

# On the sustainability and effects of irrigation for global implementation of Bio-Energy with Carbon Capture and Storage (BECCS)

\*Naota Hanasaki<sup>1</sup>, Qian Zhou<sup>1</sup>

1. NIES National Institute of Environmental Studies

To achieve the 2 degrees Celsius target shown in the Paris Agreement, Bio-Energy with Carbon Capture and Storage (BECCS) is considered an implementable technology. To produce a massive amount of bio-energy, a vast area of crop land is needed. The land requirement can be suppressed by enhancing crop production per area by applying irrigation. Irrigation for bio-energy would exacerbate water stress, however, since water resources is already scarce in many parts of the world. Here we investigated the spatial distribution of bio-energy cropland which secures sustainable irrigation by using the global hydrological model H08. The simulation results indicated that the regions with potential expandability in irrigated cropland are concentrated in tropical and mid to high latitudes. Since these regions are already humid for many cases, limited effects of irrigation were expected.

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