

UE Temporal, spatial and extreme event analysis



Niveau d'étude
Bac +5



ECTS
6 crédits



Crédits ECTS
Echange
6.0



Composante
UFR IM2AG
(informatique,
mathématiques
et
mathématiques
appliquées)



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

- > **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.

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
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Pré-requis recommandés

Background on statistics and probability (master 1 level)

Période : Semestre 9

Infos pratiques

Contacts

Responsable pédagogique

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Campus

› Grenoble - Domaine universitaire