ETR Code

1) Read namelist

2) Read ensemble forecast input data (*read_fcst*)

   ps, div, vor, and ntrac (3) forms of water content

3) Calculate ensemble forecast perturbations

4) Calculate kinetic energy (*write_ke*)

5) Calculate transformation matrix T (*Generate_vec*) by using KE (nlevmask=500hPa) and climatological analysis error variance

6) Multiply ensemble forecast perturbations with T (*Compute_gc*)

7) Multiply ensemble perturbations with an inflation factor (*factor_t*)

8) Rescaling ensemble perturbations (*mask_pert*)

9) Read analysis data, add ensemble perturbations to analysis, and write outputs (*write_ana*)

Some Details

- Inflation factor *scf* (*factor_t*):

$$scf = ftt(0.8)/sqrt(\bar{T'^2})$$,

T': ensemble temperature at 500 hPa (nlevemask=13 now should be 20)

- Centering ensemble perturbations (wang et al 2004)

- Rescaling (*mask_pert*)

- 1) Climate KE variance at 500 hPa times 0.88 (globamplr) than compared with ensemble KE. if ensemble KE is larger than the above value, it is scaled down.
- 2) the perturbations is inflated under the 500 hPa (nlevmask). The inflation decreases with height from 1.2 (smax) to 1 from surface to 500hPa.
- 3) Extra rescaling on top levels

a) Find the level with maximum total energy (levs)

b) rescaling from nlevrs (=28) to the level with the maximum total energy. The maximum TE will be no not larger than contop (10)