GlobalHAB/EuroMarine Workshop on Modeling and Prediction of Harmful Algal Blooms

9–13 May 2022

University of Strathclyde Technology and Innovation Centre

99 George St, Glasgow UK

**Sun 8 May**

9:30am–7pm *(optional)* Train + hillwalking excursion to Arrochar and Tarbet

5pm–??*(optional)* Pub evening

Drygate Brewing Co, 85 Drygate, Glasgow G4 0UT

Food and drink menus at *drygate.com*

**Mon 9 May**

8:30–9am Registration and coffee

9–10:30 Oral presentations

**Neil Banas**: Welcome, practical matters, and themes for the week

**Nuette Gordon**: Harmful Algal Blooms – Monitoring Challenges in the Seychelles

**Melissa Peacock**, Rosa Hunter, and John Rombold: Freshwater Cyanotoxins and Marine Food Security

**Bengt Karlson**: Development of harmful algal blooms along the Swedish Skagerrak coast studied by combining observations and modelling

10:30–11 Coffee break

11–12 Oral presentations

**Johnathan Evanilla**, Nicholas R. Record, Steven D. Archer, Benjamin Tupper, Kohl Kanwit, Bryant Lewis, Craig Burnell, Carmen Cartisano, Adrienne Tracy, David W. Miller: Using AI to Forecast Paralytic Shellfish Poison (PSP) in Coastal Maine

Discussion with all morning presenters

12–1pm Lunch

1–1:30 Lightning talks

1:30–2:45 Concurrent sessions

**Discussion**: Engaging with stakeholders (facilitated by Aletta Yniguez and Dave Clarke)

**Tutorial**: Getting started with machine learning using tidymodels in R (Johnathan Evanilla, Kasia Kenitz, and Bingzhang Chen)

*Part 1: lecture and discussion*

2:45–3:15 Coffee break

3:15–4:30 Concurrent sessions

**Discussion**: Scalable solutions: bringing large-scale community tools to local applications (facilitated by Clarissa Anderson)

**Tutorial:** Getting started with machine learning using tidymodels in R (Johnathan Evanilla, Kasia Kenitz, and Bingzhang Chen)

*Part 2: hands-on*

4:30–6 Posters and refreshments

6pm Adjourn: dinner on your own

**Tues 10 May**

8:30–9am Arrivals and coffee

9–10:30 Oral presentations

**Margarita Fernández Tejedor**, Carles Guallar, Jorge Diogene: HABs forecast models in Alfacs Bay (Northwestern Mediterranean).

**Keith Davidson**, Callum Whyte, Paola Acre, Po Teen Lim, Chuipin Leaw, Dmitry Aleynik, Steve Gontarek, Will Harvey: HABreports & MyHABs: Online early warning of harmful algal and biotoxin risk for the Scottish & Malaysian Aquaculture Industries

**Fatima Gianella**, Michael T. Burrows, Sarah C. Swan, Andrew D. Turner, Keith Davidson: Temporal and spatial patterns of harmful algae affecting Scottish shellfish aquaculture

**Bengt Karlson,** Introduction to the HAEDAT database

10:30–11 Coffee break

11–12 Oral presentations and discussion

**Dmitry Aleynik**, Whyte C., Davidson K., Miller P., Kurekin A., McNeil S., Arce P. and S. Gontarek: Earlier Warning of Harmful Algae Blooms in Scotland

**Discussion**: highlights from Monday afternoon sessions (Aletta Yniguez and Clarissa Anderson)

12–1pm Lunch

1–1:30 Discussion

Discussion: Scoping possible papers arising from the workshop

1:30–2:45 Concurrent sessions

**Discussion**: Building blocks of early-warning systems (facilitated by Dave Clarke) (room 2)

**Tutorial**: Satellite methods (Clarissa Anderson) (room 3)

2:45–3:15 Coffee break

3:15–3:55 Discussion

Combining automated plankton observations and modelling

(facilitated by Bengt Karlson)

4:00–4:40 Discussion

New directions in mechanistic plankton modeling: where do HABs fit in? (facilitated by Neil Banas, Onur Kerimoglu, and Bingzhang Chen)

4:40–6 Posters and refreshments

6pm Adjourn: dinner on your own

**Wed 11 May**

8:30–9am Arrivals and coffee

9–10:30 Oral presentations

**Manuel Ruiz Villarreal**, L. Garcia-Garcia, G. Gonzalez-Nuevo, F. Rodriguez and B. Reguera: Early warning forecasts of harmful *Dinophysis* blooms in Galicia (NW Spain)

**Robert McEwan**: The Met Office operational marine biogeochemical modelling system, products and future development

**Peter I. Miller**, Junfang Lin, Bror F. Jönsson, Michael Bedington: Early warning of harmful algal bloom risk using satellite ocean colour and Lagrangian particle trajectories

Rafaela C. Cruz, Pedro Reis Costa, Ludwig Krippahl, **Marta B. Lopes**: Forecasting mussel contamination by marine biotoxins using long short-term memory networks

10:30–11 Coffee break

11–12 Oral presentations

**Lael Wakamatsu**, Gregory L. Britten, Andrew M. Fischer, Christopher J.S. Bolch, Monique Messié: Exploring negative feedback loops between zooplankton grazing rates, phytoplankton abundance and toxicity levels

**Jackie Taylor**: A theoretical modeling framework for motile and colonial harmful algae with practical applications

**Bruno M. Oliveira**; Roelof M. J. Boumans; Brian D. Fath; Wei Liu; Benoit Othoniel; Joseph Harari: Prototype of social-ecological systems resilience using system dynamics modelling

12–1pm Lunch

1–1:30 Lightning talks

Also: What are GlobalHAB and EuroMarine?

1:30–2:45 Discussion

HAB model-obs systems for 2050: anticipating future societal needs and assessment tools (facilitated by Clarissa Anderson)

2:45–3:15 Coffee break

3:15–4:45 Tutorial

Getting started with Individual-based modeling (Aletta Yniguez)

4:45–6 Posters and refreshments

6pm Adjourn

7pm Conference dinner!

Dahkin South Indian Kitchen, 89 Candleriggs, G1 1NP

**Thur 12 May**

8:30–9am Arrivals and coffee

9–10:30 Oral presentations

**Raphael M. Kudela**, Clarissa Anderson, Kendra Hayashi: Resolving the Apparent Paradox of Temperature and *Pseudo-nitzschia* Events along the US West Coast

**Kasia M. Kenitz**, Clarissa R. Anderson, Melissa L. Carter, Emily Eggleston, Kristi Seech, Rebecca Shipe, Jayme Smith, Eric C. Orenstein, Peter J.S. Franks, Jules S. Jaffe & Andrew D. Barton: Environmental and ecological drivers of harmful algal blooms in the Southern California Bight

**Discussion**: potential group-authored papers

10:30–11 Coffee break

11–12 Closing discussion

Looking back to Galway 2009: What has changed in 13 years of HAB modeling? (Clarissa Anderson et al.)

12–1pm Lunch

1pm Adjourn: end of main workshop

or

*(optional)* City walk following the City Centre Mural Trail

*https://www.citycentremuraltrail.co.uk*

**Fri 13 May**

9:30–4pm Industry Perspectives (organised by Sustainable Aquaculture Innovation Centre)