Reviewer 1

First of all we would like to thank reviewer for careful reading the manuscript and for appreciation of our work.

The manuscript "Fluorescence lidar observations of wildfire smoke inside cirrus: A contribution to smoke-cirrus – interaction research" is very well written and presents a novel apprach to combine Flourescence and Multiwavelength Raman Lidar to better isolate vertically profiled smoke characteristics both in the free atmosphere as well as in cirrus clouds. The approach is quite empirical and intersting and should provide a uselfull tool in exploring a number of aerosol - cloud interctions and how smoke can mix and be modified in cloudy backround enironments.

One issue is that it is not clear what kind of quantitative errors we are propogating into the Flouresence retreivals (both Flourescence Backscatter and Smoke Microphysical). In particular, estimates of plausible errors are not shown in Tables 1 or 2 whereas the aerosol parameter errors are estimated.

The question about uncertainty of the method is definitely very important. Uncertainties of β_F calculation depend on the chosen value of σ_R and on relative transmission of optical elements in fluorescence and nitrogen channels. These system parameters do not change with time. The relative sensitivity of PMTs, however, may change. Regular calibration of the channels demonstrates that corresponding uncertainty can be up to 10%. At high altitudes the statistical uncertainty becomes predominant.

We should recall, that when we estimate smoke concentration from fluorescence backscattering, using mean conversion factors from Eq.(4), the mentioned above systematical uncertainties disappear, because conversion factors and β_F are calculated with the same assumptions. The uncertainties of *N, S, V* estimation arise mainly due to variation of conversion factors for different smoke episodes. We estimate corresponding uncertainties to be below 50%, 25% and 20% for number, surface and volume density respectively.

In revised manuscript we added paragraph describing possible uncertainties of β_F calculation. Uncertainties are added to Table 1 and to the plots in the figures.