

## Discharge of Waldemar River and outflow from glacier

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Catchment basins of six rivers can be distinguished on the Kaffiøyra plain. The catchment basin of Waldemar River is the smallest; its area takes 4.4 km<sup>2</sup>, 62% out of which is taken by Waldemarbreen. The measurement site was located at the point where the river enters the outwash plain, about 500 m from the glacier frontal part. The length of Waldemar River from that place is about 1 kilometre. Below that point the river shows anastomosing character. The main factor shaping the catchment basin of Waldemar River is fluvioglacial water of the Waldemarbreen. Its area includes the streams fed both by the ablation water and precipitation water.

The largest intensity of the discharge corresponded with the period of highest ablation level. The closest correlation was visible when a few-day values were analysed. Additionally, there were periods when increased intensity of discharge was recorded later than the maximum of ablation. This mainly resulted from temporary retention of melted snow in the form of slush, large patches of which were found on glaciers. During every summer season ablation exerted distinct influence over the size of the discharge of Waldemar River. This is proved by the correlation between ablation and discharge.

Mean discharge of Waldemar River between 1996 and 2006 was 1.21 m<sup>3</sup>s<sup>-1</sup>, while in 2006 was 1.08 m<sup>3</sup>s<sup>-1</sup>.

In order to measure water stages and water temperatures at 5-minute intervals the HOBO logger was used. This enabled the author to estimate the discharge rate, both daily and mean for the entire summer season.

The mean outflow from Waldemarbreen between 1996 and 2006 was 4,578,641 m<sup>3</sup>s<sup>-1</sup> of water, which was carried away by Waldemar River. The

share of the ablation within the outflow was, on average, 56%. The remaining part was made up by rainfall, outflow from the ice covers as well as other local sources of water (inter-glacier outflow, melting of snow from the mountain slopes).



**Fig. 1.** Waldemar River in 2006 summer (A) and 2007 spring (B), (photo I. Sobota)

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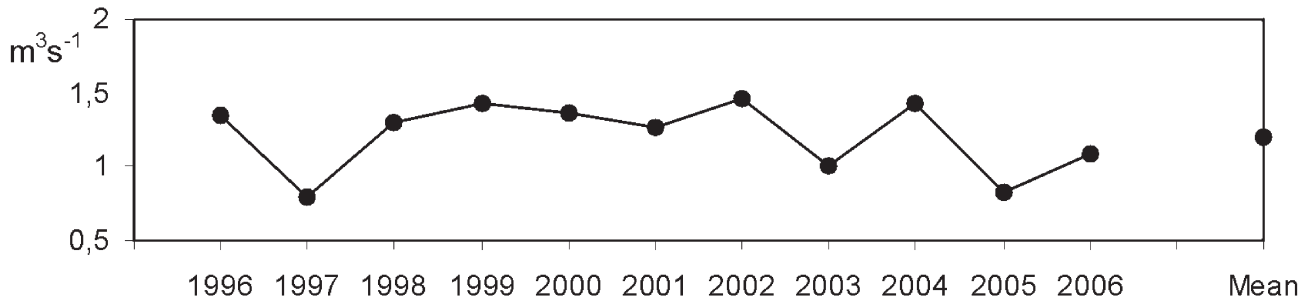


Fig. 2. Mean discharge of Waldemar River in 1996–2006

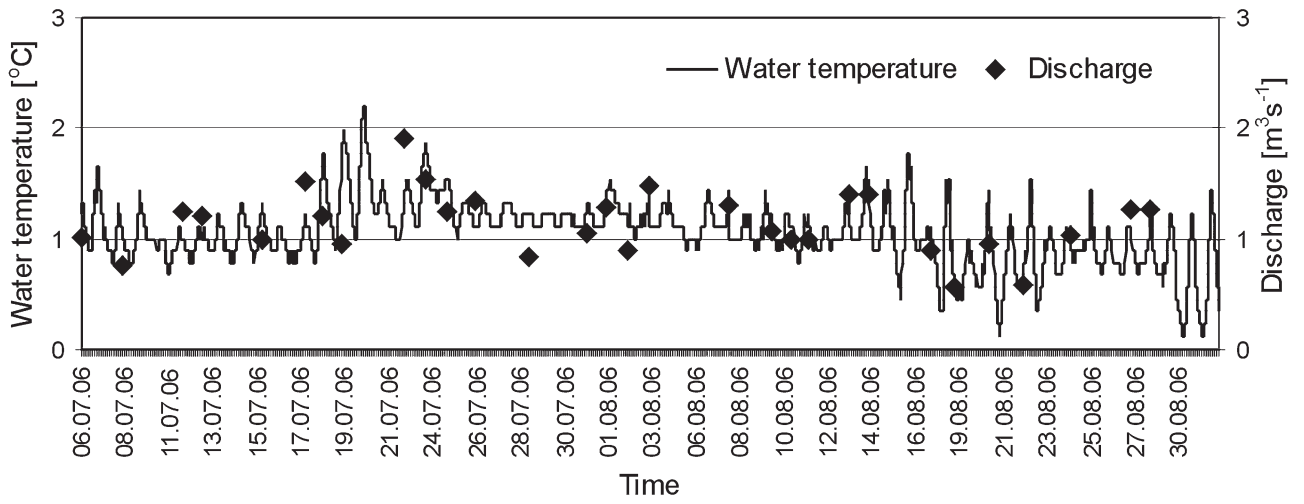


Fig. 3. Water temperature in Waldemar River against discharge in summer 2006