les dossiers d'AGROPOLIS INTERNATIONAL

Expertise of the scientific community

Geoinformation and Earth Observation for environment and territories



▲ Hazard map for the presence of the midge Culicoides imicola (indicator between 0 absence and 1 presence): entomological approach.

▲ Background image: Environmental approach – Corsican landscape.

> Epidemiological approach: a herd of Corsican sheep.

Main teams

URP Pastoralism (see page 38)

US ESPACE - Expertise et SPatialisation des Connaissances en Environnement (see page 8)

Other teams focused on this topic

UMR CBGP - Center for Biology and Management of Populations (see page 43)

UMR CEFE - Centre of Evolutionary and Functional Ecology (see page 43)

UMR G-EAU - Water Resource Management, Actors and Uses (see page 44)

Geomatics and epidemiology: satellite images to track midges

The distribution of vectors (insects and mites that transmit pathogens) and communicated diseases is shifting as a result of climate change and human activities. The AGIRs team and the research unit (UMR) TETIS are collaborating to study the key environmental factors determining the disease distribution.

The topics investigated concern the search for epidemiologically useful indicators that could be obtained from satellite images and the application of geomatic tools for the spatialization of health hazards. One thesis research project derived from this partnership, carried out in collaboration with the Université de Franche-Comté, is aimed at identifying suitable landscapes for Culicoides imicola, a small exotic midge that transmits bluetongue disease to sheep, on SPOT satellite images of Corsica combined with field information. The recent arrival (late 1990s) of this midge in the Mediterranean Basin led to a major epizootic (animal epidemic) of bluetongue disease. Following a large-scale midge trapping campaign in sheep herds in southern Corsica, environmental characteristics such as land-use and spatial vegetation patterns, and the altimetric and hydrographic features around sites where the midge was present, were compared with characteristics in the vicinity of sites where the midge was absent. The results indicated that the presence of this midge was associated with environments where the vegetation cover had low chlorophyll activity and where the land-use pattern was highly diversified. Hazard maps were drawn up on the basis of these results in order to target surveys of the disease and vectors in both infected and uninfected zones.

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