

**SUPPORTING REPORT
FOR**

CHAPTER 2

**Water Resources Potential
and
Development Plan**

Supporting Report for “Chapter 2 Water Resources Potential and Development Plan”

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ANNEX to 2.1
Surface Water

2.1 Surface Water

2.1.1 Rainfall and Evaporation

Table 2.1.1-2 and Table 2.1.1-3 summarized the rain-gauge and evaporation stations respectively, and that letter in bold type means station's data are applied to the Study. Fig. 2.1.1-1 and Fig. 2.1.1-2 summarized the available records for these rain-gauge and evaporation stations respectively by bar graph.

Table 2.1.1-4 summarized the long-term monthly average and annual rainfall at the representative rain-gauge stations. Among these stations, El-Umari station (F0011) at Zarqa governorate, Ma'an station (G0003) at Ma'an governorate and Aqaba station (ED0001) at Aqaba governorate where mean annual rainfall was less than 50mm. On the other hand, Wadi Es-sir station (AN0002) at Amman governorate, Ibbin station (AD0018) at Mafraq governorate, Kufrinja station (AJ0002) at Ajloun governorate, Rihaba station (AF0002) and King Talal Dam station (AL0053) at Jerash governorate where mean annual rainfall was more than 500mm.

Table 2.1.1-5 shows the minimum annual rainfall and their equivalent return periods at the representative rain-gauge stations. It is clear that most droughty year can be judged as the water year of 1998/99 with annual rainfall about 200mm for the northern area and central area. On the other hand, as for the southern area including Madaba, Karak, Ma'an, Tafielah and Aqaba governorates, where annual average rainfall is normally less than 50mm, 1972/73 can be considered as the most droughty water year.

Table 2.1.1-6 summarized the long-term monthly average and annual evaporation at the representative evaporation stations. It is obvious that Khirebit As-Samra station (AL0066) at Zarqa governorate where mean annual evaporation is about 2,000mm shows the minimum, and Aqaba station (ED0026) at Ma'an governorate where mean annual evaporation is more than 5,000mm shows the maximum.

Using the double-mass curve method, the homogeneity of annual rainfall mentioned above were checked and illustrated as shown in from Fig. 2.1.1-3 to Fig. 2.1.1-14.

Monthly average and annual rainfall at the representative rain-gauge stations were summarized in from Table A2.1.1-1 to Table A2.1.1-12. It is concluded that rainfall occurs mainly in winter with heavy rainfall in December, January and February. In the same way, monthly average and annual evaporation at the representative evaporation stations were summarized in from Table A2.1.1-13 to Table A2.1.1-22.

2.1.2 Runoff

Table 2.1.1-7 summarized the gauging stations including the closed ones, and that letter in bold type means station's data are applied to the Study. Fig. 2.1.1-17 shows the available records for these gauging stations by bar graph. Moreover, using the double-mass curve method, the homogeneity of annual runoff mentioned above were checked and illustrated in Fig. 2.1.1-18.

Monthly average and annual runoff at the representative gauging stations were summarized in Table A2.1.1-23. Table A2.1.1-24 summarized the discharges at Maqaren for the Yarmouk River. In the same way, Table A2.1.1-25 summarized the discharges at New Jerash Bridge (AL0060) for the Zarqa River.

Furthermore, Table 2.1.1-28 summarized the estimate of drought probability with the return periods of 2-year, 5-year, 10-year, 20-year and 50-year.

2.1.3 The Dead Sea

Fig. A2.1.1-1 shows the historical change of the Dead Sea Level. It is clear that the water level sharply and abruptly decreased from 1950.

2.1.4 Present Development of Surface Water

Table A2.1.5-1 shows the present development amount of the surface water resources (based on 1998 data) and anticipated future development schemes of the surface water resources by governorate basis.

Table 2.1.1-2 Summary of Rain-gauge Stations

ID	RAIN-GAUGE STATION	PALESTINE		ALTITUDE (EL.M)	OPERATION		GOVERNORATE
	NAME	NORTH	EAST		OPEN	CLOSE	
A 0001	SHUNA (WADI ARAB)	1224	208	-197	1950/10/1	1968/10/30	IRBID
A 0007	R.J.WAHADINA GAUGING STATION	1193.7	202.5	-311	1964/10/1	1968/12/30	IRBID
AB0001	AL-TAIYIBA	1216.5	217.5	365	1934/11/1		IRBID
AB0002	DEIR ABI SAID	1211.5	214.5	330	1933/11/1		IRBID
AB0003	EL-QARN	1195.3	204.5	-178	1940/10/1	1956/12/30	IRBID
AB0004	KH.EL-WAHADNEH	1192.8	210.8	590	1950/10/1		IRBID
AB0008	KUFR AWAN	1203.7	214.8	470	1934/11/1		IRBID
AD0001	MUKHEIBA	1234	214	-75	1951/10/1	1968/10/1	IRBID
AD0002	HARTHA	1233.3	229.5	450	1951/10/1		IRBID
AD0003	KUFR SAUM	1232.3	225.2	455	1934/11/1		IRBID
AD0004	SAMAR	1231.5	224	425	1960/10/1		IRBID
AD0005	UM QEIS	1229	214	360	1934/12/1		IRBID
AD0006	ADASIYA SCHOOL	1230.3	207.2	-180	1934/11/1	1968/10/30	IRBID
AD0007	BAQURA AGR. STATION	1226	208	-200	1948/1/1	1969/10/30	IRBID
AD0008	KHARJA	1229.5	233.5	455	1934/11/1		IRBID
AD0009	HAWWARA	1215.5	235.5	560	1934/11/1		IRBID
AD0010	HUSN	1210.5	233	680	1942/11/1		IRBID
AD0011	EN NUEIYME	1202.8	236	785	1955/10/1		IRBID
AD0012	RAMTHA BOYS SCHOOL	1218.8	244.5	520	1933/11/1		IRBID
AD0013	KHANASIRA	1200.3	248.5	860	1950/10/1		IRBID
AD0016	MAFRAQ POLICE POST	1195	264	695	1934/9/1		MAFRAQ
AD0017	RIHAB	1192.8	253	900	1945/10/1		MAFRAQ
AD0018	IBBIN	1196.5	226.8	1105	1937/11/1		MAFRAQ
AD0019	MAFRAQ AIR PORT	1192.5	266.6	686	1963/10/1		MAFRAQ
AD0021	TURRA	1226.6	243.3	450	1965/10/1		IRBID
AD0022	HOSHA	1206.6	250	600	1965/10/1		MAFRAQ
AD0023	JABER MUGHAYYIR	1213.3	263	600	1965/1/1		MAFRAQ
AD0024	ADASIYA GAUGING STATION	1231	210.1	-210	1964/10/1		IRBID
AD0025	WADI KHALID RAILWAY STATION	1238	221	-85	1964/10/1	1967/10/30	IRBID
AD0026	SAMU-IRBID	1213	219	380	1965/10/1	1973/10/30	IRBID
AD0027	SAMAER ROSAN EVAP .ST	1227.9	228.7	550	1968/7/1	1985/12/31	IRBID
AD0029	JABER-ES-SIRHAN	1213.7	262.4	595	1968/10/1		MAFRAQ
AD0031	KHALID IBN AL-WALEED DAM	1234.4	214.6	-100	1967/1/1	1968/10/30	IRBID
AD0032	BAQURA MET.STATION	1224.3	206.3	-205	1967/10/1		IRBID
AD0034	SAMAR EVAP. STATION	1232.3	231.9	410	1985/1/1		IRBID
AD0036	MAQARIN GAUGING STATION	1237	230	12	1964/10/1		IRBID
AD0112	RAMTHA GIRLS SCHOOL	1219.3	245	590	1968/10/1	1973/10/30	IRBID
AE0001	IRBID SCHOOL	1218.5	230	585	1933/10/1		IRBID
AE0002	IRBID AGR.STATION	1217	230.3	555	1954/10/1		IRBID
AE0003	KAFR YUBA	1216.7	225.3	560	1934/11/1		IRBID
AE0004	KAFR ASAD	1223	217	350	1962/12/1		IRBID
AF0001	WADI ZIQLAB	1214.5	207.3	-190	1950/10/1	1977/10/30	IRBID
AF0002	RIHABA	1204.8	224	925	1963/1/1		IRBID
AG0001	WADI JURUM	1205.8	206.8	-180	1950/10/1	1968/10/30	IRBID
AH0001	ISHTAFEINA	1196.5	220.4	920	1952/10/1		IRBID
AH0002	WADI EL-YABIS	1199.5	207	-200	1962/10/1		IRBID
AH0003	RAS MUNEIF EVAP. ST	1198.8	226.8	1150	1968/7/1	1988/9/20	IRBID
AJ0001	AJLUN POLICE POST	1193.5	221	760	1937/12/1		IRBID
AJ0002	KUFRINJA	1189.4	216.4	640	1939/11/1		IRBID
AJ0003	WADI KUFRINJA	1186	206.8	-200	1951/10/1	1976/10/30	IRBID
AL0001	AIN KHUNEIZIR	1190.5	249	360	1953/10/1	1955/10/30	IRBID
AL0002	MIDWAR	1188.5	244	760	1950/10/1		MAFRAQ
AL0003	BAL'AMA	1182.8	252.7	695	1950/10/1		MAFRAQ
AL0004	JARASH	1187.5	234.5	585	1942/11/1		IRBID
AL0005	KITTA	1187	229.5	665	1943/11/1		IRBID
AL0006	DIBBIN NATIONAL PARK	1184.8	229	780	1950/10/1	1975/4/30	IRBID

(To be continued)

Table 2.1.1-2 Summary of Rain-gauge Stations (Continued)

ID	RAIN-GAUGE STATION NAME	PALESTINE NORTH	PALESTINE EAST	ALTITUDE (E.L.M)	OPERATION		GOVERNORATE
					OPEN	CLOSE	
AL0007	JARASH BR.(OLD ROAD)	1177.8	228.3	145	1950/10/1	1951/10/30	BALQA
AL0008	ALUK	1174.8	237.2	630	1950/11/1		ZARQA
AL0009	DEIR ALLA (NRA)	1178.5	209.5	-180	1950/10/1	1975/10/30	BALQA
AL0010	DEIR ALLA AGR. STATION	1178	208.5	-224	1952/10/1		BALQA
AL0011	RUMMAN	1174.3	228.5	560	1942/9/1		BALQA
AL0012	SUKHNA	1171	250.7	500	1950/10/1		BALQA
AL0013	NAWASIF	1166.5	267.5	590	1961/10/1		IRBID
AL0014	KHAW	1166	258	575	1946/10/1	1973/10/30	ZARQA
AL0015	ZARQA	1163.8	253	610	1934/11/1		ZARQA
AL0016	RUSEIFA	1158.5	248.5	655	1964/10/1		ZARQA
AL0017	SWEILH	1159	229.5	1000	1942/9/1		AMMAN
AL0018	JUBEIHA	1159.2	232	980	1937/11/1		AMMAN
AL0019	AMMAN AIRPORT	1153.8	243.5	790	1937/10/1		AMMAN
AL0020	AMMAN AIN GHAZAL	1153	240.8	720	1956/10/1	1964/10/30	AMMAN
AL0021	AMMAN JABEL TAJ	1151.5	240	800	1952/10/1	1954/10/30	AMMAN
AL0022	AMMAN HUSSEIN COLLEGE	1152	238.2	834	1950/11/1		AMMAN
AL0023	AMMAN JABEL AMMAN (DEV.DEPT.)	1150.5	238	810	1939/10/1	1952/10/30	AMMAN
AL0024	AMMAN LANDS DEPARMENT	1150.75	238	821	1940/10/1	1961/10/30	AMMAN
AL0025	AMMAN JABEL LUWEIBDA NRA	1150.7	237.7	840	1961/10/1	1978/10/30	AMMAN
AL0026	BURMA	1181	224	600	1962/12/1		IRBID
AL0027	SUBEIHI	1173	216.5	500	1962/11/1		BALQA
AL0028	RUMEIMIN	1168.5	225.5	675	1967/10/1		BALQA
AL0029	TAB QIRA'	1162.5	234	975	1962/10/1	1974/10/30	BALQA
AL0030	RUJM ESH-SHOUK (BADRAN)	1165	238.5	950	1962/10/1	1974/10/30	AMMAN
AL0031	AIN ZARBI	1159.5	243	800	1962/10/1	1966/10/30	AMMAN
AL0032	YAUZ	1160	237	850	1961/10/1	1975/10/30	ZARQA
AL0033	AMMAN RADIO STATION	1146	238.5	925	1962/10/1	1977/10/30	AMMAN
AL0035	K.H.NURSERY EVAP.ST (BAQ'A)	1165.4	230	700	1966/10/1		BALQA
AL0036	PRINCE FEISAL NURSERY	1180.5	234.5	300	1963/11/1		IRBID
AL0037	AMMAN CIGARETTE COMPANY	1151.3	239.9	780	1964/12/1	1975/10/30	AMMAN
AL0038	AMMAN ALWIHDAT	1149	238.5	825	1965/10/1	1970/10/30	AMMAN
AL0039	ABU HAMID	1165	233.5	700	1966/2/1	1972/10/30	BALQA
AL0041	AIN AL-BASHA	1162.8	228.8	680	1966/2/1	1968/10/30	BALQA
AL0042	AMMAN JABEL AMMAN (NRA)	1151.3	235.5	840	1965/11/1	1978/10/30	AMMAN
AL0043	ABU ALANDA	1145.5	241.3	990	1967/1/1	1985/3/30	AMMAN
AL0044	MAJDAL	1181.7	229.3	500	1967/2/1		IRBID
AL0045	UM JAUZA	1167	220	860	1967/10/1		BALQA
AL0046	EL-'AL	1136.3	228.6	800	1967/10/1		AMMAN
AL0047	SIHAN	1171.8	221.6	495	1967/10/1		BALQA
AL0048	KHALDIYA	1177	276	630	1967/10/1		MAFRAQ
AL0049	QASR EL-HALLABAT	1167.2	275.4	610	1968/10/1		ZARQA
AL0050	QAFQAF	1195.3	238.8	930	1967/10/1		IRBID
AL0051	WADI ZARQA GAUGING STATION	1180.4	232.3	230	1968/10/1		ZARQA
AL0052	BEIR EL-AD'AM	1150.2	268.2	800	1968/9/1		ZARQA
AL0053	KING TALAL DAM	1178	228.6	218	1972/11/1		JARASH
AL0054	HASHIMIYA	1171.7	255.2	550	1968/10/1		ZARQA
AL0055	WADI DHULEIL NURSERY	1174	271	575	1973/10/1		MAFRAQ
AL0057	WADI ES-SIR (NRA)YARD	1151.6	230.2	900	1979/10/1		AMMAN
AL0058	SABHA AND SUBHIYEH	1194	291.8	850	1967/10/1		MAFRAQ
AL0059	UM EL-JUMAL EVAP .ST	1190.4	276.8	650	1968/6/10		MAFRAQ

(To be continued)

Table 2.1.1-2 Summary of Rain-gauge Stations (Continued)

ID	RAIN-GAUGE STATION NAME	PALESTINE NORTH	PALESTINE EAST	ALTITUDE (EL.M)	OPERATION		GOVERNORATE
					OPEN	CLOSE	
AL0069	W.UM AL-DANANIR	1165.9	227.3	565	1966/2/1	1986/11/30	BALQA
AM0001	SALT	1160.5	219	796	1934/1/1		BALQA
AM0002	W.SHU,EIB AGR.STATION	1152.8	218	300	1954/10/1		BALQA
AM0003	W.SHU,EIB KM.47	1151.5	217	220	1953/10/1	1959/10/30	BALQA
AM0004	SHUNET NIMRIN EVAP. ST	1146	209.5	-185	1954/11/1	1968/10/30	BALQA
AM0005	HUMMAR	1158.8	227	925	1955/10/1		AMMAN
AM0006	IRA	1157	213	650	1968/10/1		BALQA
AM0007	SOUTH SHUNA	1146	210.5	-160	1965/3/1		BALQA
AN0002	WADI ES-SIR	1151	227.5	720	1942/9/1		AMMAN
AN0003	NA'UR	1142.5	228.5	800	1942/9/1		AMMAN
AN0004	ADASIYA JANOUBIYA	1140.6	222.7	750	1967/10/1		AMMAN
AN0005	KAFREIN DAM	1139.3	213.8	-153	1969/2/1	1973/10/30	BALQA
AP0001	ER-RAMA	1137	214.8	-185	1957/10/1	1968/10/30	BALQA
CA0002	KHANZIRA (TAIYBAT EL-KARAK)	1051.8	207.3	1000	1945/9/1		KARAK
CA0003	MUREISED	1060.5	200.3	-350	1963/5/1	1965/10/30	KARAK
CA0004	AIY	1060.3	211	900	1963/5/1		KARAK
CA0005	AL-AINA	1042.2	224	775	1967/10/1	1968/10/30	KARAK
CA0006	MUHAI	1044.5	231.8	1000	1967/10/1		KARAK
CA0012	GHOR MAZRA'A	1078	201	-300	1939/9/1	1982/6/15	KARAK
CC0001	MADABA	1125	225.5	785	1943/1/1		AMMAN
CC0002	MA'IN	1120.8	219.9	810	1967/10/1		AMMAN
CC0004	MUSHAQQAR EVAP. ST	1132.9	226.2	84	1984/12/1		AMMAN
CD0001	SAHAB	1142.5	245	830	1957/10/1		AMMAN
CD0002	YADUDA	1139.5	236.5	850	1945/10/1	1966/2/28	AMMAN
CD0003	EL-MUWAQQAR	1136.5	255	910	1940/2/1		AMMAN
CD0004	BEIR EL-TUNEIB	1134.3	239.5	795	1938/11/1	1979/1/1	AMMAN
CD0005	JIZA	1123	241	705	1938/1/1		AMMAN
CD0006	WADI WALA	1107.5	223	350	1954/10/1		AMMAN
CD0007	DHIBAN	1100.8	224	745	1938/1/1		AMMAN
CD0008	WADI MUJIB GAUGING STATION	95	226.5	138	1952/10/1		AMMAN
CD0009	HEMUD	1078	226	890	1934/10/1		KARAK
CD0010	RABBA	1075.5	220.5	970	1951/10/1		KARAK
CD0011	QATRANA POLICE POST	1072.5	249.5	770	1938/1/1		KARAK
CD0013	MAZAR	1052	216.5	1140	1934/10/1		KARAK
CD0015	DHABA' NURSERY	1111.6	250.5	750	1962/11/1		AMMAN
CD0016	JUDAYDA	1105	211.5	725	1962/11/1		AMMAN
CD0017	UM EL-RISAS	1101	237.5	750	1962/10/1		AMMAN
CD0018	KHANEZ-ZABEEB	1097.8	255	775	1962/11/1	1978/10/30	AMMAN
CD0019	JADA'	1089.5	222	900	1962/11/1		KARAK
CD0020	SIWAQA EVAP ST.	1086.8	253.7	775	1965/11/3	1973/12/31	AMMAN
CD0022	QASR EL-MUSHEISH	1038	254	850	1962/12/1	1963/10/30	MA'AN
CD0023	QASR EVAP. ST	1080.9	221	900	1968/7/1	1985/12/31	KARAK
CD0024	YADUDA FAHID ABU JABER	1139.5	236.5	850	1963/10/1		AMMAN
CD0025	UM EL-AMAD	1132	235	800	1963/10/1	1978/10/30	AMMAN
CD0026	EZ-ZEITHNA EVAP.ST	1129.7	235.7	765	1968/8/1	1984/12/31	AMMAN
CD0028	MULEIH	1110.9	228	630	1967/10/1		AMMAN
CD0029	SIRFA	1081.6	212.5	900	1967/10/1		KARAK
CD0030	JABEL ABU HALLUFA	1086	272.9	950	1967/9/1		KARAK
CD0031	WADI EL-JINZ	1054.5	276	825	1967/9/1		MA'AN
CD0033	JABEL SAKHRIYAT	1026.6	274	910	1968/10/1		MA'AN

(To be continued)

Table 2.1.1-2 Summary of Rain-gauge Stations (Continued)

ID	RAIN-GAUGE STATION NAME	PALESTINE		ALTITUDE (ELM)	OPERATION		GOVERNORATE
		NORTH	EAST		OPEN	CLOSE	
CD0034	QATRANA EVAP. ST	1073.6	249.5	730	1970/3/1	1982/12/31	KARAK
CE0001	RAKIN	1070	217.5	1050	1958/10/1		KARAK
CE0002	AIN BISAS	1067.8	213.5	700	1951/10/1		KARAK
CE0003	RAS ABU HAMMUR	1066	220	1090	1950/10/1	1957/10/30	KARAK
CE0004	KARAK	1066	217	1000	1938/10/1		KARAK
CE0005	QABR MADHA	1069.3	234	700	1967/12/1	1968/10/30	KARAK
CF0001	GHOR ES-SAFI P.POST	1049.5	194.8	-277	1939/9/1	1978/10/30	KARAK
CF0002	QAL'AT AL-HASA	1027.8	239	810	1937/10/1	1938/10/30	KARAK
CF0003	JURF ED-DARAWISH	1011.8	233	940	1938/1/1		KARAK
CF0004	LA'ABAN	1035	217	700	1945/10/1	1965/10/30	TAFILAH
CF0005	HASA POLICE POST	1025.8	243	825	1962/11/1		TAFILAH
CF0006	GHORES-SAFI-MET.ST	1051	193	-285	1965/12/1		KARAK
CF0007	HASA EVAP.ST	1030.6	243.6	900	1967/6/1		TAFILAH
CF0008	HASA GAUGING STATION	1041.6	220.4	380	1968/10/1		TAFILAH
DA0001	SHAUBAK SCHOOL	992	202	1300	1933/11/1	1981/10/30	MA'AN
DA0002	SHAUBAK AGR.STATION	991.5	200.5	1475	1962/10/1		MA'AN
DA0003	BEIR ED-DABBAGHAT	980	198	1600	1963/1/1		MA'AN
DA0004	IFJEJ	994	209	1275	1963/1/1	1986/10/30	MA'AN
DA0005	UNEIZA RAILWAY STATION	989	226.5	1050	1963/1/1		MA'AN
DA0006	AL-HUSEINYA SCHOOL	999.4	226.2	1062	1968/10/1		MA'AN
DA0007	FEEDAN	1003.75	187.3	96	1985/9/1		TAFILAH
DB0001	TAFILE	1027.5	208	1000	1938/1/1		TAFILAH
DB0002	PRINCE HASAN NURSERY (ABUR)	1023.3	218.2	1220	1967/10/1		TAFILAH
DC0001	BUSEIRA	1017	208	1100	1934/12/1		TAFILAH
DC0002	RASHADIYA P.POST	1012.5	210	1500	1969/10/1		TAFILAH
DD0001	AIN LAHDHA	1012.8	207.3	1420	1950/10/1	1970/10/30	TAFILAH
DE0001	DANA	1009.5	208.3	1230	1934/12/1		TAFILAH
DF0001	BEIR MADKHUR	978.7	183	250	1934/12/1	1965/10/30	MA'AN
DF0002	UM METLA	987.1	177.6	106	1985/1/12		MA'AN
DG0001	WADI MOUSA	970	196	1100	1934/12/1		MA'AN
DG0002	HAY	974	197	1500	1934/12/1		MA'AN
DG0003	PETRA	972	192	1000	1934/12/1		MA'AN
DH0001	TAIYIBA JANOUBIYA	963	194	300	1963/1/1		MA'AN
DH0002	DILAGHA	949.3	189	1350	1934/12/1		MA'AN
DH0003	RAJIF	956	193	500	1934/12/1		MA'AN
EA0002	RAHMA	926	162	105	1985/9/1		MA'AN
ED0001	AQABA	881.5	150	40	1934/12/1		MA'AN
ED0002	RAS EN-NAQB	935	197	1570	1934/12/1		MA'AN
ED0003	RAM P.POST	887.5	191	950	1934/12/1		MA'AN
ED0004	QUWEIRA EVAP.ST	914	181	800	1967/9/9	1990/12/31	MA'AN
ED0006	AL-KHALDY	896.5	172	725	1934/12/1	1978/10/30	MA'AN
ED0009	JABEL BAKIR	887	163.5	600	1962/12/1	1965/10/30	MA'AN
ED0010	WADI YUTM GAUGING STATION	880.6	160.3	350	1964/10/1	1966/10/30	MA'AN
ED0012	RAM (QA'DISI) EVAP.ST	896	199.8	790	1965/11/1		MA'AN
ED0015	FASSU'A ST.	908.5	236.2	1150	1965/10/1		MA'AN
ED0016	WADI RATMA	915	193	900	1967/5/1		MA'AN
ED0017	WADI NASIF	902	209	850	1967/5/1		MA'AN
ED0018	WADI MAS'ADA	896	177	850	1967/5/1		MA'AN
ED0019	WADI ARADA	899	225	920	1967/5/1		MA'AN
ED0020	QA'KHREIM	882	220	830	1967/5/1		MA'AN

(To be continued)

Table 2.1.1-2 Summary of Rain-gauge Stations (Continued)

ID	RAIN-GAUGE STATION NAME	PALESTINE	PALESTINE	ALTITUDE (EL.M)	OPERATION		GOVERNORATE
		NORTH	EAST		OPEN	CLOSE	
ED0021	WADI SABIT	872	173	850	1967/5/1		MA'AN
ED0022	WADI MUQUR	872	193	1000	1967/5/1		MA'AN
ED0023	QA'EL-GHAL	882.4	208	910	1967/5/1		MA'AN
ED0026	AQABA EVAP.ST.	887	148	15	1987/12/1		MA'AN
F 0001	UM EL-QUTTEIN	1192.5	303.5	986	1947/10/1		MAFRAQ
F 0002	H5 EVAP.ST	1180	348.5	715	1968/6/3		MAFRAQ
F 0003	AZRAQ POLICE POST	1139.5	321	533	1934/12/1	1970/10/30	ZARQA
F 0004	DEIR EL-KAHF	1185	325	1025	1963/3/1		MAFRAQ
F 0005	AZRAQ PROJECT	1180	348.5	715	1962/11/1	1963/10/30	MAFRAQ
F 0006	AL-QARYATEIN	1170	330	800	1963/3/1		MAFRAQ
F 0007	AL-WISAD	1144.8	435	700	1963/3/1		MAFRAQ
F 0008	QASR EL-HAMMAM	1167	280	600	1963/11/1	1964/10/30	ZARQA
F 0009	AZRAQ EVAP .ST	1141.5	320	533	1964/10/1		ZARQA
F 0010	ESH-SHAUMARI	1130.5	317	525	1962/10/1	1965/10/30	ZARQA
F 0011	EL-UMARI	1107.3	342	525	1962/11/1		ZARQA
F 0012	QASR TUBA	1083	300	750	1968/9/1	1989/10/30	KARAK
F 0013	WADI SALAHIB	1159.7	381.5	700	1967/9/1		MAFRAQ
F 0014	TULLUL EL-KHURISHA	1156	303	550	1968/9/1		ZARQA
F 0015	TULLUL EL-GHAR	1151.5	404.8	750	1968/9/1		MAFRAQ
F 0016	QA'SAMIKA	1187	370.2	760	1968/9/1		MAFRAQ
F 0017	GADIR EL MALLAH	1163.8	358.2	630	1968/9/1		MAFRAQ
F 0018	JABEL ASEIKHIM	1151.6	334.7	640	1968/9/1	1970/10/30	ZARQA
F 0019	JABEL MUDAYSISAT	1123.9	273.3	800	1968/9/1		ZARQA
F 0020	QASR EL-KHARRANA	1127	288.5	650	1968/10/1		ZARQA
G 0002	JAFR P.POST	969	269	1300	1947/10/1	1980/6/1	MA'AN
G 0003	MA'AN	956.5	221	1080	1934/10/1		MA'AN
G 0004	BASTA	960.3	201.8	1450	1962/1/1		MA'AN
G 0005	SADAQA	952.5	196.5	1500	1963/1/1		MA'AN
G 0006	QUREIN	945.3	195	1500	1963/3/1		MA'AN
G 0007	MA'AN RAIL WAY STATION	954	223	1006	1963/10/1		MA'AN
G 0008	JAFR EVAP.ST	970	267	900	1967/4/1	1976/12/31	MA'AN
G 0009	UDRUH EVAP.ST	973.6	206.3	1350	1967/7/1		MA'AN
G 0010	JORDHAN GAUGING STATION	965.9	221.9	1082	1968/10/1	1973/10/30	MA'AN
G 0011	JABEL QUZEMEH	995.5	284.3	920	1967/9/1		MA'AN
G 0012	QABR ES-SAWW	984	247	945	1967/9/1		MA'AN
G 0013	ABU TARAF	935	239	990	1967/9/1		MA'AN
G 0014	INAB	932.2	331.4	950	1967/9/1		MA'AN
G 0015	KABID	929.5	296.2	870	1967/9/1		MA'AN
G 0016	JABEL EL BATRA	924	210	1300	1967/5/1	1973/10/30	MA'AN
H 0001	H4 EVAP.ST	1216	450.5	755	1968/6/1		MAFRAQ
H 0002	TARABEEL	1237.899	508.491	800	1967/9/1		MAFRAQ
H 0003	KLUM RUJEIM	1228.8	486.8	800	1967/9/1		MAFRAQ
H 0004	TULLUL EL-ASHQAF	1193	389.2	900	1967/9/1		MAFRAQ
J 0002	EL-KHERQA	1076	333	635	1967/9/1		ZARQA
J 0004	QA'ES-SIQ	972.5	365.4	870	1967/9/1		MA'AN
K 0001	EL-MUDAWWARA EVAP.ST	859	249	820	1967/9/9	1977/12/30	MA'AN
K 0002	DURRAH EVAP.ST	867.5	147	15	1968/6/1	1977/7/30	MA'AN
K 0003	MUHEISH	866	234	800	1967/5/1		MA'AN
K 0004	WADI DUREIBA	866	215	950	1967/5/1		MA'AN

Note: The central point of PALESTINE Coordinates is Birshibu. Letter in bold type means station's data are applied to the Study.

Source: WIS database of MWI

Table 2.1.1-3 Summary of Evaporation-gauge Station

EVAPORATION STATION		PALESTINE	PALESTINE	ALTITUDE	OPERATION		GOVERNORATE
ID	NAME	NORTH	EAST	(ELM)	OPEN	CLOSE	
AD0027	SAMAER ROSAN EVAP. ST.	1227.9	228.7	550	1968/7/1	1985/12/31	IRBID
AD0034	SAMAR EVAP. STATION	1232.3	231.9	410	1985/1/1		IRBID
AH0003	RAS MUNEIF EVAP. ST.	1198.8	226.8	1150	1968/7/1	1988/9/20	IRBID
AL0019	AMMAN AIRPORT	1153.8	243.5	790	1937/10/1		AMMAN
AL0035	K.H.NURSERY EVAP. ST (BAQ'A)	1165.4	230	700	1966/10/1		BALQA
AL0053	KING TALDAM	1178	228.6	218	1972/11/1		JARASH
AL0059	UM EL-JUMEVAP. ST.	1190.4	276.8	650	1968/6/10		MAFRAQ
AL0066	KHIREBIT ES SAMRA EVAP. ST.	1173.5	258.25	540	1984/9/1		ZARQA
AM0007	SOUTH SHUNA	1146	210.5	-160	1965/3/1		BALQA
CC0004	MUSHAQQAR EVAP. ST.	1132.9	226.2	84	1984/12/1		AMMAN
CD0010	RABBA	1075.5	220.5	970	1951/10/1		KARAK
CD0020	SIWAQA EVAP. ST.	1086.8	253.7	775	1965/11/3	1973/12/31	AMMAN
CD0023	QASR EVAP. ST.	1080.9	221	900	1968/7/1	1985/12/31	KARAK
CD0026	EZ-ZEITHNA EVAP. ST.	1129.7	235.7	765	1968/8/1	1984/12/31	AMMAN
CF0006	GHORES-SAFI-MET ST.	1051	193	-285	1965/12/1		KARAK
CF0007	HASA EVAP. ST.	1030.6	243.6	900	1967/6/1		TAFILAH
DA0007	FEEDAN	1003.75	187.3	96	1985/9/1		TAFILAH
DA0011	RISHEH EVAP. ST.	959	170.4	250	1998/12/1		AQABAH
DF0002	UM METLA	987.1	177.6	106	1985/1/12		MA'AN
EA0002	RAHMA	926	162	105	1985/9/1		MA'AN
ED0004	QUWEIRA EVAP. ST.	914	181	800	1967/9/9	1990/12/31	MA'AN
ED0012	RAM (QA'DISI) EVAP. ST.	896	199.8	790	1965/11/1		MA'AN
ED0026	AQABA EVAP. ST.	887	148	15	1987/12/1		MA'AN
F 0002	H5 EVAP. ST.	1180	348.5	715	1968/6/3		MAFRAQ
F 0009	AZRAQ EVAP. ST.	1141.5	320	533	1964/10/1		ZARQA
G 0004	BASTA	960.3	201.8	1450	1962/1/1		MA'AN
G 0008	JAFR EVAP. ST.	970	267	900	1967/4/1	1976/12/31	MA'AN
G 0009	UDRUH EVAP. ST.	973.6	206.3	1350	1967/7/1		MA'AN
H 0001	H4 EVAP. ST.	1216	450.5	755	1968/6/1		MAFRAQ
J 0001	BAYIR EVAP. ST.	1020	310.5	902	1967/9/20	1971/12/31	MA'AN
K 0001	EL-MUDAWWARA EVAP. ST.	859	249	820	1967/9/9	1977/12/30	MA'AN
K 0002	DURRAH EVAP. ST.	867.5	147	15	1968/6/1	1977/7/30	MA'AN

Note: The central point of PALESTINE Coordinates is Birshibu. Letter in bold type means station's data are applied to the Study.

Source: WIS database of MWI

Table 2.1.1-5 Summary of Minimum Annual Rainfall

Governorate	Rain-gauge Station		Min. Rainfall		2nd Min. Rainfall		3rd Min. Rainfall		4th Min. Rainfall		
	ID No.	Name	(mm)	Water Year	(mm)	Water Year	(mm)	Water Year	(mm)	Water Year	
Amman	AI0018	Jubeiha	204.9	1959/60	> 500-year	225.0	1998/99	249.0	1954/55	256.5	1946/47
	AI0019	Amman Airport	104.4	1959/60	50-year	107.2	1998/99	109.0	1985/86	129.0	1950/51
	AL0022	Amman Hussein College	142.9	1959/60	> 500-year	157.6	1965/66	176.2	1998/99	176.2	1950/51
	AN0002	Wadi Es-Sir	205.0	1950/51	> 500-year	244.5	1959/60	246.5	1998/99	279.1	1954/55
	AN0003	Na'ur	128.3	1998/99	50-year	131.7	1962/63	150.2	1995/96	166.3	1993/94
	CD0001	Sahab	92.0	1998/99	150-year	104.5	1978/79	136.5	1962/63	141.2	1972/73
	CD0003	El-Muwaqqar	45.0	1939/40	> 100-year	55.5	1998/99	62.0	1983/84	64.2	1959/60
	CD0005	Jiza	28.0	1984/85	50-year	49.6	1998/99	54.0	1985/86	57.0	1981/82
	CD0007	Dhiban	102.0	1957/58	12-year	110.3	1985/86	113.5	1980/81	117.0	1998/99
	CD0015	Dhaba' Nursery	9.0	1998/99	500-year	40.3	1970/71	48.2	1996/97	76.8	1978/79
	CD0017	Um El-Risas	37.1	1981/82	15-year	29.7	1998/99	45.0	1975/76	47.0	1993/94
	Zarqa	AL0008	Atuk	122.0	1967/68	35-year	151.2	1988/89	158.4	1954/55	162.3
AL0015		Zarqa	39.0	1959/60	100-year	41.5	1946/47	43.0	1954/55	48.0	1998/99
AL0049		Qasr El-Hallabat	11.4	1983/84	30-year	21.0	1998/99	26.8	1996/97	56.0	1978/79
AL0051		Wadi Zerqa Gauging Station	224.9	1972/73	10-year	232.9	1974/75	267.0	1976/77	272.6	1977/78
F0011		El-Umari	3.2	1998/99	5-year	10.5	1992/93	10.5	1982/83	12.8	1984/85
Mafraq	AD0017	Rihab	92.8	1998/99	20-year	97.0	1976/77	112.9	1965/66	115.6	1959/60
	AD0018	Ibbin	97.5	1984/85	> 500-year	172.5	1982/83	270.5	1978/79	287.9	1980/81
	AD0019	Mafraq Airport	58.3	1998/99	> 500-year	88.1	1985/86	88.2	1972/73	88.5	1976/77
	AL0003	Bal'ama	82.0	1998/99	30-year	87.4	1990/91	125.1	1978/79	128.6	1993/94
	AL0048	Khaldiya	47.6	1998/99	> 100-year	60.4	1985/86	65.4	1993/94	67.4	1972/73
	AL0059	Um El-Jumal Evap. Station	17.0	1998/99	50-year	26.7	1975/76	46.9	1985/86	53.4	1993/94
	F0001	Um El-Quttein	16.0	1998/99	> 500-year	58.0	1947/48	58.0	1048/49	64.5	1999/00
Irbid	AB0001	Al-Tayiba	180.9	1998/99	> 500-year	273.4	1959/60	284.3	1958/59	294.6	1988/89
	AB0004	Kh. El-Wahadneh	139.3	1981/82	> 500-year	180.9	1998/99	214.3	1950/51	219.5	1972/73
	AB0008	Kufrawan	203.2	1998/99	> 500-year	231.2	1978/79	240.5	1950/51	253.0	1946/47
	AD0002	Kartha	177.6	1978/79	75-year	217.0	1998/99	233.1	1981/82	236.0	1959/60
	AD0003	Kufr Saum	187.7	1978/79	100-year	259.1	1998/99	265.8	1985/86	275.9	1988/89
	AD0005	Um Qeis	199.4	1978/79	> 500-year	230.7	1981/82	237.1	1998/99	270.3	1988/89
	AD0009	Kawwara	165.0	1959/60	40-year	165.1	1998/99	176.5	1972/73	184.6	1978/79
	AD0011	En Nusayme	102.1	1998/99	100-year	105.8	1959/60	144.5	1978/79	189.4	1990/91
	AD0012	Ramtha Boys School	94.8	1998/99	75-year	115.9	1950/51	130.2	1978/79	151.5	1959/60
	AD0013	Khanasirz	52.4	1998/99	350-year	96.5	1978/79	84.3	1954/55	86.8	1969/70
	AE0002	Irbid Agr. Station	210.3	1998/99	> 500-year	211.7	1959/60	226.4	1978/79	264.0	1958/59
	AH0002	Wadi El-Yabis	115.3	1998/99	> 500-year	152.5	1978/79	189.7	1977/78	194.8	1993/94
	Ajloun	AJ0002	Kufrija	237.5	1998/99	> 500-year	336.7	1950/51	338.5	1950/51	341.9
AJ0003		Wadi Kufrija	113.8	1975/76	40-year	131.5	1959/60	173.8	1972/73	174.4	1962/63
AF0002		Rihaba	180.8	1998/99	> 500-year	226.1	1981/82	252.0	1978/79	271.4	1962/63
Jarash	AL0004	Jarash	145.0	1978/79	100-year	157.3	1959/60	178.0	1946/47	178.1	1950/51
	AL0026	Burma	223.2	1998/99	15-year	234.7	1985/86	241.1	1988/89	270.8	1993/94
	AL0036	Prince Feisal Nursery	171.3	1998/99	150-year	175.5	1978/79	221.0	1993/94	226.9	1985/86
	AL0050	Qafqafa	120.5	1998/99	80-year	146.4	1985/86	166.6	1972/73	185.8	1978/79
	AL0053	King Talal Dam	67.0	1975/76	> 500-year	404.3	1998/99	428.7	1976/77	451.1	1978/79
Balqa	AL0010	Deir Alla Agr. Station	102.1	1998/99	> 500-year	114.6	1959/60	####	1975/76	145.1	1954/55
	AL0028	Rumeinin	109.5	1998/99	> 500-year	195.8	1982/83	260.0	1977/78	260.1	1984/85
	AM0001	Salt	223.4	1998/99	200-year	262.0	1954/55	302.0	1959/60	326.0	1950/51
	AM0002	Wadi Shu'eib Agr. Station	144.5	1998/99	> 500-year	183.4	1962/63	184.1	1959/60	201.1	1983/84
Madaba	CC0001	Madaba	55.9	1981/82	> 500-year	111.8	1983/84	135.7	1962/63	141.0	1960/61
	CD0013	Mazar	119.8	1962/63	25-year	136.5	1972/73	138.5	1957/58	152.9	1983/84
Karak	CD0029	Sirfa	160.6	1983/84	20-year	172.0	1972/73	172.9	1985/86	194.5	1998/99
	DA0002	Shaubak Agr. Station	95.0	1983/84	50-year	107.8	1962/63	138.1	1972/73	145.2	1998/99
Ma'an	DG0001	Wadi Musa	39.6	1972/73	> 500-year	58.2	1983/84	66.4	1957/58	66.5	1952/53
	G0003	Ma'an	11.5	1957/58	15-year	11.6	1992/93	13.0	1955/56	14.5	1975/76
	G0006	Qurein	23.2	1999/00	50-year	33.9	1972/73	57.2	1981/82	64.6	1998/99
	CF0005	Hasa Police Post	16.0	1969/70	20-year	27.0	1972/73	34.3	1968/69	49.9	1970/71
Tafielah	DB0001	Tafile	82.7	1972/73	> 500-year	83.6	1962/63	86.0	1957/58	86.8	1959/60
	DE0001	Dana	55.5	1962/63	12-year	60.4	1957/58	97.4	1998/99	102.5	1972/73
	ED0001	Aqaba	1.5	1995/96	25-year	2.5	1948/49	3.8	1966/67	4.6	1979/80
Aqaba	ED0002	Ras En-Naqb	16.4	1995/96	500-year	16.8	1996/97	24.5	1983/84	31.9	1969/70

Source: WIS database of MWI

Table 2.1.1-6 Long-term Monthly Average and Annual Evaporation by Governorate

Governorate	Evaporation Station		Wet Season (mm)									Dry Season (mm)					Annual (mm)			Available Data Period
	ID No.	Name	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total	Jun.	Jul.	Aug.	Sep.	Total	Mean	Max.	Min.	
Amman	AL0019	Amman Airport	180	111	83	72	90	133	184	255	1,108	264	273	262	221	1,020	2,129	2,962	1,548	66/67-73/74, '80/'81, '88/'89-95/96
Zarqa	AL0066	Khirebit Es Samara	152	85	53	52	55	102	164	258	921	304	305	279	233	1,120	2,042	2,748	1,571	85/86-91/92, '93/94-95/96
Mafraq	H0001	H4	237	137	102	87	125	197	271	345	1,501	387	408	365	315	1,476	2,978	3,759	2,214	68/69-76/77, '80/'81, '83/'84, '86/87-89/90, '91/92-96/97
	F0002	H5	276	143	89	86	123	203	298	414	1,631	469	535	490	392	1,885	3,516	4,417	2,830	68/69-73/74, '75/76-76/77, '78/79, '83/84, '90/91-91/92, '96/97-97/98
Irbid	AD0034	Samar	208	171	112	97	95	117	186	227	1,213	225	223	206	204	858	2,071	2,225	1,884	85/86-86/87, '88/89-96/97
Ajloun	AH0003	Ras Muncif	199	123	70	76	99	143	190	270	1,168	296	323	300	240	1,159	2,327	2,508	1,755	68-88
Jarash	AL0053	King Talal Dam	225	152	92	93	93	131	193	285	1,265	329	362	341	289	1,322	2,586	2,762	2,430	78/79, '81/82-84/85, '86/87-87/88
Balqa	AL0059	Um El-Jumal	250	174	113	104	118	175	273	375	1,582	397	434	382	309	1,522	3,104	3,791	2,440	68/69-71/72, '73/74-74/75, '76/77-85/86, '87/88-89/90, '91/92-99/00
	AM0007	South Shuma	289	199	124	108	122	188	292	379	1,702	424	436	406	344	1,610	3,311	3,913	2,865	72/73, '74/75-79/80, '82/83-83/84, '86/87-96/97
	AL0035	K.H.Nursery (Baq'a)	216	135	88	72	91	138	209	299	1,247	343	373	349	282	1,347	2,594	3,382	1,662	67/68-68/69, '71/72-83/84, '96/97-98/99
Madaba	CC0004	Mushaqqar	207	141	80	69	74	119	201	278	1,169	300	313	299	250	1,161	2,331	2,327	1,703	84-99
	CD0026	AJ Zeituneh	228	131	76	70	100	143	203	302	1,253	366	385	345	300	1,396	2,649	3,113	1,803	69-84
Karak	CD0010	Rabba	237	179	127	100	108	146	248	333	1,479	351	354	330	273	1,309	2,787	3,002	2,544	86/87, '88/89-90/91, '92/93-96/97
	CF0006	Ghores-Safi-Met.	266	175	120	122	135	184	297	386	1,685	412	452	422	344	1,630	3,315	4,020	2,806	66/67, '79/80, '84/85-86/87, '90/91-95/96
Ma'an	ED0012	Ram (Qa'disi)	275	169	124	100	144	229	270	390	1,702	457	480	460	344	1,741	3,443	3,943	3,146	68/69-73/74, '91/92-92/93
	ED0026	Aqaba	445	328	258	227	239	322	417	505	2,741	590	598	581	528	2,297	5,038	5,343	4,869	87/88-88/89, '90/91-91/92, '93/94-96/97
	G0008	Jafr	222	121	94	90	123	199	295	387	1,530	422	476	447	338	1,683	3,214	2,748	1,571	69/70, '72/73-75/76
Tafilah	CF0007	Hasa	239	148	106	99	135	205	302	390	1,622	444	466	423	337	1,670	3,292	4,074	2,778	67/68-74/75, '83/84-88/89, '90/91-96/97
Aqaba	DA0011	Al Rishah	241	161	154	158	-	-	-	-	-	-	-	-	-	-	-	-	-	Oct. '99 - Jan. '00

Note: "##" means no evaporation gauging station, "-" means data not available.

Source: WIS database of MWI (pan evaporation)

Table 2.1.1-7 Summary of River/Wadis Gauging Stations

ID	GAUGING STATION NAME	PALESTINE NORTH	PALESTINE EAST	ALTITUDE (E.L.M)	OPERATION		GOVERNORATE
					OPEN	CLOSE	
AB0009	WAQQAS	208.25	1216	-155	1981/10/1		IRBID
AD0020	MAQAREN	230	1237	12	1963/10/1		IRBID
AD0033	ADASIYA	209.2	1231.5	-210	1963/10/1		IRBID
AE0400	WADI ELARAB	207.5	1222.5	-210	1973/10/1		IRBID
AF0003	ZAGLAB	206.6	1213	-205	1963/10/1		IRBID
AH0005	ALYABIS	206	1199	-180	1981/10/1		IRBID
AJ0005	KUFRANJA	205.2	1185	-180	1966/6/1		IRBID
AK0003	WADI RAJIB	211.2	1183.2	-80	1981/10/1		AJLOUN
AL0040	W.UM AL-DANANIR	227.3	1165.9	600	1966/10/1		BALQA
AL0060	WADI ZERQA NEW JERASH BRG	232	1180	150	1963/10/1		JARASH
AL0061	WADI SLEIHI	229.6	1168.8	530	1966/10/13		BALQA
AL0062	WADI ZERQA AIN GHAZAL	241.9	1153.7	700	1973/1/13	1979/9/1	AMMAN
AL0063	WADI ZERQA NEAR SUKHNE	250.2	1171.3	515	1971/10/1	1984/9/30	ZARQA
AL0064	WADI DHULEIL NEAR SUKHNE	250.6	1173	490	1971/11/18	1979/9/30	ZARQA
AL0065	WADI ABDOUN	236.8	1150.7	780	1973/1/16		AMMAN
AL0068	WADI ZARQA DEIR ALLA	212.1	1178.4	-190	1949/5/1	1975/6/1	AJLOUN
AM0008	WADI SHUEIB SHAN NIMRIN	208	1147	-190	1981/10/1		BALQA
AN0006	WADI KAFREIN	210	1139	-160	1965/10/1		BALQA
AP0002	WADI HISBAN	210.2	1137	-140	1982/10/1		BALQA
CA0001	W.KERAK GHOR MAZRA'A	200	1078.4	-300	1973/11/13	1982/3/27	KARAK
CA0007	EIN-AL-MAGARAH	201.5	1078.5	-330	1998/5/4		KARAK
CA0008	W. IBN HAMMAD	206	1079.5	-160	1979/10/1		KARAK
CA0009	EIN EL-SIKKEEN NORTH	201.2	1076.2	-300	1998/5/4		KARAK
CA0010	WADI ISSAL	202.4	1066.8	-260	1978/10/1		KARAK
CA0011	WADI NUMEIRA	201	1060	-300	1978/10/1		KARAK
CD0035	WADI MUJIB KERAK ROAD	226.5	1096.6	120	1964/10/1		MADABA
CD0036	WADI SULTANI SULTANI DAM	245	1055.5	820	1961/12/31		KARAK
CD0037	WADI KATRANI QATRANI DAM	246.4	1072.2	760	1961/12/31		KARAK
CD0038	WADI WALA KERAK ROAD	223.3	1106.5	440	1963/10/1		MADABA
CD0039	WADI SWAQA	250	1087	740	1963/11/9		AMMAN
CD0041	MALAQI	216.25	1096	-150	1984/10/1		MADABA
CD0042	WADI WALA / DOWNSTREAM	222.8	1107.35	440	1998/10/1		MADABA
CE0006	WADI ELKARAK	205.9	1075.5	-150	1978/10/1		KARAK
CE0007	WADI DREA'A	205.05	1072.55	-40	1978/10/1		KARAK
CF0009	WADI HASA KERAK-TAFILEH RD	218	1043.4	360	1968/11/23		KARAK
CF0010	WADI HASA GHOR SAFI	196	1047.5	-300	1963/10/1		KARAK
DA0008	WADI FEIFA	194.8	1038.8	-280	1978/10/1		KARAK
DA0009	WADI TLAH	189.6	1026.4	-106	1978/10/1		TAFILAH
DA0010	WADI UMRUQ	195	1035.3	-260	1978/10/1		KARAK
DC0004	KHNEIZIRA	191.4	1032.5	-142	1978/10/1		TAFILAH
DD0003	WADI DAHAL	190.4	1024.4	-40	1980/12/11		TAFILAH
DE0002	WADI DANA	197.7	1004.8	290	1985/3/23		TAFILAH
DE0003	WADI FINAN	198.1	1003.7	310	1977/7/9		AQABAH
DG0004	WADI MUSA BRIDGE	195.38	970.8	1050	1963/12/2	1984/10/1	AQABAH
DG0005	WADI MUSA WADI ARABA	187.25	974.1	410	1984/1/16	1993/10/1	AQABAH
DH0004	WADI HUWWAR	170.9	962	340	1981/3/25		AQABAH
EA0004	WADI SIQ	169.4	940	270	1980/12/27		AQABAH
EA0006	W. DARBA	165.6	921.7	485	1998/5/4		AQABAH
EB0001	WADI DILAGHA	183	947	1100	1964/2/1	1989/10/1	MA'AN
EB0002	WADI ABU BARQA	172.7	952.4	240	1984/1/16		AQABAH
EC0003	WADI RUQIYA	168.161	937.916	195	1980/2/13		AQABAH
ED0024	WADI YUTM	160	887	350	1964/2/1		AQABAH
F 0022	EL JANAB	291.353	1126.96	638	1998/10/1		AMMAN
F 0023	BUTUM	300.474	1134.471	580	1998/10/1		AMMAN
F 0024	RATAM	322.304	1141.583	510	1998/10/1		ZARQA
G 0018	WADI JURDHAN	221	966.15	1070	1979/11/29		MA'AN
H 0005	WADI RUWEISHED	459.5	1219.8	697	1980/12/27		MAFRAQ

Note: The central point of PALESTINE Coordinates is Birshibu. Letter in bold type means station's data are applied to the Study.
Source: WIS database of MWI

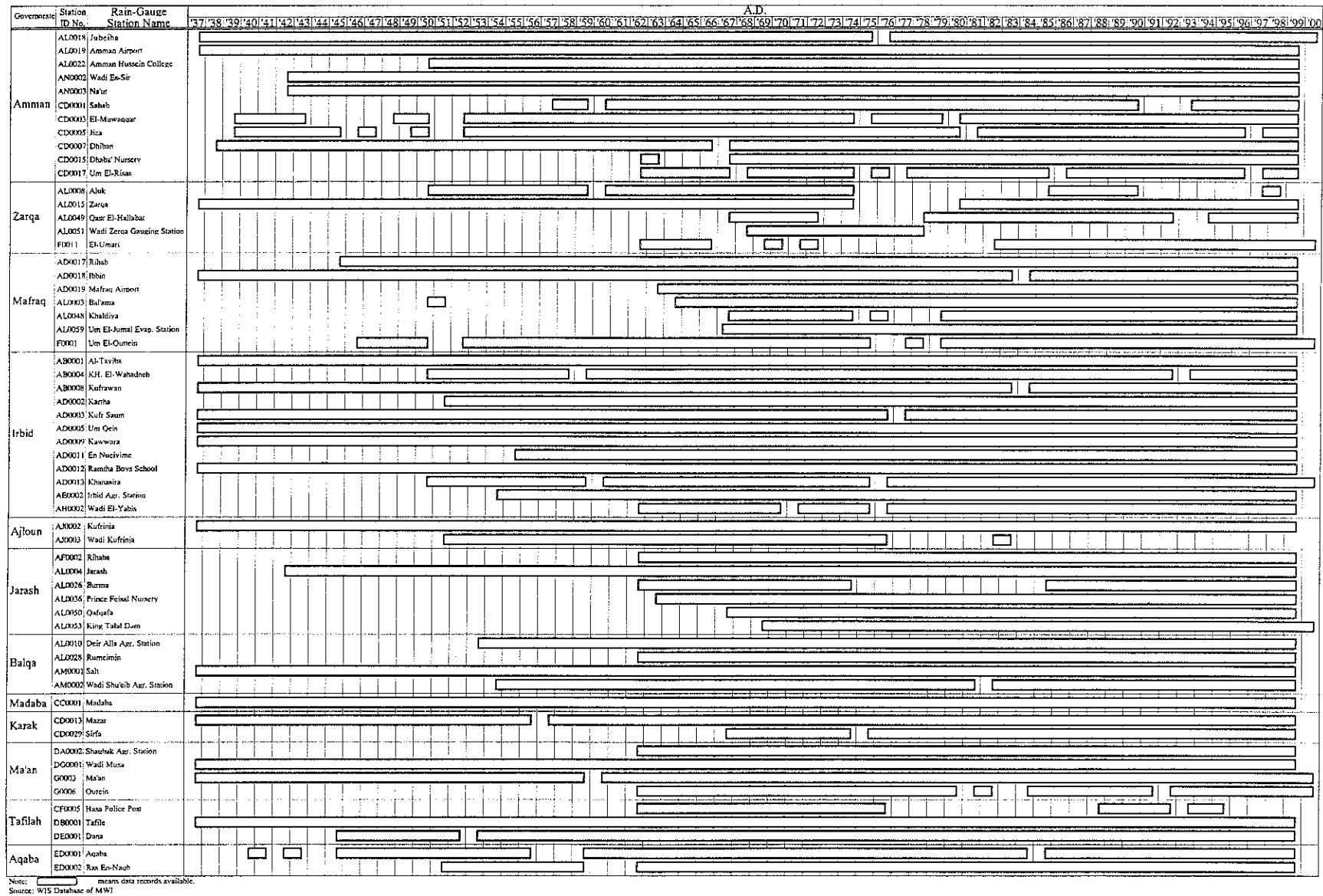


Fig.2.1.1-1 Available Rainfall Records at the Representative Rain-Gauge Stations

Governorate	Station ID No.	Evaporation Station Name	A.D.																																				
			'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00		
Amman	AL0019	Amman Airport	[Bar]										[Bar]					[Bar]										[Bar]	[Bar]										
Zarqa	AL0066	Khirebit Es Samara	[Bar]																				[Bar]															[Bar]	
Mafraq	H0001	H4	[Bar]															[Bar]															[Bar]						
	F0002	H5	[Bar]										[Bar]	[Bar]	[Bar]					[Bar]	[Bar]					[Bar]													
Irbid	AD0034	Samar	[Bar]																				[Bar]															[Bar]	
Ajloun	*	*	[No data]																																				
Jarash	AL0053	King Talal Dam	[Bar]										[Bar]	[Bar]										[Bar]	[Bar]														
Balqa	AL0059	Um El-Jumal	[Bar]															[Bar]																					
	AM0007	South Shuma	[Bar]	[Bar]										[Bar]	[Bar]										[Bar]														
	AL0035	K.H.Nursery (Baq'a)	[Bar]										[Bar]																				[Bar]						
Madaba	*	*	[No data]																																				
Karak	CD0010	Rabba	[Bar]																				[Bar]															[Bar]	[Bar]
	CF0006	Ghores-Safi-Met.	[Bar]										[Bar]	[Bar]										[Bar]	[Bar]														
Ma'an	ED0012	Ram (Qa'disi)	[Bar]																				[Bar]															[Bar]	
	ED0026	Aqaba	[Bar]																				[Bar]															[Bar]	
	G0008	Jafr	[Bar]	[Bar]										[Bar]																				[Bar]					
Tafilah	CF0007	Hasa	[Bar]										[Bar]	[Bar]	[Bar]	[Bar]	[Bar]	[Bar]										[Bar]											
Aqaba	DA0011	AJ Rishch	[Bar]																																				

Note: [Bar] means data records available. "*" means no observatories.
 Source: WIS Database of MWI

Fig.2.1.1-2 Available Evaporation Records at the Representative Stations

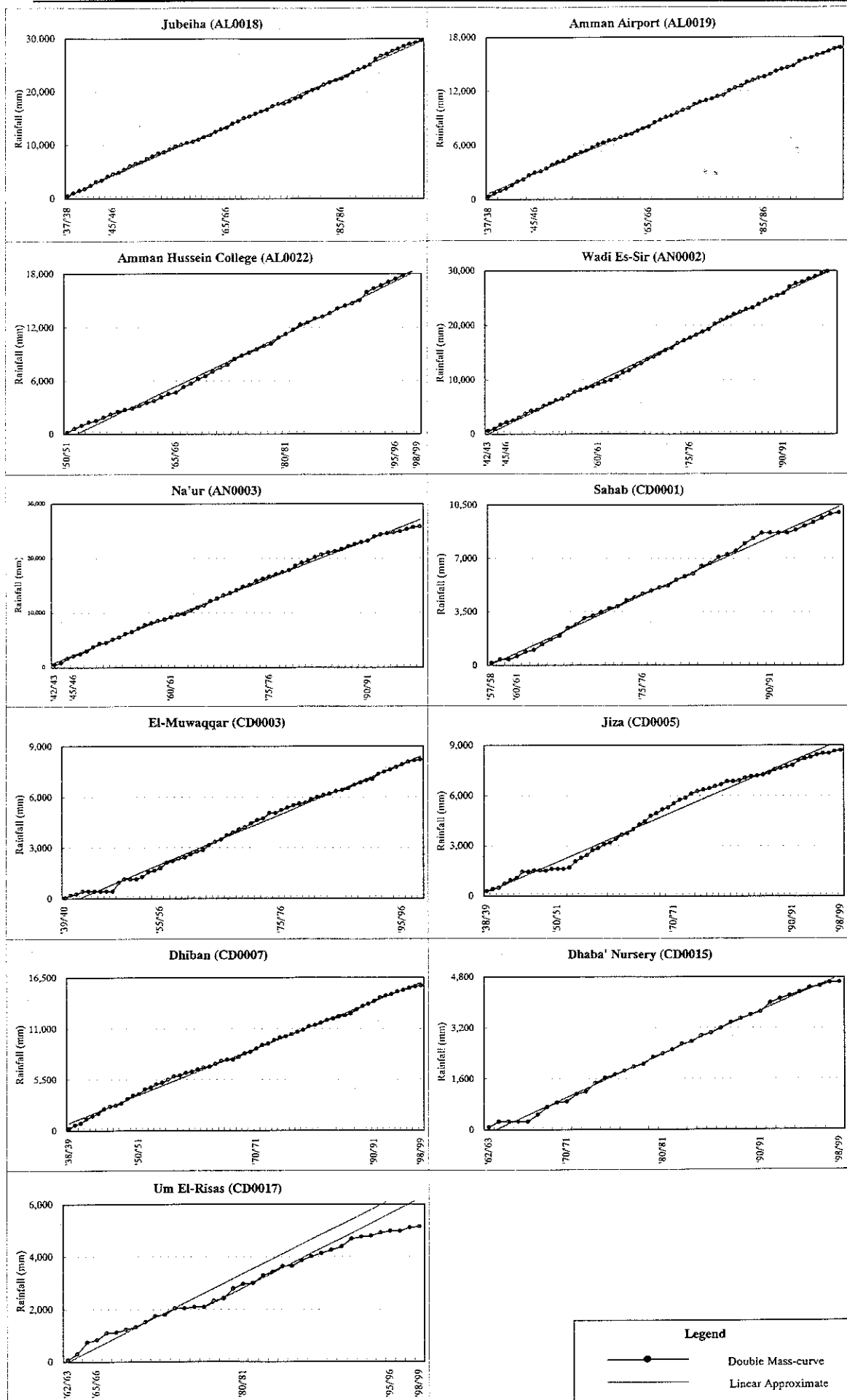


Fig.2.1.1-3(1) Double Mass-curves of Annual Rainfall (Amman Governorate)

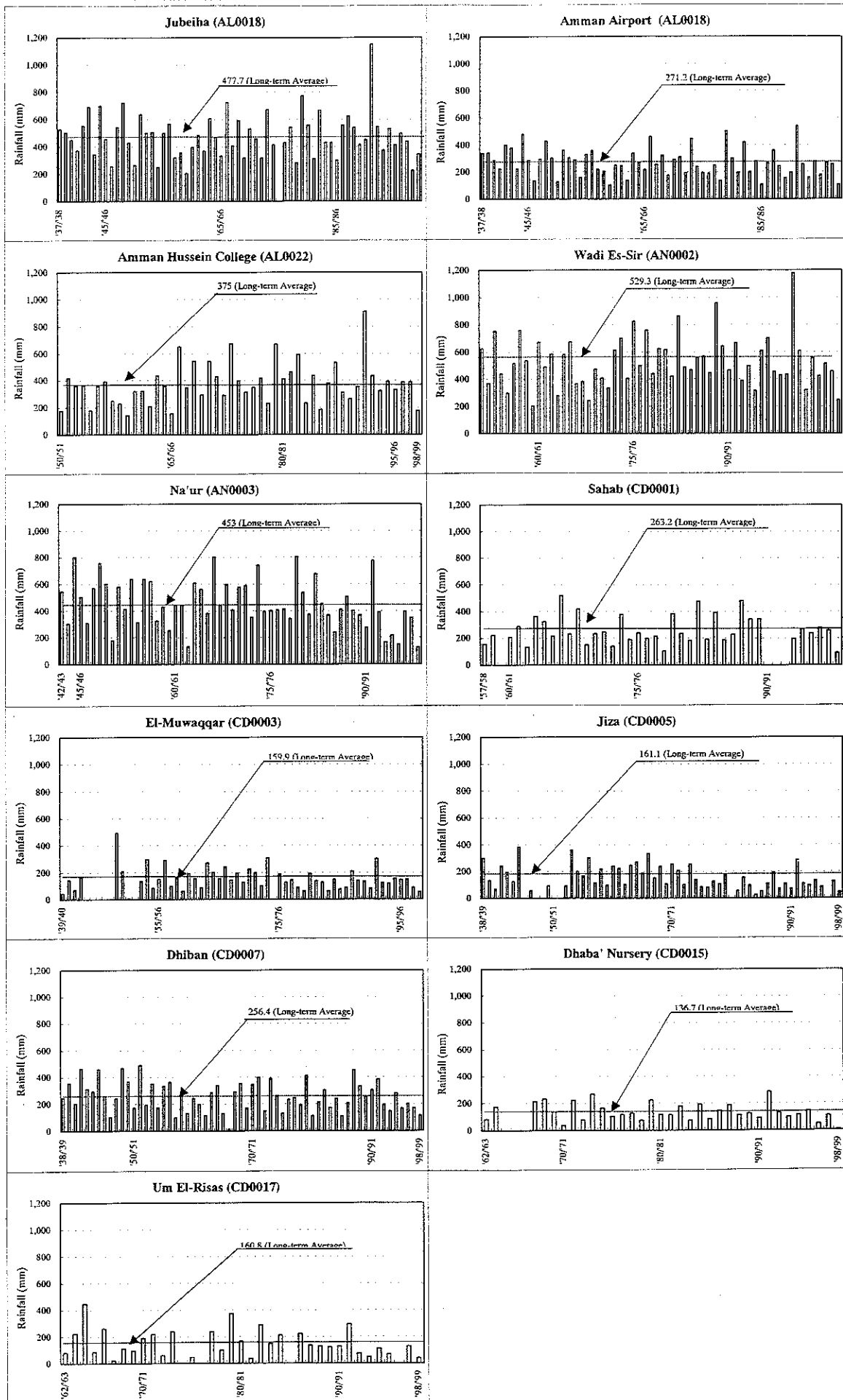


Fig.2.1.1-3(2) Long-term Average and Annual Rainfall (Amman Governorate)

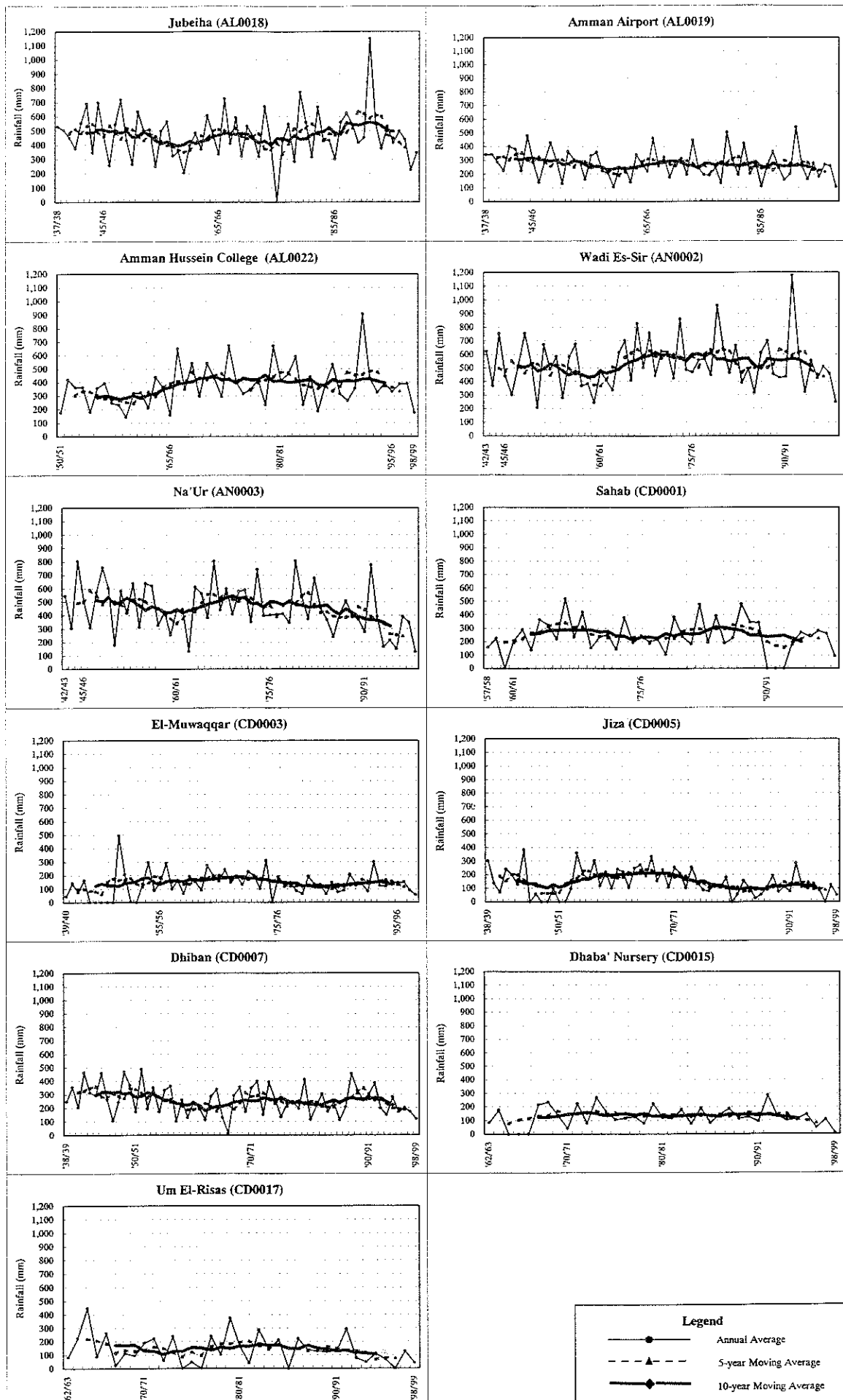


Fig.2.1.1-3(3) Annual Rainfall Moving Averages (Amman Governorate)

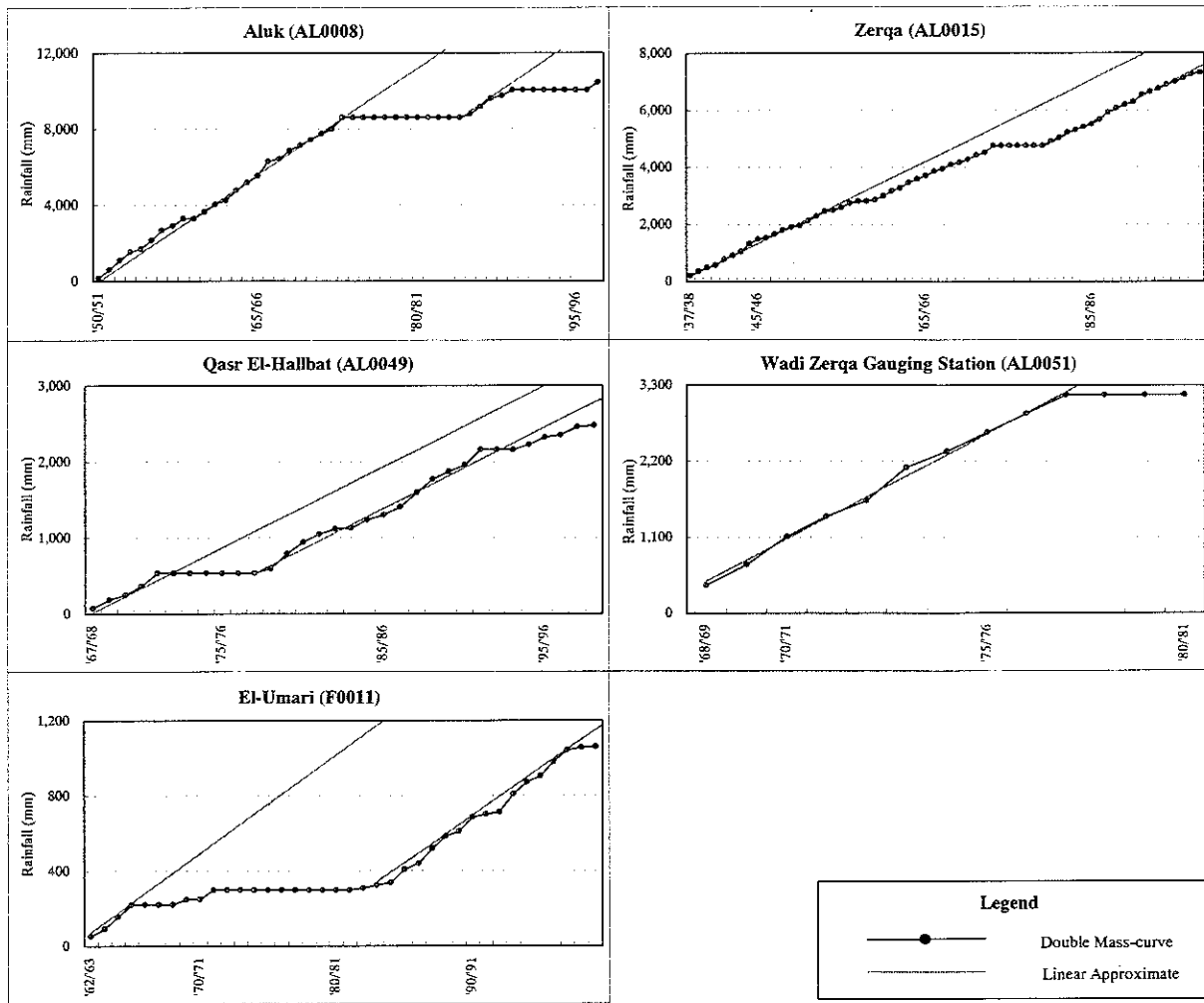


Fig.2.1.1-4(1) Double Mass-curves of Annual Rainfall (Zarqa Governorate)

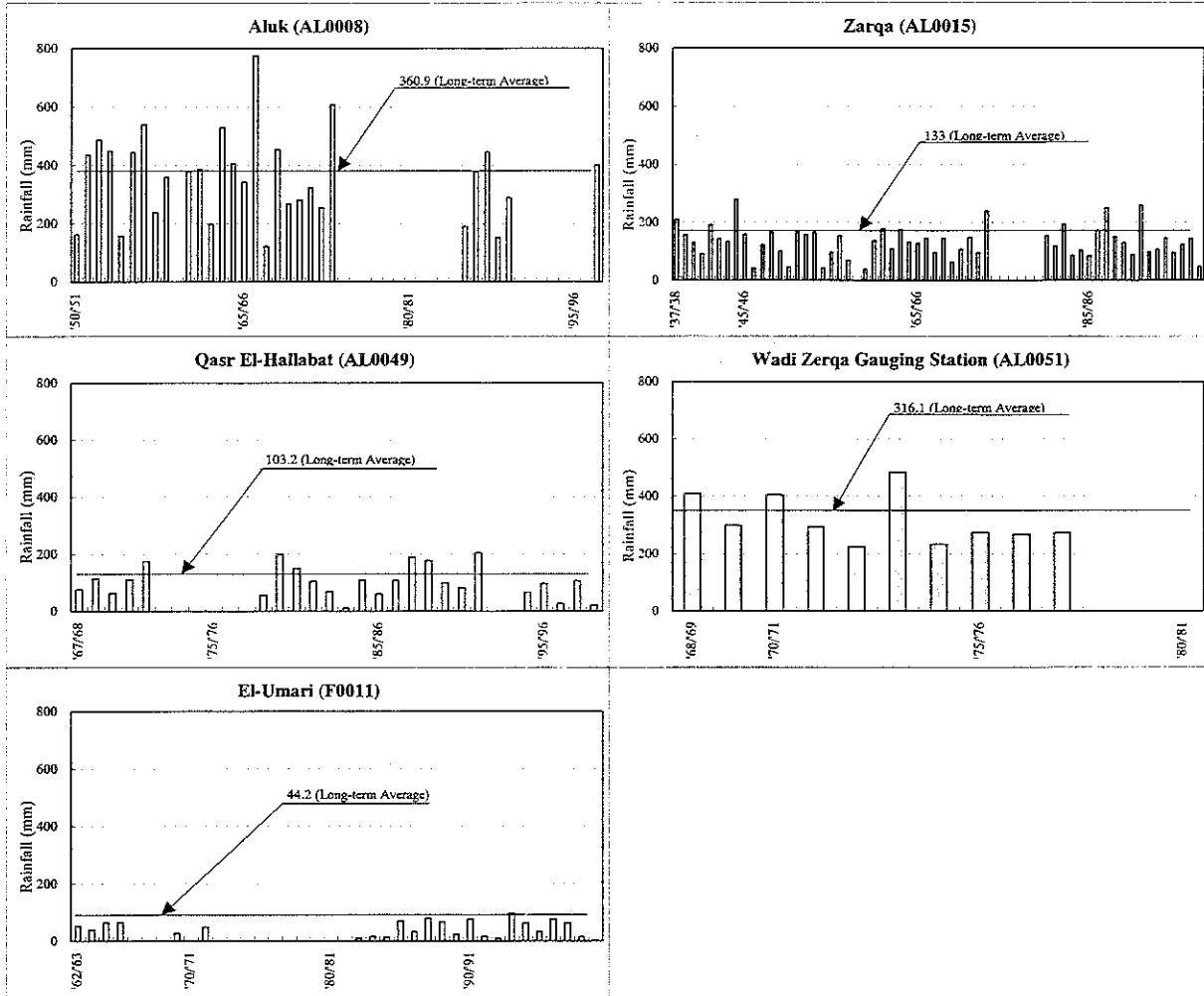


Fig.2.1.1-4(2) Long-term Average and Annual Rainfall (Zarqa Governorate)

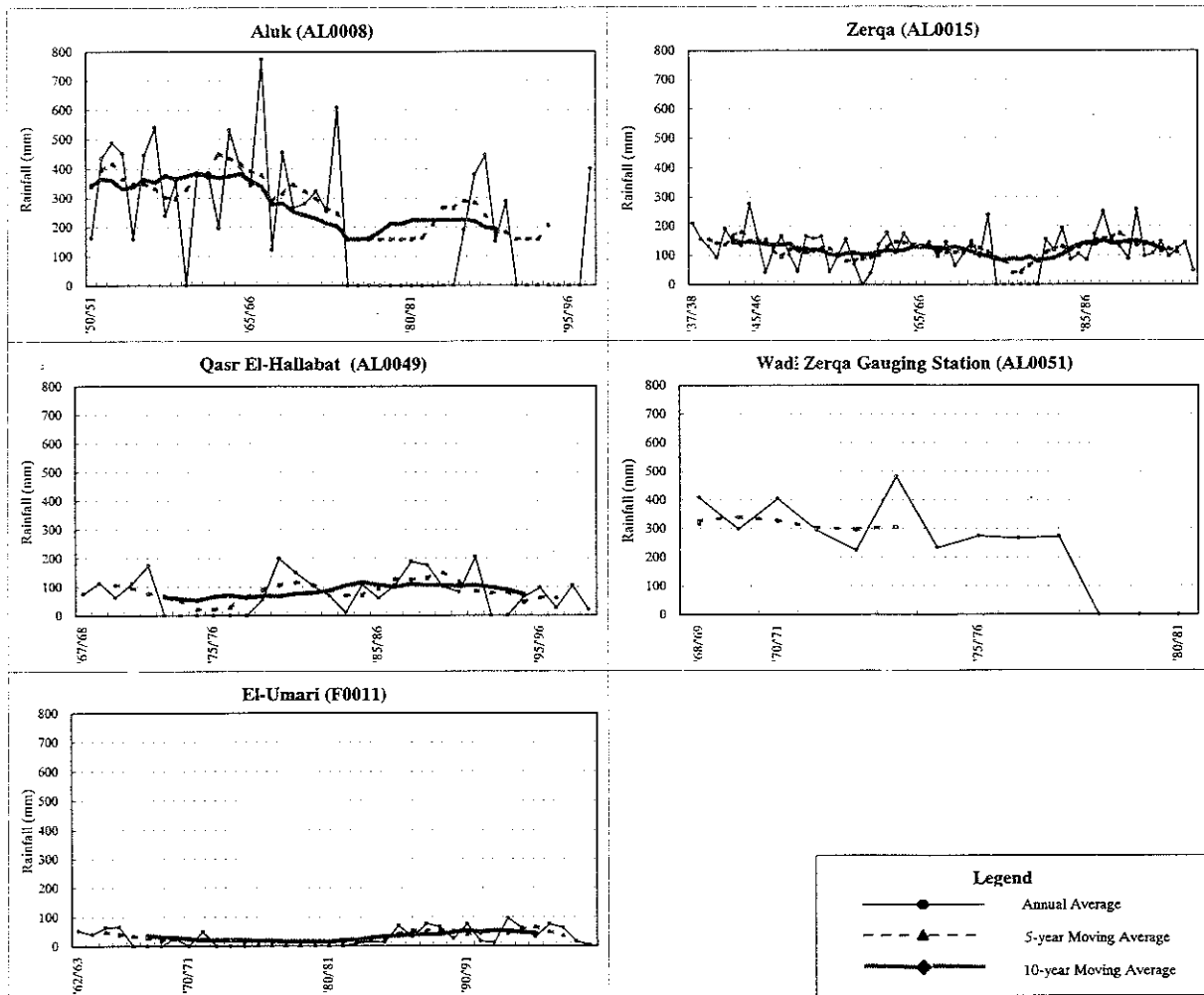


Fig.2.1.1-4(3) Annual Rainfall Moving Averages (Zarqa Governorate)