RIVER ICE REGIME IN THE AREA AFFECTED BY A HYDRAULIC STRUCTURE IN TERMS OF THE NATURAL ENVIRONMENT PROTECTION

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ABSTRACT

Changes in river ice regime at sites affected by hydraulic structures result, as a rule, in deteriorating ecological conditions. Below hydraulic structures, open-water zones are retained throughout the winter period which deteriorate the microclimate in river valley because of ice fogs which can cause lung disorders (Yenisey, Zeya, Angara).

On the boundaries of such open-water zones at the edge of ice cover, jams are formed causing winter floods in cases of high discharge. This can result in large damage (Volga, Angara). On reservoirs, when ice cover melts, under the action of wind, ice is heaped up destroying river banks (Volga).

When ice flows out of reservoirs, ice blockages can develop. In such cases, maximum water elevations are frequently above those of spring floods and can lead to flooding of vast areas including settlements and agricultural areas (Ob, Yenisey).

In this presentation, the methodology is given for estimating changes in river regime under the effects of hydraulic structures and their ecological consequences. Certain examples are also considered that characterize the potentially disastrous impacts on the natural environment of anthropogenic changes in the ice regime of Russian rivers.

Proceedings of the Workshop on Environmental Aspects of River Ice, T.D. Prowse (Editor), National Hydrology Research Institute, Saskatoon, Saskatchewan, 1993, NHRI Symposium Series No. 12, p. 331-332.

DISCUSSION

Rick Cunjak:

Is the medical problem associated with ice fogs due to industrial air pollutants being 'scavenged' by the airborne ice crystals?

Reply:

Ice fog consists of tiny ice needles, which cause respiratory diseases and intensify the influence of industrial air pollutants.