Comment 1: Can the authors please provide a full explanation/appraisal (qualitative and quantitative) of PEA? The authors are presuming that readers will have a deeper understanding than may be the case.

Reply: Thank you for your comment.

Potential energy arguments have been found to be an excellent means with which to study the competing influences of stratification and mixing. The method has proved crucial for quantifying the mixing efficiency in numerous stratification studies in coastal seas and estuaries (Nunes Vaz et al., 1989; 5 Rippeth and Simpson, 1996; Lund-Hansen et al., 1996; Ranasinghe and Pattiaratchi, 1999). The spatial variation in the potential energy anomaly at low and high tides has been documented by Shaha et al., 2011.

Simpson (1981) defined PEA as the amount of mechanical Energy (per m^3) required to instantaneously homogenize the water column completely. As suggested by the referee, in order to provide a wider insight to the readers of HESSD, here we provide a simple brief description which elaborates the physical meaning of PEA :

The basic principle is that mixing increases the potential energy anomaly of the water column as kinetic energy has to be converted to potential energy.

Potential energy of the water column $V = m.g.h$

Potential energy per unit volume

$$\frac{V}{Vol} = \varphi' = \rho.g.h$$

But But $\rho = \rho(Z)$

$$\Rightarrow \varphi = g \int_{-H}^{0} \rho.z.dz$$

The potential energy per unit area of a mixed water column is: $\varphi_m = g \int_{-H}^{0} \bar{\rho}.z.dz$

where $\bar{\rho} = \frac{1}{H}\int_{-H}^{0} \rho.dz$

The energy difference between a mixed and a stratified water column is:

with units of [Joules/m^2]

$$\varphi_m - \varphi = g \int_{-H}^{0} (\bar{\rho} - \rho) \, . z . dz = \varphi$$

Thus, φ (PEA) is the energy required to mix the water column completely i.e., the energy required to bring the profile $\rho(z)$ to $\bar{\rho}$.

In the present study, we have used PEA as a proxy for studying the intra-tidal variations in stratification. According to the opinion of referee1, we have also computed PEA for longitudinal salinity survey which gives more robust information regarding the seasonal and spatial variations in stratification. The results are incorporated in the revised manuscript.