

عنوان مقاله:

Best Operation of Multi Reservoirs as a System at the Critical Flood Situation in Japan

محل انتشار:

اولین کنفرانس بین المللی و سومین کنفرانس ملی سد و نیروگاههای برق آبی (سال: 1390)

تعداد صفحات اصل مقاله: 1

نویسنده:

Shinichi Endo

خلاصه مقاله:

Heavy rain with the 18th typhoon threatened the Nabari River Basin , Kansai region with causing inundation early in the morning on 8th October, 2009. The Nabari River is a tributary of the Yodo river basin which contains Osaka and Kyoto and runs through Nabari City which is a residential zone as commutable distance area from Osaka city. In the upper reach of the Nabari, there are three multi-purpose dams; Shorenji Dam, Hinachi Dam, and Murou Dam, which are operated by Kizugawa Integrated Dam Control and Management Office (KIDCMO), branch office of Japan Water Agency (JWA). Since it rained heavily in the downstream of the three dams, the regular operation by three dams complying with the given flood control regulation seemed not to be able to prevent Nabari City from inundation. Therefore, JWA and Ministry of Land, Infrastructure, Transport and Tourism (MLIT) conducted collaborative operation of the three dams to avoid the inundation in the city area. In this case, flood control operation of three dams commenced in early stage before the inflow reached the defined flood discharge in consideration of the water level of the Nabari River , rainfall condition and capacity of the reservoirs. During the operation, discharge from the dams was changed timely and appropriately through the collaborative work of the three dams in order to maximize the effectiveness of all flood control capacities of the reservoirs according to the latest rainfall forecast technology and runoff analysis. The use of improved rainfall forecast technology and runoff analysis model enabled the effective application of this flexible operation protocols. It is estimated that this operation has resulted in 1.5 m decrease of the water level at Nabari design control point, and prevented approximately 1200 households from inundation. Considering the recent climate change, it is possible to have extreme rainfall more often. The proof of adaptability of this flexible operation is quite meaningful not only for flood damage mitigation in the downstream, but also for future prospects of flood control by dams.

کلمات کلیدی:

Operation, Reservoir, Critical Flood, Japan

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