

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