



EFI Year in Review: Advancing the Science and Community of Ecological Forecasting

The Momentum of 2025

2025 provided another year for EFI to work towards our mission to build a community of practice around ecological forecasting so as to "understand, manage, and conserve ecosystems". EFI's strategic growth is evidenced by our reach. Formal membership increased from 308 to 369 individuals this year, while multiple webinar series and workshops engaged over 2,500 individuals around the world—a testament to the increasing demand for predictive ecological tools.



Global Expansion: A Network of Networks

Working Groups and Chapters have helped EFI establish a global, interdisciplinary network that serves as the collaborative engine driving the field forward. By maintaining a structure open to

anyone at any time, we have created connections that link the global community across career stages and geographical boundaries. Supporting EFI's growth is the capacity for new working groups and chapters to capitalize on the experiences and activities of longer-established ones as they launch.

In 2025, the EFI chapter leadership and the Steering Committee finalized **Section 6, an addendum to the EFI Operating Principles and Procedures** that formalized the rights and responsibilities of EFI chapters, and an **International Chapter Playbook** to provide structure and guidance for EFI's current and future chapters.

EFI also provided global reach virtually through the Statistical Methods webinar series (n=5), co-hosted with the Ecological Society of America's Statistical Ecology section, and webinars hosted by the European (n=10) and Oceania (n=2) chapters, all of which were also made available on the **EFI YouTube Channel**. EFI also organized seven in-person conference sessions around the world at the Ecological Society of America, MODSIM, eLTER, Biospace25, SIBECOL, British Ecological Society, and the American Geophysical Union.

Canadian EFI

CEFI achieved a major milestone in 2025 by launching its formal Steering Committee, which includes a strategic balance of academia (n=6), government (n=2), industry (n=1), and NGOs (n=1). The focus of 2025 has been on preparing to host the **EFI2026 Annual Conference in Toronto** to bring together the global ecological forecasting community while simultaneously enhancing connections of forecasters in Canada. Support for the Conference has been obtained from a **Fields Institute Scientific Activity Grant**, and supplemented by the **Canadian Forest Service**, the **University of Toronto**, the **Ocean Tracking Network**, and the **University of Guelph**.

Oceania EFI

In 2025, the Oceania chapter focused on building connections through online seminars, hosting the "Ecological Forecasting in Oceania" session at **MODSIM 2025** in Adelaide, and is in the process of developing a Horizon Scanning manuscript to identify regional knowledge gaps and is actively exploring expansion into New Zealand and the western Pacific.

European EFI

The European chapter delivered four conference sessions in 2025, with high-impact sessions at Biospace25, SIBECOL, eLTER, and the British Ecological Society annual meeting. Strategically, the launch of the OSCARS-funded, **PREDICT – Platform for REsilient Data Integration and Coordinated Forecasting Tools** project presents a leap forward in operationalizing forecasting in Europe. This project will expand on an initial shrubland forecasting challenge for Doñana National Park by integrating additional open ecological data into modular workflows, effectively bridging the gap between monitoring and prediction.

New Initiatives: Africa & Asia

2025 saw the official launch of the **African chapter**, which hosted an **inaugural short course** in Cape Town for 25 participants from 7 countries, including Kenya, Nigeria, and Japan. Meanwhile, 2025 served as the preparatory year for the **Asian chapter**, which launched in January 2026 and is currently gathering **expressions of interest** to tailor its launch to the region's specific data policies and time zones.

Annual Meeting: EFI2025 Conference

The **EFI2025 Conference** at Virginia Tech (May 19-22) brought together a diverse global assembly of over 100 professionals to improve how we predict and manage environmental changes. The event focused on bridging the gap between scientific research and practical applications through keynote speeches, technical workshops, and collaborative working groups. Keynote speakers **Mark Urban** (University of Connecticut), **Antoinette Abeyta** (University of New Mexico, Gallup), and **Kate Thibault** (National Ecological Observatory Network) addressed the future of accessible data science, emphasizing the reciprocal relationship between monitoring networks and forecasters. Participants explored cutting-edge tools like artificial intelligence, Gaussian modeling, and cloud computing to enhance the accuracy of forecasts across terrestrial and aquatic ecosystems. A significant portion of the program was dedicated to capacity-building and providing impetus for EFI working groups to share major advances in projects and to provide a springboard for future projects.

Foundations of Predictability: Theory, Methods, and Cyberinfrastructure

Reliable ecological forecasting is built upon the dual pillars of foundational theory and robust cyberinfrastructure and statistical methods.

- The **Theory** working group used the EFI2025 Conference to coalesce around ideas about the "**Predictability of Nature.**" Over the past year, the group has developed an outline of a manuscript that explores the fundamental influence of scale, horizon, and novelty on the factors controlling ecological predictability versus stability. The goal is to finalize the manuscript in 2026.
 - **Spatial Forecast Challenge Implementation:** The **Cyberinfrastructure/Methods & Tools** joint working group has launched a **spatial forecast challenge** focused on wildfire recovery using MODIS Leaf Area Index (LAI) for automated, real-time processing.
 - **Ecological Forecasting Challenges:** The **NEON Ecological Forecasting Challenge** processed over **93 million forecast-observation pairs** across 81 sites since 2021. This volume is made possible by a serverless, cloud-native architecture that leverages GitHub Actions and Docker to ensure scalability (**Thomas and Boettiger, 2025**). The Forecasting Challenge infrastructure is being used to support the following forecasting challenges:
 - EFI-USGS River Chl a
 - Virginia Ecoforecast Reservoir Analysis (VERA) that includes physical (n=3), chemical (n=6), and biological (n=2) data streams
 - Wildfire Recovery with MODIS LAI
 - Shrubland density dynamics in Doñana National Park, Spain
 - Boston University challenges focused on tropical infectious disease in Brazil, urban air quality in Boston, and coastal Chl a in the Gulf of Maine.
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Inclusive Growth: Education, DEI, and Early Career Development

The long-term sustainability and effectiveness of ecological forecasting depend on a diverse community. Key initiatives from the **Education, Diversity, Equity, and Inclusion (DEI)**, and **Student & Early Career Association (EFISECA)** working groups include:

- **EFI University for Everyone:** Beginning as an EFI2025 conference working group, the Education and DEI met jointly to reimagine ecological forecasting education through open

educational resources designed for limited internet and software access environments, short-term and long-term support for mentorship, and community engagement to include forecasting education in a math-free environment at the K-12 level. The ideas initiated at and further developed following the conference were shared in [this blog post](#).

- **EFI Student and Early Career Association Rebranding and Community Support:** In early 2025, the EFI Student Association (EFISA) rebranded as the EFI Student and Early Career Association (EFISECA) to be more inclusive of early-career research technicians and postdoctoral scholars. The group provided community support through a "[Virtual Graduate Student Flash Talks](#)" seminar to share an introduction to highlight ecological forecasting experiences in graduate research, and an R-based tutorial on "[Beetle Abundance Forecasting](#)." Academic and non-academic speakers at monthly calls provided professional networking and a peer-support system to help individuals navigate funding uncertainties and consider job opportunities. By fostering connections, the association ensures that early-career scientists are not only technically capable but also professionally resilient and mentally supported.
 - **2025 Book Club - Actionable Takeaways:** Examples of key considerations identified by the book club members who discussed [Data Feminism](#) by D'Ignazio and Klein, include considering the context data are collected in and who has the power to interpret results of data analysis, valuing multiple forms of knowledge, and acknowledging that the work of data science is the work of many whose labor needs to be recognized and valued.
 - **Educational Resources Updates:** [Multiple resources](#) were added in 2025, including a blog post with recommendations and resources for a structured review of code for data analyses, eight EFI2025 Conference workshop training tutorials, and materials from two short courses and a NEON forecasting challenge tutorial.
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Actionable Science: Translation

Connecting with end users ensures that ecological forecasting is relevant and provides measurable societal benefit. The Translation & Actionable Science working group released a [short video series](#) on engaging interested parties, rightsholders, and end users of forecasts, featuring interview snippets that provide examples from co-production experiences of EFI Members. The **Intro/Why** tutorial provides motivation for engaging stakeholders and interested parties. The **When** tutorial identifies optimal timing for end-user engagement. The **What** tutorial defines diverse forms of co-production and engaged science. The **Who** tutorial explains how to identify relevant end users and interested parties. The **How** tutorial will provide practical frameworks for co-production, and the **Barriers** tutorial will share common challenges in co-producing science. The How and Barriers tutorials are still in development.

In late 2025, the Translation working group hosted a second round of the [Social Science & Ecoforecasting Award](#) to provide seed funds for fostering connections to social scientists and the incorporation of human behavior into ecological forecasting. Three projects were awarded in early 2026 for projects that will work on 1) forecasting PFAS exceedance in changing forest landscapes, 2) Indigenous-led co-production of ecological calendars to forecast seasonal shifts, and 3) ecological forecasting to support sustainable management and policy for snowmaking in the southwest US.

New Working Groups

Two new working groups emerged in 2025 to address EFI members' requests to advance the [EFI strategic plan](#) and meet the needs of community members.

Ethics Working Group: A six-month task force developing frameworks for the ethical

Coastal and Marine Ecological Forecasting Working Group: This working group aims to

dissemination and funding of forecasts. Seven volunteers have been meeting since October 2025 to develop narrative examples and recommendations.

leverage insights from other working groups to strengthen EFI's connections to the coastal and marine forecasting community.

EFI Awards in 2025

To foster the next generation of experts, EFI recognized exceptional contributions from emerging scholars at the 2025 Conference with the **EFI Futures Outstanding Student Presentation Awards**.

- **Charlotte Malmberg (Boston University):** Best Oral Presentation for “Towards Forecasting Recovery After Disturbance: A Case Study and Potential Directions for Forest Management.”
- **Parul Vijay Patil (Virginia Tech):** Best Poster for “Gaussian Process Forecasting of Tick Population Dynamics.”

The **2025 Ecological Forecasting Outstanding Publication Award** from the Ecological Society of America Statistical Methods recognized the work led by **Mary Lofton (Virginia Tech)** in *Bioscience* (<https://doi.org/10.1093/biosci/biae089>), highlighting the Macrosystems EDDIE modular curriculum to teach undergraduates ecological forecasting that significantly improves student and instructor confidence in data science skills.

Future Engagement Opportunities

We invite anyone across academia, government, industry, and NGOs to participate in our ongoing efforts.

How to Get Involved

- **Attend the EFI2026 Conference August 4-7 in Toronto:** Abstract submissions close April 15. Early bird registration closes May 29. Full registration closes July 1.
- **Join the EFI newsletter listserv:** Sign up at ecoforecast.org to receive newsletters with high-level announcements
- **Join a Working Group:** Contact info@ecoforecast.org to be added to mailing lists or Slack channels for the following. Calls are monthly and currently scheduled through May
 - **Theory:** Tuesdays at 2:00 PM US ET.
 - **Translation & Actionable Science:** Wednesdays at 2:00 PM US ET.
 - **Education:** Mondays at 1:00 PM US ET.
 - **Diversity & Inclusion:** Wednesdays at 1:00 PM US ET.
 - **Cyberinfrastructure/Methods & Tools:** Wednesdays at 2:00 PM US ET.
 - **Student and Early Career Association:** Thursdays at 12:00 PM (Noon) US ET.
 - **Coastal and Marine:** Thursdays at 2:00 PM US ET.
- **Join a Chapter:** Each EFI chapter provides different ways to connect. See information about these options on the individual chapters' webpage/website.
- **Become an EFI Member:** EFI members can run for and vote in elections for the EFI Steering Committee. We are collecting nominations for candidates through February 26. Ballots will be sent to members on March 2.
- **Explore manuscripts led by chapters and working groups:** There is a new [efi-projects GitHub repository](#) where we will share manuscript efforts and collect expressions of interest in co-authorship.

We are committed to providing opportunities to develop tools, resources, and the inclusive community necessary to support ecological forecasting to understand, manage, and conserve ecosystems.



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