We are very grateful to the reviewer for their very positive assessment of our manuscript. Regarding the last point raised by the reviewer, we have done some preliminary analysis of the heat budget of the ocean-only GCM we use. However, the analysis is not easy to carry out and the results are not as insightful as obtained using the simple approach we adopt in the manuscript, the essence of which is, in any case, already contained in what is shown in Figure 2. Indeed, we think it best not to complicate matters by including such an analysis. The simplicity of our approach also makes it ideal for application to coupled models which we know have problems simulating CP ENSO. The diagnostic can also be applied to mooring data, an approach we have been exploring with our colleague Prof. Peter Brandt, a topic of ongoing research.

Review of a manuscript entitled "A simple diagnostic based on sea surface height with application to Central Pacific ENSO" by Jufen Lai et al.

I have read through the manuscript with much interest. The authors have developed a simple method to derive near-surface heat content changes by taking advantages of sea-surface height anomalies and removing the contribution from the thermocline displacement. Then they have shown the importance of the thermal anomalies mostly due to horizontal advection, primarily in the evolution of the Central Pacific ENSO (or Modoki ENSO).

Thermodynamic (heat and moisture) and dynamical (momentum) fluxes at the sea surface are important for understanding the atmosphere-ocean interactions that produce climate variability modes such as ENSO. In particular, the thermodynamic effects that determine sea surface temperature are of great importance. Understanding the evolution of ENSO can be broadly divided into two approaches. One approach is that the zonal advection of the surface water temperature is important, and the other is that the influence of the thermocline on the surface temperature by oceanic mixed layer processes is important. The former is abbreviated as zonal advection feedback and the latter as thermocline feedback.

The thermocline variability in the tropical equatorial region is mainly due to dynamic forcing by momentum flux from the ocean surface, but thermocline feedback does not ignore thermodynamics. It implicitly assumes the oceanic mixed layer above the thermocline, just skipping the process for brevity. Naturally, there is a lag between thermocline variability and the sea surface temperature variability.

The authors have considered briefly the sea level variability in two parts, based on the two-layer model. One is caused by fluctuations in the thermocline and the other is caused by fluctuations in surface heat capacity. Such brevity is important for understanding physics. It may also open the door to exploiting data from altimeter satellites. I would like to commend the authors for taking on this challenge. The authors have attempted to interpret the ENSO diversity for concrete applications and have suggested that the Central Pacific ENSO (or Modoki ENSO) relies more on zonal advection feedback.

In this paper, by using seemingly dynamic fluctuations, the authors have derived differences in thermodynamic mechanisms of surface water temperature fluctuations in the present paper. Ideally, the authors could have used the results of GCM simulations to perform a thermodynamic analysis of fluctuations of sea surface temperature (or surface mixed layer temperature), and demonstrated the effectiveness and limitations of the simple approach introduced here. However, I think this work itself deserves publication.