

# Climate change impact studies in APCC

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APEC Climate Center (APCC) mainly provides seasonal climate forecasts and other climate information products and also carries out the climate change impact assessment on agriculture and water resources. APCC accumulates a variety of CMIP5 climate change scenario data to carry out climate change impact assessment of climate application field. We analyzed the characteristic of climate prediction and the uncertainty of prediction from collected CMIP5 GCM data. As a result of having analyzed a change characteristic of temperature and precipitation that are mainly used in climate application field, it showed that precipitation will increase as the years go on to the end of 21<sup>st</sup> century and consistency of model prediction is high. In the case of the Korean Peninsula, precipitation increase 9.5% under RCP 4.5 scenario and increase 13.6% under RCP 8.5 scenario in the 2090s and temperature increase 2.5°C under RCP 4.5 scenario and increase 4.8°C under RCP 8.5 scenario in the same period.

In the field of water resources, we carried out the climate change impact assessment on agricultural reservoirs using 10 GCMs of CMIP5 and KMA RCM which included precipitation, maximum temperature, minimum temperature, wind speed, relative humidity and solar radiation information. We used non-parametric quantile mapping methods for the bias correction of climate model data. Water demand from irrigation crop land and inflow of 2011-2040 years in the representative basin (Jiso) showed increase in comparison with 1976-2005 years but there are uncertainties in prediction and reservoir storage rate showed almost not change.

In the field of agriculture, we carried out the climate change impact assessment on rice yield in the Asia-Pacific region. We used 32 GCMs of CMIP5 and predicted the change of rice yield for 20 major rice production countries under the RCP 2.6, 4.5, 6.0 and 8.5 scenarios. As a result, rice yield in Russia and North Korea which located in the high latitude largely increase when we considered adaptation measures (planting dates, varieties). However rice yield in Cambodia suddenly decrease by temperature increase more than 3°C under the RCP 8.5 scenario.