

# Svalbard and Jan Mayen energy storage parameters

What is MOSJ - environmental monitoring of Svalbard & Jan Mayen?

MOSJ (Environmental Monitoring of Svalbard and Jan Mayen) is an environmental monitoring system and part of the Norwegian Government's environmental monitoring in Norway. The site provides historical climate records (ocean, land, and atmosphere), including temperature precipitation, snow, permafrost and sea-ice.

How has the Svalbard glacier mass balance changed over time?

Since the first estimates of Svalbard-wide glacier mass balance were made in the early 2000s, there has been great progress in remote sensing and modeling of mass balance, existing field records have been extended, field records at new locations have been added, and there has been considerable environmental change.

Does the Svalbard archipelago have a negative mass balance?

However, the main conclusion one can reach from the body of GRACE analyses is that all find a negative total mass balance for the Svalbard archipelago, with values ranging from -0.46 to -0.09 m w.e. a<sup>-1</sup>, or -15.5 to -3.0 Gt a<sup>-1</sup> (Table 2), even if the error range for some of the estimates extends them into the positive territory.

How much refreezing does Svalbard have?

For all of Svalbard glaciers, specific refreezing amounts to about 0.22 m w.e. a<sup>-1</sup>, i.e., corresponding to about 25% of the annual accumulation (Aas et al., 2016; Stby et al., 2017; Van Pelt et al., 2019).

Does ice affect the temperature in Svalbard?

The temperature in Svalbard is strongly affected by ice, which can vary widely from year to year. Hence, the seasons with ice present show greater variation in average temperature from year to year. Trends in seasonal mean temperatures at Svalbard Airport shows a temperature increase for all four seasons.

Does Svalbard have a trend toward negative CMB?

Although there is agreement on a tendency toward more negative CMB, trend analysis reveals its significance is largest in southern Svalbard, contributing to a Svalbard-wide trend of -0.06 m w.e. a<sup>-1</sup> decade<sup>-1</sup> (Van Pelt et al., 2019).

The most complete models contain a subsurface routine to account for the impact of water storage and refreezing on the mass and energy budgets. Field data are used to calibrate model parameters and to validate model output.

We use a coupled energy balance-subsurface model, forced with downscaled regional climate model fields, and apply it to both glacier-covered and land areas in Svalbard. This generates a ...

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In this paper, we present the 2008 energy balance for S&#248;rbrreen (15 km<sup>2</sup>, ~120-2200 m a.s.l.), a glacier in a polar maritime climate on the island of Jan Mayen (71°00'N, 8°30'W, 373 km<sup>2</sup>; Fig. 1). The local energy balance is calculated and compared with the corresponding specific mass ...

requested new parameters (see below). In recent years the survey also covers areas that traditionally have been covered by the Norwegian Polar Institute (the shelf west and north of ...

An assessment of MOSJ: the state of the marine climate system around Svalbard and Jan Mayen Renner, Angelika H.H.; Dodd, Paul A.; Fransson, Agneta : Troms&#248;; Norwegian Polar Institute, 2018 -51 pp (Report series / Norwegian ...

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There is a good correlation between the Br&#248;ggerbreen annual mass balance and temperature in Ny-&#197;lesund (Table II), and a similar evolution of summer temperatures at every station in ...

This paper examines the water budget and surface energy balance of a Svalbard glacier (midre Lov&#233;nbrreen) over a 6 year period (1997-2002). Fresh-water yields are found to lie between 1.1 and 1.5 m a<sup>-1</sup> and reflect variable amounts of glacier ice ablation (0.27 &#177; 0.15 ma<sup>-1</sup>) and more consistent amounts of snowmelt and summer precipitation ...

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Climate gases in Svalbard; Air temperature and precipitation; UV in Ny-&#197;lesund; Ocean. The transport of freshwater through the Fram Strait; Thickness of sea ice in the Arctic Ocean ...

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mal conditions on Svalbard show an increase in ground temperatures and indicate significant warming and an increase in active layer thickness over the 21st century (Etzelmüller et al., ...

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