

CLIMATIC WATER BALANCES OF KERALA

Several workers attempted the water balance concept for different climatological studies in different regions. Subrahmanyam (1956), Subrahmanyam and Subramanyam (1964), Krishnan and Thanvi (1969) and Prasada Rao (1979) studied the climatic types, droughts, water budget, agricultural droughts and agroclimatic indices using the water balances for different regions in India. However, detailed studies on the climatic water balances of Kerala have not been carried out. Therefore, an attempt is made to give the moisture status of the individual stations in the state.

The climatological data such as mean monthly rainfall, mean monthly maximum and minimum temperatures were collected for five I. M. D. stations viz., Trivandrum, Alleppey, Cochin, Palghat and Kozhikode of Kerala. The potential evapotranspiration (P. E.) is computed using Thornthwaite (1948) formula.

By using computed monthly P. E. and precipitation, the climatic mean monthly water balance parameters such as actual evapotranspiration (A. E.), water deficit (W. D.) and water surplus (W. S.) are worked out. Thornthwaite's (1955) book keeping procedure is used for computing the water balance parameters.

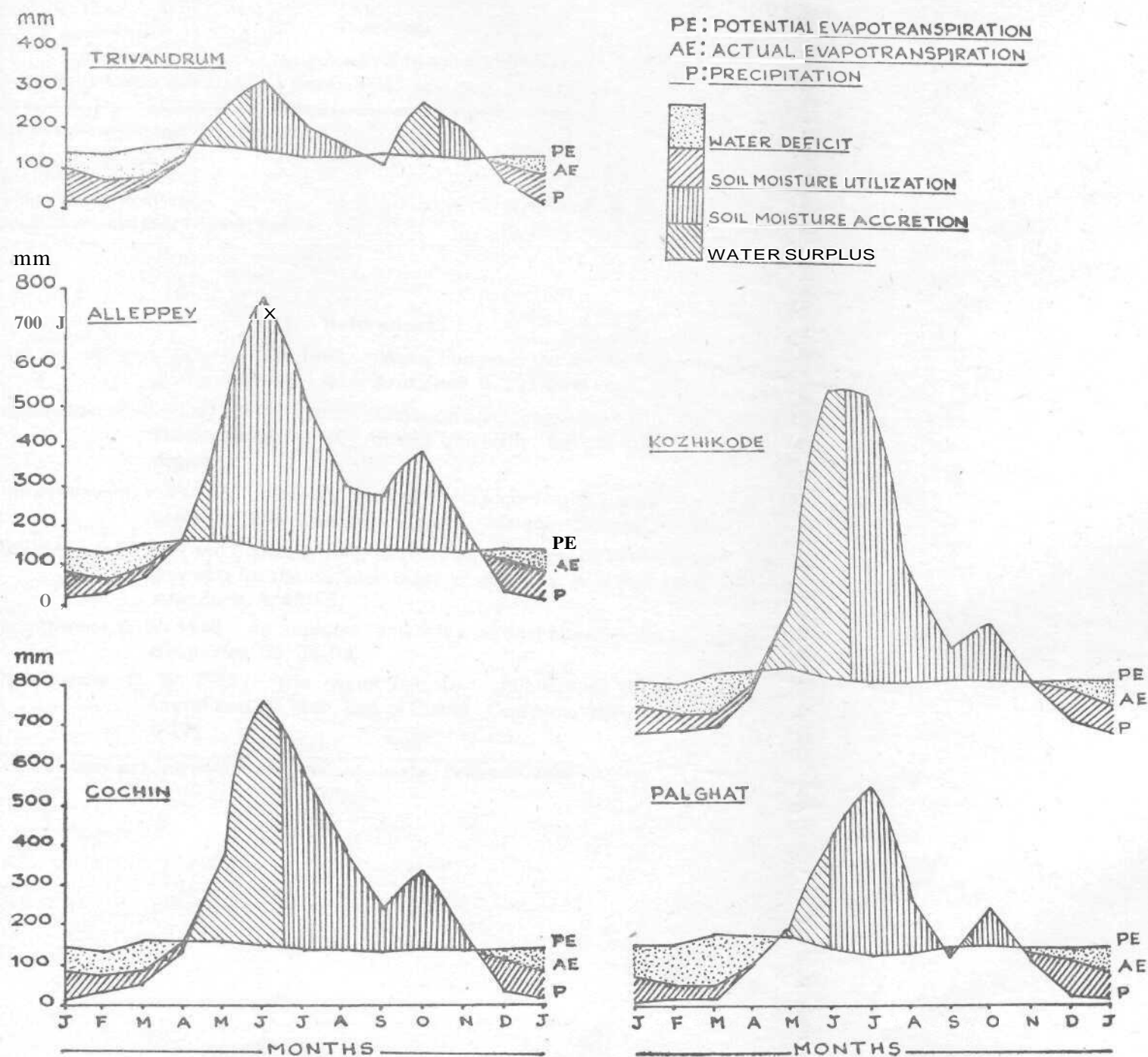
Fig. 1 shows the climatic water balance diagrams of Kerala. It is seen that the variation in potential evapotranspiration is less throughout the year except in summer months March, April and May due to the uniform distribution of temperatures in the state. The evapotranspiration is minimum in December and maximum in May. The annual potential evapotranspiration shows that it is maximum (1744 mm) at Palghat and minimum (1699 mm) at Cochin. Although the amount of precipitation is less than the potential evapotranspiration in September at Trivandrum and Palghat, water deficit is not experienced due to the soil moisture utilization which is accreted in the previous months. The soil moisture utilization starts from November and ends by mid April. It is also seen that the soil moisture accretion starts earlier (mid April) at Alleppey and late (2nd week of May) at Palghat. The water surplus starts from the second week of May at Alleppey while it is in the end of June at Cochin.

From the above analysis, it clearly indicates that the water surplus is more (1852 mm) at Kozhikode and less (337 mm) at Trivandrum. More water deficit (381 mm) is experienced at Palghat and less (194 mm) at Alleppey.

If these studies are attempted on monthly, weekly or if possible on daily basis for individual years, it will provide useful information for planning irrigation schedule, water management and drought prone areas.

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Fig. 1. Climatic water balances of Kerala



സംഗ്രഹം

കേരളത്തിന്റെ വിവിധ പ്രദേശങ്ങളിൽ നടത്തിയ മണ്ണിലെ ജല ലഭ്യതയുടെ പഠനങ്ങളിൽ നിന്നും വാർഷിക ജലാധിക്യം $a < 3$ ടിക്കോട് കൂടുതലും, തിരുവനന്തപുരത്ത് കുറവുമായി കാണപ്പെട്ടു. വാർഷിക ജല ദൗർലഭ്യം പാലക്കാട് കൂടുതലായും, ആലപ്പുഴയിൽ കുറവായും അനുഭവപ്പെടുന്നതായി കാണപ്പെട്ടു.

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