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Leibniz Centre for Agricultural Landscape Research (ZALF)

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EROSPOT research project develops digital tool:

## Conservation of arable soils through targeted erosion management

Arable soils are a valuable resource for our food and biodiversity - and are at risk from drought, storms and heavy rainfall. To help farmers better protect their fields from erosion, the Leibniz Centre for Agricultural Landscape Research (ZALF), in cooperation with the Bavarian State Research Centre for Agriculture (LfL), has produced erosion maps that identify areas particularly at risk of erosion and thus help to target protective measures where they will have the greatest effect.

As with the recent heavy rains caused by Storm Lambert, farmers seem powerless in the face of increasingly severe weather events. Fields are flooded and fertile topsoil simply washed away. It is not just the harvest that is at risk: the eroded soil often ends up in watercourses. In the worst cases, this can lead to contamination or fish mortality due to lack of oxygen. What can farmers do to protect their harvests and at the same time better conserve biodiversity on land and in water?

### Preserving biodiversity with the help of digitization

After a year of research, the EROSPOT project is providing high-resolution erosion maps to help farmers and advisers plan and implement measures to reduce soil erosion and run-off into surface waters. The main aim is to locate erosion-prone areas in the field to within a metre, and implement the necessary erosion control measures. "EROSPOT uses the latest geo-information technology to produce a map that makes it easy to see where something urgently needs to be done about erosion," says **Prof. Sonoko Bellingrath-Kimura, project leader at ZALF**. Possible measures include the creation of green strips, flower strips or "beetle banks" that cross the water's path and thus reduce erosion. The aim is to preserve the soil in the long term and improve the quality of surface water. By promoting biodiversity and ecosystems through digitisation, the project fulfils a key objective of the DAKIS project, coordinated by ZALF, which helped fund EROSPOT.

### Measures to combat soil erosion must be easy to implement

The focus is on minimizing additional burden on farmers. "We know that everyone has to think economically. Every extra tractor ride costs time and money. That's why the measures should be as easily compatible as possible with normal field work," says **Marvin Melzer, project coordinator and contact person for the data processing** behind the tool. To achieve this, the project team's next step is to expand the data set to include lane analysis in conjunction with slope. This will make it easier to see, for example, where to change the direction of ploughing to reduce erosion, or where to best integrate a green area into the field. Farmers can transfer the suggested measures to their GPS-controlled tractors and manage the land in a targeted way. In the future, they will also be able to see the success of the measure on the erosion map.

### In the long term, the data is to be available nationwide

So far, erosion maps of individual areas are displayed in a 3D web application. Before the end of this year, the data set will be extended to the entire state of Bavaria. Data for individual areas are already available on request. In the long term, the data on erosion-prone farmland will be freely available throughout Germany.

### Project partner:

- Leibniz Centre for Agricultural Landscape Research (ZALF)
- Bayerische Landesanstalt für Landwirtschaft (LfL)

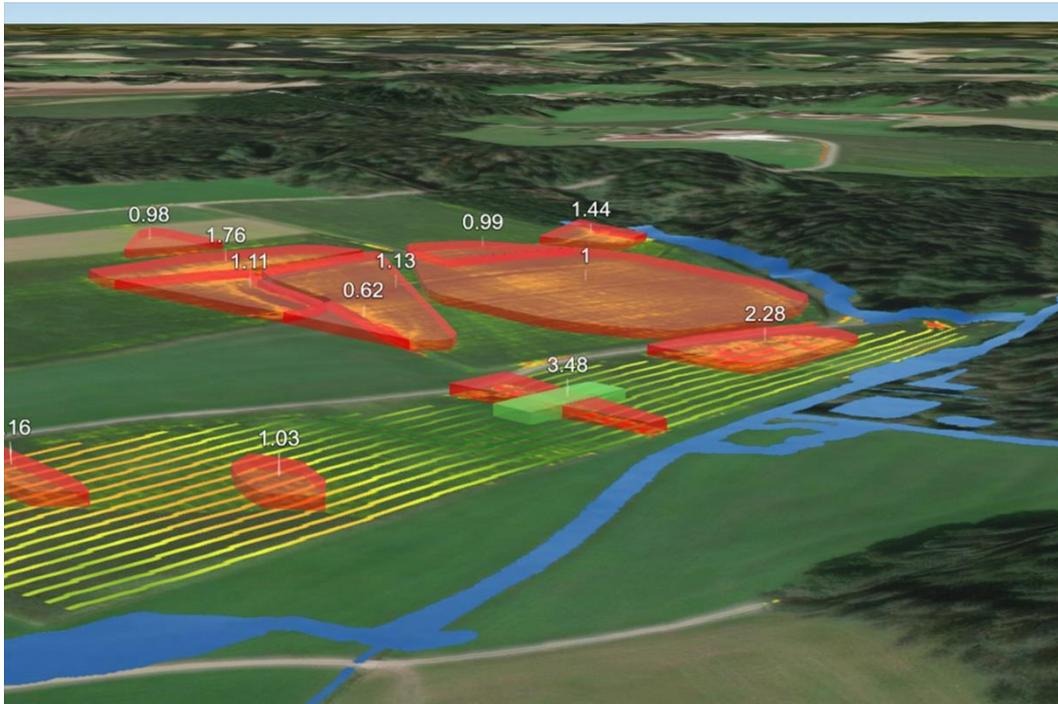
### Funding:

The EROSPOT project is funded by the Bavarian State Ministry of Food, Agriculture and Forestry (funding code: A/22/01) and by the BMBF funding line "Agricultural Systems of the Future", project DAKIS (Digital Agricultural Knowledge and Information System), funding code: 031B0729A.

### Further information:

[To the beta version EROSPOT](#)

[To the DAKIS website](#)



On the high-resolution erosion maps of EROSPOT, erosion-prone areas including river direction (in the image in red) are marked three-dimensionally and with meter precision, as well as possible locations for interventions such as green strips or beetle banks (green bar). | The picture can be used for editorial purposes by stating the source: © ZALF | Picture in color and print quality: <http://www.zalf.de/de/aktuelles>

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## About DAKIS

Loss of biodiversity, scarcity of resources, climate change and an increasing demand for food are leading to conflicting goals in land management around the world. The harmonization of these conflicting goals through an optimally balanced provision of ecosystem services (ES) represents a major challenge for the agricultural systems of the future. The optimal provision of ES is the focus of the DAKIS project and should be made possible by a new digital decision support system as well as small-scale and diversified land management.

The DAKIS project has the following goals:

- Integrating ecosystem services, biodiversity and resource efficiency into the decision-making process of farmers.
- Documentation, forecasting and control of site-specific effects of agricultural activities in real time for the first time.
- Optimization of cultivation systems for ecosystem services, biodiversity and resource efficiency.
- Development of new orientation goals in operational planning and support of complex decisions.
- Creation of new communication channels for cooperation between farmers, consumers and society.

## About the Leibniz Centre for Agricultural Landscape Research (ZALF) in Muencheberg, member of the Leibniz Association:

Mission of ZALF is to deliver solutions for an economically, environmentally and socially sustainable agriculture –together with society.

As a contribution to overcoming global challenges such as climate change, food security, biodiversity conservation and resource scarcity, we develop and design crop systems, integrated in their landscape contexts that combine food security with sustainability. Therefore we process complex landscape data with a unique set of experimental methods, new technologies and models as well as socio-economic approaches.

ZALF research is integrated systems research: starting from processes in soils and plants to causal relationships on the field and landscape level up to global impacts and complex interactions between landscapes, society and economy. [www.zalf.de](http://www.zalf.de)