

Letters

# Review on Impact of Climate Change on Water Resources System in the Upper Reaches

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## 摘要

关键词 [global warming](#) [the upper reaches of Yellow River](#) [water resources](#)

分类号

# Review on Impact of Climate Change on Water Resources System in the Upper Reaches

**Abstract** Results and progresses of studies on the impact of global warming on the water resources system in the upper reaches of Yellow River in the recent years are introduced based on relevant papers published in various Chinese natural science journals. The studies show that the hydrological and water resources system in the basin is quite particular, because the basin is geographically situated in the Qinghai-Tibetan Plateau, where the average altitude is over 3000 m and the climate is very cold, so it is very sensitive to climate changes, especially to precipitation changes. The surface runoff in the basin increases with precipitation increasing and decreases with temperature rising. The evolutionary trend of water cycle in the upper reaches of Yellow River in the 21st century is that the transpiration increases, and the surface runoff decreases with persistent temperature rising. As global temperature rising, the evaporation on land and ocean and the moisture in the atmosphere will generally increase, and the global mean precipitation will also increase, which would seemingly increase the probability of precipitation in the upper reaches of Yellow River. However, the increment in evaporation resulted from temperature rising not only cancels out to a great extent the potential increment of precipitation, but also makes water resources decrease to a certain extent because the range of precipitation increase is very limited. Therefore the future situation of water resources in the upper reaches of Yellow River is still not optimistic. It is necessary to solve the problem of water resources shortage in north and northwest China through various approaches, such as the South-to-North Water Diversion Project, so as to abate and adapt to the unfavorable impact of future climate changes.

**Key words** [global warming](#) [the upper reaches of Yellow River](#) [water resources](#)

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