

# ESA GLOBSNOW – PRODUCING LONG TERM SNOW DATA FOR CLIMATE RESEARCH PURPOSES

*Kari Luojus<sup>1,\*</sup>, Jouni Pulliainen<sup>1</sup>, Matias Takala<sup>1</sup>, Juha Lemmetyinen<sup>1</sup>, Mwaba Kangwa<sup>1</sup> and Sari Metsämäki<sup>2</sup>*

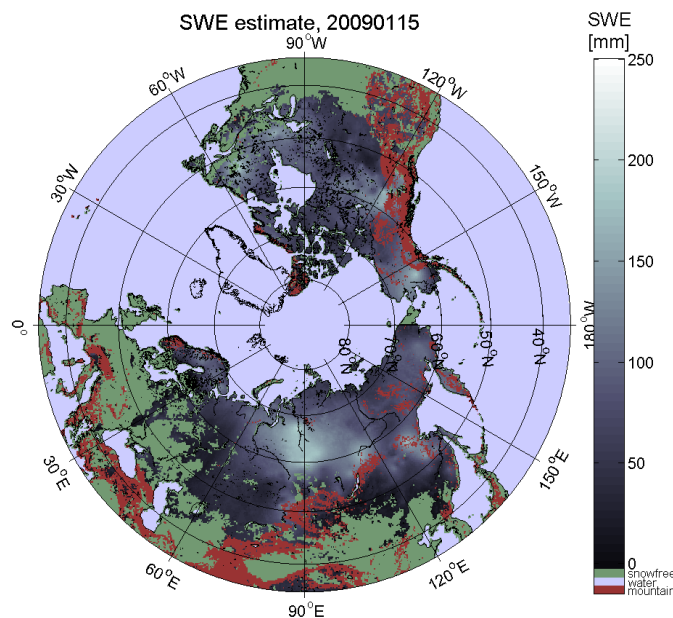
<sup>1</sup>) Finnish Meteorological Institute (FMI) Arctic Research Centre, FI-99600 Sodankylä, Finland. (\*e-mail: kari.luojus@fmi.fi)

<sup>2</sup>) Finnish Environment Institute, P.O. Box 140, 00251 Helsinki, Finland.

The European Space Agency (ESA) Data User Element (DUE) funded GlobSnow project aims at creating a global database of snow parameters for climate research purposes. The main objective is to create a long term dataset on two essential snow parameters: the areal extent of snow (SE) on a global scale and snow water equivalent (SWE) covering the Northern Hemisphere. The temporal span of the SE product will be 15 years and the span for the SWE product will be 30 years. A key improvement of the snow products, when compared with the currently available datasets, will be the inclusion of a statistically derived accuracy estimate accompanying each SE and SWE estimate. In addition to the long term dataset, an operational near-real time (NRT) snow information service will be implemented producing daily snow maps for hydrological, meteorological, and climate research purposes.

Extensive algorithm evaluation efforts were carried out for the candidate SWE and SE algorithms using ground truth data gathered from Canada, Scandinavia, Russia and the Alps. The acquired evaluation results have enabled the selection of the algorithms to be utilized for the GlobSnow products. The SWE product is derived using an Algorithm developed at FMI and the SE product is a combination of NR and SYKE developed algorithms. The algorithms showed enhanced estimation characteristics when compared with currently available existing products. Several versions of prototype SE and SWE products have been released for GlobSnow user community during 2009 and 2010.

The long term dataset to be released during late 2010 will include SWE data starting from 1978 and SE data starting from 1995. The operational near-real time processing system will start operations in October 2010. The current data, including the prototype products and the used validation data are available for all interested parties through the GlobSnow www-pages (<http://globsnow.fmi.fi>).



An example of the SWE product for 15 January 2009.