NATURE AND CHARACTERISTICS OF WEAK AND INTENSE KATABATIC FLOWS

Jon A. Arrillaga, Carlos Yagüe, Carlos Romain-Caslon, Mariano Sastre, Jordi Vill-Guerau de Archeto, Gregorio Maqueda

1. LA HERRERÍA

This analysis is performed in La Herrería Forest located at the foothills of the Guadarrama Mountain Range (Spain), at around 50 km from the city of Madrid.

2. OBSERVATIONS

In this work we use 10-minute meteorological measurements carried out during an intensive campaign of 2011-2012-2013.

3. KATABATIC DETECTION

We apply an objective and systematic algorithm to the observational data in order to select the events that fulfill katabatic-event criteria.

4. NATURE

4.1) Close relationship between katabatic intensity & thermal stratification at the onset

Thermal stratification at the katabatic onset is directly linked to turbulence.

4.2) Permanent katabatic stratification at the katabatic onset is directly linked to turbulence.

4.3) Which are the factors that induce an earlier or later onset of katabatic flows?

5. INTERACTION WITH TURBULENCE

5.1) Downward sensible heat flux and surface energy balance

5.2) Regime transition from non-dimensional parameters

6. FINAL THOUGHT

7. REFERENCES

8. ACKNOWLEDGEMENTS