



Explanation of lapse rate anomalies below the tropical melting level

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In actively convecting regions of the tropics, the lapse rate varies with height between 2 km and 5.2 km in a way which is inconsistent with both reversible moist adiabatic and pseudoadiabatic assumptions. It is argued that this anomalous behavior arises from a tendency, on the regional scale, for the divergences of updrafts and downdrafts to offset one another. This forces the cloud radiative mass flux to be independent of height, and tightly constrains the range of physically allowed temperature and moisture profiles.