We thank the anonymous reviewer for the comments and corrections, that have improved the presentability of the paper. We give a point-by-point reply below:

- *Title*

Changed from “Meanders and eddies formation…” to “Meanders and eddy formation…”

- *Choice of a gaussian profile for the vertical structure of the basic state*

The vertical structure of the initial coastal current has Gaussian profile. The two mains advantage of such vertical profile is that the vertical shear of the horizontal velocity vanishes at the surface and that the velocity quickly decays with depth below the thermocline. Indeed, in the absence of any surface wind stress there is no reason to consider a velocity shear at z=0. Besides, we do not consider any bottom friction and we should therefore avoid to reach a significant (unrealistic) velocity at the bottom, on the coastal slope. Therefore, we believe that a Gaussian profile is more relevant than an exponential decay for our analysis. We add the following comment line 24 page 4 “In the absence of any wind stress forcing there is no reason to consider a velocity shear dU/dz at the surface and we therefore chose a Gaussian law for the vertical profile G(z).”

- *First line of section 3*

“In this chapter...” changed to “In this section...”

- *Figure 5*

We agree with the reviewer that the plots (b) and (d) of figure 5 do not seems to be very interesting, even if the main conclusion that needs to be taken from those plots is that the flow near the bottom reflects some unstable mode pattern but is very weak. To make those plots more interesting to the reader, we have magnified the scale by a factor of 5 compared to the plots (a) and (c), and we have changed the caption accordingly. We have also added a note in page “”

- *Typo in equation A1 and following equation*

The last part of equation A1 was misplaced. Equation A1 and its boundary conditions now read:

$$-\partial_z \left(\frac{\rho_0 f^2}{g} \frac{\partial_z \psi_n}{\partial_z \rho} \right) = \partial_z \left(\frac{f^2}{N^2(z)} \partial_z \psi_n \right) = -\frac{\psi_n}{R_{d,n}^2}$$

$$\begin{aligned} \partial_z \psi_n &= 0 \quad \text{at } z = 0 \\ \partial_z \psi_n &= 0 \quad \text{at } z = -H \end{aligned}$$