From MeteoMet to MeteoMet2

…and more

Andrea Merlone

Presented by Tom Gardiner

WP1 Upper air measurements: sensors and techniques

WP2 Novel methods, instruments and measurements

WP3 Traceable measurement and protocols for land observations

WP4 Assessment of the historical temperature data, harmonisation

In April 2013 the second international comparison of airborne hygrometers AquaVIT2 took place at the cloud simulation chamber AIDA at KIT Karlsruhe together with the Institute for Meteorology and Climate Research – Atmospheric Aerosol Research (IMK-AAF) of the KIT.

This inter-comparison offered for the first time the possibility to trace back the calibration devices and the hygrometers of the participants to the international humidity scale by means of a traceable calibrated frost point hygrometer and a commercial two-pressure generator offered by PTB at AIDA chamber. 12 research groups from 11 institutes from all over the world derived benefit from this possibility .

The EDIE* chambers.

Transportable devices for the calibration of temperature, humidity and pressure sensors and the evaluation of the mutual influences of the parameters

*Earth Dynamics Investigations Experiment

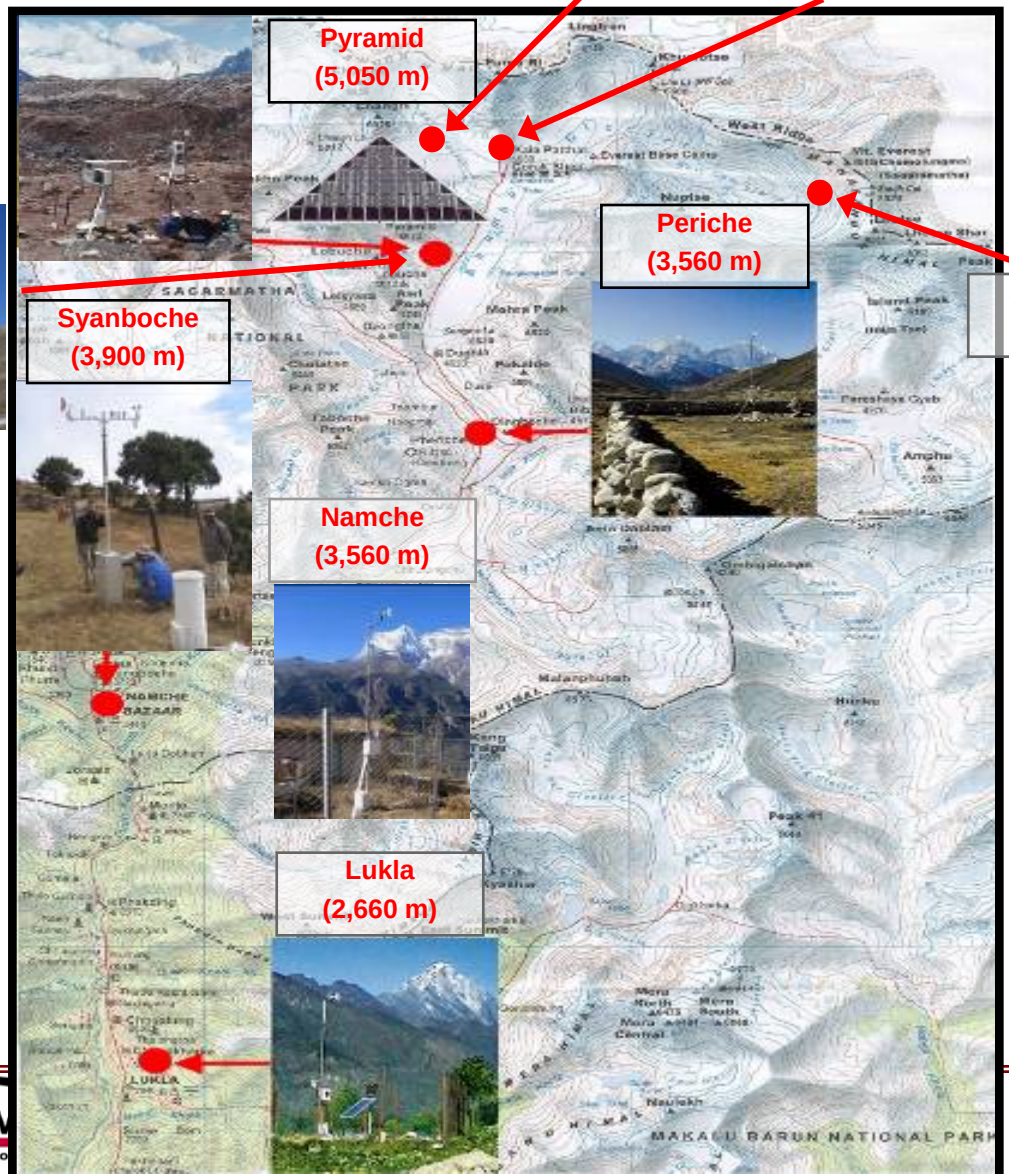
EvK2CNR

SHARE
Stations at High Altitude for Research on the Environment

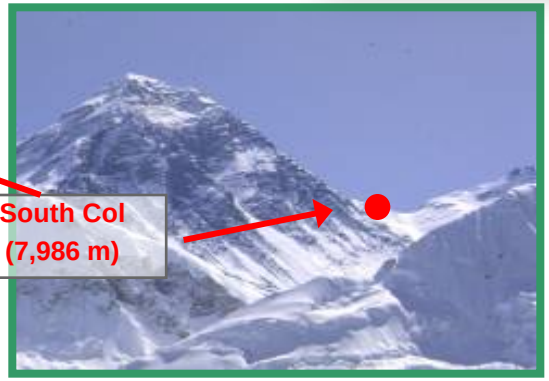
METEOMET
Metrology for Meteorology

Changri Nup
(5,750 m)

Kala Patthar
(5,550 m)



NCOP-P
(5,079 m)



MeteoMet and SHARE project for the data traceability on the Kumbu valley and Everest Nepal side

METEOM
Metrology for Meteo

Andrea Merlone

- 14 Settembre Namche – Tengoboche (3900 m)
- 15 Settembre Tengboche – Pheriche (4200 m)
- 16 Settembre Pheriche – Piramide (5050 m

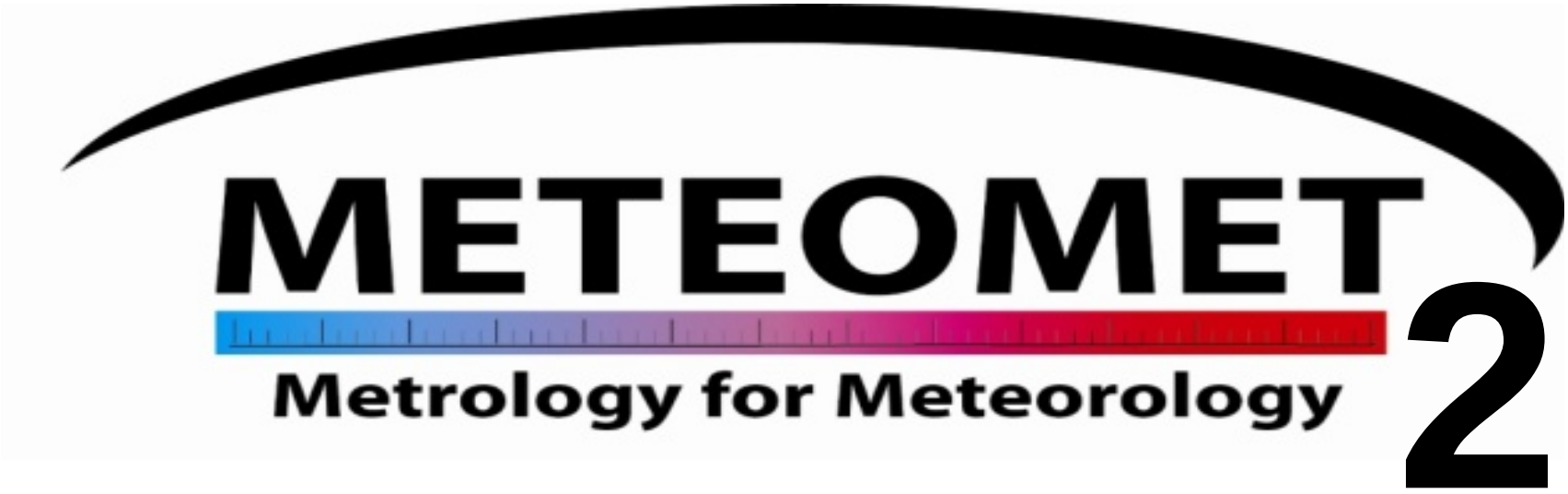
Kala Patthar
5550
Everest Base Camp
Mt. Everest
8850
Chola
6089
Kangchung La
Kangchung Peaks
6063
Nirekha Peak
Lobuche West
6145
Pyramid
Gokyo Peak
5483
Gokyo
4790
Lobuche East
6119
Lobuche
4910
Awi Peak
5245
SAGARMATHA
Dragnag
Nimaguregoth
Leisyasa
4850
Taboche Tsho
Dudh Pokhari
Taujun Tsho
Nakrok Tsho
Lhotse
8501
Island Peak
(Imja TSe)
6189
Attack Camp of
Island Peak
Lhangbo
Chokarma
Pareshaya Gyab
Cholatse
5440
Taboche
Peak
Machhermo
4470
Phuletate
5597
Lhabarma
4330
Syojap
Gyele
Samsa Ogma
Orsho
Shomare
Kohanar
Tenga
Phorte
3810
Pangboche
3930
Tengboche
3860
Chhulungche
Mingbo
Mingbo La
5845
Ama Dablam
6856
6340
Ombigaichan
Panch
Pokhari
Hunku
Pokhari
Hunku
6119
Amphu
5663
Thamo
3480
Khunde
3840
Khumjung
3780
Sanasa
Kenjoma
Syangboche
3720
Phurte
3390
NAMCHE
BAZAR
3440
Mong
Selawa
Phunki
Tenga
3250

A similar mission is planned during June 2014 at Ny Alesund.

An EDIE chamber will be shipped from INRiM to Ny Alesund. Three INRiM operators will reach the polar base and perform the calibration of instruments operating there.

Air temperature and pressure sensors of the GRUAN site operated by the German Alfred Wegener Institute for Polar and Marine Research (AWI) will be calibrated. The chamber will remain in Ny alesund for one month approximately.

This will prepare also the basis to study the feasibility of a laboratory for metrology in Ny alesund.



Metrology for Essential Climate Variables

WP1 AIR. (GRUAN-oriented activities)

- **Improving the representativeness of radiosonde calibrations to actual measurement conditions (MIKES,** INRiM**)**
- **Enhancement factor up to stratospheric range (CETIAT)**
- **Requirements for airborne traceability of humidity measurements (PTB)**
- **Metrology for fast changing quantities in upper air (NPL)**

WP2 water

- **Quantities of influence on deep-sea sensors (VSL, CNAM, SHOM)**
- **Thermodynamic characterization of oceanographic reference thermometers (CNAM, SHOM)**
- **Characterisation of deep-sea thermometers (VSL, CNAM)**
- **Buoys and fibre optics (CEM, CSIC, INRiM, REG-UPC)**

WP3 Land

- **Metrological requirements for traceable measurements of soil moisture (NPL)**
- **Air Temperature sensors characteristics (CEM, CMI, DTI, INRiM, SMD)**
- **Comparison protocols (UL, CEM, INRiM)**
- **Air humidity sensors characteristics (PTB, CETIAT, CMI, NPL, TUBITAK)**
- **High mountains observations: permafrost and albedo (INRiM, BEV)**
- **Siting related uncertainty (INRiM, CEM, CMI, IMBIH)**

Metrology for Meteorology and Climate international workshop - MMC 2014

15-18 September 2014 – Brdo – Slovenia.

MMC Slovenija 2014

METROLOGY FOR METEOROLOGY AND CLIMATE

Topics:

- Traceability and uncertainty.

- Ground based systems. Temperature, humidity and pressure sensors. Wind speed and direction, solar radiation. Quantities of influence and mutual influences. Sensors dynamics.

- Upper air measurements. Aircraft-based measurements.

- Ocean research: metrological traceability to the SI system for the measurement of the key variables salinity, pH, composition and dissolved oxygen content of sea water.

- Water: water vapour, liquid water, ice, hygrometry, soil moisture. Rain and snow gauges. Permafrost temperature measurements: instruments, procedures and calibrations.

- Assessment of the historical temperature measurement data with respect to uncertainties on instruments used.

- Thermal and chemical metrology for environment.

- Instruments and measurements capabilities, calibration procedures, best practice and regulations.

Scientific committee

Stephanie Bell (NPL, Great Briitain), CCT-WG6 Chair

Rainer Feistel (IAPWS, Germany)

Carmen Garcia Izquierdo (CEM, Spain)

Drago Groselj (WMO-CIMO, ARSO, Slovenia)

Martti Heinonen (MIKES, Finland)

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Fernando Sparasci (CNAM, France)

Peter Thorne, GRUAN Chairperson

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Davor Zvizdić (IMEKO TC12 chair, HMI-FSB, Croatia)

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GCOS GLOBAL CLIMATE OBSERVING SYSTEM

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Any Questions ?