Hydrol Current Res 2014, 5:4
http://dx.doi.org/10.4172/2157-7587.S1.015

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference on
Hydrology & Meteorology
September 15-16, 2014 Hyderabad International Convention Centre, India

Impact of precipitation and large scale tree planting on river flow in the Kor river watershed, southwest of Iran

Majid Soufi[1], Saeed Hasanshahi[2], Mohammad Reza Kowsari[3] and Behrooz Abolpoor[4]
[1]Fars Research Center for Agriculture and Natural Resources, Iran
[2]Arsanjan Islamic Azad University, Iran
[3]Yazd University, Iran
[4]Fars Research Center for Agriculture and Natural Resources, Iran

Application of tree planting and declining precipitation due to climate change is a paradox for watershed managers in arid regions in the world. This research aims to determine whether precipitation and/or large scale tree planting is the dominant cause of river flow reduction in an arid watershed in the southwest of Iran. A watershed with enough rain gauge and hydrometry station was selected. Data for precipitation, river flow, temperature and evapo-transpiration were collected for 40 years. Maps for land uses including tree planting, curve number and soil hydrologic groups were produced. Softwares such as Arc GIS, Golbal Mapper, and Google Earth were used to produce maps. Eviews software was used for modeling and Man-kendall statistical method was used to show the trend of data. River flow was compared before and after tree planting. The results revealed that water production reduced after planting tree in an area about 80 sq.km. Comparison of long term data (40 years) showed that precipitation had a negative trend but comparison of similar rainfall events before and after tree planting indicated that tree planting was the main cause. Tree planting had more impact on the average flow than low and maximum. River flow reduced between 25-80% monthly and 41.2% annually. Weighted curve number of the watershed reduced after tree planting in an area about 80 sq.km but the difference was not significant statistically. The results indicated that watershed managers should be careful about the impacts of watershed programs of predicted water flow for downstream and climate change.

Biography

Majid Soufi has completed his PhD at the age of 29 years from New South Wales University, Sydney in 1997. He is the Director of Fars Research Center for Agriculture and Natural Resources in Shiraz, Iran. He has published more than 32 papers in reputed journals. He has more than 20 years experience on gully erosion and watershed management in arid regions.

Soufi@farsagres.ir

Precision and conservation agriculture through weather informatics

V Rakesh and P Goswami
CSIR Fourth Paradigm Institute, India

A major challenge in designing and implementing best practices is combining immediate gains for the end users with long term societal benefits; further, such practices must also be sustainable, and acceptable to the end users. In case of agriculture, best practices therefore require technologies and processes that are beneficial to farmers, but without any adverse effects on the environment. We present a novel strategy based on forecast-based advisories that combines the above requirements. While a serious bottleneck in application of forecast-based advisory is low reliability, a methodology, combining optimization of forecast model, assimilation of data and design of forecast advisories, is presented so that the forecasts are risk-free and yet useful in spite of their errors. The short-term gains for the farmers come from reducing costs of irrigation and washout with the help of advisory for when NOT to irrigate because rain is predicted (risk-free because wrong forecast only delays irrigation within tolerance). The long term environmental benefits result from enhanced water and energy efficiency, and reduction of environmental loads of pesticides and fertilizer. The methodology has been applied over Karnataka (a state in south-west India with nearly 56% of the workforce engaged in agriculture). Here we present validation, against observations at comparable resolution from the rain gauge network established by the state, for the four monsoon seasons (summer and winter) during 2011-2013. Estimates show that the economic benefits to the farmers are significant. The methodology is quite generic and can be implemented in any part of the world.

Biography

V Rakesh is working as a scientist in the field of atmospheric modeling and data assimilation. He is currently working on verification of mesoscale model forecasts and data assimilation. His Doctoral research titled “Impact of satellite data in regional model simulations over India” includes the studies of impact of satellite derived land surface data, temperature and moisture profiles, wind speed, water vapor etc. on simulated regional weather and climate over India under different synoptic conditions. He is offering courses to PhD students as part of CSIR Academy of Scientific and Innovative Research program.

maheswaran27@yahoo.co.in