MICHIGAN ENGINEERING
UNIVERSITY of MICHIGAN

Advanced Study Program
Developing Scientific Leaders of the Future
NCAR
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

Warner Internship for Scientific Enrichment

Samantha Tushaus

Summer 2013

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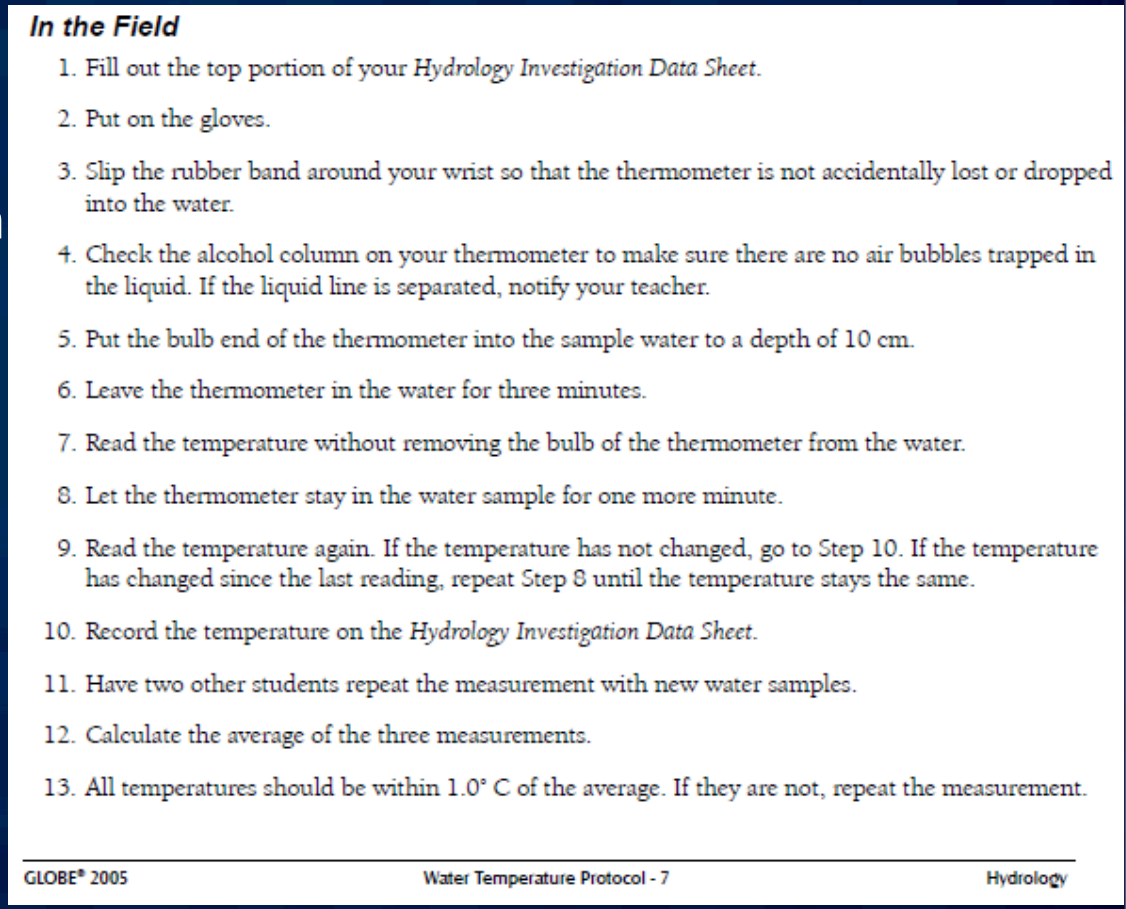
THE GLOBE PROGRAM

What is GLOBE?

- Global Learning and Observations to Benefit the Environment
- Hands-on pre-college science and education
  - Make observations and formulate hypotheses
  - Collect and analyze data
- Partner students, teachers, and scientists to gain understanding of our environment and its changes
- International collaboration!
  - Protocols: unify data collection and instrument use globally
  - Example?

Protocol Example: Water Temperature

Instrument: "Organic, liquid-filled thermometer with a temperature range of -5˚C to 50˚C. The thermometer must be factory calibrated and tested with standards traceable to N.I.S.T (The National Institute of Standards and Technology - United States) to an accuracy of +0.5˚ C, with 0.5˚ C scale divisions. It must be supplied with a metal jacket with holes at the bulb end to allow for circulation and a hole at the top by which to hang the thermometer."



In the Field

1. Fill out the top portion of your *Hydrology Investigation Data Sheet*.
2. Put on the gloves.
3. Slip the rubber band around your wrist so that the thermometer is not accidentally lost or dropped into the water.
4. Check the alcohol column on your thermometer to make sure there are no air bubbles trapped in the liquid. If the liquid line is separated, notify your teacher.
5. Put the bulb end of the thermometer into the sample water to a depth of 10 cm.
6. Leave the thermometer in the water for three minutes.
7. Read the temperature without removing the bulb of the thermometer from the water.
8. Let the thermometer stay in the water sample for one more minute.
9. Read the temperature again. If the temperature has not changed, go to Step 10. If the temperature has changed since the last reading, repeat Step 8 until the temperature stays the same.
10. Record the temperature on the *Hydrology Investigation Data Sheet*.
11. Have two other students repeat the measurement with new water samples.
12. Calculate the average of the three measurements.
13. All temperatures should be within 1.0° C of the average. If they are not, repeat the measurement.

GLOBE® 2005 Water Temperature Protocol - 7 Hydrology

GLOBE water temperature protocol for thermometers

Who is GLOBE?

50,000 teachers 25,000 schools 112 countries

GLOBE partner countries in orange

What did I do?

- Attended GLOBE Partner training (June 2013, Boulder, CO)
  - Trained in multiple protocols
  - Gained ability to train teachers
- Established contacts with GLOBE Program Office members and Detroit area GLOBE partner
- Plan to set up GLOBE partnership at University of Michigan and the Ann Arbor area

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Earth Science WOMEN'S NETWORK

What is ESWN?

- Earth Science Women's Network
- Founded in 2002 for peer mentoring, support, professional collaboration
- **Mission**: The Earth Science Women's Network (ESWN) connects women in the Earth sciences to promote career development, build community, provide informal mentoring and support, and facilitate professional collaborations.

ESWN founders, 2002, AGU

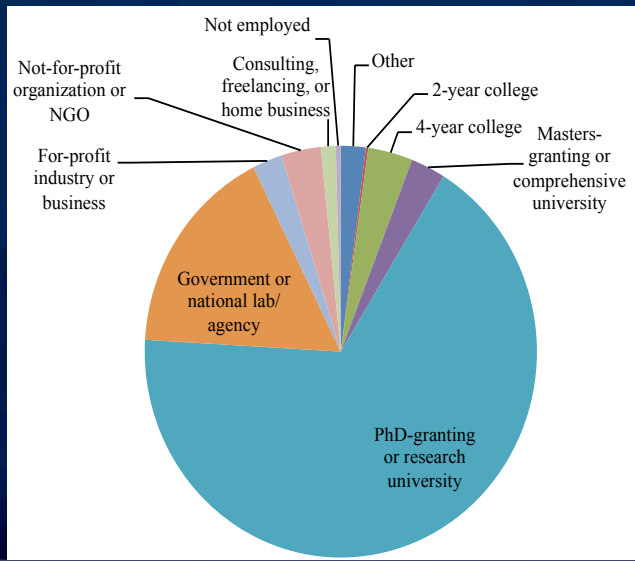
Why ESWN?

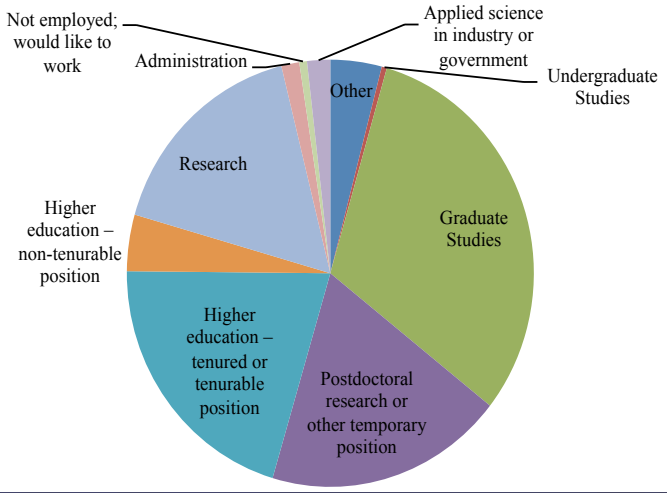
- Male-dominated leadership in geoscience
- Many females isolated in departments, few mentors or role models
- ESWN: informal, honest, safe community for women scientists
- Discuss important issues…
  - How do we nominate more women for awards?
  - With whom can I collaborate on research?
  - What is my institution's maternity leave policy?
  - Will changing my last name affect my career?

Who is ESWN?

- Leadership Board
  - Design and organize networking and professional development events
  - Support online resources
  - Apply for funding (NSF ADVANCE PAID, NOAA, NCAR, AGU)
- 2000 members, 50 countries
- Early career individuals

Left: place of employment; right: career type (as of 2010)





Connecting Online and In Person

- Online
  - Web center (eswnonline.org); public and member sites
  - Jobs listserv, Facebook, Twitter
  - Discussions; 100 discussion topics, 30 topical groups
- In Person
  - Formal and informal conference networking (AGU, EGU, GSA, AMS…)
  - Regional get-togethers
  - Peer mentoring
  - Professional Development Workshops

Professional Development

- Intensive workshops
  - Female only
  - Research Identity, Networking and Communication, Leadership and Management
- Mini-workshops
  - Male and female
  - Navigating the NSF, Networking for Professional Growth, Work-Life Balance, Success on the Tenure Track…

What did I do?

- Recent website update!
- Add, update, and edit content
- Collaborate with Leadership Board
- Advertise!

Current Leadership Board

THANK YOU

- Derek Posselt (U-M adviser)
- Rich Rotunno, Luca Delle Monache, Marcello Miglietta (NCAR collaborators)
- Paula Fisher, Terri Betancourt (ASP, WISE contacts)
- Christine Wiedinmyer (ESWN contact)
- GLOBE Program Office contacts

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