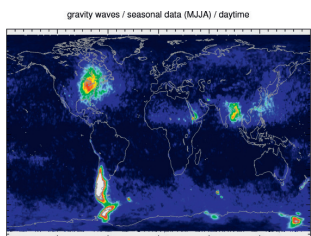# SIMULATION LABORATORY CLIMATE SCIENCE
ATMOSPHERIC SCIENCE ON HPC SYSTEMS

- **Modelling of atmospheric chemistry and dynamics (CLaMS, ECHAM, ICON, MPTRAC)**
- **Radiative transfer modelling and inversion techniques (JURASSIC, RFM, SARTA)**
- **Data analysis of Earth observation data (AIRS, HIRDLS, IASI, MIPAS, ERA-Interim)**
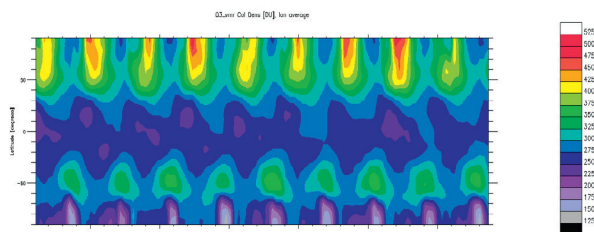- **Dedicated user support for atmospheric science community**

Hunting for Stratospheric Gravity Waves

- Gravity wave detection in multi-year records of global AIRS and IASI satellite data
- Retrievals of stratospheric temperatures from IR spectra

Gravity wave hot spots in May, June, July, and August derived from AIRS observations.

Aerosol and Cloud Measurements

- Development of new aerosol and cloud detection algorithms for infrared remote sensing
- Analysis of multi-year record of global Envisat MIPAS data

Volcanic ash of the Puyehue-Cordon Caulle and Grimsvötn eruptions observed by Envisat MIPAS.
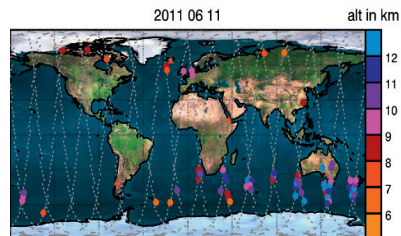
Global modelling of reactive atmospheric constituents

Evolution of zonal mean ozone total column densities [DU] for the years 2003 – 2011 simulated by ECHAM6-HAMMOZ

- Evaluation of global chemistry climate simulations
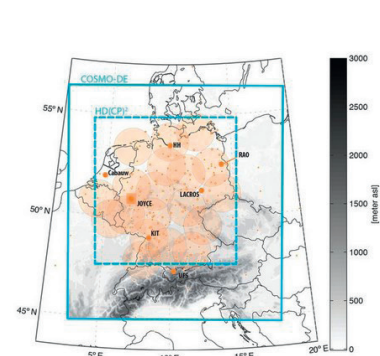- Chemical boundary conditions for regional air quality models

HD(CP)2 – High Definition Clouds and Precipitation for Advancing Climate Predictions

- BMBF-Project aiming at high resolution cloud simulations with the Earth System model ICON
- Analysis and optimization of scaling and performance on BlueGene/Q