

# Ecological Forecasting Initiative 2022 Virtual Conference May 23-25, 2022

## Workshop objectives:

- Provide opportunities to network,
- Hold activities for early career individuals,
- Host short presentations or posters on the state of the field,
- Host longer workshops and tutorials focused on skill development.

## Agenda Overview

Time (Eastern Daylight)	Monday, May 23	Tuesday, May 24	Wednesday, May 25
11:00	Welcome	Welcome	Welcome
11:15	EFI Overview	Talk Session 3	Talk Session 4
11:30	Networking Breakout		
11:45			
12:00	Talk Session 1	Break	Break
12:15			
12:30		Poster Session 2	Workshop Session 2
12:45			
1:00	Break	Break	
1:15			
1:30	Talk Session 2	Networking Breakout	Break
1:45		Workshop 1	Working Group Updates
2:00			
2:15	Break	Workshop 1	Networking Breakout
2:30	Poster Session 1		
2:45			
3:00	Informal Networking	Informal Networking	Informal Networking
3:15			

## Notes

- We will be using both Zoom and Gather to bring the group together.
- The full list of presenters, co-authors, and abstracts will be made available in an Abstract book
- Short talks will be pre-recorded. The recordings will be livestreamed during the meeting followed by a live Q&A by the presenters in each session
- Posters will be available to view in Gather throughout the conference
- If possible, Workshops will be recorded for asynchronous viewing
- "GS" indicates the presenter is a graduate student

## Agenda Details

### Monday, May 23

[11:00 - 11:30 am EDT] 30 minutes (Zoom)

**Welcome, EFI Overview, Logistics**

[11:30 - 12:00 pm EDT] 30 minutes (Gather)

**Networking Session**

[12:00 - 1:00 pm EDT] 60 minutes (Zoom)

**Session 1 Short Talks and Panel Q&A**

**If you are unable to join for the live-screening of the Short Talks you can view them in the Screening Room in Gather**

Maria Paniw, Spanish National Research Council (EBD-CSIC)

- Incorporating demography and species interactions into multispecies population forecasts: Opportunities and challenges

Ryan McClure, Washington State University

- Iterative Forecasting Improves Near-Term Predictions of Methane Ebullition Rates

Jacob Zwart, U.S. Geological Survey

- Near-term forecasts of stream temperature using process-guided deep learning and data assimilation

Kelly Heilman, University of Arizona

- Ecological forecasting of tree growth and stand-level forest carbon storage and uptake

Miraflor Santos, MIT, WHOI (GS)

- Forecasting the dynamics of a marine microbial community at Martha's Vineyard Coastal Observatory (MVCO): a case study of Gaussian process regression modelling

Bilgecan Şen, Stonybrook University

- Spatial variability of intrinsic predictability: A case study with Adélie penguins

**Q&A**

[1:00 - 1:30 pm EDT] 30 minutes

**Break**

[1:30 - 2:15 pm EDT] 45 minutes (Zoom)

**Session 2 Short Talks and Panel Q&A**

**If you are unable to join for the live-screening of the Short Talks you can view them in the Screening Room in Gather**

Melissa Kenney, University of Minnesota, Institute on the Environment

- Improving Decision-maker Usability of Forecast Data Products

Laura D'Acunto, U.S. Geological Survey

- The Everglades Vulnerability Analysis: Integrating Ecological Models and Addressing Uncertainty

Michael Gerst, University of Maryland, College Park

- The Dashboard for Agricultural Water Use and Nutrient Management (DAWN): A case study in co-production of an ecological forecasting system

Brittany Barker, Oregon State University

- DDRP: a modeling tool to forecast insect phenology and risk of establishment

#### **Q&A**

[2:15 - 2:30 pm EDT] 15 minutes

#### **Break**

[2:30 - 3:15 pm EDT] 45 minutes (Gather)

**Poster Session 1** (see Poster details below)

[3:15 - whenever you are ready to leave] (Gather)

**Opportunity for informal networking and to explore EFI resources in Gather**

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## **Tuesday, May 24**

[11:00 - 11:15 am EDT] 15 minutes (Zoom)

#### **Welcome**

[11:15 - 12:15 pm EDT] 60 minutes (Zoom)

#### **Session 3 Short Talks and Panel Q&A**

**If you are unable to join for the live-screening of the Short Talks you can view them in the Screening Room in Gather**

Mike Dietze, Boston University

- Multimodel Community Forecasts Of Vegetation Phenology: Results From Year 1 Of The EFI-NEON Forecasting Challenge

Yiluan Song, University of California, Santa Cruz (GS)

- Ecological forecasting of leafing and flowering phenology during climate change to inform public health

Shannon LaDeau, Cary Institute of Ecosystem Studies

- Predicting mosquito phenology and abundance at scales relevant to management in an urban landscape

John Foster, Boston University (GS)

- Uncertainty evaluation for population hindcasts of the vector of Lyme disease (*Ixodes scapularis*) in New York state

Zoey Werbin, Boston University (GS)

- Predicting soil microbiome structure and function using genome-scale metabolic modeling

Cayelan Carey, Virginia Tech

- Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S.

#### **Q&A**

[12:15 - 12:30 pm EDT] 15 minutes

#### **Break**

[12:30 - 1:15 pm EDT] 45 minutes (Gather)  
**Poster Session 2** (see Poster details below)

[1:15 - 1:30 pm EDT] 15 minutes  
**Break**

[1:30- 2:00 pm EDT] 30 minutes (Gather)  
**Networking Session - two (or more) concurrent sessions**

- Early Career Networking
- General Group Networking

[2:00 - 3:00 pm EDT] (Zoom)  
**Concurrent Workshops - meeting participants can choose the workshop(s) they want to attend**

1. Building Inclusive Forecasts [60 minutes]
  - a. Jason McLachlan<sup>1</sup> and the Diversity, Equity, and Inclusion Working Group  
<sup>1</sup>University of Notre Dame
2. Using Standards and Cloud Computing to Create and Analyze Forecasts [60 minutes]
  - a. Mike Dietze<sup>1</sup> and Carl Boettiger<sup>2</sup>  
<sup>1</sup>Boston University, <sup>2</sup>University of California, Berkeley

[3:00 - whenever you are ready to leave] (Gather)  
**Opportunity for informal networking and to explore EFI resources in Gather**

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## **Wednesday, May 25**

[11:00 - 11:15 am EDT] 30 minutes (Zoom)  
**Welcome**

[11:15 - 12:15 pm EDT] 60 minutes (Zoom)

### **Session 4 Short Talks and Panel Q&A**

**If you are unable to join for the live-screening of the Short Talks you can view them in the Screening Room in Gather**

Abby Lewis, Virginia Tech (GS)

- Near-term Ecological Forecasting: State of the Field

Eliot McIntire, Natural Resources Canada & University of British Columbia

- PERFICT: A Re-imagined foundation for predictive ecology

Nicholas Clark, University of Queensland

- Dynamic Generalised Additive Models (DGAM) for forecasting discrete ecological time series

Juniper Simonis, DAPPER Stats

- Evaluating Probabilistic Forecasts

Chaojiao Sun, CSIRO

- Ecological forecasting and operational information systems to support sustainable ocean management

Alyssa Willson, University of Notre Dame (GS)

- Assessing opportunities and inequities in undergraduate ecological forecasting education

## **Q&A**

[12:15 - 12:30 pm EDT] 15 minutes

### **Break**

[12:30 - 1:30 pm EDT] 60 minutes (Zoom)

### **Concurrent Workshops - meeting participants can choose the workshop(s) they want to attend**

1. NEON Data, the Forecasting Challenge, and an Opportunity to Provide Feedback [60 minutes]
  - a. Timothy Morin<sup>1</sup>, Eric Sokol<sup>2</sup>, David Durden<sup>2</sup>, and Bobby Hensley<sup>2</sup>  
*<sup>1</sup>SUNY-ESF, <sup>2</sup>National Ecological Observatory Network (NEON)*
2. Macrosystems EDDIE: Teaching Ecological Forecasting to Undergraduates [60 minutes]
  - a. Mary Lofton<sup>1</sup>, Tadhg Moore<sup>1</sup>, Whitney Woelmer<sup>1</sup>, Quinn Thomas<sup>1</sup>, and Cayelan Carey<sup>1</sup>  
*<sup>1</sup>Virginia Tech*
3. How to Write Policy Memos [30 minutes starting at 12:30pm]
  - a. Melissa Kenney<sup>1</sup>  
*<sup>2</sup>University of Minnesota, Institute on the Environment*
4. Coral Disease Forecasting in the Pacific Ocean: a new decision support tool [30 minutes starting at 1pm]
  - a. Megan J. Donahue<sup>1</sup>, Jamie M. Caldwell<sup>2</sup>, Scott F. Heron<sup>3</sup>, Austin Greene<sup>1</sup>, Erick F. Geiger<sup>4</sup>, Gang Liu<sup>4</sup>, Jacqueline De La Cour<sup>4</sup>, Tracy D. Ainsworth<sup>5</sup>, William Leggat<sup>6</sup>, Tess Moriarty<sup>6</sup>, C. Mark Eakin<sup>7</sup>, and Derek Manzello<sup>8</sup>  
*<sup>1</sup>Hawaii Institute of Marine Biology, University of Hawaii at Manoa, <sup>2</sup>Hawaii Institute of Marine Biology, University of Hawaii at Manoa & High Meadows Environmental Institute, Princeton University, <sup>3</sup>James Cook University, <sup>4</sup>University of Maryland & NOAA Coral Reef Watch, <sup>5</sup>University of New South Wales, <sup>6</sup>University of Newcastle, <sup>7</sup>Corals & Climate, <sup>8</sup>NOAA Coral Reef Watch*

[1:30 - 1:45 pm EDT] 15 minutes

### **Break**

[1:45- 2:15 pm EDT] 30 minutes (Zoom)

### **Working Group Updates**

- EFI Student Association
  - EFISA Co-chairs: Whitney Woelmer, Virginia Tech; Alyssa Willson, University of Notre Dame; Lynda Bradley, Emory University, Dave Klinges, University of Florida
- Cyberinfrastructure and Methods & Tools
  - Matthew Brouil, Washington State University
- Theory & Synthesis
  - Amanda Gallinat, University of Wisconsin, Milwaukee
- Translation & Actionable Science
  - Kira Sullivan-Wiley, The Pew Charitable Trust
- Diversity, Equity, and Inclusion
  - Anna Sjodin, EPA
- Education
  - Olivia Tabares, Universidad Nacional Autónoma de México

*We encourage people to check out the resources the working groups have created and compiled in the main hall in Gather*

[2:15 - 3:00 pm EDT] (Gather)

***Networking Session***

[3:00 - whenever you are ready to leave] (Gather)

***Opportunity for informal networking and to explore EFI resources in Gather***

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**Poster Session Details**

***Poster Session 1: Monday, May 23; 2:30 - 3:15 pm EDT; 45 minutes (Gather)***

Alexis Helgeson, Boston University (GS)

Iterative forecasts of near-term terrestrial fluxes: impacts of data constraints on predictability

Mary Lofton, Virginia Tech (GS)

Optimizing multiple data streams for assimilation into harmful algal bloom forecasts

Charlotte Malmberg, Boston University (GS)

Forecasting disturbance by an invasive moth and subsequent forest canopy recovery using a Bayesian statistical framework

Aditi Modi, Indian Institute of Tropical Meteorology, Pune

Addressing the uncertainty in estimation of Ecological indicators of the marine ecosystem

Kelsey Yule, NEON Biorepository, Arizona State University

A role for the National Ecological Observatory Network (NEON) Biorepository samples and data in monitoring and forecasting ecological change

Omi Johnson, Bigelow Laboratory of Ocean Sciences

Predicting Right Whale Prey Distributions for Future Climate Scenarios

Pamela Rueda-Cediel, Universidad de Minnesota

Projecting insect population dynamics to inform biological control practice

Benjamin Blonder, University of California at Berkeley

Predicting coexistence: learning outcomes via experiments (LOVE)

Jaime Ashander, U.S. Geological Survey

Managing an integrated socio-environmental system under non-stationary environmental change: Assessing the value of forecasts for time-dependent optimal policy

Andrew Allyn, Gulf of Maine Research Institute

A forecasting challenge to better understand the predictive skill of marine species distribution models under changing environmental conditions

John Mensah, University of Nebraska - Lincoln (GS)

Past events determines current performance: Weather and Prolonged dormancy

Daniel McGlinn, College of Charleston  
Developing forecasts of water clarity in a lagoon driven by a key macroalga - *Chara zeylanica*

Heather Wander, Virginia Tech (GS)  
Optimizing monitoring strategies for forecasting; the effects of data assimilation frequency on near-term water temperature forecasts

**Poster Session 2: Tuesday, May 24; 12:30 - 1:15 pm EDT; 45 minutes (Gather)**

Lynda Bradley, Emory University (GS)  
Agent-based model predictions of host-parasite dynamics: how well do they match mesocosm data?

Judy Che-Castaldo, USFWS  
Exploring the role of ecological forecasting in Species Status Assessments under the Endangered Species Act

Jake Lawlor (GS), Victor Cruz (Undergrad) McGill University  
A Framework for Forecasting Sea Urchin Recruitment on the North American West Coast

Nicholas DeFelice, Icahn School of Medicine at Mount Sinai  
An ECOSTRESS environmentally informed statistical model for West Nile virus infection rates among mosquitoes in the Coachella Valley, CA

Elizabeth Abraham, University of Minnesota  
Crop Production Decision Calendars in the Midwest

Whitney Woelmer, Virginia Tech (GS)  
Undergraduate student confidence and understanding of ecological forecasting concepts significantly increases after completing a Macrosystems EDDIE module

Güray Hatipoğlu, Middle East Technical University (GS)  
On methods to estimate nitrogen entries to rivers

Ehsan Moqanaki, Norwegian University of Life Sciences (GS)  
Wolverine density determinants in Scandinavia

Ioan Sirbu, ESA & Lucian Blaga University of Sibiu, Romania  
Combining, comparing, and interpreting VACOD & CUVARP (Variation partitioning in double-constrained ordination & Cumulative variation partitioning with multiple responses and predictors matrices) diagrams

Aditi Modi, Indian Institute of Tropical Meteorology, Pune  
Phenological shifts of Phytoplankton Blooms in the tropical Indian Ocean under a changing climate

James Stodder, Boston University  
Carbon Tax with Macroeconomic Stimulus: GDP as an Inferior Good