The environment and the living world

Life span models can apply in reliability and in survival analysis. In this field, the team is particularly interested in estimating model parameters in the presence of incomplete data (censored, progressively censored data).

In a very similar area, the team also studies the exponential families of probability distributions and the associated stochastic models for analyzing census data. This activity includes an applied probability aspect (use of pseudo-orthogonal polynomials for decomposing probability distributions belonging to a parametric model, moment-based approximations, etc.) and a statistical aspect (regression on different types of variable responses, latent variable or fixed effects models).

The team is also interested in studying stochastic evolutionary models in order to analyze the growth of plant or animal species. Here again, the competencies of the team concern the modeling and mathematical analysis of estimation methods in connection with the models proposed. They also concern data compilation, in which specific space and/or time survey-sampling methods are developed, and data analysis, where the team is particularly interested in the statistical processing of multivariate functional data (functional PCA, canonical correlation) and various regression models.
Specific methods are being developed for individual-based stochastic models for population dynamics. This type of study requires developing realistic behavioral models that help simulate the stochastic evolution of populations over time and deduce the statistical results as regards evolution trends.