

# Session 10

## Algorithm qualification for data assimilation

... a short introduction by Thomas Popp / DLR

based on input from Angela Benedetti / ECMWF

and thoughts of Jeff Reid / NRL

Today's discussion aims at providing input to ICAP

# Problem statement

- Data assimilation is the tool to consistently integrate multiple data sources
- **Goal: Become able to assimilate multiple satellite datasets**
- Why should we do it?
  - ever-growing wealth of satellite datasets is becoming available
    - with complementary information content
- Why is it difficult?
  - Each instrument and each retrieval is somewhat different
    - Lack of consistency
    - Possibility for contradicting inputs
    - Possibility of conflicting parametrizations (model, retrievals)
  - Each retrieved dataset needs qualification before it can be assimilated
    - The qualifying needs to meet assimilation needs (bias!)
    - **The qualifying needs significant effort for each new dataset**

# How can we improve?

- Share / standardize work for algorithm qualification
  - Would need a common good reference to assess biases against
  - Assimilation specific products: As far as possible biases should be removed after this assessment
- Provide pixel-level uncertainties
  - Needs separation of systematic and random uncertainties
- Work towards better consistency of datasets
  - e.g. CALIPSO profile integrated AOD with MODIS AOD
  - Combined products
- Work towards a smaller number of (integrated) satellite datasets
  - could reduce effort to qualify them
  - could also introduce new uncertainties