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Interactive comment on “Observation of Polar Stratospheric Clouds down to the Mediterranean coast” by P. Keckhut et al.

P. Keckhut et al.

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Replies to comments by Referee #2 Philippe Keckhut on behalf of co-authors

Authors thank the referee #2 for its interesting comments and thoughts, however as it is said the intent of this study does not consist of reviewing the different mechanism of ozone recovery and its potential delay. The scope of this study is limited to reporting an unusual event and to discuss its potential effect on ozone depletion. The competition between the both effects as suggested by referee #2 will be interested to be test in multi-years numerical model runs, and in fact both effects are included in most GCM. The conjunction of the stratospheric warming occurrences with global scale PSC using Calipso will offer a good opportunity to have adequate observations that are required for such a study. Also the comparison of the different models covering the stratosphere with similar forcing such as those performed within the CCMVAL project will be also

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offer a good opportunity to investigate these coupled effects in numerical models. This study suggests to investigate, in addition with air volume of PSC, the lowest latitudes according to sun irradiance where PSC are observed to see if numerical models indicate any long term change. This can be an issue as the light available at low latitude will permit an immediate destruction of ozone. However this study shows that such events will be not in favor of long lasting polar vortex favorable of ozone destruction. So if such early stratospheric warming occurred more often in the coming years, it could accelerate the ozone recovery. We are happy that such questions arise with the observation of this event. Next, we will probably perform such investigations with the approach suggested previously (models or Calipso/Envisat data). But as already mentioned, this additional information about the long-term dynamic changes, cannot fit with the scope of this present study.

All the minor comments are pertinent and will be take into account in the final manuscript.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 7, 6557, 2007.

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