We would like to thank the Referee for the valuable input. Please find out point-by-point reply below. Referee comments are given in black, our answers are given in blue.

Anonymous Referee #1, follow-up comment

The answers of the authors to my first comments have been all addressed in a satisfactory way and appropriate corrections have been made. I still have some minor remarks, however.

Thank you for the positive feedback.

I still find the title not very descriptive. I think that the title I suggested does not exclude any locations. The best locations can be determined from Figures 3 and 6, without specifying existing stations.

We have thought about the title suggested by the Referee (*How to find the best locations for ground-based PSC observations*) and propose to change our original title (*Location controls the findings of ground-based PSC observations*) to ***On the best locations for ground-based PSC observations.***

Among the reasons for performing or not performing a measurement from the ground, the authors mention "(ii) the decision to start a measurement, i.e. the assessment of tropospheric cloudiness, is made subjectively by the operator ", While the other two reasons are "random" with respect to the possibility to observe PSCs, the decision of the operator to perform the measurement in absence of tropospheric clouds is not random, since it already selects a favourable condition.

We agree with the Referee that point (ii) is not as random as the other two points, as an operator is generally capable of identifying cloud-free conditions. What we are referring to here, however, is related to our own experience on deciding whether or not to start a measurement with a manually operated instrument in the presence of clouds. In particular, a measurement could be started in the presence of tropospheric clouds that inhibit PSC observations. An operator might decide to stop the measurement if this cloud deck does not dissolve as expected and the clouds might dissolve after the end of the measurement.

"we randomly selected one third of those CALIPSO profiles that represent what would be observable from ground, i.e. the optimum yield". I don't understand why the authors randomly select one third of useful measurements, taking into account the number of pixels where PSCs are present. It would be sufficient to state that the ground based lidars should be able to perform at least one third of the optimum yield.

The rational for picking the factor of one-third is indeed that we assume that a ground based lidars should be able to perform at least one third of the optimum yield. The intention of sub-sampling the CALIPSO-observations related to the optimum yield, however, is to asses if random sampling of the optimum yield, i.e. subsampling of the dataset in an effort to account for the inhibiting factors imposed on a real-world ground station, would lead to any changes in the overall statistics on PSC type occurrence. Figures 4 and 7 show that this could be the case at some ground stations.

In Figures 4 and 7 two kinds of information are mixed. The first is the relative number of possible observations by CALIOP, ground-based lidar and one third of the latter. The second is the relative occurrence rate of the different PSC types at the various stations, as observed by CALIOP (the other columns are derived from CALIOP data). The question is if the small differences of the relative occurrence rates between the three columns is "real" or just "casual".

The figures provide the occurrence rate of different PSC types related to the three considered conditions viewpoints (all cases of all-sky conditions, all cases of transparent or no clouds, and one third of all cases of transparent or no clouds). The numbers that refer to the amount of considered

PSC height bins provide complementary information that allows to assess the representativity of the measurements, i.e. the statistics become less trustworthy is the number of considered cases falls below a certain level. Our best assessment of the Referee's question is that differences between the first column (all-sky conditions) and the other two columns are real as they describe the effect of tropospheric cloudiness on the obtained statistics. We already state in the discussion of Figure 4: "*The localised view for 15 ground stations in the Arctic reveals the impact of tropospheric cloudiness on the statistics on PSC microphysical properties as expected from Figure 3.*"

In an ideal world, there should be no difference between the second and third column and differences should be casual. Nevertheless, there are stations with a considerable difference in those columns. For such stations (e.g. Igloolik or Tiksi) the sub-sampled data set becomes too small to conclude that the differences are real.

We also realised that the numbers in Figure 4 were mixed up for the different stations. This has now been corrected.

The caption of Figure 6 should read "Same as Figure 3 but for the Antarctic."

Correct. Changed as suggested.