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Development of an Open Global Water Risk Assessment Tool to Support Investigation of Adaptation Measures to Climate Change in the Private Sector

HANASAKI Naota

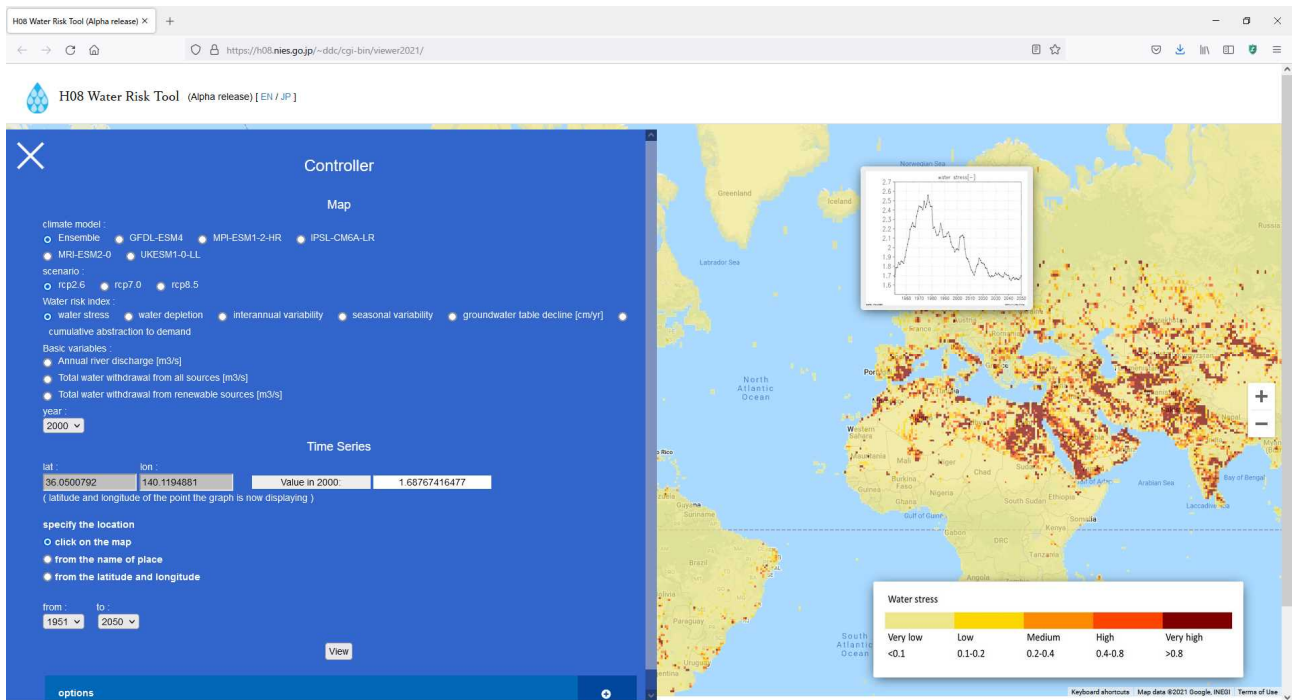
National Institute for Environmental Studies

16-2 Onogawa, Tsukuba-City, Ibaraki 305-8506, Japan

E-mail: hanasaki@nies.go.jp

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Climate change affects various fields of the world. Private companies procure raw materials and manufacture and sell their products all over the world, so they need to pay attention to the global climate change impact and take necessary actions (adaptation). The National Institute for Environmental Studies (NIES) has been developing a global hydrological model termed H08. This model enables detailed assessment of climate change impacts on the global water cycle and water resources. The purpose of this project was to develop a global water risk assessment tool that displays the results of the climate change impact assessment by H08 in an easy-to-understand manner so that companies can consider adaptation measures related to water cycle and water resources. Companies have recently taken a keen interest in the concept of "water risk". Therefore, in developing the tool, we have tried to make it useful enough for companies to assess their water risks. H08 calculates the movement of all water in the world from the time rainfall reaches the land to the time it flows out to the sea on a daily basis. The calculation is constrained by meteorological and geographic conditions, and incorporating human water use. Taking advantage of the feature of fully process-based simulation, we have succeeded in developing a new type of global water risk assessment tool that can display the background and factors of water risk assessment results. For example, it can show whether future water shortages are caused by decreasing rainfall or increasing water demand, which we believe will be useful for companies to consider specific countermeasures. During the development of the tool, we have additionally investigated important global water issues and advanced the modeling. They include a study that combined the H08 and the river dynamics model CaMa-Flood and investigated the role of dams in reducing flood-exposed population, a study that proposed a novel methodology to tune parameters of global hydrological models, and many others.



A screenshot of H08 Water Risk Tool

<Websites>

H08 Water Risk Tool: <https://h08.nies.go.jp/h08/viewer.html>

The H08 model: <https://h08.nies.go.jp/h08/index.html>