



Join us for a C-CAN webinar on  
Wednesday, August 17, 2022, at  
1 pm Pacific (4 pm Eastern)

## Understanding the mechanisms of *Pseudo-nitzschia australis* bloom formation and toxicity during contrasting upwelling and marine heatwave scenarios

Please join **Kyla Kelly, University of Southern California**, for this informative webinar. Teri King, Washington Sea Grant will be hosting the webinar.

**Abstract:** Off the west coast of the United States, highly toxic *Pseudo-nitzschia* blooms have been associated with two phenomena: seasonal upwelling and marine heatwaves. While upwelling delivers cool waters rich in pCO<sub>2</sub> and an abundance of macronutrients to the upper water column, marine heatwaves can lead to warmer surface waters, low pCO<sub>2</sub>, and reduced nutrient availability. Understanding *Pseudo-nitzschia* dynamics under these two conditions is important for bloom forecasting and coastal management, yet the mechanisms driving bloom formation in these contrasting ocean conditions (i.e., upwelling vs. heatwave) remain poorly understood. To gain a better understanding of what drives *Pseudo-nitzschia australis* growth and toxicity during these events, we conducted multiple-driver cluster experiments using temperature, pCO<sub>2</sub>, and nutrient levels reflecting conditions during upwelling and marine heatwaves. We will discuss the differences in *P. australis* growth, toxicity, and physiology between our two multiple-driver scenarios: upwelling (13°C, 1000 ppm pCO<sub>2</sub>, replete phosphate, silicate, and nitrate), heatwaves (19°C, 280 ppm pCO<sub>2</sub>, reduced phosphate, silicate, and nitrate), and extreme heatwaves (21°C, 280 ppm pCO<sub>2</sub>, reduced phosphate, silicate, and nitrate). This scenarios-based approach helps us to gain a holistic understanding of bloom dynamics under these oceanic conditions. Additionally, we conducted single-driver experiments to gain a mechanistic understanding of which drivers most impact *P. australis* growth and toxicity. Together, these experiments may help to provide both mechanistic and holistic perspectives on toxic *P. australis* blooms in the natural environment where cells interact simultaneously with several altered environmental variables.

### Register in advance for this meeting:

[https://washington.zoom.us/meeting/register/tJEkdO2qrjsqHtwzLHSIa447ovxw0N\\_72Jd7](https://washington.zoom.us/meeting/register/tJEkdO2qrjsqHtwzLHSIa447ovxw0N_72Jd7)

**After registering, you will receive a confirmation email containing information about joining the meeting.** Following the presentation there will be a few short informational announcements relevant to the C-CAN community. Please forward this invitation to interested colleagues. We look forward to seeing you at this event.