Dynamics-aerosol-chemistry-cloud interactions in West Africa
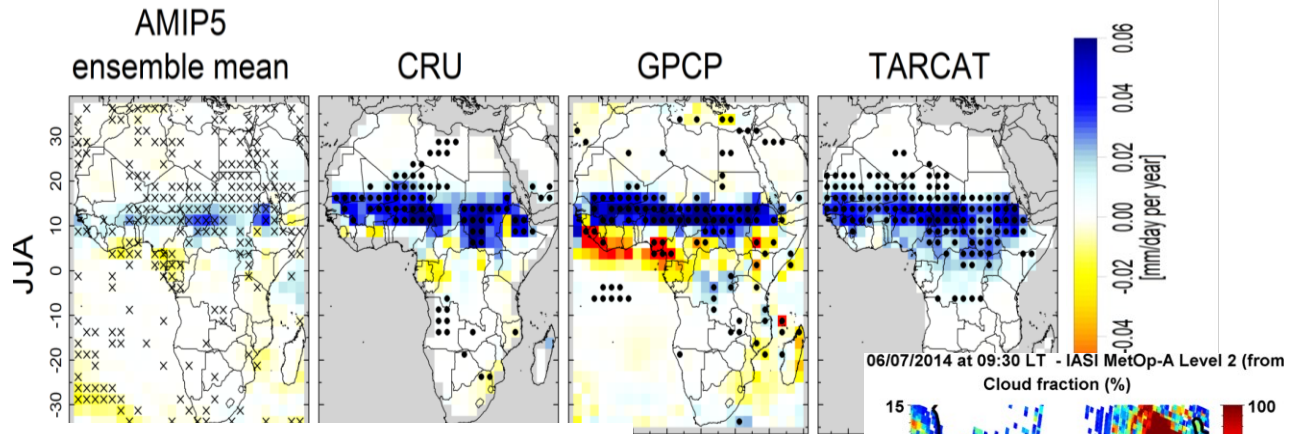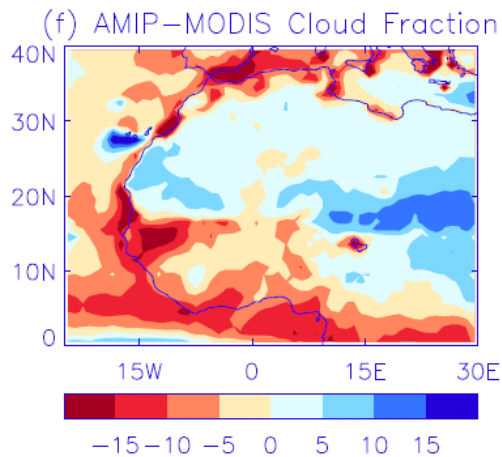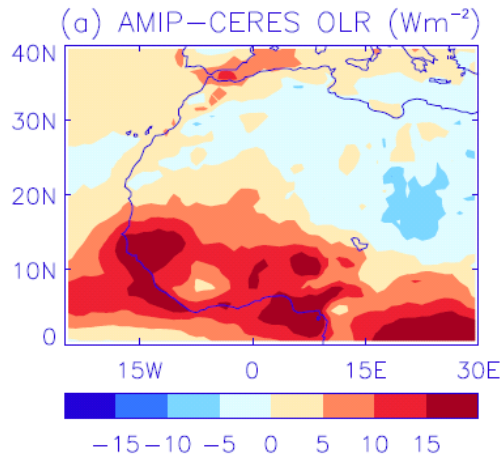
Use of Satellite data within DACCIWA

Richard Allan | University of Reading | *Toulouse 2015*
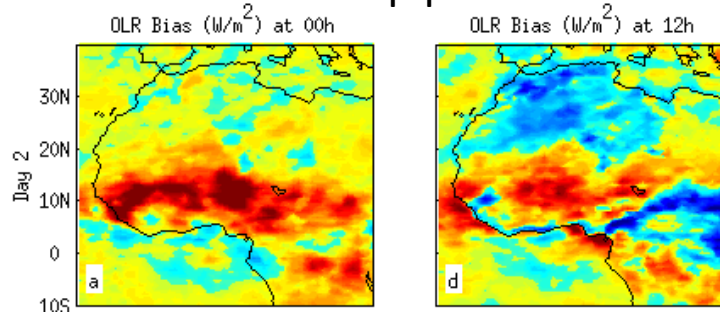
Primary use of satellite data

(a) AMIP-CERES OLR (Wm^{-2})

(f) AMIP-MODIS Cloud Fraction

AMIP5 ensemble mean   CRU   GPCP   TARCAT

Maidment et al. (2015) GRL

Above: Rainfall Trends

← climatology

field campaign →

Below: time-step process evaluation

OLR Bias (W/m^2) at 00h   OLR Bias (W/m^2) at 12h

Liu et al. (2014) JAMC

06/07/2014 at 09:30 LT - IASI MetOp-A Level 2 (from Cloud fraction (%)

Cloud top temperature (K)
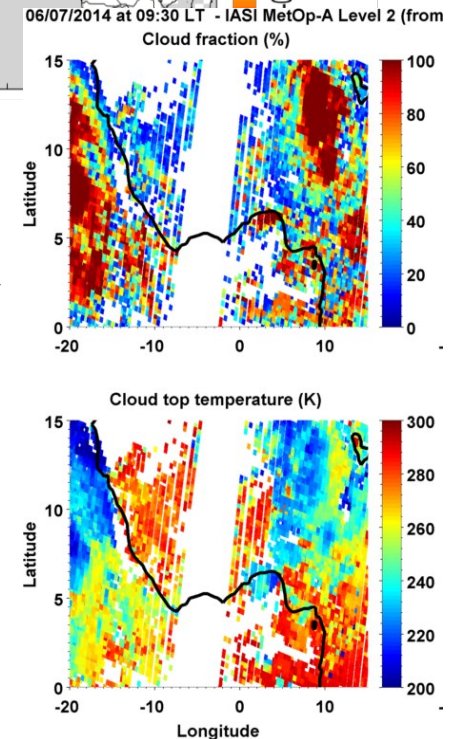
Primary use of satellite data

- **Modes of usage:**
  - Processed, climatology and variability to provide context
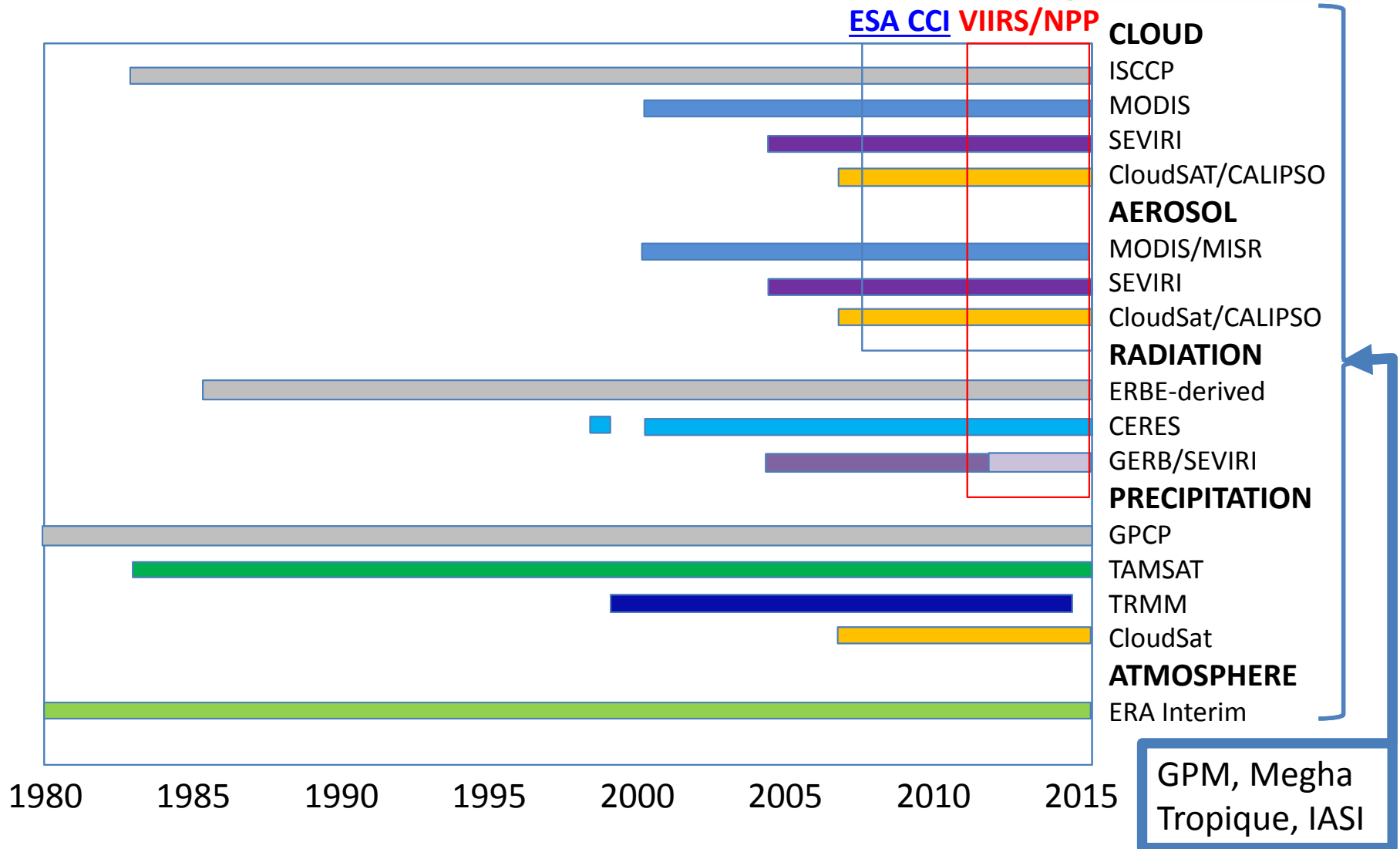 - Swath-level data for detailed examination and process understanding
  - Near-real time instantaneous data to aid field campaign
- **Physical variables of interest**
  - Primary fields: Radiation, Cloud, Precipitation, Aerosol
  - Integrating fields: water vapour, energy/moisture transports, anciliary data (temperature, humidity, winds)

Climatological data summary

DACCIWA

	ESA CCI	VIIRS/NPP

CLOUD
ISCCP
MODIS
SEVIRI
CloudSAT/CALIPSO
AEROSOL
MODIS/MISR
SEVIRI
CloudSat/CALIPSO
RADIATION
ERBE-derived
CERES
GERB/SEVIRI
PRECIPITATION
GPCP
TAMSAT
TRMM
CloudSat
ATMOSPHERE
ERA Interim

1980   1985   1990   1995   2000   2005   2010   2015

GPM, Megha Tropique, IASI

Discussion

- **What satellite products are missing?**

- **What data can be shared across work packages?**

- **How can we facilitate the use of the satellite data for DACCIWA science?**

  o sharing, visualising/analysing e.g. CIS tool

- **etc...**