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Impact of Climate Change on the Water Quality of Lake Khurpatal, Kumaun Himalaya, India

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Abstract—*Lake Khurpatal is one of the most beautiful lakes of Kumaun Himalaya and lies at an altitude of 1610m above sea level and about 12 km far from Nainital. The lake is multipurpose in use. Apart from being the source of drinking water the lake is used for fishing, irrigation and livestock as well. It is also a good repository of biodiversity; in the last few years the water quality of the lake has degraded significantly due to various anthropogenic activities. The present study was carried out in Lake Khurpatal, Kumaun Himalaya during 2016-18 with the objective to comprehend the impact of climate change on the water quality of the lake. The standard equipment and methods were used to analyse the water quality of the lake. The selected parameters of water quality were water temperature, water transparency, pH, concentration of dissolve oxygen and CO_2, concentration of phosphate-phosphorous, nitrate-nitrogen, nitrite-nitrogen, ammonia-nitrogen, fluoride, copper, zinc etc. The result of the study suggested that pH, secchi disc transparency and concentration of dissolved oxygen did not change remarkably from 1978 to 2018. The concentration of NO_2-N was reduced significantly from 476ug/l in 1978 to 14.2ug/l in 2018. The concentration of NH_3-N did not show much variation in last three decades. The concentration of NO_3-N has increased approximately 50% from 1981 to 2018. The concentration of PO_4 –P has also increased consistently from 1978-2018. The change in the water quality of lake has been discussed in relation to human activities in the catchment and climate change.*

Keywords*: water quality, climate change, Khurpatal Lake, physic-chemical characteristics.*