

The world's largest archive for climate data is located in Hamburg

DKRZ - supported by IBM - manages up to 500 Petabyte of climate data

Hamburg, May, 8th, 2015: The German Climate Computing Center (DKRZ), supported by IBM, took in operation the first configuration level of its new Hierarchical Storage Management System (HSM) that is based on a High Performance Storage Systems (HPSS). The system manages all archived simulation data at DKRZ and serves as the central in- and output interface of the tape library.

Already in autumn 2014, experts from IBM/Global Technology Services have implemented the latest HPSS software and the Linux operation system by Red Hat on the IBM x86 server as well as a HPSS disk cache with five Petabyte. The size of the disk cache, which serves as a temporary buffer, corresponds to the storage capacity of 5,000 well equipped notebook computers.

IBM specialists have migrated the data of the former, significantly smaller HPSS system to the new system within only two days of operational interruption. The new system with an essentially higher sustained throughput (in- and output) allows a transfer of climate data between the high performance computer and the archive system with a bidirectional bandwidth up to 12 Gigabyte per second. Until autumn 2015 the system will be once more upgraded to a bandwidth up to 18 Gigabyte per second (peak).

At the moment the tape library at DKRZ contains about 20 million data with a data volume of 40 Petabyte. Using HPSS DKRZ will be able to handle the massive data growth in the climate research. Within the next five years a data production of annually 75 Petabyte and a total volume of 500 Petabyte is expected, appropriate to the estimated growth of data production on the new high performance computer system for earth system research 3 (HLRE-3) being currently installed at DKRZ.

The upgrade of the HSM system is part of the project HLRE-3 that is funded with 41 million euro – two thirds by the Federal Ministry of Education and Research and one third by the Helmholtz Association. The financial resources are passed on to DKRZ by the Helmholtz Center Geesthacht – Center for Materials and Coastal Research.

HPSS results from a 20 years lasting cooperation between IBM and the five national US-Laboratories of the Department of Energy (DOE): Lawrence Livermore, Los Alamos, Sandia, Lawrence Berkley and Oak Ridge (further information: www.hpss-collaboration.org).

HPSS is implemented for very large scientific data archives at research facilities and universities, for weather forecast systems as well as in the field of defense and national security. Organizations with CPU- and data intensive processing use HPSS. In Europe and Germany it is used among other by the European Centre for Medium Range Weather Forecasts (ECMWF), the Karlsruhe Institute for Technology (KIT), the German Meteorological Service (DWD) and the computing center Rechenzentrum Garching of the Max Planck Society (RZG).

Further information: <https://www.dkrz.de/Klimarechner-en/datenarchiv>

Contact at DKRZ: Michael Böttinger, Leader Visualization and Public Relation, boettinger@dkrz.de and Jana Meyer, Public Relation, jana.meyer@dkrz.de

About the German Climate Computing Center (DKRZ)

DKRZ is a unique national center for premium climate science: it provides high-performance computing platforms, sophisticated and high-capacity data management and related services. Today, the complexity of the Earth system is one of the great scientific challenges. The Earth as a whole cannot be the object of experiments. Therefore, the computer systems of the DKRZ are the laboratory for climate research. Simultaneously the staff at DKRZ supports the scientists with the optimization of their climate model codes, with the analysis, visualization and the publication of the simulated data.

DKRZ is a limited company (GmbH) with four shareholders: Max Planck Society (55%), the City of Hamburg, being represented by the University of Hamburg (27%), the Alfred-Wegener-Institute for Polar and Marine Research (9%) and the Helmholtz Center Geesthacht (9%). It was founded on November, 11th, 1987. Currently DKRZ has about 70 employees. The director Prof. Dr. Thomas Ludwig simultaneously leads the working group "Scientific computing" at the department of informatics of the University of Hamburg.