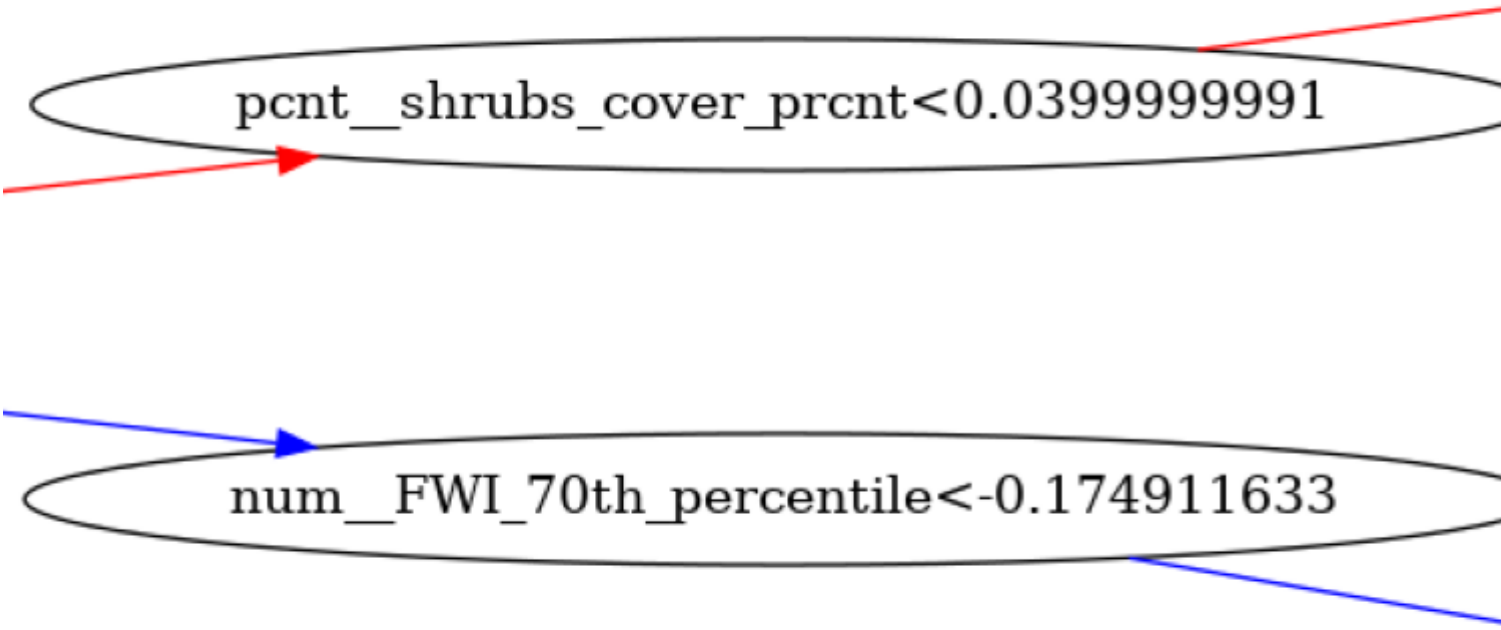
Modelization of Climatic Events with Statistical and AI Approaches



This research explores the use of statistical methods, machine learning, and deep learning to model complex climate processes beyond traditional physical approaches. The goal is to develop fast, scalable tools that enable rapid analysis and actionable insights, even with large datasets.

Summary

This research line focuses on advancing the modeling of climatic events by combining traditional statistical approaches with modern machine learning (ML) and deep learning (DL) techniques. Unlike conventional physical models, which often require significant computational resources and time, this approach aims to offer faster and more flexible alternatives to analyze complex climate dynamics, including extreme events and long-term trends.

The objective is to develop practical tools capable of processing large volumes of data and providing rapid, interpretable results to support decision-making in real-world contexts. By leveraging the strengths of AI-based models, such as pattern recognition, anomaly detection, and predictive capabilities, this research contributes to making climate analysis more accessible, efficient, and responsive to emerging environmental challenges.

Objectives

To evolve traditional stats and cutting-edge ML and deep learning methodologies to tackle complex climate processes in another approach than the physical models. The goal is to create practical tools that give us quick insights with a rapid response and being able to work with great amount of data, making climate analysis more accessible and actionable in real-world situations.

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