

## ***Interactive comment on “Modeling the effects of cold front passages on the heat fluxes and thermal structure of a tropical hydroelectric reservoir” by M. P. Curtarelli et al.***

**Anonymous Referee #1**

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The manuscript presents the influence of cold fronts on the heat fluxes and thermal structure of a tropical reservoir based on 3-D hydrodynamic modeling, remote sensing and in situ data. The paper is mostly well organized and written, and the subject and findings are a contribution appropriate for publication in HESS. I would suggest some comments as follows:

1) The satellite data were used in this study to extract the water surface temperature (WST) of the rivers' inflows, but the details of the method are not described in the manuscript. As the inflow temperature acts important role to determine the plunging point and density flow regime of inflow in the study reservoir, it should be clearly de-

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scribed how the inflow temperatures were estimated and validated.

2) In Fig. 4 and Fig. 6, authors may include reference lines indicating the depth of mixed layers to assist the discussion.

3) Page 8483, Line 17, “Upwelling events were observed following the F4 passage (Fig. 6i)”, Are they really upwelling events? It is not clear from the figure. Should be discussed more detail along with the wind events.

4) In the abstract, the authors talk about “the cumulative effect of cold fronts and the reservoir's resilience”, but it is not well discussed in the results.

5) It is not clearly addressed how the precipitation events were considered in the simulation, and their effects on the thermal structure of the reservoir.

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