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Students interested are encouraged to request more information.

Multivariate extreme-value theory focuses on estimating the probability of a random vector falling into a specific extreme failure set. In the context of environmental data, this vector could represent quantities such as maximum daily wind speeds, rainfall amounts, or temperatures at a set of d locations. In this setting, an extreme event would indicate that a value in at least one location could lead to a climatological catastrophe. The primary goal of the project is to understand both the theoretical and numerical aspects of the method presented in Kiriliouk and Zhou (2022). This methodology relies on a parametric approach and on a generalization of the tail pairwise dependence matrix.

References



A. Kiriliouk and C. Zhou (2022). Estimating probabilities of multivariate failure sets based on pairwise tail dependence coefficients. <https://arxiv.org/pdf/2210.12618.pdf>



A. Kiriliouk (May 11, 2023). Video of her presentation in Granada during the Modern Statistical and Machine Learning Approaches for High-Dimensional Compound Spatial Extremes workshop. <https://www.birs.ca/events/2023/5-day-workshops/23w6006/videos/watch/202305110830-Kiriliouk.html>