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Study of Climate Change Process on Hyrcanian Forests Using Dendroclimatology Indicators (Case Study of Guilan Province)

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Abstract : Climate change and global warming are very important issues today. The process of climate change, especially changes in temperature and precipitation, is the most important issue in the environmental sciences. Climate change means changing the averages in the long run. Iran is located in arid and semi-arid regions due to its proximity to the equator and its location in the subtropical high pressure zone. In this respect, the Hyrcanian forest is a green necklace between the Caspian Sea and the south of the Alborz mountain range. In the forty-third session of UNESCO, it was registered as the second natural heritage of Iran. Beech is one of the most important tree species and the most industrial species of Hyrcanian forests. In this research, using dendroclimatology, the width of the tree ring, and climatic data of temperature and precipitation from Shanderman meteorological station located in the study area, And non-parametric Mann-Kendall statistical method to investigate the trend of climate change over a time series of 202 years of growth ringsAnd Pearson statistical method was used to correlate the growth of "ring" growth rings of beech trees with climatic variables in the region. The results obtained from the time series of beech growth rings showed that the changes in beech growth rings had a downward and negative trend and were significant at the level of 5% and climate change occurred. The average minimum, medium, and maximum temperatures and evaporation in the growing season had an increasing trend, and the annual precipitation had a decreasing trend. Using Pearson method during fitting the correlation of diameter of growth rings with temperature, for the average in July, August, and September, the correlation is negative, and the average temperature in July, August, and September is negative, and for the average The average maximum temperature in February was correlation-positive and at the level of 95% was significant, and with precipitation, in June the correlation was at the level of 95% positive and significant.

Keywords : climate change, dendroclimatology, hyrcanian forest, beech
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