

Interactive comment on “Ammonia measurements from space with the Cross-track Infrared Sounder (CrIS): characteristics and applications” by M. Shephard et al.

Anonymous Referee #3

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The manuscript entitled “Ammonia measurements from space with the Cross-track Infrared Sounder (CrIS): characteristics and applications” describes the strategy of ammonia retrieval from CrIS on Suomi-NPP and availabilities of the product. This paper investigates the capabilities of the product for monitoring, model evaluation, dry deposition, and emission estimates. This work is quite important and largely contributes to the atmospheric chemistry community. I recommend publishing the paper after addressing several questions and comments.

Major comments 1) Cloud filtering is mentioned in section 3.1.1. Why didn't you use the VIIRS data in the current system? In Fig.2, several scans over clouds are not

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eliminated. The cloud filtering described in the paper seems not so accurate and likely occur some bias to ammonia concentrations. The author should add some evaluations of cloud filtering. In addition, I would suggest that the description of the cloud filtering strategy is moved to section 2. 2) Page 18, line 2: Why did you select that two months, July and August? How is the consistency in the other seasons that there are no obvious wildfires? The figure for the difference between Fig. 11a and 11b is also helpful.

Minor comments 1) Figure 1: The account for the circle and bar plots in the right figure should be added in the caption. 2) Page 4, line 22: “elevationsin” should be “elevations in”. 3) Page 5, line 15: “)” corresponding to “(includes. . .” is missing (after “(or smoothing) error”?). 4) Figure 5: Some other papers (e.g. Van Damme et al., 2014) and Warner et al. (2016)) reported the high concentration in Siberia and Alaska. I would recommend expanding the latitudinal area to around 70N. If there aren’t significant high values, it is also valuable information. 5) Figure 5: Are the plots only over land? If so, it should be added to the body text or caption. 6) Page 9, line 30: “SCCP” should be “ISCCP”. 7) Page 12, line 7: “norther” should be “northern”. 8) Page 17, line 8: “Gong et al., 015” should be “Gong et al., 2015”. 9) Page 17, line 26: “agrees” should be “agrees”.

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