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CLIMATE OF ALDABRA ATOLL
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List of Tables

1. Mean monthly atmospheric pressure, mb
2. Mean monthly wind speed, kts
3. Number of occurrences of calms and winds in excess of 10 and 20 kts, 1967-1974
4. Maximum wind speeds recorded in each month, 1967-1974 (kts)
5. Highest maximum temperatures in each month, °C.
6. Mean maximum monthly temperatures, °C.
7. Mean minimum monthly temperatures, °C.
8. Lowest minimum temperatures in each month, °C.
9. Aldabra rainfall records before 1967: monthly totals in mm.
10. Aldabra rainfall records 1967-1974: monthly totals in mm.
11. Frequency of daily rainfalls at Aldabra Atoll, 1968-1972
12. Rainfalls occurring in intensities exceeding 10, 25, 50 and 100 mm/day, 1968-1973
13. Duration of wet (rain recorded) and dry (no rain) spells at Aldabra, 1968-1972
14. Duration of wet (more than 5mm/day) and dry (less than 5 mm/day) spells at Aldabra, 1968-1972
15. Local variability of Aldabra rainfall, 1969-70 (West Island and Dune Jean-Louis)
16. Mean monthly rainfall at Aldabra, Assumption and Iles Glorieuses, mm

1. Records at Aldabra of (a) absolute maximum monthly temperature, (b) mean maximum monthly temperature, (c) mean minimum monthly temperature, (d) absolute minimum monthly temperature, (e) monthly rainfall, (f) mean monthly wind speed, and (g) mean monthly atmospheric pressure, 1967-1973.
2. Annual records of (a) mean monthly wind speed and (b) mean monthly atmospheric pressure at Aldabra, 1968-1973.
3. Mean monthly rainfall at Aldabra based on pre-1959 records, 1967-1973 records, and all available data.
4. Monthly rainfall records and mean monthly rainfall for Aldabra, all available records.
5. Relationship between annual rainfall and number of days in the year with rainfalls of 10-25 mm, 1968-1973.
6. Frequency and duration of wet and dry periods at Aldabra, 1968-1972.

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Introduction

Weather records have been maintained by the Royal Society at Aldabra Atoll (9°24'S., 46°20'E.), southwest Indian Ocean, continuously since mid-October 1967. The recording station is located on West Island, on the northwest side of the atoll, first at the Settlement, but after 1970 at the Royal Society Research Station 1 km to the south. These are both leeward and rather protected situations. A single synoptic observation is taken at 0600 GMT (0900 local time).

Records for the period November 1967 to October 1968 were very fully analysed by Farrow (1971), in the light of general information available for the southwest Indian Ocean, and the rainfall records up to 1970 were placed in a regional context by Stoddart (1971). Records now available since 1967 in some respects modify these preliminary reports and also permit a more detailed analysis of ecologically significant parameters such as rainfall frequency and duration of drought. This paper presents an abstract of the climatic data to the end of 1974 (seven complete years), with fuller analysis of the daily rainfall records for the five years 1968-1972. Daily observations for the period of record are available on request from the Royal Society.

In addition to these records J. Frazier maintained rainfall records at Dune Jean-Louis on the exposed south coast for most of the period July 1969-June 1970, and G. E. Farrow made records at East Channel on the northeast side of the atoll during September-October 1968. A more detailed investigation of local and microclimate is now being made by R. J. Hnatiuk.

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Pressure and Winds

Farrow (1971, 69) points out that during winter pressure is high and the Southeast Trades blow strongly, while in summer pressure is low and winds are lighter and northwesterly. Records for 1968-74 (1969 is absent because of equipment failure) confirm this pattern (Table 1 and 2; Figures 1f, 1g and 2). These show substantial agreement from year to year in pressure distribution, with a maximum in July, but considerable variability from year to year in mean monthly wind speed. 1970, 1973 and 1974 were years with generally low wind velocities, and 1972 a year of high velocities. 1971 was characterised by abnormally high wind speeds in February and March. Although both 1970 and 1973 had similar wind patterns, the former was an exceptionally dry year and the latter exceptionally wet.

Table 3 gives the number of occurrences in each month of calms, of winds in excess of 10 kts, and of winds in excess of 20 kts at the daily recording time. Calms are rare (less than 10 days per year except in 1971). The frequency of winds higher than 10 kts varies from year to year, being low in 1969, 1970, 1973 and 1974 and high in 1971 and 1972. As with mean monthly wind speed there is no obvious correlation with rainfall, though moderately high winds (10-20 kts) are most characteristic of the Trade Wind months August-October. Table 4 lists the maximum wind speeds recorded in each month. Occasional summer squalls bring speeds greater than 30 kts. The maximum wind speed recorded is 44 kts on 21 September 1968; the maximum in most months is less than 20 kts.

Temperature

Figure 1 a-d gives curves of absolute monthly maximum (a), mean monthly maximum (b), mean monthly minimum (c), and absolute monthly minimum (d) temperatures over the period of record; maximum temperatures are missing for the period November 1969 to March 1970 because of instrument failure. Corresponding data are tabulated in Tables 5-8. The annual range in mean monthly temperature is about 4°C. The monthly range is least in winter (July-August) and greatest in summer (January). The 1967-74 averages of mean maximum and minimum monthly temperatures do not rise above 31.24°C (December) or fall below 22.15°C (August), respectively. The highest temperature recorded is 36.3°C and the lowest 17.5°C. Temperatures fell below 20°C on only eight occasions during the seven years 1968-74; four of these occasions were during the winter of 1969.

Rainfall

Three complete and four incomplete years of rainfall record were available for Aldabra before the Royal Society began recording in 1967 (Table 9). The complete years gave a mean annual rainfall of 640 mm, with both 1958 and 1959 having less than 400 mm. Records since 1967 show a variable but substantially greater annual rainfall, with several years in excess of 1000 mm (Table 10). The mean annual rainfall for

