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Impact of climate change on hydrological cycle: A case study from semi-arid region of southern India

A. C. Narayana
University of Hyderabad,India

Abstract

The arid and semi-arid regions are expected to experience severe stress of climate variability. A large population of the world will be under severe stress because of population growth and inadequate water resources. The vulnerabilities due to climate change are expected to be larger in arid and semi-arid regions.

The climate change will have a direct effect on hydrological cycle and biosphere. The poleward vapour transport and evaporation increase proportionally to the lower tropospheric vapour. These changes will have direct bearing on the ground water tables as they are primarily determined by changes in precipitation, run-off and evapo-transpiration.

In the present paper, we discuss the climate change in terms of temperature and rainfall variations and its effect on hydrological cycle vis-à-vis water resource and its cycling in a semi-arid region of Andhra Pradesh, India. The rainfall and ground water level variations for the last 20 years are analyzed. The study reveals uneven spatial distribution and temporal decrease of rainfall. Further the effect of ground water depletion on agriculture and socio-economic aspects are presented.