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## **Potentials of Spatio-Temporal Behaviour Data of Cattle in Alpine Pasture Farming**

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*In the alpine regions of Bavaria there is a multitude of different pasture strategies common practice. Free grazing farm animals as well as wildlife herbivores are influencing structure and composition of their habitats by practising different grazing strategies.*

*These model sometimes a characteristic man-made landscape for the respective region. In contrast there are problems in these regions with damages caused by the grazing animals.*

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*The 1991 Alpine Convention aimed to protect and to sustain the fragile environment of the alpine regions as a living, economic, recreation, culture space, and, last but not least for tourism.*

*To follow this convention the authors initiated with the financial support of the Deutsche Bundesstiftung Umwelt (DBU) a research project for monitoring spatio-temporal behaviour of grazing animals.*

*In it, potentials of modern information technologies deriving from Precision Livestock Farming to reduce the pressure on the environment should be worked on in innovative pasture strategies (AGOURIDIS ET AL., 2004 and UMSTAETTER ET AL., 2006).*

*For this, site-related behaviour of young stock in a free-range mountain pasture (650 ha) has been studied by using GPSplus-collars (Vectronic-Aerospace GmbH, Berlin) and ALT-pedometers (Holz, Falkenhagen) during the vegetation period of 2007.*

*The collected high resolved data show in a first examination that spatio-temporal behaviour depends on a multitude of environmental parameters. Therefore all data sets were uploaded, processed and analysed in a powerful Postgres-SQL-database with a Post-GIS spatial extension and were visualised in the Open Source GIS 'Open Jump'.*

*Subsequent to these trials, conducted algorithms have to be modified and improved. Based on these algorithms, animal control strategies shall be implemented. With the knowledge of the objective location and behavioural data there can be new possibilities for sustainable land use with grazing farm animals. This will lead to a direct relief of the environment by reducing the damage of the alpine regions. Consequently the project contributes to the purpose of the objectives of the agro-environmental policy. Besides Precision Farming and Precision Livestock Farming there could be another term established on the basis of this research project in the future: "Precision Landscape Management".*

*GPS-collar, GIS, spatio-temporal behaviour, grazing farm animals*