

BLLAST Newsletter October 2014

Coming soon, the 2-3 February BLLAST workshop

Our next workshop will be held in Barcelona, in the Campus of the University of Barcelona on 2 and 3 February 2015. Most of the groups should be represented, and about 25 participants have signed in so far.

Thanks to David Pino for being our local organizer !

We will discuss ongoing studies and perspectives, and evaluate whether we can build a synthesis of our understanding of the afternoon transition based on our various studies.

Please register at <http://doodle.com/exw3dqy89fi4m69n> if you have not done it already. Also let David Pino and Marie Lothon know about your planned contribution (presentation), for them to prepare a detailed programme.

21th conference on Boundary-Layers and turbulence , 9-13 June 2014: Contributions and summary of the discussions

Contributions:

- Cuxart J., B. Wrenger, J. Duennermann, D. Martinez, M. A. Jimenez, L. Conangla, J. Reuder, M. O. Jonassen, M. Lothon, F. Saïd, and F. Lohou : Sub-kilometric heterogeneity effects on the surface energy budget in BLLAST'11.
- Jimenez M. A., W. M. Angevine, E. Bazile, F. Couvreux, J. Cuxart, D. Pino, and M. Sastre: An intercomparison of mesoscale simulations during the Boundary Layer Late Afternoon and Sunset Turbulence (BLLAST) experimental field campaign.
- Darbieu C., F. Lohou, M. Lothon, F. Couvreux, D. Pino, P. Durand, E. Blay, and J. Vilà: Evolution of the turbulence during the afternoon transition of the convective boundary layer: a spectral analysis.
- Nilsson, M. Lothon, F. Lohou, C. Darbieu, E. Pardyjak and L. Mahrt: Wind direction shifts, gradients, variances and variability during BLLAST
- Sastre M., C. Yagüe, C. Romàn-Cascòn, and G. Maqueda: Study of the atmospheric boundary layer evening transitions using two different datasets: An observational and numerical approach.

- Van de Boer A., F. Moene, A. Graf, C. Simmer, and A. A. M. Holtslag: Estimation of optical turbulence with standard weather-station observations.
- Romàn-Cascòn C., C. Yagüe, S. Viana Sr., M. Sastre, G. Maqueda, M. Lothon, and I. Gòmara Sr.: Observational analysis of gravity waves associated with a convective system near the Pyrenees during the BLLAST campaign.
- Sastre M., G. J. Steeneveld, C. Yagüe, C. Romàn-Cascòn, and G. Maqueda: WRF sensitivity to boundary-layer and land-surface schemes during the evening transition: validation with BLLAST case study.
- Canut G., and D. Legain, B. Piguët, E. Moulin, and D. Tzanos: The eddy-covariance method applied in a tethered-balloon.
- Cuxart J., B. Wrenger, J. Duennemann, D. Martinez, M. A. Jimenez, L. Conangla, J. Reuder, M. O. Jonassen, M. Lothon, F. Saïd, and F. Lohou : Sub-kilometric

Summary of the discussion which took place in Leeds:

People who were there for the discussion:

Arnold Moene, Gert-Jan Steeneveld, Jordi Vila Gueau de Arellano, Eric Pardyjak, Derek Jensen, Joan Cuxart, Larry Mahrt, Erik Nilsson, Mariano Sastre, Carlos Roman, Jens Bange, Joe Smith, Dave Tupman, Wayne Angevine, Eric Bazile, Guylaine Canut, Zbignew Sorbjan, Marie Lothon

We decided to make a round table, for a brief update on our ongoing studies and needs:

- Univ. of Wageningen

Anneke van de Boer (with Arnold Moene): current work on SL similarity, refractive index structure function

Lisanne Nauta (with Oscar Hartogensis): study on drainage flow (see Master report available on the BLLAST website)

Oscar Hartogensis: area-averaged flux in progress. NB: 3 km scale needed by modeling group. Connection with intercomparison group needed, for most appropriate scale choice, and priority cases

Gert-Jan Steeneveld: work on WRF schemes (with Mariano). Goal of re-connecting to intercomparison exercise

Jordi Vila Guerau de Arellano: case study with Henk Pietersen (nb: 2 other cases studied by Estel B. and Clara D.)

ML+LES sensitivity study, role of LS forcings

goal: pursuing with other typical cases

- Wayne Angevine : reports on the inter-comparison group

Expresses needs for defining revised goals and timetable.

Important need for the area-averaged fluxes.

- Zbigniew Sorbjan: Wishes to work on the evolution of the entrainment flux at the top. Collaboration with S. Raasch

- CNRM-Game Météo-France group:

Eric Bazile: Participation to the model inter-comparison

Fleur Couvreux: Evaluation of NWP models, vertical structure, fluxes and turbulence decay.

Guyline Canut: Comparison of TKE and variances of models-lidar-TB on 4 IOP days

- Univ. of Complutense de Madrid

Mariano Sastre, Gert-Jan Steeneveld, Carlos Yägüe: Test of WRF PBL and surface schemes. Main influence comes from humidity

Carlos Román Cascón, Carlos Yägüe : Continues study on gravity Waves.

- Univ. of Tübingen

Jens Bange and colleagues : Project of SPALT. Proposal planned to be submitted in 2015. Note that it would cover only German's groups.

- Univ. of Utah.

Eric Pardyjak and colleagues: studies based on Matterhorn and BLLAST: test of TKE model, work on counter-gradient flux theory, temperature variance during evening transition, study on Lifted Temperature Minimum (LTM)

- Joan C.: Surface layer studies based on Thermo-couples, during nocturnal conditions. Surface advection term estimates. Note on the importance of the mesoscale circulation on the BL dynamics.

Maria Antonia: the simulation of 1-2 July 2010, and of 30 jun-1-2 July 2011 with Meso-NH nested simulations will be made available for all, from the BLLAST website. *(Done, see the BLLAST database).*

- Univ. Of Bergen

Line Baserud, Jochen Reduer: UAV high rate wind measurements in progress

Omar Elguernaoui (new student at Geophysical Institute of UiB), Jochen Reduer: objective of studying the role of surface heterogeneity with LES (PALM model).

- Univ. of Dunkerque

Patrick Augustin, Pascal Flament: give inputs on aerosol CBL loading, and sources

- Barcelona Tech UPC (were not able to make it at the BLT)

Estel Blay, with David Pino and Erik Pardyjak: after study case of 1-2 July on residual layer, ongoing study on the delay time between zero-buoyancy flux and Lifted Minimum Temperature based on surface measurements.

- Univ. of Toulouse

Erik Nilsson, , with Fabienne Lohou and Marie Lothon: Work on surface layer: wind direction variability, drainage flow, understanding TKE decay and TKE budget

Clara Darbieu, with Fabienne Lohou and Marie Lothon: Continues work on the evolution of turbulence structure during the AT, spectra and scales especially in focus, with 2 phases found during the AT (case of 20 June).

Fabienne Lohou: ongoing work on the TKE budget from the LES

Marie Lothon: ongoing work on a Zi estimation based on the dissipation rate measured by UHF wind profiler.

General discussion on:

- The feedbacks from the 2 reviewers on the BLLAST overview paper. Especially on the comments about quasi-steadiness.

- the need of proposing a conceptual scheme or our understanding of the afternoon and evening transitions from our studies. Something that can be further discussed and prepared for and during the Barcelona workshop.

ACP Special Issue on the BLLAST project: where are we?

The ACP Special Issue on the BLLAST project is available here:

http://www.atmos-chem-phys-discuss.net/special_issue201.html

Associated Editors: R. J. Beare, Y. Brunet, E. Paradyjak, and S. Galmarini

Articles can be submitted to the Special Issue until 31 December 2015.

Articles already submitted or published:

- Blay-Carreras, E., Pino, D., Van de Boer, A., De Coster, O., Darbieu, C., Hartogensis, O., Lohou, F., Lothon, M., Pietersen, H., and Vilà-Guerau de Arellano, J.: Role of the residual layer and large-scale subsidence on the development and evolution of the convective boundary layer.
- Blay-Carreras, E., E. R. Paradyjak, D. Pino, D. C. Alexander, F. Lohou, and M. Lothon, 2014: Countergradient heat flux observations during the evening transition period
- Angevine, W. M., E. Bazile, D. Legain, and D. Pino : Land surface spinup for episodic modeling.
- Lothon, M. F. Lohou, D. Pino, F. Couvreux, E. R. Paradyjak, J. Reuder, J. Vilà-Guerau de Arellano, P. Durand, O. Hartogensis, D. Legain, P. Augustin, B. Gioli, I. Fabona, C. Yaüge et al. : The BLLAST field experiment: Boundary-Layer Late Afternoon and Sunset Turbulence.
- Pietersen, H., J. Vilà-Guerau de Arellano, P. Augustin, O. de Coster, H. Delbarre, P. Durand, M. Fourmentin, B. Gioli, O. Hartogensis, M. Lothon, F. Lohou, D. Pino, H. G. Ouwersloot, J. Reuder, and A. van de Boer : Study of a prototypical convective boundary layer observed during BLLAST: contributions by large-scale forcings.

Database – update!

Thanks to H el ene Ferr e (SEDOO), the original BLLAST database is now freely opened to all. To access to the data, any interested people gets access to the data after they have indicated their name, affiliation, and motivation.

Only the ongoing TKE database, and the boundary layer height estimates are restricted to BLLAST participants.

BLLAST Principal Investigators may still upload data.

Here are data that are expected to be uploaded:

- TKE estimates from both observations or simulation, planned to be gathered in the restricted TKE database.
- Any new estimates of Z_i should can be uploaded in the boundary layer height restricted database
- Modelling data or metadata information: There is now a section for mesoscale and LES modelling (and any other models like Mixed-layer model or DNS can be added). PIs can upload information and contact, if not output files, for simulations that they wish to make available.
- Missing mean meteorological variables: Surface station PIs are invited to upload the mean meteorological data on the database, if this has not been done before. (Turbulence data and uniform process is available, but not always associated with the mean variables).

Awards

- Estel Blay has very successfully defended her PhD thesis in July this summer, at the UPC of Barcelona. Her thesis is entitled: "Transitional periods of the atmospheric boundary layer".
- Mariano Sastre Marug an and Carlos Rom an-Casc on, from the University Complutense de Madrid, have been selected for the Best Student Poster Presentation for the 21st Symposium on Boundary Layers and Turbulence. Their presentations were entitled:
 - "Observational analysis of gravity waves associated with a convective system near the Pyrenees during the BLLAST campaign" (Carlos)

- “WRF sensitivity to boundary-layer and land-surface schemes during the evening transition: validation with BLLAST case study” (Mariano)

Reminder:

- Check various reports and publications related to BLLAST on:
<http://blast.sedoo.fr/Documents>
- Note that the BLLAST publications, or BLLAST related publications are put on the web section “Documents” on the BLLAST web site. Please let blast@aero.obs-mip.fr know when you have submitted an article for publication.