Response to Anonymous Referee #1:

We thank Anonymous Referee #1 very much for his/her helpful comments. Below are our point-by-point responses.

Reviewer's comment [1]:
Line 362-364: Because in section 2.2 only rough estimates are given for the size dependent sampling efficiencies of the different techniques, I recommend removing or weaken the statements about INP abundance in different size ranges here.

Authors' response [1]:
We propose to weaken the existing statements through appropriate wording, but retain a brief discussion that more clearly highlights the basis for the statements. We reference expected capture efficiencies of the filters in Section 2.2, and this should have been reiterated in this results section. These calculated capture efficiencies indicate that the 3-micron pore-size filters should be inefficient at capturing (on the surface or in pores) submicron diameter particles except those well below 0.1 microns in size, while the 0.2-micron pore-size filters have high efficiencies across all diameters. Since the INP concentration results are comparable on the two filter sizes, it suggests a size of INPs in the 1 μm range or larger on average during these sampling periods.

Changes in manuscript re: comment [1]:
We rewrite,
"*Considering the capture efficiencies versus size noted in Section 2.2, the lack of significant difference in IS n_{INPs} measured with the filters of 0.2 and 3 μm pore sizes implies that most INPs were likely large enough to be captured effectively. This crudely suggests an INP mode size at about 1 μm or larger. This is also a size that is collected with high efficiency in the Biosampler, for which similar INP concentrations were measured.*"

Reviewer's comment [2]:
The black and blue crosses can hardly be distinguished in Figs. 1 and 2. I recommend using other colors or other symbols. Why are only 1:1 lines shown in Fig. 3? I recommend to also show linear fit lines to the data sets. Why are error bars only shown in panel d of Fig. 3?

Authors' response [2]:
We agree with the reviewer on most of these points. The black and blue crosses have been changed to triangles and a different distinguishing color (gold) is now used for the Biosampler in Figures 1 and 2. We have also added the requested error bars for all panels in Figure 3. The 1:1 line in Fig. 3 is shown as an expectation for perfect agreement. Since we spent two additional figures to discuss the discrepancies between methods as a function of temperature, which in some cases is not linear, we resisted showing linear fit lines in the panels of Fig. 3. The reasoning initially was manifold. First, although these would show a general trend, the fit itself would not add any valuable information on exactly what is going on. The 1:1 line is also the basis for extrapolating perfect agreement on assuming that the CFDC instrument underestimates all natural INPs by the factor that has been reported for mineral dust particles in the laboratory and field. Finally, we spent a great deal of effort in the paper to explain that perfect overlap of samples was a difficult task that requires a lot coordination (and expense on the part of

volunteering groups), with the consequence that only a small amount of data amenable to something like statistical tests was acquitted. When showing data without perfect overlap, the discussion should be a bit more general, as we provide in Fig. 4 and Fig. 5. Nevertheless, since both reviewers have requested these fits, we place them now in addition to the existing lines.

Changes in manuscript re: comment [2]:
The new figures appear at the end of this response, as they will be shown in the final article. At the point of introducing these fits in section 3.2 we write:

"The linear relational slope between IS and CFDC data shown by the light gray dashed line in Fig. 3a. The same representation is applied in all panels of Fig. 3. We provide these fits only to show general trends between the different data sets and do not provide fit parameters herein because a deeper consideration of the source of discrepancies requires additional inspection of trends as a function of temperature, which follows below."

Reviewer's comment [3]:
Conclusions line 540: I would not say the agreement achieved is excellent. In my view it is good or very good within uncertainty limits.

Authors' response [3]:
We agree with the reviewer.

Changes in manuscript re: comment [3]:
We have modified the sentence accordingly as,
"Very good agreement within uncertainty limits was obtained under…"

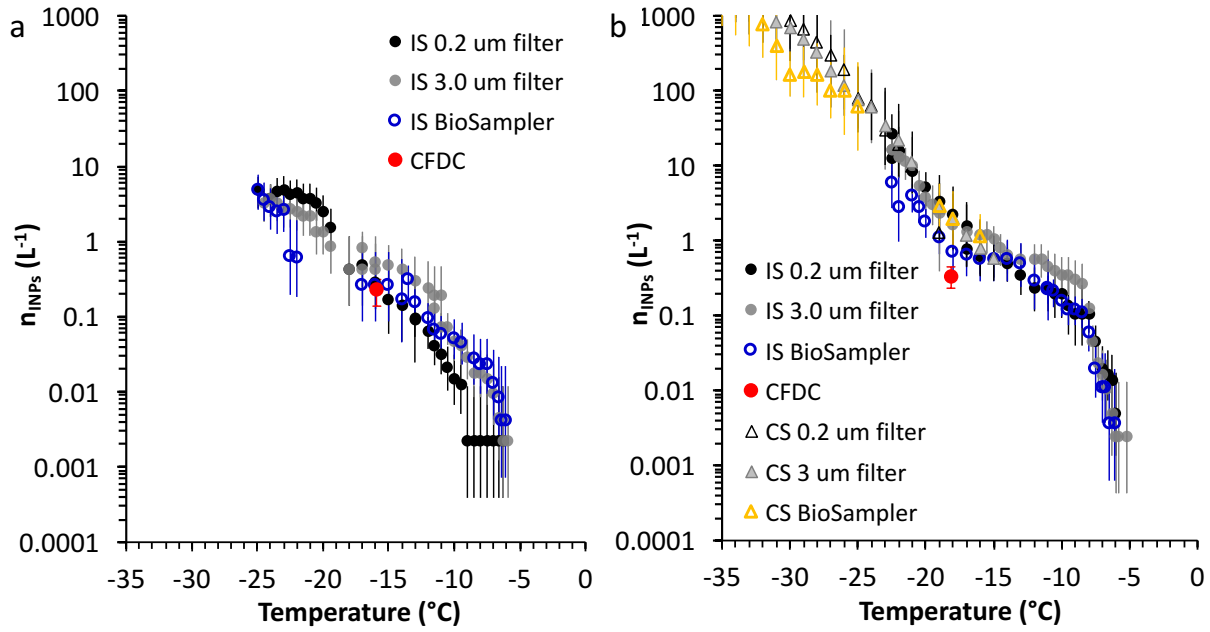

Figure 1.

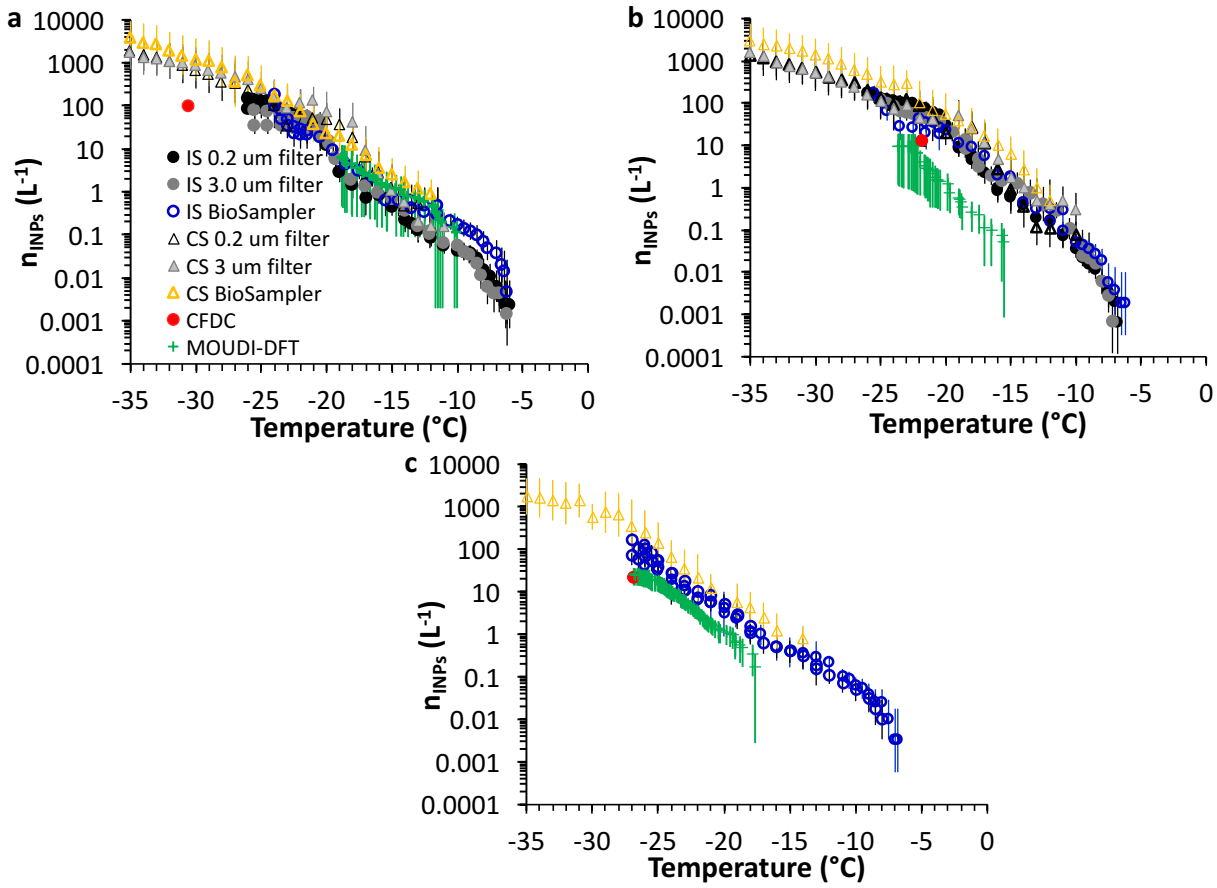

Figure 2.

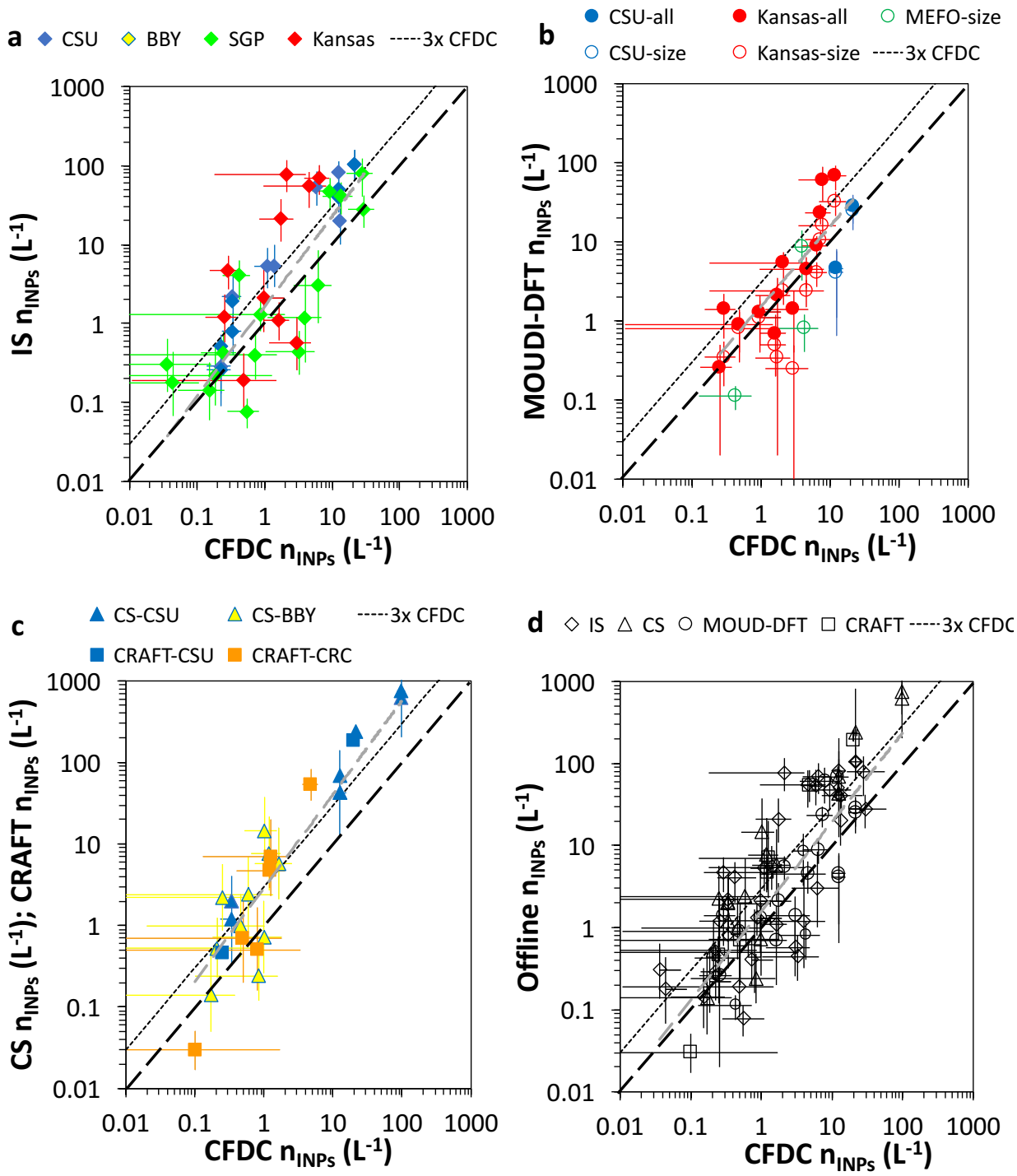
a
CSU
BBY
SGP
Kansas
3x CFDC
IS n_{INPs} (L^{-1})
CFDC n_{INPs} (L^{-1})
b
CSU-all
Kansas-all
MEFO-size
CSU-size
Kansas-size
3x CFDC
MOUDI-DFT n_{INPs} (L^{-1})
CFDC n_{INPs} (L^{-1})
c
CS-CSU
CS-BBY
3x CFDC
CRAFT-CSU
CRAFT-CRC
CS n_{INPs} (L^{-1}); CRAFT n_{INPs} (L^{-1})
CFDC n_{INPs} (L^{-1})
d
IS
CS
MOUD-DFT
CRAFT
3x CFDC
Offline n_{INPs} (L^{-1})
CFDC n_{INPs} (L^{-1})
1000
100
10
1
0.1
0.01

Figure 3.