THE REAL-TIME FLOOD FORECAST OF MELTED ICE AND SNOW RUNOFF

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The north slope of Tianshan Mountain is one of the typical areas of the snow development, the snowmelt runoff confluences very fast and often causes the flood. With the development of social economy, the position and function of the reservoir in flood control are more and more outstanding. The flood forecast and the reservoir operation get more and more arduous and complicated tasks, and it is necessary to realize the automation of flood forecast and comprehensive operation and achieve the benefit. The flood forecast that is the prerequisite and foundation of reservoir operation has become its key content, in recent years, we had explored many snowmelt runoff models, such as Tank model, Xin'anjiang model, SRM (Snowmelt-Runoff Model) and distributed ice, snow and rainwater mix hydrological model, which are applied to simulate the snowmelt runoff process and have made better achievement.

Tianshan Mountain area is arid and lack of rain continental climate, because the alpine lift air and make some alpine region bring plentiful precipitation, in which the proportion that the snowfall accounts for is very heavy. The alpine glacier is regarded as the solid reservoir and plays a regulating role to the runoff. The snowmelt runoff and the rainfall runoff are regarded as equally important, and have more abundant groundwater supply, so it is extremely complicated what make up the source of mountain-gap streamflow. The conclusion was elicited from World Meteorological Organization in 1975: The water balance model obviously superior to other Arid and semi-arid basin explicit models, when the information is inferior in quality, the calculated forecast with the simple model is superior to the complicated hydrological model. Because of the ice-snow and ice-snow melt water fundamental contributions to this area, they have already become the valuable water source as irrigating oasis in the north slope of Tianshan Mountain and the Manas river valley becomes the fourth largest irrigation sector of our country. However, with the extensive development of the north slope of Tianshan Mountain economy belt in recent years, the water contradiction between the industry and the agriculture has already shown outstandingly. It has applied value and directive benefits to choose appropriate hydrological model to simulate and forecast the runoff at the north slope of Tianshan Mountain with the bad representative information, and it also is very important.

Considering the inherent precision of the model, and the water balance model which includes the snow accumulation and snowmelt is set up, which adopt the parameter optimization technique to correct and predict the basin runoff process in real time. The valley was made to distributive melt, which started from water balance method and

combined the characteristic of melt snow runoff and set up and through analyzing the runoff generating process, the daily water balance model was set up in this paper. It had been gotten the approximate optimum value depended on the automatic optimum seeking method of the conceptual catchment hydrological model parameter. And based on the flood forecasting error information of the conceptual hydrological model and adopted the least square with improved method, the parameter was revised in real-time. This way had been applied to the automatic flood control system at Jiahezi reservoir and made better result.

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