



A Review paper on Impact of climate change on water resources and water quality in Meerut City

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Abstract: We have observed that many of water diseases are increasing in our society. Soap water is the main nutrition and main part of a living thing so we have observed there are many diseases also increasing from our daily life from the water so we took sample of water from different areas of Meerut. Water is a central resource supporting human activities and ecosystems. The hydrologic cycle, a fundamental component of climate, is likely to be altered in important ways by climate change. Significant changes in average temperature, precipitation, and soil moisture caused by climate change are very likely to also affect demand in most sectors, especially in the agriculture, forestry, and municipal sectors. Changes are also likely in the timing, intensity, and duration of both floods and droughts, with related changes in water quality. Although a full understanding of, or appreciation for, the magnitude and consequences of climate change is yet to emerge, and therefore there is no consensus on how to best adapt or mitigate its impacts at a local, regional, national or global level. Due to increase in urbanization and industrialization in India, both surface and ground water resources are being contaminated day by day. The decline in quantity and deterioration of water quality are directly attributable to the increasing demands of water by various sectors of water uses, indiscriminate disposal of wastes from different sources including urban settlements, industries and agricultural activities. In the present paper, the status of water quality of surface water resources and groundwater resources in India has been discussed. Further probable effect of climate change on water quality parameters and their consequences have also been discussed. Suggestions have also been given to preserve the water quality of water resources for different designated uses.

Index Terms – Climate change; Water resources; Land use; Management

INTRODUCTION

Water is natural solvent and life line for survival of each organism on earth. It is essential natural resources, without it no organism can survive. There is about 75% water in human body. Approximately 97.2%, of water on earth is salty and only 2.8% is present as fresh water from which about 20% constitutes ground water. Due to the urbanization and industrial development stress on the environment is well recognized and fresh water resources all over the world are threatened not only by over exploitation and poor management but also by ecological degradation. Some impurities are added by anthropogenic activities which include industrial and commercial solvent, metal and acid salts, sediments, pesticides, herbicides etc. These impurities give bad odour, colour and cause hardness, corrosiveness, staining or frothing. They may damage growing plants and transmit disease, which are harmful to living beings.

LITERATURE REVIEWS

Before this study too many researchers have been done. Test results for water quality from various industries are durned into small rivers without any treatment which pollute the major rivers and groundwater sources. This paper is consisting of literature review which provides different idea to use to improve the quality of water, now we mention the different paper and the result we found.

3.1 M.A. Mimikou*, E. Baltas, E. Varanou, K. Pantazis(2000) -

. The aim of this paper is to assess the impacts of climate change on water resources (surface runoff) and on water quality. Two GCM-based climate change scenarios are considered: transient (HadCM2) and equilibrium (UKHI). A conceptual, physically based hydrological model (WBUDG) is applied on a catchment in central Greece, simulating the effect of the two climate scenarios on average monthly runoff. A newly developed in the stream model (R-Qual) is applied in order to simulate water quality downstream of a point source under current and climatically changed conditions. Simulated parameters include monthly concentrations of BOD, DO and NH⁺₄.

3.2 NIGEL W. ARNELL (1996) -

This paper explores the potential implications of climate change for the use and management of water resources in Britain. It is based on a review of simulations of changes in river flows, groundwater recharge and river water quality. These simulations imply, under feasible climate change scenarios, that annual, winter and summer runoff will decrease in southern Britain, groundwater recharge will be reduced and that water quality – as characterised by nitrate concentrations and dissolved oxygen contents – will deteriorate. In northern Britain, river flows are likely to increase throughout the year, particularly in winter.

3.3 Adams, R.M and D. E. Peck. (2008) -

This article shows that Climate change will affect water resources through its impact on the quantity, variability, timing, form, and intensity of precipitation. This paper provides an overview of the projected physical and economic effects of climate change on water resources in North America (with a focus on water shortages), and a brief discussion of potential means to mitigate adverse consequences. More detailed information on this complex topic may be found in Adams and Peck (forthcoming) and in the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4).

3.4 Peter S. Murdoch, Jill S. Baron, and Timothy L. Miller (2000)-

Data from long-term ecosystem monitoring and research stations in North America and results of simulations made with interpretive models indicate that changes in climate (precipitation and temperature) can have a significant effect on the quality of surface waters. Changes in water quality during storms, snowmelt, and periods of elevated air temperature or drought can cause conditions that exceed thresholds of ecosystem tolerance and, thus, lead to water-quality degradation.

3.5 P. G. WHITEHEAD , R. L. WILBY , R. W. BATTARBEE , M. KERNAN & A. J. WADE (2009) -

This paper provides a review of water quality seen through the lens of anticipated impacts in the UK. The material is organised as follows. First, we review potential impacts on surface water bodies, such as rivers and lakes, in terms of their hydrological regimes, hydro-morphology, nutrient status, mobilisation of toxic substances and acidification potential. Second, we review long-term changes in the water quality for specific aspects of freshwater environments, such as estuaries and urban areas.

3.6 Abbaspour, K. C., M. Faramarzi, S. S. Ghasemi, and H. Yang (2009) -

As water resources become further stressed due to increasing levels of societal demand, understanding the effect of climate change on various components of the water cycle is of strategic importance in management of this essential resource. In this study, we used a hydrologic model of Iran to study the impact of future climate on the country's water resources. The hydrologic model was created using the soil and water Assessment Tool (SWAT) model and calibrated for the period from 1980 to 2002 using daily river discharges.

3.7 Yoichi Fujihara , Kenji Tanaka , Tsugihiko Watanabe 7, Takanori Nagano , Toshiharu Kojiri (2008) -

We explored the potential impacts of climate change on the hydrology and water resources of the Seyhan River Basin in Turkey. A dynamical downscaling method, referred to as the pseudo global warming method (PGWM), was used to connect the outputs of general circulation models (GCMs) and river basin hydrologic models. The GCMs used in this study were MRI-CGCM2 and CCSR/NIES/FRCGC-MIROC under the SRES A2 scenario, and the downscaled data covered two 10-year time slices corresponding to the present (1990s) and future (2070s).

3.8 Abdul Hameed M, Jawad Alobaidy, Bahram K, Maulood, Abass J. Kadhem(2010) -

In this paper, thirteen parameters were considered. On the basis of these data, raw and treated drinking water from Tigris River within Baghdad were analyzed. Cluster analysis conducted on the WQI data in this area was applied to detect the fluctuation of water quality. In this study, WQI showed that Tigris water never reached "Excellent" levels nor fallen to "Unsuitable" condition, except in occasional untreated water samples. Effects of various sources of pollution were evident and the needs for intensive studies on WQI became evident.

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