

# The PBLH Daily Evolution Mechanism across the Israeli Coast—Mountain—Valley Terrain Unraveled by WRF Simulations

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# Study Interest: Mount. PBLH Dynamics

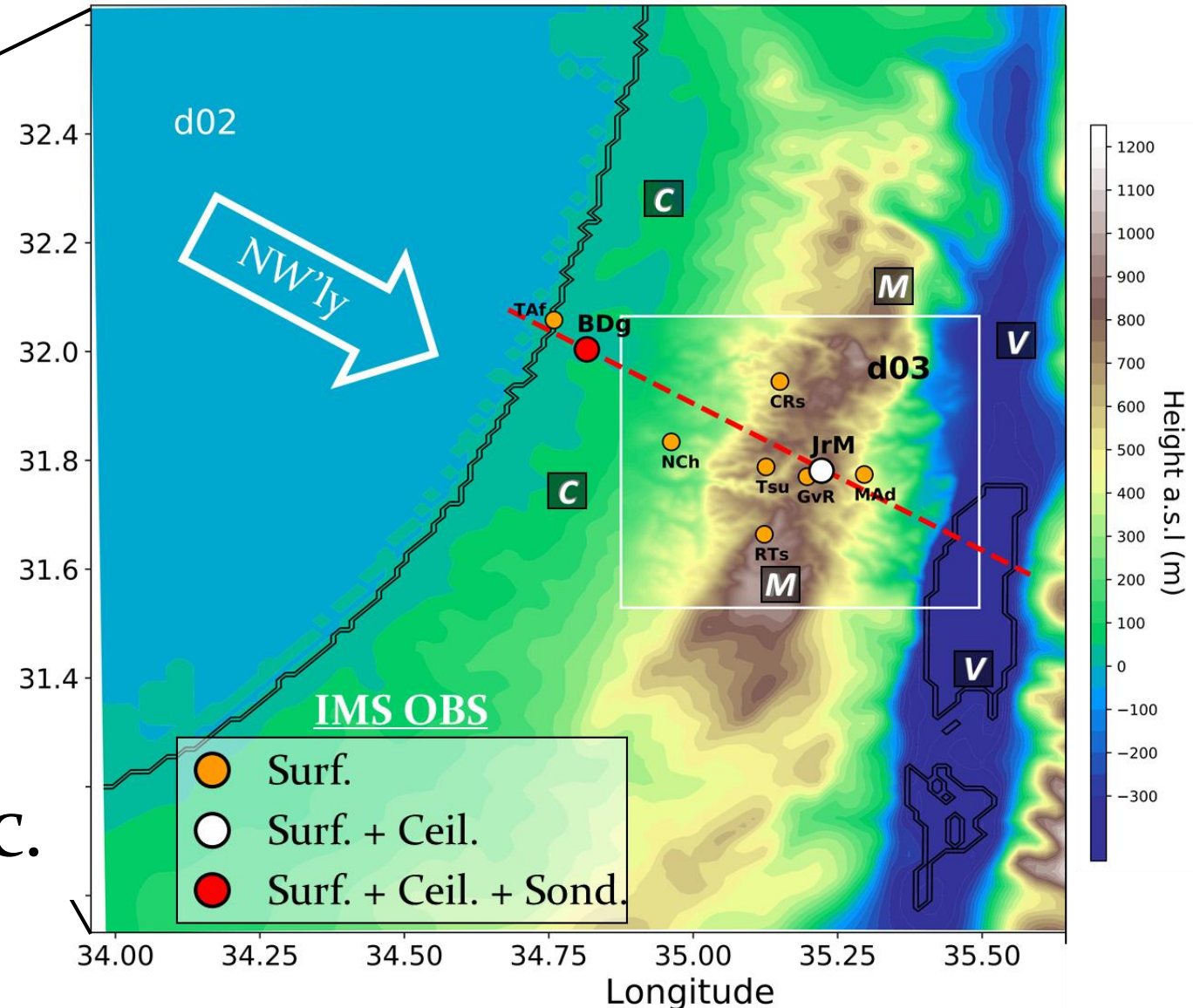
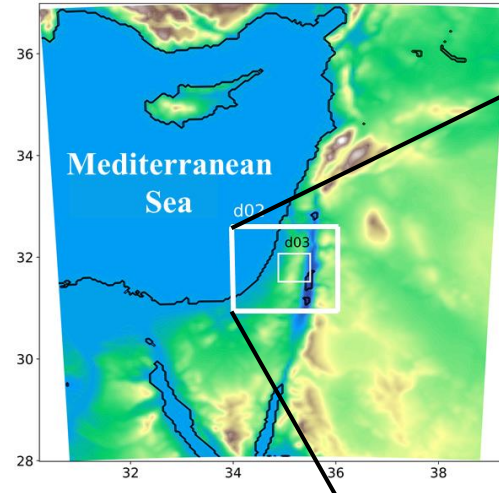
Region: iCMV

Motivation:

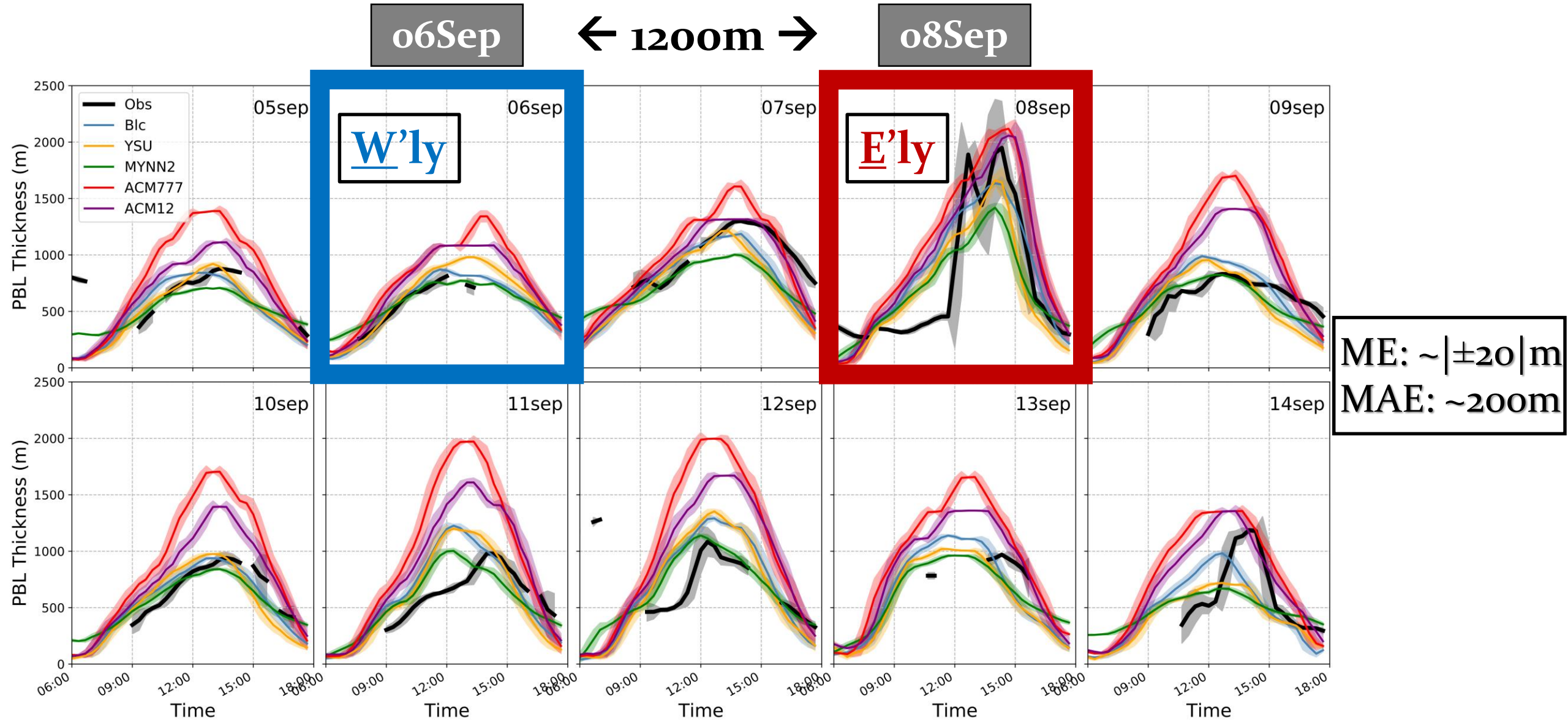
- Lack in Mount. PBLH studies.
- ~1000m BLH daily variation @ JrM.

Focus:

- (late) **Summertime** (Sep. 2017).
- ~NW'ly general flow (usually), **SBC**.
- **WRF simul.**; focus on **2 events**.

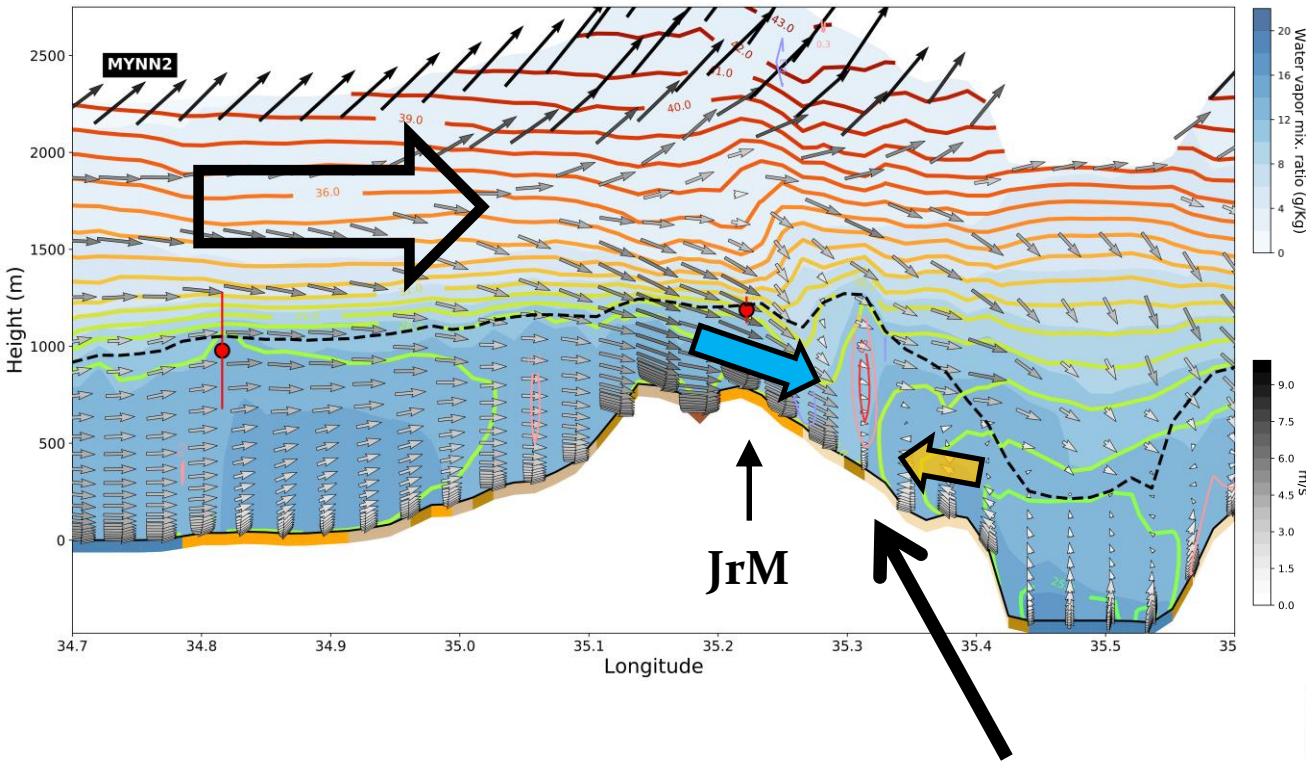


# JrM PBLH ts; Ceilometer vs. WRF



# 06Sep W'ly Event – Vertical Cross-Section

08:30 am



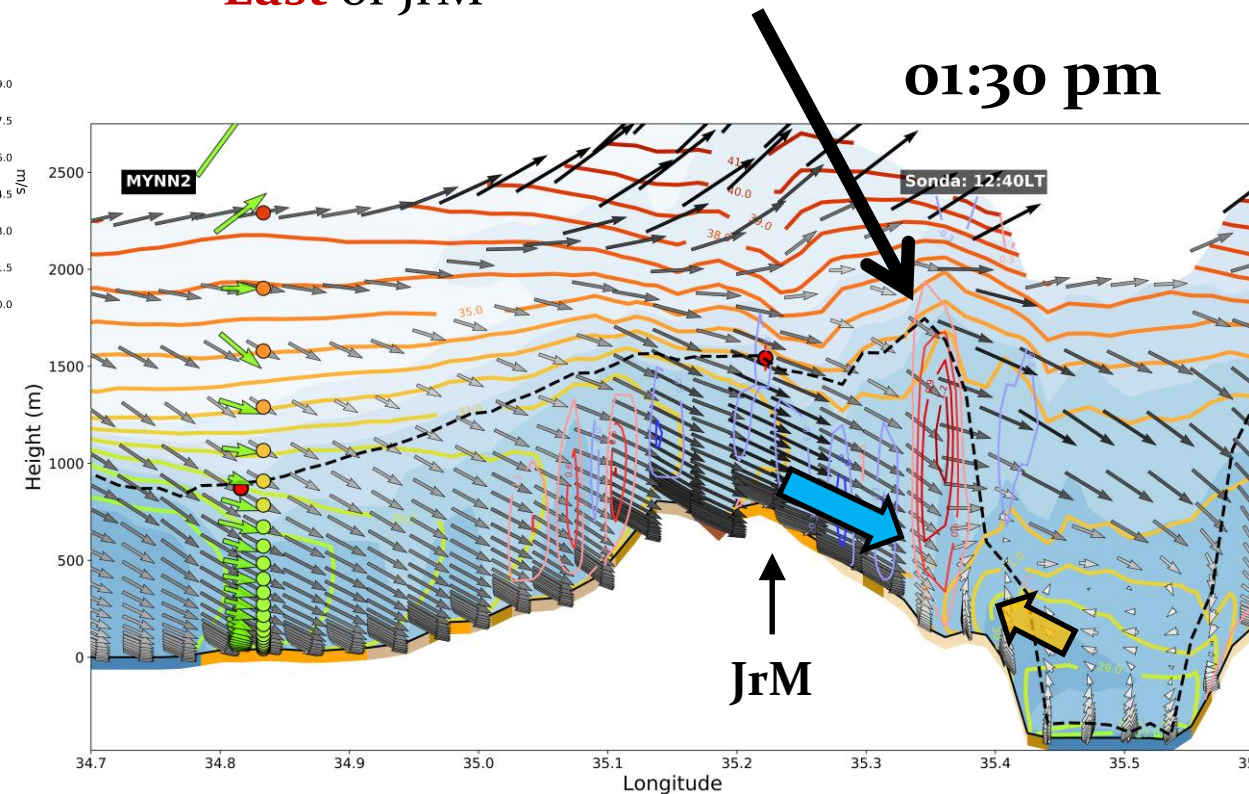
## 1) Early-morning Surface Flow-Conv.

- **East** of JrM
- Positive vertical-wind (w) column
- Locally-elevated PBLH

## 2) SurFCon Advected Eastward

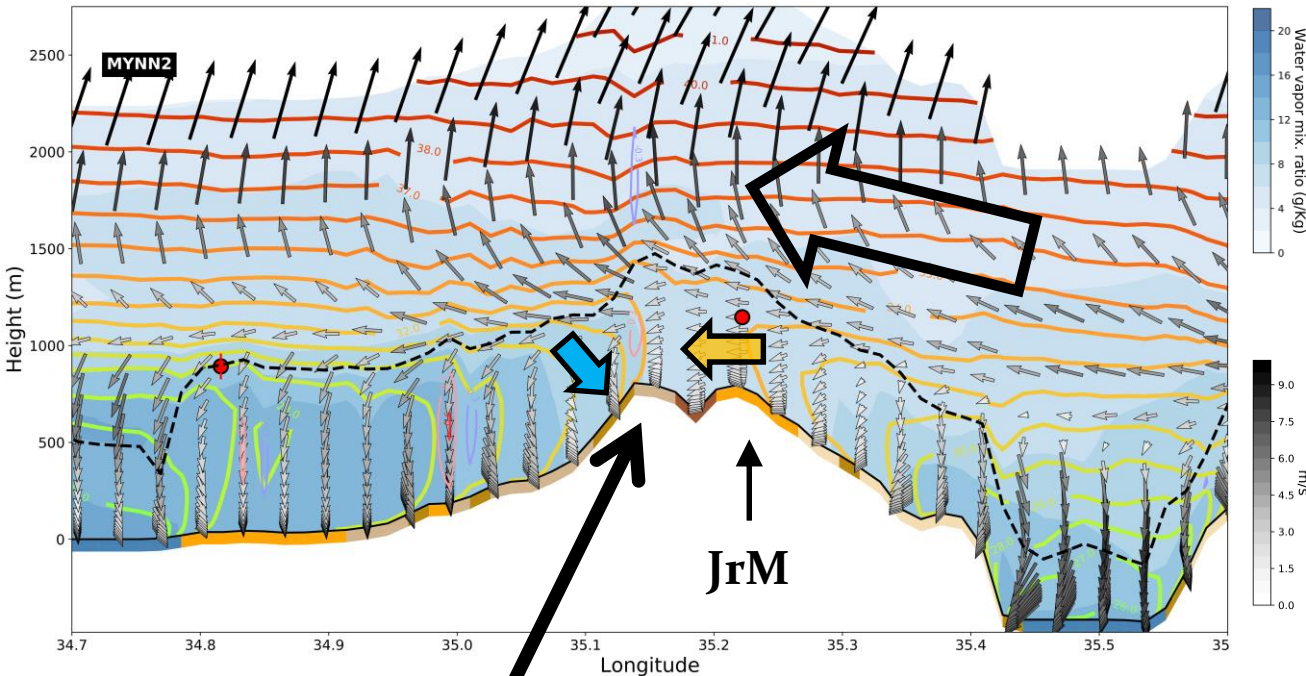
- Sea-breeze assisted
- Noontime maximal, hyper-elevated, PBLH is **East** of JrM

01:30 pm



# 08Sep E'ly Event – Vertical Cross-Section

09:30 am



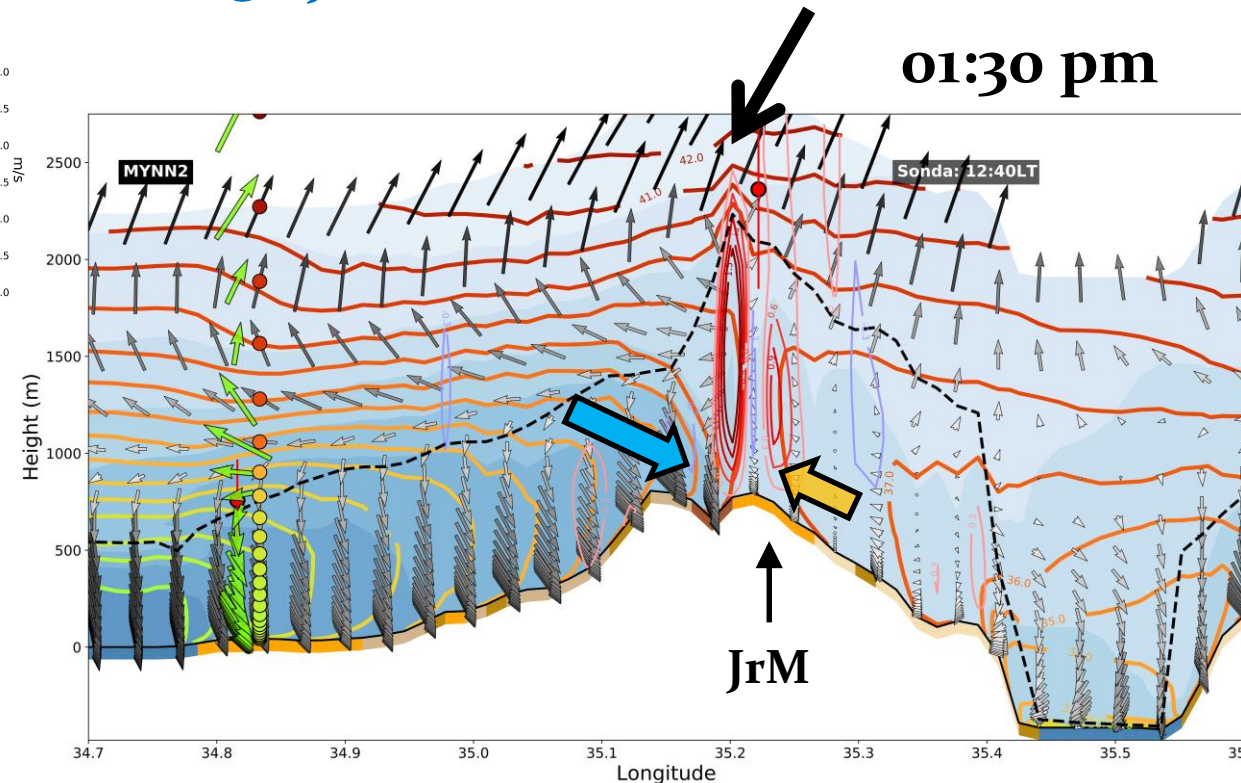
## 1) Early-morning Surface Flow-Conv.

- West of JrM
- Positive vertical-wind ( $w$ ) column
- Locally-elevated PBLH

## 2) SurFCon Advected Eastward

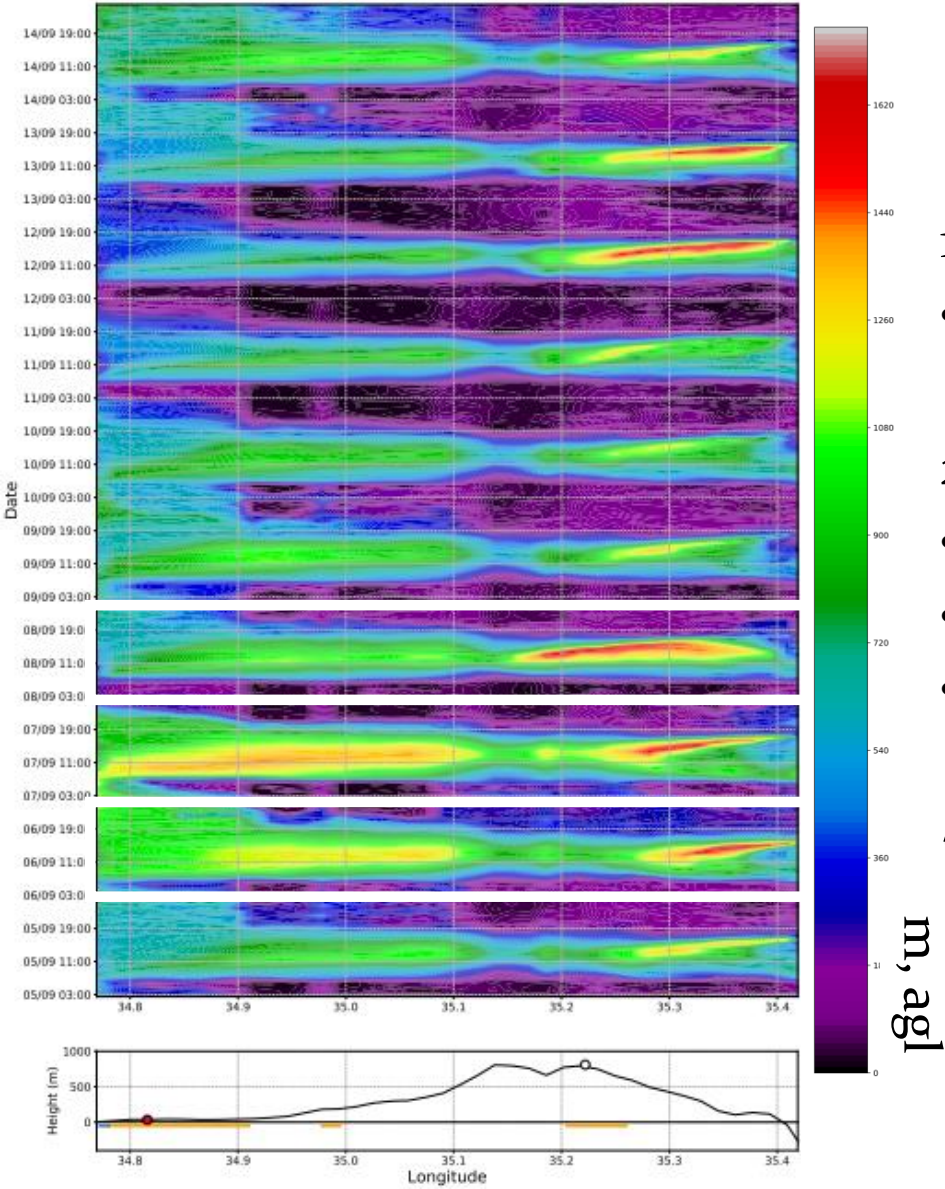
- Sea-breeze assisted
- Noontime maximal, hyper-elevated, PBLH is @ ~JrM

01:30 pm



# PBLH & w $x$ -t Cross-Sections

## PBLH

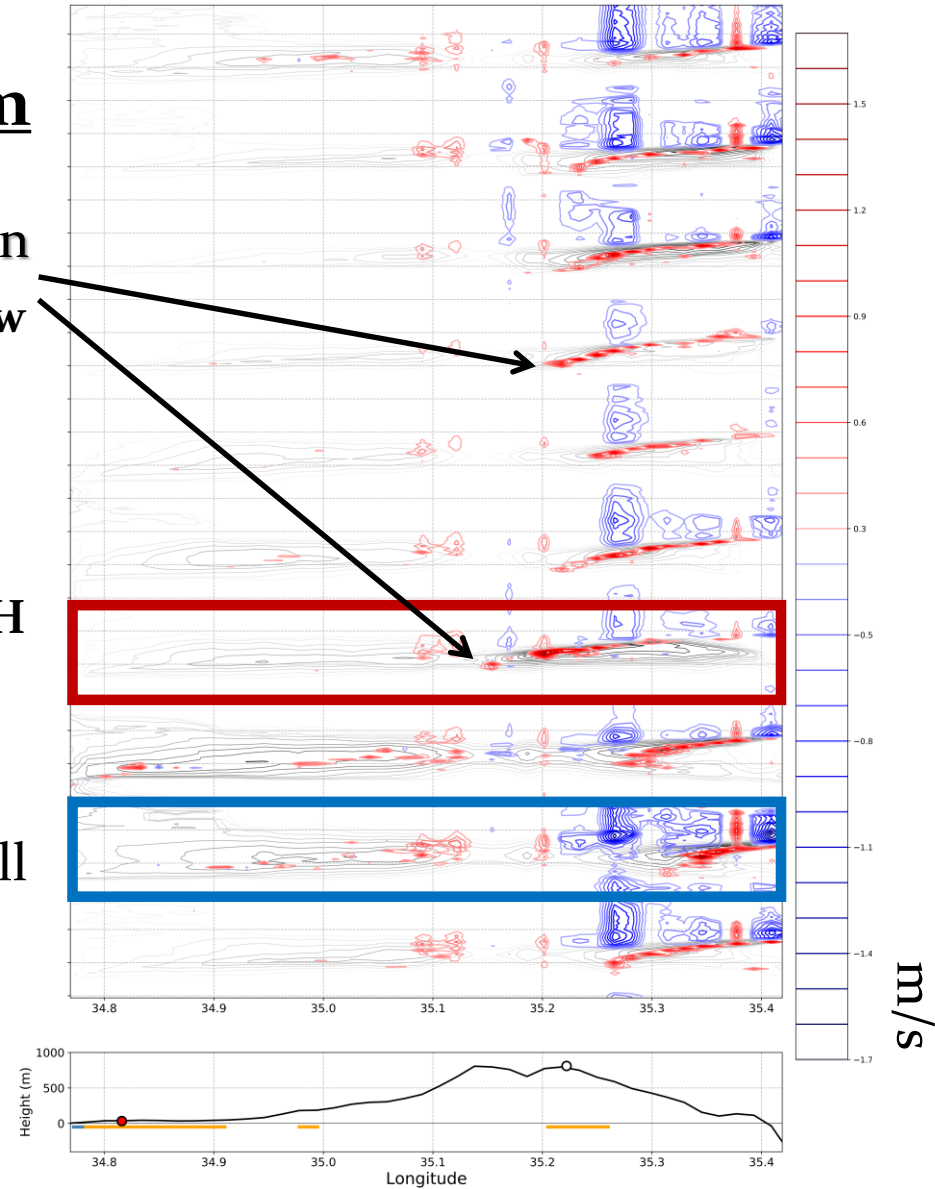


## General Mechanism

- 1) Morning-induced SurFCon
  - location depends on **gen. flow**
- 2) SurFCon Eastward advec.
  - **Sea-breeze-assisted**
  - Locally **hyper-elevated** PBLH
  - **w**: phenomenon fingerprint

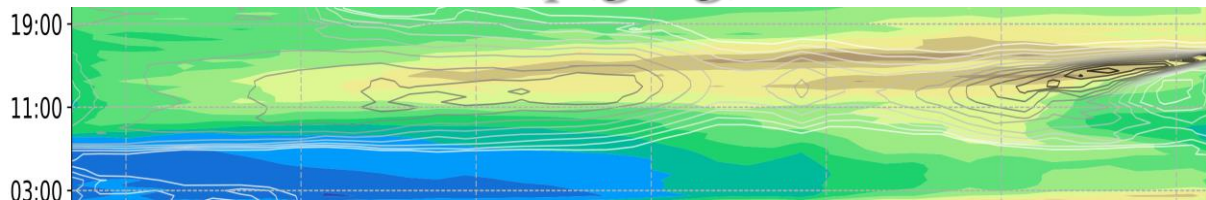
\* Dependence on Synop. still not resolved

## w

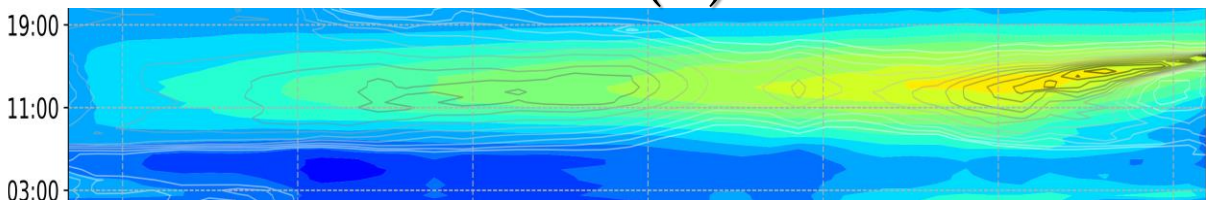


# W'ly vs. E'ly

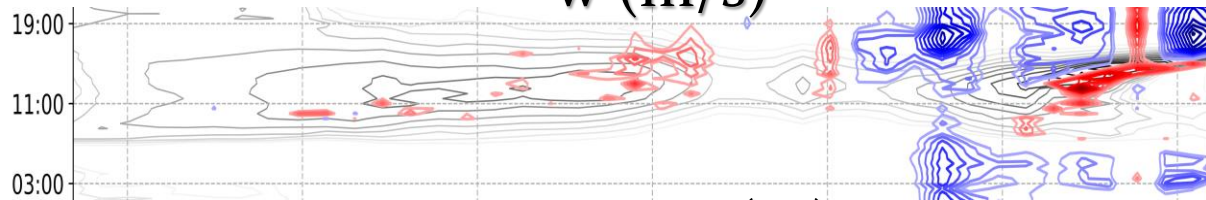
q (g/kg)



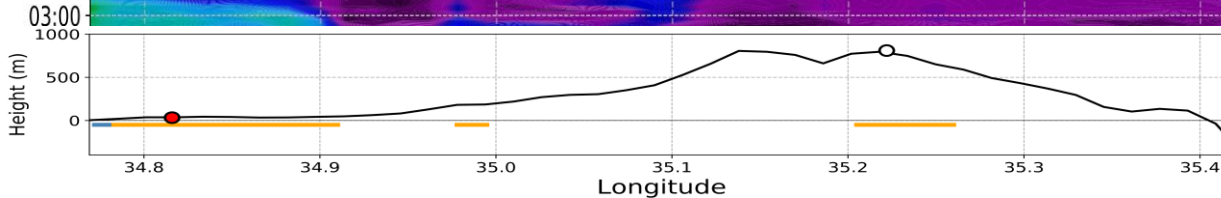
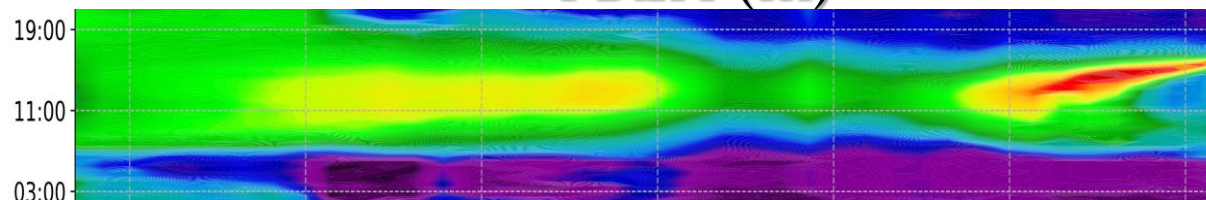
T (K)



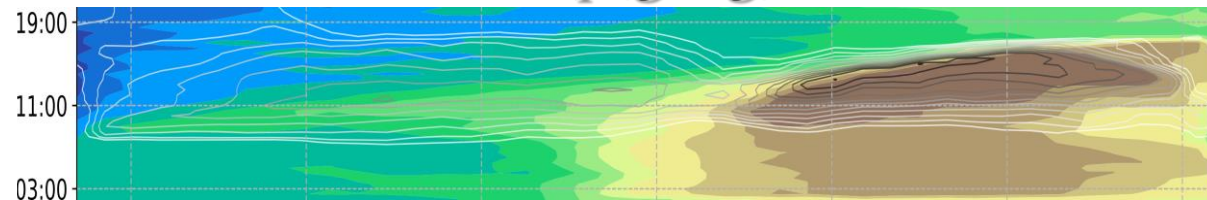
w (m/s)



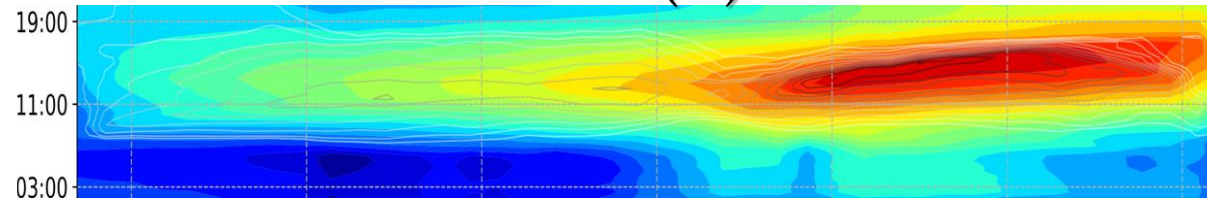
PBLH (m)



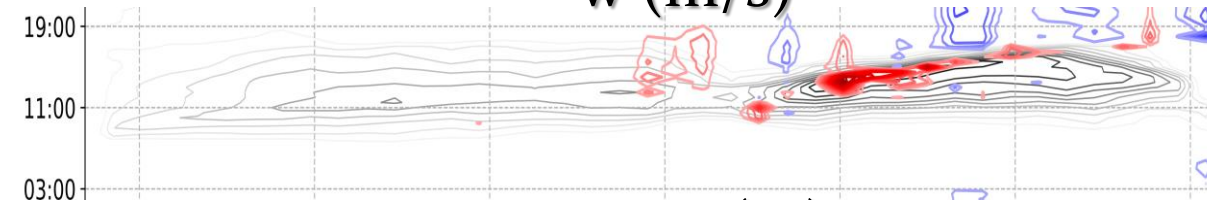
q (g/kg)



T (K)



w (m/s)



PBLH (m)

