ABL and Pyroconvection: 2021 Fire Season Case Study in NE Iberia Peninsula

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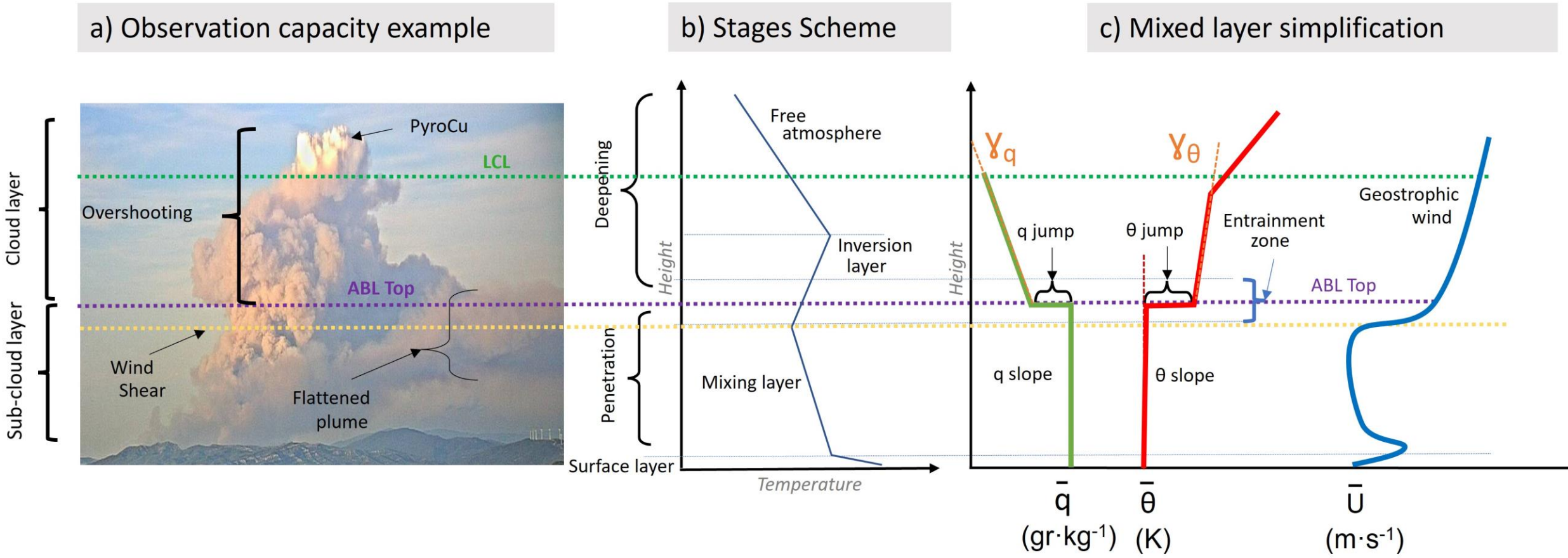
Different pyroconvection types

Pyroconvection phenomena suppose an extreme risk for firefighters and civilians

Problem

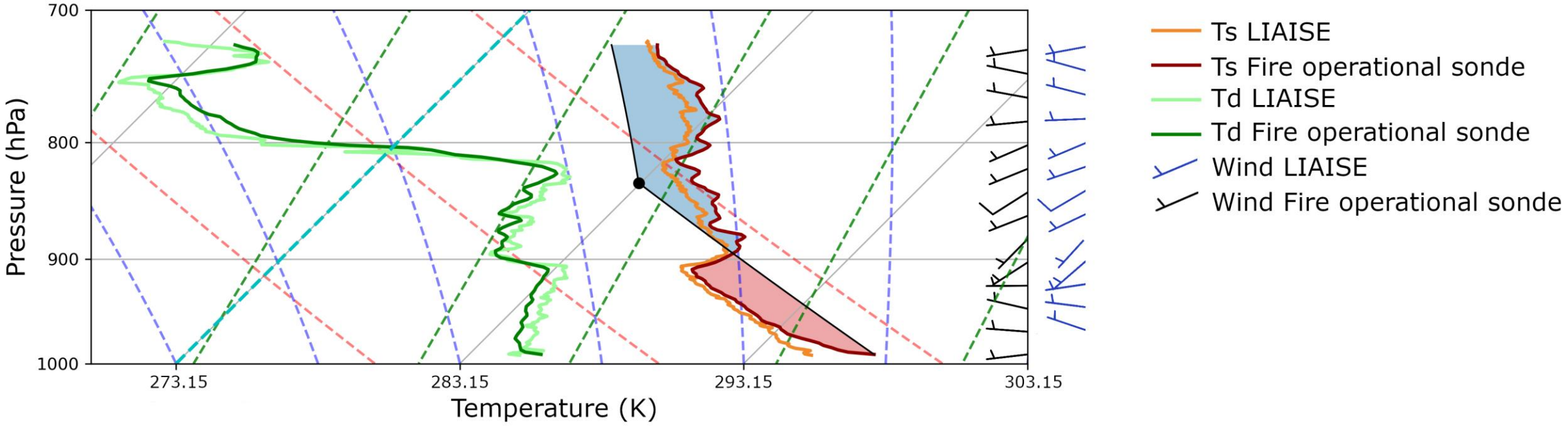
Can we characterize pyroconvection prototypes?



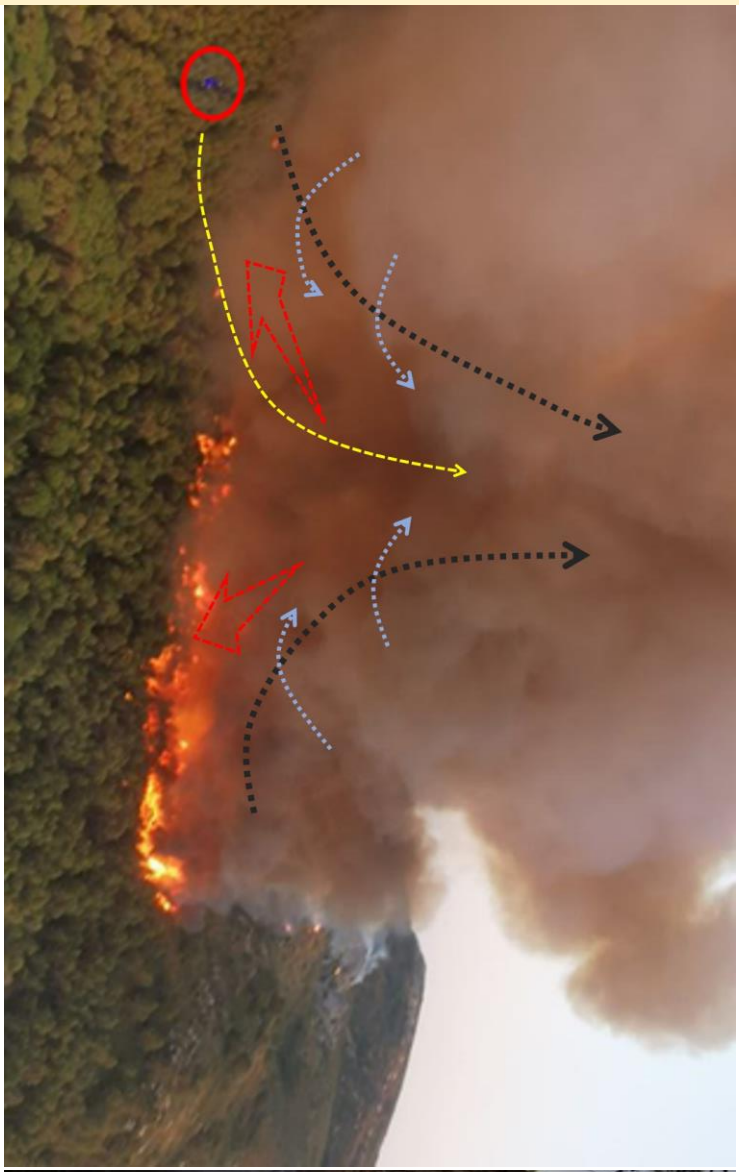
Methods

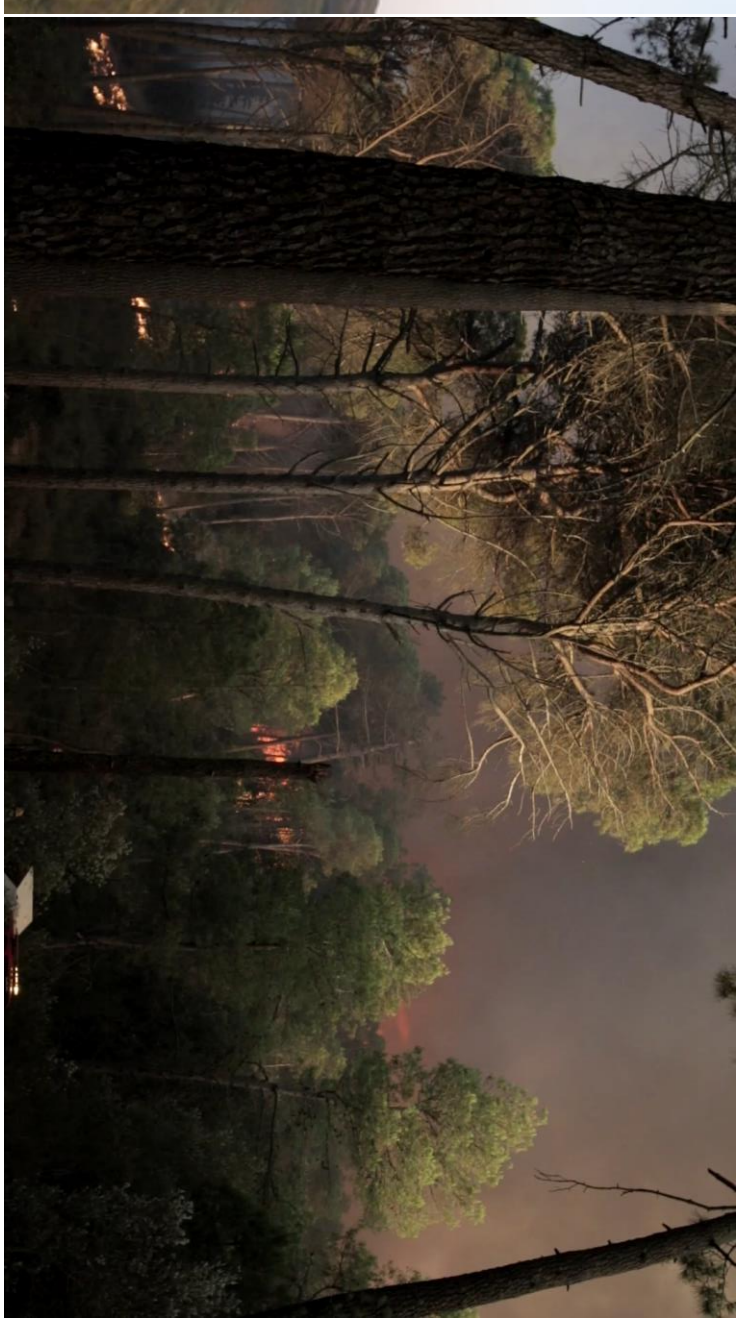
We propose a field campaign of observation and in-plume measurement of Pyroconvection events:

- Observe plume and atmosphere interaction
- Measure fire ABL with in-plume sondes
- Compare fireABL with modeled ABL (ECMWF ERA 5)
- Identify pyroconvection induced changes on fire behavior

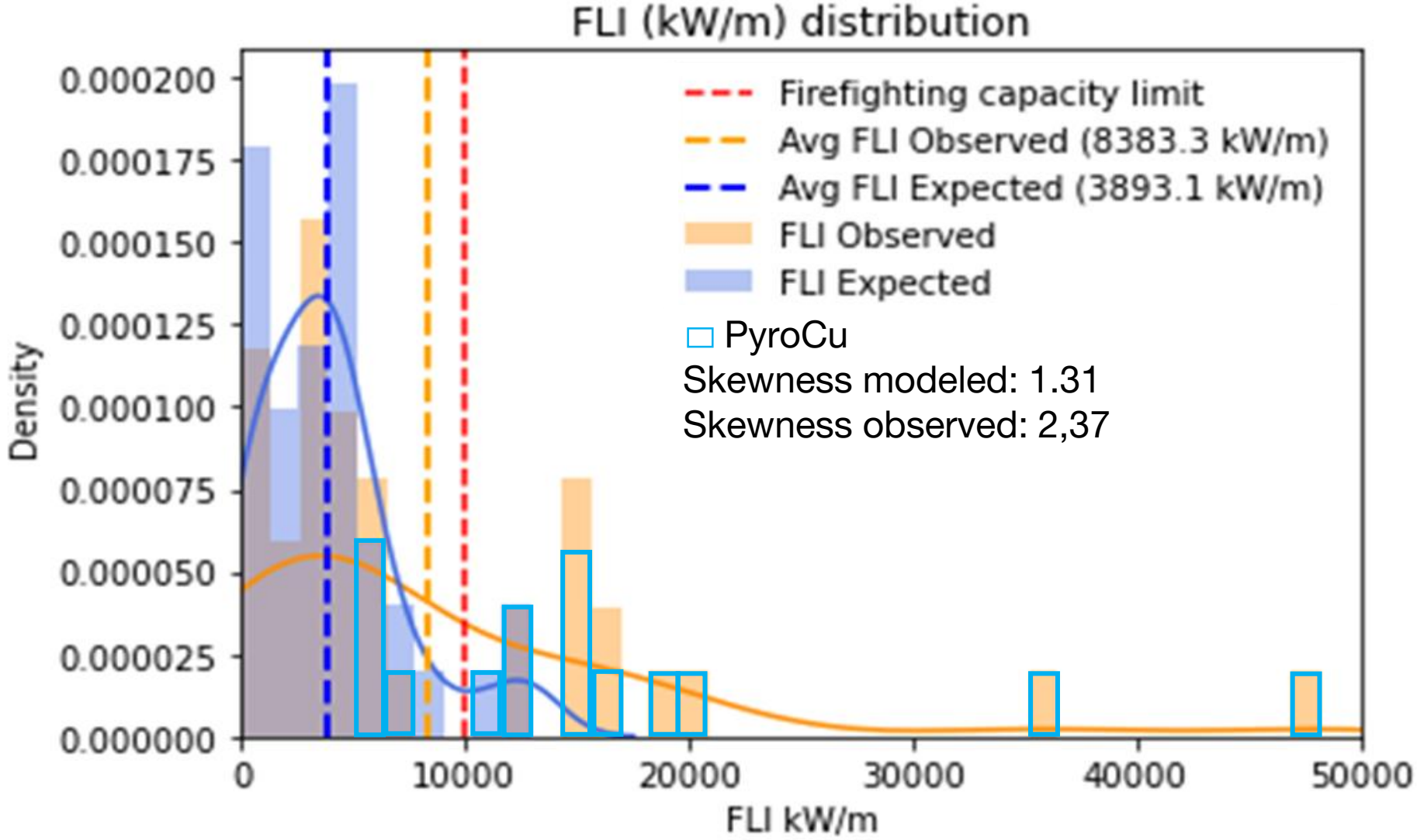


Methods

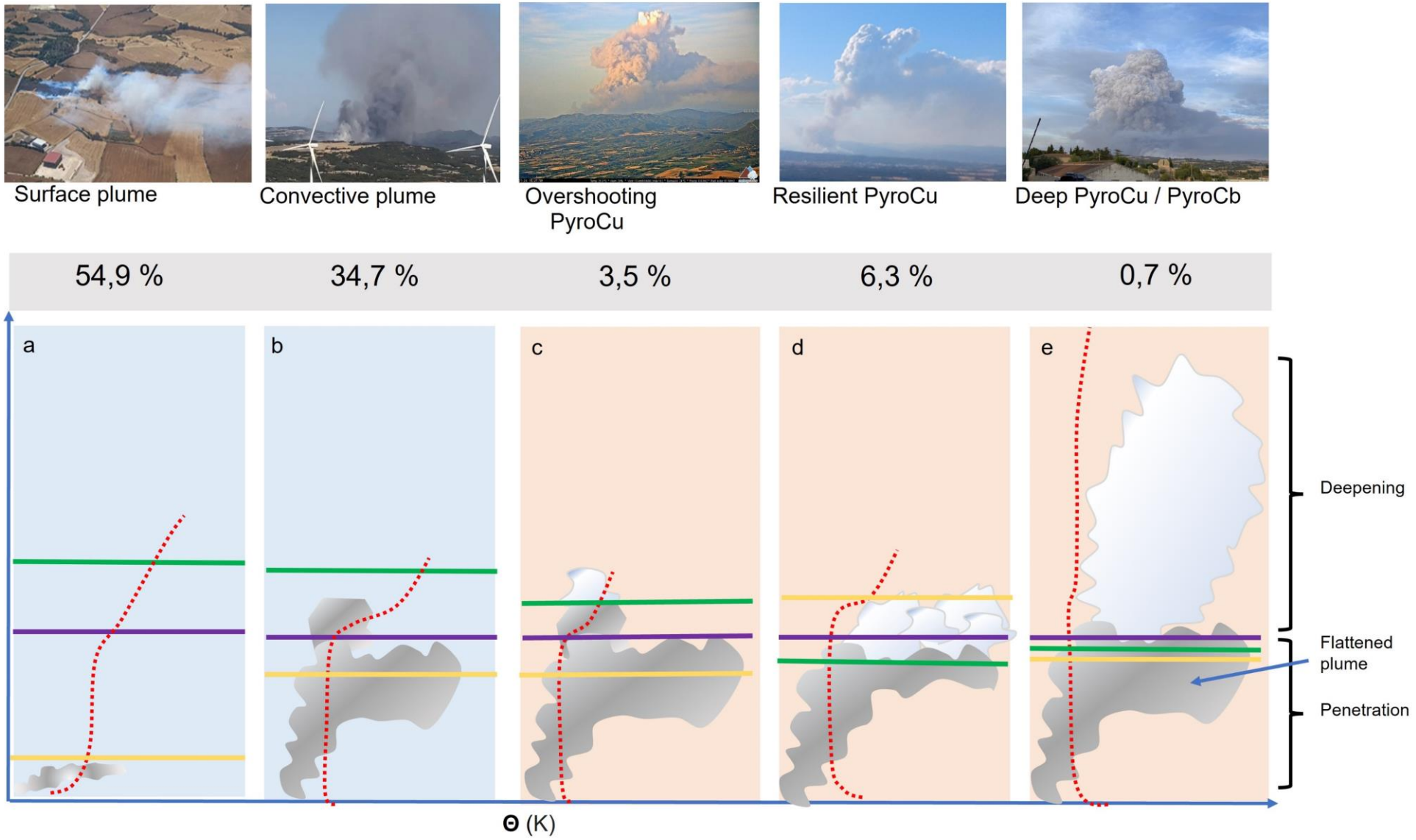




Pyroconvection prototypes are increasing the observed fireline intensity

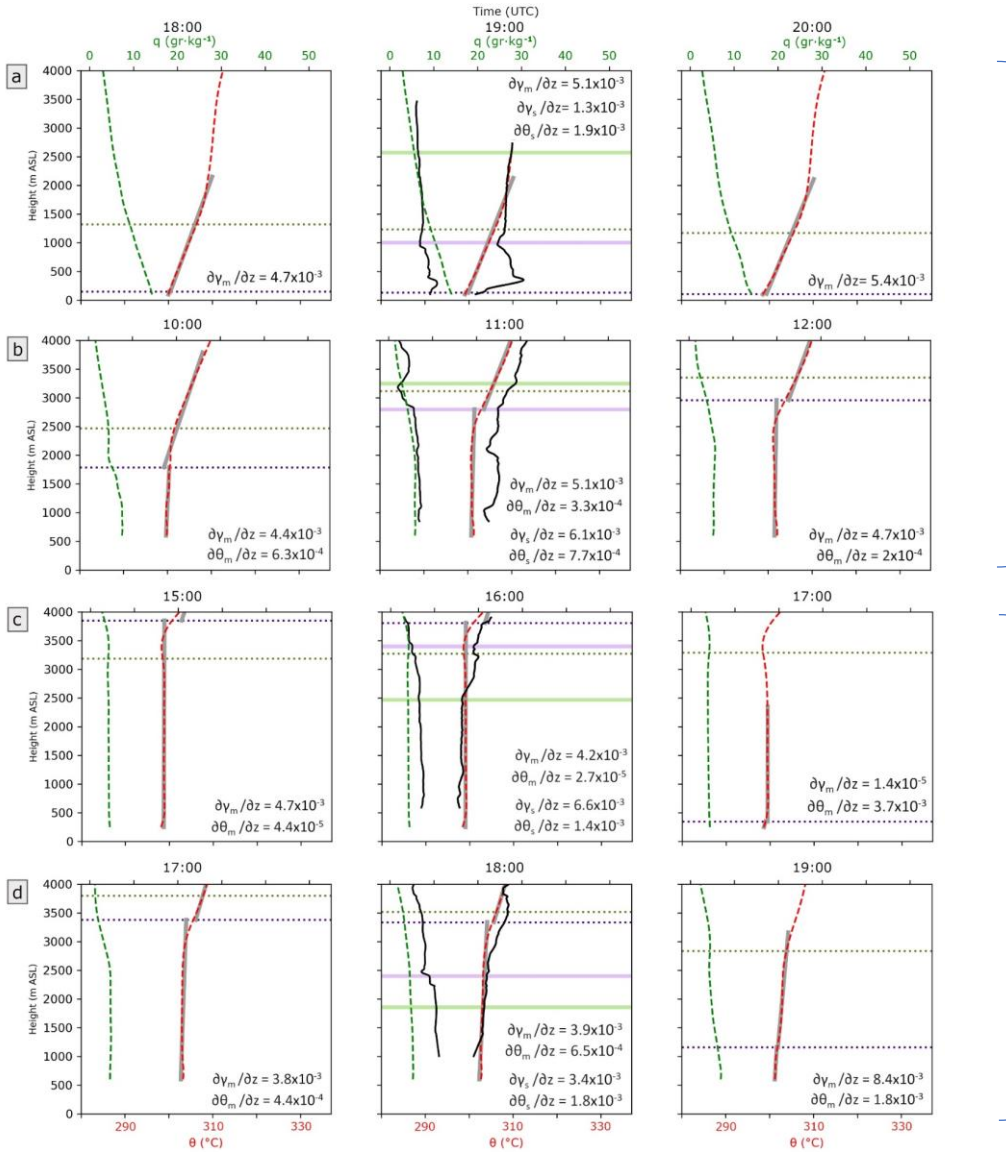


Observational Pyroconvection types depend on turbulence on top of ABL



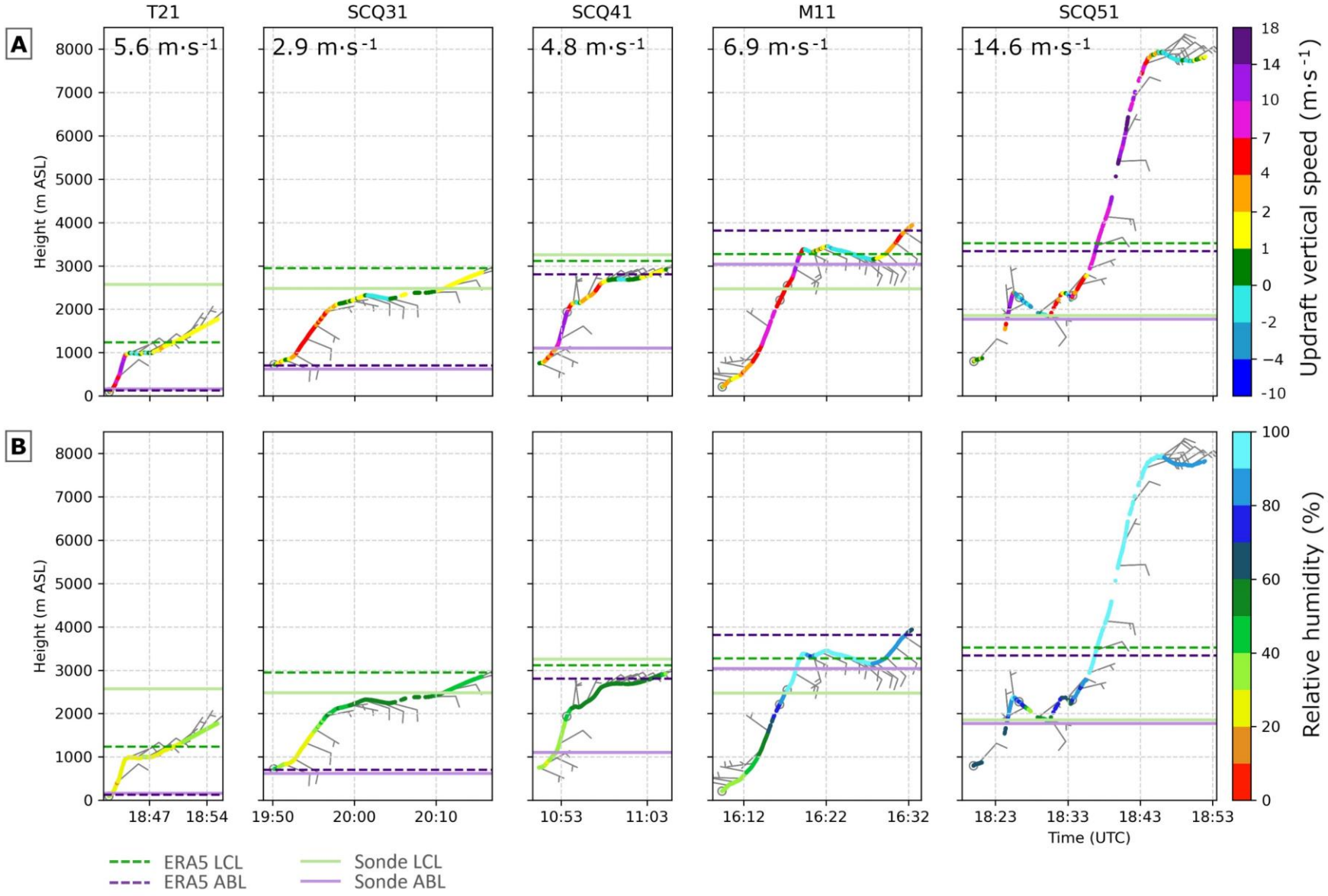
Results & Discussion

Fire-Induced changes on ABL separates Type of pyroconvection



Results & Discussion

The type of pyroconvection determines plume height and updraft speed



Results & Discussion

Pyroconvection effect on Fire behavior