Summary of seeds and needs from WRRC, DPRI.

**“Assessing the Impact of Climate Change on Water Resources with Super-High Resolution Global Climate Model and Land Surface Model”**

Climate change caused by global warming may have a significant impact on the hydrological cycle in many parts of the world. Changes in the frequency and magnitude of flood and drought event and available water resources should be evaluated carefully with good representation of climate field and watershed condition to establish adaptation plan for such changes.

WRRC, DPRI can provide super-high resolution climate information through longterm collaboration with MRI, JMA. MRI-AGCM3.2S (20km) has highest resolution among CMIP5 and CMIP6 GCMs. This GCM can resolve typhoon and cyclone, and it has better representation of orographic effects and extreme rainfall.

WRRC, DPRI has been developing a precise land surface model SiBUC. This LSM has detailed representation of land surface condition including urban area, water body, and irrigated croplands. WRRC, DPRI has developed satellite-derived crop calendar (SACRA). This product was produced based on time series analysis of satellite observed vegetation index. It has realistic spatial and temporal variability of crop sawing and harvesting dates, and enables accurate estimation of irrigation water requirement.

Let’s analyze the hydrological cycle with super-high resolution (20km, sub-daily) climate information and precise land surface model and produce available water resources (water supply), irrigation water requirement (water demand), surface states (soil moisture, soil temperature, snow water equivalent), hydrograph (through SiBUC-RRI coupling), and evaluate flood inundation and drought risk (water scarcity) under future climate condition.

Expected collaboration works with potential partners will be

1. Evaluation and validation of already existing products by in-situ hydro-meteorological data.
2. After bias correction of climate data and calibration of land surface parameters, re-run hydrological model to produce better products.
3. Climate change impact assessment with new products and establish NAP (National Adaptation Plan).