

## Study of Evapotranspiration for Pune District

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**Abstract :** The exact amount of water used by various crops in different climatic conditions is necessary to step for design, planning, and management of irrigation schemes, water resources, scheduling of irrigation systems. Evaporation and transpiration are combinable called as evapotranspiration. Water loss from trees during photosynthesis is called as transpiration and when water gets converted into gaseous state is called evaporation. For calculation of correct evapotranspiration, we have to choose the method in such way that is should be suitable and require minimum climatic data also it should be applicable for wide range of climatic conditions. In hydrology, there are multiple correlations and regression is generally used to develop relationships between three or more hydrological variables by knowing the dependence between them. This research work includes the study of various methods for calculation of evapotranspiration and selects reasonable and suitable one Pune region (Maharashtra state). As field methods are very costly, time-consuming and not give appropriate results if the suitable climate is not maintained. Observation recorded at Pune metrological stations are used to calculate evapotranspiration with the help of Radiation Method (RAD), Modified Penman Method (MPM), Thornthwaite Method (THW), Blaney-Criddle (BCL), Christiansen Equation (CNM), Hargreaves Method (HGM), from which Hargreaves and Thornthwaite are temperature based methods. Performance of all these methods are compared with Modified Penman method and method which showing less variation with standard Modified Penman method (MPM) is selected as the suitable one. Evapotranspiration values are estimated on a monthly basis. Comparative analysis in this research used for selection for raw data-dependent methods in case of missing data.

**Keywords :** Blaney-Criddle, Christiansen equation evapotranspiration, Hargreaves method, precipitations, Penman method, water use efficiency

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