Information about Level 2 – MSE budget analysis

At this level, the code estimates vertically integrated MSE budget terms.

Required input data are calculated in **Level 1.** To execute this level, set the parameter MSE = 1 in mdtf.py python file. Users need to complete **Level 1** diagnostics first before running **Level 2**.

The following terms are calculated as vertical integrals:

MSE: $$h = C_p T + gz + Lq$$

MSE vertical advection: $$-\left\langle \omega \frac{\partial h}{\partial p} \right\rangle$$

moisture divergence: $$\langle q \nabla \cdot V \rangle \quad .$$

moisture advection: $$-\langle V \cdot \nabla q \rangle$$

temperature advection: $$-\langle V \cdot \nabla T \rangle$$

Note that vertically integrated moisture divergence is also estimated here.

Note also that surface and radiative fluxes, are already estimated in Level 1. All MSE terms are expressed in W/m^{-2}.

Final output directories:

 The El Niño/La Nina composites are under directories:

~/wkdir/MDTF_{case_name}/MSE/model/netCDF/ELNINO

and

~/wkdir/MDTF_{case_name}/MSE/model/netCDF/LANINA
respectively.

 Graphical output files reside in : ~/wkdir/MDTF_{case_name}/MSE/model directory.
(e.g. {case_name} = CCSM4).