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GPS PWV Information System of the Decision Making Support System Prototype for Typhoon-Flood Disaster

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Under the frame of the Global Earth Observation System of Systems (GEOSS), we are developing a GPS Precipitable Water Vapor (PWV) Information System (IS) of the Decision Making Support System (DMSS) Prototype for Typhoon-Flood Disaster, funded by the Korea Research Council of Fundamental Science and Technology. The system is highly demanded because most, about 90%, of natural disasters happening in Korea have been caused by water, i.e. typhoon, flood, heavy rain and snow, etc. The DMSS prototype, developed mainly by the Korea Information Science and Technology Institute, consists of three sub-systems: observation, prediction, and assessment systems, which are based on the technology of data grid, computation grid, and access grid, respectively. With the augmented reality technology applied, the DMSS web portal that integrates the sub-systems will help the decision makers to access to the DMSS effectively.
The GPS PWV IS is being developed as a component of the DMSS prototype for Typhoon-Flood Disaster. PWV estimated from GPS signal delay could be useful to enhance the reliability in numerical weather prediction, nowcasting, climate change monitoring, and so on. As a leading group on GPS Meteorology, the Korea Astronomy and Space Science Institute (KASI) is taking a charge of the GPS PWV IS development. The system will provide the near-real time PWV information based on the nine permanent GPS stations of KASI. Each GPS station of KASI equipped digital weather sensor and provided their own data to the center of KASI in real time. They are expected to be used for operational weather forecasting, researches, instrument validation, etc. Here we introduce the current and future status of our GPS PWV IS, presenting its detailed structures such as Meta Data and Data Base structure, data processing strategy and procedure, flow of information, and application of augmented reality technology.