

## Responses for report referee # 2:

Major comment: The difference between the different observations can be assigned to the different spectral regions. This is well known from laboratory measurements. Combining different spectral regions nearly inhibits a comparison and validation of the ground-based and satellite instruments. I suggest that the problems of the laboratory measurements in the different spectral regions are discussed in much more detail. This could form the basis of paper, and the validation should be discussed with respect to this discussion.

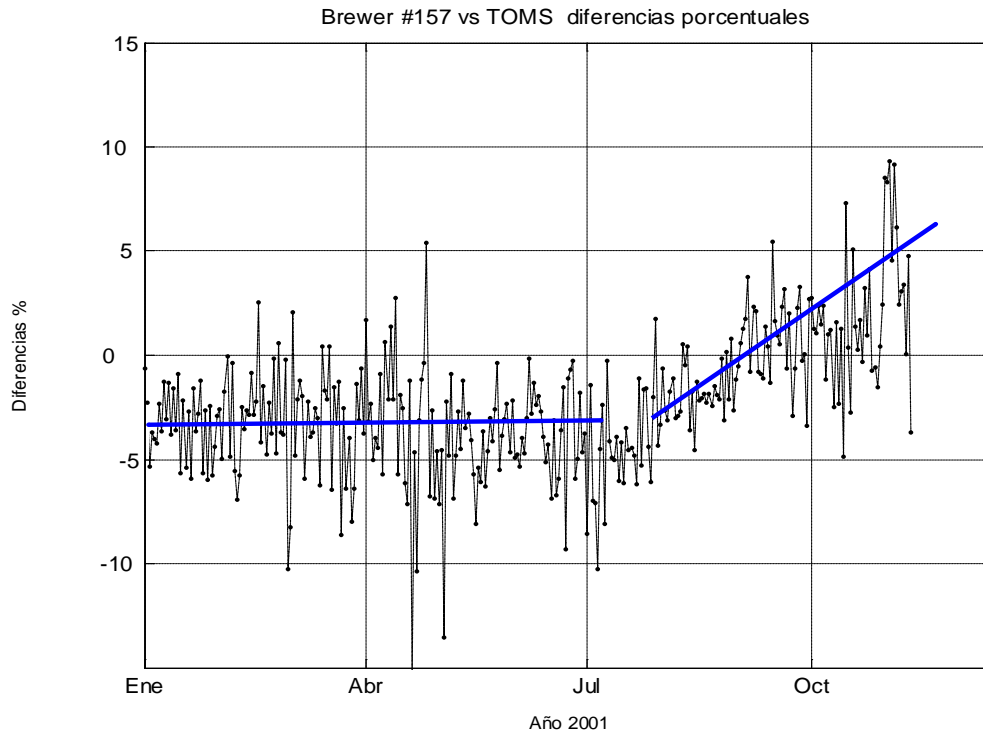
I agree, we attribute the difference FTIR/Brewer to different ozone absorption coefficient from the IR to the UV, however I don't understand why, when you combine different spectral regions and instrumental techniques, it inhibits the comparison and validation. I think it makes your comparison more robust because:

- Algorithm approximations are generally different on different spectral ranges.
- Interfering species are different for example (SO<sub>2</sub> could affect UV retrieval but could not affect to the infrared)
- Instrumental associated errors are generally independent

Minor comment: With all the measurements performed at the site, Izaña is a super site, I agree. But I do not agree that it is well suited for satellite validation. Single point measurements from a mountain site are always very difficult to be compared to satellite studies with their large spatial pixel site. This holds also for stratospheric trace gas because air masses are uplifted when passing a mountain site. This should be discussed and modified in the text.

Measurements at Izaña are not suitable for tropospheric measurements where differences can be found between windward and leeward parts of the islands but for ozone mainly located in the stratosphere, we cannot find differences in wide validation area as used in the paper (2° X 2°). Three examples are developed below:

- We perform a study with TOMS (wider pixel) that shows a very low variability of the pixels around Izaña, this indicates that this site is representative of the area.
- The good results of this paper between satellites and ground based measurements seems to confirm that is a good place for validation, also when there are problems on satellites (TOMS fails during 2001, see figure below). In this figure, TOMS and Brewer are in excellent agreement until July 2001, then, relative differences increase when TOMS failed.



- Another paper, published [Schneider et al., 2005], shows comparison between Brewer, ozonesonde and FTIR ozone data. Here, the ozonesonde is moving around the island depending of the wind and the results also support this assumption.

“**Schneider M.**, Blumenstock T., Hase F., Höpfer M., Cuevas E., Redondas A., et Sancho J. M., *Ozone profiles and total column amounts derived at Izaña, Tenerife Island, from FTIR solar absorption spectra, and its validation by an intercomparison to ECC-sonde and Brewer spectrometer measurements*, J. Quant. Spectrosc. Radiat. Transf., **91**, 245-274, 2005.”

We also proposed corrections for the section 2.1. It is written in red.

### “2.1 Presentation of the Izaña super site

Izaña Atmospheric Observatory is operated by the Meteorological **State** Agency of Spain (**AEMET**). It is located **in Tenerife** (the Canary Islands) (28°18’N, 16°29’W) at 2370m a.s.l. (above sea level). Tenerife is about 300 km away from the African west coast, surrounded by the Atlantic Ocean, so it is located far away from industrial activities, leading to clean air conditions. In addition, it is placed in the subtropical region where the descending branch of the Hadley cell **and a quasi permanent trade wind temperature inversion below the Izaña level offer** stable meteorological conditions and clear sky most of the time. Therefore, it is a site which is well suited for continuously monitoring atmospheric key species such as ozone, and for validating satellite data such as IASI. Both FTIR and Brewer measurements are performed at this site; concerning the Brewer instrument, Izaña is the Regional Brewer Calibration Centre for Europe (<http://www.rbcc-e.org/>) which guarantees highest quality standards.”