Global SnowPack - A set of Snow Cover Parameters derived from times series of daily snow cover data made available on a global scale

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ABSTRACT:

Snow cover is an important climatic variable as it influences various environmental aspects - ranging from small scale hydrological parameters like runoff or floods, ground water recharge and hydro power generation, to large scale planetary processes connected to climate change.
Remote sensing data offer the opportunity to detect terrestrial snow cover in high temporal and spatial resolution. The processing of globally available time series of remote sensing data constitutes a challenging task due to the huge data volume and computational demand. With the Global SnowPack the German Remote Sensing Data Center (DFD) of the German Aerospace Center (DLR) provides a new set of medium resolution Snow Cover products generated to fulfill the requirements of both large scale climate studies as well as small scale hydrological analyses. Between 2000 and 2014, Snow Cover Duration (SCD), Early Season SCD (ESS) and Late Season SCD (LSS) are derived from reprocessed operational MODIS daily snow cover products MOD10A1 and MYD10A1 (500m resolution). 139 MODIS tiles are included in the processing workflow to cover the whole cryosphere of the full globe, comprising more than 100.000 scenes per year. For the years before 2000, snow cover is derived from AVHRR LAC and HRPT data (1.000m resolution) relying on a combination of the APOLLO and SPARC schemes.
The presentation will give an overview of the used algorithms to process time series of snow cover data as well as the produced snow cover products. Global SCD, ESS, and LSS will be illustrated for the whole time series. Examples for potential applications of the Global SnowPack are included for both – small scale as well as large scale planetary analyses - at the end of the presentation.

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