World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:11, No:03, 2017

# Impact and Risk Assessment of Climate Change on Water Quality: A Study in the Errer River Basin, Taiwan

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**Abstract :** Taiwan, a climatically challenged island, has always been keen on the issue of water resource management due to its limitations in water storage. Since water resource management has been the focal point of many adaptations to climate change, there has been a lack of attention on another issue, water quality. This study chooses the Errer River Basin as the experimental focus for water quality in Taiwan. With the Errer River Basin being one of the most polluted rivers in Taiwan, this study observes the effects of climate change on this river over a period of time. Taiwan is also targeted by multiple typhoons every year, the heavy rainfall and strong winds create problems of pollution being carried to different river segments, including into the ocean. This study aims to create an impact and risk assessment on Errer River Basin, to show the connection from climate change to potential extreme events, which in turn could influence water quality and ultimately human health. Using dynamic downscaling, this study narrows the information from a global scale to a resolution of 1 km x 1 km. Then, through interpolation, the resolution is further narrowed into a resolution of 200m x 200m, to analyze the past, present, and future of extreme events. According to different climate change scenarios, this study designs an assessment index on the vulnerability of the Errer River Basin. Through this index, Errer River inhabitants can access advice on adaptations to climate change and act accordingly.

**Keywords :** climate change, adaptation, water quality, risk assessment
**Conference Title :** ICCCH 2017 : International Conference on Climate Change and Humanity
**Conference Location :** Osaka, Japan
**Conference Dates :** March 30-31, 2017