

## **Review of revised manuscript egosphere-2022-430-ATC1**

25 March 2023

### **General comment**

This study attempts to retrieve from space (ocean color satellite data) information on particle size distribution and carbon-based phytoplankton size classes in open ocean waters. This significant piece of work is actually the extension of previous studies (Kostadinov et al. 2007-2022) which includes validation results. The manuscript is well organized, written and illustrated.

Two reviewers pointed out validation results are not convincing, as several assumptions made in the methodology have limitations.

The authors have acknowledged these limits in their study but claim the validation results obtained are good enough considering their objective is to develop an operational algorithm for current multi-spectral satellite data. Authors have extended their validation datasets (addressing Rev#2 suggestion) and significantly modified the text to highlight the limits associated to their algorithm. Notably new references are presented and discussed, and a new section ‘Further Discussion, Summary, and Conclusions’ section summarizes the model limitations to future potential users.

I believe the revised manuscript accounts for most of the comments made by the reviewers and significantly improves the original submission. I therefore recommend the publication of this revised version (after correcting several typos in the text).