The paper introduces new settings related to the CLIMCAPS retrieval for different instruments and satellites. It is well-structured and provides detailed explanations, but some sections are overly lengthy and could be revised for conciseness. Additionally, there are several minor corrections that need to be addressed.

major revisions:

- The abstract provides extensive details about the instruments, satellites, and the CLIMCAPS system, but it lacks a focus on the results and the novelty of the paper. The results and their implications are only briefly summarized. Please conside a more balanced abstract.

- The introduction is too long, spanning about three pages. It contains excessive background information, such as discussions on MODIS, VIIRS, and CERES, which are not used in this paper and are therefore irrelevant. The introduction could be condensed to focus more on the study's specific goals and context.

- Section 2 is also too lengthy. For example, there is a detailed explanation of NUCAPS and AST-Aqua V7, which, while useful for comparison, could be summarized more. The discussion of dynamic regularization and SVD could also be more concise.

- Section 3, Experimental Design, also repeats certain concepts multiple times. For instance, the explanations about the sequential retrieval process and the covariance matrix are repeated unnecessarily.

minor correction:

- Line 63: NASA AST: what is AST stand for? It was not mentioned in the paper.
- Line 117: What is NUCAPS stand for?
- Line 184: The acronym AKs is introduced for the first time in line 184, but its meaning is only explained later in Section 2.3. and again later in Fig.6 (section 4) was mentioned about Averaging Kernel. Please consider this inconsitency.
- Line 274: The same story for „FOR", it was defined for the 1st time in line 274 but it was used several time before it for example in line 210 , …