Information about Level 3 – Rossby wave sources diagnostics

At this level the code calculates various terms of anomalous Rossby wave source terms for composite El Nino (or La Nina) winters.

The necessary input data are already estimated in **Level 2** and **Level 1.**

In this Level, the POD explicitly solves barotropic vorticity budget and the leading terms contributing to the total anomalous Rossby wave sources (RWS') are quantified.

Level 3 diagnostics are estimated as:

$$RWS' = -\bar{\xi}\nabla \cdot v'_\chi - v'_\chi \cdot \nabla\bar{\xi} - \xi'\nabla \cdot \bar{v}_\chi - \bar{v}_\chi \cdot \nabla\xi' \qquad (3)$$

Here, ξ and v_χ correspond to absolute vorticity and divergent component of the wind, respectively. The overbar represents seasonal mean and the prime refers to seasonal anomalies. The first term in RWS' corresponds to stretching due to anomalous divergence, and the second term accounts for advection of climatological gradient in ξ by the anomalous divergent wind. The third and fourth terms account for transient eddy convergence of vorticity, and their contributions to RWS' is small but non-negligible.

Final output directories:

The output data are saved in
~/wkdir/MDTF_$model_$first_year_$last_year/ENSO_RWS/model/netCDF .

Graphical output is in : ~/wkdir/MDTF_$model_$first_year_$last_year/ENSO_RWS/model

(e.g., $model = CESM1, $fist_year= 1950, $last_year = 2005)

The calculated individual and total RWS' are shown as spatial maps.