

QUEST MEETING Cologne on 1./2. October 2009: Protocol

Participants

DLR	Christian Keil (CK)
DWD	Axel Seifert (AS)
FUB	Stefan Stapelberg (SS)
IGMK	Susanne Crewell (SC), Christoph Selbach (CS), Sonja Eikenberg (SE), Mario Mech (MM), Stefan Kneifel (SK), Kerstin Ebell (KE part time)
KUL	Nicole van Lipzig (NvL), Kwinten van Weverberg (KvW), Tim Böhme (TB), Tom Akkermans (TA)
ZMAW	Felix Ament (FA), Suraj Polades (SP), Anja Ludwig (AL), Nicole Feiertag (NF)
Geophys	Thorsten Reheinhardt (TR)

Thursday, 01 October 2009

11:00 Susanne Crewell: Welcome

Status of QUEST sub projects

DLR New PhD student will start 1 Nov 2009 with 2 year contract until end of 2011

FUB Stefan Stapelberg will continue until the end of 2010

IGMK Sonja Eikenberg started 1 Oct 2009 with contract until end of May 2012

KUL Tim Böhme's will continue until the end of 2010

ZMAW Suraj Polades contract is until September 2010 – a proposal for a 1 year extension , is planned, Anja Ludwig and Nicole Feiertag will both submit their theses before the end of the year

Felix Ament *Ceilometer evaluation – Probabilistic verification of deterministic forecasts and observations*

- ceilometer vcloud base height evaluation for 2007 and 2008 Cabauw and Hamburg with deterministic and probabilistic approach
- influence of cloud overlap assumption and temporal averaging is negligible (check!)
- investigate inclusion of further grid points
- use COSMO-EU also from 3 UTC onward
- Christoph identify forecasted peak height at 500 m
- focus on deterministic vs probabilistic evaluation and as a second aspect on the question where the model has skill
- first draft of paper should be finished until mid November

Nicole van Lipzig *Long-term evaluation of water cycle parameters in the COSMO model*

- focus on temporal evolution of biases and circulation weather type (CWT) -dependent biases in the mean fields
- analyse and better understand 850 hPa composites for cyclonic and anticyclonic type
- generally good IWV agreement but compensating bias, Maritime (too dry) versus continental (too wet) advection in particular in the north and center of Germany
- cloud base height underestimated in winter and overestimated in summer but absolute value depends on threshold
- Inverse relation between CBH and IWV relative to CWT in the north both in summer and winter
- test with radiosondes whether LCL is too low
- precipitation overestimation mainly in orographic regions during northerly flow conditions
- challenges in precip measurements (snowfall) Add individual stations
- Understand correlation with temperature (overestimation of IWV during warm CWTs and underestimation during cold CWTs)

- discuss role of compensating bias ?
- first draft of paper should be finished until mid November

Tom Akkermans *Regime-dependent COSMO model evaluation: the spatial distribution of water cycle parameters*

- precipitation composites for different CWTs
- obvious windward /lee effect
- case study for Thüringer Wald: Precipitation overestimation is significantly higher on the Thüringer Wald Gebirge hill crest
- look at individual stations and filter for warm/cold temperatures to distinguish snow and ice
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Stefan Stapelberg *COSMO-DE /- EU Long Term Evaluation with MSG SEVIRI 2007-2008*

- diurnal cycle shows higher BTs in 6.2 and 10.8 um after 12 UTC assimilation of dry bias radiosondes – bias decreases continuously
- no bias in 6.2 um channel – hardly any diurnal cycle in obs
- about -6 K bias in obs, likely reason is solar signal (check through comparing December and June!)
- - 4 K bias in 10.8 um channel with observational maximum about 1.5 h earlier
- separation shows that bias occurs for clouds (TB<260 K)
- for clear sky / low cloud conditions (>260 K) observations show BT decrease starting around 12 UTC while model decrease starts about 2 h later is slightly less pronounced: Is the reason due to more (or higher) low level clouds than predicted?
- provide time series on monthly mean basis for comparison with IWV, CTH data
- case studies for MSG cloud mask retrieval during night: skill score for longer time series
- cloud tracking for June 2008 : diurnal cycle of cell averaged BT is less pronounced in model
- combine results with Nicole Feiertags, e.g. statistics of cell parameters (life cycle, area..)

Axel Seifert *Current work add DWD*

- vertical velocity in Leap Frog-core simulations is much too noisy due to numerical problems, especially over orography
- COSMO-EU with Runge-Kutta numerics reduces the wintertime bias, but the reduction seems to be too strong leading to an underestimation of precipitation
-< retuning of microphysics necessary (but still some underestimation for strong precip events)
- probably warm bias in aircraft temperature observations
- radiosonde (RS) dry bias at noon: neglectance of RS in data assimilation increases precipitation at noon but effect does not last long enough (over afternoon) – only in old PBL scheme
- new pbl scheme shows much better diurnal cycle of precip (still too weak) except first 12 h of 12-UTC runs; too warm and unstable in low troposphere at daytime
- data assimilation (exploiting model physics) problematic due to model bias (partly compensating with RS bias)

Friday, 02 October 2009

Tim Böhme *Precipitation patterns above Belgium using weather radar and COSMO model reflectivity data*

- 3 convective case studies using 3 different COSMO versions
- ECMWF forcing increases reflectivity too strongly
- differences between COSMO versions are small except for low reflectivities (< 20 dBz)
- latest version (4.3) performs best
- look for two contrasting summer (2006 / 2007) and soil erosion; discussion on suitability of

years..

Suraj Polad *Evaluation of Hydrological Cycle Predicted by MAP D-PHASE Models with GOP Observations*

- GPS IWV diurnal cycle : mean values vary up to 4 kgm⁻² between different models.
- several models show 12 UTC jump due to radiosonde dry bias
- check with Meteo France about large ALADIN (2.5 kgm⁻²) bias but also other modellers
- MM5 starts with very high cloud cover and rapidly decreases
- 12 UTC jump also visible in high cloud cover as defined from MSG cloud top pressure
- models are clustered around 5 and 30 % with observation around 10-15 % consistent with ISCCP
- no clear signal in error structure of IWV, cloud cover and SAL yet – check different subdomains

Anja Ludwig *Evaluation of humidity, clouds and precipitation in hindcasts by CCLM and MM5 (WRF)*

- falscher Vortrag

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Nicole Feiertag *Lagrange precipitation verification.*

- statistics of precipitation cells from observations (RY) and COSMO-DE for COPS period using rada tracker RAD-TRAM
- quantile calibration cell threshold for model is 11 mm/h and 8 mm/h for observation
- occurrence of cells with lifetime > 90 min is rather similar in observations and model
- most cells starts in southwest, start point from model cells slightly shifted to south
- diurnal cycle in model is less pronounced

Sonja Eikenberg *Validation of GME IWCs with CloudSat satellite data*

- compare operational GME version and experiment with CLOUDSAT using obs-to-model and model-to-observation (QUICKBEAM) Ansatz
- 4 case studies for frontal systems and ice clouds as well as 11 day period
- operational GME contains only diagnostic snow and therefore has much to low total (cloud+snow) ice
- GME experiment still has slightly to low ice and too narrow distribution
- cloud top in GME is too high but might be explained by limited Cloudsat sensitivity (check with Calipso)
- aggregate Cloudsat to better match GME resolution

Stefan Kneifel *Snow events at Zugspitze: comparison of TOSCA measurements with COSMO microwave forward simulations*

- introduction of TOSCA project, instrumentation and passive microwave signal
- relation between TB31 and TB150 GHz of COSMO models (6 winter months) differs strongly from observations - > much more liquid water in observations
- snow crystal form gives large BT difference at 90 and 150 GHz
- correct intercept parameter of model data for calculations (check with Axel)

15:00 End

Action items

SC1	clarify reporting procedure with Andreas Hense
SC2	Armin Mathes about individual rain gauges for Tom
SC3	contact Kim-Kaja/Elbern on radar tracker
SC4	check with Meike Biltstein about RS analysis of lifting condensation level and RS validation for North Germany and dependent on weather types
NL/TB	decide on contrasting seasons (check climatological information)
NL	write LTE paper (end of November)
TA/MM	put weather type classification on GOP server and send information out
FA1	send around bachelor thesis of Nele about coastal clouds in North Germany
FA2	compare probabilistic uncertainty of ceilometer with deterministic methods
FA3	write first draft of ceilometer paper (mid of November)
CS	find explanation for maximum occurrence of cloud base height at 500m in models
SP1	write short summary about results and send it out also to modellers
SP2	compare results with detailed RS and cloud observations at AMF site
SS1	Make same type of MSG tracking analysis as Nicole Feiertag for COPS period
SS2	investigate cloud mask quality as function of weather type- first for north germany where clearest signal should be found
SS3	check diurnal cycle of BT10.8 for phase shift -> check cloud free pixels to see if any problem ins surface heating or whether afternoon clouds appear later in the model
SS\$	find explanation for 3.9 um behaviour
SK	send Axel dates for interesting case studies on UFS
KE	AMF cloud statistic (provide cloudnet cloud fraction)

Next meeting

18/19 March 2010 in Offenbach (DWD)