

TIME SERIES DROUGHT HAZARD MAPPING AND WATER QUALITY MODELING AT COMMUNITY LEVEL IN PALAKKAD DISTRICT USING GEOINFORMATICS

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Abstract: Drought is one of the major environmental disasters, which have been occurring in almost all climatic zones and damage to the environment and economies of several countries has been extensive and death toll of livestock unprecedented. Drought damages are more pronounced or prominent in areas where there is a direct threat to livelihoods. The advanced technologies like remote sensing and geographical information system are very essential to identify the drought condition. Groundwater is regarded to be the most valuable natural resources. The distribution of groundwater is not uniform through the area. Remote Sensing (RS) and Geographical Information System (GIS) techniques have been used to observe and more systematic analyze various groundwater resources and its demarcation. Groundwater resources are contaminated due to industrial and domestic pollution, depletion induced quality deterioration, over pumping etc. The analysis of physico chemical parameters will help to find the overall quality of area. By integration of different physico-chemical parameters into GIS base and comparison according to the defined standards of drinking water quality would help to generate Water Quality Index map of an area which is very useful in determining the groundwater quality status of the area. The present work identified the drought prone area and Water Quality Index map of Palakkad district with the help of field data, remote sensing and GIS data. The result is useful for the drought management and issues associated with water quality and ground water depletion.

Keywords: Drought, Geographic Information System, Remote Sensing, Water Quality Index.

1. INTRODUCTION

Water causes controversial problems in many parts of the world. Too much of water causes flood and too little causes drought, too poor causes famine, poor quality causes health hazards and poor management creates competition and conflicts (Vijith,2007). Out of the weather related disasters, drought is the most complex one and both the causes and multifaceted are not well understood. Drought is a dangerous natural hazard which is normal to all climate regions (World Meteorological Organization, 1975). It should not be viewed as merely a physical phenomenon rather; drought is the result of interaction between a natural event and demand placed on water supply by human use. Drought as a natural disaster is peculiar due to its slowness and lengthy duration. The severity of the drought depends upon its duration, the degree of moisture deficiency, and the size of the affected area (Karamouz,2015). Drought is a hazard that requires many months to emerge and that may persist for many months or years thereafter. This type of hazard is known as a “creeping hazard” (Abdel,2014) and results in serious economic, social, and environmental impacts.