We are grateful to the reviewer for her/his positive comments and careful reading of the manuscript. Below we address the comments with our answers in blue. The numbering of pages and lines in our answers refer to the new version of the manuscript. Changes in the manuscript are written in red.

Anonymous Referee #1
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It is relatively easy to obtain detailed size distributions and bulk chemistry of aerosols but in order to understand the sources of particles and their individual chemistry, imaging and analysis of separate particles is required. This has not been a popular form of research because it requires the use of electron microscopes and a very large amount of microscope time to study a representative sample of the aerosol. Interpreting the results also requires experience and wide background knowledge of possible sources of the aerosol.
The paper under review is very valuable because it greatly extends previous work of this type on the summer high-Arctic aerosol using improved techniques and studying a remarkably large number of individual particles. I strongly recommend it for publication, but contribute a few comments that might be useful.

1. Sizing of the aerosol from electron microscope imagery is notoriously difficult and in this case has resulted in acceptable agreement with TDMPS size distributions. Subsequent investigators will want to try to compare their work with that under review. It should therefore be made clear what assumptions were made in sizing particles such as A in figure 4 where no shadow is visible, or B in that figure which shows a thin shadow on the lower edge suggesting that it is a flat crystal. Similarly, in figure 7, were the components of the chain aggregates assumed to be spherical, their volumes summed and the diameter of a sphere with the equivalent diameter calculated? If so, attention should be called to the paper by Rogak et al. (Aerosol Sci. Tech 18, 25-47, 1993) which showed that a mobility analyser bases diameter of such particles on the projected area rather than on the volume. This will affect the comparison of mobility and EM size distributions.
We are aware of this problem and therefore used the projected area of a particle to determine the particle equivalent diameter D_{pa} (the diameter of a circle that comprises the same diameter as the projected particle), see chapter 2.2.4.

2. P.10 line 24. I can't understand why C and O were not detected on blank films of polyvinyl formal. In the supplemental data the carbon signature is strong, so the detector was sufficiently sensitive.
Thank you for pointing out this error. We changed the text to:
P10 lines 23-25. "The EDX spectra of blank grids showed only signals from Pt, the supporting copper TEM grid and carbon and oxygen signals from the Formvar substrate film."

3. Droplet haloes: I don't believe the splash hypothesis is appropriate for low velocity electrostatic collection. In fact I think it is also doubtful for particles of the size of those in figure 10 collected by high velocity impaction. Stratospheric aerosol sampling by an Ames Research Center group (Farlow and Ferry) 40 years ago found that the sulfuric acid particles did not develop haloes if all contact with water vapour was avoided before examination. (Possibly in JGR 82, 4921-4929, 1977 but I don't have the article) It was later confirmed by laboratory experiments (Bigg, Tellus, 38B, 62-66, 1986). A possible explanation is that acid vapour extends outwards from the captured particle as a monolayer (or multiple layers) on the surface. On exposure to water vapour the molecules take up water and coalesce to form tiny droplets.

We agree, halo formation has to be discussed as the result of several factors. We therefore extended the discussion of halo formation as follows:
P16, lines 5-15: "Several authors (Farlow et al., 1977; Bigg, 1986; Bigg and Leck, 2001b) have found that the formation of droplet ring structures from sulphuric acid containing aerosol is a result of humidity, hydrophilicity of the collection surface and impact velocity effects. Bigg and Leck (2001b) observed that a solution of sulfuric acid wets out on a hydrophilic surface but retracts when humidity is reduced, leaving behind small droplets in a symmetrical ring. In our study the sampling procedure led to a drastical reduction in relative humidity, from around 100% at ambient conditions to 20% within the sampling manifold (see chapter 2.1.1) and the aerosol was impacted onto a surface with hydrophilic properties (TEM grid). We will thus assume that the HP originally existed as one particle in the atmosphere that splashed out into the droplet ring structure upon impaction onto the substrate. "

4. P.15, line 23: "the biopolymer networks of marine gels are water solvable". Solvable means that an answer is available for a problem. If you meant "soluble", how could they exist as entities in the ocean?

Thank you for pointing that out. We now use "solvated" instead, referring to the IUPAC definition for solvation: "Any stabilizing interaction of a solute (or solute moiety) and the solvent or a similar interaction of solvent with groups of an insoluble material (i.e. the ionic groups of an ion-exchange resin)…"

We changed the text to:
P15, line 17-31: "In seawater the observed size range of gel particles ranges from sovated nanogels (100-200 nm; Bigg et al., 2004) that can further anneal into microgels (> 1000 nm) by interpenetration and entanglement of neighboring nanogels or hydrophobic interaction."

The manuscript is well-written, the diagrams informative and the references very comprehensive. There are some instances where the spelling or wording differs slightly from conventional English usage and some of these are listed below together with suggested alternatives.

Thank you for thoroughly reading our manuscript. We corrected spelling and wording as suggested below.

p.5, line 21: Longyearbyen, Svalbard

p.5, line 25 and beyond: Since you are reporting completed work it would be more conventional to use the past tense rather than the future tense. E.g., change "will use" to "used".

p.6, line 2: according to morphological. . .

p.8, line 19: In order to compare (to) the number. . .

p.9, line 21: Although wolfram is more logical in view of its symbol, tungsten is the common English usage.

p.10, line 19: were not reliably detected

p.16 line 10: unstable

p.16 line 17: morphology to the

p.20 line 13: is capable of adding

p.20 line 30: In the hope of enhancing

References, p.23, line 5: Ayers, G.P.

p.23 line 8: pouchetii

p.25 line 4: Cambridge

p.30 line 21- 24: Remove hyphens in Ramaswamy, Isaksen, climate and Intergovern-mental

p.31, line 6: atmosphere

Figure 10 caption, line 6: degenerated