

## **Parameterization of Stable Boundary Layer in Numerical Weather Prediction Models**

Finnish Meteorological Institute, Helsinki, December 3 - 5 2012

Meeting room Tellus (3rd Floor, room 3D19c)

### **Monday the 3rd of December 2012**

#### Session 1: Introduction

Chairman: Sylvain Joffre

sylvain.joffre, fmi.fi

09.00 - 09.10 Opening and arrangements of the workshop

09.10 - 09.35

Sergej Zilitinkevich: New developments in modelling and parametrization of stable PBLs

sergej.zilitinkevich, fmi.fi

09.35 - 10.00

Irina Sandu: Why is it so difficult to represent stable boundary layers in NWP models?

irina.sandu, ecmwf.int

10.00 - 10.25

Timo Vihma: Towards the Fourth GEWEX Atmospheric Boundary Layer Model Inter-comparison Study (GABLS4)

timo.vihma, fmi.fi

*10.25 - 10.45 Refreshments*

#### Session 2: Forecasting SBL Weather

Chairman: Sami Niemelä

sami.niemela, fmi.fi

10.45 - 11.10

Jukka Julkunen: Boundary layer challenges in aviation meteorology

jukka.julkunen, fmi.fi

11.10 - 11.35

Francois Boyussel: Forecasting low level clouds and fog with Arome

francois.boyussel, meteo.fr

11.35 - 12.00

Karl-Ivar Ivarsson: Experiences on AROME forecasting fog and low clouds for Nordic conditions

karl-ivar.ivarsson, smhi.se

12.00 - 12.25

Aurore Porson: Clear sky and fog case studies over the UK with the high resolution MetUM

aurore.porson, metoffice.gov.uk

12.25 - 12.50

Irene Suomi: Effects of stability on wind gusts

irene.suomi, fmi.fi

*12.50 - 13.50 Lunch*

13.50-13.50 (cancelled, see the linked paper instead)

Evgeny Atlaskin: Evaluation of NWP results for wintertime nocturnal boundary-layer temperatures over Europe and Finland

[published paper](#)

evgeny.atlaskin, fmi.fi

13.50 - 14.15

Dmitrii Mironov: Effect of Surface Temperature Heterogeneity on Turbulent Mixing in the SBL

dmitrii.mironov, dwd.se

14.15 - 14.30

Ekaterina Kurzeneva: Surface temperature model errors in off-line ice simulations under SBL conditions

ekaterina.kurzeneva, fmi.fi

14.30 - 14.45

Laura Rontu: Very short note on radiation comparisons in Sodankylä

laura.rontu, fmi.fi

14.45 - 14.55 Introduction + division to working groups

*14.55 - 15.15 Refreshments*

15.15 - 17.00 Session 3: Working groups

**Suggested working groups:**

WG-Oper: Problems and solutions for handling of SBL in operational NWP  
Expected outcome: identification of main problems and suggestions for further work

WG-GABLS: Preparation of GABLS4 Antarctic experiment  
Expected outcome: plans and perhaps data for the next phase of the experiment

WG-Turb: Ways to implement the new turbulence parametrisations into NWP models  
Expected outcome: suggestions for the approach and code structures for AROME-ALARO and other models

**Rooms available for working groups:**

Kontti (medium), bottom floor PA06c (Mon-Tue)

Sykloni (medium), 4th floor 4A08c (Wed)

Tellus (large), 3rd floor, 3D19c

Turbulenssi (small), 4th floor, 4A12c

**Tuesday the 4th of December 2012**

Session 4: Modelling of SBL over snow and ice

Chairman: Timo Vihma

timo.vihma, fmi.fi

09.00 - 09.25

Hannu Savijärvi: High-resolution simulations of the night-time stable boundary layer over snow

hannu.savijarvi, helsinki.fi

09.25 - 09.50

Marina Sterk: The role of snow-surface coupling, radiation and turbulent mixing in modeling a stable boundary layer over Arctic sea-ice

marina.sterk, wur.nl

09.50 - 10.15

Olivier Traulle: Preliminary results on turbulent measurements over an instrumented profile tower in Dome C Antarctica ; attempting to estimate some turbulent parameters through unstable and stable boundary layer conditions above snow surface

olivier.traulle, meteo.fr

10.15 - 10.40

Eric Bazile: Study of the diurnal cycle at DomeC Antarctica: 3D and 1D experiment and impact of the snow and PBL scheme

eric.bazile, meteo.fr

10.40 - 11.05

Rostislav Kouznetsov: The shallow katabatic flows over Dronning Maud Land, Antarctica

rostislav.kouznetsov, fmi.fi

*11.05 - 11.25 Refreshments*

### Session 5: Turbulence parametrisations

Chairman: Carl Fortelius

carl.fortelius, fmi.fi

11.25 - 11.50

Ivan Bastak Duran:

Compact stability dependence model for turbulent schemes with prognostic TKE and without critical Richardson number: 3 parameter system of functions for the whole range of Richardson numbers

ivanbastak, gmail.com

11.50 - 12.15

Jean-Francois Geleyn: Third Order Moments parametrisation for turbulent schemes with prognostic TKE: non-local extension of local heat/moisture diffusion with a complete, simple and stable solver

jean-francois.geleyn, meteo.fr

12.15 - 12.40

Niels Woetman Nielsen: Parameterization of the effect of turbulence in the nocturnal boundary layer

nwn, dmi.dk

*12.40 - 13.40 Lunch*

Session 7: Working groups continue

13.40 - 17.00

WG-Oper: Problems and solutions for handling of SBL in operational NWP

WG-GABLS: Preparation of the GABLS4 Antarctic experiment

WG-Turb: Ways to implement the new turbulence parametrisations into NWP models

*14.50 - 15.10 Refreshments*

Working group sessions continue after coffee break.

*19.30 Workshop dinner in restaurant [Cella](#)*

By choosing meals from menu beforehand we will improve service in the restaurant. Please think about your choice (everyone will pay own expenses), we will collect a list of 2-3 alternatives on Monday!

## **Wednesday the 5th of December 2012**

08.30 - 10.00

Finishing working group work, writing slides for general discussion

Session 6: Air quality modelling in SBL

Chairman: Curtis Wood

curtis.wood, fmi.fi

10.00 - 10.25

Alexandr Baklanov: SBL parameterisations for urban areas and environmental applications

alb, dmi.dk

10.25 - 10.50

Marko Kaasik: Performance of SILAM air quality model in winter anticyclone

marko.kaasik, ut.ee

*10.50 - 11.10 Refreshments*

Session 7: Final discussions

Chairman: Laura Rontu

laura.rontu, fmi.fi

11.10 - 11.40

Report from WG-Oper, discussion

11.40 - 12.10

Report from WG-GABLS, discussion

12.10 - 12.40

Report from WG-Turb, discussion

12.40 - 13.00

Final discussion and conclusions

13.00

Closure of the workshop

*13.00 - Lunch*