

Bern, 2021-03-31

[Bern Data Science Day 2021 - April 23](#)

Contribution - DETECTING CLIMATE DRIVERS OF EXTREME IMPACTS WITH MACHINE LEARNING

Event topic : DS applications and challenges in Medicine, Natural Sciences, and Engineering

A. Marcolongo (corresponding author, aris.marcolongo@math.unibe.ch), M. Vladymyrov, S. Lienert, N. Peleg, S. Haug, J. Zscheischler

Mathematical Institute, University of Bern

Climate and Environmental Physics, University of Bern

Abstract

Understanding the causes of extreme impacts is important for assessing climate risk. In this work (poster) we aim at finding weather drivers leading to low carbon sequestration by plants from the atmosphere. We exploit machine learning techniques to automatically identify weather features linked with large impacts from simulated data. We first create long simulations (100 000 years) of daily weather and vegetation dynamics for different locations. Then, we train convolutional neural networks based on U-Net architectures to predict the amount of carbon sequestered from the atmosphere from input weather data alone. As a benchmark for performance, we compare our results against simple linear models. We then inspect the trained neural network architectures to find what weather features the network is leveraging to perform predictions.