Review of the study entitled “GUV long-term measurements of total ozone column and effective cloud transmittance at three Norwegian sites” by Svendby et al.

The work presents long-term measurements of total ozone and effective cloud transmittance from well-maintained ground-based stations in Norway. Efforts to maintain instruments that provide long-term atmospheric measurements deserve recognition and the results of such studies should be published. The study shows the ability of the GUV multi-filter instruments to complement Brewer direct sun total ozone measurements, discusses the dependence of ozone on effective cloud transmittance, and presents the variability and trends in ozone and effective cloud transmittance in Norway. I am in favor of publishing the results of this study without any reservation.

Few minor comments

Line 241 and eq. (4): I see one harmonic in eq. (4) and in figure 1, i.e. the seasonal, and not two harmonics. Please check. If it were two harmonics I would expect the equation to be of the form:

$$f(t) = a + c \cdot \cos(2\pi t) + s \cdot \sin(2\pi t) + c' \cdot \cos(2 \cdot 2\pi t) + s' \cdot \sin(2 \cdot 2\pi t)$$

First harmonic second harmonic

Equation 5: A quadratic fit would probably fit better as I see from the plots in figure 5, but a linear fit seems also to work. Therefore, all right. It would be good to know what the errors and related statistical significances of the coefficients *α* and *b* are, in Table 3.

Line 253 or Lines 295-302: Can you explain what the harmonization procedure offers and how is it used? Is it used as a method to fill gaps in the time series? Is it used as a method to bring closer the GUV data to the Brewer data and vice versa? It is not clear.

Line 490: correct “form GUV” to “from GUV”.

Figure 12: I notice that the Average eCLT (April) > Average eCLT (May) > Average eCLT (June). In Figure 13 I notice that the Average overcast days (April) < Average overcast days (May) ≅ Average overcast days (June). Shouldn’t the Average overcast days in June be larger than May’s? Since eCLT is based on noontime values, is the correspondence between the average values in figures 12 and 13 improved if you take cloud observations at 12.00?

Line 491: The cloud data from NCCS represent cloud cover for a whole day. In lines 477-479 you mention that cloud observations are performed three times a day, at 6:00, 12:00, and 18:00. Do cloud observations at 12.00 improve the GUV and NCCS correlation?

Cloud analysis: I understand that clouds have little or no influence on the eCLT trends. Aerosols are probably not important because of low amounts or of no significant trends in high latitudes

(see for instance Eleftheratos, K., Kazadzis, S., Zerefos, C., Tourpali, K., Meleti, C., Balis, D., Zyrichidou, I., Lakkala, K., Feister, U., Koskela, T., Heikkilä, A., and Karhu, J. M.: Ozone and spectroradiometric UV changes in the past 20 years over high latitudes, Atmosphere-Ocean, 53, 117-125, doi: 10.1080/07055900.2014.919897, 2015). As such, I understand that the negative trends in eCLT are attributed to negative trends in surface albedo (less ice coverage) as all other parameters do not explain the observed trends. Is that so?