

Potential contribution of the Institute for Meteorology and Climate Research (KIT, Germany) to the YMC campaign

29 January 2015

INSTITUTE FOR METEOROLOGY AND CLIMATE RESEARCH, DEPARTMENT OF PHYSICS

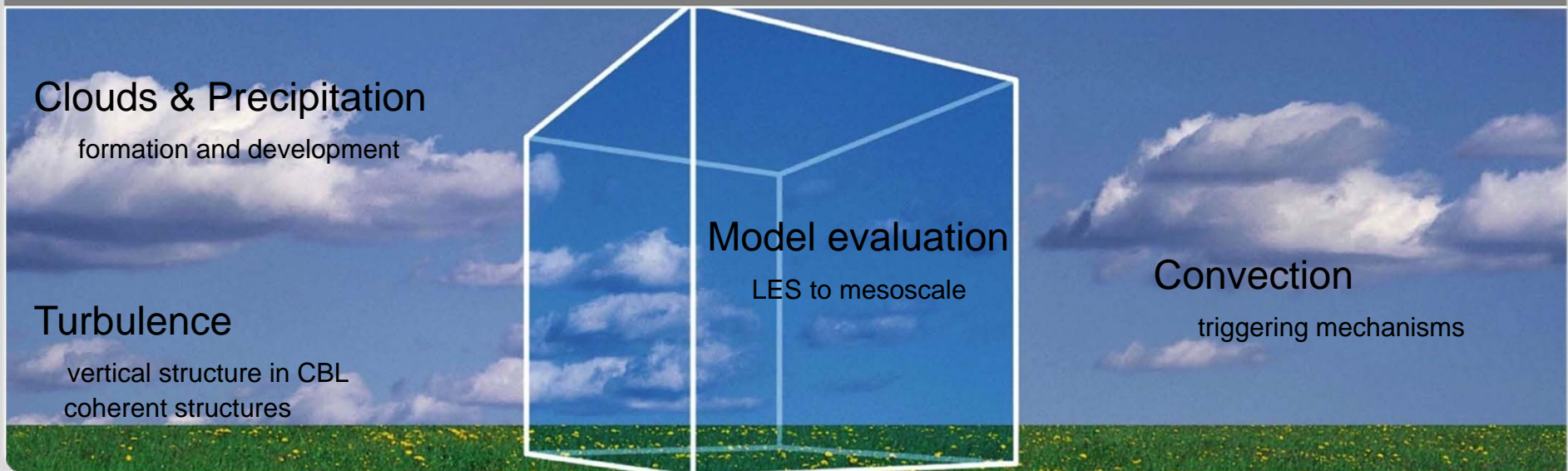
Andreas H. Fink and the KIT research team

KITcube

integrated atmospheric observation system

Norbert Kalthoff, Andreas Wieser

Institute for Meteorology and Climate Research (IMK-TRO)

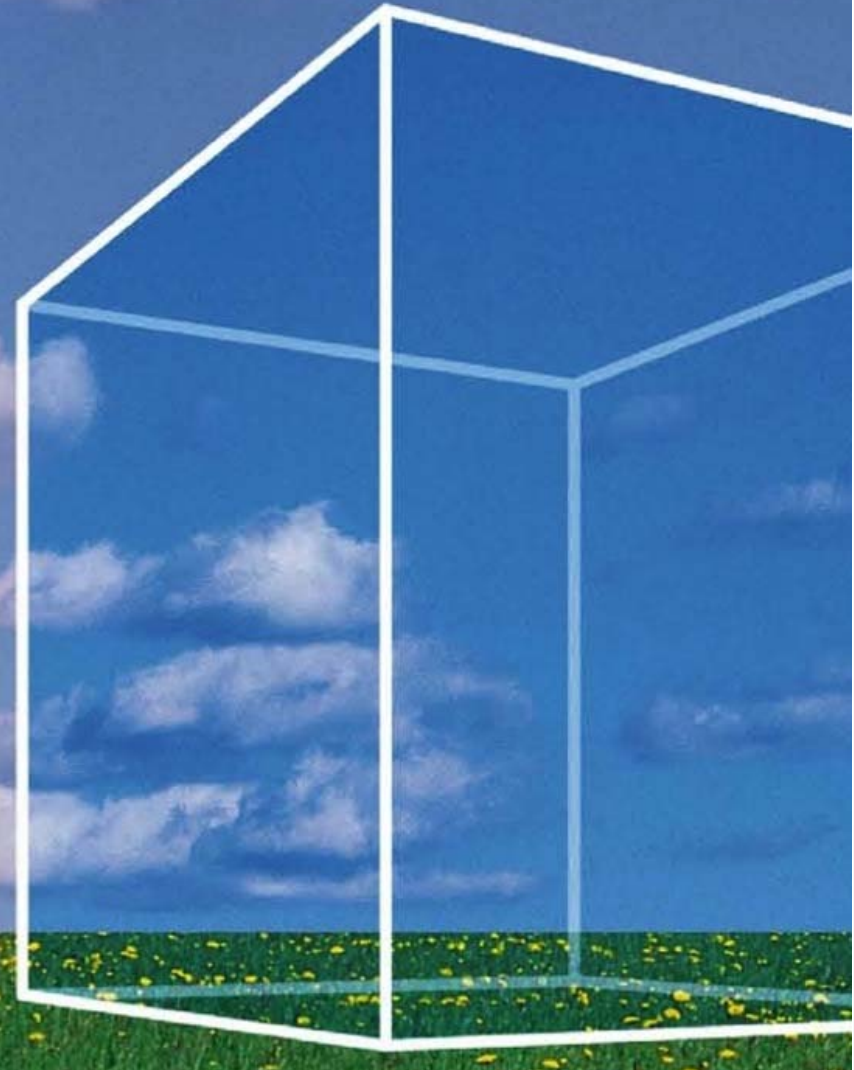


What is **KITcube** ?

Mobile integrated atmospheric observation system for most complete probing within a volume of $10 \times 10 \times 10 \text{ km}^3$

High resolution observations covering complete process chains

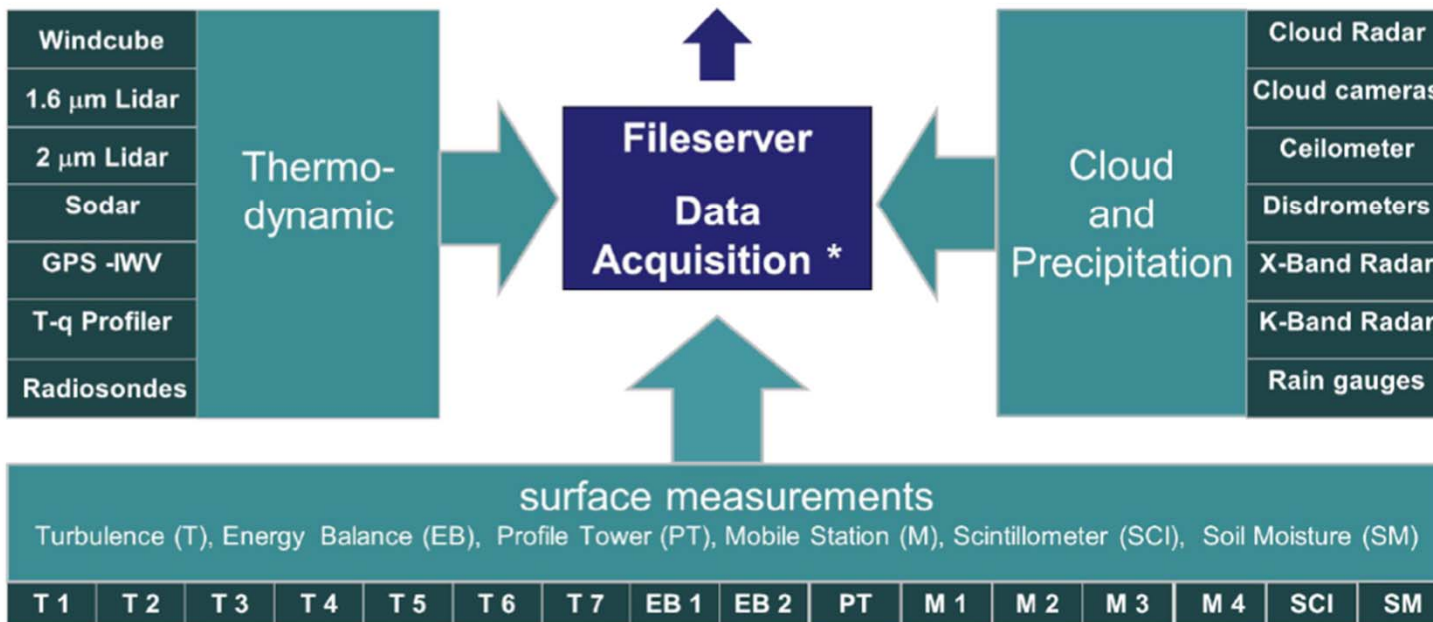
Intelligent instrument control for maximum synergy of complementary measurement techniques



KITcube Instruments & Data flow



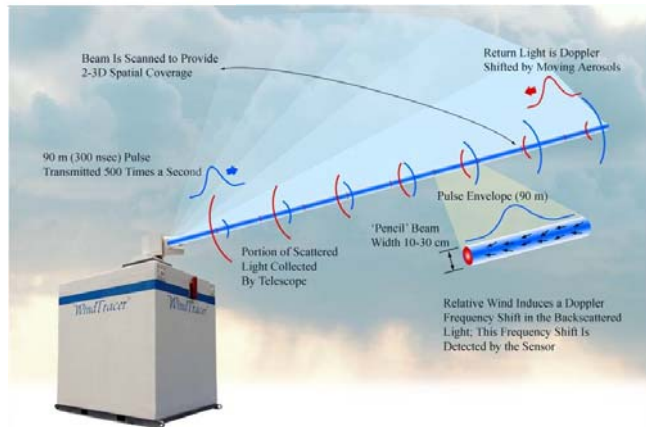
Database, Visualization + Datamanagement and Backup *



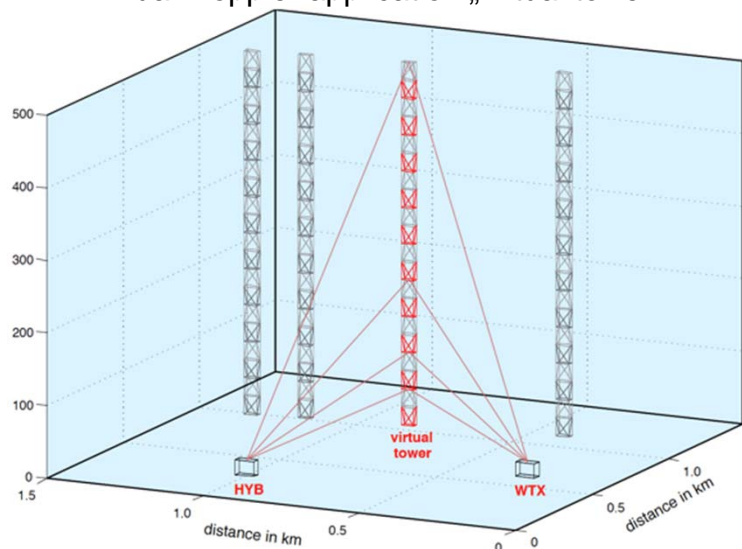
KITcube Deployment & Measurement site



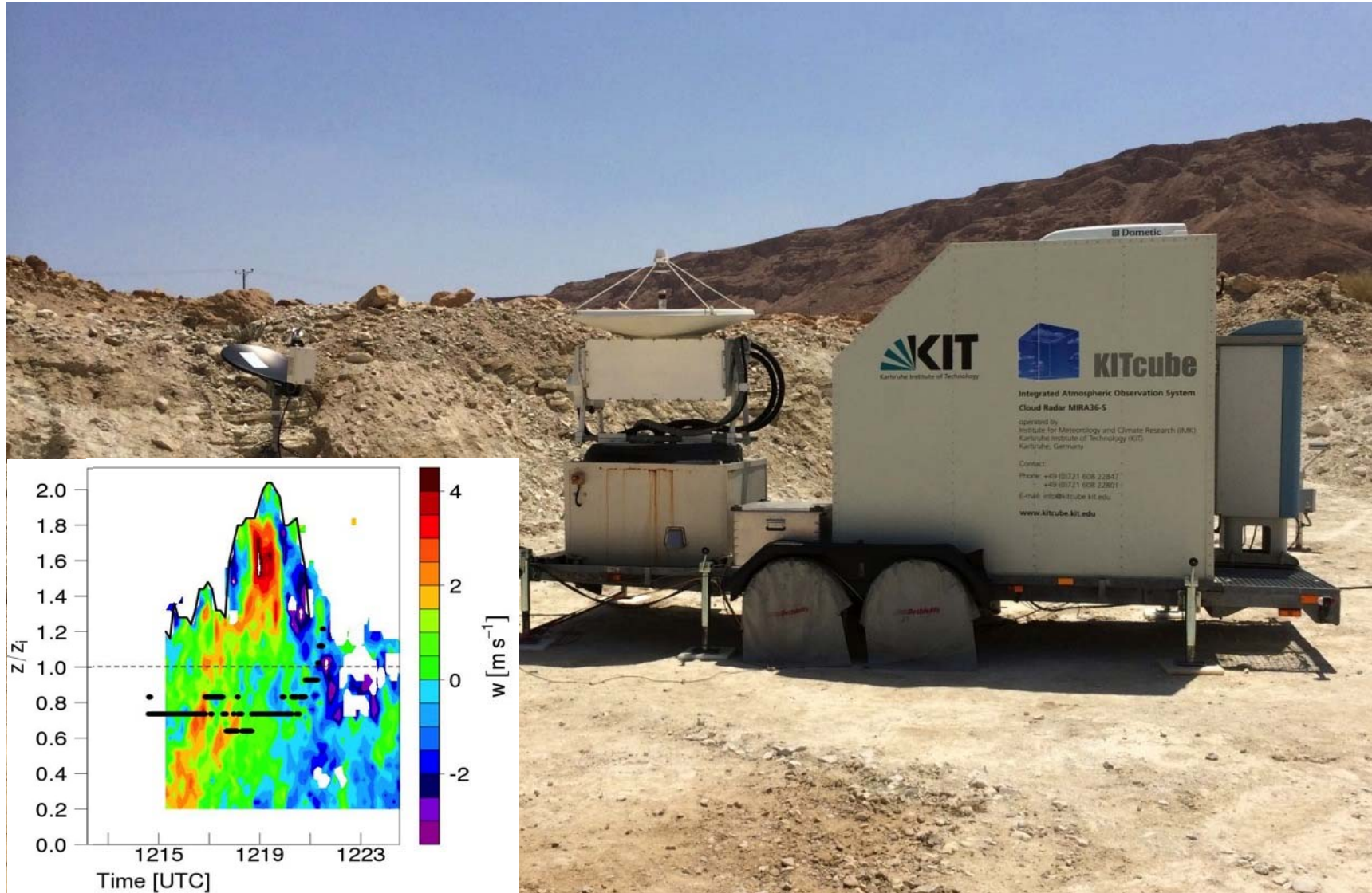
KITcube Doppler Lidar



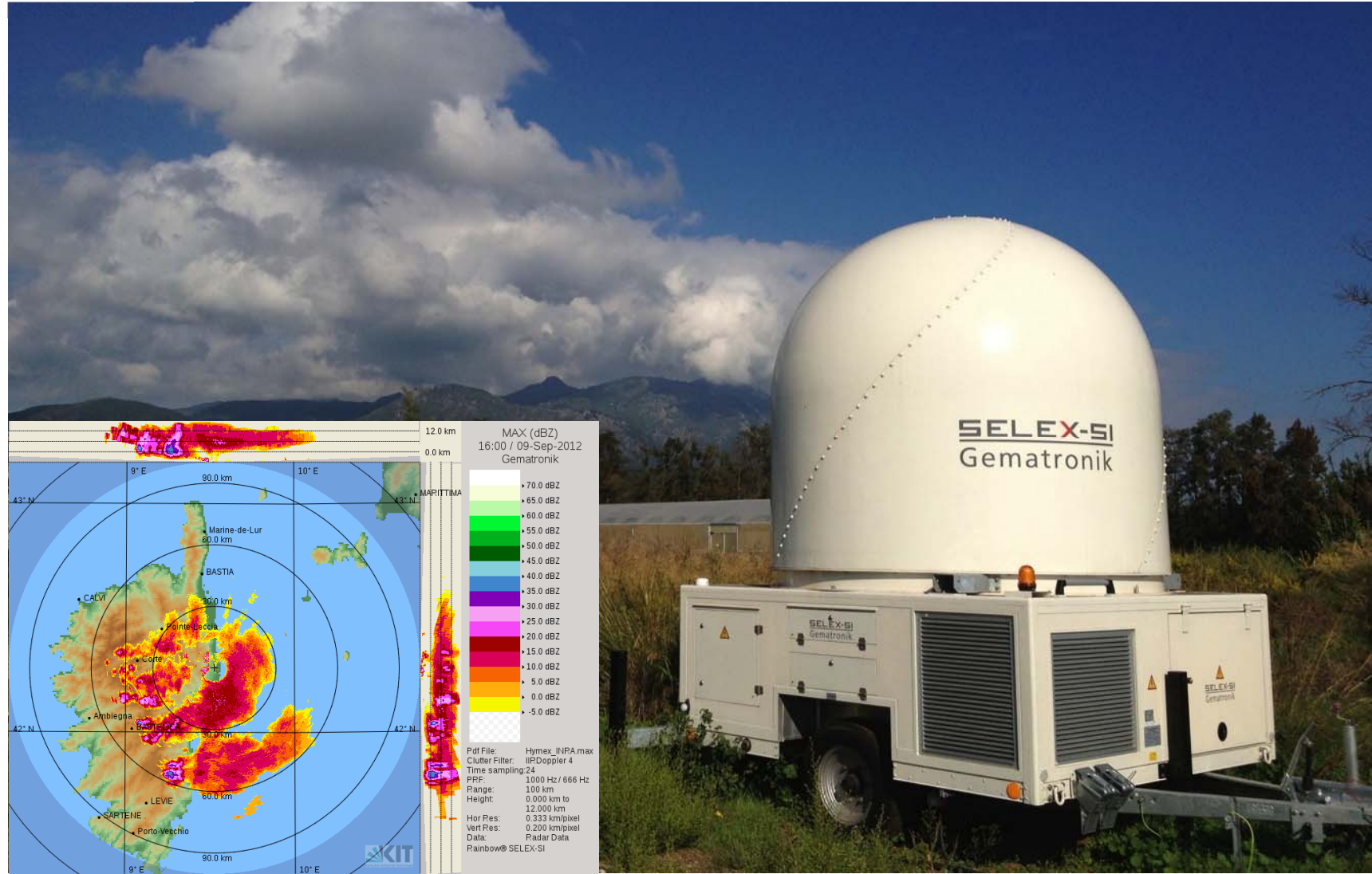
Dual-Doppler application „virtual tower“



KITcube Cloud Radar Metek Mira 36S



KITcube X-Band Radar Selex Meteor 50DX



Scientific Interest of KIT in YMC

- **Diurnal cycle of convection (N. Kalthoff, P. Knippertz, A. H. Fink)**
 - Focus on land-sea breeze /island convection and interaction with synoptic and MJO/CCEW dynamics
 - Using data of KITcube
 - diagnostic studies
 - Using high-resolution, convection and PBL-resolving modeling (ICON)

- **Cloud-Aerosol Interaction (C. Hoose, B. Vogel)**
 - Focus on CCN, IN, microphysics-dynamics interactions and semidirect effects
 - Using data of KITcube
 - Using regional and LES modeling (COSMO, COSMO-ART, ICON-ART)

- **Tropical-Tropopause Layer (TTL) dynamics/exchange(P. Braesicke)**
 - Stratosphere-troposphere exchange (with a focus on water vapor and ozone)
 - High-resolution modeling of exchange processes (ICON-ART)
 - Satellite data for model validation and quantification of exchange processes

Period, Location, Partners and Funding

- Malaysia (Sarawak on Borneo)
- Up to 3-month during winter monsoon period, e.g. DJF, preferably 2018/19
 - Reasons:
 - strong diurnal cycle
 - interaction with synoptic systems (e.g. cold surges, Borneo Vortex),
 - advection of aerosols from Asia
 - existing collaborations with Malaysia and Vietnam
- Potential partners
 - Prof. Dr. Tan Phan-van, Hanoi University of Sciences, Vietnam National University, Hanoi, Vietnam
 - Prof. Dr. Azizan Abu Samah, Dept. of Geography, University of Malaysia, Kuala Lumpur, Malaysia
 - Prof. Dr. Shigeo Yoden, Dept. of Geophysics, Kyoto University, Japan
- Funding Issues
 - Real challenge to fund deployment of KIT CUBE (> 500 k€)
 - Planned involvement with 4 fully-funded scientists
 - Contingency plan: Smaller funding from various sources for Ph.D. students