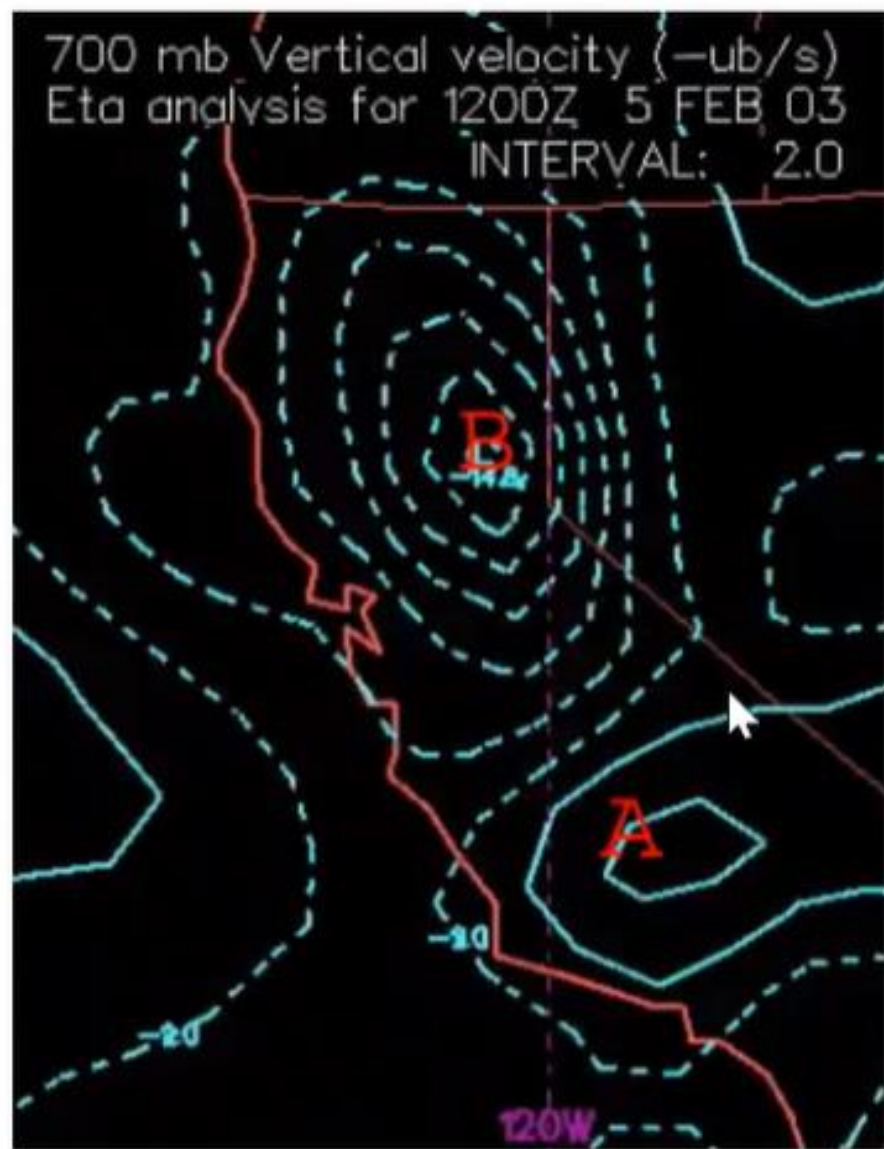


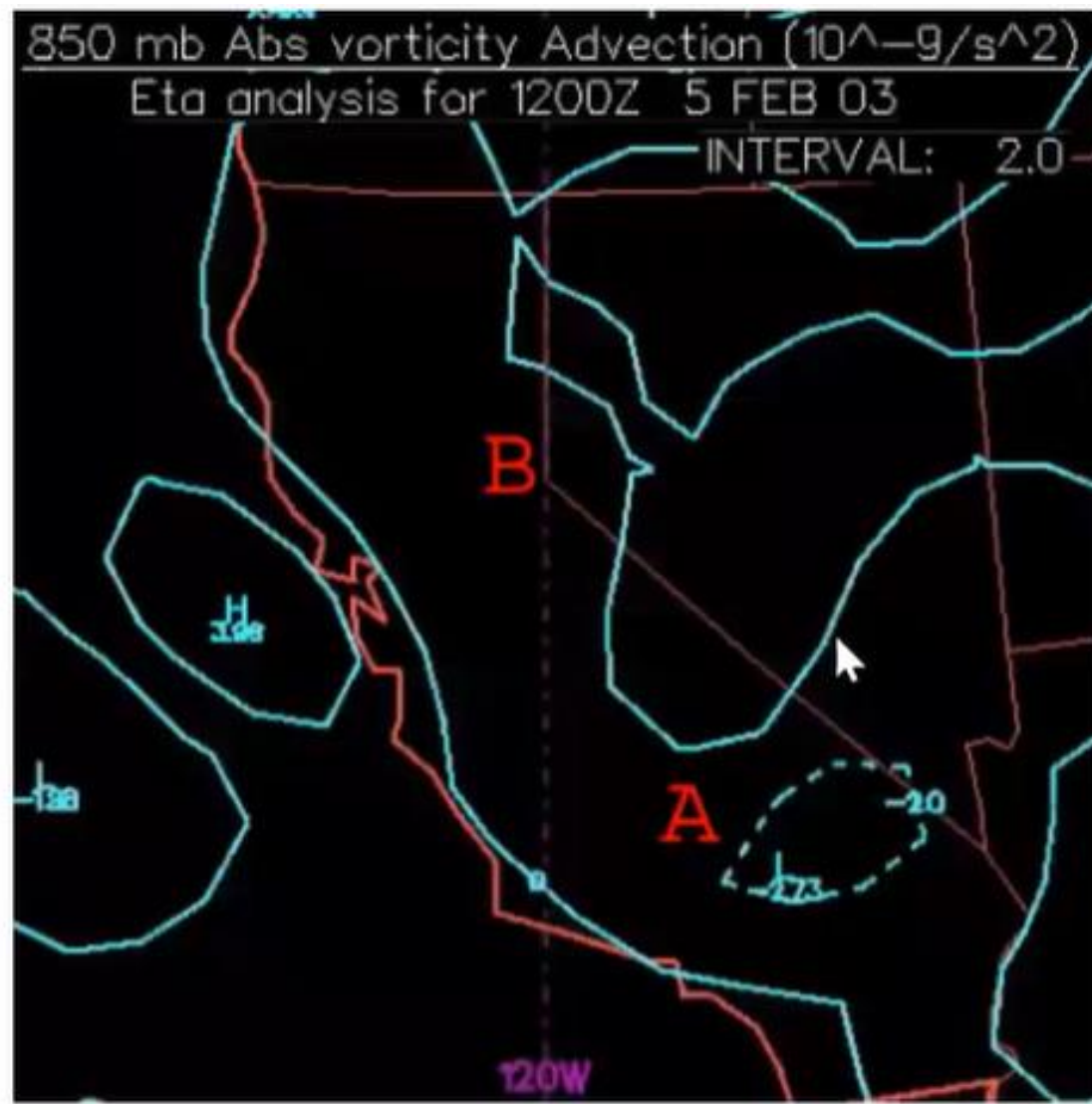
The simplified qualitative Quasigeostrophic-Omega Equation says:

upwards vertical air motion is associated with differential positive vorticity advection (PVA) and warm-air temperature advection

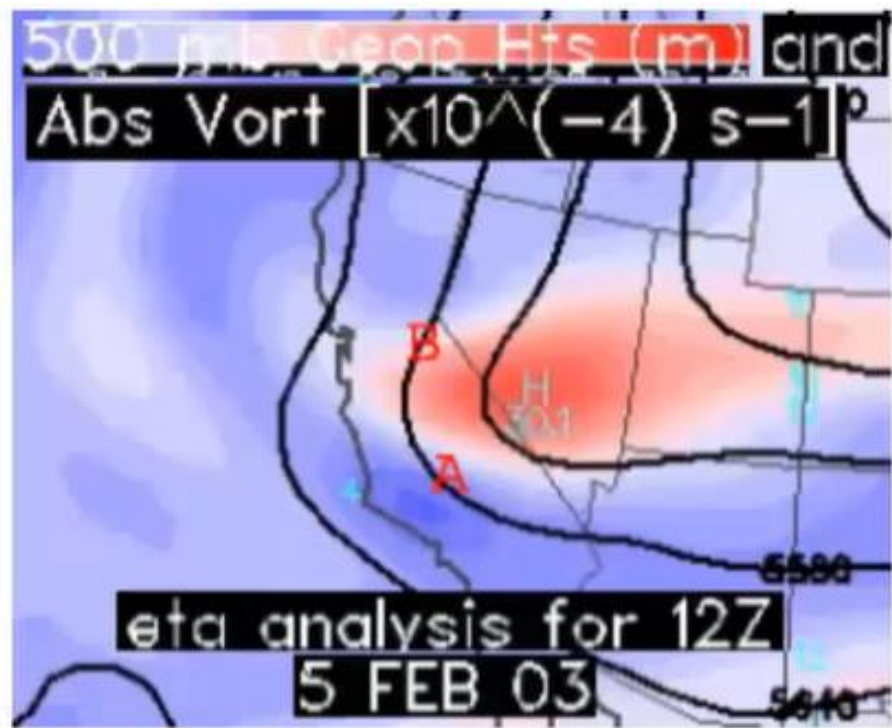
downward vertical air motion is associated with differential negative vorticity advection (NVA) and cold-air temperature advection



700mb vertical velocity

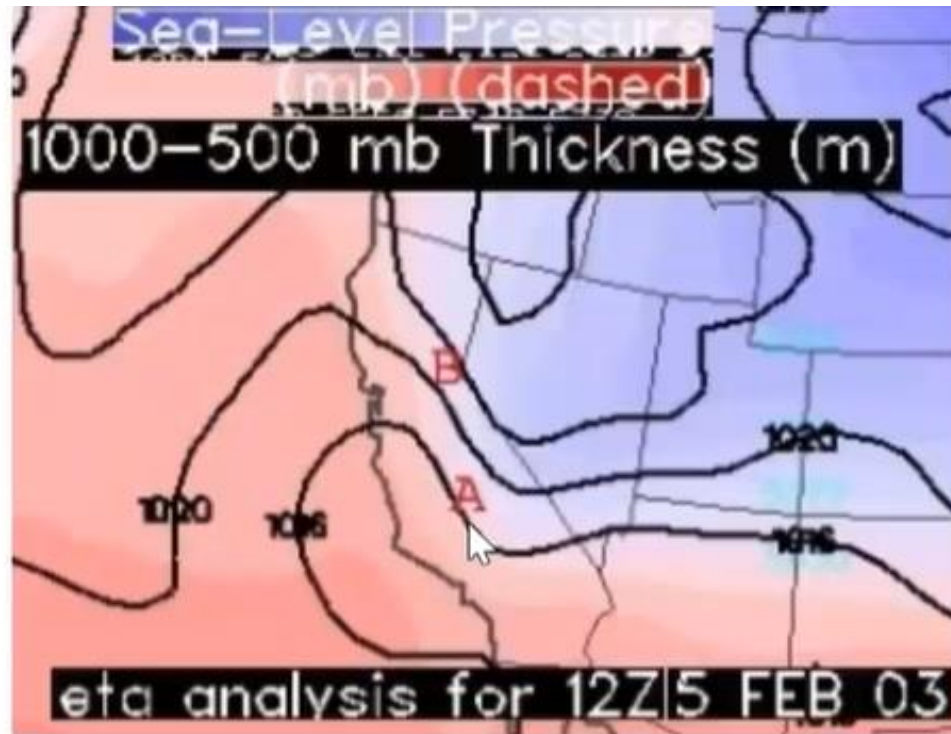


850mb absolute vorticity advection



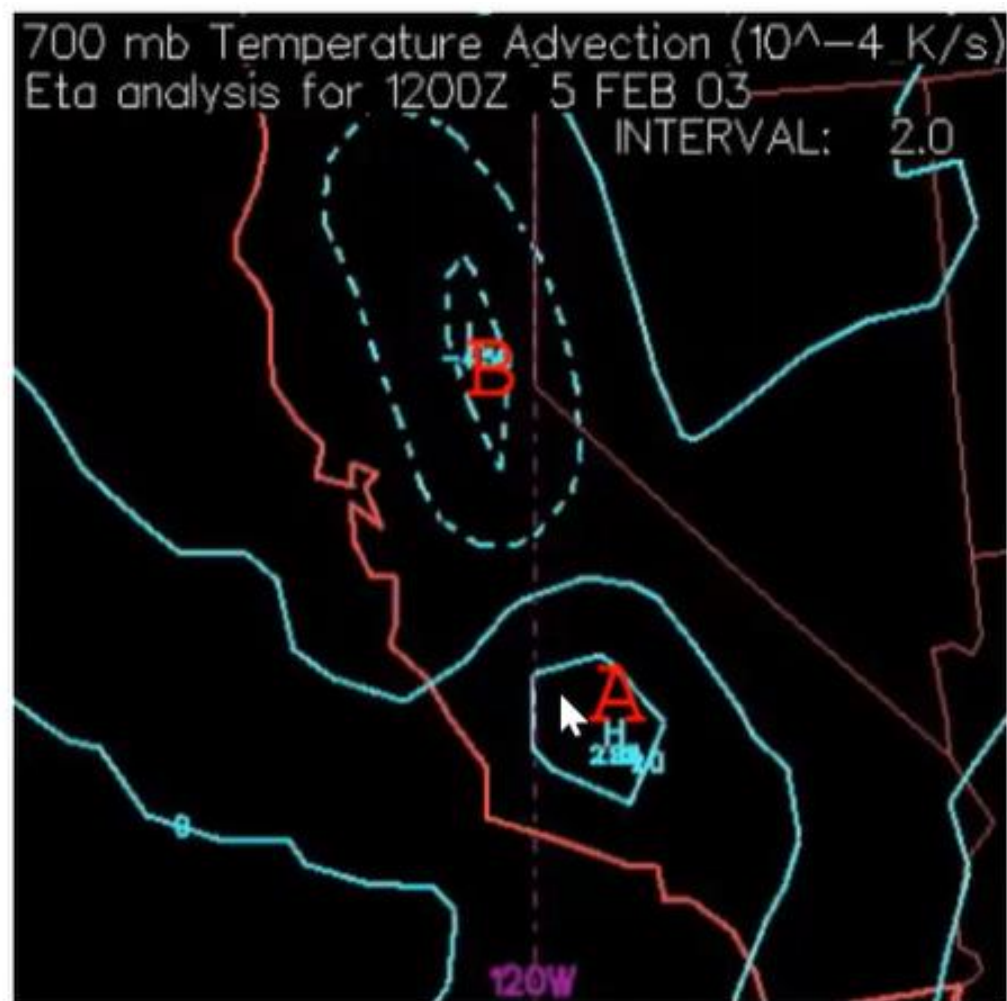
500mb height and absolute vorticity

Location A is experiencing positive (absolute) vorticity advection (PVA) at 500mb
Location B is experiencing negative (absolute) vorticity advection (NVA) at 500mb



MSLP and 1000-500mb thickness

Location A is experiencing "neutral" temperature advection at the surface
Location B is experiencing cold air advection at the surface



700mb temperature advection

Location A is experiencing warm air advection at 700mb
Location B is experiencing cold air advection at 700mb

The Trenberth Approximation says:

upwards
vertical
air motion

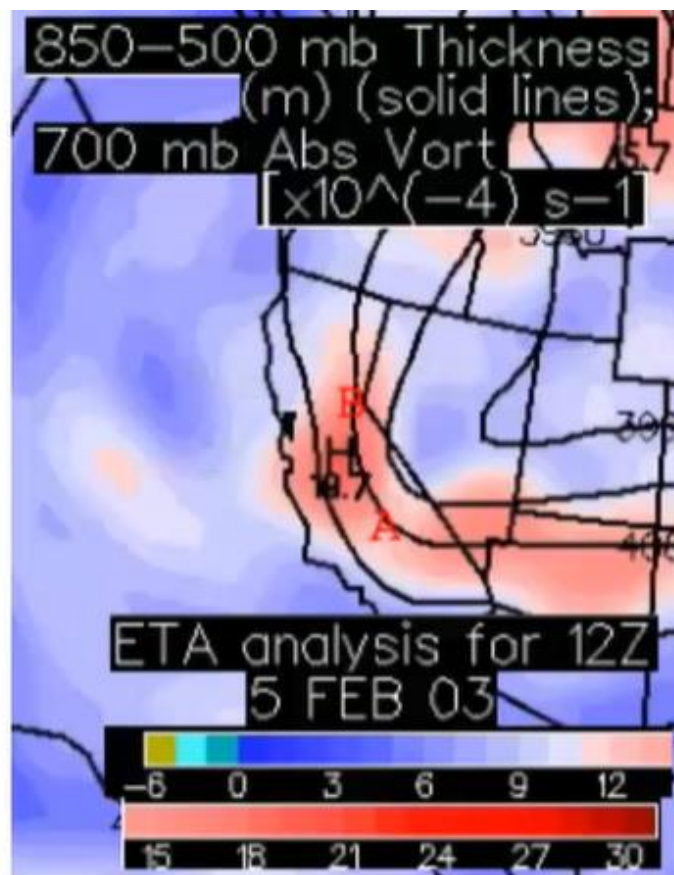
is associated with

positive absolute geostrophic vorticity
advection at 700mb by the thermal wind

downward
vertical
air motion

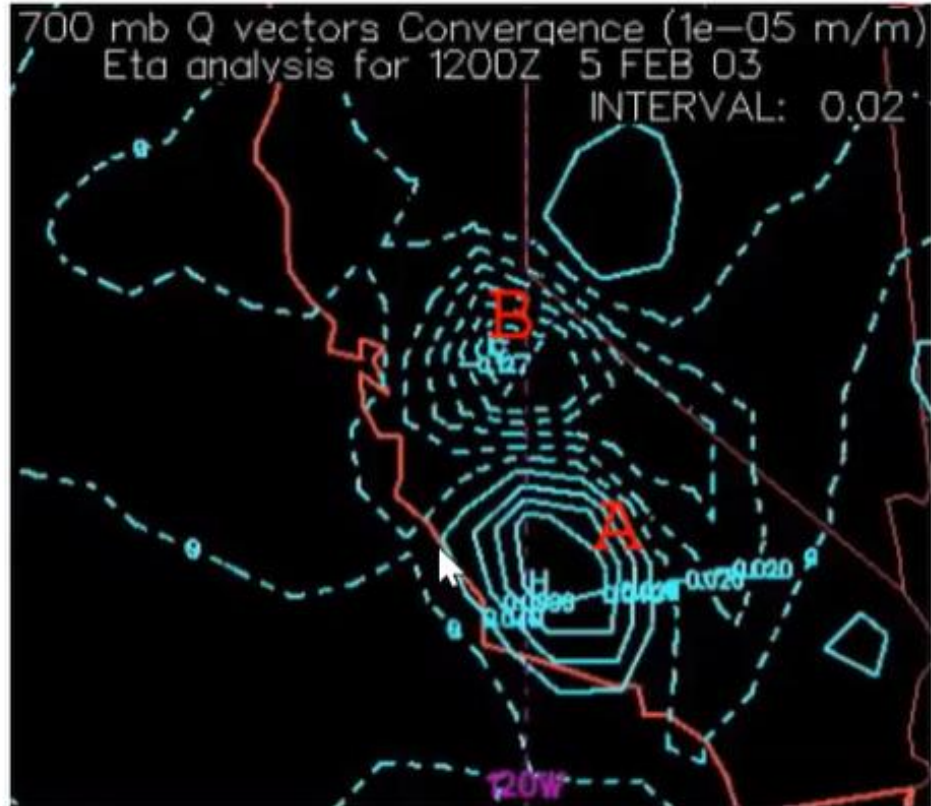
is associated with

negative absolute geostrophic vorticity
advection at 700mb by the thermal wind



850-500mb thickness and 700mb absolute vorticity

Location A is experiencing positive (absolute) vorticity advection (PVA) at 700 mb
Location B is experiencing negative (absolute) vorticity advection (NVA) at 700mb



700mb Q-vector convergence

At location A there is slight positive 700mb Q-vector convergence (negative 700mb Q-vector divergence)

At location B there is negative 700mb Q-vector convergence (positive 700mb Q-vector divergence)