

# ***Interactive comment on “A 40-year global dataset of visible channel remote sensing reflectances and coccolithophore bloom occurrence derived from the Advanced Very High Resolution Radiometer catalogue” by Benjamin R. Loveday and Timothy Smyth***

## **Anonymous Referee #1**

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### General appraisal

Loveday and Smyth have generated a 40-year long dataset of coccolithophore blooms occurrence over the global ocean, from observations of the Advanced Very High Resolution Radiometer (AVHRR) visible bands.

This is a very timely effort, inasmuch as generating long-term, consistently calibrated satellite time series is absolutely needed for studies about how global environment

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changes affect marine ecosystems.

The paper is overall well written, concise, and including the appropriate level of details. Illustrations are of good quality. So, overall, an excellent paper.

My only reservation would be about the attribution of the high reflectance signal to coccolithophore blooms. The authors themselves recognise that they cannot always ascribe the reflectance anomalies to the presence of such blooms (their discussion on limitations, page 9).

I do not think that referring simply to highly scattering waters instead of coccolithophore blooms would undermine the paper value. Any subsequent user of the data set can bring his own interpretation of what these high-scattering waters are, depending on the area and season under investigation (even if, admittedly, they are probably most of the time caused by the presence of coccoliths). It might even prevent potential users to actually negatively comment on this data set because they would have found a clear example of such high-scattering waters not being due to the presence coccoliths, whereas the data set "claims" that they are.

Some minor comments

- Lines 20-27 page 2: this whole paragraph is rather unclear to me. Not sure what has been done at the end. Maybe this could be expanded a bit.
- Line 21 page 3: could the authors have used a lower threshold, to account for the fact that observations will anyway be hardly exploitable for large sun zenith angles, roughly above  $70^\circ$ ?
- Eq. (1): I suspect a "-" sign is missing before the 0.5 in the denominator.
- Eqs. (1) and (2): maybe Eq. (2) should actually come first, because that is where R is defined, and then the computation of Rrs from R would be Eq. (2). My other comment here is that these equations could maybe be split into a few more equations, to more clearly show the logic.

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- Line 4 page 5: I guess it is “affect”, not “effect”
- Line 7 page 5: “are discarded”
- Line 19, page 5: “between two and ten”
- Line 20, page 5: I do not understand the point here. I do not see how missing values could anyway be included in an average. Maybe rephrase.
- Line 19 page 6: “set to zero”
- Line 25 page 6: “are missing”
- Line 26, page 6: “not included”
- First line of the paragraph page 7: “archived on a “
- Line 20 page 8: maybe this CZCS map could be included here to facilitate comparison

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