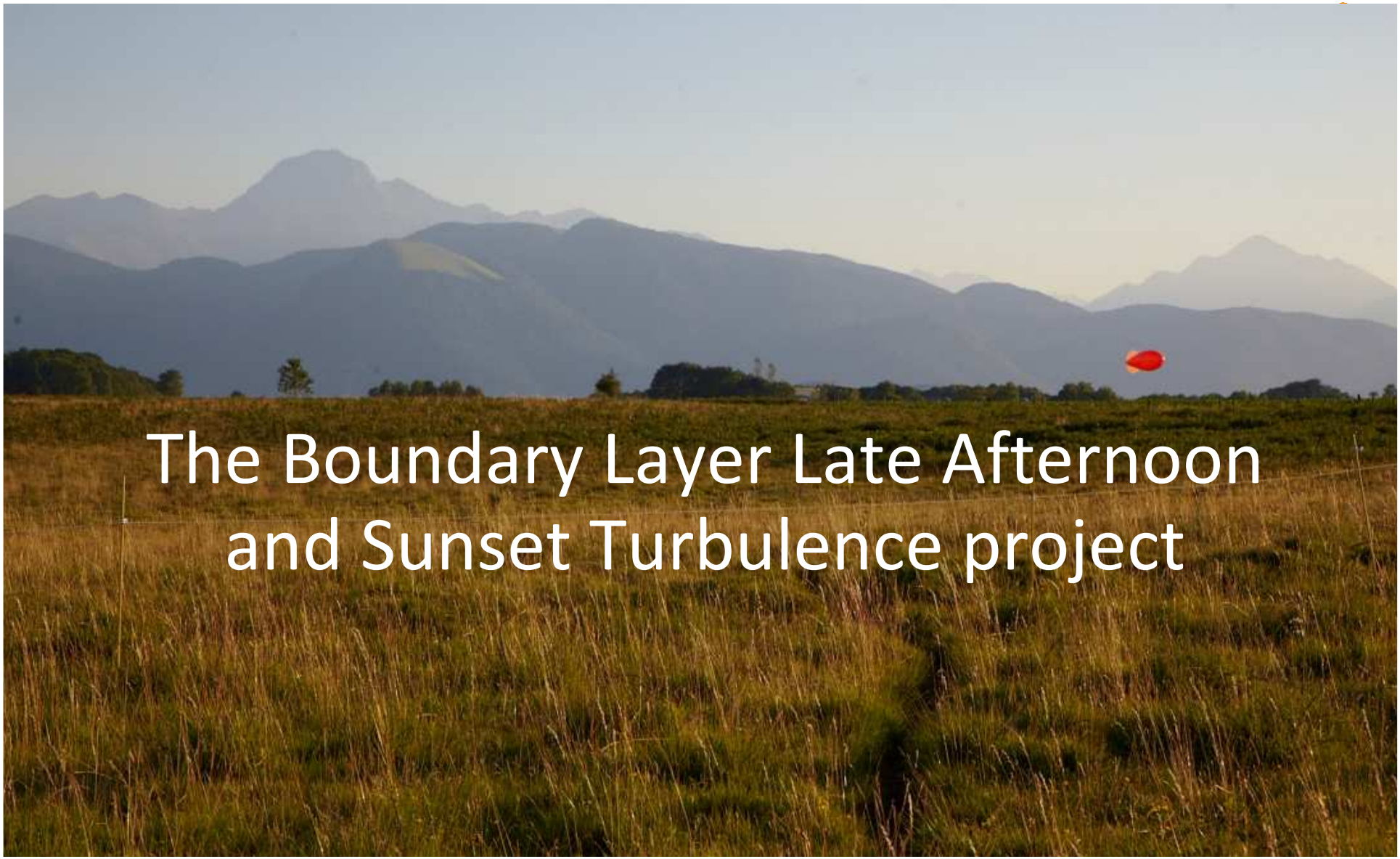
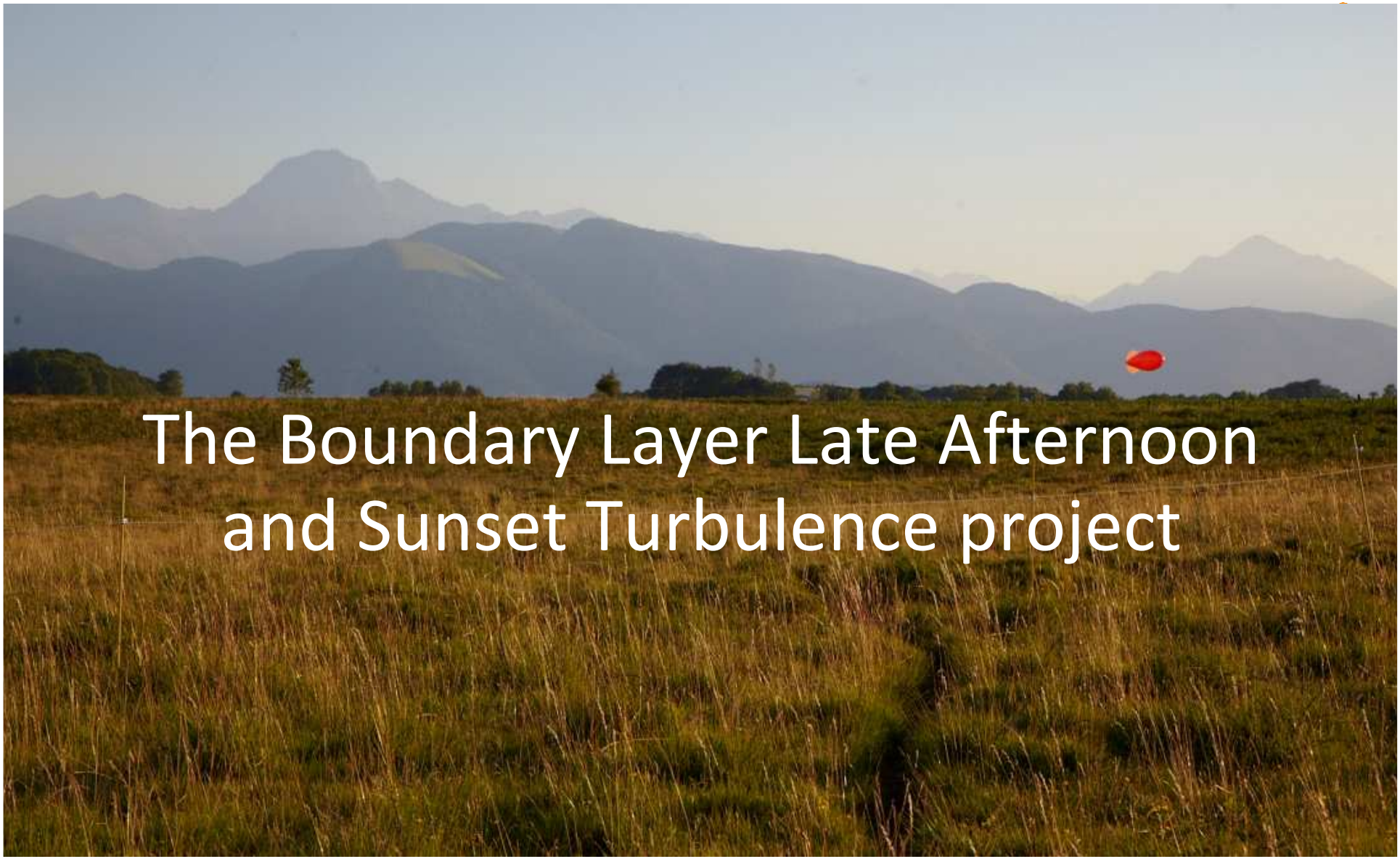


The Boundary Layer Late Afternoon and Sunset Turbulence project

Observatoire Midi-Pyrénées OMP · cnrs · lefe · METEO FRANCE · ANR

BLLAST

cost ES 0802 Unmanned Aerial Systems in Atmospheric Research · EUFAR European Fleet for Airborne Research



The Boundary Layer Late Afternoon and Sunset Turbulence project

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

UNIVERSITETET I BERGEN

Universitat de les Illes Balears

pmod wrc

UCDAVIS UNIVERSITY OF CALIFORNIA

UCSanDiego

EBERHARD KARLS UNIVERSITÄT TÜBINGEN

WAGENINGEN UR METEOROLOGY AND AIR QUALITY

THE UNIVERSITY OF UTAH

lpca Laboratoire de Physico-Chimie de l'Atmosphère

Ibimet

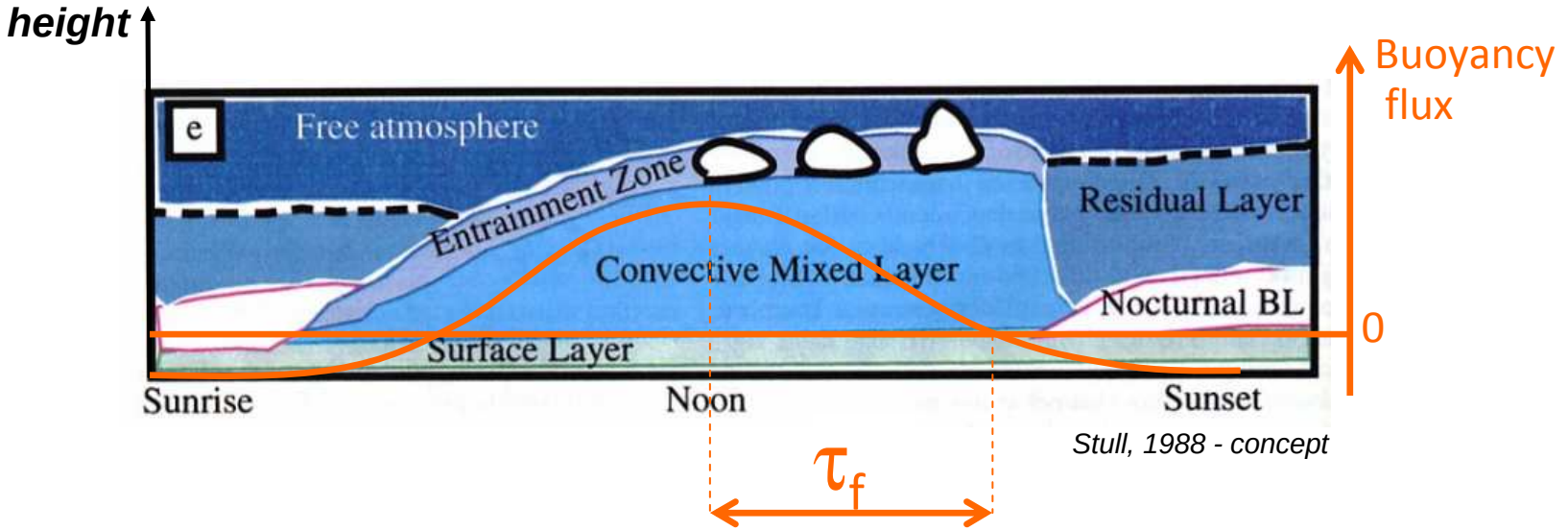
LMD

Technische Universität Braunschweig

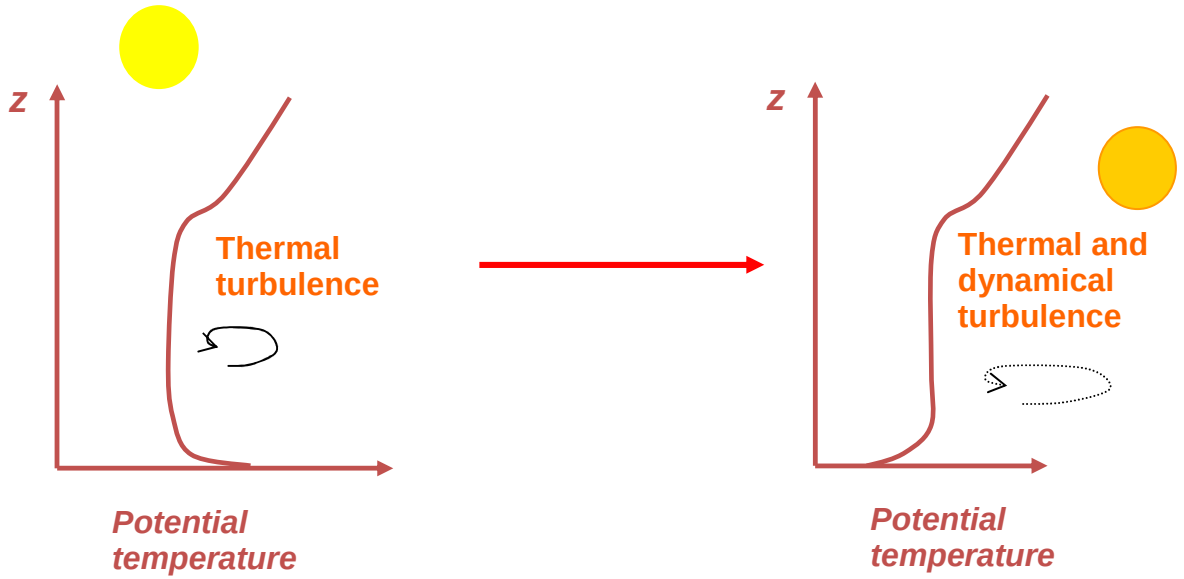
Institute of Aerospace Systems

Late afternoon transition issue

Issue



Stull, 1988 - concept



Overview of our studies

Hierarchy of models used in combination of observations:

LES, ML, Mesoscale, Forecast models, analyses

Mesoscale “forcing” or “influence”

Turbulent processes

Evaluation of the forecast models

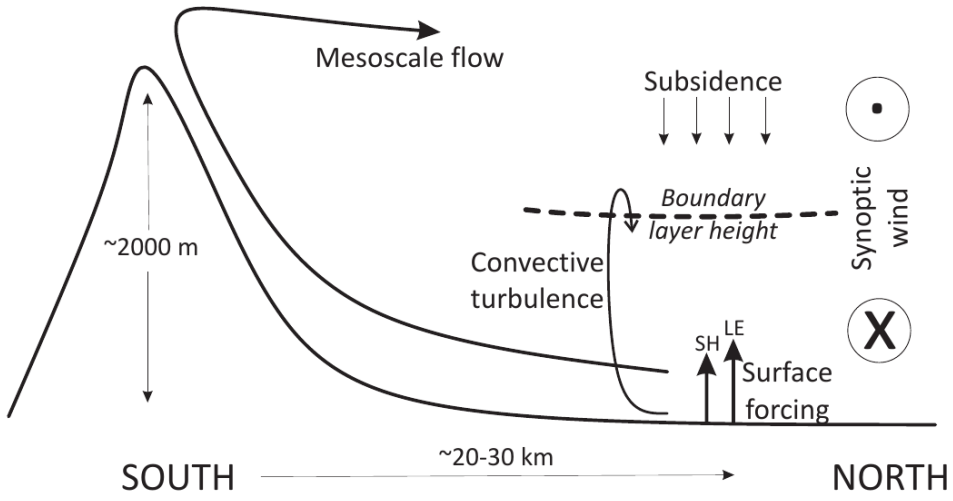
Definitions and estimates of key variables

Measurement methodology studies

Overview of our studies

Mesoscale “forcing” or “influence”

J. Cuxart, M. Antonia Jimenez et al:	Mountain circulation, downslope wind
J. Vila, H. Pietersen:	Large scale influence on the BL growth and transition
E. Blay, D. Pino et al:	Role of residual layer in the BL growth
I.Faloona et al:	Estimate and subsidence, and diurnal cycle
E. Bazile, Y. Seity et al :	Météo-France forecast models outputs and analysis



Courtesy of H. Pietersen, 2014

Overview of our studies

Boundary layer and Turbulence processes

E. Blay, D. Jensen, E. Pardyjak D. Pino:	Counter-gradient flux theory
E. Blay, E. Pardyjak D. Pino et al:	Minimum lift temperature
C. Hang, E. Pardyjak, et al:	Temperature variance evolution
C. Darbieu, F. Lohou, M.Lothon :	Evolution of turbulence structure, scales and spectra
E. Nilsson et al:	TKE budget in the surface layer
D. Martinez, E. Nilsson:	MOST validity, wind variability
C. Darbieu, O. El Guernaoui et al:	Role of surface heterogeneity
L. Nauta, Oscar Hartogensis:	Shallow drainage flow
C. Roman-Cascon et al :	Gravity waves and turbulence

Overview of our studies

Evaluation of the mesoscale models

D. Pino, F. Couvreux, M. A. Jimenez, W. Angevine, M. Sastre et al.:

Mesoscale model intercomparison

F. Couvreux, G. Canut, Y. Seity, E. Bazile et al:

Evaluation of the forecast models on the evolution of the BL vertical structure, surface fluxes and TKE

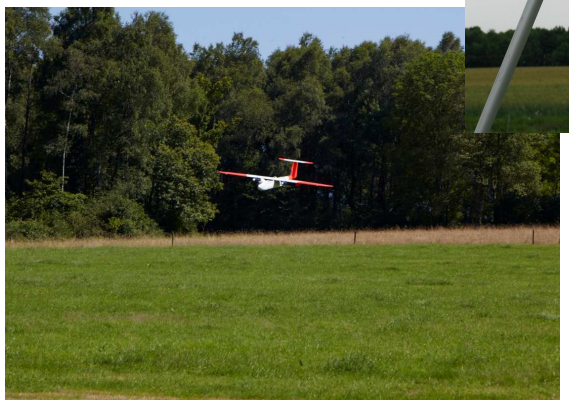
Definitions and estimates of key variables (data base additional elaborated data)

O. Hartogensis:	Area-averaged flux
P. Augustin, F. Couvreux, M. Lothon et al:	Estimation of BL heights
F. Couvreux:	Estimation of advection from forecast models
I. Faloona et al:	Estimates of large scale subsidence
F. Lohou et al:	Estimates of TKE, and TKE budget terms
E. Nilsson, C. Hang, M. Lothon, F. Lohou:	Estimates of TKE dissipation rate

Overview of our studies

Measurement methodology studies

O. Hartogensis :	Flux estimates from scintillometers
J. Reuder, L. Baserud:	Turbulence measurements from SUMO UAS
B. Piguet, G. Canut:	Turbulence measurements from a balloon-borne probe
S. Martin, A. Lampert:	Turbulence measurements from M2AV UAS
J. Bange, D. Tupman:	Turbulence measurements from MASC UAS



Overview of case studies

20 June:	LES case study	– turbulence structure evolution *(Darbieu et al., 2014)*
	LES case study	– Scaling *(El Guernaoui, ongoing)*
	LES case study	– Diurnal cycle representation *(A. Kempf, ongoing)*
21 June:	Observational study	– Gravity wave *(Roman-Cascon et al., 2014)*
25 June:	LES and ML case study	– large scale influences *(Pietersen et al., 2014)*
27 June:	SUMO observations	– surface temperature evolution *(Reuder et al., 2012)*
01-02 July:	LES and ML case study	– large scale influences *(Blay et al., 2013)*
02 July:	Observational study	– Wave event *(Carlos, ongoing)*