ABSTRACT

Climate change is one of the biggest issues of the world that is related with horrific consequences. The detection of root causes of this global phenomenon and prediction of its magnitude in the future remain a great challenge for the world. Methods of dendrochronology are helpful for the investigation of past climatic changes over a certain region and also in forecasting the possible future environmental disturbances. The present study deals with the dendroclimatic analysis of five selected conifer species from Upper Dir Kohistan Forest Division, KP. A total of 146 tree increment cores were extracted from dominant and healthy trees located in Kumrat Valley. After successful crossdating, tree-ring width chronologies were developed, through ARSTAN program, for the selected species which spanned 1793-2022 AD (*Taxus baccata*), 1882-2022 AD (*Cedrus deodara*), 1765-2022 AD (*Pinus wallichiana*), 1658-2022 AD (*Picea smithiana*) and 1850-2022 AD (*Abies pindrow*). Climatic variations were evident from the chronologies as indicated by statistical descriptive analysis shown by program COFECHA. The climate-growth relationship was developed against monthly precipitation and temperature data of the study site using multiple regression model through package dplR in R studio software. The response indicated significant positive results against precipitation of the area for all species except *P. wallichiana* which exhibited inverse relation with precipitation. Temperature also showed great influence upon tree growth of the study site. The growth of *P. wallichiana* was positively affected by temperature, while in other species a variable relationship with temperature was seen. The developed chronologies contribute to the paleoclimatic record of the region which would serve to understand the climatic trends of the past and to predict the future environmental changes. The developed climate-growth response would provide baseline information to understand the health of forest ecosystem and the climatic fluctuations over the study region, through reconstruction of the past climate.