Project proposal 'wind speed sequences'

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Informal problem description

A non-imprecise probabilities colleague came to me with the following problem:

- I am interested in the yearly maximal 10-minute mean wind speed.
- We know the CDF F_{10} on the 10-minute means (it is usually Weibull).
- If we assume that the 10-minute means are independent, we can derive the CDF of the yearly maximal 10-minute mean ($F_{\text{yr}} = F_{10}^{N}$ with N the number of 10-minute periods in a year).
- Obviously, the 10-minute means are not independent. Their between subsequent means is about 0.9. I would like to know what the impact is of this correlation on the yearly extreme.
- Also, I'd like to simulate 10-minute mean wind sequences that satisfy F_{10} and the assumed correlation.

Assignment

- Identify partial knowledge aspects in the problem description (are my colleague's assumptions always)
- Find data to learn uncertainty models in the problem domain
- Formulate research questions in the problem domain related to partial knowledge and epistemic uncertainty
  - This can include, but can also be different from my colleague's questions
  - Include an investigation of the impact of the degree of imprecision
- Formalize the problem domain and work towards answering your research questions
- Create visualizations showing the result of your investigation