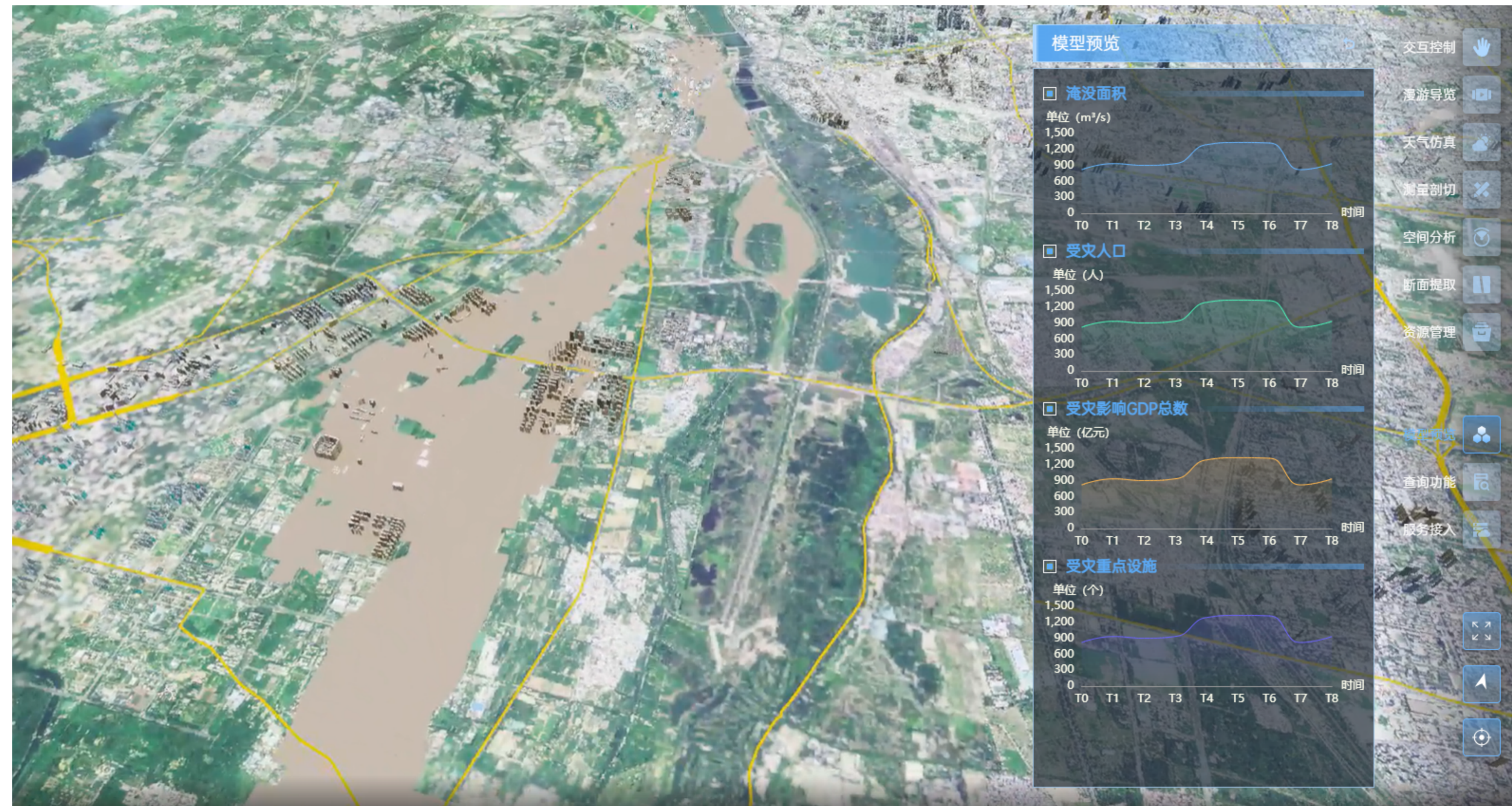


Digital twin technology based basin water resources scheduling application - an example of ecological water replenishment in Yongding River.

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Objectives

In recent years, in order to make full use of local water resources and external water resources, to further contain groundwater and create a good water environment, Beijing has carried out ecological water replenishment in the Yongding River basin for three consecutive years, which has achieved the full penetration of the Yongding River and improved the water ecological environment around the Yongding River basin. At the present stage of business application, the expression of water resources scheduling work is still relatively single. The forecast is mainly based on the results of model calculations, and the execution of scheduling orders lacks visual expression.



Methods

Combined with the construction of digital twin basins, this paper discusses the construction of a digital twin scenario for water resources scheduling at a typical basin scale. Taking the ecological replenishment of the Yongding River as an example, the digital twin data base of the Yongding River basin is constructed in a hierarchical manner, and combined with the water resources scheduling model, the execution process of water resources scheduling at important time and space nodes of ecological replenishment is visually expressed.

Results

Relying on the construction of the digital twin Yongding River Basin, the real-time preview of multi-projects, multi-channels and multi-programs can be realized in the process of carrying out large-scale, multi-objective joint water resources scheduling in the basin. Especially for the complex conditions, multiple storage projects in the basin to carry out the scheduling process, can visualize the impact of the key areas, support for risk assessment and scheduling decisions.

Conclusions

Combined with the water level and flow monitoring data, it realizes the early warning during the water replenishment scheduling process and the timely revision of the scheduling plan. Realize the preview of the scheduling plan in the digital twin basin scenario to provide decision support for the later water replenishment scheduling.

