



## Team Profiles

### Alix Contosta

Research Assistant Professor  
University of New Hampshire  
Research Interests: Soil carbon, land  
use-climate feedbacks, winter  
ecology, ecosystem ecology



**DR. ALIX CONTOSTA'S** home base is in the Earth Systems Research Center at the University of New Hampshire (UNH), although she is often also in the field year-round. She is an ecosystem ecologist whose focus is on changing winters and their effects on ecosystems and people.

Contosta's academic interest in changing winters started during her Ph.D. at UNH, where she was studying the effect of climate change on soils, soil organisms, and soil nutrient cycling. Trying to find unique questions to ask for her research project, Contosta started thinking about the importance of winters since there had been limited research that focused on the so-called "dormant season."

Her personal interest in winter began years earlier when Contosta moved to New England for her master's degree. She is originally from Philadelphia, where winters are shaped by the city's landscape and often result in dirty snow neighboring lanes of traffic. The forests and fields of Massachusetts, Vermont, and New Hampshire offered a stark contrast to her urban experience, and she realized how beautiful winters could be.

"It was amazing to me that it could be so beautiful in the woods, it could be so quiet, the trees looked totally different without leaves and you could really see their personalities in a different way," Contosta said. "This fascination I had with this forgotten season aligned with the research questions that I was interested in pursuing, and so my focus in winter ecology started then, something that has stuck with me ever since."

Contosta is one of the leads of INSPIRES Theme 1, a team focused on designing and installing a network of cutting-edge sensor suites across the northern forests of Maine, New Hampshire, and Vermont.

Within this framework, Contosta and Theme 1 colleagues are trying to understand changing winter conditions, specifically changes in the winter to spring transition period called the vernal window (i.e., the timeframe between snow melt and when forest canopies 'leaf-out' or 'green-up').

Contosta is part of another NSF-funded grant as the Principal Investigator of Winter Weather Whiplash and its Impacts on Socio-Ecological Systems. Her project is looking at not only winters getting warmer, but the variability of winter conditions. For example, she is exploring extreme cold snaps in winter that



*Contosta and INSPIRES team members Regina Toolin, Liz Burakowski, Peter Nelson, Franzi Peterson, Marina van der Erb and Sara Lyndsay with STEM teachers from Maine and Vermont.*

are followed by anomalous warmth, which are often accompanied by changes in precipitation. “The idea around winter weather whiplash is that the weather is changing so frequently that it almost has this whiplash effect,” Contosta explained. “There’s a big impact because of those swings between warm and cold on natural ecosystems and on the built environment, and on people.”

As part of INSPIRES’ outreach component, Contosta is working with teachers from Vermont, New Hampshire, and Maine through a partnership with the UMaine Center for Research in STEM Education (RiSE Center). Recently, INSPIRES project members gathered at Acadia’s Schoodic Institute on the Maine coast for the 2021 RiSE Conference. Contosta and other project members provided in-person STEM-related training for high school teachers from Vermont and Maine, which included helping them to set up their own research sites and to develop and test their own hypotheses. Through INSPIRES’ teacher training program, teachers and students are given the opportunity to act as researchers and collect data alongside INSPIRES project members.



*“We’re trying to track the environment during winter and spring to understand how reduce-depth and duration of snowpack, warmer temperatures, and increase freeze-thaw during the winter effect carbon cycling and nitrogen cycling, both during the winter and the spring, and also the carry-over effects into the rest of the year.”*

“Winters are changing really fast and we don’t have a lot of data points in our region to understand how fast they’re changing and what the effects are,” Contosta stated. “I think that a lot of the work we do in INSPIRES and working in classrooms is not only to have students understand how to use these tools to answer questions they’re interested in, but also to expand the scope of our own research and the observations that we’re able to accumulate. Hopefully, it’s a two-way street.”



*INSPIRES interviews and profiles by Stefania Irene Marthakis,  
University of Maine Center for Research on Sustainable Forests*

[crsf.umaine.edu/inspires](https://crsf.umaine.edu/inspires)



## *Smart Data for Resilient Forests*

**INSPIRES: Leveraging Intelligent Informatics and Smart Data for Improved Understanding of Northern Forest Ecosystem Resilience** is an NSF-supported project that leverages unique expertise from the University of Maine, University of New Hampshire, and University of Vermont to construct a digital framework to better assess, understand, and forecast this complex forest at a resolution relevant to scientists, land managers, and policymakers.

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