EUCLIPSE

EU Cloud Intercomparison, Process Study & Evaluation Project

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Deliverable D0.9 – Summer School on “Clouds and Climate”

Delivery date: 44 months

Involved partners:

- Royal Netherlands Meteorological Institute, Netherlands
- Max Planck Institute for Meteorology, Germany
- Centre National de la Recherche Scientifique Institute Pierre Simon Laplace, France
- Delft University of Technology, the Netherlands
- Météo-France, France
- University of Stockholm, Sweden
- University of Warsaw, Poland

Figure 1: Group photo of all the participants and lecturers

Location of the Euclipse Summer School

From June 24 to July 5, 2013 a summer school on “Clouds and Climate” was organized by the EUCLIPSE project as was promised with D0.9 in the DOW of the project.
The summer school took place at the “Ėcole de Physique des Houches”, Les Houches, France. The school of Physics of les Houches hosts physicists from around the world since 1951. Rich of a history which has seen the biggest names in modern physics form from young junior researchers (some of which will later receive the Nobel Prize in Physics), the school continues a tradition of excellence while adapting to changes in science. Courses or conference sessions can last from one to five weeks. Topics cover all the fields of physics, but also the interdisciplinary aspects at the borders between physics and the sciences of the Earth, mathematics, chemistry or biology.

Participants.

Over 130 students from all over the world did apply for participation of the EUCLIPSE Summerschool. From these applicants the best 54 students from 15 countries have been selected. A list of participants is attached to this document as Appendix 1.

Lectures and Lecturers

The program (see Appendix 2) consisted of a series of lectures presented by experts in the field

mainly from the EUCLIPSE consortium. The lectures followed closely the book ”Clouds and Climate” that is as part of EUCLIPSE under construction. As such the Summerschool did also serve as an excellent stepping stone to test the various drafts of the book chapters. The students did evaluate all the lectures and their input will be used to further shape the book. The titles of the lectures are

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Part 1 Fundamentals

● Lecture 1: Louise Nuijens (MPI Hamburg): Introduction and Overview (2 lectures)
● Lecture 2: Hélène Chepfer (LMD): Clouds and radiation (2 lectures)
● Lecture 3: Bjorn Stevens (MPI Hamburg): Cloud Dynamics (2 lectures)
● Lecture 4: Hanna Pawlowska (Warsaw University): Cloud Microphysics (2 lectures)

Part 2 Models and their evaluations

● Lecture 5: Stephan de Roode (TU Delft): Conceptual and Theoretical Model (3 lectures)
● Lecture 6: Françoise Guichard (Meteo France, CNRS):Cloud Resolving Models (3 lectures)
● Lecture 7: A. Pier Siebesma (KNMI, TU Delft): Representation of clouds in large-scale models (3 lectures)
● Lecture 8: Christian Jakob (Monash University): Evaluation of clouds in large-scale models (3 lectures)

Part 3 Cloud and Climate Processes

● Lecture 9: Gilles Bellon (Meteo France, CNRS): Tropical and subtropical Cloud systems (3 lectures)
● Lecture 10: Gunilla Svensson (Stockholm University): Extratropical and Polar Cloud systems (3 lectures)
● Lecture 11: Cathy Hohenegger (MPI Hamburg): Clouds and Land Surface Interaction (3 lectures)
● Lecture 12: Johannes Quass (University of Leipzig): Clouds and Aerosols (3 lectures)
● Lecture 13: Sandrine Bony (LMD): Clouds and Climate Change (3 lectures)

Also a number of distinguished guest lecturers visited the summer school to give more general evening lectures and actively participated in the many discussions during the Summer School:
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Simona Bordoni, (Ass. Professor California Institute of Technology, Pasadena, USA): Understanding the Monsoon Dynamics

Kerry Emanuel , (Professor MIT, Cambridge, USA): Radiative-Convective Instability

Ludovic Ravanel, (Compagnie des Guides de Chamonix): the evolution of the mountain in the current context of global warming. (Glacier retreat and unknown processes such as the degradation of mountain permafrost and the related processes.)

In relation with the presentation above from dr. Ravanel an excursion was organized on Sunday, June 30 to the Montenvers – Mer de Glace glacier.

Julia Slingo, (Chief Scientist at the Met Office, Exeter, UK): Uncertainty in Weather and climate Prediction

Adam Sobel, (Professor Columbia University, New York, USA):Cloud-radiative feedbacks and the Madden-Julian oscillation

Figure 2: Lectures

Student Activities

In order to stimulate the interaction between the students a number of activities were organized. The students were given 5 superproblems in groups of 6 persons. These super-problems were:

What would happen with the current and future climate if:

1. The latent heat would be 3 times larger/smaller.
2. Clouds would be transparent to radiation
3. the Earth would not rotate
4. condensed water/ice could not evaporate
5. clouds would be black (i.e. totally absorbing)

Figure 3: Student Presentation of “”Super-Problems”

In addition 2 debates were organized centered around 2 propositions:

1. There are too many climate models
2. IPCC has been detrimental to climate science.

For each proposition there were 2 groups of students, where one group had to defend and a competing group had to oppose the proposition in a public debate with an active participation of the audience.

Figure 4: Student Debates

Finally Poster sessions were organized throughout the 2 weeks in order to give the students opporunites to present their work to their fellow students and the lecturers.

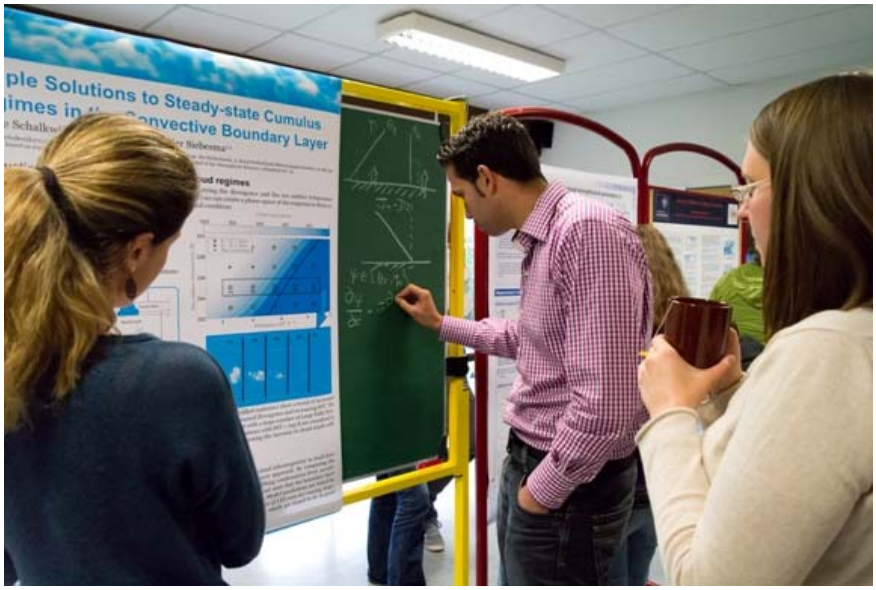

Figure 5: Poster Sessions

All these activities have been highly appreciated by the students as they have stimulated them to think and debate actively on the climate problem in many different aspects ranging from politics to science. Two afternoons were dedicated in which the students could present/debate the outcome of their group discussion in plenary sessions.

Figure 6: Student Discussions

Further Activities

In addition a panel discussion has been organized on career planning and opportunities for the students in climate science. Three lectures (Kerry Emanuel, Julia Slingo and Pier Siebesma) gave a short summary of their career paths after which there was a lively discussion with the students on how to (not) plan their future career steps within the field of climate.

Conclusion

From the evaluation it became clear that the summer school was highly appreciated by all the students and there was a strong request to make this school a recurring event with a cycle of around three years.

Further information

Further information on the Summerschool including photo impressions can be found at the Euclipse web site at:

http://www.euclipse.eu/summerschool/index.html

Appendix 1.

ÉCOLE DE PHYSIQUE des HOUCHES

EUCLIPSE Summer school on "Clouds and Climate"
Participant list

Alterskjær	Kari	University of Oslo	Norway
Arnold	Nathan	Harvard University	USA
Raudzens Bailey	Adriana	University of Colorado Boulder	USA
Barrera Verdejo	Maria	University of Cologne	Germany
Bellomo	Katinka	RSMAS, University of Miami	USA
Benedict	James	Colorado State University	USA
Block	Karoline	University Hamburg	Germany
Boïng	Steef	TU Delft	The Netherlands
Brueck	Heiner Matthias	University Hamburg	Germany
Carlson	Henrik	Stockholm University	Sweden
Cesana	Gregory	Universite Pierre et Marie Curie (UPMC)	France
Chen	Jinqiang	Cal. Inst. Of Technology	USA
Cisse	Mamadou	Universite Claude Bernard Lyon1	France
Coppin	David	University of Paris 6/ENS ULM	France
Dal Gesso	Sarah	KNMI - TU Delft	The Netherlands
Dinh	Tra	University of Washington	USA
Dussen, van der	Johan	TU Delft	The Netherlands
Evans	Stuart	University of Washington	USA
Fielding	Mark	University of Reading	England
Fuchs	David	University of NSW	Australia
Glassmeier	Franziska	ETH Zurich	Switzerland
Glenn	Ian	University of Utah	USA
Guzman Lastra	Francisca	Universidad de Chile	Chile
Jeevanjee	Nadir	UC Berkeley	USA
Kamae	Youichi	University of Tsukuba	Japan
Kapsch	Marie-Louise	Stockholm University	Sweden
Karmakar	Nirupam	Indian Institute of Science, Bangalore	India
Kodama	Chihiro	Tohoku University	Japan
Lacagnina	Carlo	KNMI	The Netherlands
Libois	Quentin	Ecole Polytechnique	France
Loriaux	Jessica	TU Delft - KNMI	The Netherlands
Mason	Shannon	Monash University	Australia
Myers	Timothy	Scripps Inst. Of Oceanography	USA
Naumann	Ann Kristin	Max Planck Inst. For Meteorology	Germany
Nie	Ji	Harvard University	USA
Nogherotto	Rita	Abdus Salam ICTP, Trieste	Italy
Nugent	Alison	Yale University	USA
Nurowska	Katarzyna	University of Warsaw	Poland
Nygren	Eva Lovisa	Stockholm University	Sweden
Oueslati	Boutheina	Université Paul Sabatier	France

Paquin-Ricard	Danahé	University of Quebec in Montreal (UQAM)	Canada
Popke	Dagmar	Max Planck Inst. For Meteorology	Germany
Posner	Anna	ETH Zurich	Switzerland
Reitter	Sonja	University of Cologne	Germany
Rochetin	Nicolas	Universite Paris 6	France
Schalkwijk	Jerome	TU Delft	The Netherlands
Schemann	Vera	Max Planck Inst. For Meteorology	Germany
Schmeissner	Tina	University of Leipzig	Germany
Sotiropoulou	Georgia	Stockholm University	Sweden
Takeishi	Azusa	Yale University	USA
Tan	Zhihong	California Institute of Technology	USA
Tomassini	Lorenzo	Max Planck Inst. For Meteorology	Germany
Vial	Jessica	University of East Anglia	England
White	Bethan	University of Oxford	England
Yu	Weihua	Institute of Atmospheric Physics	USA

Appendix 2

International Summer school on "Clouds and Climate"

Les Houches, France, June 24 - July 5, 2013

Monday June 24

15:00-18:00	Registration	
19:30	Dinner	

Tuesday June 25

09:00 - 09:15	Opening	Pier/Sandrine/Björn/Christian
09:15 - 10:15	Introduction to Clouds &Climate (1)	Louise Nuijens
10:15 - 10:30	Coffee	
10:30 - 11:30	Introduction to Clouds &Climate (2)	Louise Nuijens
11:30 - 12:00	Introduction to the Student Challenges	Pier/Sandrine/Björn/Christian
12:30 - 14:00	Lunch	
14:00 - 15:45	Rapid Poster Introduction by Participants	
15:45 - 16:00	Break	
16:00 - 18:30	Poster Viewing	
18:30 - 19:30	Welcome drinks	
19:30	Dinner	

Wednesday June 26

09:00 - 10:00	Clouds & Radiation (1)	Hélène Chepfer
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds & Thermodynamics (1)	Bjorn Stevens
11:15 - 11:30	Break	
11:30 - 12:30	Clouds & Microphysics (1)	Hanna Pawlowska
12:30 - 14:00	Lunch	
14:00 - 17:00	Free Time for the Student Challenges/ Discussions	
18:00 -19:00	Conceptual and Theoretical Models (1)	Stephan de Roode
19:30	Dinner	
21:00 - 22:00	Special Evening Lecture: the evolution of the mountain in the current context of global warming	Ludovic Ravanel

Thursday June 27

09:00 - 10:00	Clouds & Radiation (2)	Hélène Chepfer
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds & Thermodynamics (2)	Björn Stevens
11:15 - 11:30	Break	
11:30 - 12:30	Clouds & Microphysics (2)	Hanna Pawlowska
12:30 - 14:00	Lunch	
16:00 - 17:30	Panel discussion 1	
18:00 - 19:00	Cloud Resolving Models (1)	Françoise Guichard
19:30	Savoyard Dinner	

Friday June 28

09:00 - 10:00	Conceptual and Theoretical Models (2)	Stephan de Roode
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Cloud Process representation in Large Scale Models (1)	Pier Siebesma
11:15 - 11:30	Break	
11:30 - 12:30	Cloud Resolving Models (2)	Françoise Guichard

12:30 - 14:00	Lunch	
14:00 - 17:00	Free Time for the Student Challenges/ Discussions/Lecture Feedbacks	
18:00 - 19:00	Evaluation of clouds in Large Scale Models (1)	Christian Jakob
19:30 Dinner		
21:00 -22:00	Special Evening Lecture: Radiative-Convective Instability	Kerry Emanuel

Saturday June 29

09:00 - 10:00	Cloud Resolving Models (3)	Françoise Guichard
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Conceptual and Theoretical Models (3)	Stephan de Roode
11:15 - 11:30	Break	
11:30 - 12:30	Cloud Process representation in Large Scale Models (2)	Pier Siebesma
12:30 - 14:00	Lunch	
14:00 - 19:00	Free Time for the Student Challenges/ Discussions/Lecture Feedbacks	
19:30 Dinner		

Sunday June 30

Excursion
19:30 Dinner

Monday July 1st

09:00 - 10:00	Tropical and Subtropical Systems (1)	Gilles Bellon
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds and Climate Sensitivity (1)	Sandrine Bony
11:15 - 11:30	Break	
11:30 - 12:30	Cloud Process representation in Large Scale Models(3)	Pier Siebesma
12:30 - 14:00	Lunch	
16:00 - 17:30	Panel discussion 2	
18:00 -19:00	Evaluation of clouds in Large Scale Models (2)	Christian Jakob
19:30 Dinner		
21:00 -22:00	Special Evening Lecture: Uncertainty in Weather and climate Prediction	Julia Slingo

Tuesday July 2

09:00 - 10:00	Clouds and Climate Sensitivity (2)	Sandrine Bony
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Tropical and Subtropical Systems (2)	Gilles Bellon
11:15 - 11:30	Break	
11:30 - 12:30	Extratropical and Polar Cloud Systems (1)	Gunilla Svensson
12:30 - 14:00	Lunch	
14:00 - 17:00	Free Time for the Student Challenges/ Discussions/Lecture Feedbacks	
18:00 -19:00	Evaluation of clouds in Large Scale Models (3)	Christian Jakob
19:30 Dinner		

Wednesday July 3

09:00 - 10:00	Clouds and Aerosols (1)	Johannes Quaas
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds and Land Surface Interaction (1)	Cathy Hohenegger
11:15 - 11:30	Break	
11:30 - 12:30	Tropical and Subtropical Systems (3)	Gilles Bellon
12:30 - 14:00	Lunch	
14:30 - 15:00	Student presentation Super problem 1	
15:00 - 15:30	Student presentation Super problem 2	
16:00 - 16:30	Student presentation Super problem 3	
16:30 - 17:00	Student presentation Super problem 4	
18:00 -19:00	Extratropical and Polar Cloud Systems (2)	Gunilla Svensson
19:30 Dinner		
21:00 -22:00	Special Evening Lecture: Cloud-radiative feedbacks and the Madden-Julian oscillation	Adam Sobel

Thursday July 4

09:00 - 10:00	Clouds and Climate Sensitivity (3)	Sandrine Bony

10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds and Land Surface Interaction (2)	Cathy Hohenegger
11:15 - 11:30	Break	
11:30 - 12:30	Extratropical and Polar Cloud Systems (3)	Gunilla Svensson
12:30 - 14:00	Lunch	
14:30 - 15:15	Student debate 1	
15:30 - 16:15	Student debate 2	
16:30 - 17:15	Student debate 3	
18:00-19:00	Clouds and Aerosols (2)	Johannes Quaas
19:30 Dinner		
21:00 - 22:00	Special Evening Lecture: Understanding the Monsoon Dynamics	Simona Bordoni

Friday July 5

09:00 - 10:00	Clouds and Land Surface Interaction (3)	Cathy Hohenegger
10:00 - 10:15	Coffee /Tea	
10:15 - 11:15	Clouds and Aerosols (3)	Johannes Quaas
11:15 - 11:30	Break	
11:30 - 12:30	Conclusions and Overview	Björn Stevens
12:30 - 14:00	Farewell Lunch	