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Transnational analysis on the impact of climate change scenarios in the Blue Nile River basin

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The Blue Nile River is an important shared resource of Ethiopia, Sudan and Egypt, which is the major contributor of water to the main Nile River. To drive economic development, the Ethiopian government plans to utilize Nile water resources for both irrigation and hydropower. There is great uncertainty about the impacts of climate change in the basin and there have been few systematic studies of the possible implications for water resource development. Major natural hazards such as flood, drought, sand storms and other calamities that inflict loss of lives and costly damage to property are always a threat in the Nile River Basin, and covering major other areas in Sudan and other adjoining areas. Situated in the tropics, its climate ranges from arid in the north to tropical wet-and-dry in the far southwest. Moreover, the Nile Basin areas inevitably suffer from climate-related calamities similar to those experienced recently. With continued development in the lowlands and urban areas, and growing populations, it is expected that damage to infrastructure and human losses would persist and even rise unless appropriate measures are immediately implemented by concerned agencies. One of the new and emerging missions of the Kush Institute for Space Technology (KIST) at Future University is to undertake scientific research and development, using cutting edge of space science and technologies to recommend innovative information services in local and international on environmental and weather monitoring for disaster prevention, mitigation efforts, and response management. Through the use of space science and technologies and in partnership with other stakeholders, the KIST is taking a multi-disciplinary approach in developing systems, tools, and other technologies that could be operationalized such as the EUMETSAT technologies to establish a ground reception station at FU premises. Such EUMETSAT reception station will be a common facility for building wealth of timely access of satellite data and information of climate and weather satellites and other sources for services to the community for environmental and weather monitoring towards sustainable development and quality of life. This paper presents some initial research conducted to determine the impact of climate change scenarios using CMIP5 on the performance of existing and planned irrigation and hydropower schemes in Ethiopia and the implications for flows into Sudan. Other potential applications using satellite remote sensing and geographic information based approaches in collaboration with local and international partners will be presented.

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