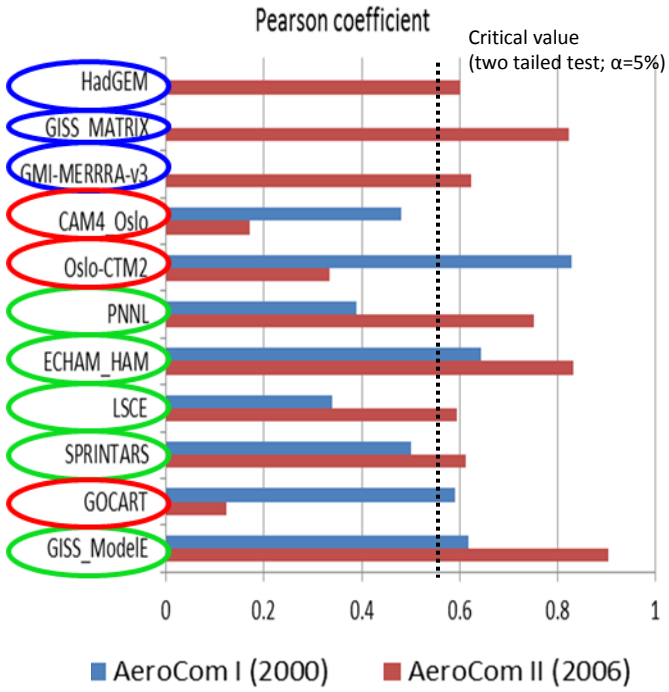
Simulation of the aerosol vertical distribution by the AeroCom models: Phase II versus Phase I results

Brigitte Koffi, Michael Schulz, Jan Griesfeller and François-Marie Bréon

Comparison of AeroCom and CALIOP $Z_{\alpha\ 0\text{-}6\ km}$ mean aerosol height diagnostics over 12 regions of Koffi *et al*. [2012].

Mean annual $Z_{\alpha\ 0\text{-}6\ km}$: inter-regional variability

- The three **newly analysed models** reproduce the observed $Z_{\alpha 0\text{-}6\ km}$ inter-regional variability, but HadGEM and GISS-MATRIX have a tendency to underestimate $Z_{\alpha 0\text{-}6\ km}$ over most regions
- Five models **improved** whereas three **degraded** in reproducing the inter-regional diversity of the mean annual $Z_{\alpha\ 0\text{-}6\ km}$ compared to their AeroCom I version.



Joint Research Centre

Simulation of the aerosol vertical distribution by the AeroCom models: Phase II versus Phase I results

Brigitte Koffi, Michael Schulz, Jan Griesfeller and François-Marie Bréon

Timing of $Z_{\alpha\ 0\text{-}6\ km}$ peak season

- **The observed peak season is caught by the AeroCom II models in 76% of the cases**.
- In the other cases, it is **ranked 2nd** (20%) **or more** (3%).
- **The agreement with CALIOP has generally increased*** compared to AeroCom I, except for 2models*
- It has somewhat decreased in the three biomass burning regions

AeroCom I models

Regions	CALIOP	GISS *	GOCART *	SPRINTARS *	LSCE *	MATCH	ECHAM-HAM *	PNNL *	MOZGN	Oslo-CTM2 *	TM5	Cam4-Oslo *	AROM
EUS	JJA/MAM	MAM	DJF	JJA	JJA	JJA	JJA	MAM	MAM	MAM	JJA	JJA	JJA
NAT	JJA/MAM	JJA	MAM	JJA	SON	JJA	JJA	JJA	MAM	JJA	JJA	DJF	DJF
WEU	JJA	JJA	MAM	MAM	JJA	JJA	JJA	MAM	JJA	JJA	JJA	JJA	JJA
IND	MAM	MAM	MAM	MAM	JJA	JJA	JJA	JJA	MAM	MAM	JJA	SON	JJA
ECN	MAM	MAM	MAM	MAM	JJA	JJA	JJA	JJA	MAM	MAM	JJA	SON	MAM
NWP	MAM	MAM	DJF	MAM	SON	JJA	JJA	MAM	MAM	MAM	SON	SON	DJF
CAT	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	DJF	JJA
NAF	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	MAM	JJA
WCN	JJA	MAM	JJA	MAM	DJF	JJA	JJA	JJA	JJA	MAM	JJA	MAM	DJF
CAF	JJA	JJA	JJA	JJA	JJA	JJA	JJA	MAM	JJA	MAM	JJA	JJA	JJA
SAM	MAM/SON	DJF	SON	SON	JJA	DJF	SON	SON	SON	SON	DJF	SON	SON
SAF	SON	DJF	SON	SON	DJF	SON	DJF	SON	SON	JJA	SON	SON	SON

AeroCom II models

	CALIOP	GISS *	GOCART *	SPRINTARS *	LSCE *	GMI-MERRA	ECHAM-HAM *	PNNL *	GISS-MATRIX	Oslo-CTM2 *	HadGEM	Cam4-Oslo *
EUS	JJA/MAM	JJA	MAM	MAM	JJA	MAM	JJA	JJA	MAM	JJA	JJA	MAM
NAT	JJA/MAM	JJA	MAM	DJF	JJA	MAM	JJA	MAM	DJF	JJA	JJA	DJF
WEU	JJA	JJA	MAM	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	MAM
IND	MAM	MAM	JJA	MAM	MAM	JJA	JJA	MAM	MAM	MAM	JJA	MAM
ECN	MAM	MAM	MAM	MAM	MAM	MAM	MAM	MAM	MAM	MAM	MAM	MAM
NWP	MAM	JJA	MAM	MAM	MAM	MAM	DJF	MAM	MAM	MAM	MAM	DJF
CAT	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA
NAF	JJA	JJA	JJA	JJA	SON	JJA	JJA	JJA	JJA	SON	JJA	JJA
WCN	JJA	DJF	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	JJA	DJF
CAF	JJA	JJA	JJA	JJA	JJA	JJA	JJA	MAM	JJA	MAM	MAM	JJA
SAM	MAM/SON	DJF	DJF	SON	SON	SON	SON	JJA	JJA	SON	DJF	JJA
SAF	SON	SON	DJF	SON	SON	SON	DJF	SON	JJA	JJA	DJF	SON