Atmospheric
Measurement
Techniques

Open Access

EGU

Discussions

Interactive comment on "Lee waves detection over the Mediterranean Sea using the Advanced Infra-Red WAter Vapour Estimator (AIRWAVE) Total Column Water Vapor (TCWV) dataset" *by* Enzo Papandrea et al.

Anonymous Referee #1

Received and published: 9 May 2019

The authors have addressed the issue of detecting lee waves from satellite observations over the Mediterranean basin. Although the issue is not new, to my knowledge this is the first time the analysis has been performed using data from ATSR instrument series. Lee waves are normally detected in cloudy skies using clouds themselves as tracers. In the present paper, the tracer is total column water vapour derived from an algorithm developed from the same authors. Therefore, they focus on clear sky, which demands for a robust and accurate TCWV estimate. In this respect, the results also provide an indirect validation of the retrieval algorithm. The authors have

provided a very exhaustive and comprehensive analysis of the results, which encompasses comparison with other satellite instruments and simulations from a numerical weather prediction model (WRF). The effort of authors also includes an automated scheme to search for clear sky and favourable lee wave conditions, and a final analysis for the estimate of the wave parameters, such as amplitude, wavelength and phase.

I have to say that I enjoyed reading the paper and therefore I have not so many questions to ask. Maybe one point they could clarify is that lee waves are generally stationary waves, which enables one to recover the wave-parameters from 2-D spatial patterns as seen from the satellite, rather than 3-D. Also, they could clarify how important is the hypothesis of stationarity for their method and analysis to work and what are the limitations, if any.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-105, 2019.