

Zhen-chun Hao, Yi-heng Du, Wei-ling Li, Qin Ju, Cheng-yang Lu, Jun-jie Chang

The Research on River Ice Forecast of Freeze-up and Break-up in Yellow River Source Area.

China is one of the countries that suffered serious ice-slush hazard. In a normal winter of northern China, the ice-slush can exist in more than three-quarters of the rivers and lakes. Meanwhile, the Yellow River is one of the most seriously-affected areas. The Yellow River Valley locates between $96^{\circ}\sim 119^{\circ}\text{E}$ and $32^{\circ}\sim 42^{\circ}\text{N}$, and the special location gives the opportunity of ice-slush all along the river from the headstream to the downstream. As long as the ice-slush exists, it always plays to be swift, violent, high water-leveled, easily caused disaster but hard to be prevented.

Therefore, it has important theoretical and practical value to do research on the ice characters of Yellow River source area under the condition of climate changes. Meanwhile, it can provide scientific accordance for decision-makings of command and management, in order to reduce the ice-slush disaster effectively.

Based on analyzing the characters and physical causes of the ice situations of Yellow River source area, this paper took the reach of source region of Yellow River as the example, and selected main affecting factors of river ice-slush evolution from various factors of thermal, hydraulic and channel conditions, using multiple linear regression and artificial neural network method to make a simple forecasting. The dates of freeze-up and break-up have been forecasted. And a comparison between the results of the two different methods has been made.