



Computer models for food security and against climate impacts

International crop modelling symposium shows new opportunities

Berlin/Müncheberg, 21 March 2016 For three days more than 300 scientists from 47 nations have exchanged ideas in Berlin-Adlershof, scientists who are using computer models to understand agricultural systems. The symposium has brought together two major research networks standing for the latest modelling approaches and extensive knowledge in that field. It was hosted by the Leibniz Centre for Agricultural Landscape Research (ZALF) in Müncheberg, Brandenburg (Germany).

With a total of 85 presentations, 130 poster presentations and discussions, the 2.5 days meeting (15 to 17 March 2016) had an exciting program. Adjacent to the meeting many scientists and initiatives took the chance and met during side-events. "The international crop modellers' scene was very well represented here," sums up Dr. Claas Nendel from ZALF, responsible for the organization of the meeting. "The personal exchanges, the many discussions motivate researchers further who otherwise often only communicate over great distances. Numerous ideas for new developments arise during such symposiums", Dr. Nendel says.

How far the opportunities have progressed to address the major global challenges using computer models, showed Prof. Achim Dobermann, Director of Rothamsted Research as the most important agricultural research facility in England, in his plenary lecture. Prof. Martin Kropff, Director General of the International Maize and Wheat Improvement Center (CIMMYT) which is dedicated to the global maize and wheat cultivation by developing improved seeds and improved agricultural practices, highlighted simulation models as important tools for deriving breeding goals and alternative farming practices as adaptations to climate change. Together with the plenary lectures by James Jones (University of Florida, USA; The next Generation of Crop Models), Serge Savary (INRA, Toulouse, France; Models for Crop Diseases), Graeme Hammer (University of Queensland, Australia; Modelling and Genetics), Andrew J. Challinor (University of Leeds, UK; Models and Climate), Brian Keating (CSIRO, Australia; Models and Cropping Systems) the range of topics at the conference was very well addressed by the keynotes.

In the concluding panel discussion, the responses to the great challenges were expressed in summary form. The moderator was Prof. Frank Ewert, the Scientific Director of ZALF, who had launched the Symposium together with colleagues from Finland, Australia and the USA. "It becomes clear that we are increasingly capable of estimating the extent to which climate change and policy decisions can affect crop productivity and food security", Prof. Ewert says. "Recent developments aim, for example, at being able to better represent extreme climate changes or to better understand crops in rotations. The enormous progress in information technologies also offers novel opportunities for

improved applications of the models. The so-called modelling platforms are a relatively new way to link a variety of models and data – collaboration to the benefit of all. In the field of climate research it is very important for us to understand the impact of possible climate change and how to adapt agriculture to minimize potential environmental impacts", Prof. Ewert summarizes.

The international Symposium iCROP2016

The symposium focused on recent scientific work related to model improvement, generation and use of experimental data and on advancements in model application considering new methods of model intercomparison, uncertainty propagation and scaling. While the main emphasis was on crops, progress on grassland and vegetation modelling have also been considered as well as new approaches of model implementation making use of recent software developments. Improvements in crop and cropping system modelling referred to the field level but also to the higher landscape, regional and global level and included efforts to link crop modelling to genetics. Studies to improve the modelling of relationships between plant production, resource use and management including effects on water and nutrient cycles were also welcome.

The Leibniz Centre for Agricultural Landscape Research (ZALF) combines six institutes at its campus in Müncheberg and addresses socially relevant questions related to the use of agricultural landscapes. Issues such as food security, soil as a natural resource or biodiversity are interdisciplinarily investigated. The research questions comprise three core topic areas starting from the processes in agricultural landscapes through the effect of different land uses to the resulting use conflicts and their governance. Based on the results ZALF develops solutions for the sustainable intensification of land use under changing conditions such as climate change.

Conference Homepage: www.icropm2016.org

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