

## ***Interactive comment on “CALIPSO polar stratospheric cloud observations: second-generation detection algorithm and composition discrimination” by M. C. Pitts et al.***

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### General comments

This paper presents a second-generation PSC detection algorithm and composition discrimination. The method presented shows improvements in comparison with the original algorithm, although it is still necessary to be validated by more in situ measurements. The application of the algorithm and composition classification scheme presents the useful and impressive information on the properties of PSCs over the Arctic and Antarctic. The paper also mentioned the inter-comparison of the results with the other observations such as MLS data, which shows a high degree of consistency. In this regard, further validation by in situ measurements will lead to further

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improvement of current algorithm and more understanding of PSC composition and formation mechanisms. The paper is well written and will interest the scientific community with the promising application in PSC detection and composition discrimination using satellite measurements.

### Specific comments

1. Page 8132-8133, the authors present the theoretical calculation of optical properties for STS, STS-NAT, STS-ice by different particle number density and effective radius. It will be interesting to give the summarised typical particle size and number density of mixtures found from satellite observational data analysis. 2. Page 8134-8135, how about the thin PSCs of the very large NAT particles with low number density? Is it possible to detect them? 3. Page 8136-8138, it will be helpful if the authors can give some uncertainty analysis of the second-generation algorithm and scheme.

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