

Layer instability

Also called convective instability or potential instability

The state of an unsaturated layer or column of air in the [atmosphere](#) with a [wet-bulb potential temperature](#) or [equivalent potential temperature](#) that decreases with [elevation](#).

If such a column is lifted bodily until completely saturated, it will become unstable (i.e., its [temperature lapse rate](#) will exceed the [saturation-adiabatic lapse rate](#)) regardless of its initial [stratification](#).

Mathematical requirement:

$$\frac{\partial \theta_e}{\partial z} < 0$$

Another mathematical requirement, but never used:

$$\frac{\partial \theta_w}{\partial z} < 0$$