UE Temporal, spatial and extreme event analysis

Niveau d'étude
Bac +5

ECTS
6 crédits

Crédits ECTS Echange
6.0

Composante
UFR Informatique, mathématiques et mathématiques appliquées (IM2AG)

Période de l'année
Automne (sept. à dec./janv.)

Diplômes intégrant cet élément

- Master Mathématiques et applications

Langue(s) d'enseignement: Anglais

Ouvert aux étudiants en échange: Oui

Crédits ECTS Echange: 6.0

Code d'export Apogée: GBX9AM45

Présentation

Description

Modelling extreme temperatures, extreme river flows, earthquakes intensities, neuronal activity, map diseases, lightning strikes, forest fires, for example is a risk modelling and assessment task, which is tackled in statistics using point processes and extreme value theory.

On the one hand, point processes are a class of stochastic processes modelling random events in interaction. By event we can think of the time a neuron activates, an earthquake occurs, the time a tweet has been retweeted, etc or the location of a tree in a forest, the impact of a lightning strike, etc. The first two parts provide an introduction to stochastic models and statistical inference which could cover such applications. Main characteristics of such processes, standard models (properties, simulation) and statistical procedures to infer them will be presented.

Informations non contractuelles.
Dernière mise à jour le 30 juin 2026

On the other hand, taking into account extreme events such as heavy rainfalls, floods, extreme temperatures is often crucial in the statistical approach to risk modeling. In this context, the behavior of the distribution tail is then more important than the shape of the central part of the distribution. Extreme-value theory offers a wide range of tools for modeling and estimating the probability of extreme events.

Heures d'enseignement

CM	CM	36h

Pré-requis recommandés

Background on statistics and probability (master 1 level)

Période : Semestre 9

Infos pratiques

Contacts

Responsable d'UE

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Campus

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