

## **Monitoring of the groundwater variation in urban area, by combining GRACE data and in-situ gravity measurements**

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Transformations of water resources between groundwater and surface water occurred in many cities depending on the development stage of urbanization. A project to evaluate ground water flow systems in and around the developing cities has started. In the project, precise gravity measurements with a relative gravimeter and an absolute gravimeter will be planned to monitor the groundwater changes, and Bangkok in Thailand and Jakarta in Indonesia have been selected as the research areas.

On the other hand, the monthly gravity field solutions derived from GRACE satellite are expected to reveal regional to global water circulations. The data of surface gravity measurements include not only local gravity changes but also regional to global scale gravity variations. We thus intend to use GRACE data for estimating and removing such long wavelength gravity signals.

Using the GRACE monthly gravity field solutions, we estimated regional scale mass variations of 4 major river basins, i.e., Salween, Chao Phraya, Irrawaddy and Mekong river basins in the Indo China Peninsula. Although it is difficult to detect the mass variations associated with each of the river basin of Salween, Chao Phraya and Irrawaddy, the results show that GRACE data detected at least the Mekong basin scale variation.

In this presentation we will briefly describe the outline of the project and the preliminary results of the GRACE data processing.