

Hydrodynamics of Selected Ethiopian Rift Lakes

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Abstract : The Main Ethiopian Rift Valley lakes suffer from water level fluctuations due to several natural and anthropogenic factors. Lakes located at terminal positions are highly affected by the fluctuations. These fluctuations are disturbing the stability of ecosystems, putting very serious impacts on the lives of many animals and plants around the lakes. Hence, studying the hydrodynamics of the lakes was found to be very essential. The main purpose of this study is to find the most significant factors that contribute to the water level fluctuations and also to quantify the fluctuations so as to identify lakes that need special attention. The research method included correlations, least squares regressions, multi-temporal satellite image analysis and land use change assessment. The results of the study revealed that much of the fluctuations, specially, in Central Ethiopian Rift are caused by human activities. Lakes Abiyata, Chamo, Ziway and Langano are declining while Abaya and Hawassa are rising. Among the studied lakes, Abiyata is drastically reduced in size (about 28% of its area in 1986) due to both human activities (most dominant ones) and natural factors. The other seriously affected lake is Chamo with about 11% reduction in its area between 1986 and 2010. Lake Abaya was found to be relatively stable during this period (showed only a 0.8% increase in its area). Concerned bodies should pay special attention to and take appropriate measures on lakes Abiyata, Chamo and Hawassa.

Keywords : correlations, hydrodynamics, lake level fluctuation, landsat satellite images

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020