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Comment

***Interactive comment on “A QBO-signal in mesospheric water vapor measurements at ALOMAR (69.29° N, 16.03° E) and in model calculations by LIMA over a solar cycle” by G. R. Sonnemann et al.***

**G. R. Sonnemann et al.**

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Dear Referee,

Thank you very much for your comments on the paper. We have tried to follow your suggestions and take your remarks into consideration. Different changes and insertions relate to comments of the second referee.

As a response to criticisms about the interruptions in the ALOMAR data we excluded now the first and third interruption and the data before the first and after the third interruption. Now the analysis is based on eight years between July 1997 and August 2005.

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The surprising result was that the QBO peak with a period of about 27 months became clearer and is practically identically with that peak of the LIMA calculations calculated for the same period. This finding supports strongly the confidence in the results of the FFT analysis.

We have discussed Fig. 1 in more detail, particularly we considered the abrupt change of the behavior of the water vapor mixing ratio after 2002. This was also a recommendation of referee #1. The survey of all years suppresses, of course, many details. The influence of SSWs occurs as small spike-like features. According to the records of the NCEP-NCAR and ERA-40 data set (Charlton and Polovani 2007) different major warmings occurred during the whole observation period.

The significance of the correlation presented in Figs. 6 amounts to more than 90% (91 and 92%) according to a Kolmogorov-Smirnov test. This value is not very high but unfortunately the sequence of data is not longer to get a larger value of significance under the condition of a strongly scattering distribution of data.

The same analysis of correlation between the water vapor mixing ratios at 70 and 50 km carried out for the months September/October results in smaller correlation coefficients. The reason seems to be understandable as the correlation results mainly from the vertical wind which is strongest during the summer months. During equinox the vertical wind slows down and reverses finally.

Different mistakes list by you have been redressed.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 883, 2009.

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