World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:18, No:06, 2024

A Geospatial Analysis of Diminishing Himalayan Ice Under Influence of Anthropomorphism: A Case Study of Himalayan Ice From 1990 to 2020 in Pakistan

Authors : Ali Akber Khan

Abstract : In the 21st century, freshwater resources, especially ice cover, would have grave significance as ice carries most of the total freshwater resources in the world. The Himalayas in Pakistan is one of the biggest sources of fresh water for Pakistan. These regions of the Himalayas and neighboring mountains include Swat, Chitral, Upper Dir, Lower Dir, Mardan, Swabi, Haripur, Abbottabad, Muzaffarabad, Neelum, and Mansehra in Pakistan. The study examines ice resources in the years 1990 to 2020 and shows a decrease in snow-shrouded regions, reducing from 72,187.54 sq. km in 1990 to 66,061.17 sq. km in 2020. This indicates a total ice cover loss of 6,126.37 sq. km area in 40 years due to environmental variabilities and climatic changes. From 2010 to 2020 loss of ice-covered area was 3479.24 sq. km. The mean maximum temperature from 2000 to 2010 in December, January and February is 7.4 °C, 4.2 °Cand 7.8 °C respectively, while from 2011 to 2022 mean maximum temperature registered in December, January and February is 6.9°C, 4.1°C and 6.6 °C respectively. Investigation of anthropogenic elements in the region shows population rise. From investigation, 22 cities and towns of the Himalayas region and neighboring mountains showed the highest rise in population, 329.46%, and a minimum rise of 14.39%, while 12 towns have risen in population by more than 100% from 1990 to 2023. This examination adds to a point-by-point comprehension of the connections among normal variables, population dynamics, snow cover variation, evidence strategies, and multipurpose measures for maintained and strong improvement in the districts.

Keywords : snow, ice, Himalayas, Pakistan, climate change, population
Conference Title : ICEB 2024 : International Conference on Ecosystems and Biodiversity
Conference Location : Paris, France
Conference Dates : June 20-21, 2024