

## ***Interactive comment on “Improved OSIRIS NO<sub>2</sub> retrieval algorithm: Description and validation” by Christopher E. Sioris et al.***

### **Anonymous Referee #1**

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In this paper a new OSIRIS NO<sub>2</sub> retrieval algorithm is presented using a better forward model (and forward model inputs). It is well written and clearly presented. I see only minor technical issues that should be addressed before publication:

1. The second sentence in the Abstract becomes only clear after reading the paper. It could be left as is, if no better formulations come to mind.
2. page 2 line 17: OSIRIS is already defined on page 1 line 17
3. page 9 line 16: Why use 17.5 km?
4. page 12 line 17-21: Why include a climatology only for November and the Southern Hemisphere? What data has been used for this climatology, I presume it

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is the new algorithm 2D? Should this figure be included, no mention has been made about it other than that it has been included, because no other data south of 22°S has been used?

5. page 21, table 1: Maybe add references to papers for v3.0 and fast in an additional row?
6. page 24, figure 2: Maybe use 'new algorithm' instead of 'algorithm described above' and add the colours (blue and green) in the figure caption (eg: using the default window (435-477 nm), blue.
7. page 27, figure 5, line 4: add a 'the': 'and the true atmosphere.'

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