Activity 3 – Run an idealized ocean basin III

1. Impact of explicit/implicit viscosity

We will run different simulations with various numerical choices and compare the evolution of the gyre and the barotropic vorticity budget. Adapt the resolution and duration of the simulation so that it takes no more than 10-20 minutes to run

- Choose 2 (or 3) setups among of the following ones:

- Simulation 1: choose numerical options to have no implicit horizontal viscosity/diffusion and an explicit horizontal viscosity/diffusion of 1000 m^2/s
- Simulation 2: choose numerical options to have no explicit horizontal viscosity/diffusion and an advective scheme with implicit viscosity/diffusion
- Simulation 3: choose numerical options to have no horizontal implicit nor explicit viscosity/diffusion
- Simulation 4: similar to simulation 3 but with a large vertical mixing coefficient (Akv_bak = 1., Akt_bak = 1.)
- Simulation 5: similar to simulation 3 but with a large bottom drag coefficient (RDRG = 3.e-2)

- For each simulation plot the different terms of the barotropic vorticity budget and the kinetic energy budget averaged over the last year of the simulation.

- Compare the vertical structure of the flow between simulations