**The Daisy Model Newsletter**
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# Daisy Newsletter no. 17

## 1 The Daisy code, v. 5.74 has been released on Windows and OS X

It is now possible to define a conversion between the Daisy development stage DS and other scales, e.g. BBCH. The implementation of this is described on the homepage in the news release from 31.jan 2019. We consider this a very interesting improvement for crop calibration and linking parameterization to research findings.

Please note that the default reference evapotranspiration models have been changed. This is a follow-up to the addition of the hourly parameterisation of Penman Monteith (*Allen at al.:A recommendation on standardized surface resistance for hourly calculation of reference ETo by the FAO56 Penman-Monteith method. Agricultural Water Management 81 (2006): 1–22)* and addition of different parameterisations of the Makkink equation.

Furthermore, there are different improvements to the description of pesticide processes. Please check the whole range of additions on https://daisy.ku.dk/news/daisy-5.74-released-for-os-x-and-windows/ .

## 2 Weather data for long-term simulations of present and future climate

Rasmussen et al. have developed weather series for the present East-Danish climate and two future periods and used it for Daisy simulations to investigate changes in agro-climatic indices. These data can now be reached through the Daisy homepage. Go through https://daisy.ku.dk/climate/ to read more about the possibilities.

## 3 Courses

We expect to conduct a one week PhD-course on basic use of Daisy at the end of August. Please consult the Daisy homepage for details in April.

## 4 Recent articles where Daisy have been used

This time, most of the published articles are related to climate change.

**Aydim et al. (2018)** investigated the sensitivity of the Daisy winter wheat parameterisation (default version, it seems) to changes in weather parameters for Turkish conditions. They quantify the effects of changes in temperature, global radiation and precipitation.The authors conclude that there is a need to update the description to fit local wheat varieties better.

**Rasmussen et al. (2018)** started with four general (GCM's) and eight regional models (RCM's) to define future weather in Denmark. Apart from the generation of weather data for now, the near future (2030-2059) and the far future (2070-99). Rasmussen et al. investigated the effect of future climate on maize- and wheat growth as well as trafficability and drainage need. Although model predictions add quite some uncertainty to predictions, the results points to an increasing drainage need during winter, an increase in irrigation requirements during summer and the necessity of adjusting the choice of crops and varieties to the changed conditions.

**Žilinský et al. (2019)** describe the predicted effects of climate change in Southern Slovakia. Significant temperature increases and less precipitation in the growing period will lead to increased crop-specific potential evapotranspiration and thus increased irrigation requirements if yield levels are to be sustained.

The article by **Plauborg et al.** concerns precision agriculture and the importance of including local knowledge of texture and organic matter

content. They stress the importance of particularly the distribution of organic matter into soil organic matter pools in the prediction of mineralization levels.

## 5 References

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Plauborg, F., Manevski, K., Zhou, Z. and Andersen, M.N. (2015). The use of computer simulation models in precision nutrient management. In (Ed) Stafford, J.V.: Precision agriculture '15. https://doi.org/10.3920/978-90-8686-814-8_50

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Žilinský, M., Takáč, J. and Šiška, B. (2019): Adaptaion Strategies to Reduce the Impact of Climate Change on Yield Loss in Northern Carpathians, Slovakia. In: Filho, W.L., Trbić, G. and Filipovic, D. (Eds.): Climate Change Adaptation in Eastern Europe. Managing Risks and Building Resilience to Climate Change. Springer. P. 293-306.