

## Use of satellite imagery to predict the distribution of bluetongue in Corsica

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Due to climatic changes and human activities, many ecosystems are acquiring the capacity to shelter major pathogens. Because environmental parameters impact insects bionomics, vector and vector-borne disease distributions have significantly changed during the past years. Our aim is to study the conditions required for the establishment of a new vector in a new ecosystem, taking as example *Culicoides imicola*, one of the vectors of bluetongue, in Corsica.

The favorable environment for *C. imicola* is described using remote sensing and Geographical Information Systems (GIS). Parameters likely to influence vector distribution were extracted from a SPOT image (10 meters pixel) and from a digital elevation model (DEM). The normalized difference vegetation index was calculated and a supervised classification was carried out. Slope, altitude, sunshine, and orientation of study sites were extracted from the DEM.

In parallel, data concerning the disease (sheep farm descriptors and sanitary status) in southern Corsica were collected. The neighborhood of infected and disease-free farms was compared in order to build a logistic model explaining bluetongue occurrence. Results highlight the role of environmental variables such as latitude, and some particular types of vegetation. Data, methods, results, applications and limits of this approach are discussed.