

Input data: daily weather data, soil, digital terrain model and land use

Drought is monitored by several independent approaches so that we are able to look at the progress and the impact of drought from different points of view. The network of experts who share their observations from their place of interest in real is essential for evaluation of the progress and the impact of drought. Farmers, fruit growers and foresters can get involved as well as wide public who often are interested in monitoring drought and weather exposure in their free time. Our goal is to have at least 5 experts in each of the 77 districts of the Czech Republic.

Ambitions of the system

Drought monitoring is key tool for supporting agricultural production, bussines & political decisions as well as education. Its development is based on the latest knowledge in the fields like agrometeorology and bioclimatology. The ambition of creators of the system for drought monitoring is to help our farmers, horticulture industry, foresters but also municipalities and water management companies.

References

Drought monitoring has been praised by the National Drought Mitigation Centre, Lincoln, Nebraska, USA, the world's leading institution in the field of drought research. Drought monitoring results are provided also for the Slovak Republic. Czech creators of this system have been working on the implementation of drought monitoring in Austria and are currently cooperating with a number of other partners to work on extensions of certain elements of the system for ten countries in the Danube river basin.

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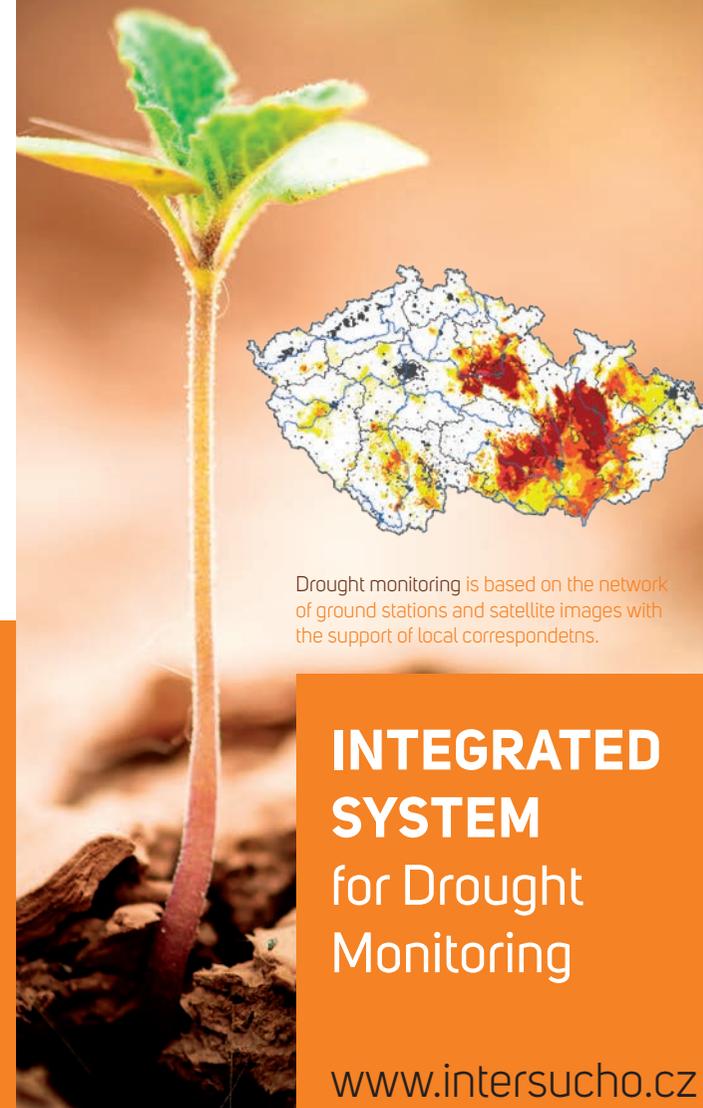
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Zemedelska 1, 613 00 Brno
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INTERSUCHO



Drought monitoring is based on the network of ground stations and satellite images with the support of local correspondents.

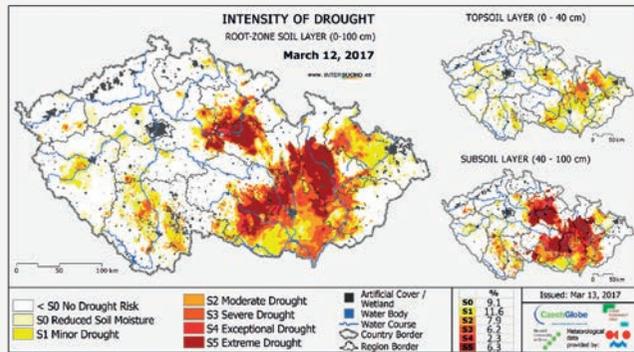
INTEGRATED SYSTEM for Drought Monitoring

www.intersucho.cz



TOOL FOR DROUGHT MONITORING

The Global Change Research Institute CAS (CzechGlobe), Mendel University in Brno and The State Land Office together run the time and spatially detailed tool "Integrated system for drought monitoring". Computational model of the system is based on real time daily meteorological data provided by the Czech Hydrometeorological Institute and also based on pedological data. The tool reflects and evaluates vegetation condition in a given time with use of TERRA satellite imagery. Outputs for the whole Czech Republic and Slovakia at a resolution 500 x 500 m are completely updated every Monday on www.intersucho.cz while forecasts are done daily.



Drought monitoring is designed to assess the drought intensity and its impact on the landscape, where agriculture and horticulture are the primary target areas. Besides the coverage of built-up areas respectively water areas of the whole territory of the Czech Republic it is therefore usable also in forestry and for the description of the drought impact on ecosystem services of the other controlled and uncontrolled ecosystem.

FIRST PILLAR – SOIL MOISTURE

Drought monitoring uses the latest approaches for soil moisture content to a depth of 1 m. This layer is divided into a surface layer of 0–0.40 m and subsurface layer of 0.40–1.00 m. The soil moisture content at a given pixel (500 x 500 m resolution) is then compared with the long-term average soil moisture content and based on this comparison the level of drought intensity is determined. You can see areas suffering in the range of moderate drought to exceptional drought immediately on the current map (white or red color).

SECOND PILLAR – SATELLITE

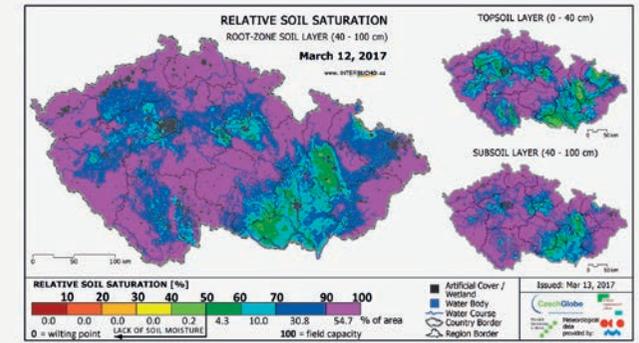
Important elements of drought monitoring are vegetation indices which are determined by satellite images. Those indices enable to describe and evaluate the condition of vegetation, which is affected by drought during the growing season. They also reflect other stresses like a lack of nutrients, occurrence of diseases and pests or other sudden changes in vegetation.

THIRD PILLAR – DROUGHT PREDICTION

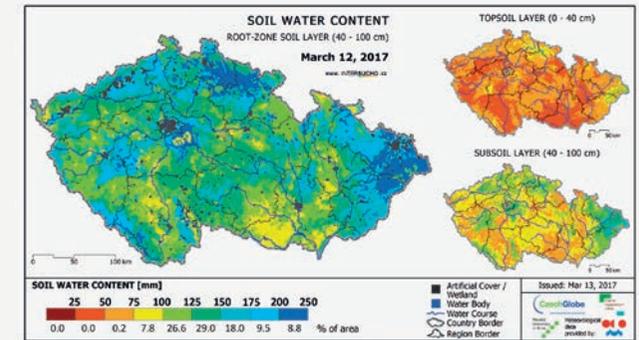
Third pillar solves spatial and time evolution of drought that focuses on drought prediction and prediction of agrometeorological parameters. Predictions for the next 9 days are updated daily and they are unique by use of ensemble of 5 numerical weather prediction models, which enable to consider uncertainty of the prediction. In addition, every Monday a probabilistic prognosis is available, which shows long-term outlook for up to 2 months in advance.

ADDITIONAL AVAILABLE PRODUCTS

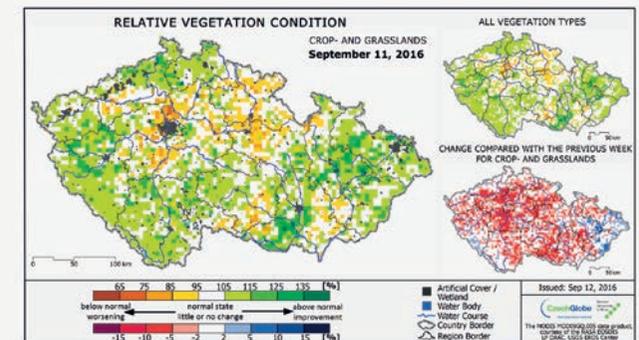
- Soil moisture deficit – deviation from normal water reserves in soil in a given period
- Cumulative stress – percentage of time when soil was saturated under the point of decreased availability of selected time frame
- Basic monitoring for the wider region of Central Europe including the estimated impact on the yield of the main competitors.



Relative soil saturation



Soil water content



Relative vegetation condition