

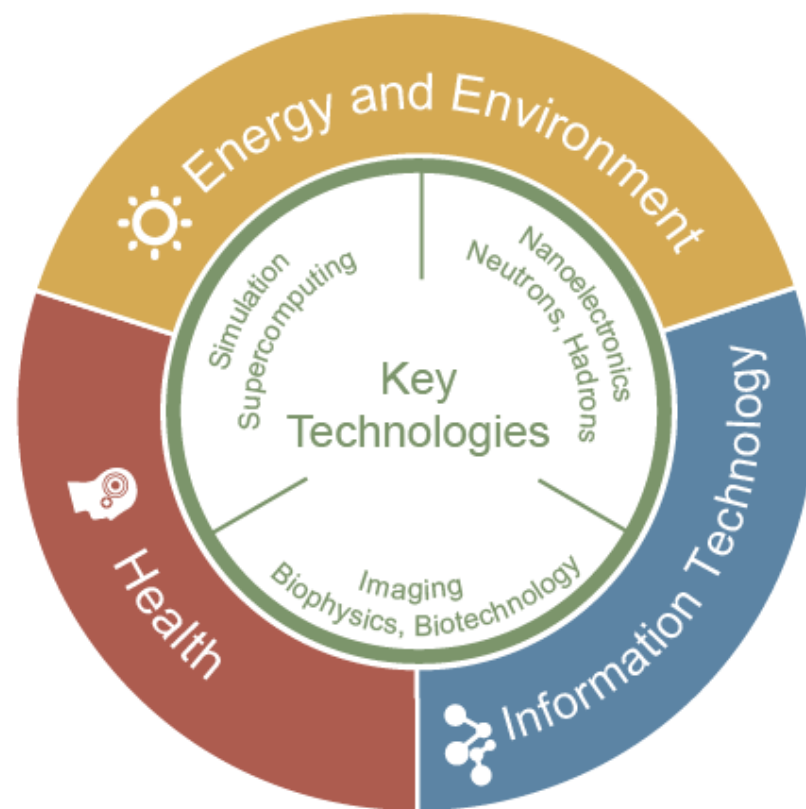
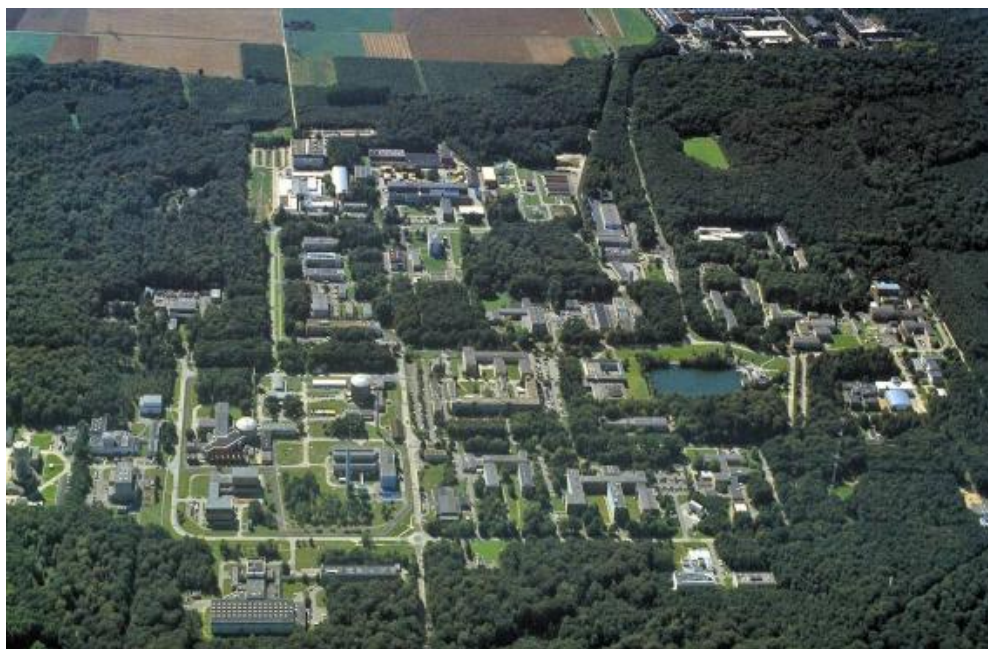
→ **ADVANCED ATMOSPHERIC TRAINING COURSE 2014**

Welcome !

Martin Riese
Forschungszentrum Jülich (IEK-7)

Facts and Figures on Forschungszentrum Jülich

- Employees: 5.534
- Budget: 560 Mio €
- ~900 guest scientists
- Third-party funding: ~ 170 Mio €
- (>45 countries)

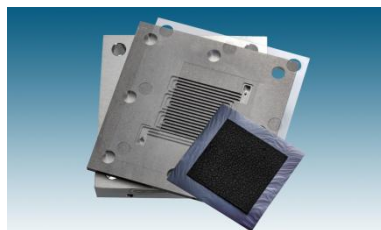




Energy and Environment



Efficient, Dynamic Power Plants



Hydrogen and Fuel Cells



Photovoltaics



Fusion



Geo-Science



Plant-Science



Climate Research



Nuclear Waste Management

Essential Elements for Transformation of the Energy System

Storage



Renewables



Efficiency



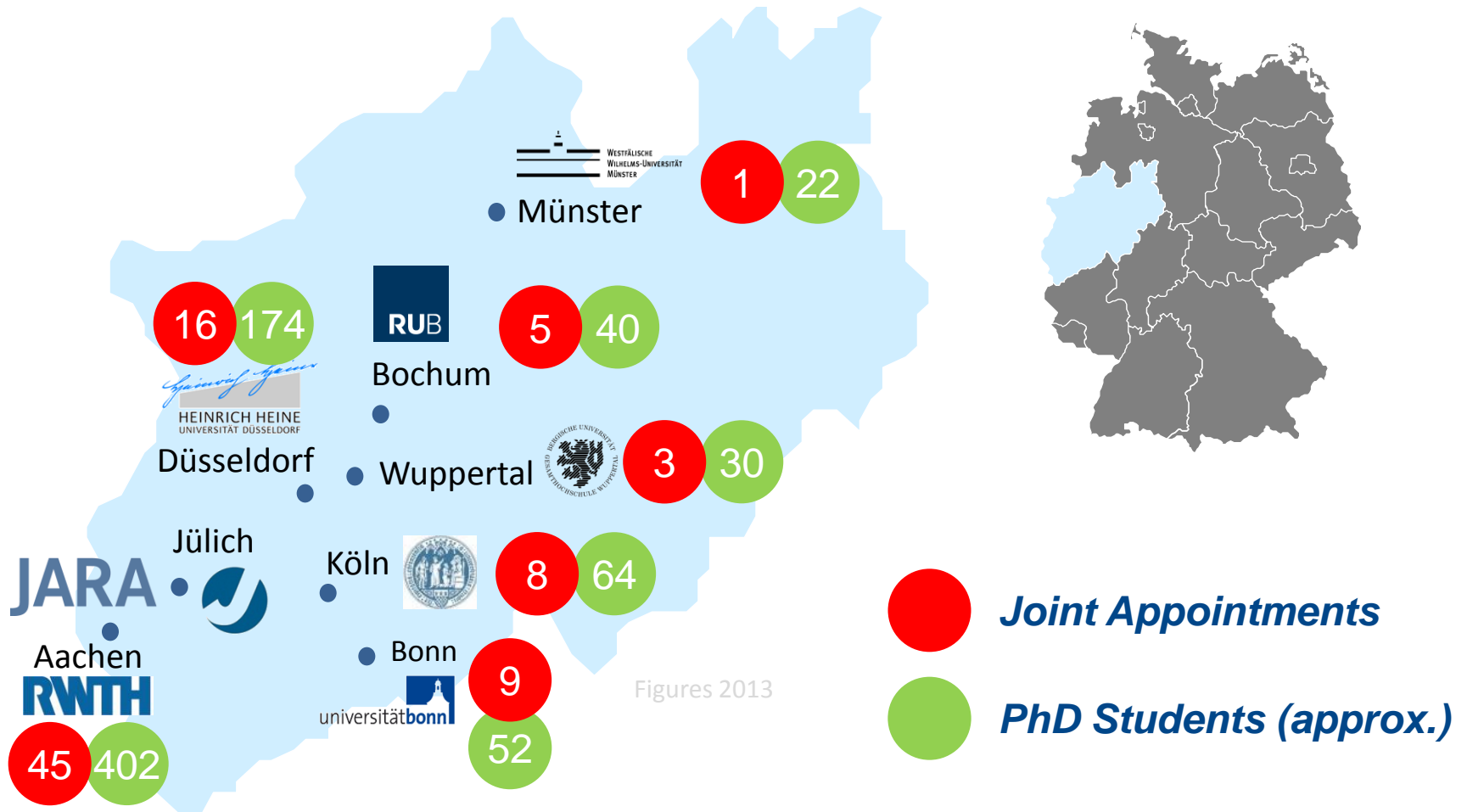
Grids



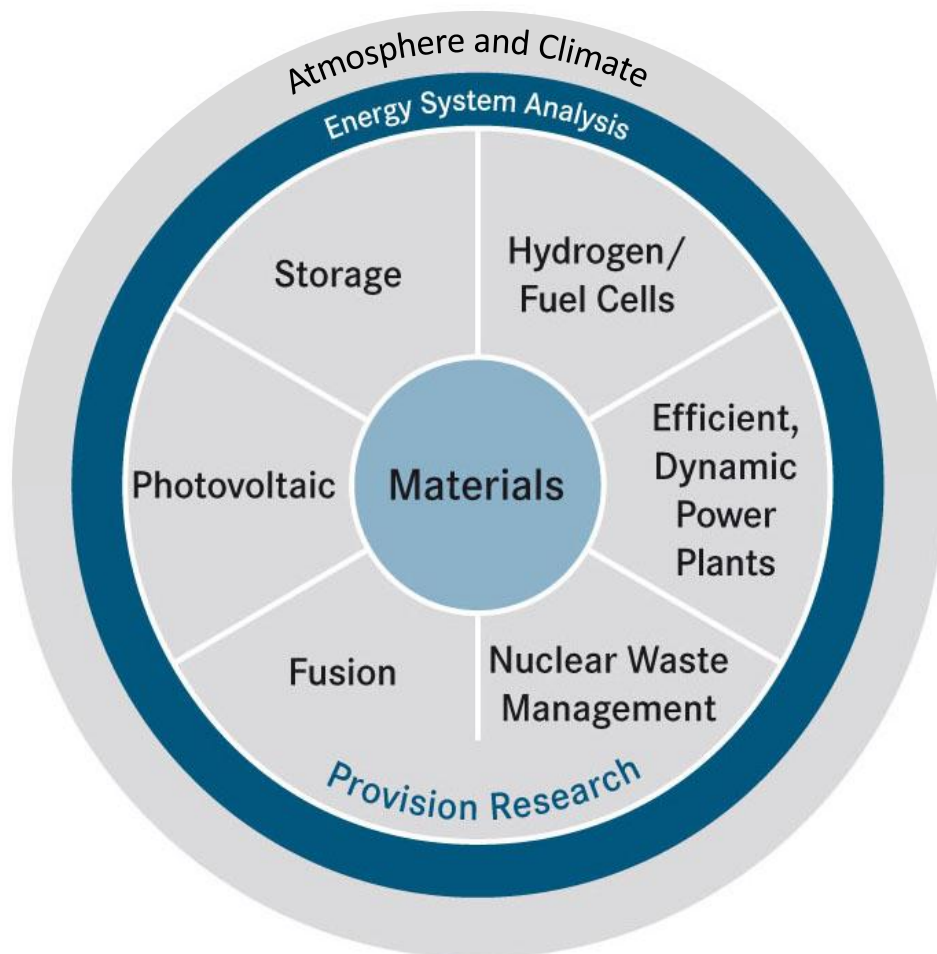
Flexible Power Plants



Cooperation with Regional Universities: NRW



Institute of Energy and Climate Research



824 Staff

675 Energy Research

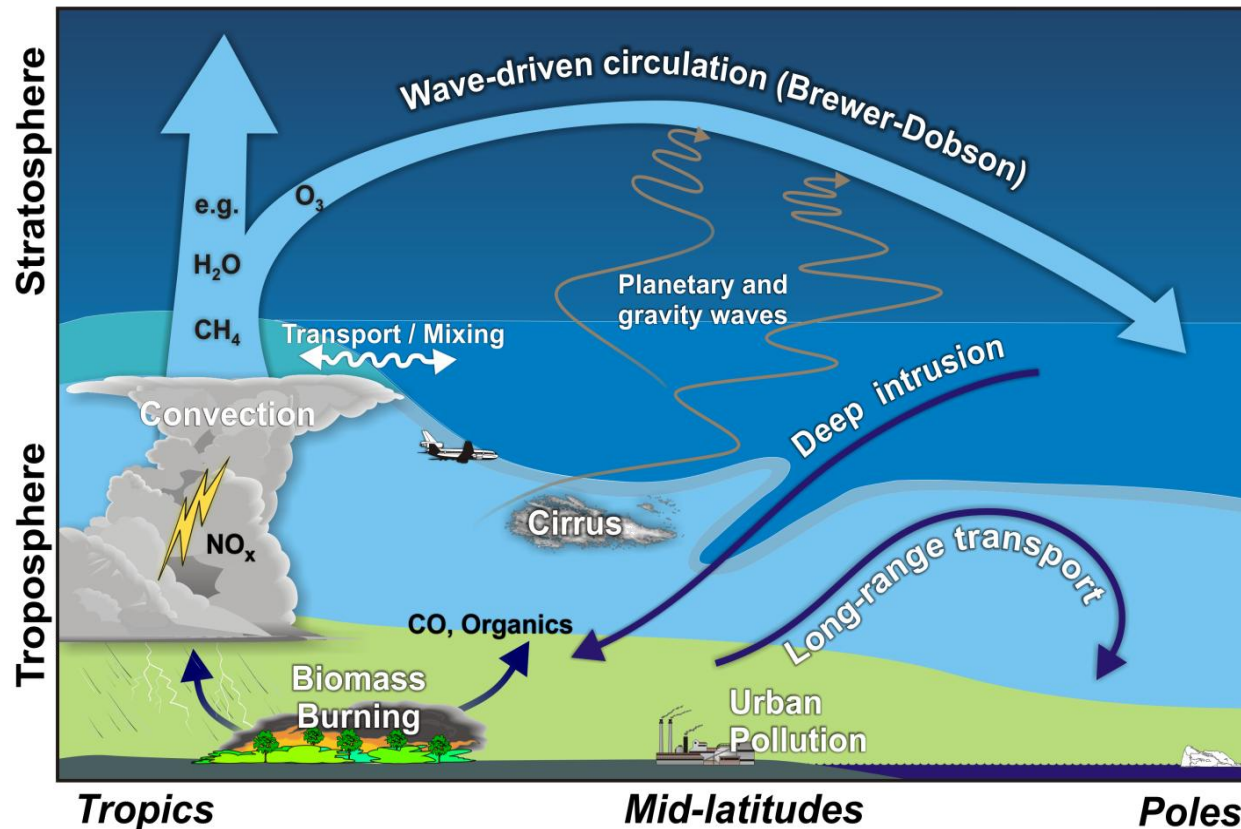
149 Climate Research

160 PhD Students:
Helmholtz Graduate school

Helmholtz
Interdisciplinary Doctoral
Training in Energy and
Climate

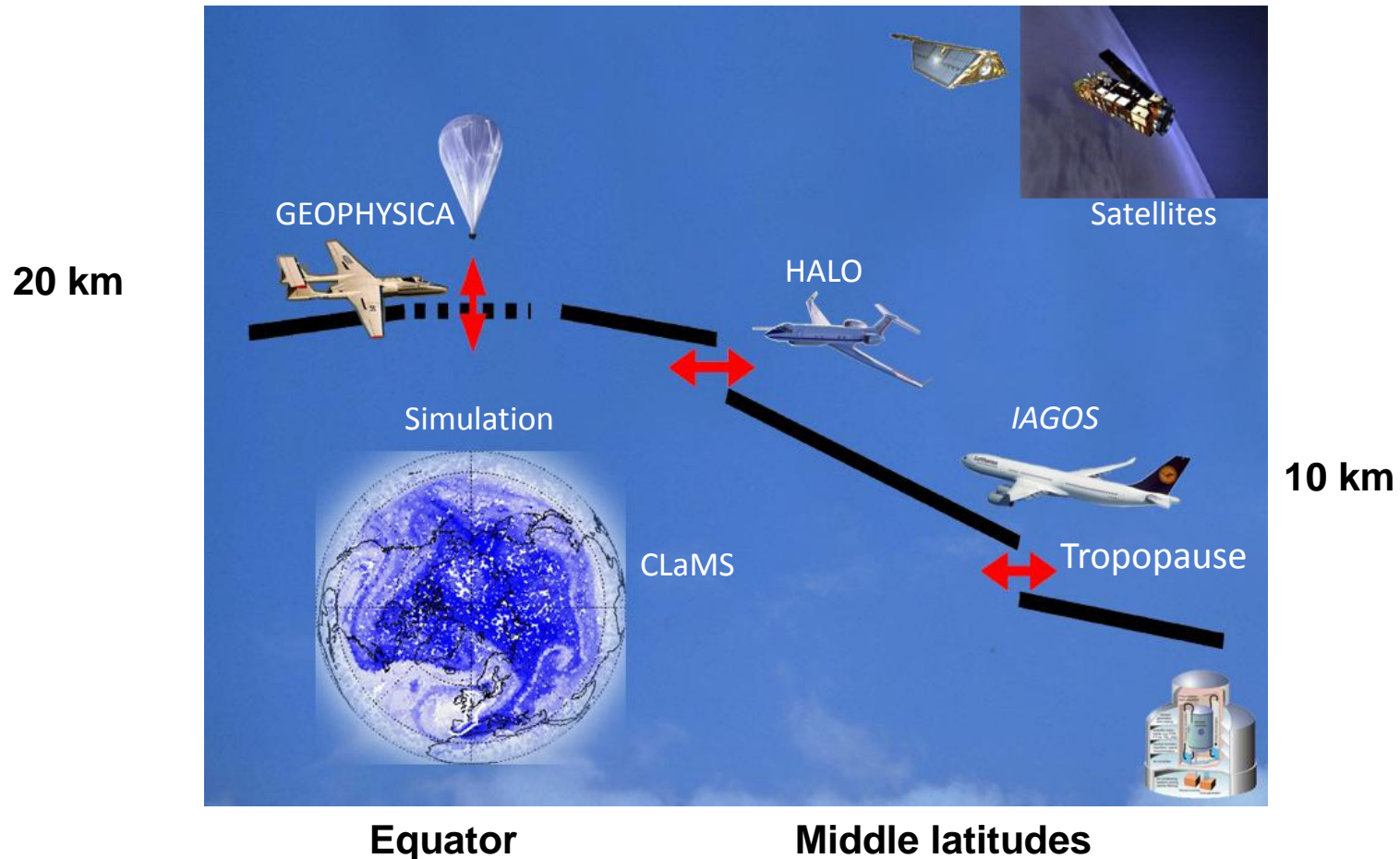
IEK-7 science overview

Role of the upper UTLS in climate

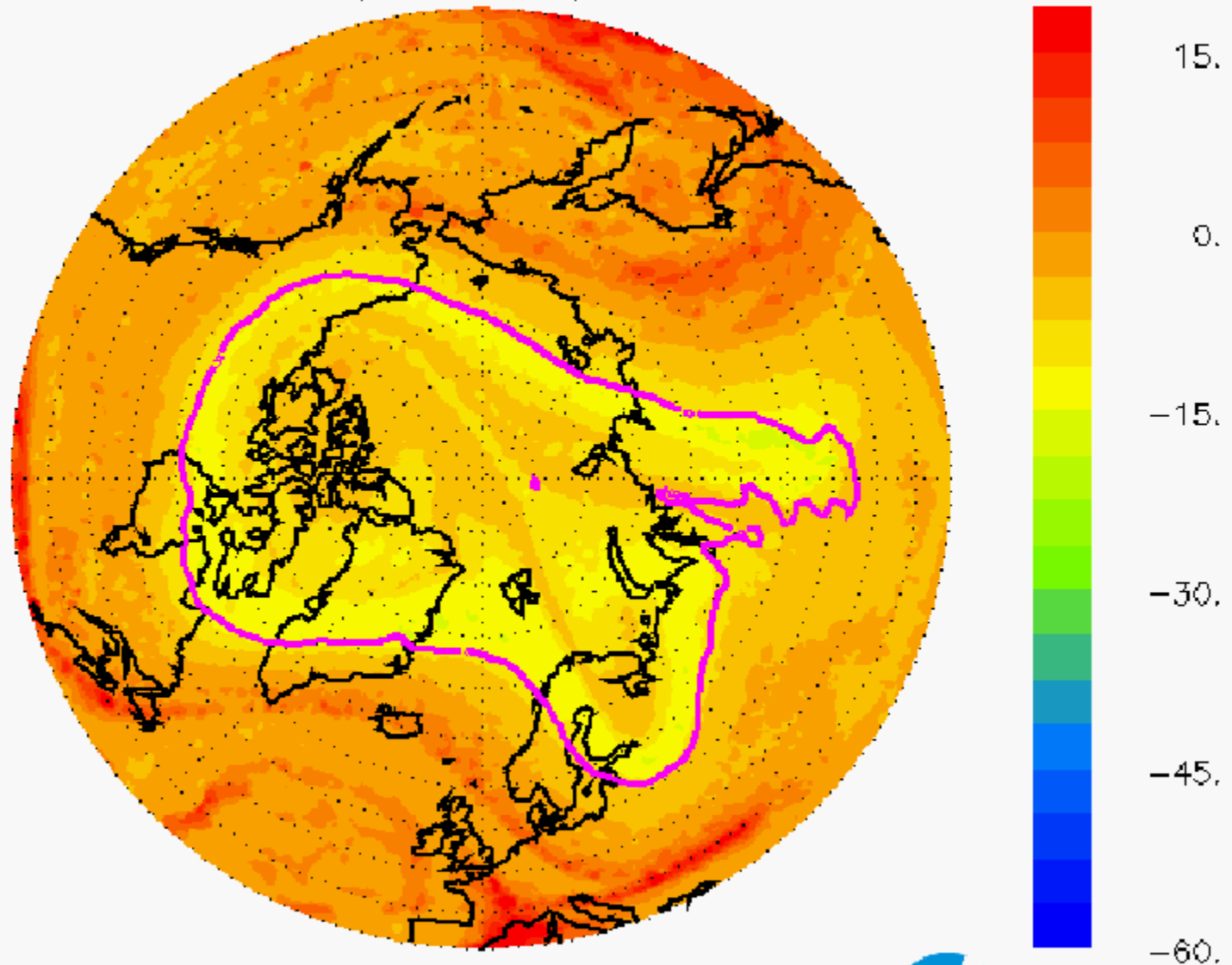


- Improved predictions of chemistry-climate models (CCMs) rely on a realistic representation of physical and chemical processes

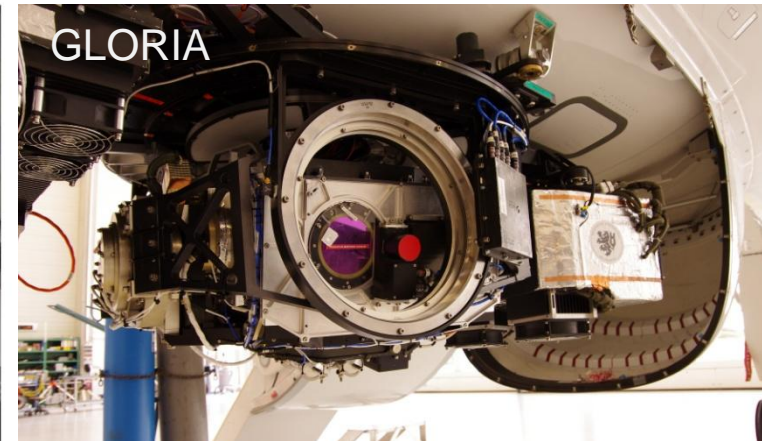
Synergetic use of observations, process-oriented simulations, and chemistry-climate models



Ozonverlust / 17.5km / 01.02.2005



Remote sensing and in-situ measurements onboard HALO



- Water vapour and clouds
- Limb imaging

Remote sensing and in-situ measurements on M55-Geophysica



- Water vapour and clouds
- Halogen radicals, sulfur compounds
- Infra-red limb sounding



Development of limb imaging technique (in coop with Karlsruhe Institute for Technology)

Heritage

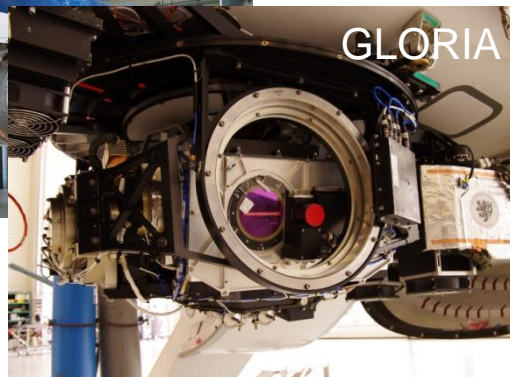


1994, 1997



CRISTA-NF

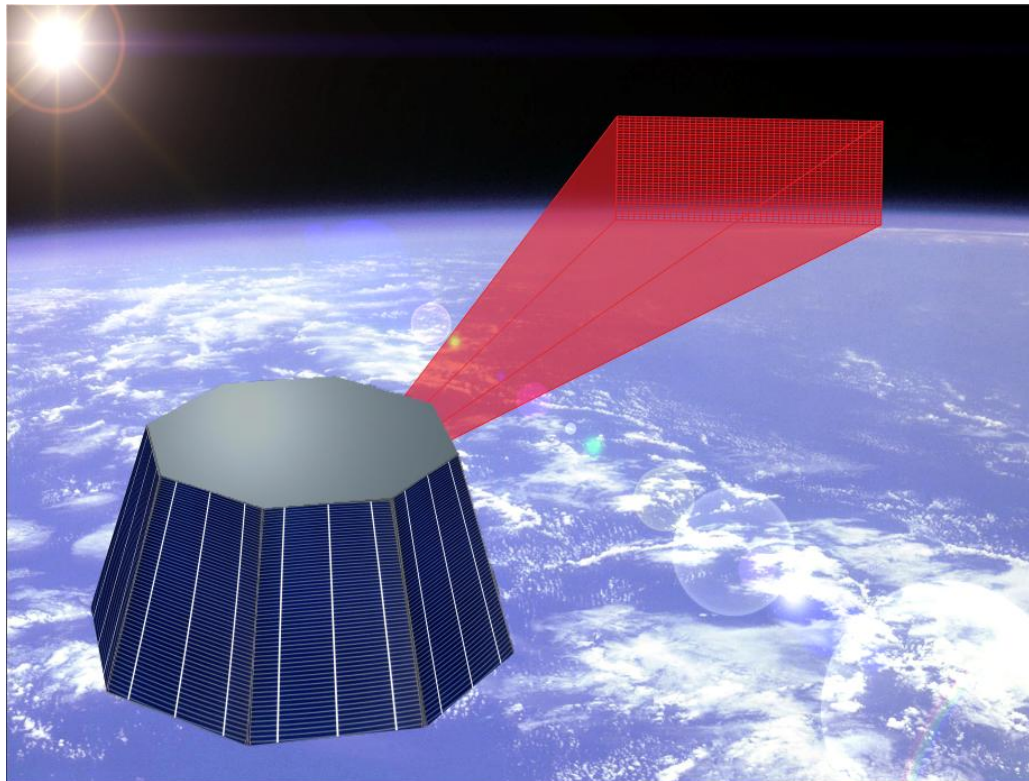
2005 - 2010



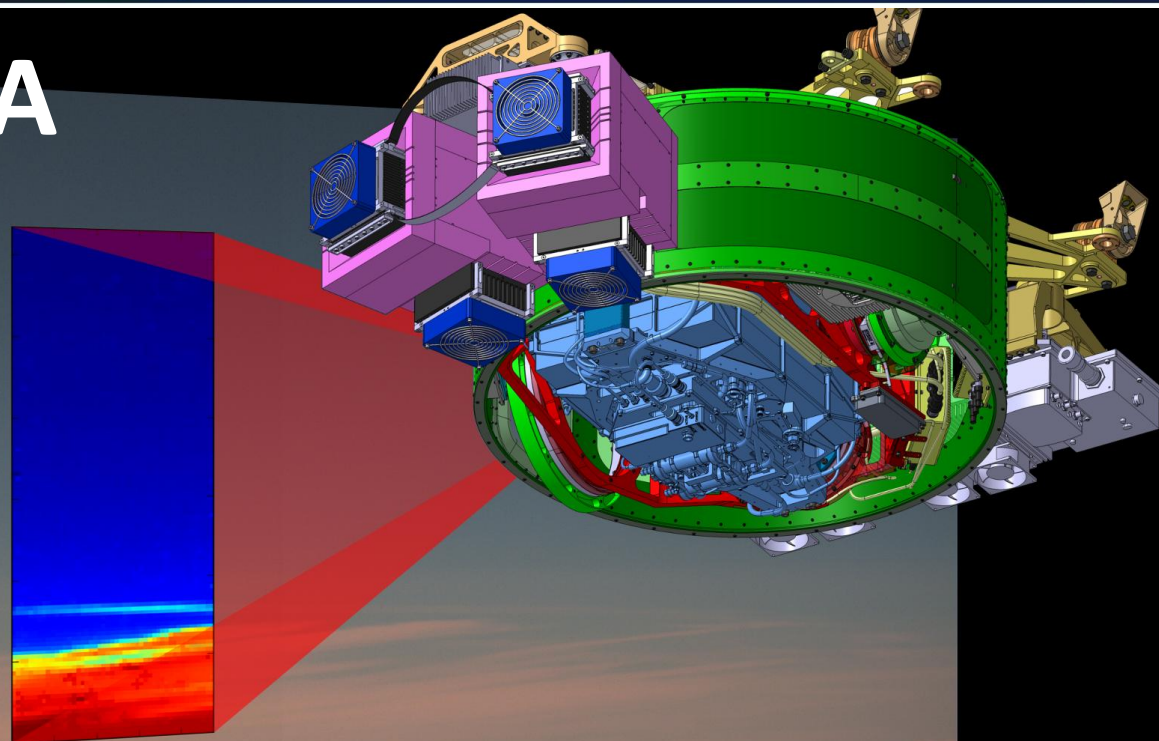
GLORIA

2012 – tbd
IEK-7, KIT, BU Wuppertal

Vision – Limb imaging from space



GLORIA

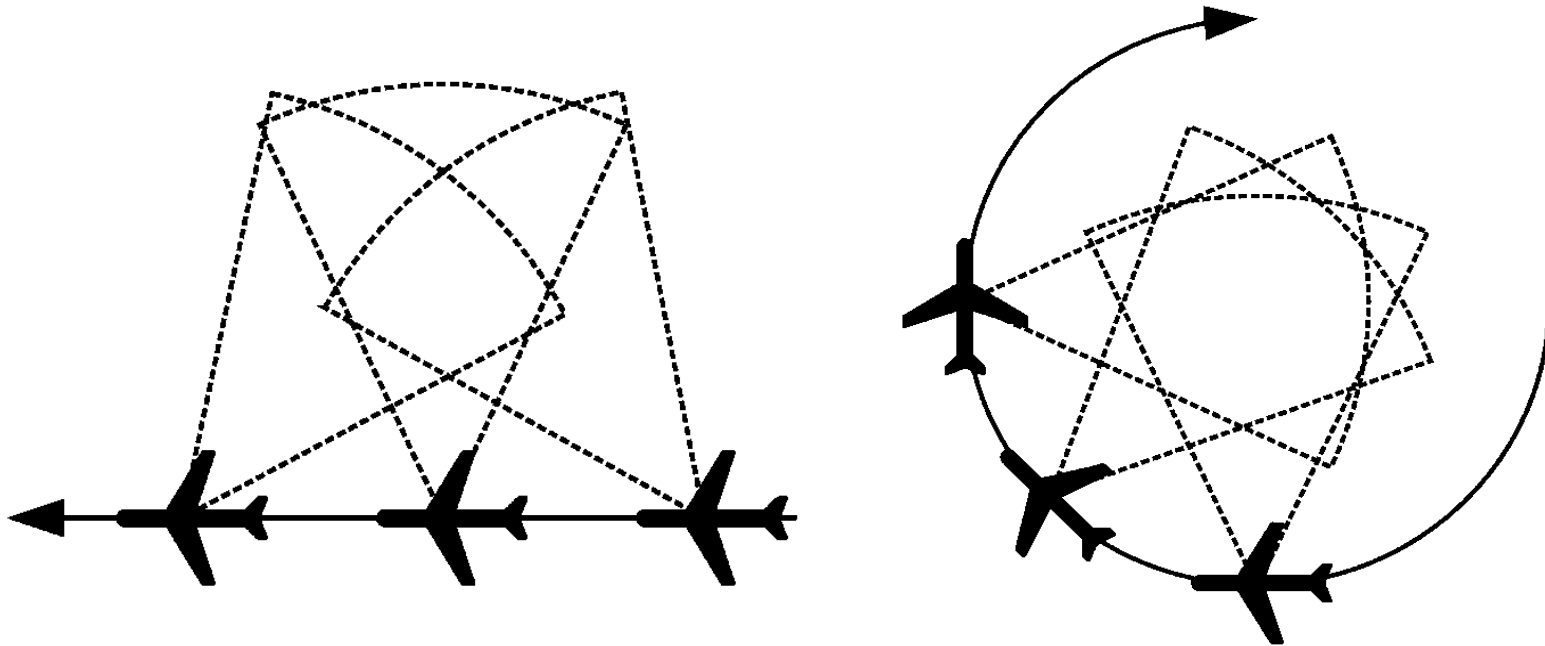


- Joint development of FZJ and KIT
- Combination of FTS and 2D IR detector array
- 10.000 simultaneous limb views from flight altitude to 5 km

Temperature, H₂O, HDO, O₃, CH₄, N₂O, CFC-11, CFC-12, HCFC-12, SF₆, HNO₃, N₂O₅, ClONO₂, HO₂NO₂, PAN, C₂H₆, H₂CO, NH₃, and cirrus cloud quantities

Tomographic observations

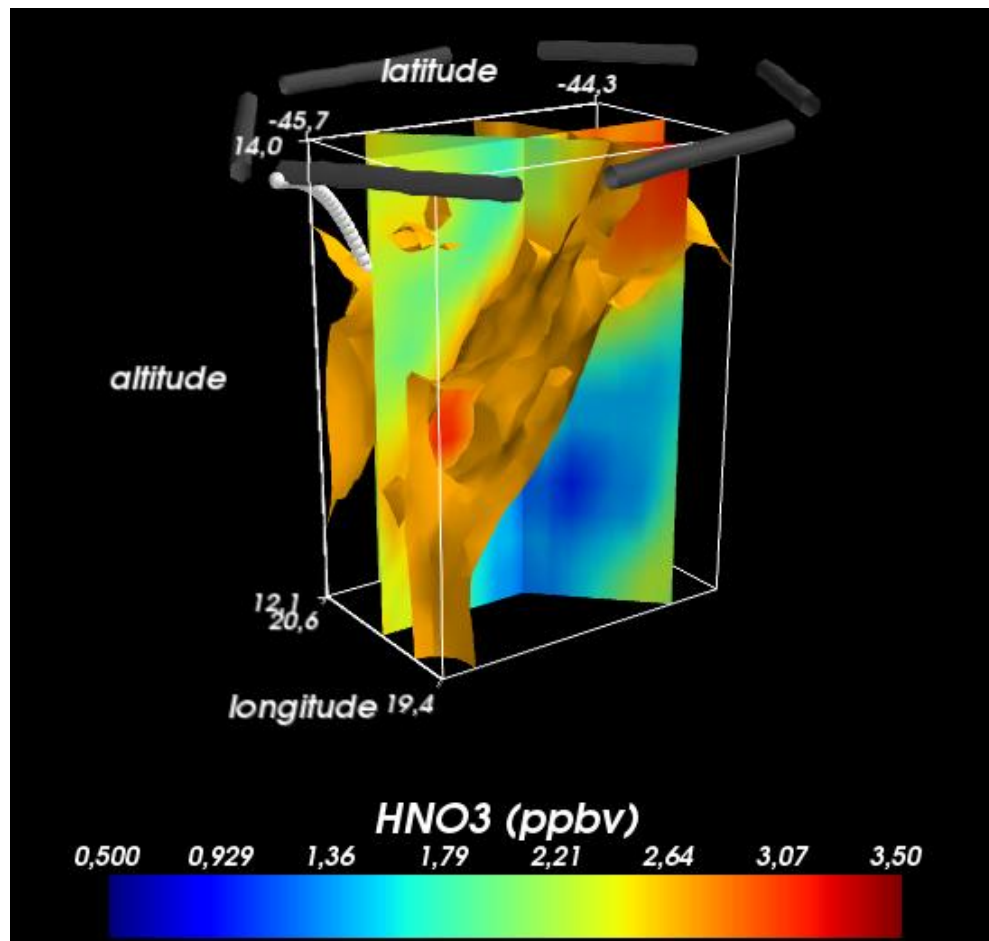
@reduced spectral resolution



Horizontal resolution: up to 20 km x 20 km

Vertical resolution: up to 300 m

First tomographic observations: HNO_3 filamentary structures



HALO
ESMVal