

OPERATIONAL CLIMATE SERVICES: A DIALOGUE ON PRACTICAL ACTION

Assessment of Agro-climatic Indices over North-east of Iran under Climate Change Scenarios

Iman Babaeian, Mansoureh Kuhi
ibabaeian@yahoo.com

*Climate Change Division, [Climatological Research Institute](#) (National Centre for Climatology),
Mashad, I.R. of Iran, P.O. Box: 91735-676, Tel: 0511-3822306-8, Fax: 0511-3822311*

Abstract:

Study of the climate change impacts on agricultural products and agro-climatic variables can improve the management strategies regarding to the agricultural demands in future decades. In this research impacts of climate change on agro-climatic variables including precipitation, temperature, Length of dry season, growing period and potential evapotranspiration over selected stations of the Northeast of Iran under IPCC A1B, A2 and B1 emission scenarios has been studied using NCAR-PCM and GFDL-CM2.1 data in the periods of 2010-2039, 2040-2069 and 2070-2099. Uncertainty of each models are investigated. Statistical downscaling has been done using two different methods of multiple regressions for monthly to yearly time scales and stochastic weather generator of LARS-WG 5 for producing daily data. We used daily data for calculating daily potential evapotranspiration by using Hargrives-Samani method.

Results showed that mean amount of growing period has been increased by 18.6 days in the period of 2070-2099 over all stations. Growing period is increased both in 2010-2039 and 2040-2069 in Mashad and Sabzevar, but it has been decreased in Torbat-e- Heydariyeh in the same period. Precipitation change has no significant change in future decades in the stations under study, but mean annual precipitation of Mashad, Sabzevar and Torbat-e- Heydariyeh will be decreased by 5.0, 2.8 and 2.6 mm per year in the period of 2070-2099. Results also indicated that mean amount of evapotranspiration in Mashad, Sabzevar and Torbat-e- Heydariyeh will be decreased by 13.5%, 16% and 14% in 2010-2039, 2040-2069 and 2070-2099, respectively. Results of this research can be used for water resources management and crop cultivation policies over Northeast of Iran in future decades.

Key words: Climate change, Agroclimate index, growing period, evapotranspiration, emission scenarios.