COPS - FRANCE

Proposal funded by

ANR, CNES, LEFE/INSU &
Météo-France

FINANCIAL SUPPORT: ~700 k€

+ 24 months of post-doc secured through ANR

+ 2 x 24 months of post-doc requested from INSU/CNRS

PARTICIPANTS & RESPONSABILITIES

- LA (CNRS, Toulouse) – ***E. Richard***
  - ➔ Overall scientific coordination
  - ➔ Numerical simulations – case studies

- CNRM (Météo-France, Toulouse) – ***F. Bouttier***
  - ➔ Assimilation (AROME)
  - ➔ Supersite instrumentation (4-M)

- IPSL (CNRS, Paris) – ***C. Flamant***
  - ➔ Overall coordination of ground-based and airborne COPS-FRA experimental contribution
  - ➔ operation of LEANDRE 2 on SAFIRE/F20
  - ➔ Coordination GPS network effort over eastern France
  - ➔ Supersite instrumentation (TReSS & Raman lidar)
  - ➔ Numerical simulations – case studies
  - ➔ Upstream site (SIRTA)

- LaMP (CNRS, Clermont-Ferrand) – ***J. Van Baelen***
  - ➔ Supersite instrumentation (radars)
  - ➔ Numerical simulations – case studies

ACTIVITIES

Instrumentation / Modelling / Assimilation

WP1: Process study – Convection initiation (IPSL, LA, LaMP)

WP2: Process study – Aerosols and cloud microphysics (LaMP, LA)

WP3: Process study – Life cycle of precipitating processes (LA, GAME)

WP4: Data assimilation (CNRM, LA, LaMP)

WP5: IASI and CALIPSO level 2 products (IPSL, CNRM, LaMP, LA)

WP6: Contribution to the COPS experimental set up (IPSL, LaMP, GAME)

MODELLING

- Clark's model + DESCAM

(very detailed microphysics – bin type model from CCN/ICN to liquid/solid precipitation

- Méso-NH model

(two-moment microphysics)

- AROME

(systematic forecasts within MAP-D-PHASE)

ASSIMILATION

- 3D-Var AROME data assimilation system
- In real time all conventional available meso-scale observations
- After the experiment : GPS zenithal delays and lidar & radar data

EXPERIMENTAL CONTRIBUTION

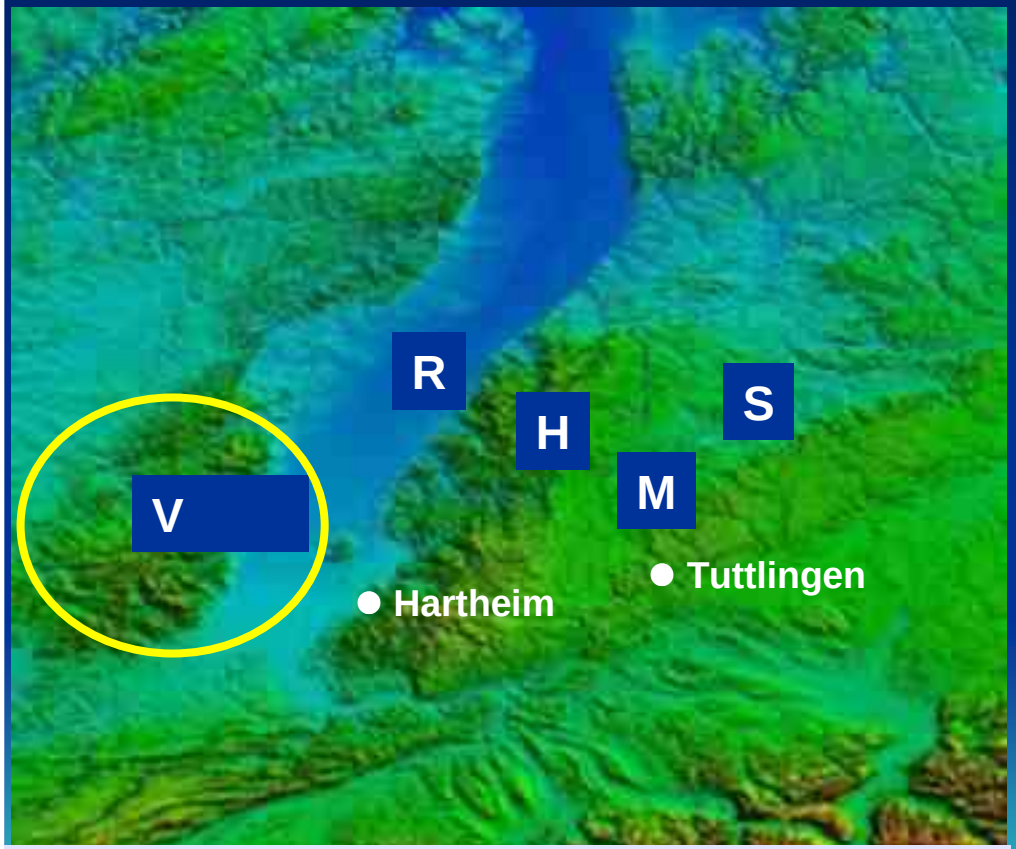
- 1 - Supersite in the Vosges & Rhine valley
- 2 - GPS stations network over Eastern France
- 3 – SAFIRE aircraft

4 – Routine observations from Météo-France

5 – Upstream operations at SIRTA

EXPERIMENTAL CONTRIBUTION

1 - Supersite in the Vosges & Rhine valley



➔ 1 month

➔ together with SAFIRE F20 operations

What is new?

- Recce completed as of 30-31 January 07
- Valley & mountain sites identified
- Dates of operations: 1-31 July
- Additional IPSL partners joining in (strengthening of the “aerosol” component)
- Additional equipment (MWR)

➔ Supersite coordinator(s) designated once staff rotations are established

Vosges (Bischenberg):

➔ LaMP

- X-band radar
- GPS station

Rhine valley (Meistratzheim):

➔ CNRM / 4-M

- RDS station
- UHF + SODAR + Scintillometer
- Surface flux stations (2)
- Soil moisture station (2)

➔ IPSL

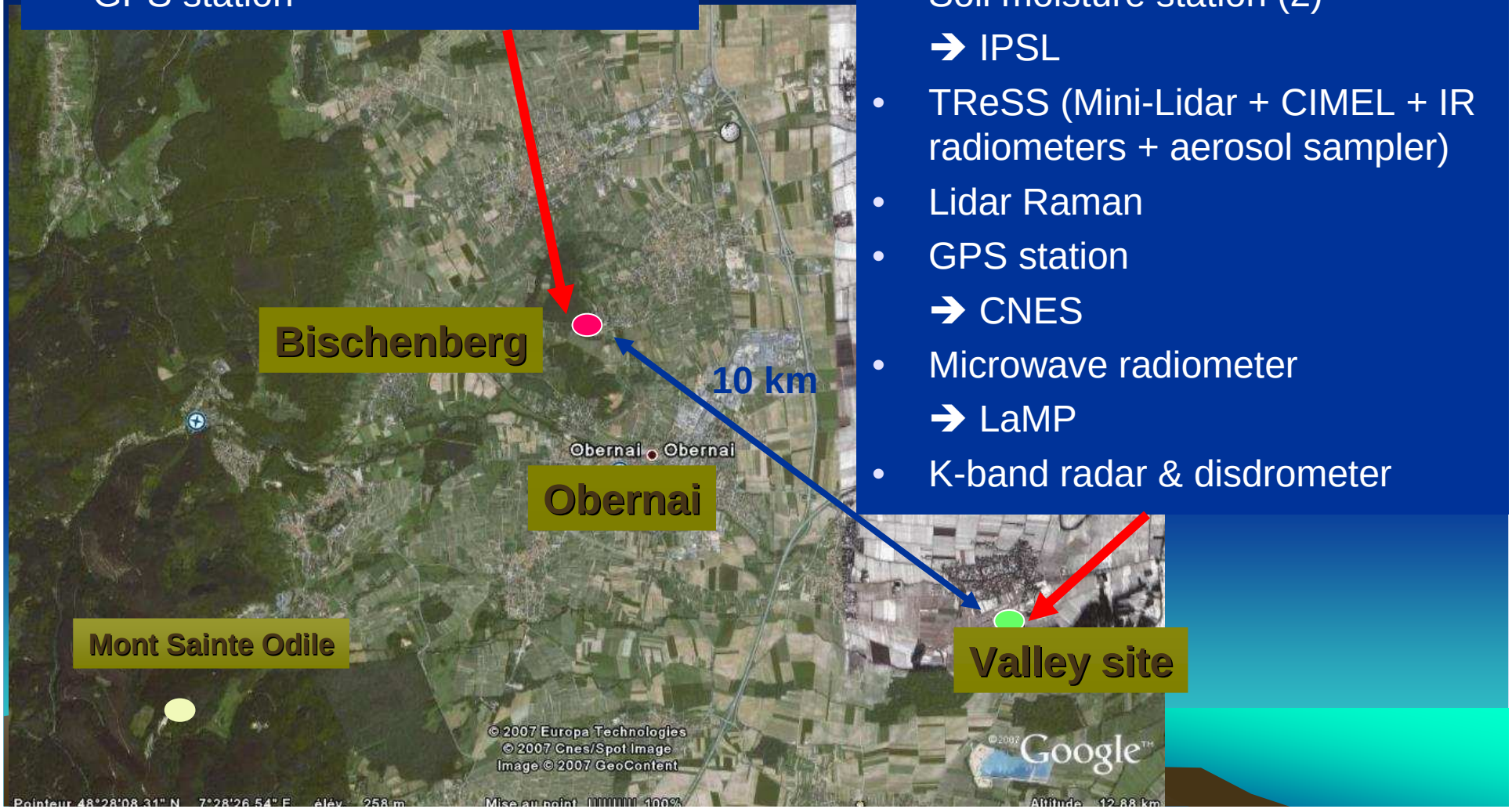
- TReSS (Mini-Lidar + CIMEL + IR radiometers + aerosol sampler)
- Lidar Raman
- GPS station

➔ CNES

- Microwave radiometer

➔ LaMP

- K-band radar & disdrometer



CALIPSO orbits

Mountain site

Valley site

50 km

IPSL/LSCE « aerosol mobile facility »

➔ CALIPSO validation

➔ « linking » supersites

Scanning Lidar + aerosol sampler

R

H

S

M

V

Tuttlingen

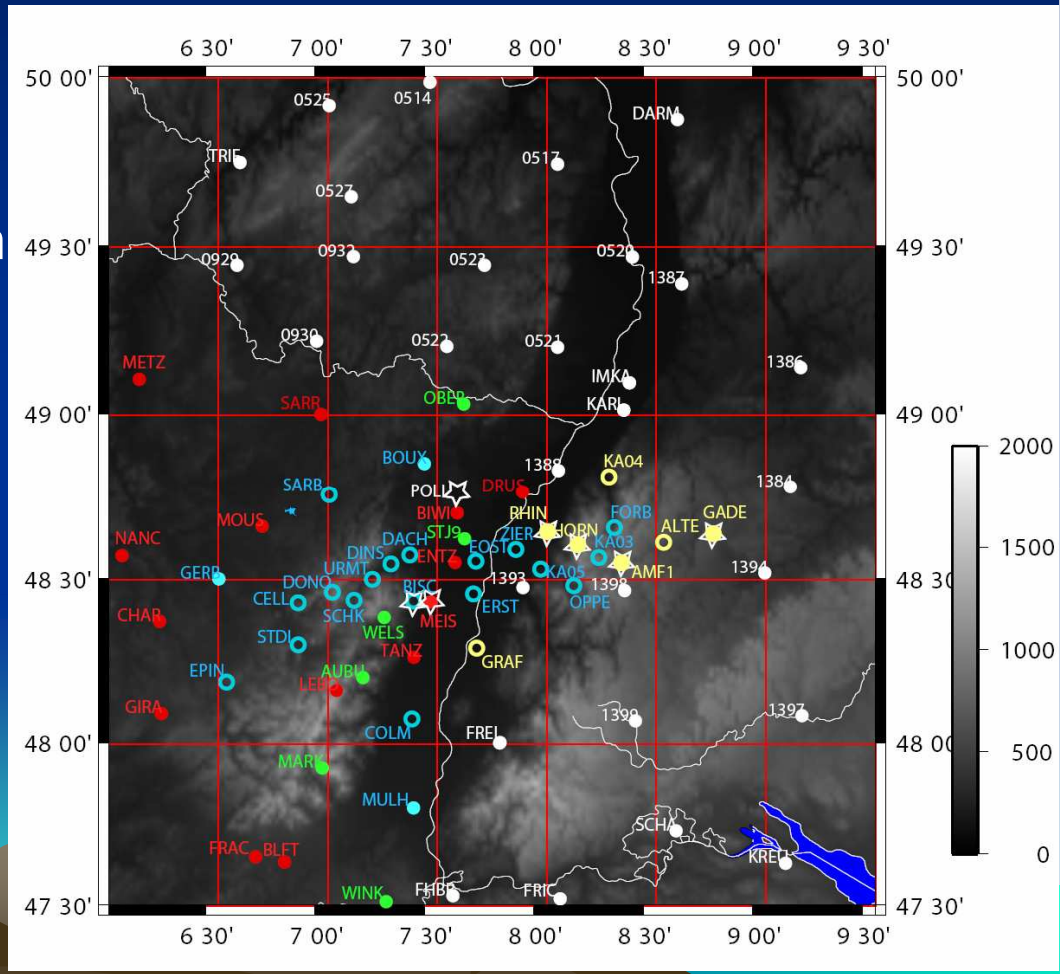
Hartheim

2 - GPS stations network over Eastern France

➔ 3 months (June-August 2007) except in some cases

What is new?

- Coordination by C. Champollion
- Recce in France completed December 06
- Active contribution from Strasbourg University
- GPS network design nearly completed
- Recce in Germany soon



3 – Airborne Operations

Falcon 20 equipped with:

- WV DIAL LEANDRE 2
- Dropsondes

What is new?

- Possibility of SAFIRE ATR participation through EUFAR
- (11 flight hours funded)
- Falcon 20 EUFAR proposal for additional flight hours fell through a crack
- Ongoing discussions with Baden Airpark staff for hangars, etc..

ATR landing in Niamey, Niger

Falcon 20 equiped with:

- WV DIAL LEANDRE 2
- Dropsondes

➔ 24 days of July 2007
➔ 35 flight hours
➔ 80 dropsondes

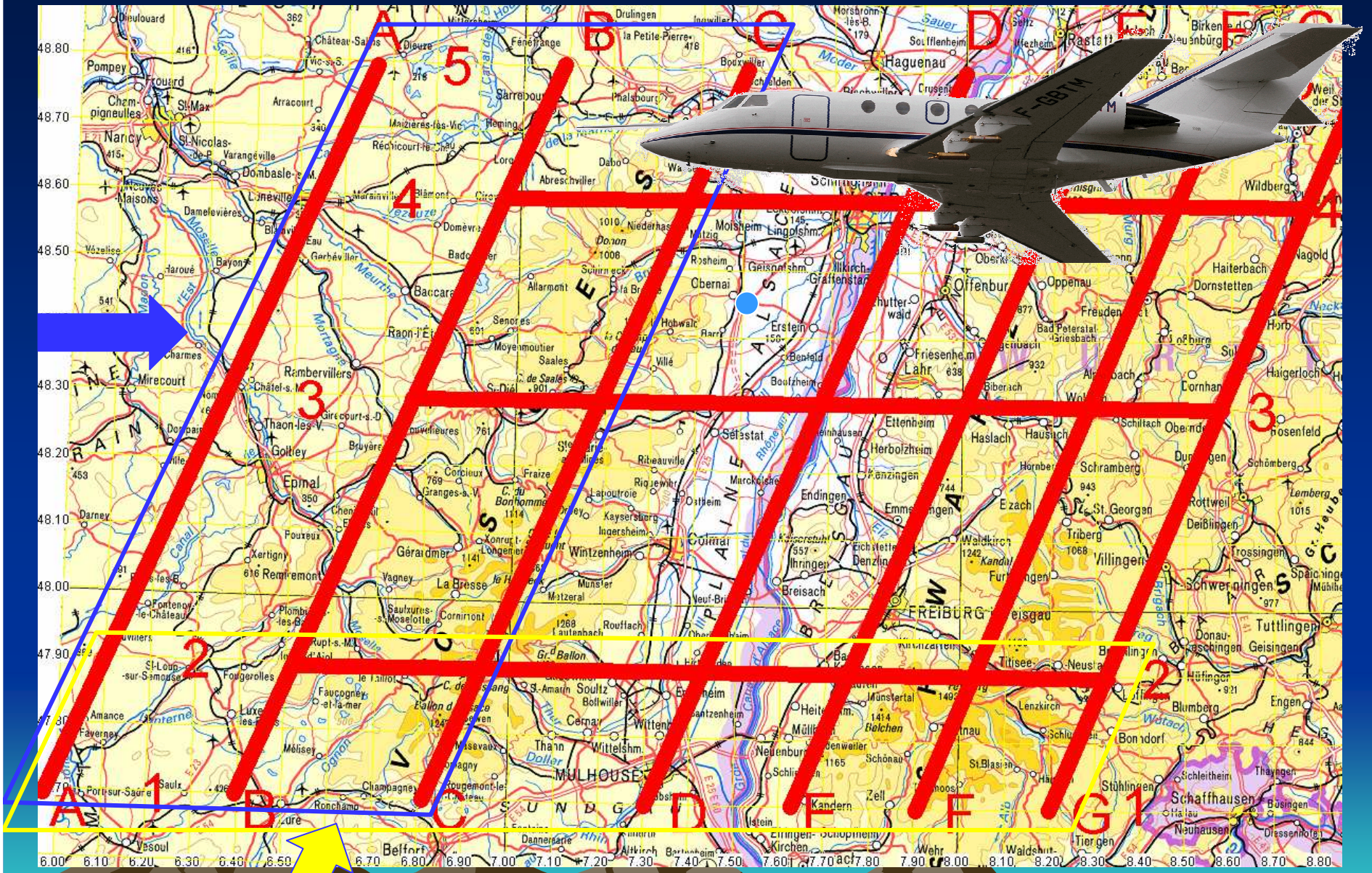
PI: C. Flamant (IPSL)

SAFIRE detachment schedule: 10 July – 2 August 2006

EUFAR: 16 h additional requested ☹

Dropsonde (4 channels = 1 drop/5 min.)

Communication: IRIDIUM sat com operational (since end of AMMA)


A
B
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F-GBTM
Issues with dropsonding over France not cleared yet

ATR during COPS: OSMOC

Observation strategy for Mixed-phase Orographic Clouds

PI: Y. Dufournet (TU Delft)

ATR equipped with liquid and ice cloud microphysics

- FSSP 100
- OAP 2D probe
- Nevzorov (?)
- standard PTU

➔ detatchment: 18 - 29 July 2007
➔ 11 flight hours

Simultaneous measurements with ground-based remote sensing devices:

-Doppler Polarimetric radar at 3 GHz (TARA) – (for measurement of ice crystals properties basically)

-Raman Lidar or backscattered lidar (for detection of supercooled water layers within the cloud and for future work about the LWC)

- Microwave radiometer (for temperature and LWP)