

# ***Interactive comment on “Coral mortality induced by the 2015–2016 El-Niño in Indonesia: the effect of rapid sea level fall” by Eghbert Elvan Ampou et al.***

## **Anonymous Referee #1**

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This paper presents the first report of coral mortality induced by El Niño related sea level fall event in 1995, and thus would contribute not only to coral reef science but also to ecosystem response to climate change studies in general.

The relation between sea level and the upper level of coral survival is a key to this study. However, the upper level of coral survival before this event is not quantitatively discussed, but only described as Mean Low Water (MLW). MLW which limit the coral survival before the event should be quantitatively shown in the time series ADT in Figure 3, and then the mortality of the upper 15cm of corals should be defined in sea level changes.

Figure 2 shows coral mortality area spatially. To obtain spatial distribution of coral

mortality, the authors states that "reef flats were visually surveyed and recent mortality was recorded. Geographic coordinates of the presence of mortality were compiled to map its extent". However, it seems to me the area was not only mapped by field survey, but also by remote sensing. If so, the authors should describe how remote sensing was applied to map the mortality area.

In 1997-1998, sea level dropped lower than the event in 2016. The corals should also have recorded the event in 1997-1998. The coral of P2 in Figure 1 forms a microatoll with a depression, which seems to be a record of sea level drop in 1997-1998. Twenty years passed since then, and horizontal growth during this period might be 20 cm. If so, the authors' observation shows coral microatolls record not only tectonic relative sea level changes, but also climate related sea level changes. Further discussion of this point referring to reconstruction of tectonic sea level change by coral microatolls would extend viewpoint of this paper.

The authors reconstruct sea level changes by satellite remote sensing. Reliable sea level history is obtained by tidal gauge. The remote sensing reconstruction should be compared with tide gauge data in this area.

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