

Workshop 2-3 February 2015 Barcelona

David Pino: Welcoming introduction

Marie Lothon: A brief overview of BLLAST studies

Maria Antonia: Downslope winds analysis based on a Meso-NH simulation

Oscar Hartogensis: The area-averaged flux task. Some results on the IOP's chosen for the model intercomparison (25/6 and 1/7)

Erik Nilsson: Turbulent Kinetic Energy budget in the surface layer

Guylaine Canut: Observation of turbulent kinetic energy based on BLLAST observations and a field campaign in Bourges, France.

Fleur Couvreux: Representation of the afternoon transition in Numerical Weather Prediction models: evaluation with BLLAST data

Clara Darbieu: Evolution of the vertical structure of turbulence during the late afternoon transition

David Pino: Minimum lifted temperature

Antonia Kempf: Simulation of the diurnal cycle with the BLLAST dataset and the LES model EULAG

Omar El Guernaoui (presented by Jochen Reuder): A new LES model for BLLAST. Understanding the influence of surface heterogeneity on the TKE decay during the late afternoon transition

Mariano Sastre Marugan: A comparison between atmospheric boundary layer evening transitions at two experimental sites

Carlos Roman: A wave event on 2 July

Derek Jensen: Counter-gradient flux during MATTERHORN and BLLAST

Daniel Martinez: Some methodological developments for estimating surface flux and analysis of the MOST during BLLAST



Photo: Joachim Reuder

Joan Cuxart: Small scale surface temperature heterogeneities: effect on the Surface Energy budget

David Tupman: Current research of the Environmental Physics group of the University of Tuebingen: Boundary layer measurements with Unmanned Aerial Vehicles (UAVs), and the Ammer valley ground station network.

Jochen Reuder: Status on the SUMO turbulence measurements, and instrumentation at GFI.

Ali Al Sam: Current research and plans based on BLLAST dataset



Photo: Joachim Reuder

Discussions:

- Discussion around the mesoscale model intercomparison
 - 2 days kept, 25/06 and 01/07, for their interesting differences
 - 3 steps planned:
 - * Analysis of Maria Antonia's mesoscale simulations
 - * Enlarge the domain of intercomparison, 3D perspective
 - consider day and night (not in between), consider 2 points: Lannemezan and at the exit of the Aure Valley
 - * Back to local area for final objective of evaluating the models on the afternoon decay (time of the transition, wind reversal, ...)
 - Additional proposition: Include the area-averaged flux analysis:

- by adding the area-averaged flux to the previous comparison (different stations, different models)
 - by running the area-averaged flux algo of Oscar on the land-use map used in the model (to check whether the resulting area-averaged fluxes are very different from those made based on the CESBIO map).
- Review of the set of LES models used and associated studies going on BLLAST :
 - DALES (20/6, 25/06, 01/07)
 - NCAR (20/06, 30/06-01/07)
 - Meso-NH LES (20/06)
 - PALM (all IOP days)
 - EULAG (01/07)
 - OpenFOAM

List of people on a LES group list:

- Jochen, Omar, Fleur, David, Fabienne, Clara, Jordi, Erik, Antonia, Ali, Marie

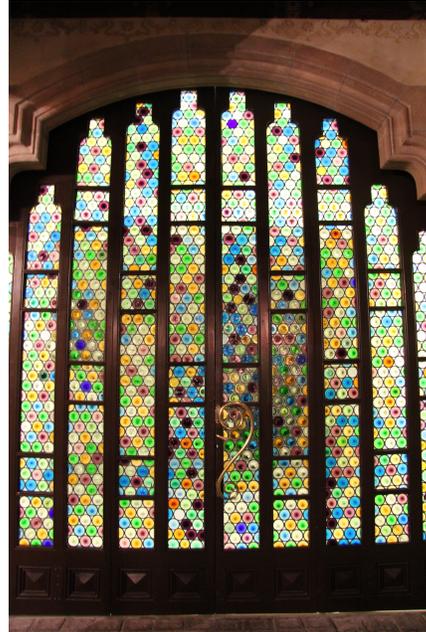


Photo: Joachim Reuder

Possibility for Ali to make some intercomparisons on some cases like 20/06 which has already been simulated by 4 models, with tests of initial profiles, prescribed advection, ... and to test subgrid schemes for a better understanding of the differences between the models.

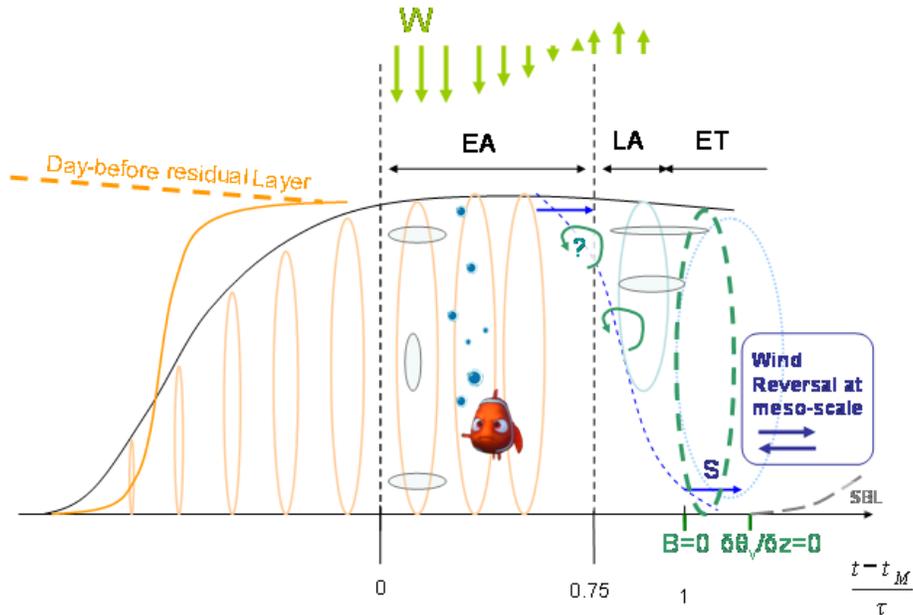
Proposition of using high resolution area-averaged flux as forcing surface flux in the 20/06 LES.

- Around our understanding of Turbulent Kinetic Energy decay, and a conceptual description of the LAT... Or what remains to address for us to draw it ?

TKE decay (TKE decay, TKE budget evolution & evolution of other variances, Evaluation of the forecast models, Technical aspects)

CBL evolution sketch (remaining unclear mechanisms, and contradictory results)

Linking our understanding of mesoscale forcings to the forcings that influence the CBL processes



* David P.: do not forget shear sheltering (see works by Hunt et al, Brecher et al), when considering the role of entrainment, and the demixing process

Maybe LES not the best tool to address the question of the decoupling with height, and the demixing process. DNS ? Lab exp ?

* It would be interesting to use DNS for the second phase of the AT, the most transitory and complex, where the LES may fail on several aspects.

* David P.: interest on studying the evolution with height of the counter-gradient theory works. David and Derek willing to contribute.

* Fleur C., Marie L., study by Taylor et al 2014: release of tracers a good tool for highlighting the transition evolution of vertical structure and scales ? (release at different time and height from surface to inversion height).

* nb: Jordi V.: A study of LS forcings of the 12 IOP days with ML model had been proposed a few months ago.

* Marie L.: testing Zi-scaling with the different definitions of Zi, and extending van Driel and Jonker 2011 study would be interesting.

* Need more work on radiative forcings.

Other topics

- Information for newbies about the field experiment and the database
 - > Not done, because of lack of time, and impossibility to access BLLAST website.
- BLLAST prospectives
 - SPALT: stand by.
 - Plan to continuing the BLLAST analyses
 - Experimental sub-projects proposed
 - David Tupman (Tübingen) indicated that there will be some flight planned for the study of the morning transition, and that he might also make some flights for the afternoon transition issue, at low levels. Suggestions of flight plans and strategy welcome, as David T. is willing to contribute with some more data.
- Data base
 - Open access now, TKE and Zi database restricted.
- ACP special issue
 - Status of papers published, submitted, in preparation, and planned.
- Upcoming conferences
 - ISARRA (Line, Marius), EGU (Clara), EMS ? BLT 2016
- Next workshop
 - Wageningen is proposed
 - Feb 2016 ? end of summer 2016
 - ? Feb 2017 ?



Photo: Joachim Reuder