Comparison of Sediment load Transport in the Skeiðará Jökulhlaups in 1972 and 1976

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ABSTRACT

The characteristics of the Skeiðará jökulhlaups are briefly described. A summary of the data on the quantity of suspended sediment load is presented in Table 1. The three methods which have been used in the sampling of sediment are found to give highly different amounts of coarse sediment load. The jökulhlaup of 1976 was the first one in Skeiðará in which more than one sampling method was applied.

In the jökulhlaup of 1976 a good discharge/sediment rating curve and a fairly uniform spatial distribution of the sediment were obtained. On the other hand in 1972 the rating curve was poorly defined and the spatial distribution non-uniform.

In the jökulhlaup of 1972 a layer of sand and coarse silt was deposited in the flood channel, but not in 1976. The deposit is too fine-grained to have been laid down by running water. The present authors explain it as having been deposited by way of anchor ice which is also considered responsible for the variation in the sediment concentration from one place to another. Similarly, such deposition may explain some very fine-grained layers in ancient alluvial sediments.

INTRODUCTION

The Grimsvötn jökulhlaups are vast floods caused by draining of the Grímsvötn subglacial lake which is situated in the western part of the Vatnajökull ice-cap. The floods appear in the glacier rivers Skeiðará, Gígjukvisl and Sóla on Skeiðarársandur and sometimes they spread over a great part of the sandur plain, see Fig. 1. Because of these jökulhlaups the above rivers were first bridged as late as 1973-74. Skeiðará is by far the most voluminous of the glacier streams on Skeiðarársandur. Floods in that particular stream are

Fig. 1. Flood channels of Skeiðará jökulhlaups. Key: SKU: Skeiðará at glacier outlet, SKG: Skeiðará at dikes. - Mynd 1. Yfirliðsmýnd. Hlautafarna gr Steiðaráhlaupa. SKU: Steiðará við Úlfjall. SKG: Steiðará við garða.