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Specific surface density (SSA) evolution of surface snow at low accumulation site on the East Antarctic plateau (Kohnen Station, DML)

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SSA and density of the top 25 mm of the surface snow have been measured at Kohnen Station during the summer season 2016/17 from mid of November until beginning of February (measurements in progress). SSA and density were determined along a 100 m long profile perpendicular to the main wind direction. The main processes affecting the SSA are precipitation of fresh snow, moving snow and the aging of snow during meteorologically calm periods. We find patches of snow with dimensions up to 74 m^2/kg after a snow fall event, which rapidly decrease with aging, reaching 30 m^2/kg after one week. Typical values are found around 45 m^2/kg. Densities follow the trend of SSA inversely, showing decrease for fresh snow and continuous increase with time.
Vertical SSA profiles indicate a sharp decrease to 10 m^2/kg at 0.6 m depth. SSA shows a large variability indicating that the snow pack at Kohnen Station is characterized by snow deposited during different seasons of the year. When models of snow evolution are developed, the wide variety of snow pack types (winter/summer snow, dunes, redistribution) has to be taken into account.