

Interactive comment on “Detection and mapping of polar stratospheric clouds using limb scattering observations” by C. von Savigny et al.

Anonymous Referee #1

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General comments

The paper of von Savigny et al. is presenting a method for detection and mapping of polar stratospheric clouds using the limb observations of the SCIAMACHY instrument. The method is based on a colour-index approach and takes advantage of the large wavelength range of the Sciamachy spectrometer. After a rapid presentation of Sciamachy limb observations and a detailed description of the PSC detection technique, the authors are applying the methodology to the southern winter 2003. They show the PSC geographical distribution, the PSC altitude temporal evolution and the agreement between PSC occurrence and low UKMO temperatures. This paper is of interest for the atmospheric remote sensing community and therefore is appropriate for publication in

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Specific comments and questions Description of the color index method: The method is based on the ratio of limb radiances at two wavelentghs. The authors indicate that the selection of the pair of wavelengths is based on a) absorption as little as possible b) not shorter than 400nm. Are these criteria the only ones? What is the minimum difference in wavelength? have other pair of wavelength been tested? Sciamachy is covering a very large spectral range : why not to use a visible and an IR wavelength.

Modeled maximum color index ratio: 4 scenarios have been studied with various aerosol loadings. The maximum modeled values are 1.1 in case of "Rayleigh only", 1.2 in case of "Background aerosols", 1.3 in case of "moderate volcanic aerosols" etc... The stratospheric aerosol loading in 2003 is low. Why to choose 1.3 as PSC detection threshold? Is it because it is just above 1.2? Have sensitivity tests been conducted with various values?

Technical corrections: The description of the color index and color index ratio is difficult to follow. I think that the author should keep "color index" when speaking about "Rc (TH)" and "color index ratio" when using "theta (TH)". Considering this, the text on page 7174 line 2 should be "Figure 2 shows color index profiles" instead of "colour ratio profiles".

Page 7172, line 16: alternatively instead of alternatingly?

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