The Daisy Model Newsletter
Department of Plant and Environmental Sciences
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The Daisy code, v. 5.59 (and 5.63)

Version 5.59 is still the last version available on all platforms.

However in version 5.63, several versions of Makkink reference evaporation have been included in Daisy. The additional options were added because recent comparisons between different evapo-transpiration formulas at Taastrup showed a reduction in average wind speed and therefore poorer correspondence between the Makkink calibration by Aslyng and Hansen and Penman Monteith-estimates (Pers. Com. S. Svane). The changes are most likely due to increased surface roughness (houses, trees etc.). The Makkink calibration by DeBruin appears to provide a better estimate with the present wind conditions. This homepage (http://drømstørre.dk/wp-content/wind/miller/windpower%20web/da/tour/wres/dkmap.htm) provides a nice estimate of wind speeds at 45 m over Denmark and roughness estimates in different types of landscapes.

The Daisy Homepage

A page called "Contributions" has been added to the Daisy homepage. On this page you can find links to parameterizations developed by other users and kindly made available to us. The relevant articles are referenced too. If you use the parameterisations, you must refer to the relevant sources.

We would like to invite you to contribute to this page with your tested parameterisations and we hope this can become a means of improved cooperation.

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Courses

The course "Applied Agrohydrology II" with a one week intensive course on Daisy followed by a modelling exercise starts on 27th Aug 2018. It is possible to participate in the intensive week only or to join the whole program. Please consult our homepage or this link for more information.

Aarhus University runs a course on "Modeling crop growth, water, carbon and nitrogen dynamics in cropping systems" from 24th Sept 2018.

Furthermore, a special course called "Dynamic crop models: Principles and methods with emphasis on applications to climate change" is organized this year. This course aims at students and researchers working with crop models. It will offer a comprehensive basis for understanding and working with simulation crop models in their many applications and in particular in climate change assessments. Students will learn about the crop physiological and soil processes described in dynamic crop models on growth and development. More specific:

- System analysis as the basis for dynamic crop models
- Simulation methods; calibration, uncertainty, sensitivity analysis and evaluation techniques
- Construction of climate change scenarios based on a weather generator
- Model-based climate change impact assessment
- Future prospects in crop modelling: crop ideotype design, ensemble modelling and next generation models.

Please consult this link for more information.

MSc.-Thesis

Line Vinther Hansen has submitted a MSc. Thesis called "Improvement of coarse sandy subsoil by amendment of comminuted bottom ash from combustion of straw. The Thesis includes some Daisy calculations on the hydrology-related effects of the amendment. She will defend the Thesis on 25th June at 10.30 in R645, Thorvaldsensvej 40, Frederiksberg.

Recent articles where Daisy has been used

Manevski et al. (2018) have used Daisy to provide estimates of water fluxes in an experiment with new cropping systems aimed at feedstock production to future biorefineries.

Maharjan et al. (2018) reviewed approaches to simulate the impact of tillage on soil physical properties and on vertical distribution of organic matter and nutrients implemented in 16 different agro-ecosystem models (APEX, APSIM, CropSyst, DAISY, DayCent, DNDC, DSSAT, EPIC, HERMES, HYDRUS-1D, LPJmL, MONICA, SALUS, SPACSYS, STICS, and SWAT). Some of the reviewed agro-ecosystem models simulate the tillage effects on soil bulk density, soil settlement, soil texture redistribution, and several soil hydraulic properties. To some extent, the changes in soil porosity, soil aggregates, and the soil organic matter content are considered. Most models simulate the incorporation or/and redistribution of organic matter, residues or/and nutrients in the soil. None of the models consider the changes in biochemical properties such as changes in soil microbial biomass and activity or redistribution of weed seeds after a tillage operation. This study indicates the urgent need to improve the tillage components in crop modelling due to its obvious impact on various soil and nutrient processes and consequently, on crop growth and yield.

Other studies of general interest

Seidel at al. (2018) have published a survey on crop calibration practices. Based on the survey results, a list of topics that should be covered in guidelines for calibration is suggested.

Recent articles and reports

Manevski, K., Lærke, P.E., Olesen, J.E. and Jørgensen, U. (2018). Nitrogen balances of innovative cropping systems for feedstock production to future biorefineries. Science of the Total Environment 633 (2018) 372–390.

Maharjana, G.R., Prescherb, A-K., Nendel, C., Ewerta, F., Mboha, C.M., Gaisera, T., and Seidel, A.J. (2018). Approaches to model the impact of tillage implements on soil physical and nutrient properties in different agro-ecosystem models. Soil and Tillage Research 180: 210-221.

Articles of general interest

Seidel, S.J., Palosuo, T., Thorburn, P. and Wallach, D. (2018). Towards improved calibration of crop models – Where are we now and where should we go? European Journal of Agronomy 94: 25–35.