

Hungary

Lechner Knowledge Centre

Tracking the effects of extreme water conditions with earth observation

“Geospatial datasets combined with time series of satellite images can provide a solid basis for trend analysis, anomaly detection and modelling, and hence should play a significant role in the long-term strategic development of climate change adaptation, responding to and monitoring of ad hoc phenomena, and for revealing cause and effect relationships.”

Gábor Mikus

Head of Earth Observation Operations, Lechner Knowledge Centre

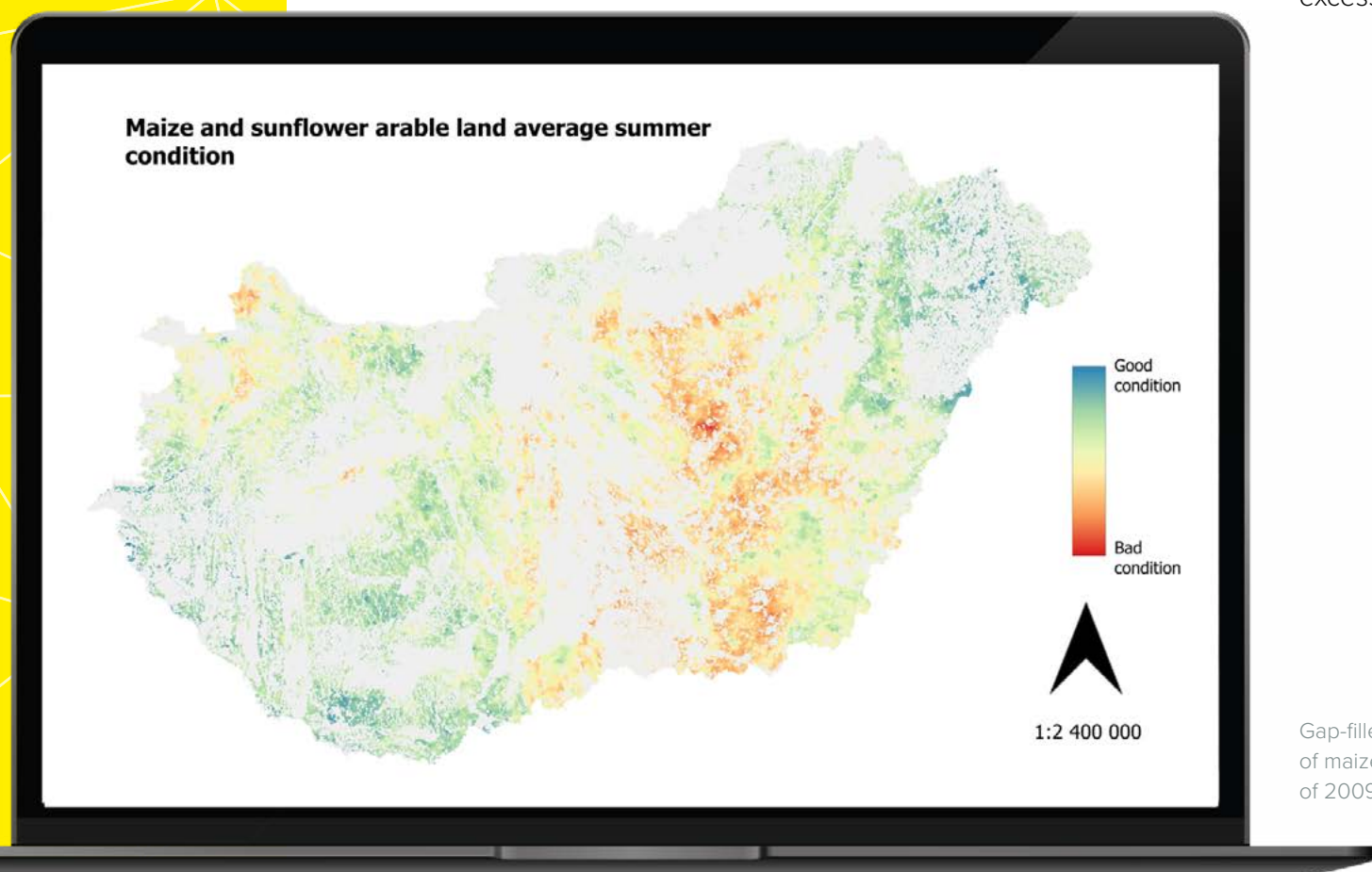
Mapping and monitoring of extreme hydrological events by time-series earth observation data, in combination with national geospatial datasets, provides insights for decision makers at different levels. As the Carpathian Basin and Hungary are particularly affected by climate change, the approach of data-driven, mindful decision making is indispensable for the adaptation to changing conditions and to mitigate related effects.

In Hungary, the Lechner Knowledge Centre (LTK) is providing authorities with regularly updated inland excess water and drought maps at multiple resolutions and timescales.

LTK, and its predecessor, the Institute of Geodesy, Cartography and Remote Sensing (FÖMI), have been actively involved in countrywide mapping and monitoring of extreme water conditions by remote sensing since the late 1990s.

For more than 10 years, data provision has been operational towards the Agricultural Risk Management System (MKR), a governmental infrastructure integrating relevant authorities and even the insurance sector.

The advent of the European Copernicus Sentinel ecosystem marked an important breakthrough in this field. Combined with other long-term Earth Observation time series along with thematic products such as crop maps and ancillary geospatial data, LTK now operationally provides high-resolution crop condition maps, drought maps, inland excess water maps and other derived products.



Gap-filled average summer condition of maize and sunflower over the period of 2009-2024, based on MODIS data.

Benefits

- Enables timely input for authorities assessing crop damage claims and helps to optimise field work through the delivery of high-resolution inland excess water and crop condition maps based mainly on Sentinel imagery.
- Provides medium-resolution drought, crop condition and water abundance maps based on a 25-year time series of MODIS imagery to detect trends and anomalies over long periods.
- Enables tracking of frequency, severity and seasonal characteristics of extreme water conditions at multiple resolutions.
- Provides invaluable input for strategic, synergistic planning of water management and possible land use conversions when products are combined with relevant information sources such as land cover/land use and cadastral data.