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Cyclone activities and associated elevation changes of the Greenland Ice Sheet

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Greenland, with its steep coastal mountains and the ice covered plateau, plays an important role on the dynamics of the cyclone activities. On the other hand, the cyclone activities in this region will have impact on moisture and heat transport to the Greenland Ice Sheet (GrIS). Therefore, to study the cyclone activities in this region will give better understanding of the atmospheric impact on the mass balance of the GrIS. Here, cyclone entered the Greenland region and the associated variations of snowfall and surface temperature over the GrIS is investigated during the recent 60 years. In addition, the relation between the cyclone activity and surface elevation change of the GrIS (an indicator of the Surface Mass Balance (SMB), based on satellite measurements during 1993-2007) is also investigated. The results indicated that changes of the intensity rather than the number of cyclones entered the Greenland area have significant impact on the SMB of the GrIS during 1993-2007.