

German Climate Computing Centre (DKRZ)

VR display for scientific supercomputing

“We explored a number of different passive stereo projection technologies, and it was obvious that Barco's VR Workroom, powered by iCon native HDTV projectors, was best suited for our needs, scoring very high with regard to light efficiency and stereo separation capabilities.”

Michael Boettinger,
Visualization specialist at DKRZ

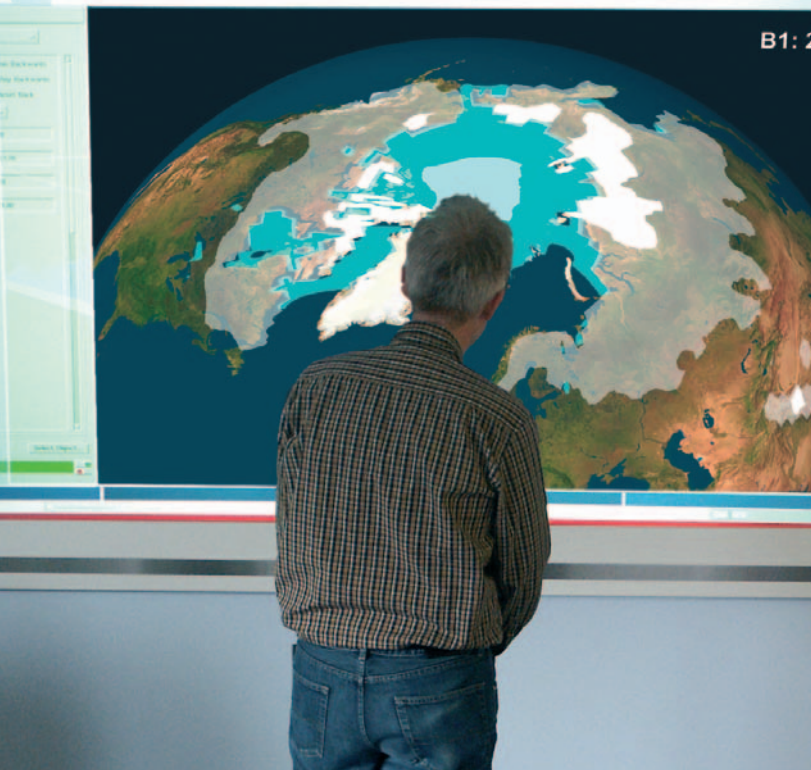


For DKRZ, one of Europe's fastest supercomputer facilities, BARCO integrated a high performing VR visualization display in the institute's seminar room and networked it through optical connections and advanced switching equipment to the HP SVA High Performance Visualization Cluster.

The AmiraVR and AVS/Express MPE application software used for the visualization of the climate data fully support the multi-pipe rendering and tracking. The wireless ART optical tracking system allows the scientists to easily interact with the data in which they are immersed.

BARCO

Visibly yours



Northern sea ice extent and snow cover for March and September as simulated for 2100, according to the 'optimistic' IPCC scenario B1.

Gaining more insight into the processes and interactions governing our climate

With high-end computing resources of about 1.0 TeraFlops sustained performance and a storage capacity of more than 6 PetaByte (equaling 10 million CDs, a pile more than 10 km high), the virtual laboratory for the German earth system research provides state-of-the-art super-computing data service to the German scientific community. On DKRZ's systems, simulations with complex numerical models of the global climate system are carried out in order to gain more insight into the processes and interactions governing our climate.

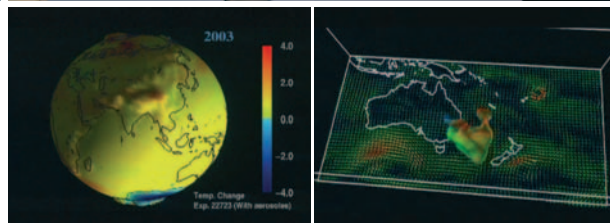
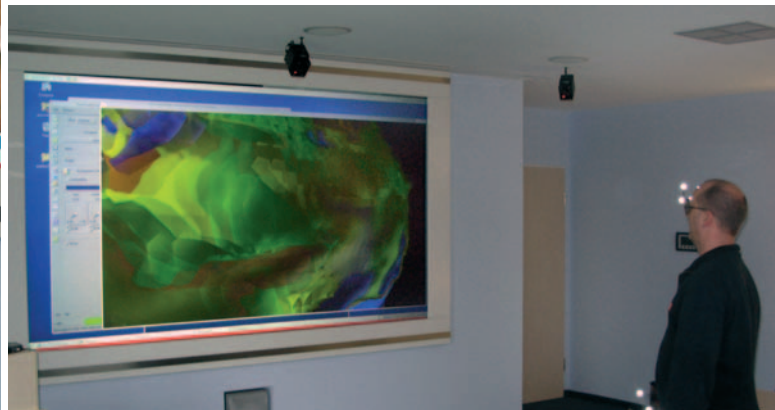
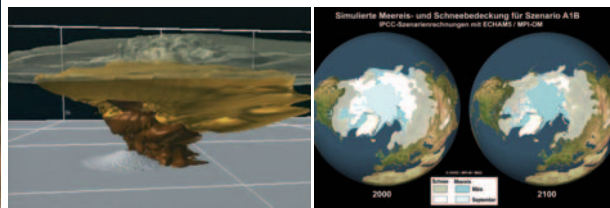
Excellent stereoscopic depth perception

To implement a high resolution stereoscopic visualization system at DKRZ and to network it to the other visualization stations, main contractor HP called upon Barco. The Barco display in the seminar room is powered by two Barco iCon high resolution projectors (1920 by 1080 active pixels) delivering a razor sharp image on a 2.4 by 1.35m (7.87 x 4.26 ft) Barco PASCAD screen.

"Thanks to internal circular polarization the projectors deliver an excellent stereo light output and specialists wearing comfortable light weight stereo glasses enjoy excellent depth perception when analyzing the climate models under various viewing angles", states Michael Boettinger, DKRZ's visualization specialist. The system can be used as well in stereo mode as in mono mode.

Enhanced interaction with the data

A full fledged ART optical tracking system consisting of 3 infrared cameras, a tracking PC as well as tracking targets allows to track the user's position and movements and give feedback to the computer. As a result the scientists can easily interact with the data in which they are literally immersed.



In its visualization and video laboratory, DKRZ offers support to visualize the large three-dimensional and time dependent data sets produced by the climate models.

Easy operation through familiar Windows XP interface

Operating the display is very easy as all display functions can be directed through a wireless keyboard and mouse in the Seminar room. Icons on the screens desktop allow switching from stereo to mono mode and to select the sources to display. Local sources include 4 laptops, 2PC's, a DVD or VHS player and videoconferencing. Remote sources, linked via fiber from the remote "Geomatikum", include rendering nodes from a HP SVA Visualization-cluster. Multi window layouts with views from different sources can be created and stored in the projectors internal memory.

The advanced high performance networked Barco Visualization at the DKRZ aims to keep German scientists at the leading edge of visualization for climate research. Major user institutions are the Max Planck Institute for Meteorology, Hamburg University's Centre for Marine and Atmospheric Sciences (ZMAW), the Alfred Wegener Institute for Polar and Marine Research (AWI) and the Geesthacht GKSS Research Center.

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