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## **The data challenge in CRC 1502: Large-scale data handling and computing for modeling the atmospheric and terrestrial water and energy cycles**

The Collaborative Research Centre 1502, DETECT, deals with the various anthropogenic changes affecting energy and water redistribution in the atmosphere and subsurface. For this, a considerable amount of data is being used. Experts from DETECT, including hydrologists, meteorologists, land use modelers, geodesists, remote sensing experts, agricultural economists, and social scientists, will use and generate diverse data in a variety of formats.

Service Project Z03 (DATA INFRASTRUCTURE AND SERVICES) is a sub-project of DETECT with the goal of providing and managing sustainable open research data infrastructures for DETECT. Z03 focuses on implementing the principles of FAIR (findability, accessibility, interoperability, and reusability) to facilitate efficient data flow paths, data processing, and modeling chains. Gridded forcing data, static fields, simulation results, restart files, model settings, regional climate and hydrologic model results, validation data based on in situ observations, satellite data products, and geographic baseline data are some of the data sets that will be managed in Z03 to be efficiently reused in an active research area. This issue requires a large-scale data and computing infrastructure and a collection of data integration and aggregation services, including HPC data workflows and management. These services will enable studies on data sets of various scales and heterogeneous quality. The technology will be complemented by a web-based visualization component to assist users in data exploration.

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