

Agulhas Current Project

AGULa0.4:

Resolution: 0.4° Mercator

Domain = $[60^\circ\text{W}, 120^\circ\text{E}, 60^\circ\text{S}, 0^\circ\text{S}]$;

Vertical discretization: 10 layers Full isopycnal

Stratification: Barotropic from 20°C to 19.91°C

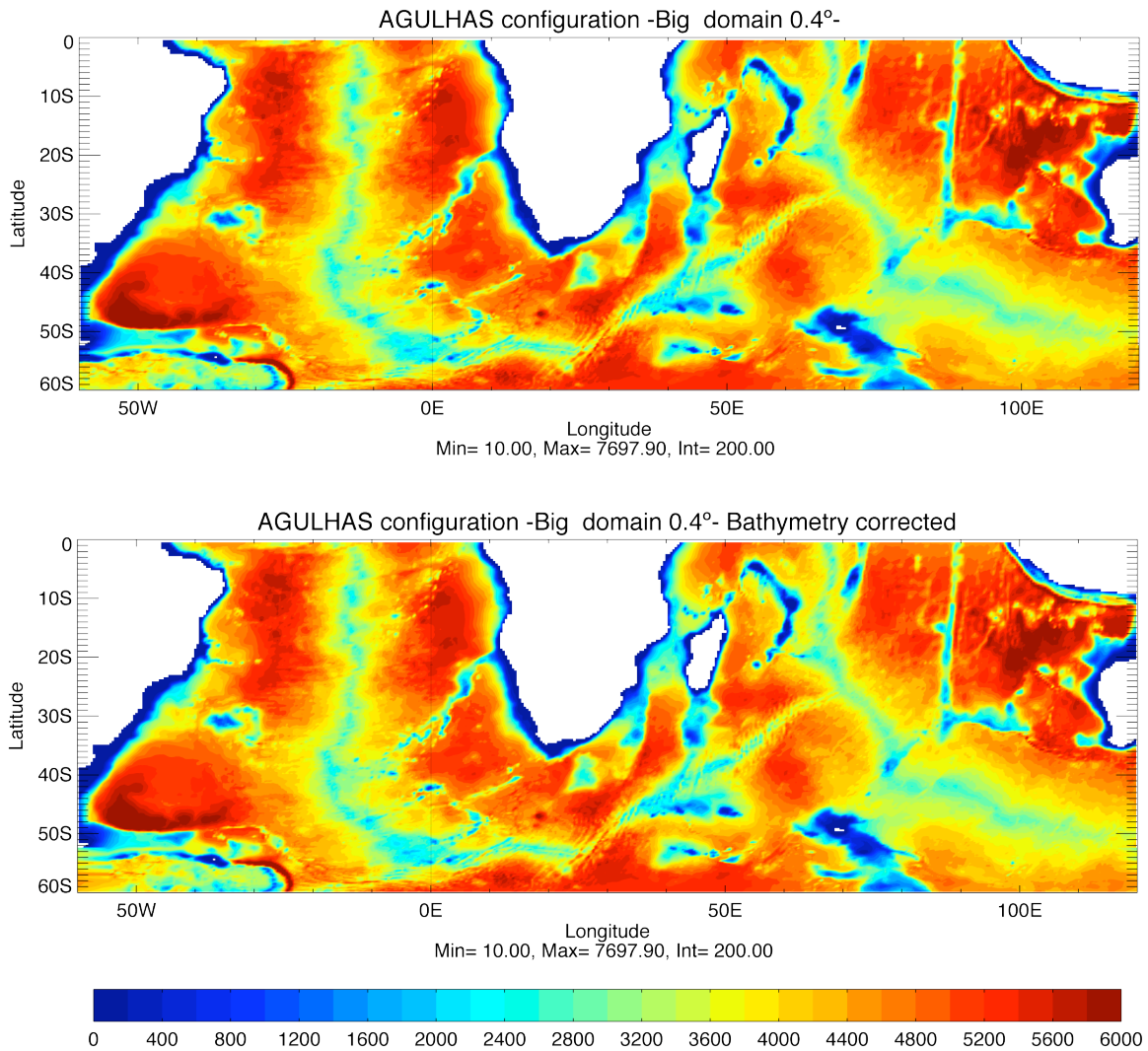


Fig. 1: Bathymetry extracted from $1/12^\circ$ global configuration and interpolated on a 0.4° grid. Smoothing of the bathymetry on 10 points at the eastern and western boundary to assure periodic conditions.

Experimental Set-up

Expt_10.1:

Bathymetry: realistic from 1/12° global configuration

Boundary conditions: periodic, open at 60°W from the Falklands (~52°S) to 60°S; idem at 120°E.

Expt_10.2:

Bathymetry: 4000m Flat

Boundary conditions: periodic, open at 60°W from the Falklands (~52°S) to 60°S; idem at 120°E.

Expt_20.1:

Bathymetry: realistic from 1/12° global configuration

Boundary conditions: closed basin

Expt_20.2:

Bathymetry: 4000m Flat

Boundary conditions: closed basin

Expt_20.3:

Bathymetry: 2000m Flat

Boundary conditions: closed basin

Expt_20.4:

Bathymetry: 1000m Flat

Boundary conditions: closed basin

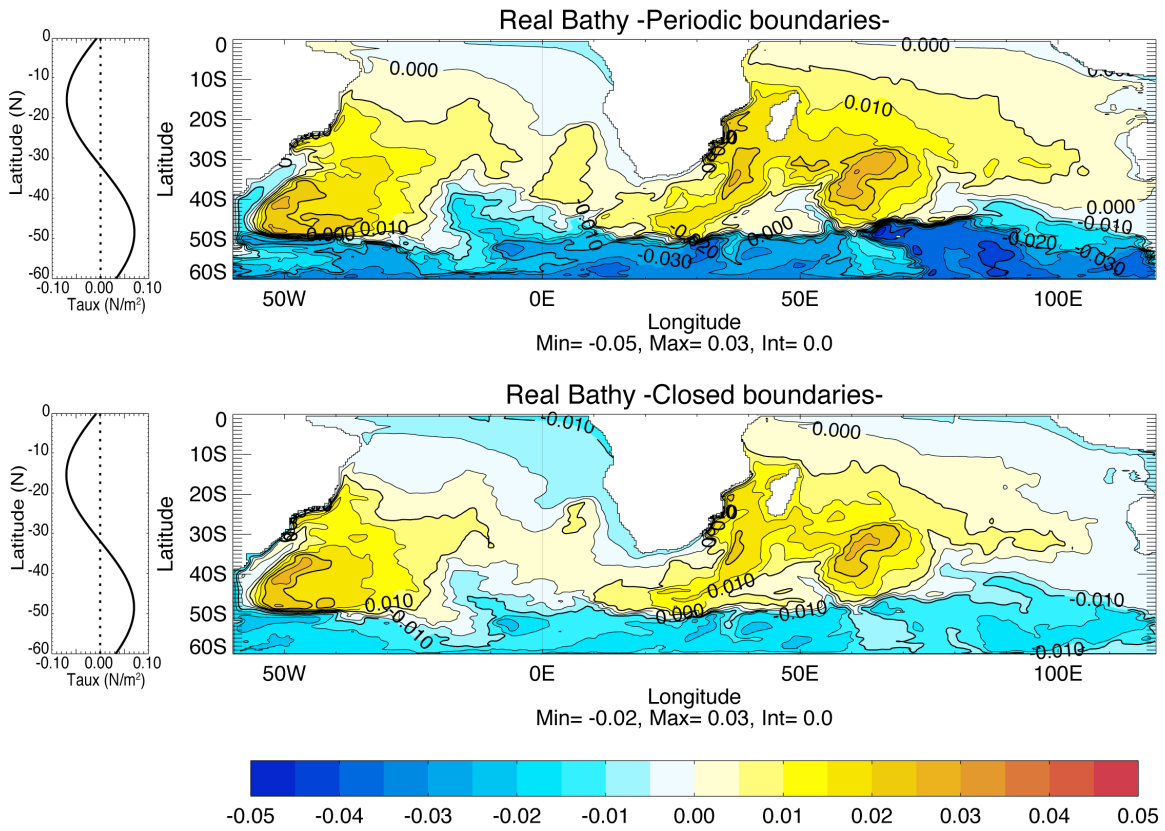


Fig. 2: SSH averaged over the 10 last days of a 1-year simulation for (top) expt_10.1, and (bottom) expt_20.1. Meridional Distribution of τ_x on the left.

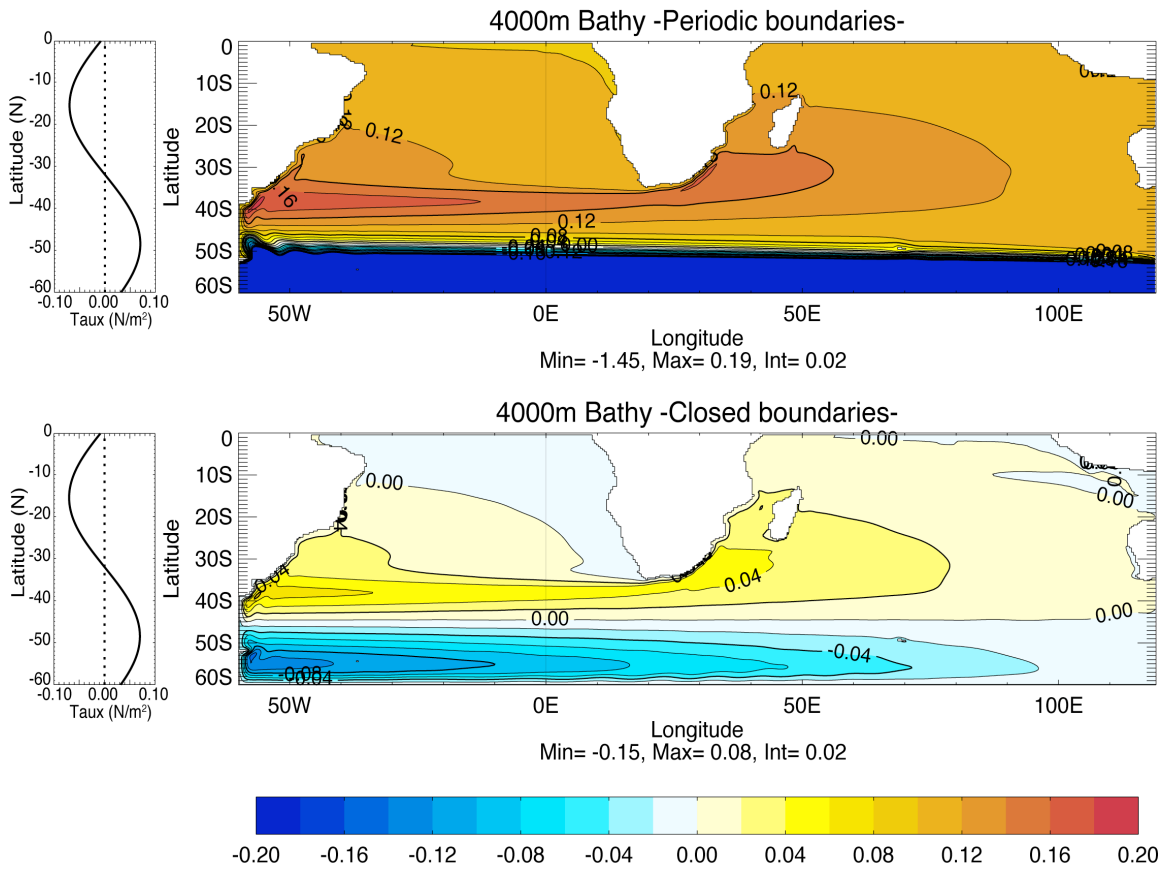


Fig. 3: SSH averaged over the 10 last days of a 1-year simulation for (top) expt_10.2, and (bottom) expt_20.2 with flat bottom at 4000m. Meridional Distribution of tau_x on the left.

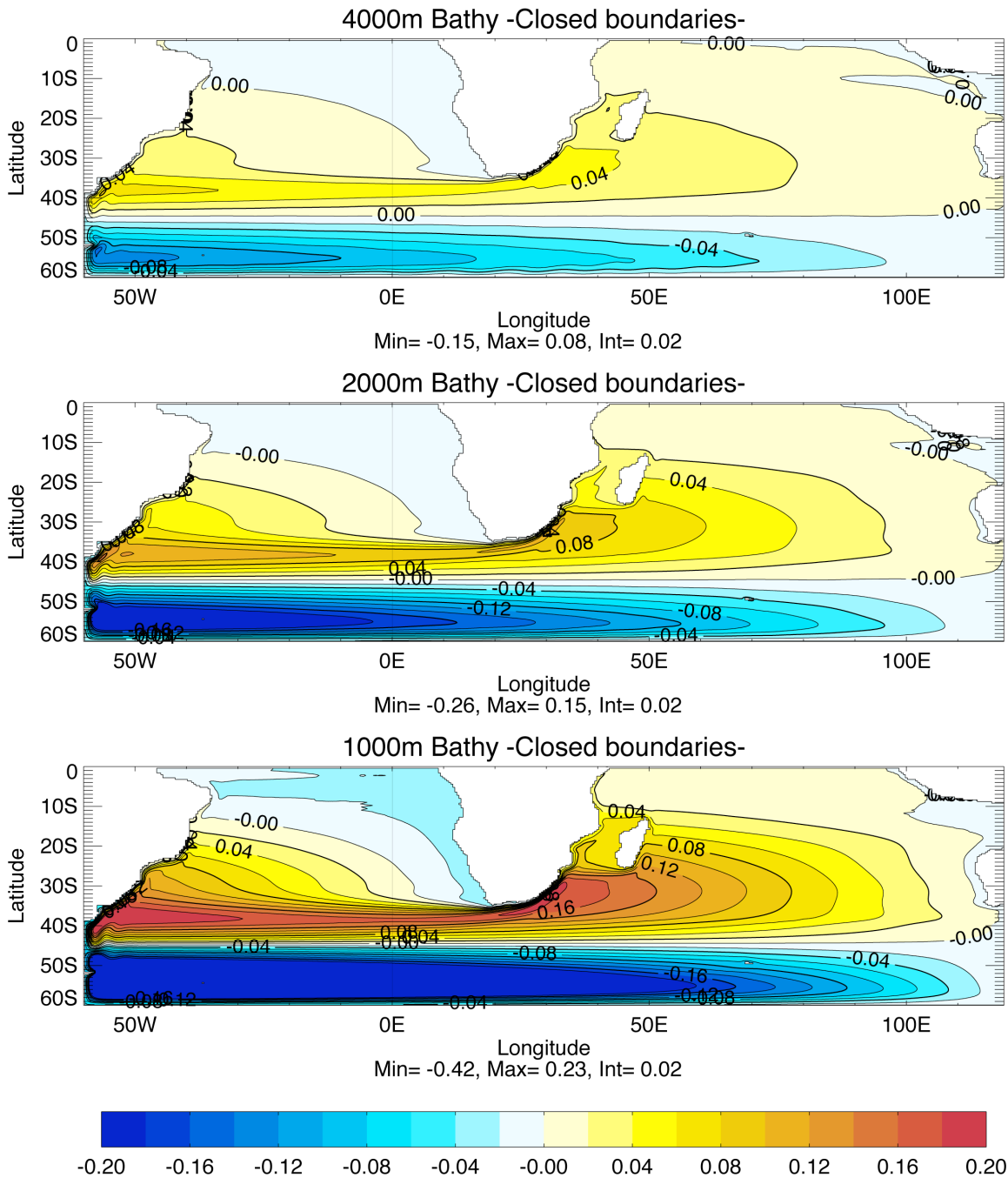


Fig. 4: SSH averaged over the 10 last days of a 1-year simulation for (top) expt_20.2 (4000m), (middle) expt_20.3 (2000m) and (bottom) expt_20.4 (1000m).

AGUL0.4:

Resolution: 0.4° Mercator

Domain = [50°W,120°E,60°S,0°S];

Vertical discretization: 10 layers Full isopycnal

Stratification: Barotropic from 20°C to 19.91°C

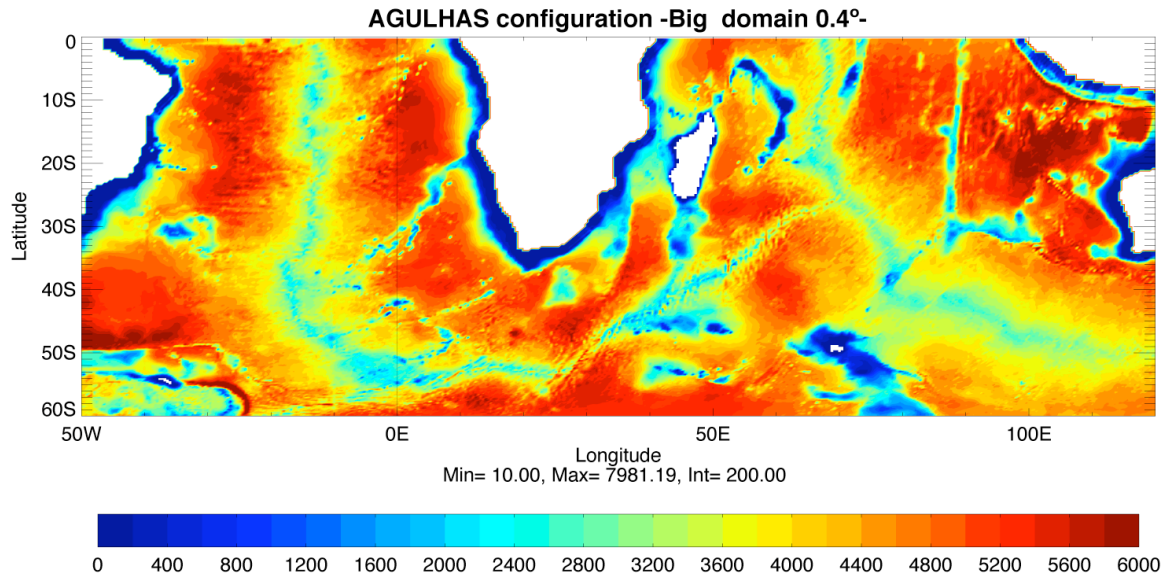


Fig.5: Bathymetry extracted from 1/12° global HYCOM interpolated on 0.4°.

Experimental Set Up

Expt_12.3:

Bathymetry: realistic from 1/12° global configuration

Boundary conditions: periodic, open at 50°W from 32°S to 60°S; idem at 120°E (South of Australia).

Expt_12.4:

Bathymetry: 4000m flat bottom.

Boundary conditions: periodic, open at 50°W from 32°S to 60°S; idem at 120°E (South of Australia).

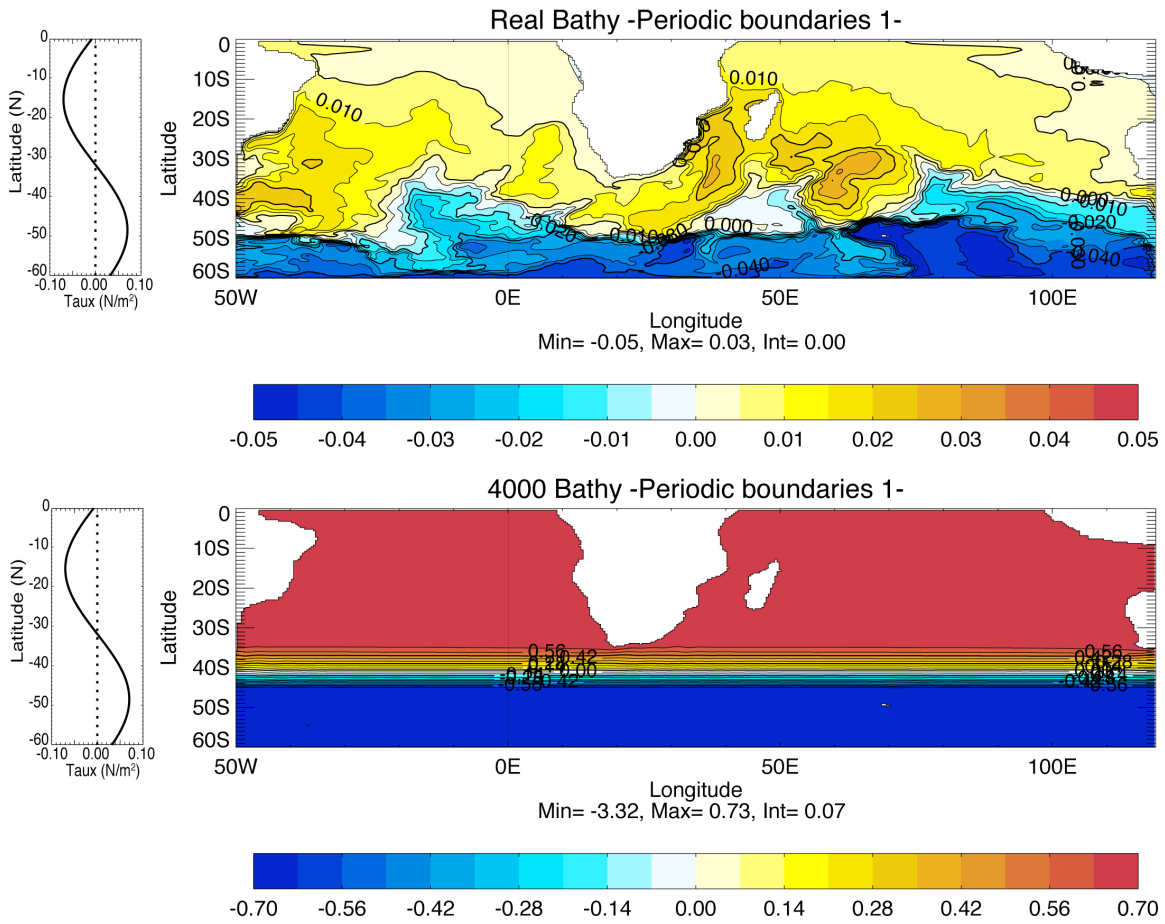


Fig. 6: SSH of the last day of a 1-year simulation for (top) expt_12.3 with real bathy, and (bottom) expt_12.4 with flat bottom at 4000m. Meridional Distribution of τ_x on the left.