A Review

An Asian Journal of Soil Science
Vol. 6 No. 2 (December, 2011) : 247-250
Received : June, 2011; Accepted : September, 2011

Impact of climate change on ground water

UMEHSA BARIKARA

SUMMARY

Groundwater is an important resource for livelihoods and food security of billions of people, especially in developing countries of Asia. Although trends on abstraction and use in each country are not available, globally groundwater is estimated to provide approximately 50 per cent of current potable water supplies, 40 per cent of the water demand of self-supplied industry and 20 per cent of water use in irrigation. In Asia and the Pacific, about 32 per cent of the population uses groundwater as a drinking water source. Global climate change is expected to have negative effects on water resources as a result of increased variability in extreme events such as droughts and floods. Compared with surface water resources, there has been less research into the impacts of climate change on groundwater both in terms of the effects on quantity and quality and also linkages within the hydrological cycle. Climate change impacts may add to existing pressure on groundwater resources by (i) impeding recharge capacities in some areas; and (ii) being called on to fill eventual gaps in surface water availability due to increased variability of precipitation. Groundwater contamination is also expected in low elevation coastal zones due to sea level rise. In some vulnerable areas, such impacts on groundwater resources may render the only available freshwater reserve unavailable or unsuitable for use in the near future. This paper presents an over view of possible climate change impacts on groundwater using evidence from previous presented papers.

Barikara, Umesha (2011). Impact of climate change on ground water. *Asian J. Soil Sci.*, **6**(2): 247-250.

KEY WORDS : Ground water, Climate change, Recharge, Storage

Groundwater is an important natural resource. Worldwide, more than 2 billion people depend on groundwater for their daily supply (Kemper, 2004). A large proportion of the world's agriculture and irrigation is dependent on groundwater, as are a large number of industries. Whether groundwater or surface water is exploited for water supply is largely dependent on the location of aquifers relative to the point of demand. As a result of the growth in the global population, the demand for clean water is rising and the pressures on surface water and groundwater resources is increasing, particularly in semiarid and arid regions of the world where useable water supplies are scarce. In terms of groundwater, the demand has been poorly managed due to low investment in investigation during the 20th century, at a time when its intensive use for agricultural irrigated crop production has placed groundwater resources under stress. To better manage groundwater resources, the vulnerability of groundwater resources to drought, over-abstraction and quality deterioration must be assessed both now and in the context of climate change, and the natural functions of groundwater for river runoff and ecosystems safeguarded (Struckmeier *et al*., 2004).

The global climate is changing with instrumental records showing that during the last century the Earth's temperature rose by about 0.6^0C (IPCC, 2001). Climate change affects groundwater recharge rates (*i.e.*, the renewable groundwater resources) and depths of groundwater tables. However, knowledge of current recharge and levels in both developed and developing countries is poor; and there has been very little research on the future impact of climate change on groundwater, or groundwater–surface water interactions. At high latitudes, thawing of permafrost causes changes in both the level and quality of groundwater, due to increased coupling with surface waters. As many groundwaters both change into and are recharged from surface water, impacts of surface water flow regimes are expected to affect groundwater. Increased precipitation variability may decrease groundwater recharge in humid areas because more frequent heavy precipitation events may result in the infiltration capacity of the soil being exceeded more

Address of the corresponding author :
UMESHA BARIKARA, Department of Soil and Water Conservation Engineering, Central Research Institute for Dryland Agriculture, Santoshnagar, Saidabad, HYDERABAD (A.P.) INDIA
Email : umeshabarikar@gmail.com