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Minutes EUCLIPSE

Date minutes
7 October 2010 concept
December definite version

Subject	Minutes of Kick-off meeting EUCLIPSE
Place and date of meeting	Utrecht, 27-28 September 2010

Minutes secretary
Frank Selten
Karin van der Schaft

Attachement(s)

Participants:

Royal Netherlands Meteorological Institute (KNMI):
Richard Bintanja (9-28-2010), Reinout Boers, Olivier Geoffroy, Sara dal Gesso, Carlo Lacagnina, Geert Lenderink (9-28-2010), Roel Neggers, Frank Selten, Pier Siebesma, Karin van der Schaft,

Max Planck Institute for Meteorology (MPG):
Thijs Heus, Daniel Klocke, Thorsten Mauritsen, Christine Nam, Louise Nuijens, Johannes Quaas, Marc Salzmann, Irina Sandu, Bjorn Stevens, Suvarchal Kumar Cheedela

Met Office (MetO):
Yoko Tsushima, Mark Webb

Centre National de la Recherche Scientifique, Institute Pierre Simon Laplace (CNRS-IPSL) :
Sandrine Bone, Florient Brient, Héléne Chepfer, Frédérique Cheruy, Solange Fermepin, Dimitra Konsta

Academy of Athens (AA):
George Tselioudis

European Centre of Medium Range Weather Forecast (ECMWF):
Mark Rodwell

Delft University of Technology (TUD):
Johan van der Dussen, Harm Jonker, Emily Jones, Stephan de Roode

Meteo-France-Centre National de Recherche Meteorologique (MF-CNRM):
Isabelle Beau, Gilles Bellon, Dominique Douniol, François Bouyssel, Fleur Couvreux, Michel Déqué , Francoise Guichard

University of Stockholm (SU):
Gunilla Svensson

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Eidgenossische Technische Hochschule Zurich (ETHZ):
Ulrike Lohmann

University of Warsaw (UW):
Hanna Pawlowska

Stony Brook University:
Minghua Zhang

University of Köln:
Suzanne Crewell

University of Reading:
James Lloyd

Day 1, September 27th, 2010

- A word of welcome for all participants of the Kick-off meeting from Hein Haak, Director of Climate and Seismology Department at KNMI. He mentions that the subjects that will be discussed during this meeting are important aspects of climate change and he hopes that the participants will enjoy studying this subject together.
- Pier Siebesma: gives an introduction of cloud uncertainties in climate model projections: low marine clouds are the largest source of uncertainty, though other cloud types (extra-tropical clouds) might also give rise to large uncertainties (see talk Tselioudis). There are four objectives of EUCLIPSE:
    - Evaluate cloud-related processes in ESM's through integration of the latest data sets, LES techniques and new process-oriented diagnostic techniques
    - Develop physical understanding of how these cloud-related processes respond and feedback to climate change
    - Developing metrics to measure the relative credibility of the cloud feedbacks produced by the different ESM's thereby demonstrating a reduction of the uncertainty in model-based estimates of climate change
    - Improve the Parameterizations of cloud-related processes in the current ESM's

Important is to combine all tools and Research Communities in EUCLIPSE and improve the parameterization of clouds.

Break-up of the work:

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WP1: preparing and execution of the simulations and diagnostic packages
WP2: analyses of ESM
WP3: Process studies
WP4: improvements in cloud descriptions

Other subjects to be discussed during this meeting are:

- getting to know each other, present science, asses and discuss progress in wp1 and wp3 and further to design group efforts to assure synthesis between the work packages.

In the mean time: keep interacting with each other, for example by video meeting.

- For financial and administrative issues: contact Jeroen Sassen at KNMI (sassen@knmi.nl)
- For practical and organizational issues: contact Karin van der Schaft at KNMI. (schaftvd@knmi.nl)
- There are plans to make a newsletter. Contributions from the participants are much appreciated.
- Reports on deliverables and milestones.
- The projects website www.euclipse.eu.
- Dinner.

Presentation and Discussions on Work Package 1 (WP1).
For details see presentations that are posted on the EUCLIPSE website (www.euclipse.eu)

George Tselioudis: Overview WP1

Development and implementation of COSP (simulators) in the participating ESM's
CALIPSO and PARASOL GCM-oriented observational products.
Execution of the agreed CMIP5 runs.
Dissemination of the agreed model output in de WDCC database2.

Mark Webb (on behalf of Alejandro Bodas-Salcedo): Overview COSP

COSP: Overview and Model Intercomparison Results.
CloudSat, CALIPSO/ISCCP/MISR/MODIS/RTTOV simulation of satellite retrieval product on the basis of model data.
CFMIP observation simulator package, used in CFMIP-2 via Coupled Model Intercomparison Project (CMIP5) for AR5.
subgrid profiles: instruments output: statistical aggregation: outputs.
version 1.3: june 2010.
version 1.3.1: bug fixes and post-processing for cf3hr output orbital data.

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Multi-model intercomparison for main reference paper of COSP in BAMS, HadGAM1, LMDZ4, MMF L26 and L52 intercomparisons.
MISR cloud top heights: lack of middle levels clouds in the models North Pacific compared to ISCCP, but ISCCP overestimates middle level clouds: MISR results are in agreement with middle level cloud tops:
CALIPSO: good for cirrus clouds but also picks up low-level clouds. Models underestimate low level clouds.
Super cooled liquid clouds in mid-levels are probably under-estimated.
CloudSat: models overestimate precipitation mid to low level clouds: issues with particle size distributions of precipitation

Summary:

- Example of use of satellite simulators for model evaluation
    - Brings models and observations onto the same ground
    - Interpretation in observations space
- Use of several instruments provide complementary information on clouds and precipitation
- Multi-model intercomparison for North Pacific SON 2006
    - ISCCP/MISR: models have too much optically thick high-top cloud
    - CALIPSO: models lack mid-level supercooled liquid clouds (?)
    - CloudSat: models miss the non-drizzling low cloud mode

Johannes Quaas: Simple MODIS-Simulator

Analytical overlap assumption instead of SCOPS. Sampling of daily fields at satellite overpass time.
Visible clouds only (tau c > 0.3).
Useful to sample 2D cloud top properties (droplet effective radius, temperature and cloud top phase.
Cheap and easy and accurate enough. More elaborate MODIS simulator available in COSP: recommended for future use.
Summary:

- More elaborate MODIS simulator available in COSP (R. Pincus et al.)
- uses COSP subcolumn sampler
- better account for instrument sensitivities
- creates joint histograms
- recommended for future use

Héléne Chepfer (Sandrine Bony and Grégory Cesana): GCM's Oriented CALIPSO Cloud Product.

Summary:

- Web site : **http://climserv.ipsl.polytechnique.fr/cfmip-obs.html**

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- CALIPSO-GOCCP netCDF monthly files (GIECCMIP5 standard) for the period 200606 to 200906
- PARASOL netCDF monthly files (GIECCMIP5 standard) for the period 200503 to 200812
- CLOUDSAT netCDF monthly files (GIECCMIP5 standard) for the period 200606 to 200807
- CERES-EBAF single netCDF file for the period 200003 to 200510.
- ISCCP netCDF files

All the data are regularly updated.

Coming soon in CFMIP-OBS:

- New observations in the database:
- MODIS (R. Pincus, UCB) and MISR (R. Marchand)
- Development of a Cloud phase diagnostic in COSP and CALIPSO-GOCCP
- Merged CALIPSO-GOCCP / CloudSat consistent with COSP radar/lidar outputs

Complementary informations:

- CFMIP-OBS : will be accessible from to the PCMDI
- CALIPSO-GOCCP is part of the GEWEX Cloud Assessment

Dimitra Konsta: Multi variables analysis of cloud over tropical oceans based on A-train observations. Evaluation of clouds in LMDZ with Lidar CALIPSO, PARASOL, MODIS: CFMIP-OBS with COSP.

Conclusions:
A statistical view of clouds with A-train observations:

- simultaneous and independent observations of multiple cloud parameters at **high resolution**→ assess cloud process parameterization in climate models
- the spatial resolution of different sensors and the temporal resolution of the statistical analysis are critical
- study of cloud properties **only** (excluding 'Clear sky' contribution)
- link between Cloud Cover, Vertical Structure and Cloud Optical Depth
- low clouds: cloudy reflectance increase with the cloud top altitude

LMDZ model evaluation:

- Error's compensations between
  - - underestimation of low tropical clouds/ few medium clouds and overestimation of high clouds
  - underestimation of the total Cloud Cover and overestimation of the Cloud Optical Depth (mainly in regions of subsidence)
  - Optically thinner high clouds and optically thicker boundary layer clouds

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- Better representation of clouds from LMDZ New Physics

Perspectives:
- Similar analysis based on "high resolution" A-train observations to evaluate other climate models
- Analysis of the subgrid variability (observations and models)

George Tselioudis: Survey of process based model evaluation techniques.

Two branches of process based model evaluation studies.
Summary:
Global observations : Current-climate parameter relationships
(+) Global coverage, Large data ensembles
(-) Few parameters, Retrieval uncertainties,
Low space and time resolution
Global Models: Current and future climate feedback processes
(+) Fully resolved process definitions
(-) Model uncertainties, Low Resolution
Local (field) observations: Current climate parameter relationships
(+) Multiple parameters, Subgrid scale resolution
(-) Local coverage, Small data ensembles
Radiative Convective Models: Useful tools to translate atmospheric parameter changes into temperature/radiation changes

Discussion: could we do an organized process-based evaluation of the CMIP5 runs. Today this is done by individuals.

Conclusions: first better physical understanding of the flaws, but that is pretty long-term.

Mark Webb: Overview EUCLIPSE GCM simulations

Summary:
- CFMIP-2/CMIP5 experiments and diagnostics will provide an unprecedented amount of information to evaluate and understand clouds and cloud feedbacks in the AR5 models.
- CFMIP-2 experiments based on realistic AMIP SSTs should ideally be submitted first, while aquaplanet experiments can be later
- Simulator and timeseries at fixed locations should ideally be submitted first, while 3D snapshot data, tendency terms, instantaneous radiative forcings and fluxes on model levels can be later.

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Bjorn Stevens: Status and overview EUCLIPSE simulations ECHAM.

CMIP5 runs not started yet due to the fact the final model formulation has not yet been frozen
Expected starting date of production: November 1, 2010.
Status COSP??

Sandrine Bony: Status and overview of EUCLIPSE simulations for IPSL.

Two different ESM versions will be used:

- IPSL-CM5A : same version as for CMIP3 (all CMIP5 simulations)
- IPSL-CM5B : new physics package (few CMIP5 simulations)

Two different resolutions will be used and more vertical levels than for CMIP3:

- 3.75 deg x 1.85 deg x L39 (all CMIP5 simulations)
- 2.50 deg x 1.25 deg x L39 (some CMIP5 simulations)

Status runs:
Most CMIP5 runs with IPSL-CM5A are completed with COSP included.
CMIP5 runs with with IPSL-CM5B planned in 2011
All diagnostics included except:

- Output on 119 selected grid points
- 3 hourly output

Results expected in early 2011

Michel Déqué: Status and overview of EUCLIPSE simulations for CNRM.

All AMIP CMIP5 simulations have been completed.
No online-implementation of COSP.
Off-line COSP output for CMIP5 runs completed in Feb 2011.
Remaining CMIP5 runs: core runs completed feb 2011, ensemble runs completed jun 2011

Frank Selten: Status and overview EUCLIPSE simulations for EC-Earth.

CFMIP2-CMIP5 runs not started yet: Completed in June 2011
COSP simulator not yet implemented.

Hans Luthardt: World Data Centre on Climate

EUCLIPSE data as part of CMIP5:

- Interface : CMOR-2 for NetCDF3/4 and METAFOR/CIM questionnaire for metadata
- data available via Earth System Grid Federation (PCMDI, BADC, WDCC/DKRZ)
- data access via IS-ENES data portal

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EUCLIPSE data in addition to CMPI5:

- identical interface as for CMIP5 should be used
- amount of additional data should be restricted to 50 TB (project disk space)
- identical data access as for CMIP5 should be used (IS-ENES)

EUCLIPSE access and quality control:
Access and quality Control could be handled similar to the CMIP5/AR5 QC (currently under discussion) :

- restricted access during quality control process,
  control by protect access or PCMDI
- free academic access after finalization of quality control, access control by WDCC according to rules of ICSU WDC system
- CMIP5/IPCC-AR5 QC L3
  freezing of data, assigning of persistent identifier, fixed citation reference

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Mark Webb (on behalf of Keith Williams): Transpose – AMIP and EUCLIPSE.

- Run the transpose-AMIP II experiment with your model!
  - MIP tables will be available from the website in the next few weeks and data centres able to receive data. The Met Office simulations have just completed!
- Submit a diagnostic subproject summary – i.e. a paragraph saying what do you want to do with the data when it becomes available.
  - If there is a lot of interest in the data, more modelling centres will conduct the experiment

More info : www.transpose-amip.info

Presentation and Discussions on Work Package 3 (WP3).
For details see presentations that are posted on the EUCLIPSE website (www.euclipse.eu)

Mingua Zhang: Concept and SCM results of CGILS.

The concept: idealized simulations to understand processes and to use LES.
Climate change for cloud feedbacks.

Summary:

- The SCMs simulated a wide range of low clouds and cloud feedbacks at all three locations.
- Interaction of parameterization components plays a major role in explaining the processes
  The relative roles of PBL and convection for turbulent mixing, and their interaction with the stratiform cloud scheme need to be understood
  first for cloud distribution in control climate, and then for cloud feedback.
- It appears that models with explicit cloud-top mixing have positive cloud feedbacks, while those without have negative feedbacks (related to moist flux in the PBL)

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Stephan de Roode on behalf of Peter Blossey:
LES model results for CGILS.
Difference between LES models is smaller than in previous sessions due to the fact that the case is better constraint.
Models use diurnal mean conditions. Impact +2K response is a slight cloud cooling.

Irina Sandu:
Langrangian stratocumulus to cumulus transition.
Langrangian analysis of the air mass flow: trajectories, reanalysis and satellite data (Sandu, Stephens, Pincus, 2010): transition is similar in the 2 regions, takes place in the first 3 days.

Stephan de Roode:
The ASTEX Langranian model intercomparison case.

For more details see summary WP3 meeting.

The first day is closed at 18.30 p.m. with a dinner in restaurant Luden.

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Day 2, 28th September 2010

Roel Neggers: Model evaluation using the KNMI parameterization testbed.

Idea: To evaluate Single Column Model (SCM) versions of climate and NWP models with observational data from atmospheric profiling stations (Cabauw) for a long period (> month) thereby moving away from the more traditional single day case studies.

Method: A graphical interface that allows to run SCM's and confront them interactively with observational data. Tools for metrics, etc.

Examples:

- Cloud overlap function cause of SW error despite better representation of vertical cloud structure
- Test of new microphysics packages into the SCM
- Feed long SCM runs with observed CCNs at Cabauw

Main role: building bridges between GCMs and SCMs

Use within EUCLIPSE:

- Investigation at process-level of typical model behavior that comes to light in the other WGs of EUCLIPSE
- Multi-parameter confrontation of models against relevant observations as available at supersites, making use of simple metrics (e.g. multi-variable scores) to establish performance. A pilot SCM evaluation study at selected gridpoints (CloudNet sites)?
- Long-term evaluation of the cloud-radiative climate of the various SCM codes participating in EUCLIPSE

Frederic Cheruy: LMD model evaluation at SIRTA testbed.

SIRTA is operational since 10 years; goal decadal climate obs.

Contributions to EUCLIPSE:

- CFMIP observational data base based on Cabauw and SIRTA. (cloud, radiation and turbulence measurements)

Roel Neggers and Yangang Liu: model evaluation on the ARM sites

FASTER project: Fast physics system testbed and research.
Motivation: despite extensive research, climate sensitivity remains uncertain due to the sheer complexity of the problem.
FASTER performs continuous model evaluation against comprehensive long term ASR measurements: 10 institutes, 21 investigators.

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www.bnl.gov/ems
Long-term SCM evaluation against ARM SGP datasets reveals that:

- The ice super-saturation routine in RACMO / IFS brings a significant improvement in high cloud occurrence
- Typical results with EDMF-DualM on shallow cumulus cloud structure for the idealized GCSS RICO case also materialize in multi-year statistics at ARM SGP

Links with EUCLIPSE: Like EUCLIPSE, FASTER tries to bring Atmospheric Profiling station data (ARM) closer to GCM's to facilitate model evaluation. Important to similar work in Europe (EUCLIPSE) and in US (FASTER) in a coordinated way.

Dominique Bouniol (CNRM): Model evaluation using AMMA data.

Why West Africa?
Unprecedent data base (AMMA) is now available for studying the cloud processes and evaluate the representation of clouds in models in a region where very low constraints exists:

- Temporal variability at ground-based sites (ARM data) or spatial variability (A-Train)

Four cloud categories are identified + Sc over the Guinea gulf:

- High-level and mid-level clouds are ubiquous before and during Monsoon
- All present a diurnal cycle that evolves during the Monsoon season
- Strong impact of mid-level clouds in SW and LW, small impact of high-level clouds

Comparison with Climate models :

- Small impact on surface radiative fluxes for ARPEGE_Climat / overestimation of SW at the surface and an overestimation of OLR at TOA for LMDZ
- Underestimation of mid-level and low-level clouds + high-level (in LMDZ)/ overestimation (in ARPEGE_Climat)

Future work

- Generalise the category sorting in the satellite data and in the model outputs
- Quantification at the scale of WA of each cloud category impact / comparison with models
- At ground based sites, study of the relationships between cloud cover and surface/TOA fluxes.

Role for EUCLIPSE: Apply the above described analyses also on the model output of the other EUCLIPSE GCM-output.

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Presentation and Discussions on the plans for Work Package 2 & 4 (WP2 & WP4) .
For details see presentations that are posted on the EUCLIPSE website (www.euclipse.eu)

Sandrine Bony: Overview EUCLIPSE WP2 Climate model evaluation and analysis.

Overview of expected activities (see presentation for details)
Timeline :

- WP2 will officially start in March 2011 (mth 13)
- strong contribution to CMIP5 analysis
- strong input to the IPCC AR5 WG1 ("Clouds and aerosols chapter")
  (papers to be submitted by the end of Jul 2012, accepted by Mar 2013)
- contribution to WCRP/CMIP5 review papers ?

Bjorn Stevens: Overview Activities working group 4.
WP4 starts in March 2011.
4.1: get ideas from wp2 about specific sensitivities or unusual behaviour in the ESM's.
4.2: develop and test improvements suggested by WP3 in ESM's: narrow cloud feedback uncertainties.
4.3: establish observational metrics that correlate with climate sensitivity backed up by physical reasoning.
Proposal: Every participating climate model should vary those parameters that have been used to tune their model.

Gunilla Svensson: Arctic clouds in the AR4 models

Huge differences in liquid water path, ice water paths: surface cloud forcing large spread.
as function of cloud fraction. Too low optical thickness in longwave, too high in shortwave.
Summary:

- Arctic clouds are poorly represented both in global and regional models
- The insulating effect of clouds are underestimated in winter
- AR4 models show a substantial across-model spread in cloudiness and some models underestimate the cloud liquid water content
- Arctic clouds are different than lower latitude clouds both regarding microphysics and dynamics

EUCLIPSE objective: To apply similar analyses on AR5 models

Thorsten Mauritsen: What drives arctic amplification

From Holland and Bitz (2003) all models warm more strongly in the arctic.
Different Causes:
1 surface albedo feedback,
2 water vapor feedback,

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3 cloud feedback,
4 net energy transport into the arctic
Method to breakdown the relative contributions to the arctic apmplification applied to ECHAM.
Conclusions so far:

- The developed method provides exceptional linearity in the decomposition of the response to climate feedbacks.
- Experiments will be performed using final ECHAM 6.0, while including albedo, cloud and water vapor feedbacks.
- Exploitation of method in EUCLIPSE, whenever appropriate, is welcome.

Christine Nam: Evaluation of shallow convection in ECHAM5 schemes with Cloudsat and Calipso simulators

3 different low cloud parameterizations compared with satellite simulators.

- Lidar Simulators: New parameterization improve (some) of the problems in simulating low cloud cover compared to Calipso
- Radar Simulator: ECHAM5 has more reflective clouds than observations
  ECHAM5 has greater frequency of precipitation than observations
- Both simulators show differences amongst schemes less than difference with observations

Outlook: Assess cloud climate feedback for the thre low cloud parameterizations

Florient Brient, Sandrine Bony and Jean-Louis Dufresne: Understanding tropical cloud feedbacks mechanisms in the IPSL GCM through a hierarchy of models.

Overview and Examples of how to use the full hierarchy of models and observations for analysing the cloud response to global warming

Yoko Tsushima: Integration of metrics for cloud feedback.

Different metrics are used:, i.e. cloud regime error metric (Williams and Webb)
Metrics for cloud feedback (see Tsushima 2010) variation of radiative feedback with variation in the SST.

Daniel Klocke: Constraining estimates of climate sensitivity with present-day observations.

One model (ECHAM) used to make an ensemble of perturbed cloud physics that span up all the cloud uncertainties that are being observed in AR4 models
No relation found between model skill and model sensistivity.
Explained variance in skill: mainly due to entrainment in deep convection
Explained variance in sensitivity: mainly due to entrainment combined with massive detrainment in shallow convection.

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Targeted metric (tropical oceans): high and low sensitivity model diverge in strongest subsidence, and below 18 K the lower tropospheric stability causes separation as well: weighting helps.
This does not work for the multi model ensemble !?

Gilles Bellon: ITCZ and MJO

Things to do:

- Characterization of regime transitions and associated feedbacks, in particular the transition 1P – 2P. (xp = # of precip maxima)
- Characterization of associated cloud fields and cloud feedbacks.
- Sensitivity studies to the parameters of the convection scheme.
- Intercomparison of models: precipitation regimes, cloud fields…
- Use modified CLIVAR diagnostics to document the cloud signal associated to GCM MJOs.;
- Dig in for insights in the biases.

Gilles Bellon on behalf of Hervé Douville: Evaluation of temperature variability and change over Europe.

Large scale dynamics, cloud feedbacks, land surface feedbacks.

- Evaluation of temperature biases and changes over Europe using a weather regime cluster analysis for both winter (DJFL) and summer (JJAS)
- Comparison of various sources of errors (present-day climate) and uncertainties (future climate):
  - Large-scale dynamics (frequencies of weather regimes)
  - Cloud feedbacks
  - Land surface feedbacks (soil moisture in summer, snow cover in winter)
- Need of daily model outputs (CFMIP, possibly CMIP5, Z500)
- 18-month postdoc starting in January 2011

James Lloyd: The role of atmosphere feedbacks during ENSO in the CMIP3

CMIP3 Models overestimate the heat flux feedback in the east.
Split into different components: cloud response to the dynamics is most difficult in models.

- The α heat flux feedback is one of the main sources of ENSO amplitude errors in present-day GCMs.
- The strength of α is underestimated by the coupled simulations and most AMIP simulations.
- αSW is the primary source of model errors in the overall α feedback. Biases in the AMIP and coupled SW flux feedbacks are linked to the cloud response to dynamics (δTCC/δω500).
- An improved α feedback (and ENSO?!) can only be obtained by reducing the model cloud feedback biases in the East Pacific.

Mark Rodwell: Using data assimilation to quantify and understand model error.

Reduced entrainment of deep convecting plumes : model is out of balance: reject ?
The assimilation process is repeated with the perturbed model.
Measure the imbalance of initial tendencies as quality measure of consistency between model and obs.

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Dual-m scheme is better in balance ! Changes in the physics do influence the dynamics in a couple of days.
Summary:

- Initial tendencies to assess strato-cumulus / DUALM
- Transpose-AMIP to assess strato-cumulus & remote influence of deep convection
- Close collaboration with Physical Aspects Section of ECMWF

Johannes Quaas, MPI: Evaluation of aerosol-cloud-radiation interactions in ESM's.

Proposed metrics: variation of Nd (droplet concentration), LWP, TCC, Precip with Aerosol Optical Depth (AOD).
Results:

- Positive relationship of Nd and LWP vs AOD (especially over land) in models too strong (compared with observations: MODIS)).
- Second indirect effect on auto-conversion overly simplistic in models.

Summary:

- Aerosol-cloud interaction evaluation: suggest to be done in cooperation with AEROCOM
- Issues with vertical aerosol distribution and swelling (would Calipso help here?)

Ulrika Lohmann : Indirect Effects of Aerosols

Planned work in EUCLIPSE:

- Continue SCM evaluation at Cabauw test bed (with Roel Neggers)
- Investigate cloud feedback with 1-moment vs. 2-moment cloud schemes with and without aerosol-cloud interactions (started with Sandrine Bony (IPSL), to be revisited)
- Run 2-moment schemes with present-day, pre-industrial and future aerosol concentrations/emissions
- Goal in EUCLIPSE: Evaluate whether narrowing the range in feedbacks of cloud processes narrows the spread in associated aerosol-cloud effects.
- Task 4.2.2: Evaluate cloud-aerosol interactions, using different representations, across a subset of EUCLIPSE models (lead ETHZ: contributions from MPG, KNMI)

Marc Salzmann: Two-moment cloud microphysics in the GFDL AM3 GCM

2-moment scheme important for indirect aerosol effects. i.e. different CDND => autoconversion rates for the same LWP.
New cloud scheme GFDL allows for oversaturation for ice (see Tompkins 2007)
In-cloud droplet number is really different in the new run.
Summary:

- more sophisticated presentation of cloud ice
- important prerequisite for study of potential anthropogenic effects via ice phase

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General Discussion

WP1

George Tselioudis and Mark Webb:
Proposal: All EUCLIPSE Climate Models provide the CFMIP AOGCM control, AMIP+4K patterned SST runs, quadrupling step 4xCO2 at an earlier stage
For the quick look: Request simple diagnostics for the time being so that a synthesis paper can be drafted in July 2012.

Proposed Timeline:

- Model runs for the 3 (4?) core CFMIP climate runs ready in January 2012
- Submission of the simple diagnostics of these model runs by end of January 2012
- Discussion in June 2012 at the EUCLIPSE General Assembly on model results ans synthesis paper
- Submission synthesis paper July 2012

WP3

WP3 issues will be discussed in more detail separately on 29 and 30 September 2010 at a meeting at KNMI, De Bilt. There are 3 large themes in WP3

1. CGILS Case:
    - input needed from all EUCLIPSE SCM's.
    - submit a version with identical physics as the GCM.
    - try to find the key parameters that influence the sensitivity.
    - map out the sensitivities for SST and large scale subsidence for each SCM.
    - Double CO2 to relate to the ESM results (proposal Sandrine Bony)

2. Scu-Cu Transition Cases (ASTEX and the composite Lagrangian)
    - Well on track and ahead of schedule
    - Try to connect both cases by relating the high sensitivity models in CGILS to the models that break up early in the transition cases (Bjorn Stevens)
    - All SCM versions of EUCLIPSE climate models will participate with (at least) the same physics as in the formulations of the CFMIP runs

3. Analysis of ESM results and comparison to observations at selected locations (KNMI, IPSL, MF, CNRM, AA, METO) through
    - free climate model runs,
    - T-AMIP runs, climate runs nudged to reanalysis
    - Extended SCM runs

This point 3 needs more scienctific thoughts and input.
Use evaluations at the specific sites with satellite products to check where the problems are (Sandrine Bony).

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Proposal is to have a breakout meeting between now and June 2010 to further shape up ideas on the science related to point 3.

Further proposals:

A intercomparison between all the radiation codes on the sensitivity of the albedo of Scu used in the participating EUCLIPSE climate and LES models. To be further discussed in the WP3 meeting on 29-30 Sept 2010.

Summerschool 2013: Decide location in 2010. About 70-90 participants should be able to participate.

Next meeting is planned for June 6-11 June 2011. The Met Office has kindly offered to host the General Assembly for EUCLIPSE for 2011 in Exeter (UK).
Preliminary agenda:
break-out group for EUCLIPSE specific issues, CFMIP/GCSS meeting starts with general science merged agenda, final day reserved for EUCLIPSE