Updates:

1. Karisruhe Institute of Technology (KIT) – *Andreas Fink*
2. U of Note Dame (UND) – *Harindra Joseph Fernando*
3. U of Washington and U of Columbia – *Ren-Chieh Lien and Arnold Gordon*

Karlsruhe Institute of Technology

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

YMC workshop, Djakarta (Indonesia), November 24-26 2015

INSTITUTE FOR METEOROLOGY AND CLIMATE RESEARCH, DEPARTMENT OF PHYSICS

Andreas H. Fink and the KIT research team

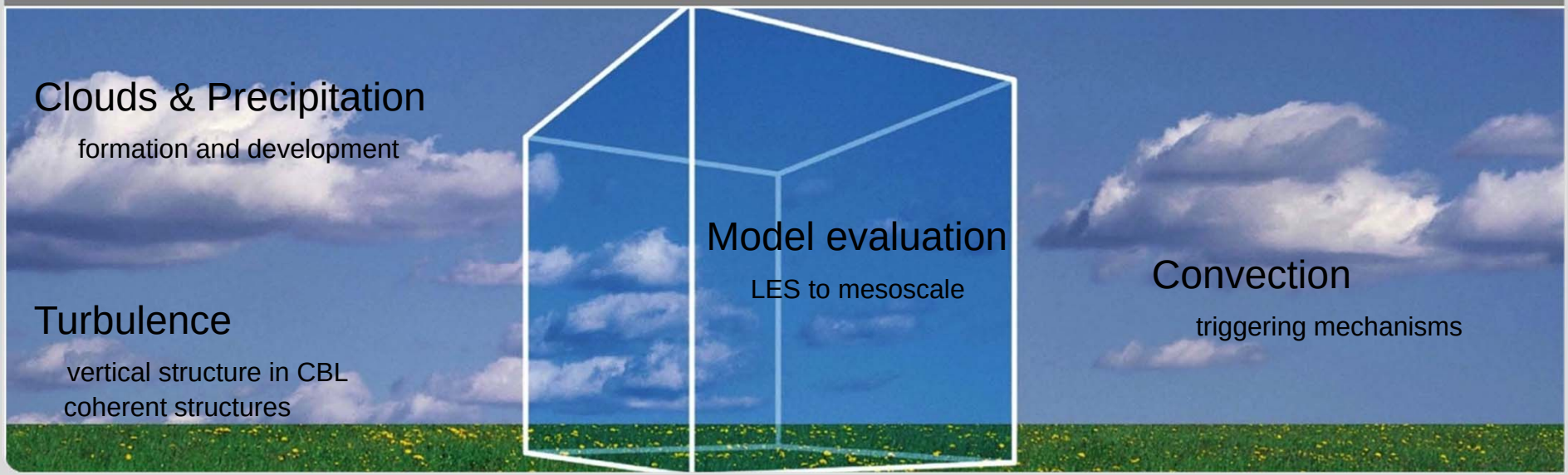
Karlsruhe Institute of Technology

KITcube

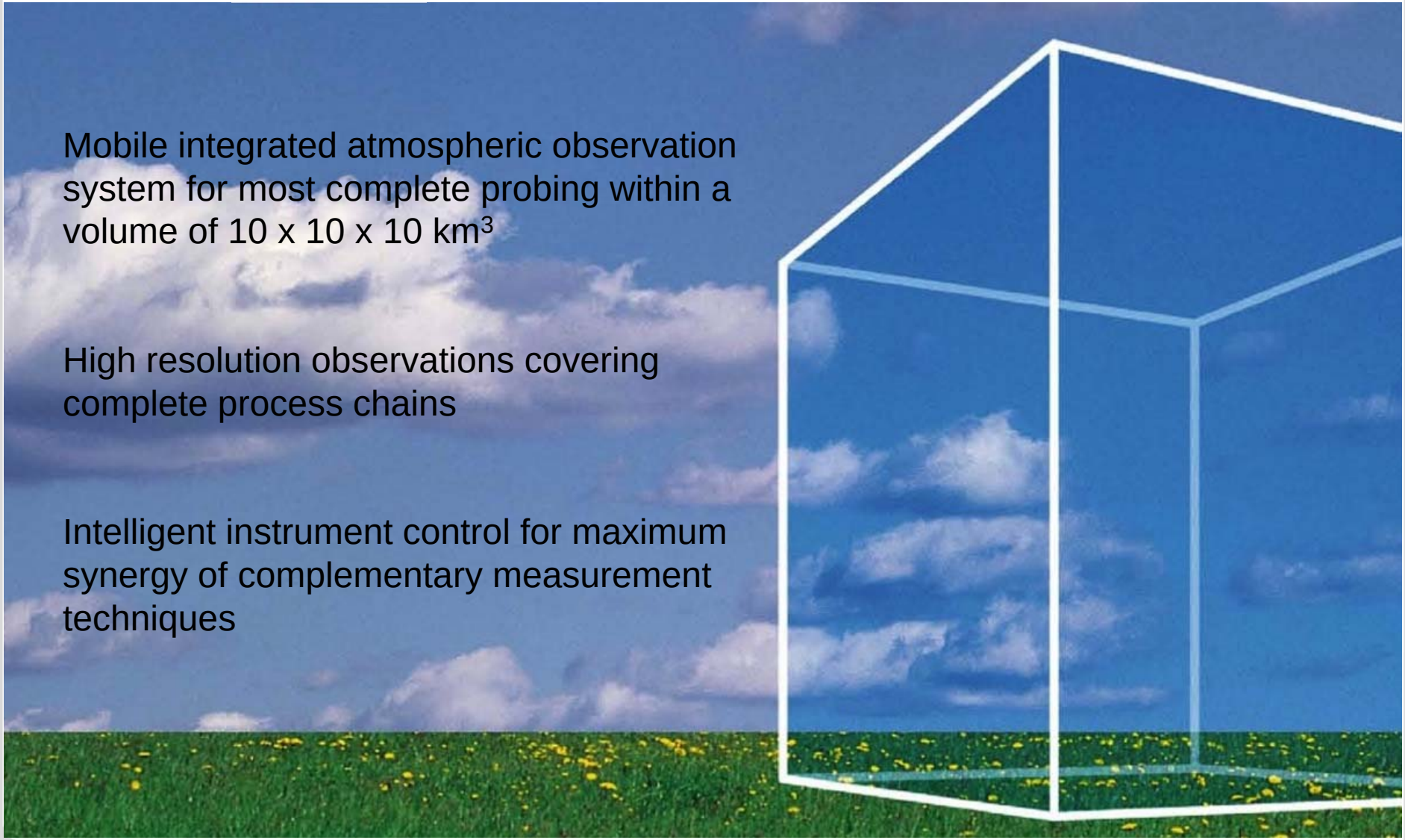
integrated atmospheric observation system

Norbert Kalthoff, Andreas Wieser

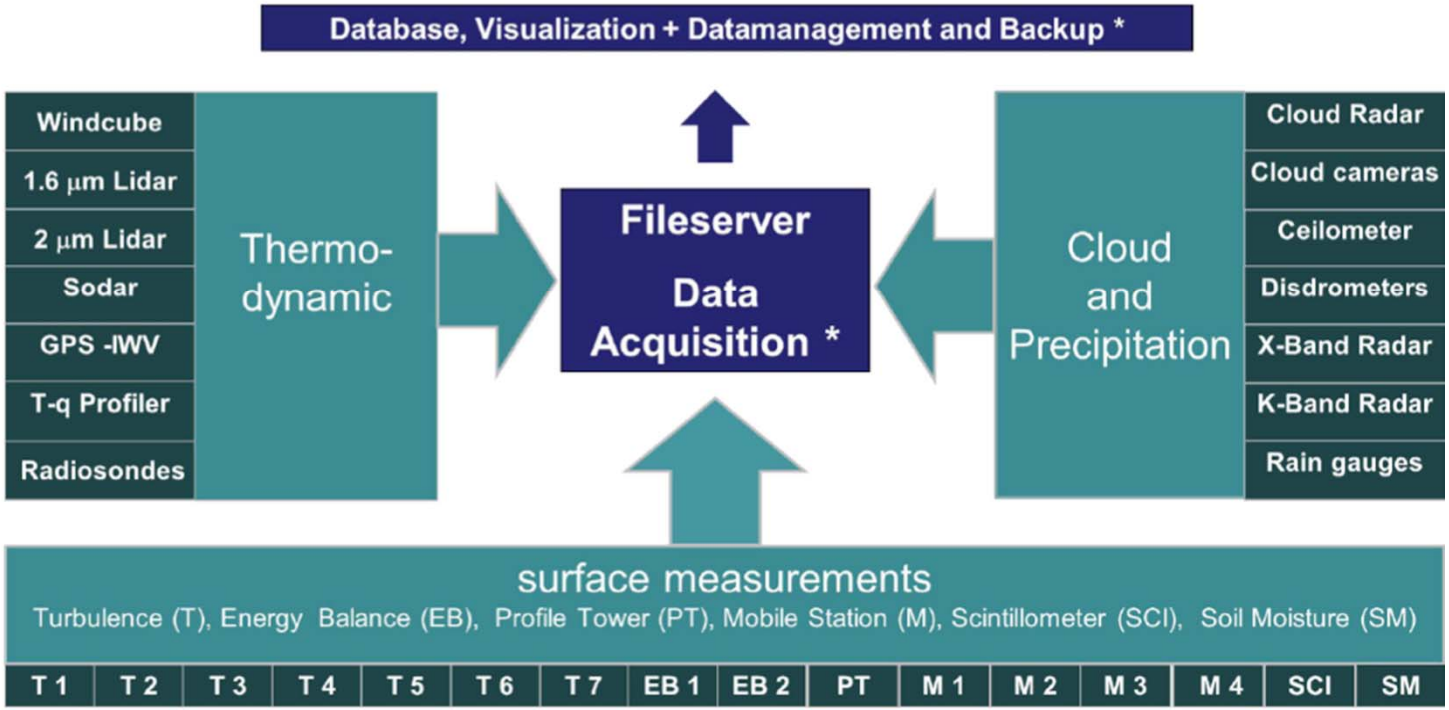
Institute for Meteorology and Climate Research (IMK-TRO)



What is KITcube ?

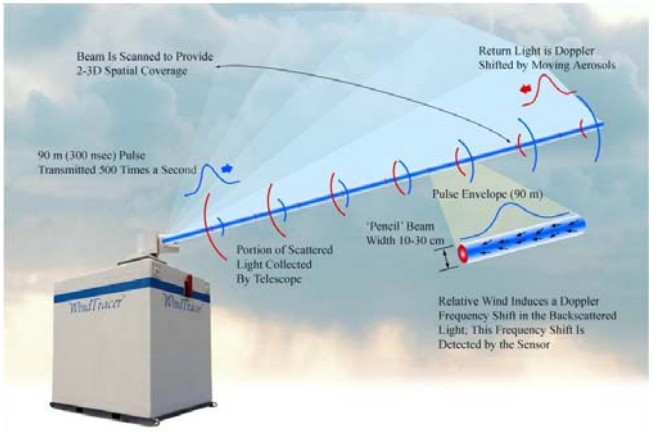


KITcube Instruments & Data flow

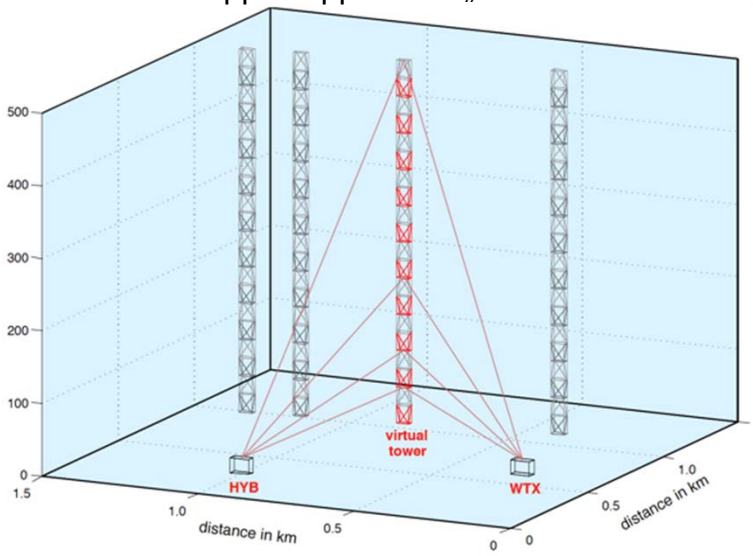


Deployment & Measurement site

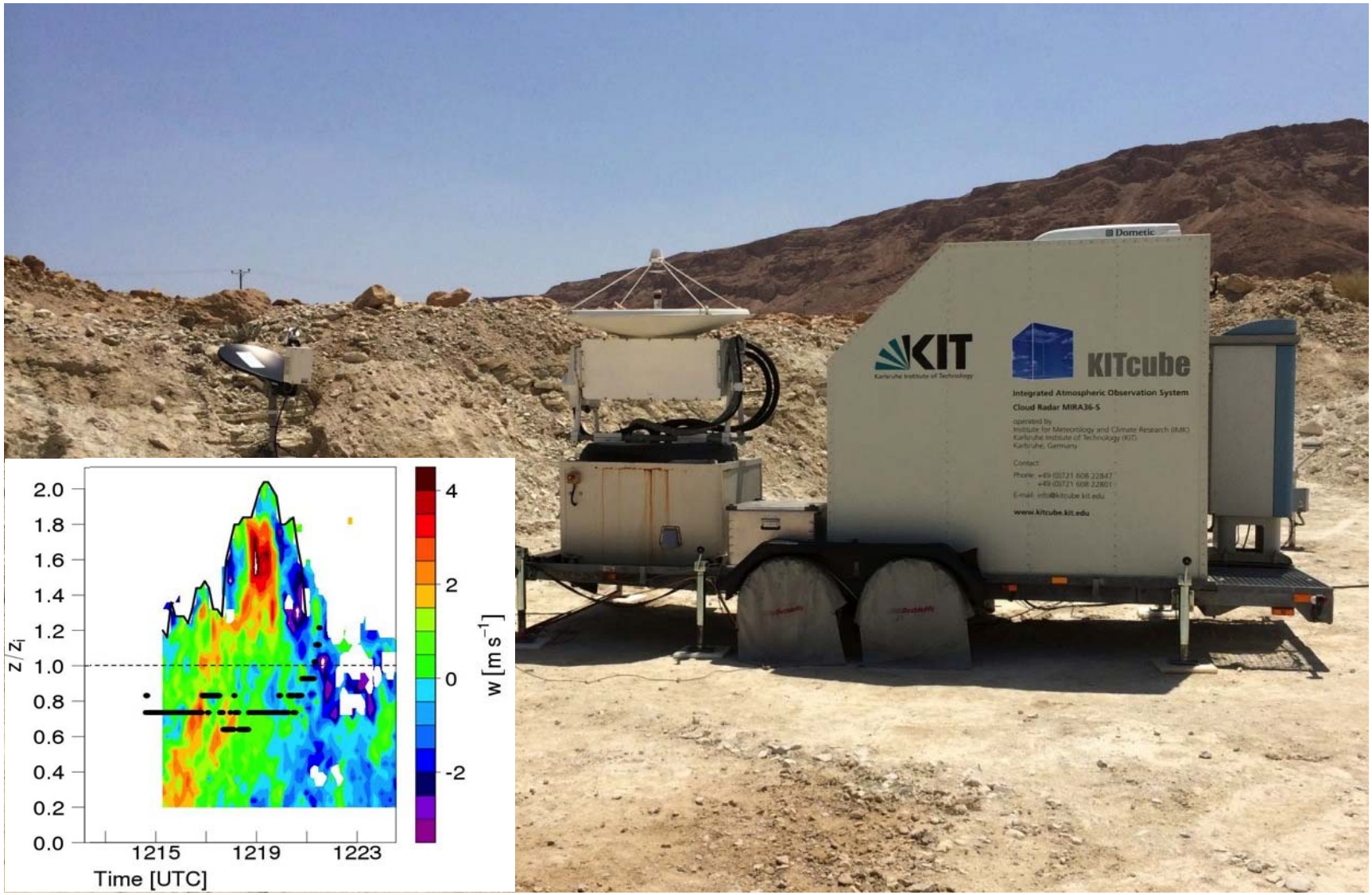
KITcube Doppler Lidar



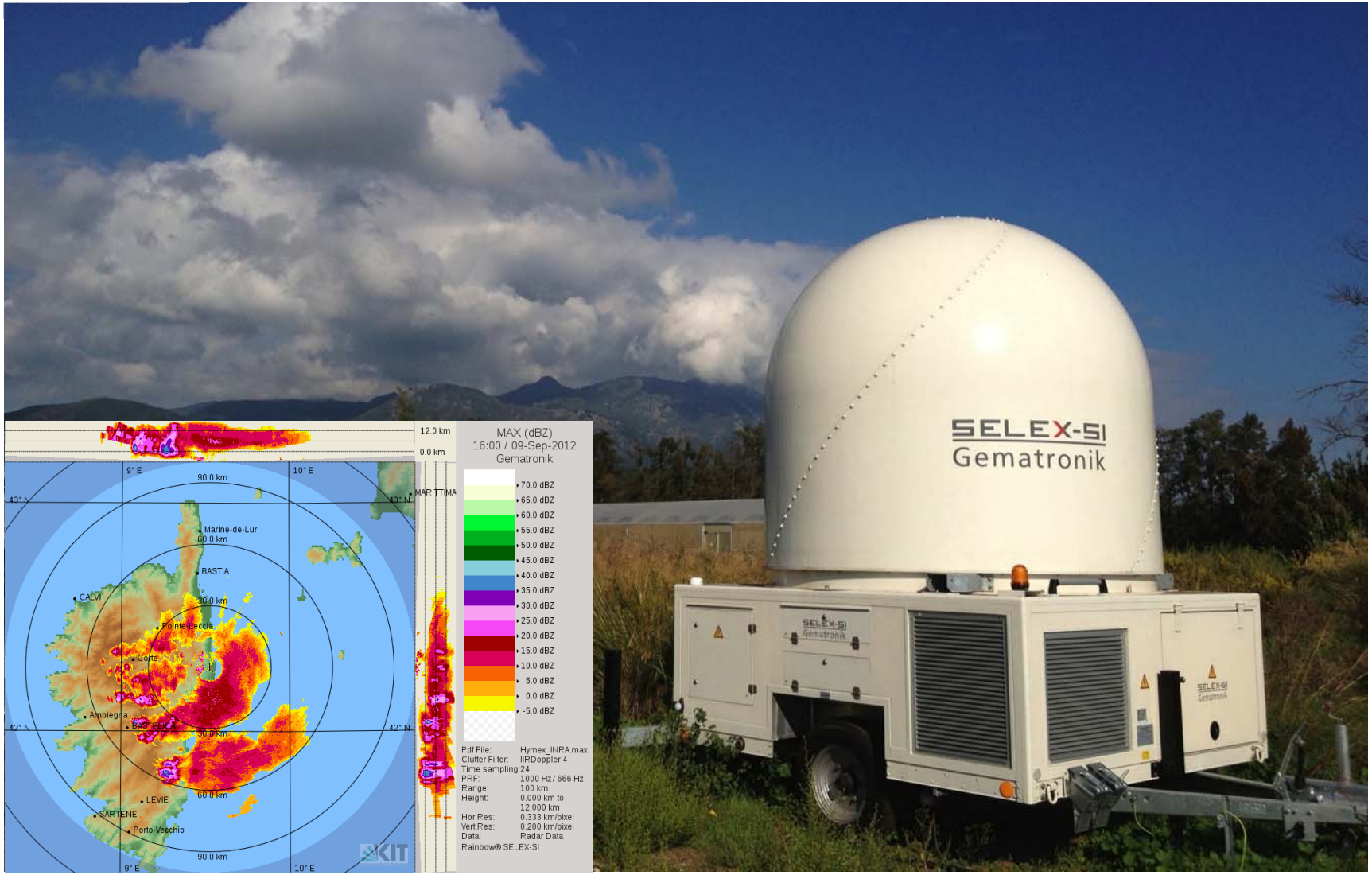
Dual-Doppler application „virtual tower“



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

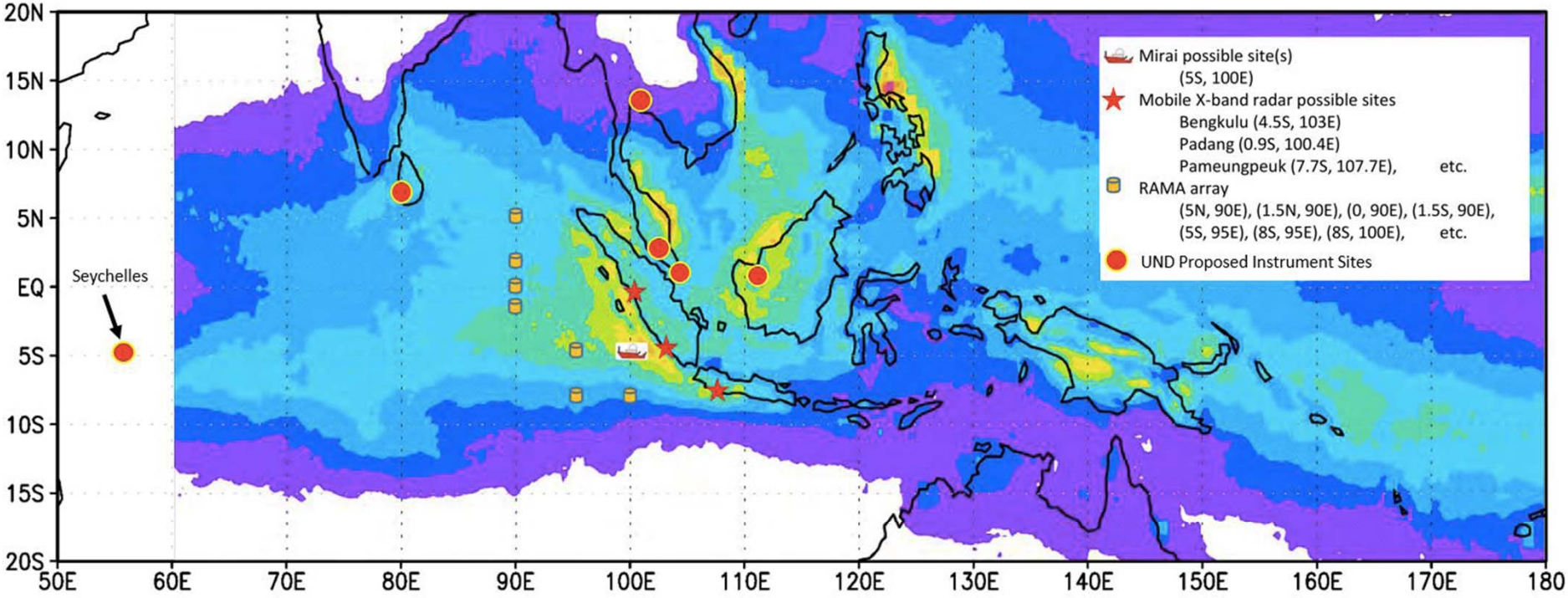
- Funding Issues

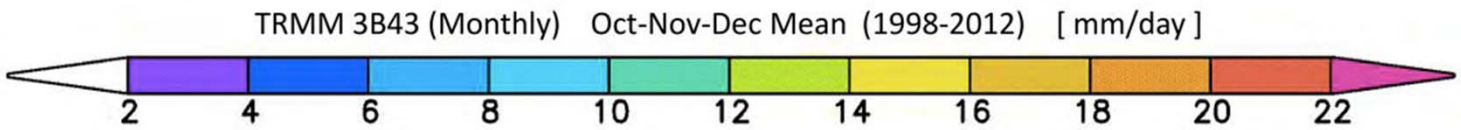
- Real challenge to fund deployment of KIT CUBE (> 500 k€)
- Planned involvement with 4 fully-funded scientists
- Contingency plan: Smaller funding from various sources for Ph.D. students

U. of Notre Dame Update – Harindra Joseph Fernando

InterMet radiosonde systems (2)
Sodar/Rass systems (2)
Doppler Lidars (4)
15-20 meter towers (4)
Sonic anemometers (15)

Microwave radiometer
Tethersonde
ceilometers (2)
LICORS (for water vapor fluxes)





SRI LANKA

13m Flux tower

3D sonic anemometers
***(13 m, 8m, 6m, 4m, 2m)* – [20Hz]**

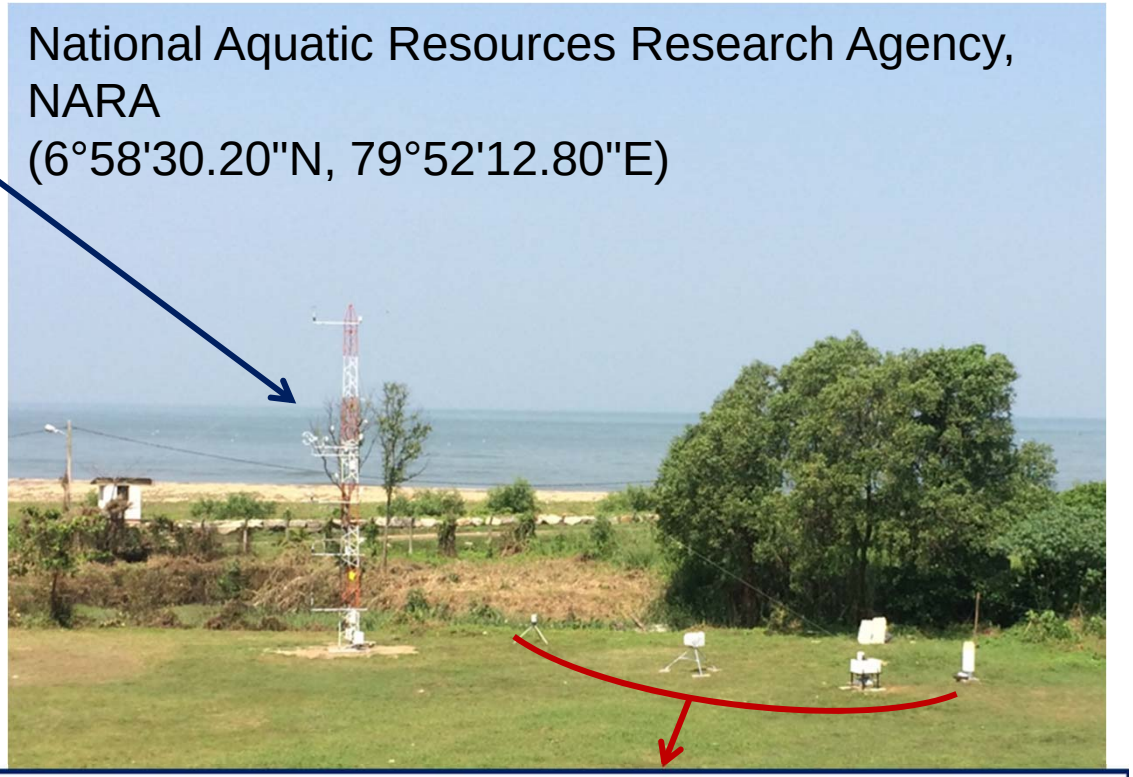
Open Path CO_2/H_2O Analyzer (LI-500A)
(8m) – [20Hz]

Solar net radiometer
(8m) – [1 Hz]

Temperature and RH probes
***(13 m, 8m, 6m, 4m)* – [1Hz]**

Thermocouples

National Aquatic Resources Research Agency, NARA
(6°58'30.20"N, 79°52'12.80"E)



Rain Gage | **Sky Camera** | **MW Radiometer** | **LiDAR** | **Ceilometer**

SINGAPORE

(1°17'57.13"N,103°46'16.50"E)
NUS – roof of E5 building (40m AGL)

10m Flux tower (UND)

3D sonic anemometers *(10 m, 5m)* – [20Hz]

Temperature and RH probes *(10 m, 5m)* – [1Hz]

Thermocouple (*2m)* – [1Hz]

X-MET (ONR)

Visibility, Wind, T/RH, Press,rain & hail (2m) –[updated each hour on http://cordc.ucsd.edu/projects/xmet/]

UND Observational Targets:

1. ISO-diurnal cycle interaction in boreal summer and winter;
2. Role of the PBL in ISO through convectively and shear driven vertical transport
3. Role of land surface fluxes in ISO propagation

U. of Washington and U. of Columbia Update - Ren-Chieh Lien, Arnold Gordon

1. ONR funded pilot study on upper ocean mixing in the Indonesian Seas
2. EMAPEX microstructure (temperature, salinity, velocity, and turbulence) floats (2)
3. 200 m most of the time; 1000 m occasionally
4. To deploy in spring of 2016
5. Foreign Research Permit was granted by RISTEK