551.577(54)

NORMAL RAINFALL FOR EACH DEGREE SQUARE OF CO-ORDINATES FOR THE INDIAN PENINSULA, SOUTH OF LATITUDE 15°N

Natural phenomena like rainfall and winds do not recognise artificial divisions of space and time into the usual political districts, calendar months etc. The study of such phenomena will, therefore, become the more scientific, the more we disregard such man-made limits and go by natural limits. In the case of space, latitudes and longitudes form convenient natural boundaries.

2. As a first step in changing over to such natural divisions, the author has prepared average rainfall in inches for each calendar month for areas bounded by each full degree of latitude and longitude for the portion of the Indian Peninsula south of Lat. 15°N. These maps for (*i*) each of the 12 months (*ii*) the seasons June to September and October to December and (*iii*) the whole year are reproduced in Figs. 1—5. In these maps, the averages for each degree square are written in the appropriate area.

3. In preparing these maps, the normals brought up to 1940 for a large number of rain recording stations, *viz.*, the "Provincial" raingauges published by India Meteorological Department as Memoirs, Vol. 27, Part V have been used. The average rainfall for each degree square has been obtained by taking the unweighted arithmetic mean of the normal fall of each station within the degree square. In one map, the number of stations in each degree square or part of degree square is shown (Fig. 6). The author hopes in the future to extend this system of averages for the rest of India and also to connect up these rainfall values with the major features of the upper wind distributions.

4. It may be helpful for various purposes to work out the quantities of rainwater that are precipitated over these areas. A degree square of Latitude-Longitude, in the region 8 to 15° Latitude and 74 to 81° Longitude has an average area of 4657 sq miles. The weight of water precipitated over an area of one sq mile as a result of 1″ of rainfall works out to 64,800 tons; hence the weight of water that falls over one degree square of land due to 1″ of rainfall becomes $301 \cdot 8 \times 10^6$ or 302 million tons. In a normal year, over the entire Peninsula south of Lat. 15°N, $4 \cdot 3 \times 10^{11}$ tons (or nearly half a billion tons) of water fall as rain round the year.

5. The areas of land in each degree square in the region concerned with the quantity of water precipitated corresponding to the normal rainfall of each of the two seasons (June—September and October—December) and the whole year are given in Table 1.

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TABLE 1

Area of land portion in each degree square in square miles

Lat./Long.	74—75	75—76	76—77	77—78	78—79	79—80	80—81° E
8— 9° N			760	3900	570		
9—10			3230	4660	4180	290	
10—11		190	4280	4660	4660	3140	
11—12		1900	4660	4660	4660	3900	
12—13	290	4560	4660	4660	4660	4560	760
13—14	1430	4660	4660	4660	4660	4660	1140
14—15	3230	4660	4660	4660	4660	4660	480

TABLE 2

Weight of water precipitated as rain over land area in the months June-September in a normal year in millions of tons

Lat./Long.	74—75	75—76	76—77	77—78	78—79	79—80	80—81° E
8— 9° N			1980	4347	52		
9—10			16080	3655	2113	90	
10—11		942	21630	4258	3744	2258	
11—12		12610	14550	2658	4500	3665	
12—13	2082	30260	6101	4500	4560	5231	763
13—14	11920	22080	3895	4620	4198	4650	1012
14—15	23200	7338	3655	3715	4530	3563	358

TABLE 3

Weight of water precipitated as rain over land area in the months October-December in a normal year in millions of tons

Lat./Long.	74—75	75—76	76—77	77—78	78—79	79—80	80—81° E
8— 9° N			1024	5308	676		
9—10			5295	5556	4172	432	
10—11		222	5131	4893	4620	4111	
11—12		2044	5043	3503	4047	6825	
12—13	220	4226	2717	2778	3413	6205	1507
13—14	991	2929	2356	2266	2929	5646	2202
14—15	1800	2023	1902	1873	2326	5437	784

TABLE 4

Weight of water precipitated as rain over land area in the whole year in millions of tons

Lat./Long.	74—75	75—76	76—77	77—78	78—79	79—80	80—81° E
8— 9° N			3841	12810	961		
9—10			26100	12050	7911	677	
10—11		1362	30640	11840	10360	7752	
11—12		16350	23010	8245	10780	12030	
12—13	2471	37420	11360	9452	9815	12820	2477
13—14	13530	26910	7852	8335	8576	11690	3494
14—15	25870	10690	6705	6613	7700	10120	1235

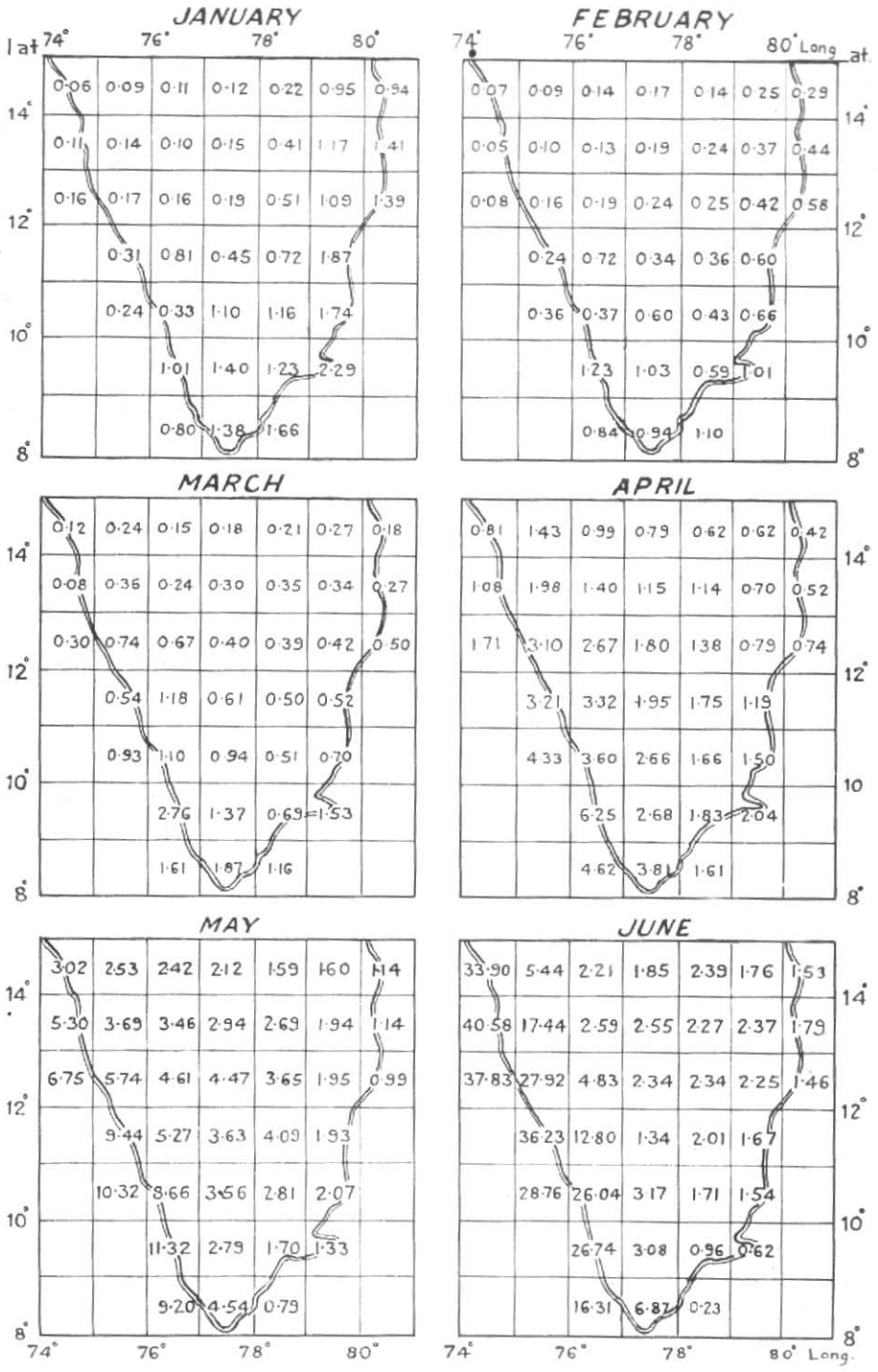

Fig. 1 Monthly average rainfall for each degree square in inches
(January to June)

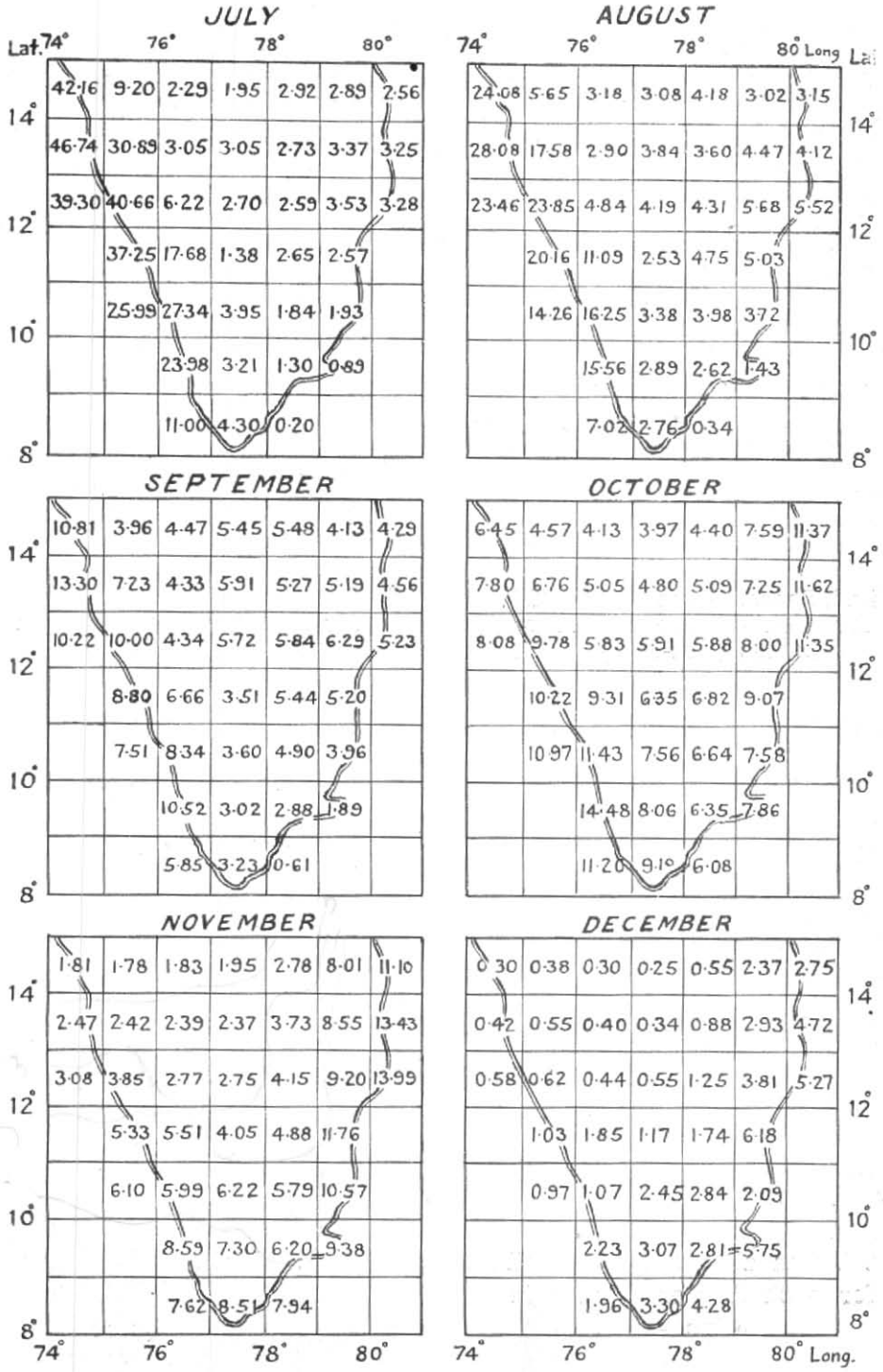

Fig. 2. Monthly average rainfall for each degree square in inches (July to December)

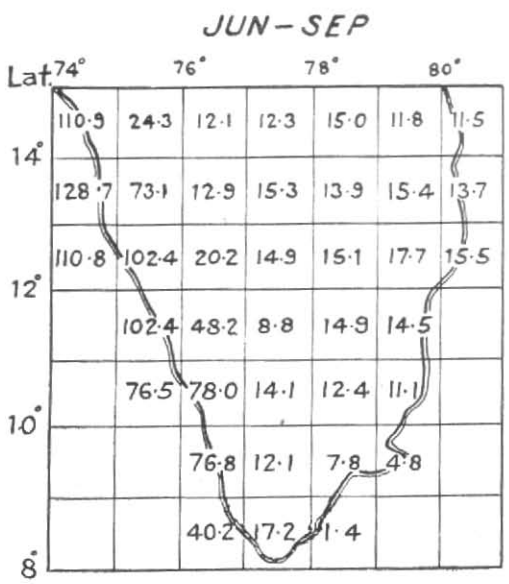

Fig.3. Seasonal average rainfall for each degree square in inches (Jun-Sep)

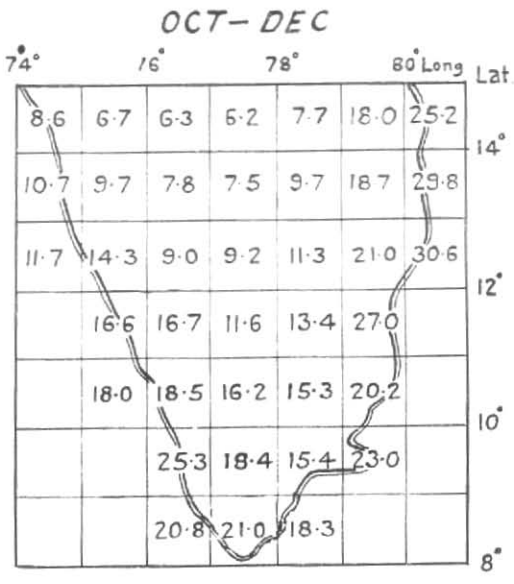

Fig. 4. Seasonal average rainfall for each degree square in inches (Oct-Dec)

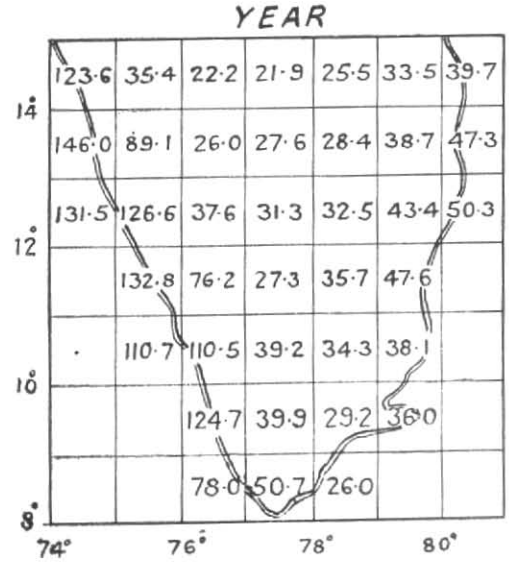

Fig. 5. Annual average rainfall for each degree square in inches

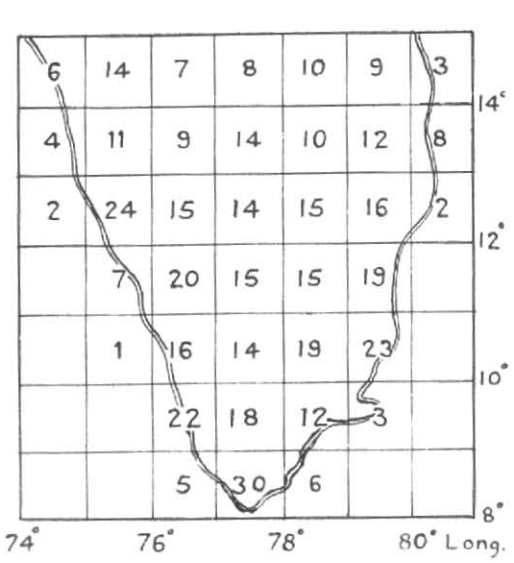

Fig. 6. Number of raingauge stations in each degree square