WG3: Microwave Radiometers (MWR)

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WG3 MWR

- **Overarching goal**: Exploit MWR into NWP DA

- **Objective**: Pursue the development of a sustainable network of European MWR

- **Heritage**: COST Action ES0702 (EG-CLIMET) + MWRnet

- **Tasks**:

  1. Establish protocols for providing QC MWR data (+ uncertainties)

  2. Coordinate the data processing chain (e.g. harmonised network)

  3. Engage NWP DA community (requirements, tools)

together

Task 1: Establish protocols for providing QC MWR data

Subtasks

1. **Review protocols for calibration, scanning, and maintenance**
   - o Make available via MWRnet (Cimini)
   - o Collect already available calibration documents via MWRnet and compile to one document (Cimini/Küchler)
   - o Put together Calibration Procedure Document (CPD)

   How? – Email correspondence, video conference

Task 1: Establish protocols for providing QC MWR data

2. **Systematic calibration uncertainty**

Joint Calibration Effort (J-CAL)

o   Prepare document highlighting LN2 calibration problem
       in V-band

o Propose procedure to assess problem → intensive calibration
    phase (2-3 days) followed by weeks to months of parallel
    measurements at Lindenberg

o At least 2 MWRs from each RPG and Radiometrics (including
    manufacturers!)

o Include GRUAN for dedicate radiosondes (Cimini)

o HATPROs from Leipzig, Poland, Bucarest, RPG,…

   o Include Turner/Caddedu (ARM)

**How? – SWG mid-end of August, possible additional
    funding by ITARS, RPG, …**
Lead: Pospichal

Task 1: Establish protocols for providing QC MWR data

3. Common characterization of TB measurement uncertainty

o Random uncertainties and channel covariances

    o measurement procedure for determination

    o agree on for different instruments

o Common QC flags

    o assess flags used already

    o new: RPG developing a spectral consistency check

How? – SWG at the end of August in Lindenberg (coordinated with J-CAL)
Lead: ALL

Task 2: Coordinate the data processing chain for use of MWR data in DA

1. Common data format and data life cycle

- o Coordinate further mwr_pro development within HD(CP)^2 (producing netcdf cf convention type files) with RPG(Czekala) and Radiometrics users (Cimini/Güldner/Madonna)
- o Begin procedure for BUFFR file generation after netcdf files have been finalized (Haefele/Cimini/Löhnert)

How? – Email correspondence, video-conference

Lead: Löhnert

2. Establish a common forward model & advanced retrieval method

- o Continue ground-based RTTOV development (MO)
- o Develop standardized 1DVAR retrieval

How?
– STSM1 Francesco DeAngelis to MO for developing ground-based RTTOV, summer 2014
– STSM2 Pauline Martinet to MO for using RTTOV ground –based for 1DVAR T/q retrieval, summer 2014

Lead: Cimini

Task 2: Coordinate the data processing chain for use of MWR data in DA

3. DA trial together with WG4

- o First assimilation of T/q retrievals, later assimilate TBs with help of RTTOV ground-based
- o Need T and q retrieved profile data for as many stations as possible from defined time period (R. Potthast to communicate), possibly on the order of one month
- o Minimize error in calibration and retrieval but do NO bias correction by your own with model output
- o Provide uncertainty estimates of T/q profiles

How? – Email correspondence, video-conference

Lead: Cimini/Löhnert/Potthast, all MWR operators to contribute

Other

STSM on the synergy of sunphotometer and MWR
- o Exploit AERONET stations also for IWV and LWP retrievals, assess (and combine) with MWR
- o MO (Klugmann), UReading (Christine Chiu), MWRnet