

RAINFALL INTENSITY DATA FOR ADDIS ABABA

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PRESENTING RAINFALL INTENSITY DATA FOR ADDIS ABABA

A small Weather Station is being operated at the Northern Campus of the Faculty of Technology, Addis Ababa University (AAU), in Addis Ababa with the primary aim to supplement the practical education of water-related subjects, especially that of Hydrology.

The Station is located on the roof-terrace of the main building of the Campus at an elevation of about 2472 M.S.L. The author re-organized this Station in early 1979 and arranged for continuous observation of the following meteorological parameters: air temperature, atmospheric pressure, humidity and precipitation. The corresponding records are kept in the Hydraulic Laboratory of the Civil Engineering Department.

With reference to the many enquiries received, the author considers it useful to publish his analysis on the rainfall data of the last nearly 4 years (April 1979 to February 1983), in order to supply a basic information for the various design purposes and to make them available for comparative studies involving the data of all the rain gauges observed in Addis Ababa.

The data presented here have been derived from the records of a Hellmann Type continuous strip chart recording rain gauge (model No.: 1509/H/b/bH, make: W. Lambrecht K G Germany) having a 31 days operational cycle. Owing to unavoidable technical reasons during about just over 10% of the total observation time no records could be taken.

The charts were analyzed to obtain characteristic maximum values for the intensity-duration function of the related period. Accordingly, the corresponding values of precipitation data (height of rainfall measured

and of the time of its duration were used to calculate the prevailing rainfall-intensity figures. Note that during this analysis only the "uniform-intensity" rains were considered, i.e., those which appeared as steadily rising quasi-straight lines on the records. This implies also that most of the individual rains were, in fact, of longer overall duration than shown here, yet of changing (reduced) intensity during the rest of the time

These maximum values of rainfall-intensity are shown plotted on the Fig. 1 against the duration of their "uniform" time periods. The straight line of the equation

$$i = 22.04t^{-1.10} \quad (1)$$

has been established to represent the extreme rainfall intensity-duration function that characterized the given period at this Station. In the equation i denotes the intensity of rainfall (mm/hr) and t the observed duration of the related "uniform" period (hr).

The author is fully aware of the fact that the overall length of the observations does not allow the direct extrapolation of the above function for storms of greater recurrence intervals. It is, nevertheless, believed that through continued observations and by analyzing the data of all nearby gauges the findings presented here can well be refined for the purposes of practical application. May this Note serve as a promising start for this work.

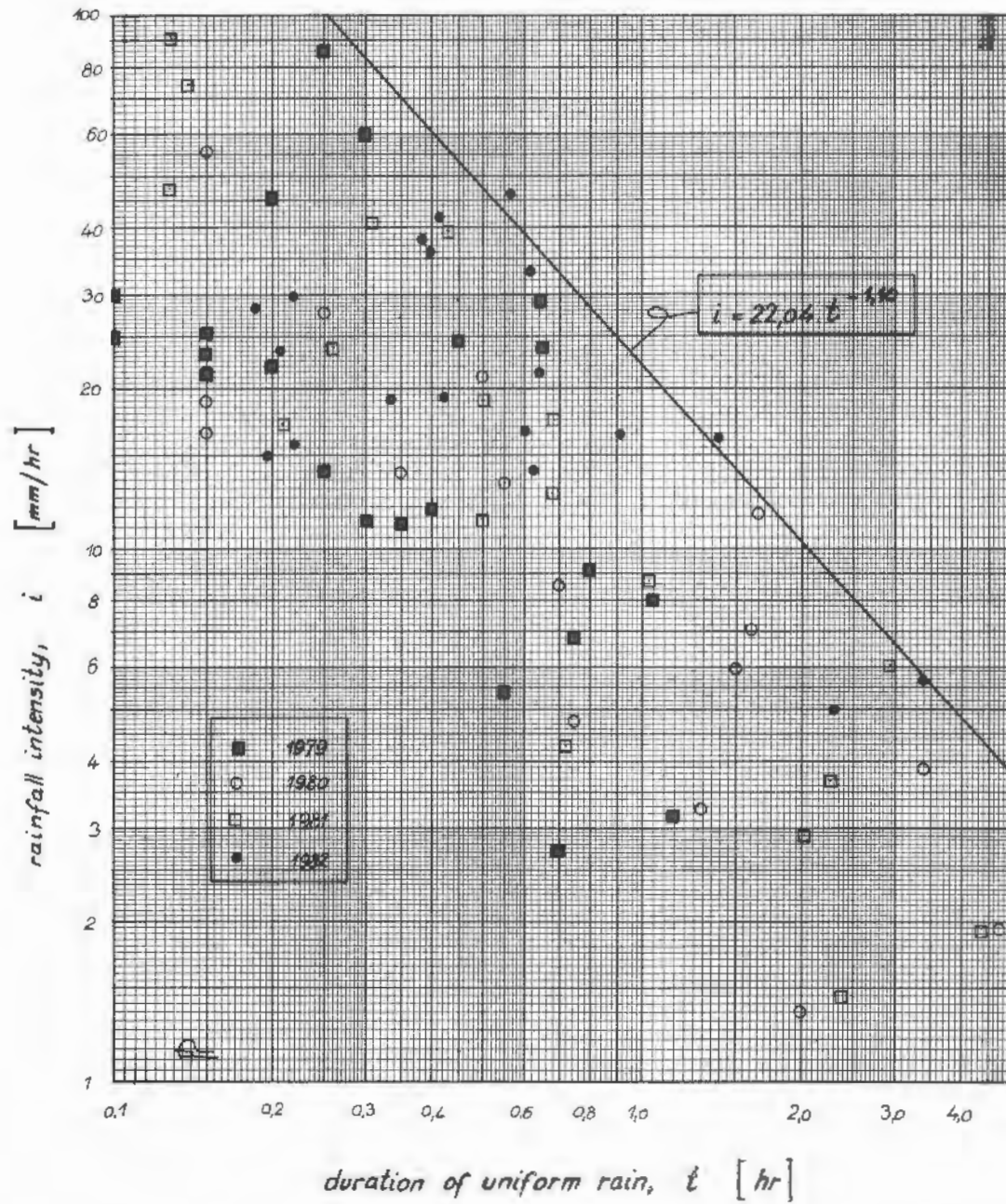


Fig. 1 Plot of Maximum Intensity-Duration Rainfall Data of the Years 1979-1982
(Station: Faculty of Technology, AAU, Northern Campus)