

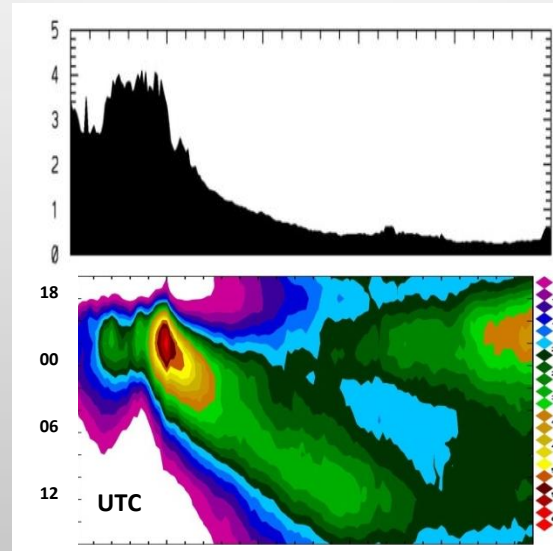
Differential Pole-Eq. Warming and Rainfall

slower tropospheric winds suggest weaker vertical shear of horizontal wind

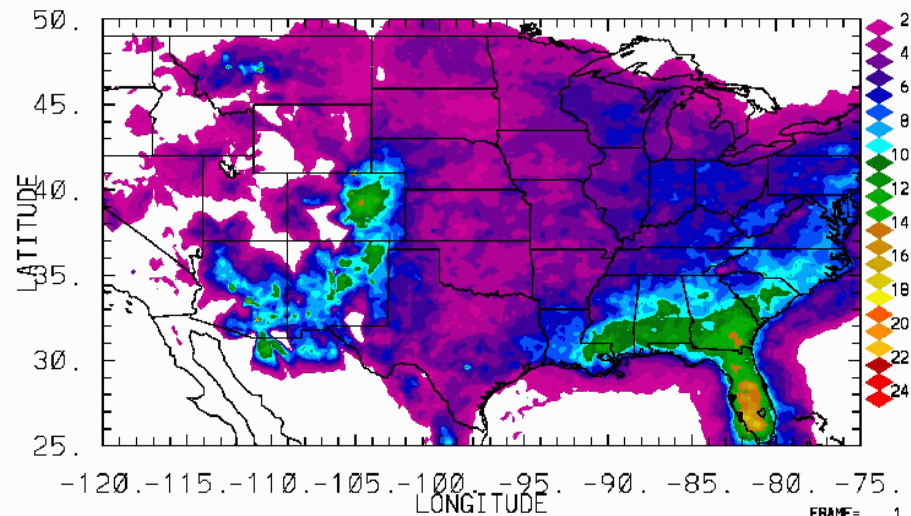
Potential for abrupt change
in rainfall regime

Vertical Shear
 $\geq 10^{-3} \text{ s}^{-1}$

is a **necessary** condition
for 50-60% of JJA rainfall
in central U.S.



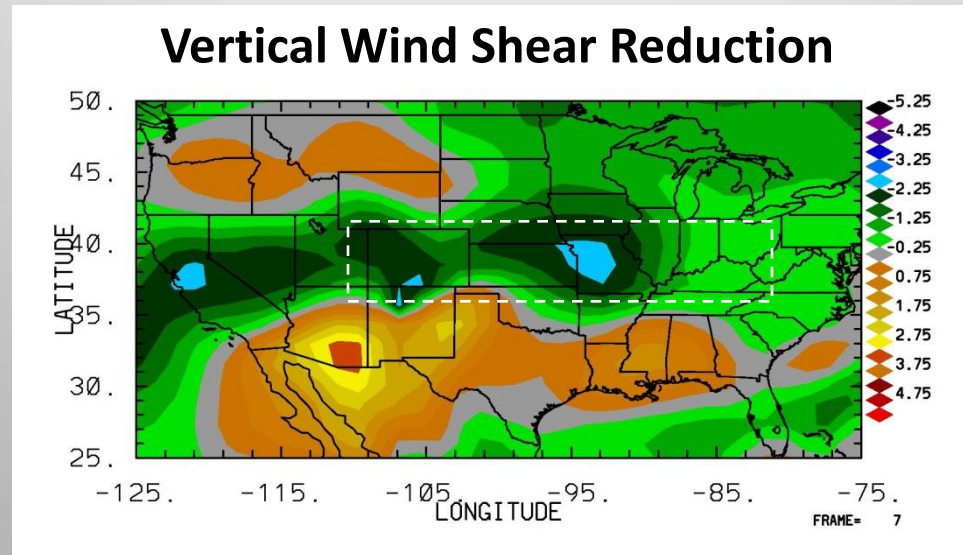
This phenomenon is
common to many
“breadbaskets” of the
world.



NCAR CSM 4th Assessment runs

<2090s – 2000s>

An “ill-posed finding”



Implies a major redistribution of continental warm season rainfall, both spatially and temporally within the diurnal cycle.

This “finding” may be similarly applicable to major portions of China, So. America, Australia, Europe, Africa and S/SE Asia.

Convection-permitting global climate models are needed to resolve this issue