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Brine channel network and brine inclusions – characterization of the three-phase 3D microstructure of saline spray ice

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Brine channel networks and brine inclusions are dominating features of the microstructure of saline ice that determine the physical properties and influence thermodynamic and convective processes within the ice. Similar to sea ice, salinity and the spatial distribution of brine are important properties of sea spray ice. However, their manifestation in the microstructure and their relation to the growth conditions are scarcely investigated for spray ice. Towards a physical understanding of brine inclusion and brine drainage processes in sea spray ice, we characterize microstructures of samples from the field and from systematic experiments in the cold lab under varying growth conditions (temperatures, spray rate, salinity). By means of 3D micro-computed tomography images, we examine main characteristics of the brine features. We will present first results of the microstructure characterization and discuss their relation to the growth conditions.