Reviewer #4: Together, the authors review the state of the ocean for 2020, with a focus on physical trends. Biogeochemical change is discussed in the last 2 sections. The chapter meets the goals of the State of the Climate overall, but in some cases, clearer language could be used. In addition, I recommend more balance across physics and biogeochemistry in the introductory / summary section a.

SECTION a. INTRO

Section 3a. This section addresses physical changes exclusively, except for the very last sentence. There should be more balance here so that the to carbon and phytoplankton trends of section I and J are represented in a proportional manner.

SECTION b. SST

Line 169: "great lakes" is unclear. Is this the Laurentian Great Lakes? African? The definition should be clear by name, or by a criteria such as surface area.

Line 215: "Marine heatwaves" have not been defined.

SECTION c. OHC

Line 264: "ENSO and ocean warming are related…" is stated, but it is not made clear what this relationship is.

Line 361: Please state the years accounted for by the heat gain cited here. If this is not precisely clear based on the various references, the authors should be telling the reader how to interpret the numbers… i.e. "mid-1990s to mid-2010s" or the like. Providing no indication means the reader, who is less expert, has to figure this out.

SECTION d. SALINITY

Line 436 - 437. Without a mean SSS plot, this argument is hard to follow.

Line 2129. In this figure [Fig. 3.10], the line shouldn't have dots on red if it is just to show 0

SECTION f. SEA LEVEL

Line 2160. [Fig. 3.15] The timeseries line is blue more than cyan

SECTION g. SEA SURFACE CURRENTS

Line 822-831, Indian Ocean section. Please discuss links to La Nina in this section.

SECTION h. AMOC

Line 943 - 952: This text is not directly relevant to the primary goal of reporting 2020 observations.

SECTION i. PHYTOPLANKTON

Line 1043: "bias" suggests error. What is meant here is a difference. Please rephrase

Line 1047-1056: These are correlations, consistent with the proposed decoupling, but does not prove. Please rephrase to indicate that this is consistent, but not proven by the data presented.

Line 1098-1100: Does this conclusion have significance given the uncertainties in the observations? Please discuss the uncertainties in Chla and Cphy to put this conclusion in context.

SECTION j. CARBON

Line 1166 and Figure 3.27: Is this RF approach published? The guidelines under which we are asked to review requires previously peer reviewed work only. Please provide reference for RF, or will need to be removed.

Line 1174-1176. It is not possible for the reader to compare these seasonal variations based on Fig 3.27.

Line 1238. There is not sufficient detail for 2020 in Fig 3.29 for this feature to be seen. It is certainly impressive to see the hovmoller for the whole time since the 1980s, but it is hard to distinguish what is happening in 2020, as is being discussed. A figure that zoomed in on 2020, perhaps showing anomalies, is recommended.

Line 1239 - 1265: This section does not say anything about 2020, but instead summarizing the work of Carter et al. 2021. The section does not contribute specifically the goals to the State of Climate. In addition, the figure (3.30) that is meant to be referenced is not cited. There is no date information on the figure to place it in specific context with 2020. I suggest to remove Figure 3.30.

SIDEBAR 1: MARINE HEAT WAVES

Line 1286: Remove reference to the sidebar within the sidebar

Line 1292: Add a period at end of this line before "A"

Line 1309-131: It isn't clear how this section relates to 2020. "La Nina can disrupt...", but not clear if saying this did happen in 2020.

SIDEBAR 2: OCEAN ACIDIFICATION

Sidebar 3.2 is essentially a cruise report, in terms of carbon observations, from Pacific observations. It does not tell us much about 2020 in particular. The discussion is difficult to follow and could be substantially condensed. I suggest this sidebar be substantially reduced in length or eliminated.

Line 1399-1400. The meaning of "offset between month and year..." is unclear

Line 2279. To show the month / day of year for the observations would substantially improve Fig SB3.2