Is in the World? (Lesson 1)
● What is a Watershed? - model demo (Lesson 3)
● Land Uses & Pollution (Lesson 4 & 8)
● Designing A Watershed/Stream Investigation (Lesson 7)

4:45 - 5:00 pm  **Taking it back to the classroom** (Jan Sneddon)
Reflection – in target age groups
  o High School/Community College (4)
  o Middle (4)
  o Elementary School (4)

Prompting Questions - Ed Camp model. Teachers develop their questions during this 15 minutes

5:30-6 pm  DINNER at Wadsworth Hall (on campus participants)

**Tuesday, July 15**

8:00-9:00 am  **Data Analysis: sediment/benthic organisms, plankton, trout stomach dissection** (102 GLRC)
  -- Marcel Dijkstra, PhD candidate, MTU Dept of Civil & Environmental Engineering

9:00-noon  **Teaching with Great Lakes Data Using Online Data & Resources** (B003 GLRC)
  -- Cynthia Hagley, Environmental Quality Extension Educator, MN Sea Grant
  [http://www.seagrant.umn.edu/about/cindy](http://www.seagrant.umn.edu/about/cindy)

Noon  Depart MTU for Houghton Waterfront Park
12:30  Picnic Lunch at Houghton Waterfront Park (pick up from Keweenaw Food Coop)

1:30-4:00  **Huron Creek Stream Monitoring: physical, chemical, biological parameters**
  (Meet at Green Acres crossing of Huron Creek)
  -- Dr. Alex Mayer, Michigan Tech Dept of Civil & Environmental Engineering
  -- Joan Chadde, Western UP Center for Science, Mathematics & Environ. Education, LSSI, MTU

4:00-5 pm  **Taking it back to the Classroom** (Jan Sneddon)
  ● Ed Camp
  ● 3 20-minute sessions or 2 30-minute sessions - to address teachers’ questions/needs

5:30-6 pm  DINNER at Wadsworth Hall (on campus participants)

**Wednesday, July 16**

8:00  **Using the Earth Force Process to Foster Environmental Stewardship** - Jan Sneddon  (104 GLRC)
10:00  Break

10:10  **Earth Force Curriculum and Data-driven Decision making** (continue)  (104 GLRC)

Dollar Bay High School Student Organization of Aquatic Robotics (SOAR) to present their school community project

11:00  **Teacher Reflections**: meet in grade groups to discuss taking back to classroom. Share out with large group.
  ● How might/could school-community collaborations benefited your students’ learning?
  ● How might/could school-community collaborations increased your students’ sense of citizenship and stewardship?
  ● How might/could integrating place-based education “using the Great Lakes and/or Lake Superior” enhanced your students understanding and engagement in the curriculum?
  ● How might/could hands-on learning with a place-based theme engaged students of all abilities and learning styles?
● How could you incorporate student voice into your stewardship work?

Noon Lunch (5th & Elm: available in the classroom to go)
3-day group does evaluations (B003 GLRC)

**1:30-3:30** Visit U.S. Forest Service Peatcosm Research Project (meet at USDA Northern Research Station)
- Evan Kane & Lynette R Potvin, USDA Forest Research Lab

4:00 pm Taking It Back to the Classroom: WET Activity Presentations (2 – 30 min. each) (104 GLRC)

Thursday, July 17

8:00 AM Biomonitoring: Frogs As Bioindicators (104 GLRC)
- Joan Chadde, Western UP Center for Science, Mathematics & Environ. Education, LSSI, MTU

9:00 Wetlands Ecology (104 GLRC)
-- James Bess jabess@mtu.edu, PhD student, MTU School of Forest Resources & Environmental Sciences
(10 AM Pick up Lunch from Kew Coop and bring back to GLRC for 10:15 AM departure)

10:30-Noon Frog & Salamander Sampling (Lake Perrault)
- Joan Chadde, Western UP Center for Science, Mathematics & Environ. Education, LSSI, MTU

Noon Picnic lunch at Lake Perrault (from Keweenaw Coop)

1:00-3:30 Field Trip: Wetland Types of the Great Lakes
-- James Bess, MTU School of Forest Resources & Environmental Sciences

4:00 pm Taking It Back to the Classroom: WET Activity Presentations (2 – 30 min. each)

Friday, July 18

8:00-8:30 am SOAR demos ROV (Xenia Cortez, SOAR)
8:30 am Drive to Calumet Waterworks Park

9:00-10:30 am School-Community Partnerships: Adopt a Beach & Invasive Plant Removal (Calumet Waterworks Park)
-- Darrell Hendrickson, Washington Middle School (*invited*)

(11:00 am Pick up lunch at Kew Coop on way back to GLRC)

11:00 am WET Activity Presentations (3 – 30 min. each)

12:30-1:00 pm LUNCH & Lesson Planning Discussion

1:00 pm Group-sharing

1:30 pm Course Evaluations (Computer Lab-B003 GLRC)
2:00 pm       Institute ends