# Conférence inaugurale

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## AI Research for Climate Change and Environmental Sustainability

**Résumé**:
The stunning recent advances in AI content generation rely on cutting-edge, generative deep learning algorithms and architectures trained on massive amounts of text, image, and video data. With different training data, these algorithms and architectures can benefit a variety of applications for addressing climate change. As opposed to text and video, the relevant training data includes weather and climate data from observations, reanalyses, and even physical simulations.

As in many massive data applications, creating "labeled data" for supervised machine learning is often costly, time-consuming, or even impossible. Fortuitously, in very large-scale data domains, "self-supervised" machine learning methods are now actually outperforming supervised learning methods. In this lecture, I will survey our lab's work developing generative and self-supervised machine learning approaches for applications addressing climate change, including downscaling and temporal interpolation of spatiotemporal data and generating probabilistic weather predictions.

**Biographie:**
Claire Monteleoni is a Choose France Chair in AI and a Research Director at INRIA Paris where she leads the ARCHES team, a Professor in the Department of Computer Science at the University of Colorado Boulder (on leave), and the founding Editor in Chief of Environmental Data Science, a Cambridge University Press journal. Her research on machine learning for the study of climate change helped launch the interdisciplinary field of Climate Informatics. She gave an invited tutorial: Climate Change: Challenges for Machine Learning, at NeurIPS 2014. She co-founded the International Conference on Climate Informatics, which will hold its 15th annual event in 2026. She currently serves as Tutorials co-Chair for the International Conference on Machine Learning (ICML) 2025.