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KI:STE Project – AI Strategy for Earth System Data

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Artificial intelligence (AI) methods currently experience rapid development and are also used more and more frequently in environmental and Earth system sciences. To date however, this is often done in the context of isolated rather than systematic solutions. In particular, for researchers there is often a discrepancy between the requirements of a solid and technically sound environmental data analysis and the availability of modern AI methods such as deep learning. Their systematic use is not yet established in environmental and Earth system sciences.

The recently started KI:STE project bridges this gap with a dedicated strategy that combines both, the development of AI applications and a strong training and network concept, thereby covering different relevant aspects of environmental and Earth system research. It creates the technical prerequisites to make high-performance AI applications on environmental data portable for future users and to establish environmental AI as a key technology.

Specifically, within KI:STE an AI-platform is envisioned which unifies machine learning (ML) workflows designed to study five core Earth system topics: cloud variability, hydrology, earth surface processes, vegetation health and air quality. All of them are strongly coupled and will profit from ML, e.g. to extend locally available information into global maps, or to track the interplay of spatio-temporal variability on different scales along process cascades. Besides being already connected across disciplines in the classical sense, KI:STE aims to furthermore bridge between these different topics by jointly addressing cutting edge ML research questions beyond pure algorithmic approaches. In particular, we will put emphasis on an explainable AI approach, which itself is a yet to be explored highly relevant topic within the Earth system sciences. It has the potential to connect the interdisciplinary work on yet another level.

KI:STE will also launch an e-learning platform in order to support the usage of the AI-platform as well as to communicate the knowledge to adequately use ML techniques within the different Earth system science domains.

