18 April 2019

Leibniz Centre for Agricultural Landscape Research (ZALF)

IT infrastructure at ZALF upgraded:

Modern high-performance computer cluster goes into operation

On 18 April 2019, the new High-Performance Computer Cluster (HPC) at the Leibniz Centre for Agricultural Landscape Research (ZALF) will commence operations. Following a 6-month construction period and investments of 1.78 million euros, it was inaugurated today. It has 20 times the performance of the previous computing capacities and replaces an outdated computing infrastructure. In particular, the new cluster will enable complex calculations, such as the simulation of grain yields of entire countries or continents taking climatic changes into account, to be carried out with new data quality and speed.

"The core strength of ZALF is that we use complex and very heterogeneous data, analyses and models to answer urgent societal challenges, such as the effects of climate change on agriculture, and thus gain new information and knowledge", explains **Prof. Frank Ewert, Scientific Director of ZALF** at the inauguration. "This makes it essential for us to be able to process a large volume and range of biophysical and socio-economic data – from soil moisture and land use to economic issues – quickly and to make it available to answer research questions. We are therefore very pleased that we are now better equipped with the new computer cluster." With the help of the new computing power, theoretical findings on complex landscape processes will in future be translated even more efficiently into recommendations for measures for the sustainable use of agricultural landscapes at ZALF.

The HPC cluster has 5000 cores with 12 terabytes of RAM and 96 terabytes of hard disk space. The individual nodes of the cluster are connected via a very fast network, which actually enables simulation within the cluster. Furthermore, 8 GPU nodes each with 16 gigabyte RAM as well as 640 tensor cores were installed for AI and machine learning. In summary, the cluster has approximately 5000 times the

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performance of a conventional home computer plus special performance for artificial intelligence (AI).

Project Partners:

- MEGWARE Computer Vertrieb und Service GmbH
- RITTAL GmbH & Co. KG
- Opti-Klimatechnik GmbH
- Carsten Müller Steuerungstechnik GmbH
- LANtec GmbH
- Elektroservice Steffen Speer
- Bildfunk Electronic GmbH
- Tauer Bau GmbH
- Malermeister Stefan May
- Dachdecker Henri Pischel GmbH

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About Leibniz Centre for Agricultural Landscape Research (ZALF), one of the Institutes of the Leibniz Association:

Mission of ZALF is to deliver solutions for an ecologically, economically and socially sustainable agriculture – together with society.

As a contribution to overcoming global challenges such as climate change, food security, biodiversity conservation and resource scarcity, we develop and design crop systems, integrated in their landscape contexts that combine food security with sustainability. Therefore we process complex landscape data with a unique set of experimental methods, new technologies and models as well as socio-economic approaches.

ZALF research is an integrated systems research: starting from processes in soils, plants and water to causal relationships on the field and landscape level as well as looking at global impacts and complex interactions between landscapes, society and economy. www.zalf.de