

Water and sediment discharges from an Alaskan river drainage basin

Kazuhisa Chikita[1]

[1] Earth and Planetary Sci., Hokkaido Univ.

Water and sediment discharges from glacial Tanana River, Alaska, were investigated by field observations and runoff analyses. Glacier-covered regions occupy only ca. 10 % of the total drainage area ($6.48 \times 10^4 \text{ km}^2$), but water and sediment discharges by glacier-melt control those of the Tanana River over summer. Field observations in 2002 and 2003 indicated (1) that sediment discharge in the Tanana River depends on SSC rather than water discharge, and (2) that the correlation between water discharge and SSC is significant when rainfalls occur in the whole drainage basin or glacier-melt prevails.

A runoff analysis by the tank model revealed (1) that, in the early to middle stages of glacier-melt (June to mid-August), glacier-melt water discharge occupies 70 to 90 % of Tanana River discharge, together with a large water loss by evapotranspiration in permafrost regions, but (2) that, as air temperature decreases toward the final stage of glacier-melt (mid-September), rainfall runoffs from permafrost regions are comparable to glacier-melt discharge.