

Modeling snow accumulation and snow melt using monthly climatic grid data

Haruki Numajiri[1], Michio Nogami[2]

[1] Geography, Sci and Tech, Nihon Univ, [2] Nihon Univ.College of humanities & Siences

The purpose of this report is to construct a monthly water balance model for drainage basins and to test its validity using the mesh climatic data of Japan (Meteorological Agency) and the river discharge data (Ministry of Land, Infrastructure and Transportation). The climatic data is monthly and of 1 km grid aperture. The target basins were covered by snow in the winter months in Japan.

We constructed a tank model having three outlets for all grids in the basins and a sub-model for snow accumulation and snow melt. We separated snow and rain fall by temperature, and assumed that snow cover would be melted after temperature with assumed snowmelt coefficient. Through repeating runs of simulation with changing parameter values, we sought optimal values for these parameters and the tank model's coefficients by evaluating difference between the model's outputs of the basins and the observed discharge values.