The Global Lake Ecological Observatory Network Graduate Student Fellowship Program: 1st Student Cohort

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1 Graduated from program
2 Participating in 1st year of program
3 Participating in second year of program

The Global Lake Ecological Observatory Network (GLEON), via a grant from the National Science Foundation’s Macrosystems Biology program, supports a fellowship program for early career researchers to study the impacts of global change on lakes. The program focuses on developing effective collaboration skills and actively engaging in existing networks of people, data, and technology on a global scale. (See diagram below).

Overview

The GLEON Graduate Student Fellowship Program provides support for early-career researchers from multiple disciplines to work on lake science projects. The program aims to foster collaborations and develop new research opportunities. Fellows are expected to participate in workshops, seminars, and networking events to enhance their scientific and professional skills.

Program Leaders

- Weathers, Hanson, Hong, Readers, and Wisniewski

Program Assessment

- Academic: fellows, advisors, colleagues in other fellowship programs, and local mentors
- Funding: hours of alumni,由此可见, the fellowship program aims to provide opportunities for fellows to network and collaborate with experts in the field.

Project Outcomes

- Leadership skills for new generation of network scientists
- Lifelong cohort and collaboration
- Enhanced dissertation research
- Cutting edge publications in field
- Communication and collaboration strategies to engage a diverse audience and cultures
- New training model and materials for observational networks and faculty advisors

Communication and Mentoring

- Collaborative mentoring (social media)
- Monthly and quarterly student and advisor meetings
- Utilization of different communication tools for workshops and training

Collaborations

- Lake function, global change, remote diagnostics, spatial analysis, and communication (e.g., social media)
- Complex datasets and techniques to address scientific questions
- Scientific training and communication at the interface

Remote Distributed Collaboration and Team Science

- NLA Group: Kirsten Winter
- Vijay Patil
- Time series group: Richard Woolway
- Aline James

Students have gained experiences and skills in:

- Programming in the R language
- Model design for spatial analysis
- Effective strategies for project management in a virtual environment
- Evaluating and responding to cross-disciplinary issues
- Leadership skills for team science

EPA's National Lakes Assessment dataset, plus additional variables: wind speed, wind direction, air temperature, and water temperature.

Variables:
- Dissolved oxygen, photosynthesis, temperature, wind speed, wind direction, air temperature and water temperature.

Table 1. Summary of research outlined by each working group during the 1st workshop

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Data</th>
<th>Methods</th>
<th>Contributors</th>
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</thead>
<tbody>
<tr>
<td>1. What land use/land cover characteristics drive water quality over large spatial scales?</td>
<td>EPA National Lakes Assessment dataset, plus additional variables</td>
<td>Use multiple regression and regression tree analysis to determine landscape drivers of variation</td>
<td>Alex Nodine, Emily Nodine, Hilary Dugan, Jessica Conran, Ari Santoso, Vijay Patil, Kirsten Winters, Luke Winslow</td>
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</tbody>
</table>

Diagram of data and processes

- Time series group
- NLA group

Ongoing work and future directions

- Future directions are focused on building upon the central goals of the fellowship program through workshops, remote collaboration, participation in meetings, and publications.

Above: Conceptual model of physical and biological components contributing to dissolved oxygen (O2) variability in a lake. (Diagram by Richard Woolway)

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