

Supplementary Material

Boundary layer evolution over the central Himalayas from Radio Wind Profiler and Model Simulations

**Narendra Singh^{1*}, Raman Solanki^{1,2}, N. Ojha³, R. H. H. Janssen³, A. Pozzer³ and S. K.
Dhaka⁴**

¹Aryabhata Research Institute of Observational Sciences, Nainital, India

²Department of Physics and Astrophysics, University of Delhi, India

³Department of Atmospheric Chemistry, Max Planck Institute for Chemistry, Mainz,
Germany

⁴Radio and Atmospheric Physics Lab., Rajdhani College, University of Delhi, India

*e-mail: narendra@aries.res.in

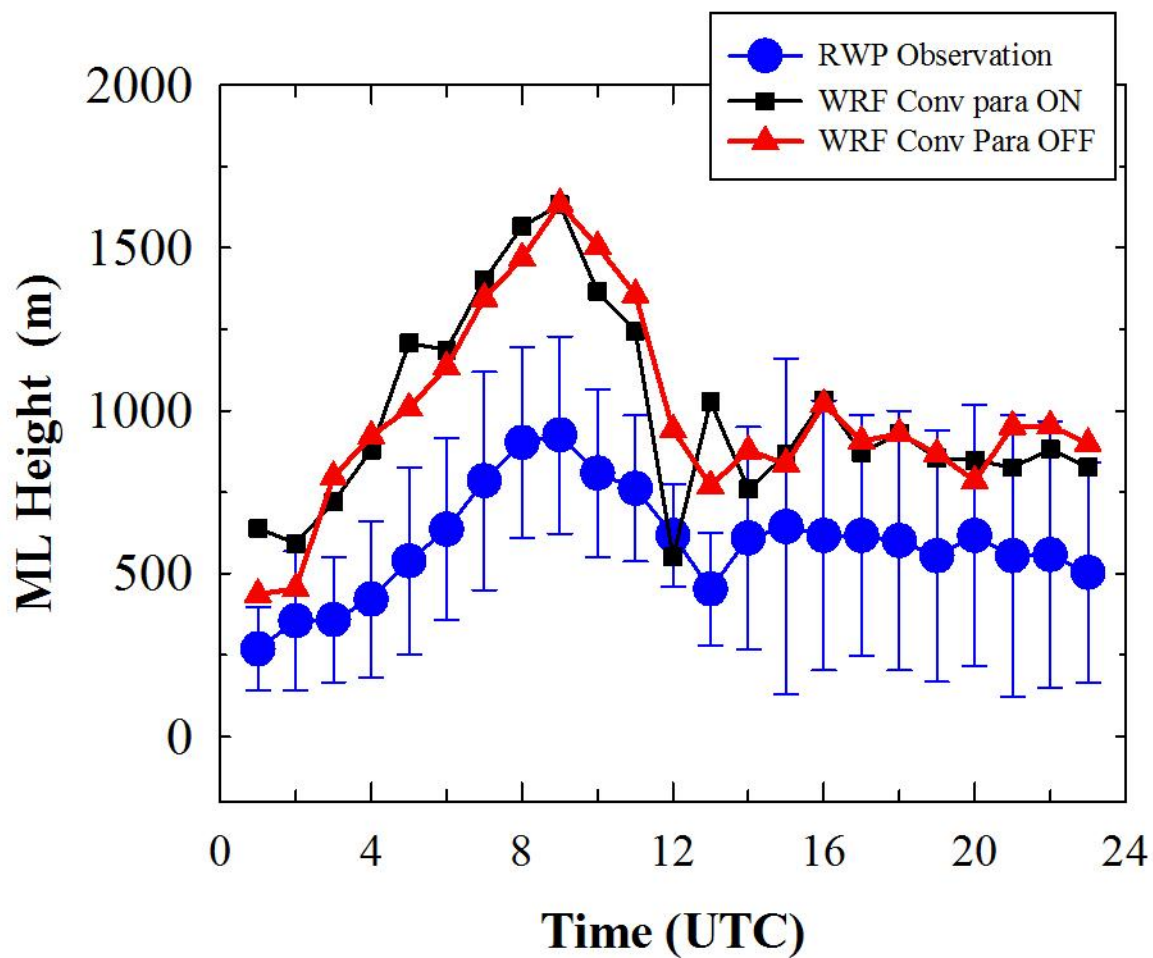


Figure S1: Comparison of mean diurnal variation in boundary layer height from the RWP measurements and WRF simulations (5 km x 5 km) to investigate the effect of convective parameterization. The simulation with convective parameterization turned OFF shows relatively smoother variation at 11-13 UT.

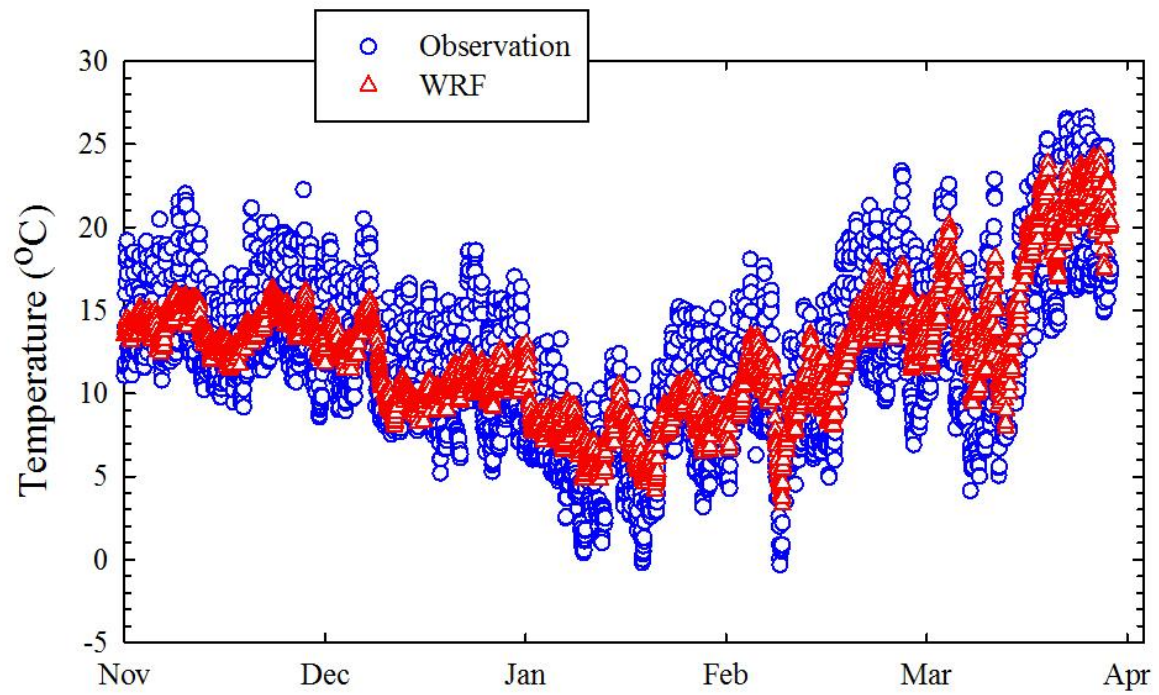


Figure S2: Comparison of observed air temperature from Automatic Weather Station (AWS) with WRF simulated temperature at Nainital during study period.

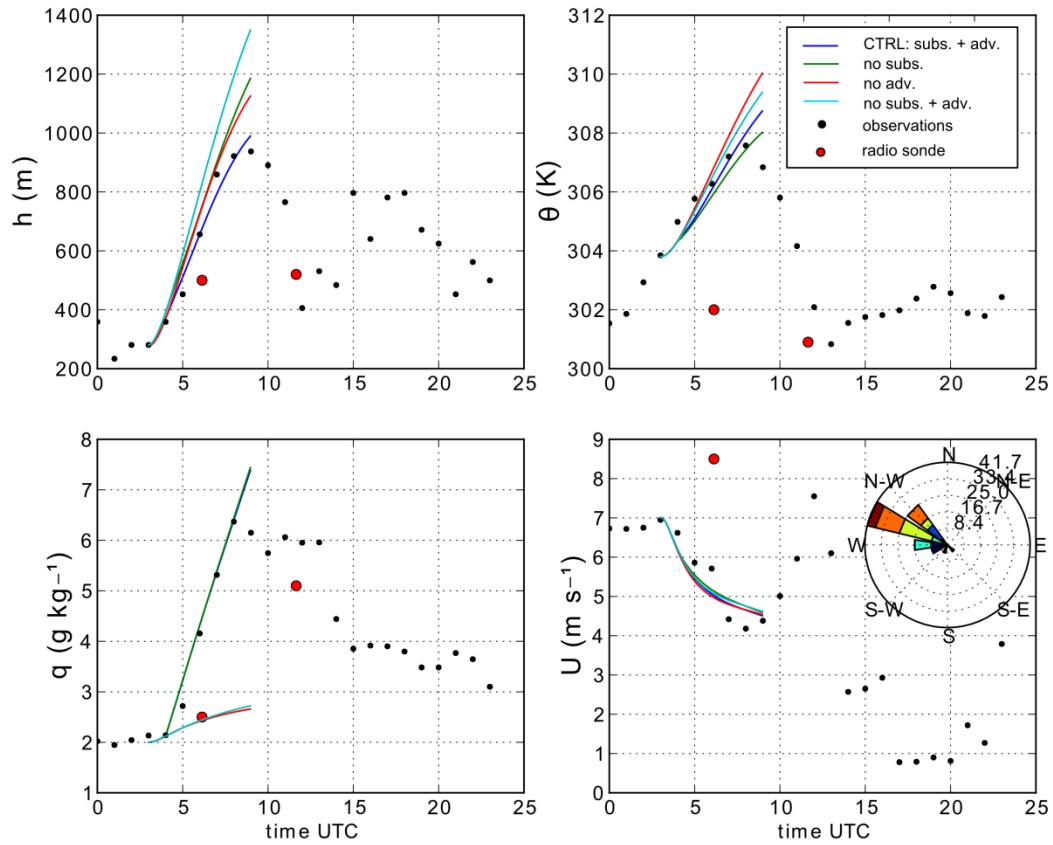


Figure S3: Diurnal variations in (a) boundary layer height (h), (b) potential temperature (θ) (c) specific humidity (q) and (d) wind speed (U) and direction on 15th March 2012 as simulated with MXL/MESSy. The dots show observations of these variables. The results of four simulations are shown: a control case (CTRL) which includes both subsidence and advection, a simulation in which the subsidence has been turned off (no subs.), a simulation in which the advection of cool and moist air has been turned off (no adv.) and a simulation in which both subsidence and advection have been turned off (no subs. + adv.).