

# Mesoscale Organization Breakout

**ZHE FENG**

**PNNL**

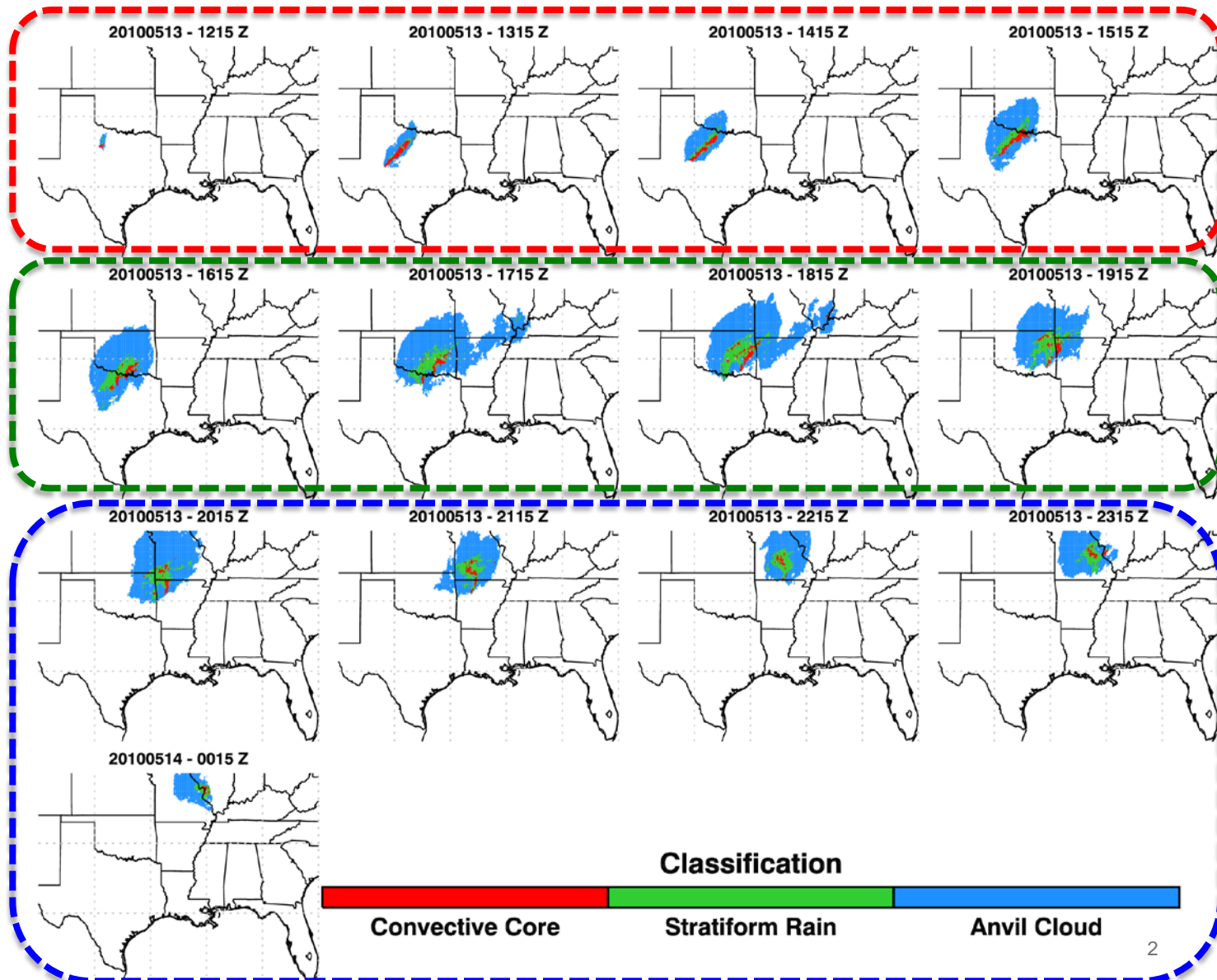
**2013 ASR STM**

# Mid-latitude Convective Lifecycle

**Intensify**

**Mature**

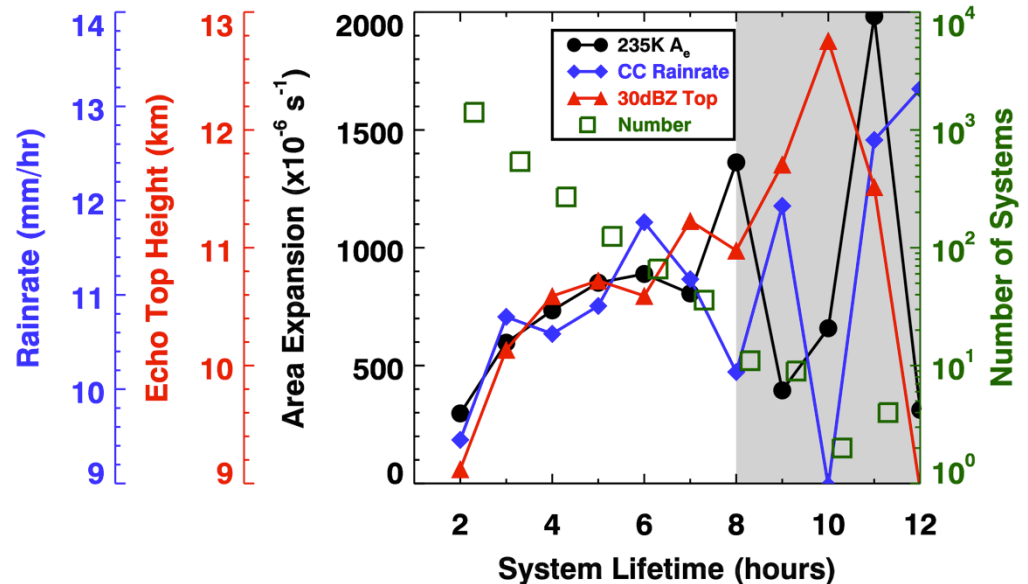
**Decay**



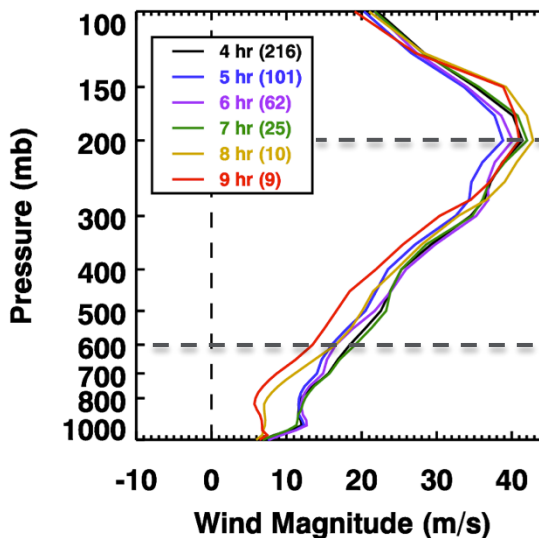
Feng et al.  
2012 JGR

# Lifetime of Convective Systems

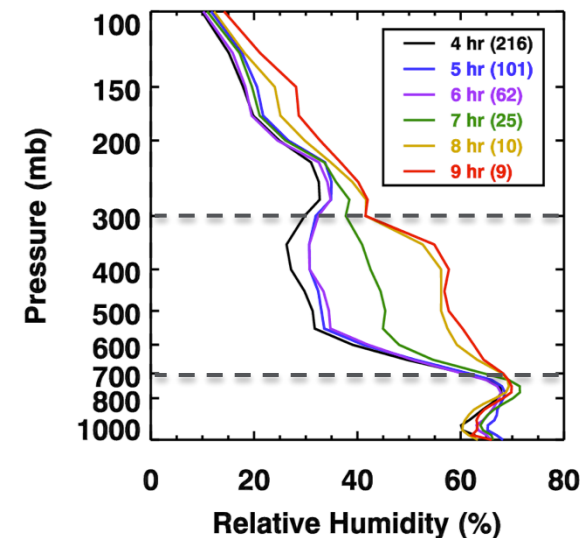
- ▶ **Initial convective intensity** determines lifetime of **short-live CS** (< 6 hr)
- ▶ Collocated NARR shows: **40% stronger wind shear** and **50% higher RH** favor longer-lived CS (> 6 hr)



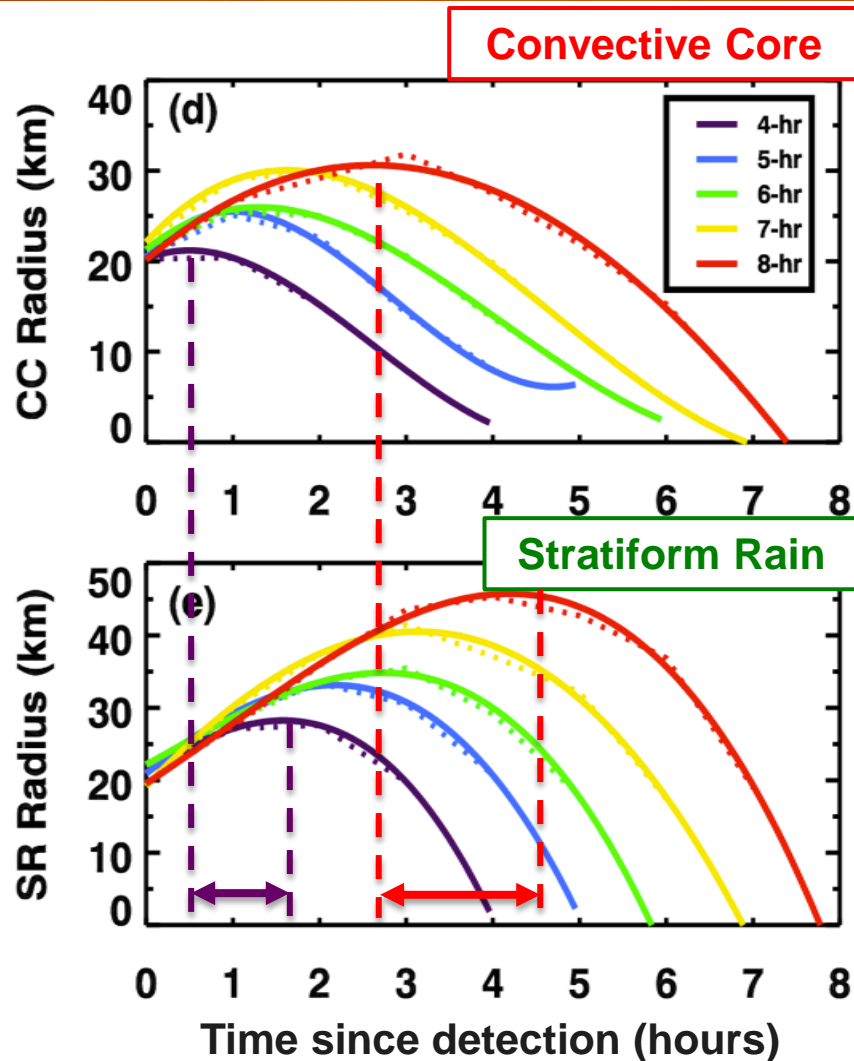
(a) Wind Magnitude



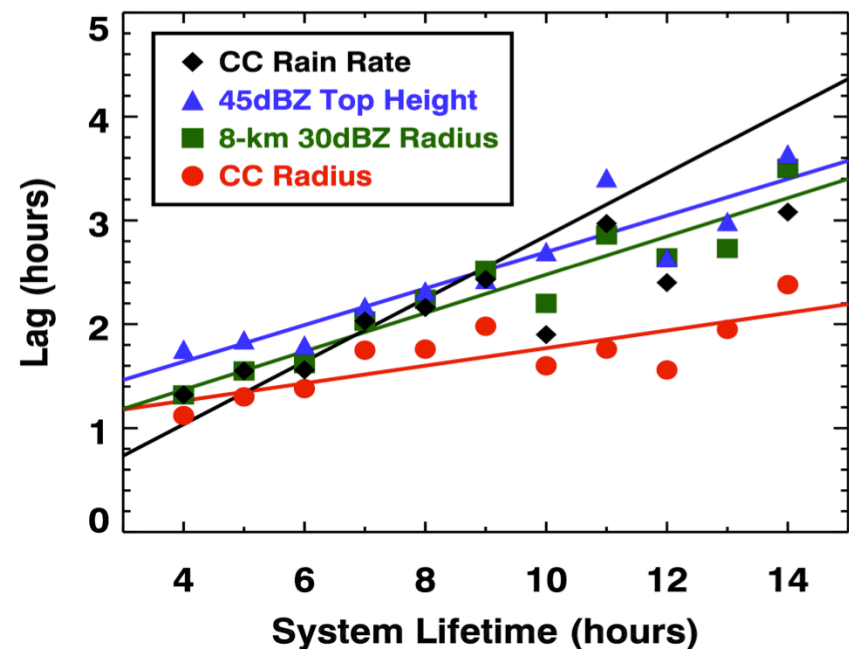
(b) RH



# Composite CS Evolution



- ▶ SR area continue to grow after convection peaks
- ▶ Stronger shear and more humid env. support fully developed SR (deposition)  
→ **prolongs CS lifetime**  
**beyond 6-hr (conv. organ.)**



**Composites of 4221 systems**