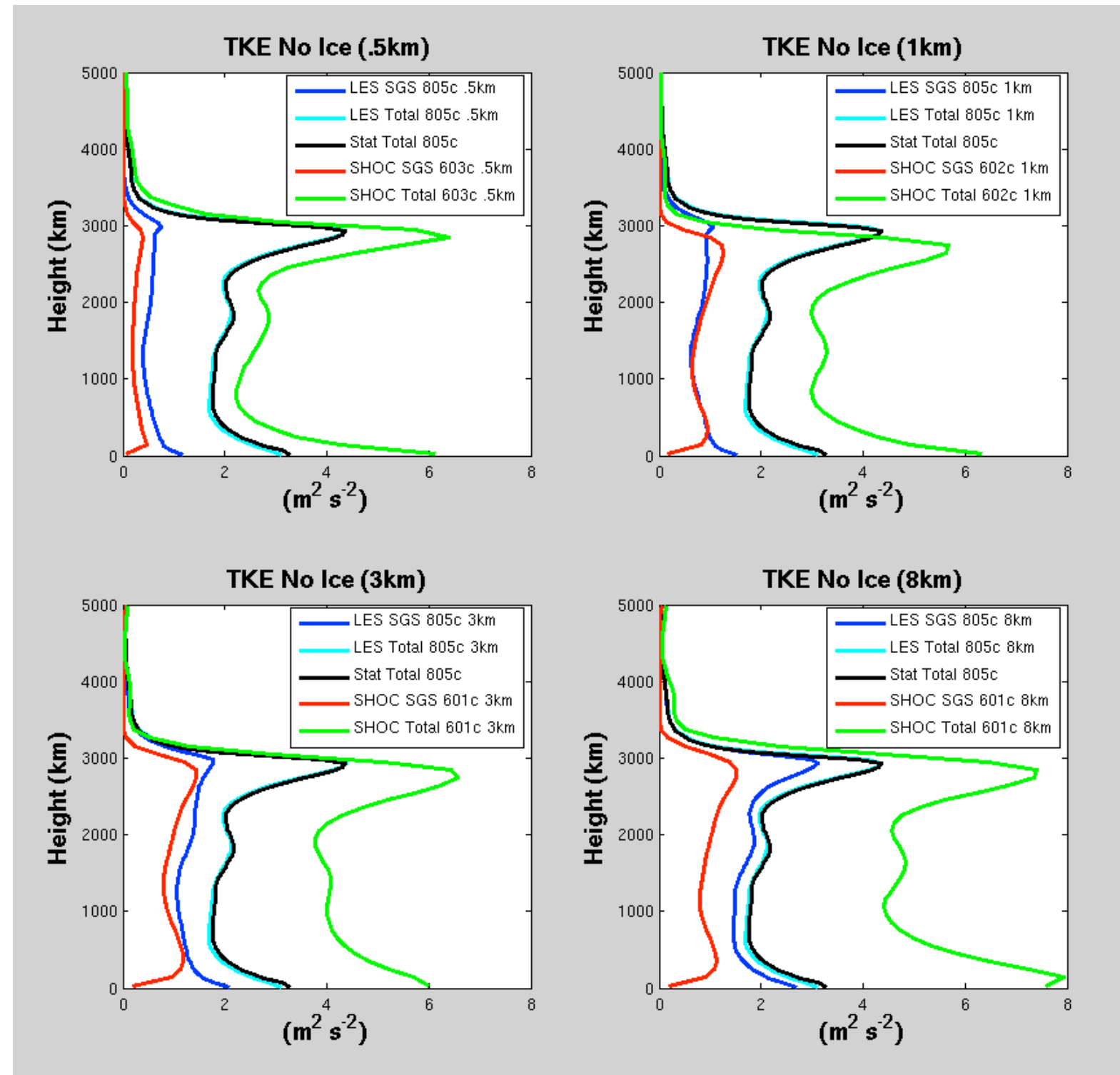
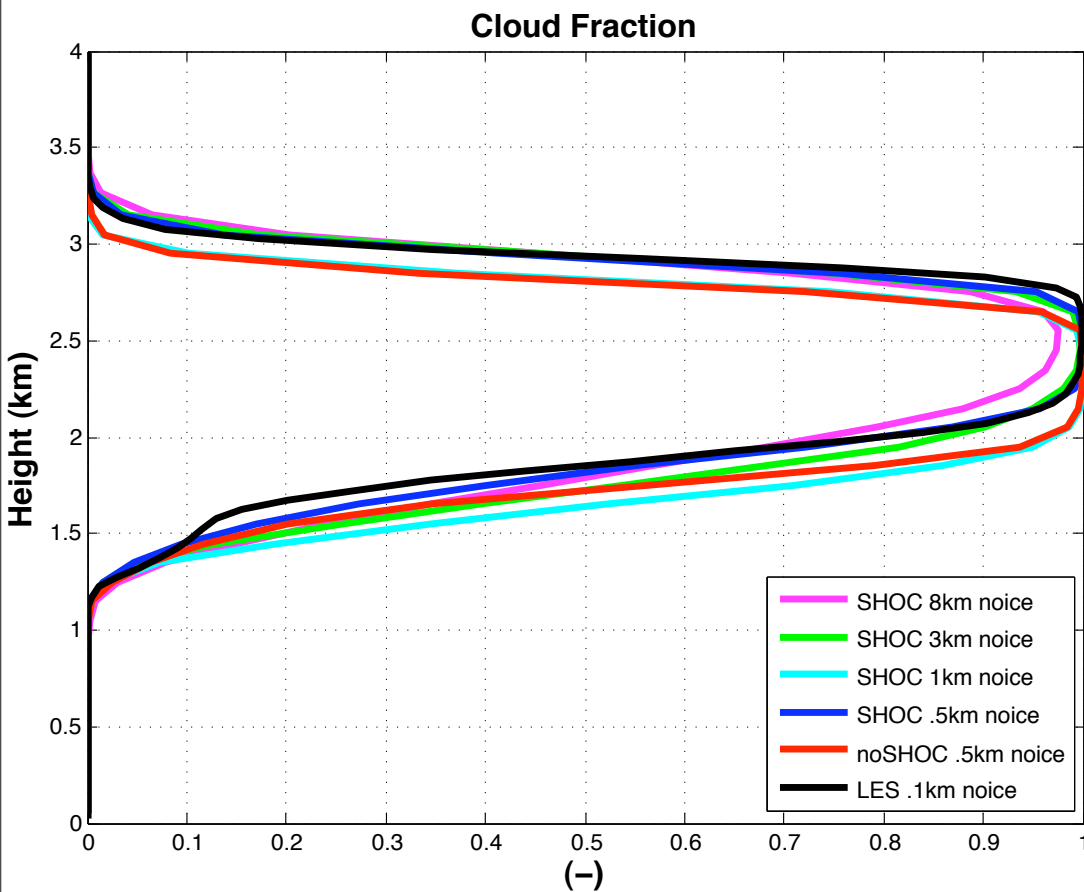


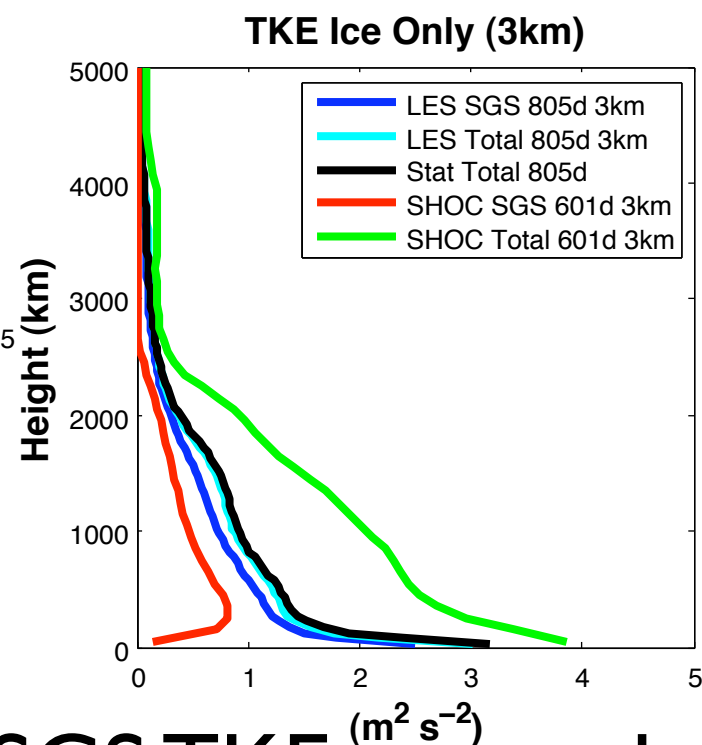
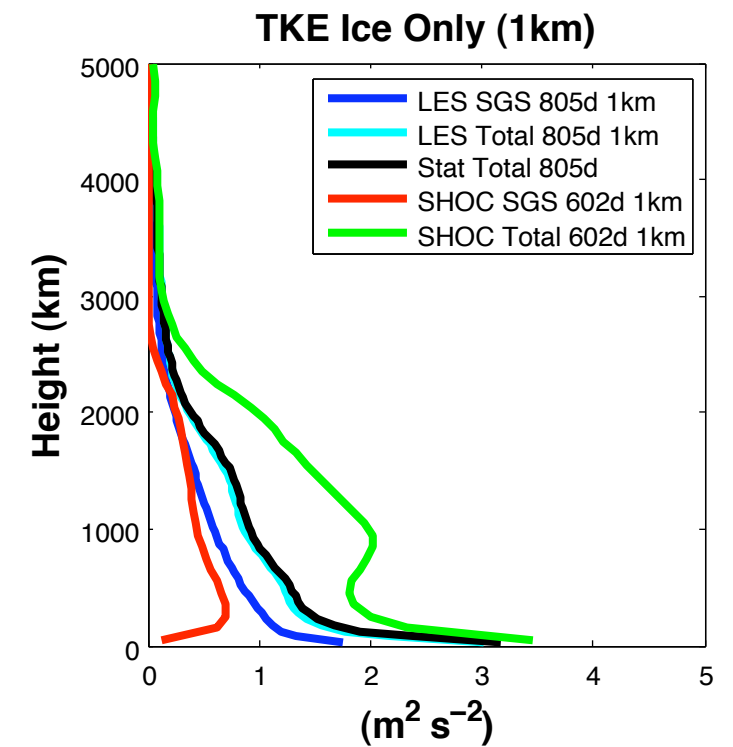
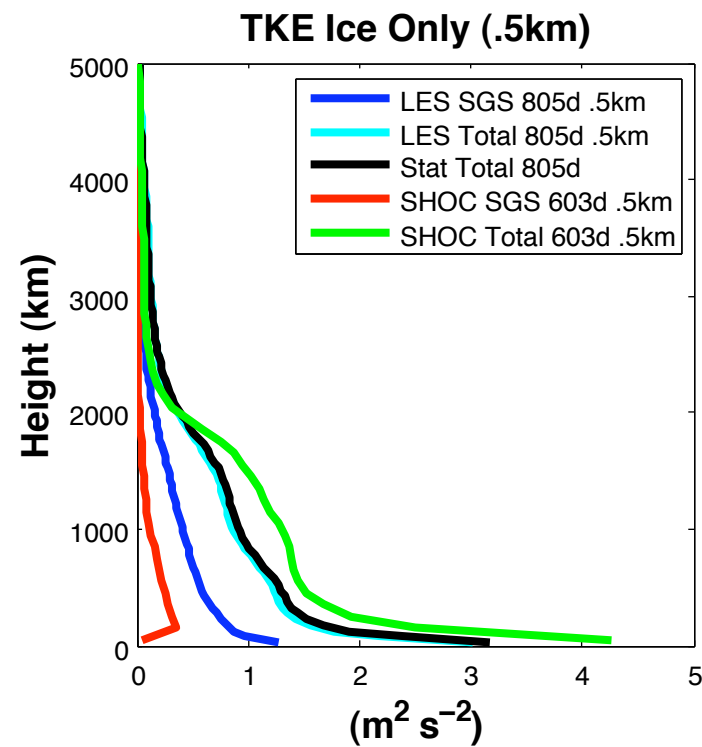
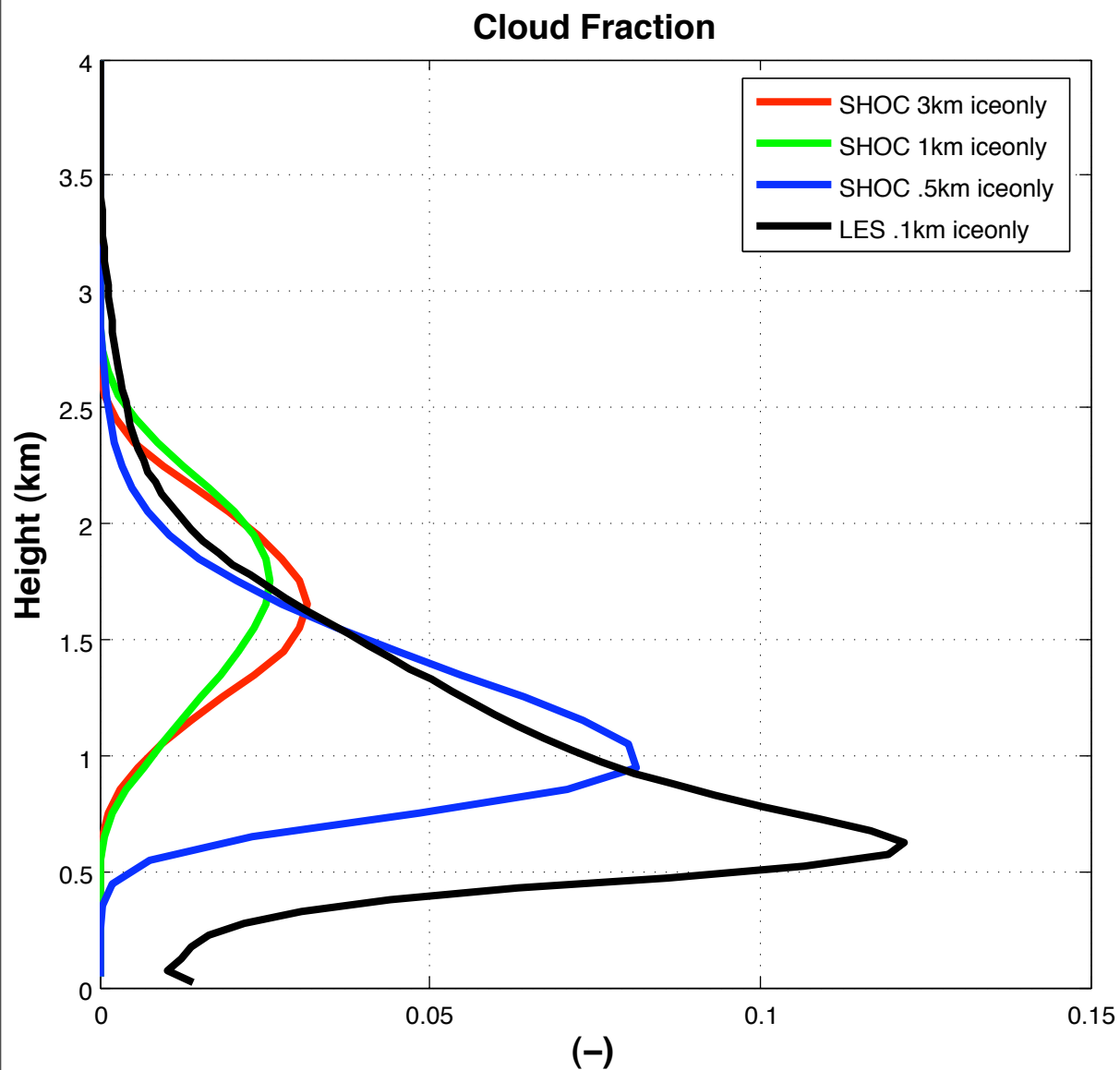
# Mixing Length, Conv.Vel. Scale, and Cloud Fraction

# CFrac & TKE - No Ice



Other than with 1km, SHOC underestimates SGS TKE, even below cloud base in no ice runs.

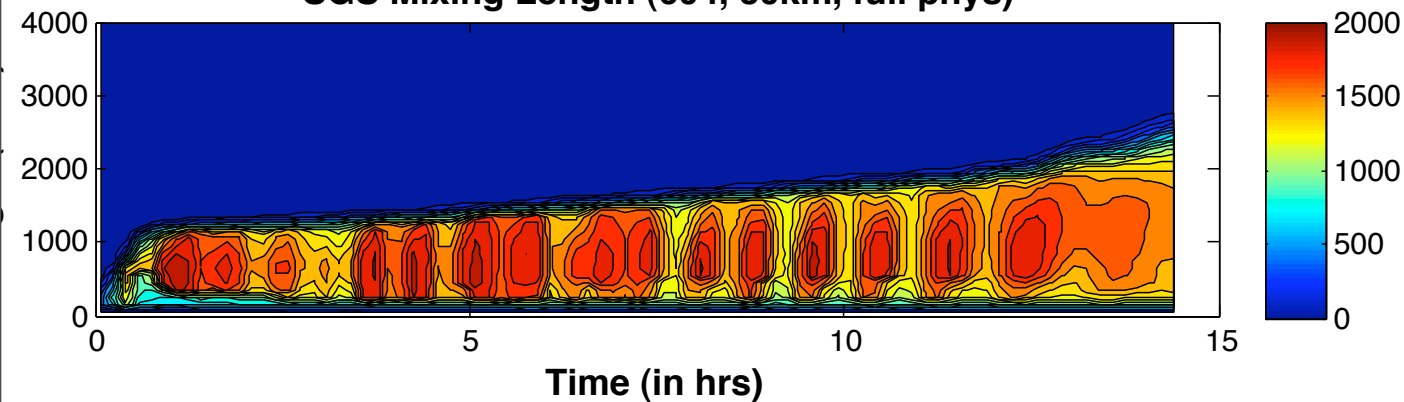
# CFrac & TKE - Ice Only



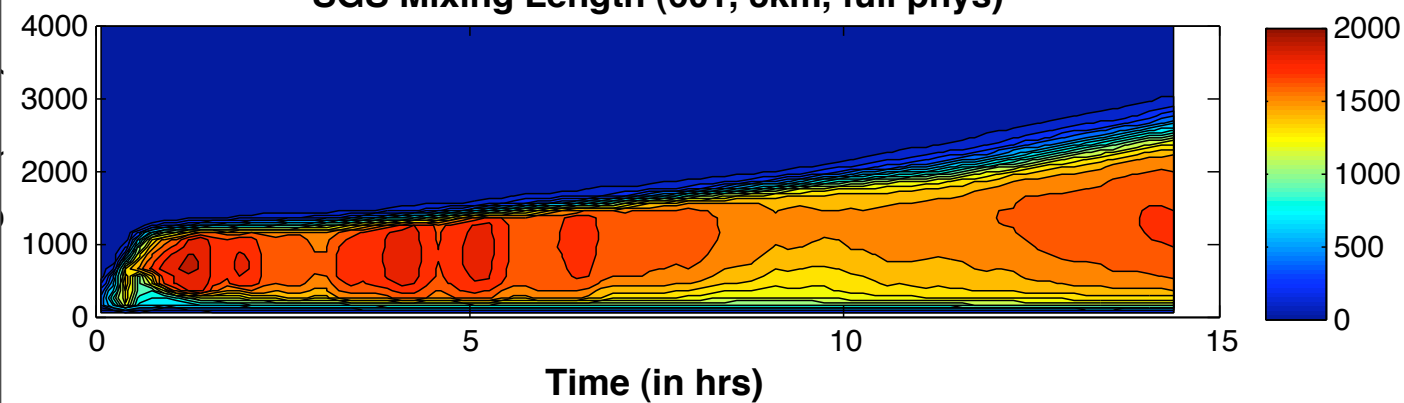
Again, SHOC underestimates SGS TKE even when below cloud base  
(for the most part, 1-2% cloud isn't much).

# Mixing Lengths

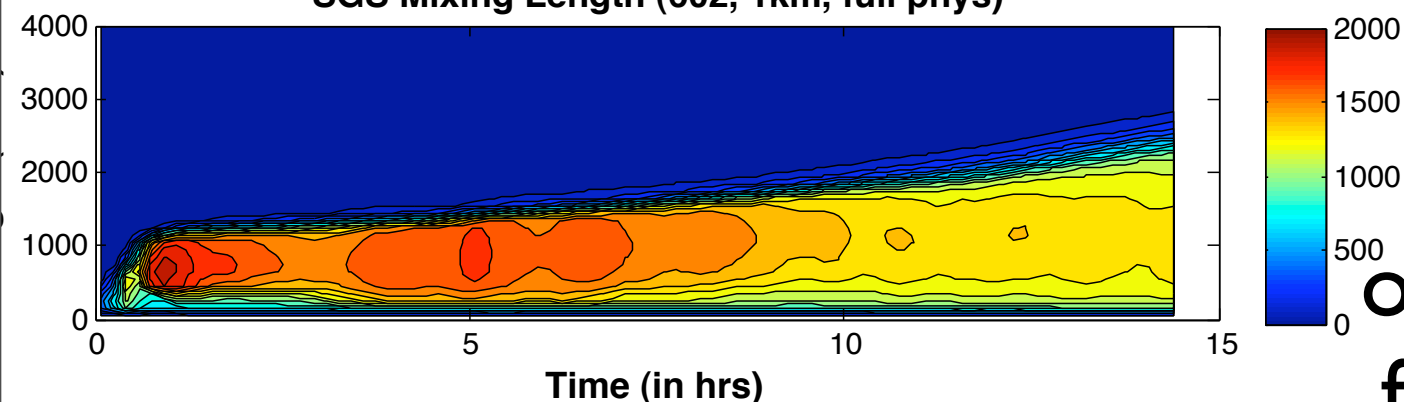
SGS Mixing Length (604, 30km, full phys)



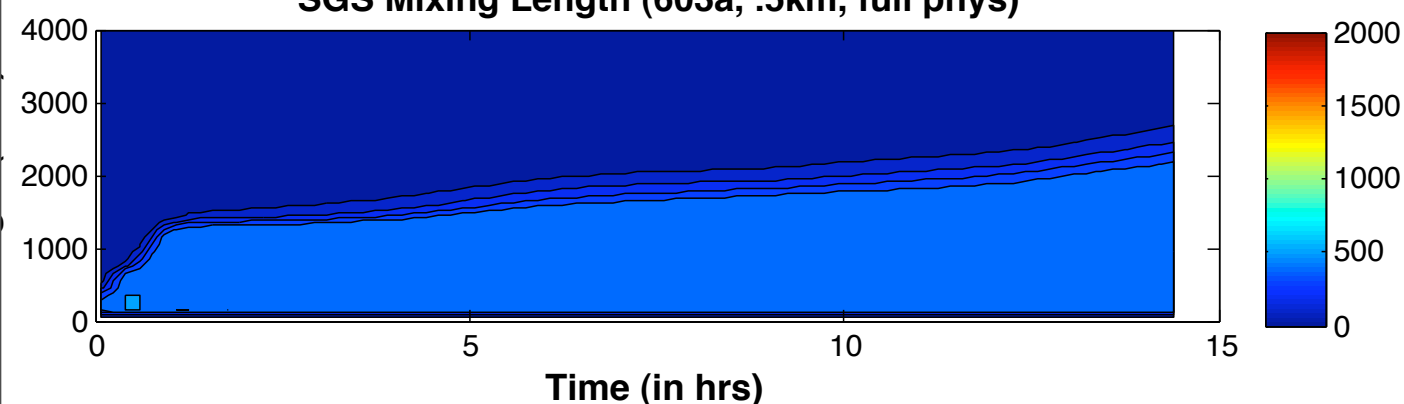
SGS Mixing Length (601, 3km, full phys)



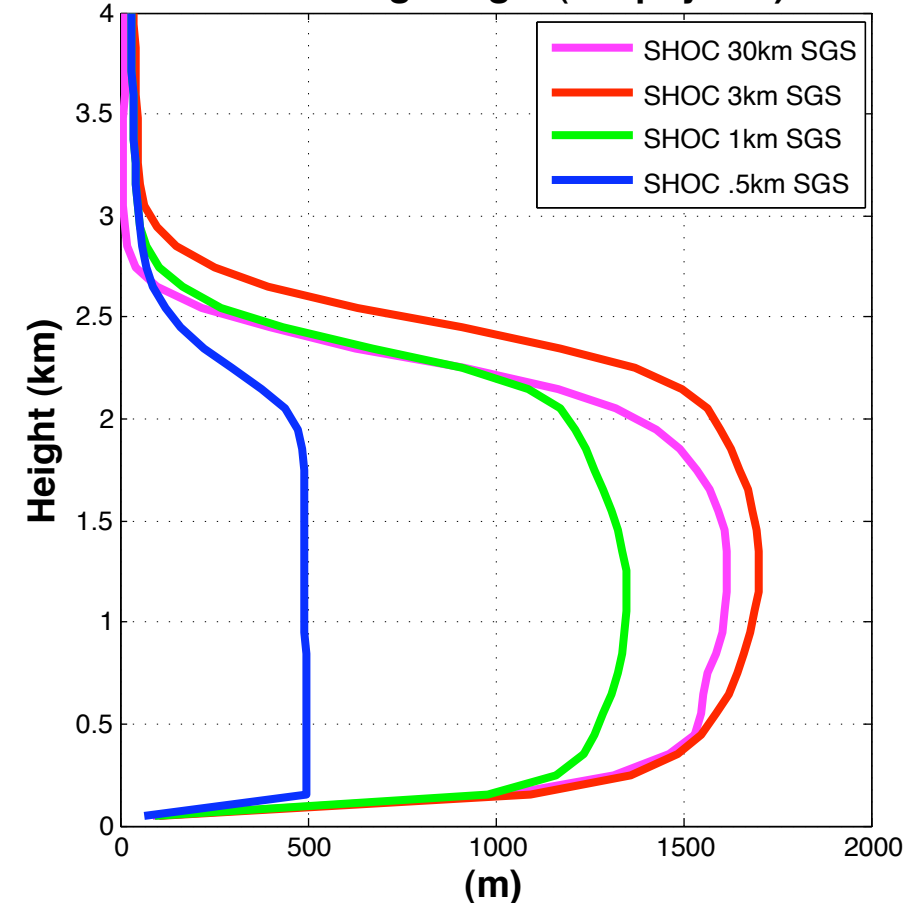
SGS Mixing Length (602, 1km, full phys)



SGS Mixing Length (603a, .5km, full phys)

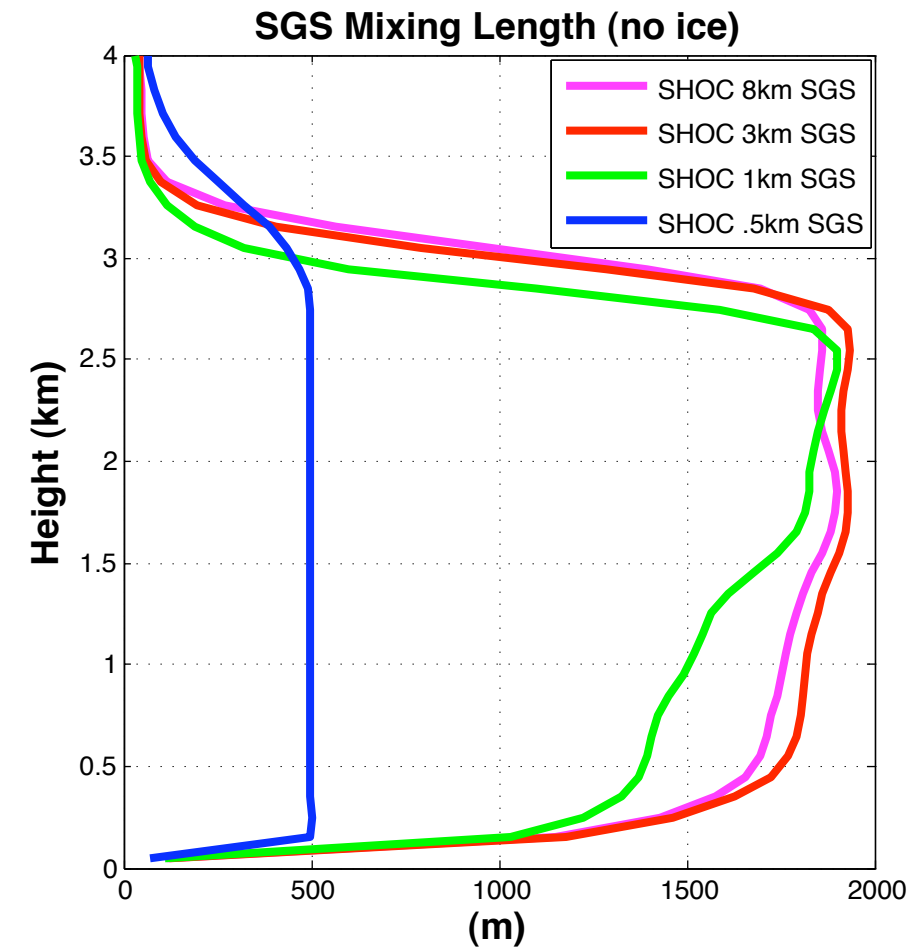
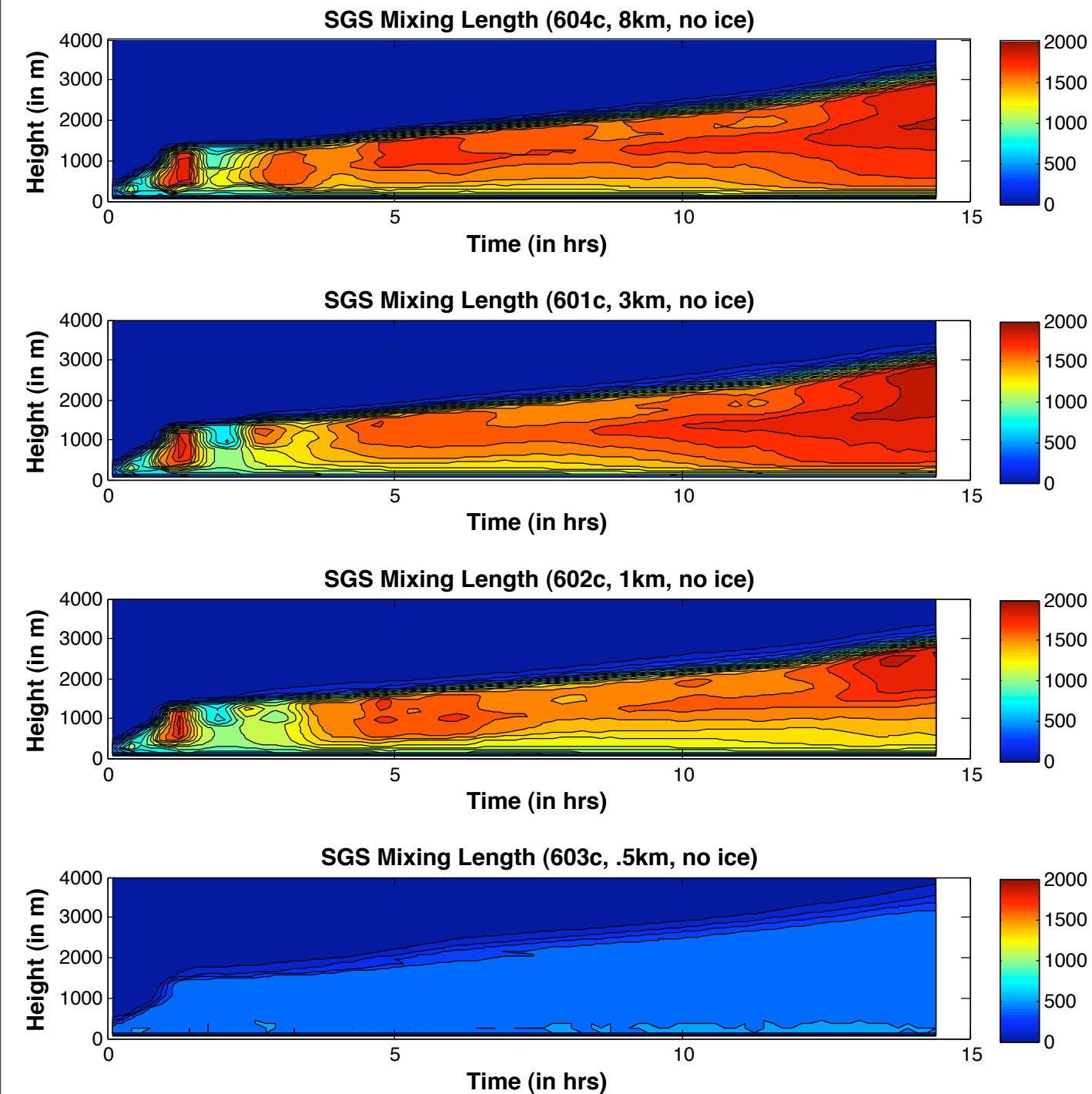


SGS Mixing Length (full physics)

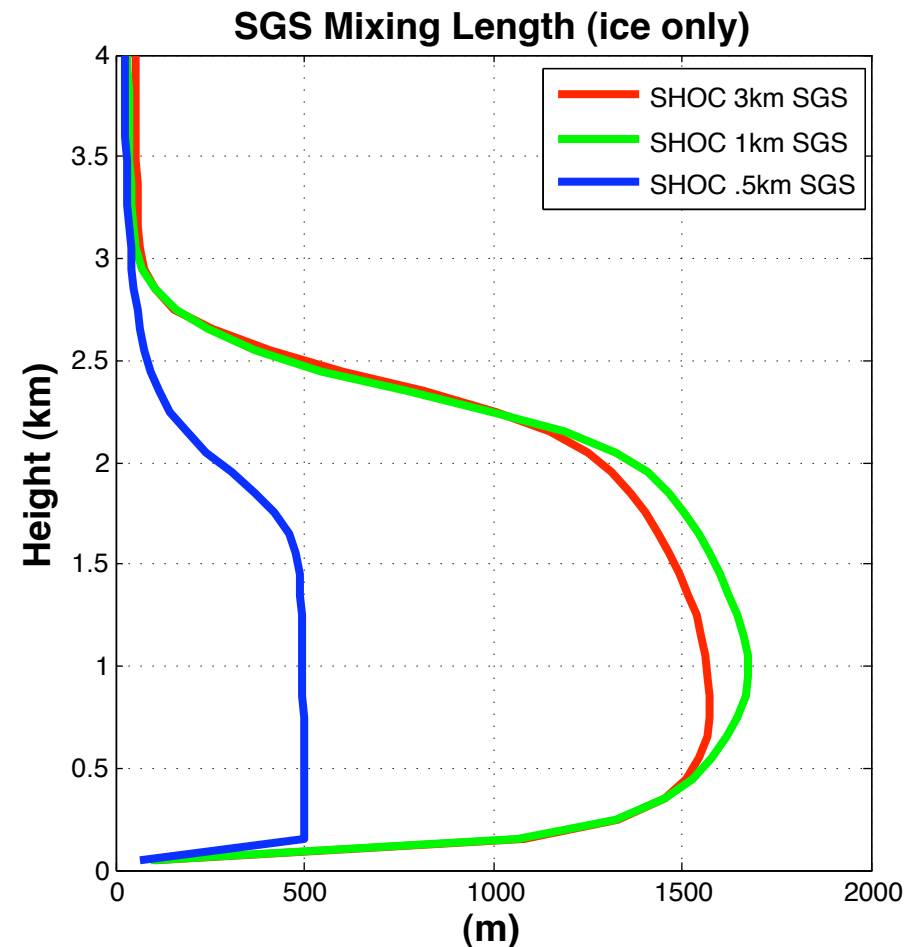
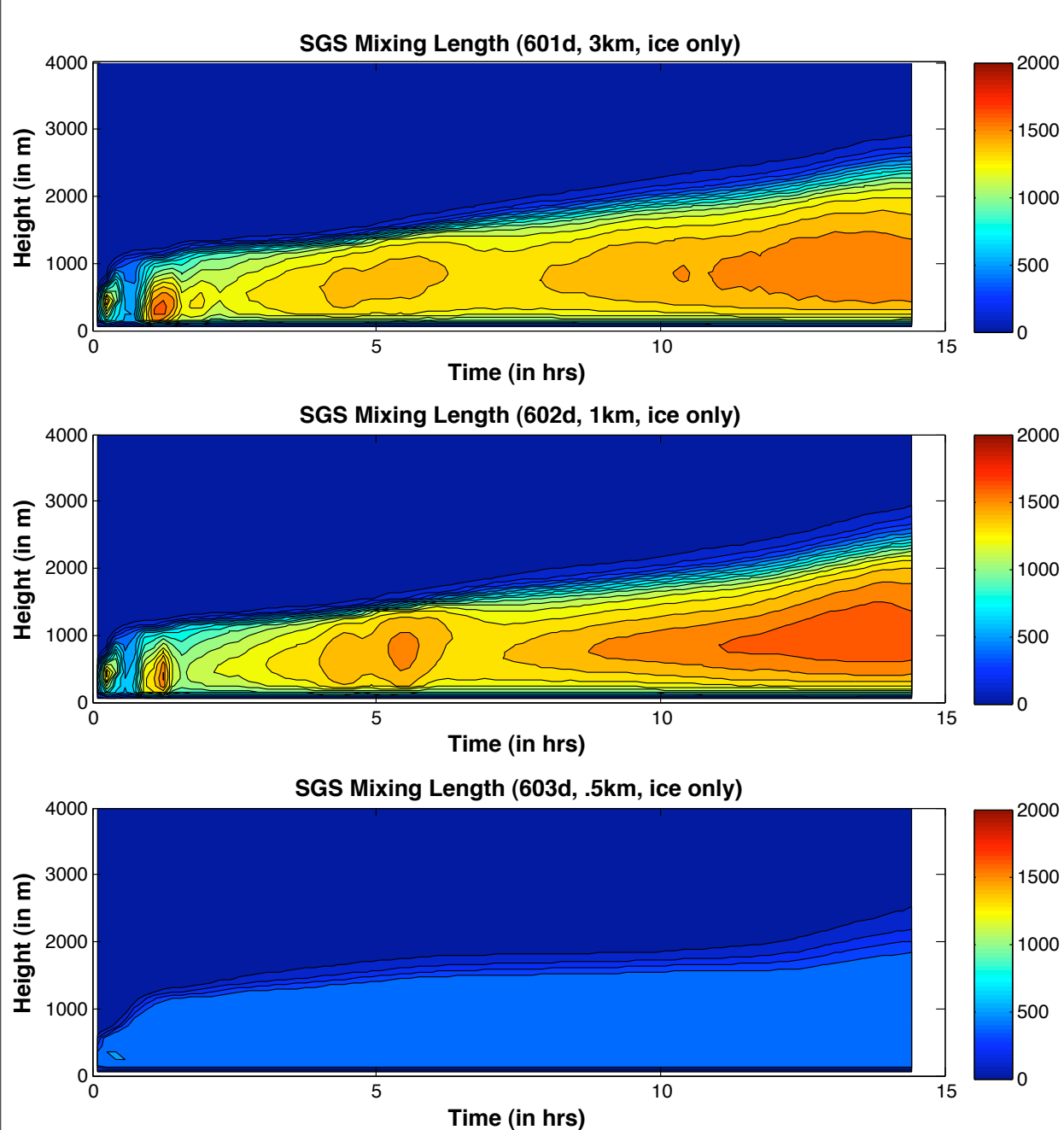


Mixing length starts to decrease over time at 1km resolution, while for no ice and ice only magnitude still increasing.

# Mixing Lengths



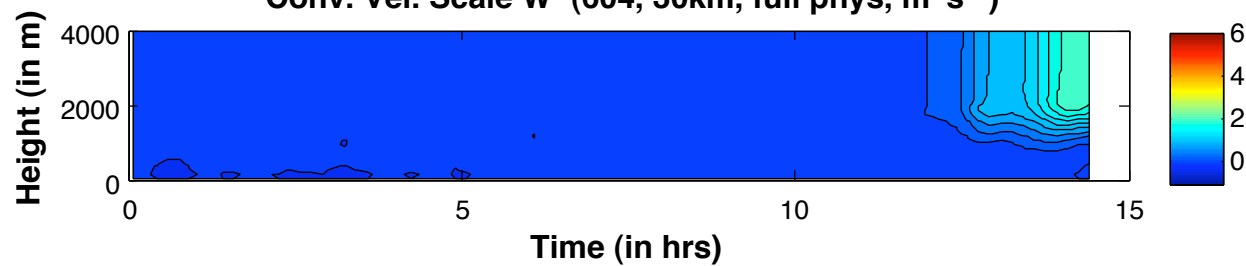
# Mixing Lengths



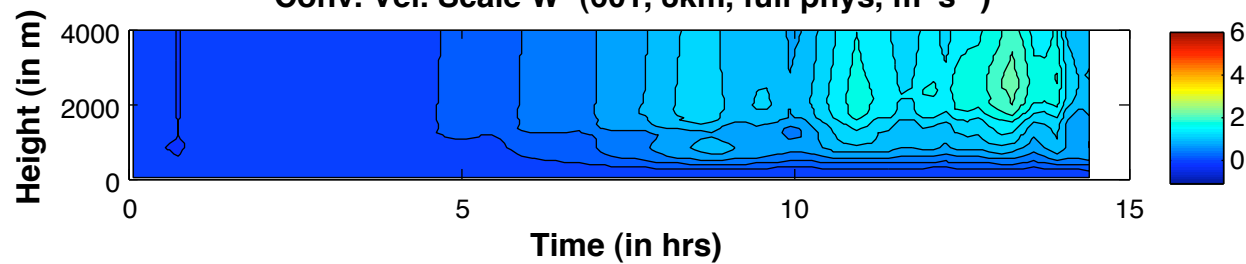
Unlike full physics (and to lesser extent no-ice), ice only seems to reach max mixing length  $\sim 1$  km grid.

# $W^3$ & CloudFraction

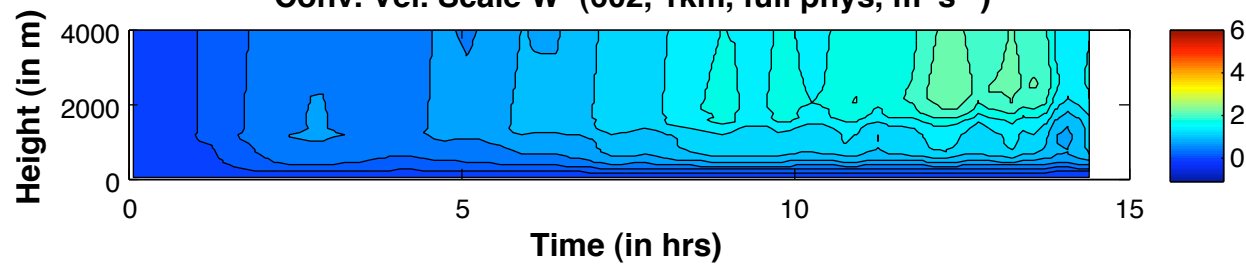
Conv. Vel. Scale  $W^3$  (604, 30km, full phys,  $\text{m}^3 \text{s}^{-3}$ )



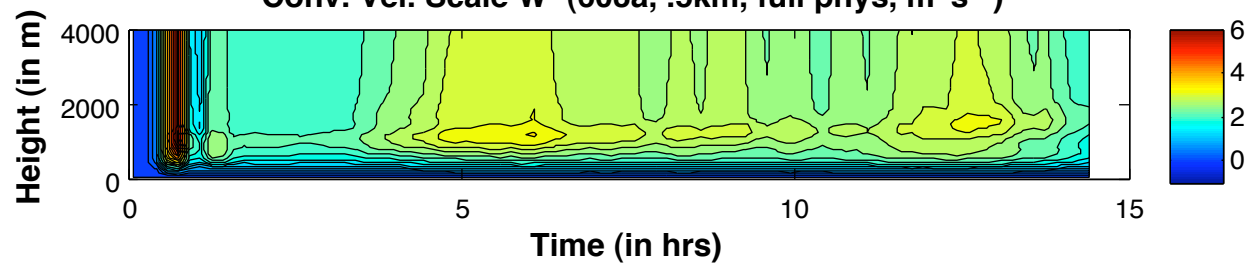
Conv. Vel. Scale  $W^3$  (601, 3km, full phys,  $\text{m}^3 \text{s}^{-3}$ )



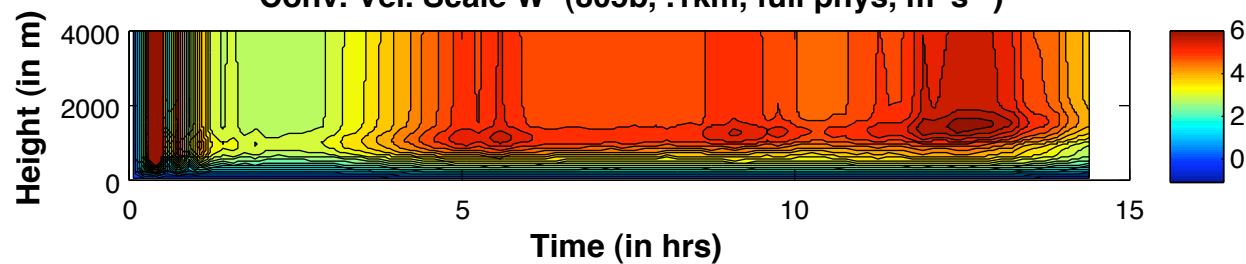
Conv. Vel. Scale  $W^3$  (602, 1km, full phys,  $\text{m}^3 \text{s}^{-3}$ )



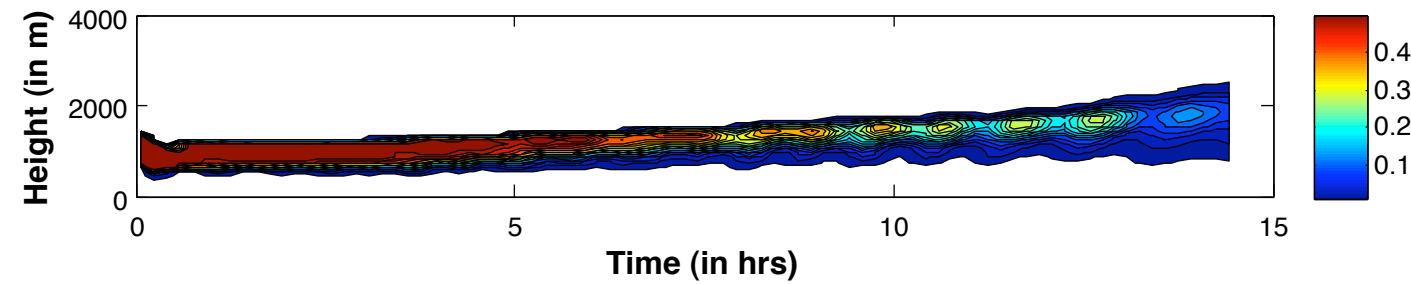
Conv. Vel. Scale  $W^3$  (603a, .5km, full phys,  $\text{m}^3 \text{s}^{-3}$ )



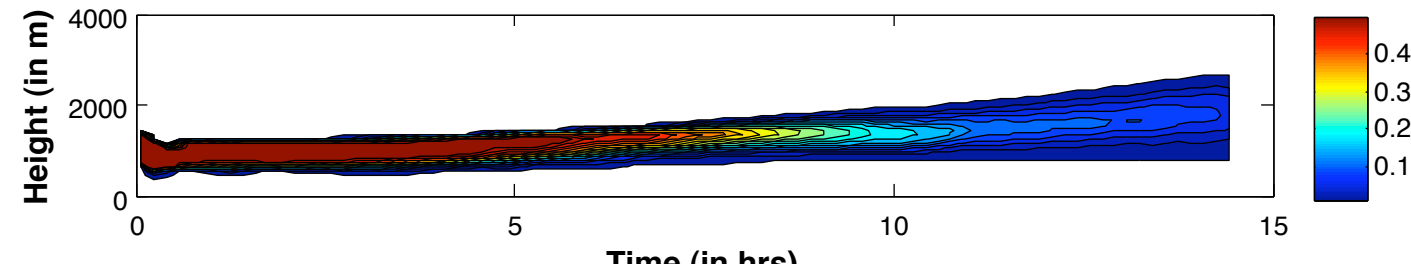
Conv. Vel. Scale  $W^3$  (805b, .1km, full phys,  $\text{m}^3 \text{s}^{-3}$ )



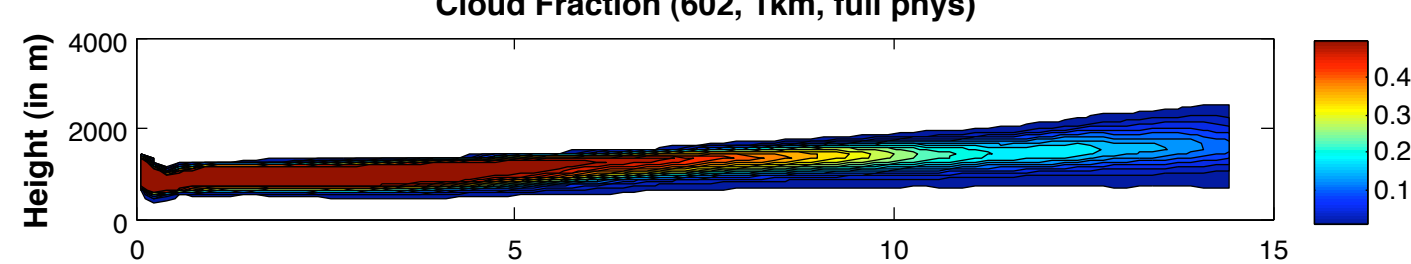
Cloud Fraction (604, 30km, full phys)



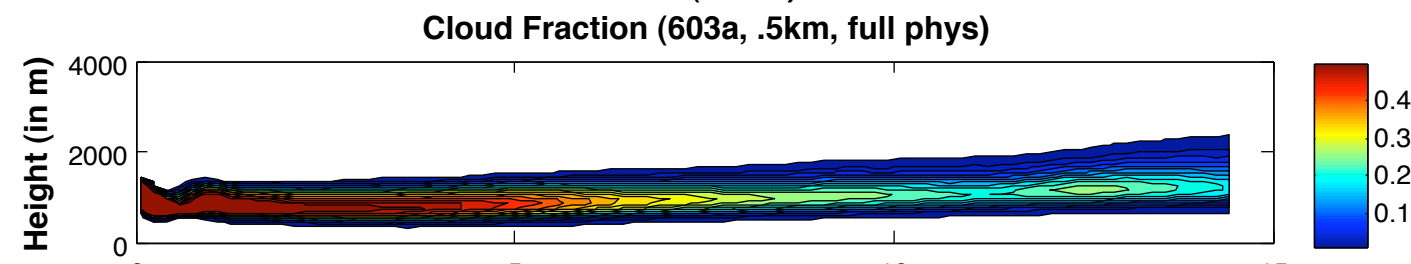
Cloud Fraction (601, 3km, full phys)



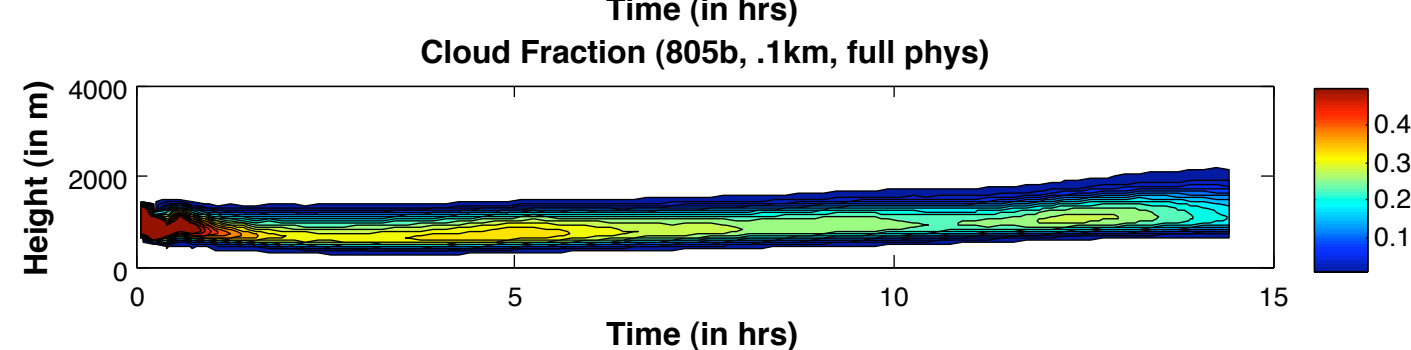
Cloud Fraction (602, 1km, full phys)



Cloud Fraction (603a, .5km, full phys)



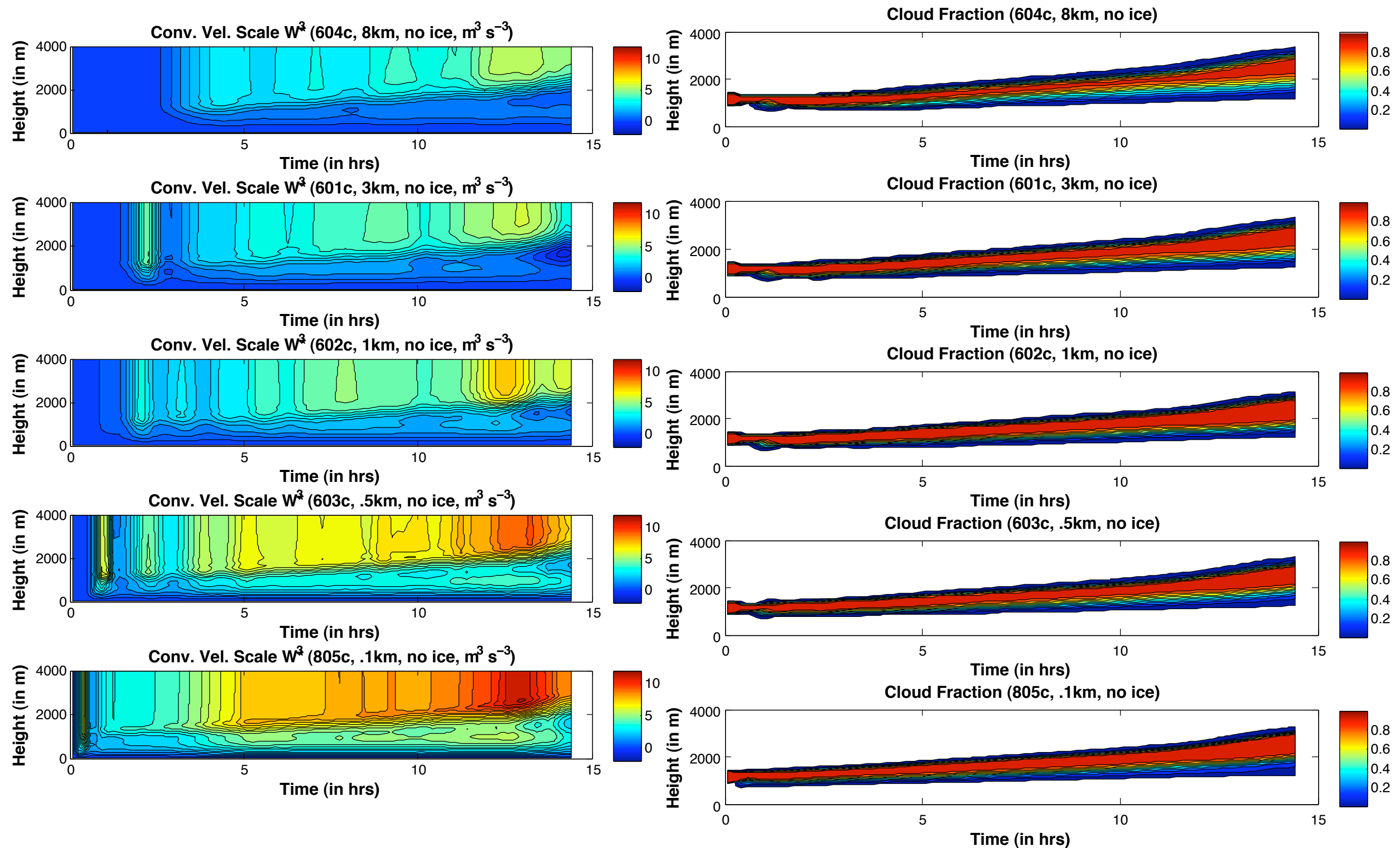
Cloud Fraction (805b, .1km, full phys)



For all 3 run types (full phys, ice only, no ice)  $W^3$  increases over time.



# $W^3$ & CloudFraction

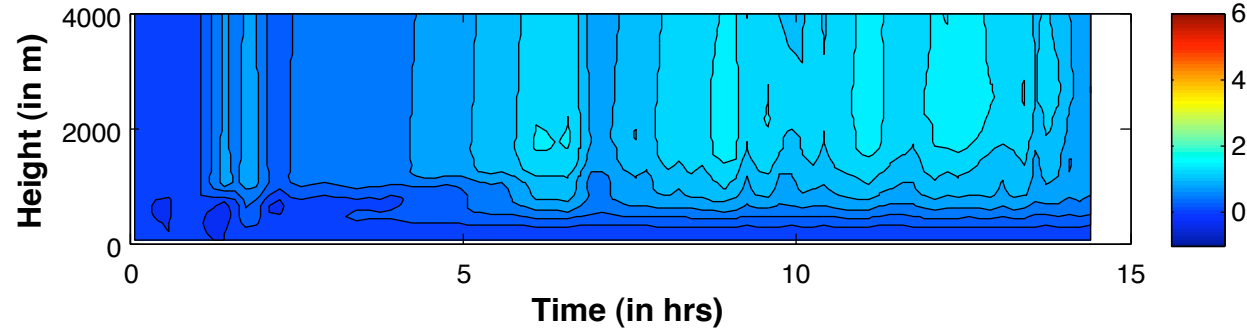


This is the only run type of the three where cloud fraction is sustained throughout.

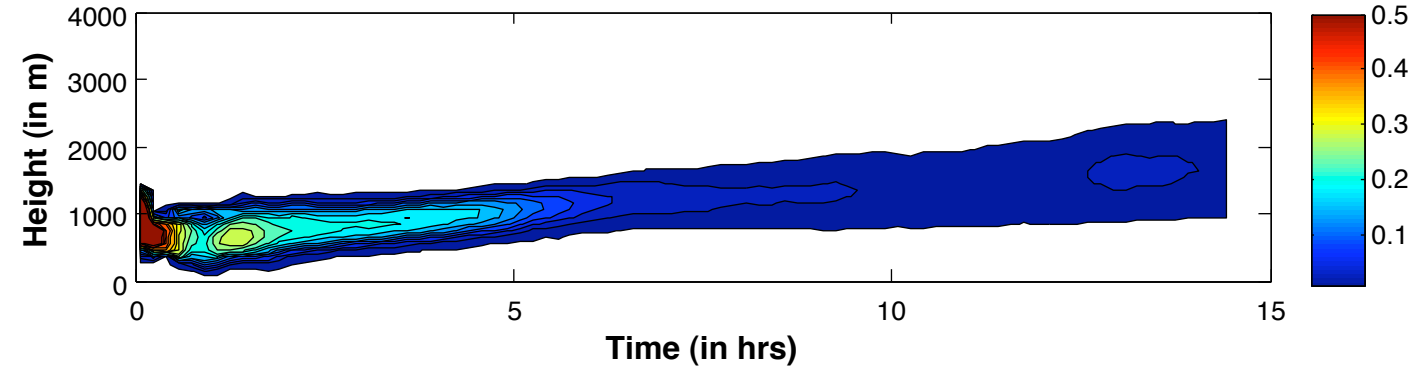


# $W^3$ & CloudFraction

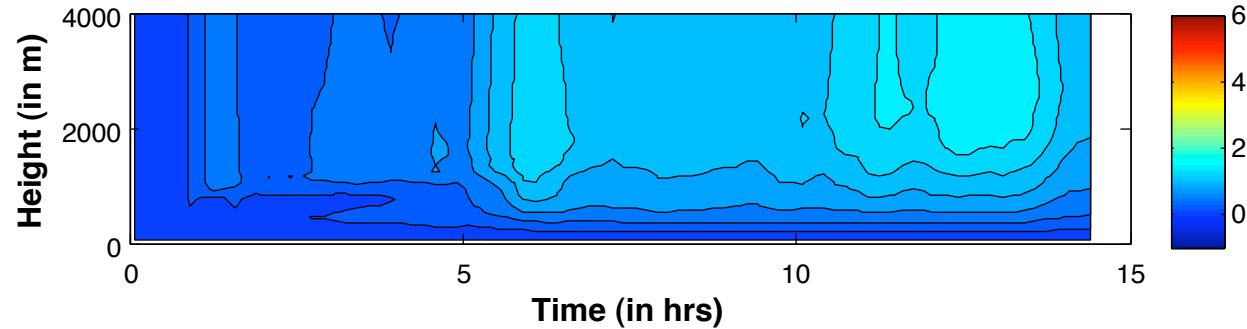
Conv. Vel. Scale  $W^3$  (601d, 3km, ice only,  $m^3 s^{-3}$ )



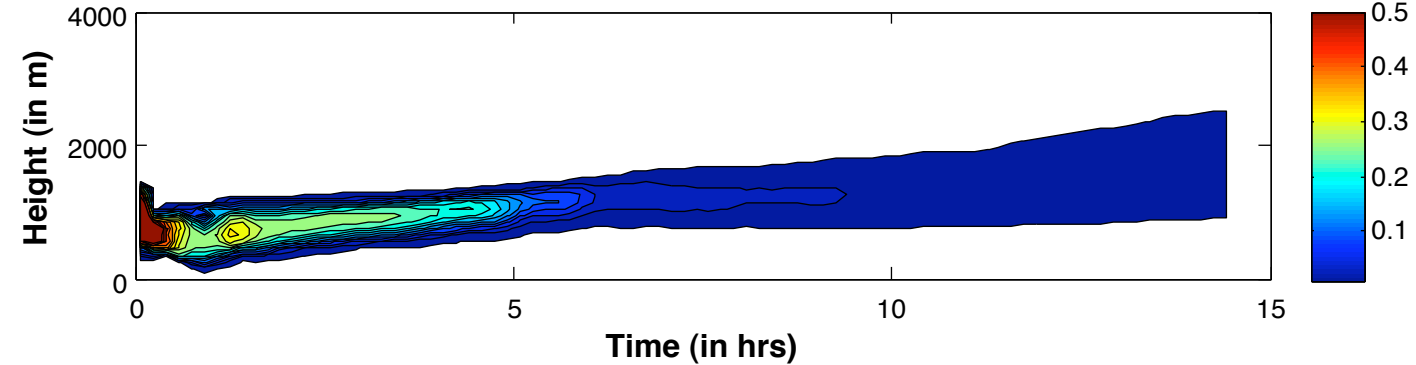
Cloud Fraction (601d, 3km, ice only)



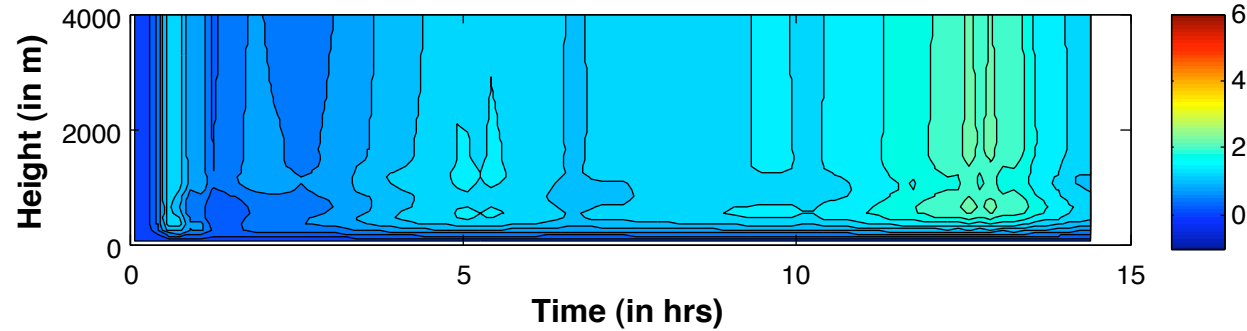
Conv. Vel. Scale  $W^3$  (602d, 1km, ice only,  $m^3 s^{-3}$ )



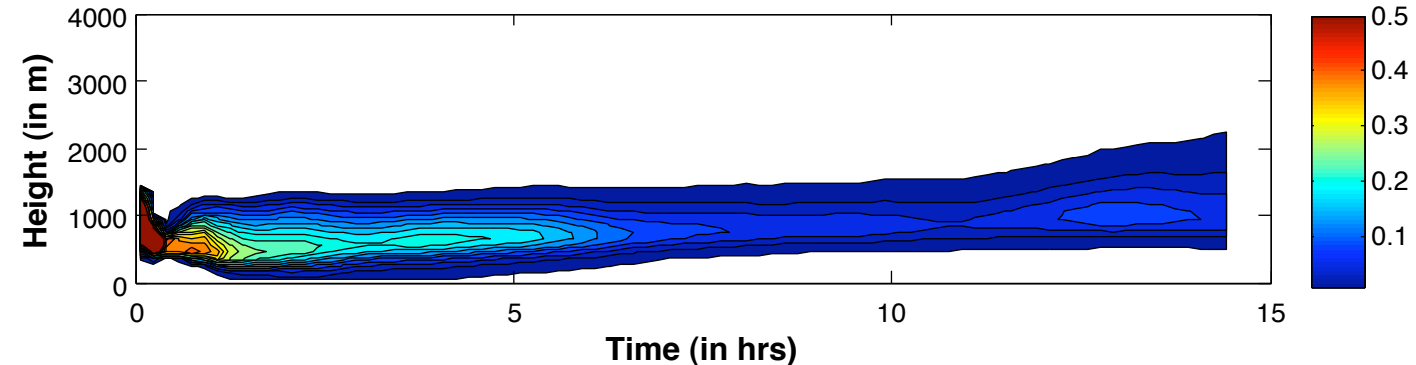
Cloud Fraction (602d, 1km, ice only)



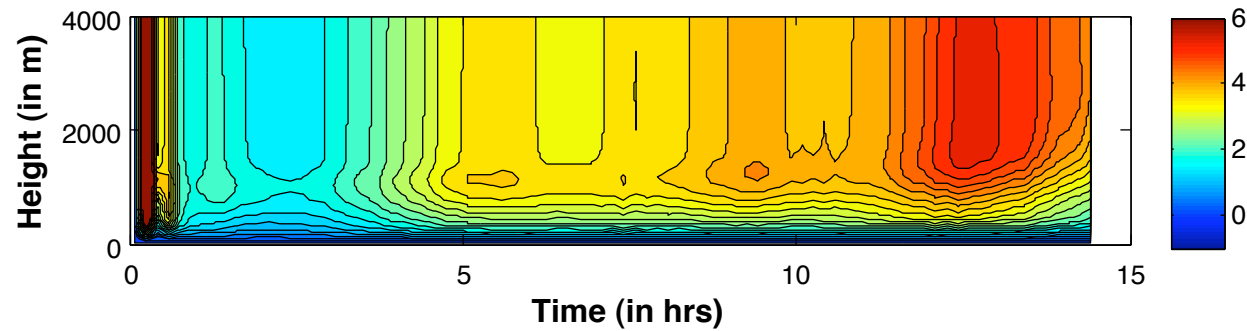
Conv. Vel. Scale  $W^3$  (603d, .5km, ice only,  $m^3 s^{-3}$ )



Cloud Fraction (603d, .5km, ice only)



Conv. Vel. Scale  $W^3$  (805d, .1km, ice only,  $m^3 s^{-3}$ )



Cloud Fraction (805d, .1km, ice only)

