18th Regional Climate Outlook Forum over Central Africa Region
PRESAC -18

ON LINE
March 04 to 7, 2024

ClimSA
INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME

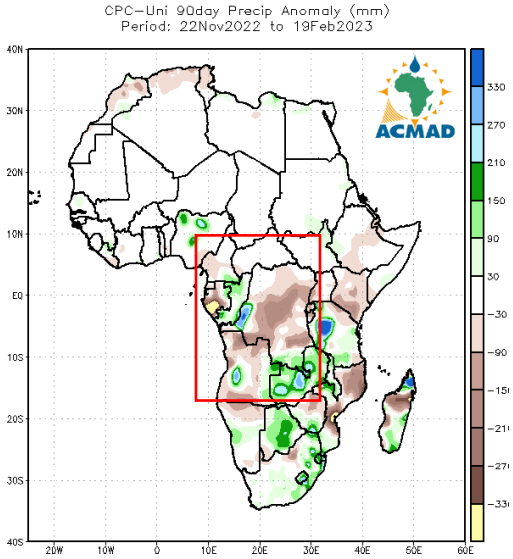
An initiative of the Organisation of African, Caribbean and Pacific States funded by the European Union

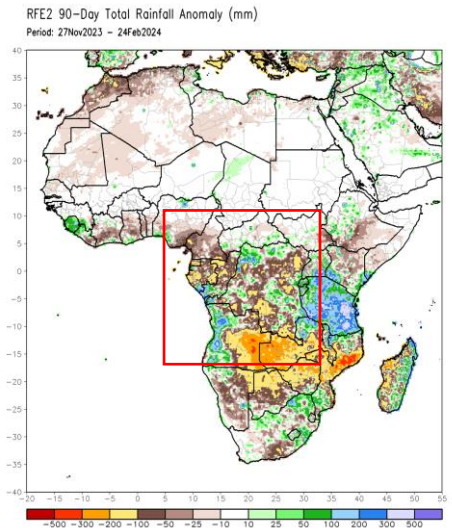
Prepared By: ACMAD Team

Time series analysis of Climate variability (seasonal and annual cycles, interannual/interdecadal variability) and trends

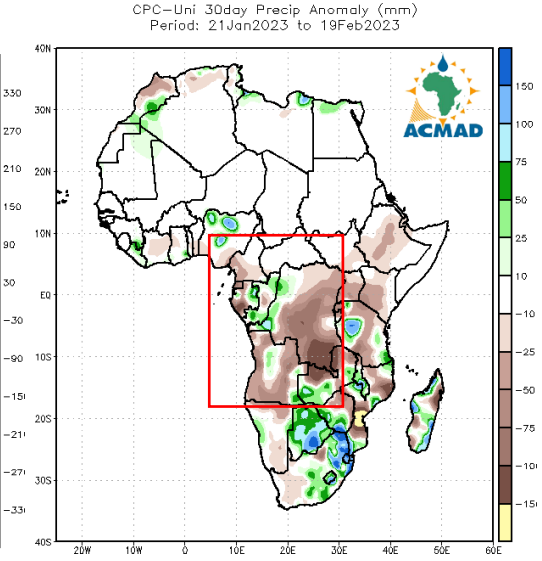
Time series analysis of Climate variability and trends(Persistence forecast)

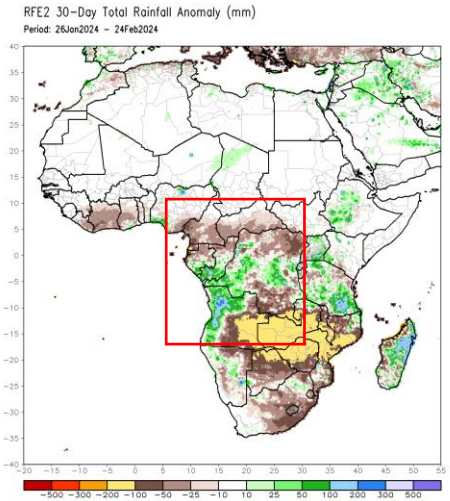
Latest 90-days



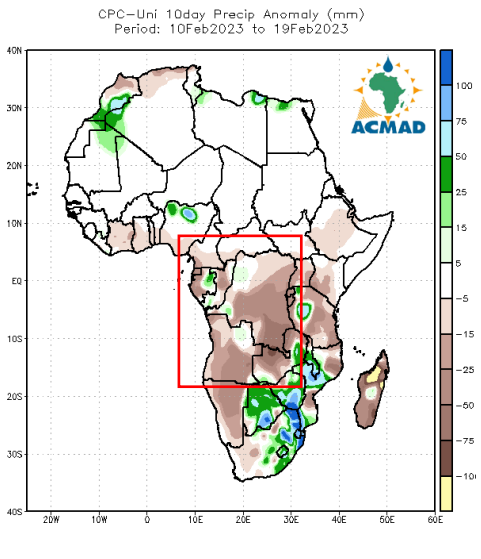


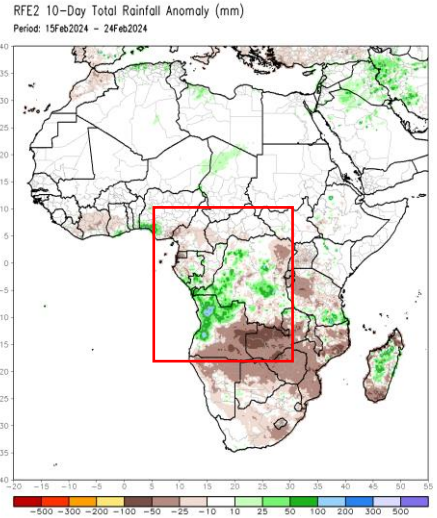
Last 30-days





Last 10-days

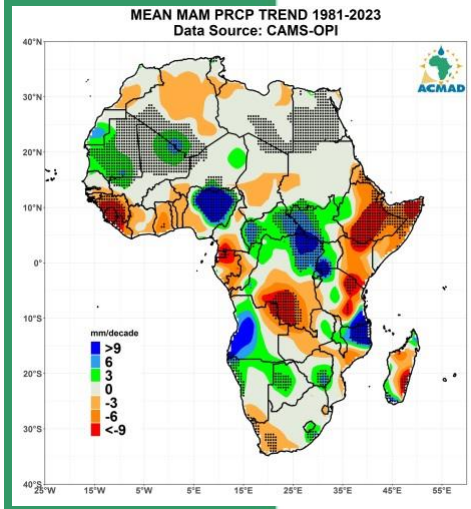




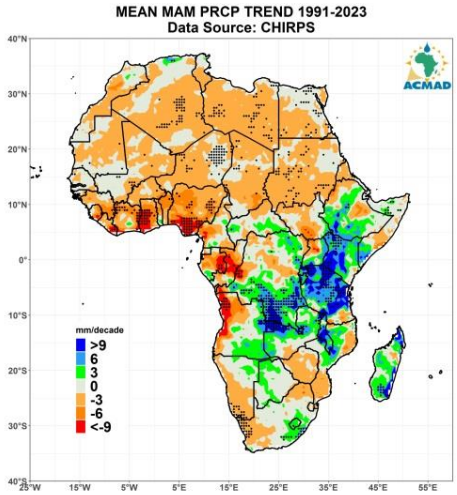
Time series analysis of Climate variability (seasonal and annual cycles, interannual/interdecadal variability) and trends (1/4)

Season 1 MAM

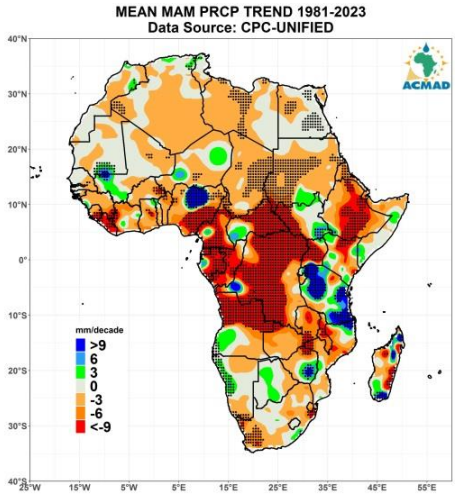
CAMS-OPI



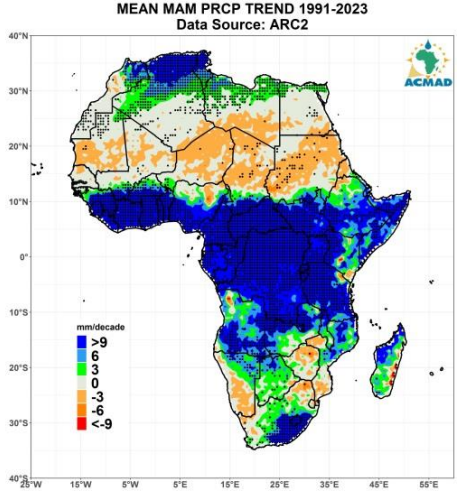
CHIRPS



CPC-UNI

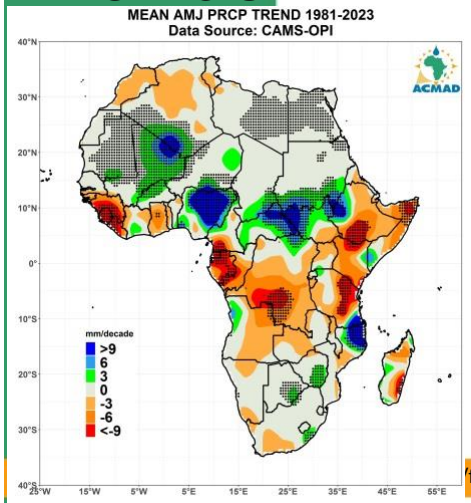


ARC2

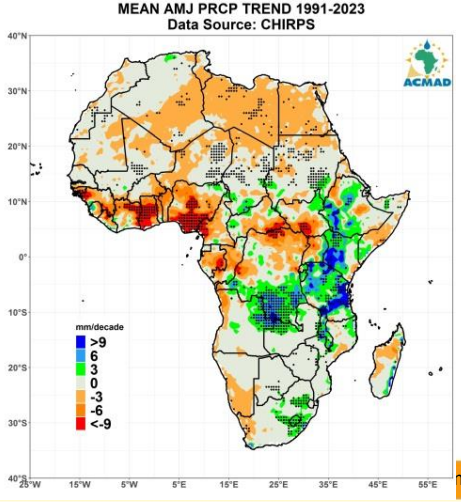


Season 2 AMJ

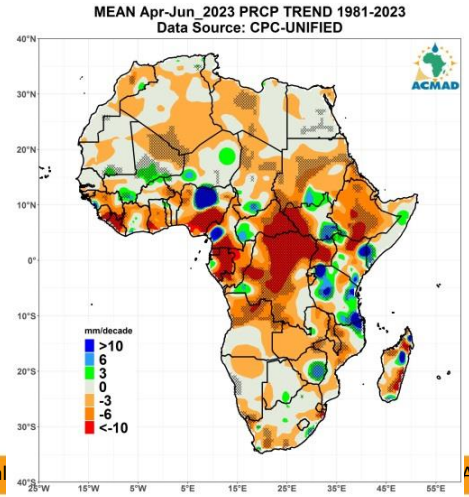
CAMS-OPI



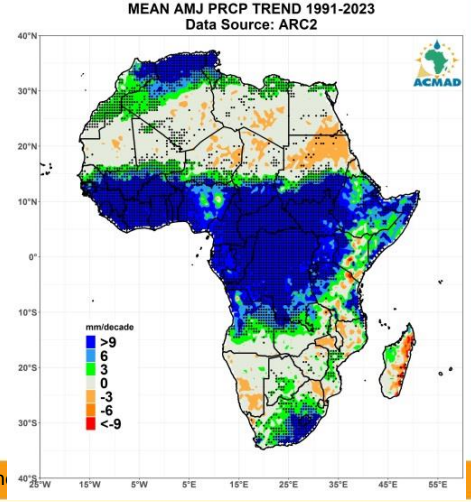
CHIRPS



CPC-UNI



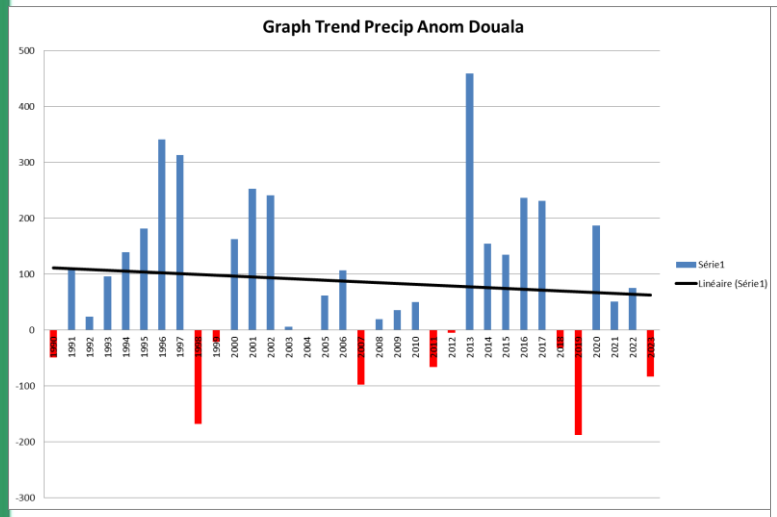
ARC2

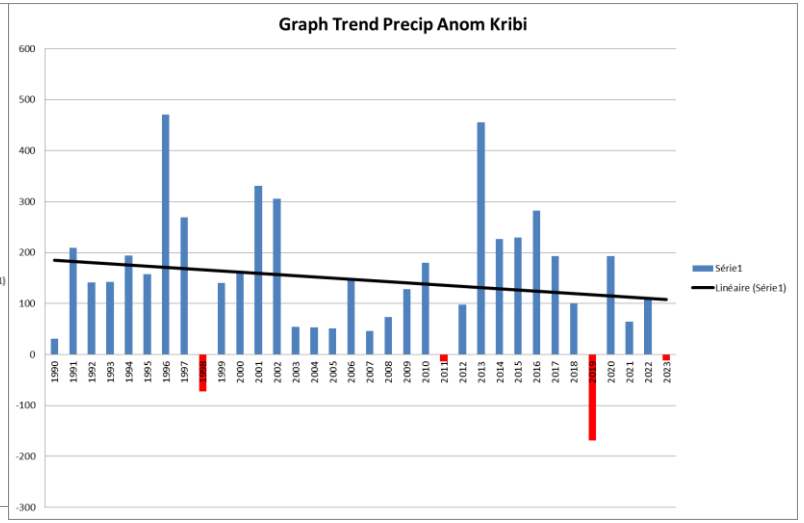


Time series analysis of Climate variability (seasonal and annual cycles, interannual/interdecadal variability) and trends

Station	ABONG-MBA	BAFIA	BAMENDA	BANYO	BATOURI	BERTOUA	BETARE-OYA	DOUALA-OB	GAROUA	KOUNDJA	KRIBI	LOMIE	MAMFE	MAROUA-SA	NGAOUNDERE	NKONGSAMBA	YAOUNDE	YOKO	MEIGANGA
Lon	13.2	11.25	10.11666	11.81666	14.36666	13.73333	14.06666	9.7	13.38333	10.75	9.9	13.61666	9.28333	14.25	13.36666	9.93333	11.51666	12.36666	14.36666
Lat	3.96666	4.73333	6.05	6.78333	4.46666	4.6	5.6	4.01666	9.33333	5.65	2.95	3.15	5.71666	10.45	7.35	4.95	3.83333	5.55	6.53333
1990	344.1758	373.0751	397.6524	352.0635	345.6296	339.9097	338.1003	441.0181	197.9041	391.1114	481.8938	352.8026	414.9929	110.8717	296.6971	415.8243	357.6051	362.811	318.3062
1991	515.7714	607.8197	573.1059	497.6862	464.4082	474.086	444.8268	600.8105	273.2615	584.0925	659.8236	516.2865	573.2392	182.4787	397.0269	589.5502	619.3219	534.5408	405.2553
1992	380.2062	478.1949	610.0469	475.2389	365.1443	373.3205	375.4836	514.2137	237.191	553.5467	592.5869	432.9008	635.6343	131.6745	351.6259	556.761	421.9275	460.5889	336.1995
1993	491.7852	479.1855	421.2559	371.6013	435.5416	455.0909	390.122	585.6511	197.5275	447.041	592.7422	518.5244	446.1231	116.1149	310.8148	503.0074	505.8565	429.629	329.0508
1994	457.8085	472.139	543.5701	367.0542	416.2228	413.4879	350.2345	629.2912	173.9218	494.3817	644.9427	489.803	628.9355	109.5716	270.4063	586.5592	684.9208	405.8599	296.4261
1995	449.5389	585.9708	677.6276	513.3598	415.2962	435.8366	406.6584	672.0175	189.9371	634.6778	607.9069	434.2036	720.35	105.0568	335.6561	671.1282	549.9212	519.4958	381.4034
1996	656.8556	709.6505	675.6073	538.4869	562.4674	601.261	539.0764	830.9877	250.0868	676.5911	921.492	659.7168	730.5406	141.6952	431.0229	756.297	747.9841	615.3596	475.3948
1997	607.6448	663.3653	754.7902	570.1958	543.1192	581.8451	542.2397	803.5452	260.0233	703.6348	719.3976	615.2006	826.7741	180.3879	439.7155	776.8616	651.6349	615.1771	476.5587
1998	309.7757	292.7919	296.1772	252.3568	309.8706	307.2106	302.0359	322.2314	166.8566	287.5726	378.2122	299.7242	316.8151	93.60497	255.2892	310.7369	307.1839	287.371	285.8282
1999	434.586	477.4243	474.9522	390.2758	382.6971	400.6085	356.0805	468.9936	158.6647	473.3203	591.6508	463.5005	476.3914	104.9918	284.8026	473.106	479.5413	429.1157	311.3481
2000	417.0634	520.4271	589.6496	445.8131	383.1641	400.7963	356.3384	653.1204	160.3145	559.1706	613.0031	441.4649	639.3661	71.04544	291.7966	616.4951	694.9338	460.3522	302.5351
2001	543.7661	617.2386	643.5905	463.239	467.3672	472.85	391.482	743.2333	134.7455	617.6791	781.7206	590.3067	708.1954	70.72301	273.529	694.5141	633.5729	507.8278	316.2803
2002	475.1472	570.4483	605.0651	407.1375	385.2784	390.4631	297.8388	730.8005	116.2507	575.1083	755.9631	504.6085	681.939	66.98377	211.4523	668.2003	584.1685	439.3779	232.8978
2003	473.2155	428.8242	447.4522	332.0611	448.8303	441.3621	377.2706	495.8452	81.19047	428.4368	505.2214	534.7022	487.4369	59.44209	228.4826	473.0991	445.1052	395.4884	309.9808
2004	374.0182	391.0054	453.0957	340.4787	354.1783	352.4639	317.5225	490.688	165.9197	420.11	504.3811	399.2284	500.6049	102.1194	257.7802	469.6807	382.5767	360.0052	278.9104
2005	343.6318	444.3805	530.6185	374.2144	307.2516	304.1353	273.1151	551.4536	104.0134	489.1876	501.8597	327.2197	580.0721	71.42069	203.6624	537.226	416.1639	377.7857	242.3425
2006	456.78	494.8763	522.0704	393.9132	419.8947	422.0298	381.6928	596.7082	149.9265	502.6712	596.9179	459.0745	568.3461	98.31429	284.2528	558.7899	500.1739	439.3445	334.0455
2007	400.005	389.6111	431.3402	344.1141	385.6574	382.8442	344.3503	392.2851	166.2706	407.5093	496.4409	434.0389	445.6914	96.57803	272.7416	412.0298	385.9572	374.3983	300.2004
2008	424.9479	446.0875	464.1811	374.4896	392.0598	396.1504	355.1769	509.4004	177.2166	453.8808	523.911	438.1649	489.6705	106.3675	286.0739	485.7004	445.2285	406.3091	315.5808
2009	307.3398	393.976	457.7566	312.4983	264.3051	267.8795	237.0638	525.7449	96.27186	422.7718	578.618	292.9459	517.1229	56.33228	180.4286	489.2253	382.1719	324.1241	209.7047
2010	530.4417	509.5455	470.207	394.3319	488.0769	491.8703	430.7771	539.786	192.1405	477.0747	631.0392	581.6263	490.8608	113.1227	326.9471	508.907	546.1877	459.4021	371.5109
2011	292.7666	356.6674	406.7712	287.1408	253.1172	261.2155	230.8097	423.8106	85.57154	377.2216	437.3696	279.7082	445.6206	43.69937	174.7106	414.7023	349.8713	303.1619	196.8643
2012	376.7232	428.6559	444.3535	357.4591	338.3505	348.0544	318.6591	485.5281	162.6418	434.2799	548.6087	375.2585	468.829	101.1672	262.5013	464.2801	427.2512	381.1188	283.8666
2013	545.8723	672.2842	684.6805	487.7498	453.5598	463.7498	386.7197	949.2432	143.8648	670.7055	905.978	536.6022	784.8395	69.98264	283.7266	813.5887	685.2968	530.5667	318.49
2014	499.7849	589.6392	663.1626	508.7201	446.1955	455.0308	406.3553	644.8717	197.5794	625.4891	677.5056	499.1771	697.9243	111.1183	329.2304	652.2473	567.8538	520.7919	354.8092
2015	473.4886	497.3718	663.8538	351.6978	422.0762	420.4387	360.7484	624.8384	124.58	468.0295	680.3397	504.2254	515.367	72.41343	249.5194	546.1251	532.5789	414.9351	308.0856
2016	574.6627	607.1855	634.1856	523.1674	545.5793	548.1451	506.4704	727.0115	247.5924	622.9941	732.8127	587.7729	673.4227	153.1251	413.1891	677.0789	599.1953	566.4676	445.0288
2017	443.3476	545.2769	647.699	510.2248	424.5713	432.7424	434.692	721.3192	229.6634	607.7216	644.2668	414.4666	706.9819	129.7954	377.7495	676.0783	498.5382	512.3945	407.287
2018	458.549	452.582	532.3963	437.2234	466.6421	451.6448	422.4091	458.2845	179.1889	497.6814	550.2354	483.2938	543.7384	102.4853	323.1888	492.5814	424.7253	455.5258	371.4185
2019	284.8837	278.9998	343.8388	297.4251	301.3083	292.088	286.4638	302.6322	163.0921	321.5906	281.8081	302.0233	349.5931	106.6745	245.2516	318.7426	246.7044	298.3577	269.8022
2020	588.6268	599.812	593.1323	566.3672	581.7344	580.2005	581.8206	677.189	208.4912	608.2803	644.0759	637.2288	596.9466	125.3277	397.7579	629.9476	583.4926	591.0287	569.7876
2021	418.9788	382.619	501.8213	354.2545	464.073	430.2415	397.3789	541.056	246.9265	432.1214	514.8199	482.969	592.8825	145.1246	324.0491	519.8691	383.9043	377.0178	363.8687
2022	534.5601	544.3432	474.7506	356.8161	504.2804	499.1956	438.4536	565.6356	151.2691	523.7817	559.4885	583.6243	643.4901	255.3094	359.0211	516.1501	537.1542	508.4404	376.3741
2023	395.5904	358.9492	277.444	275.26	406.0019	380.676	359.9564	406.8294	184.7611	318.4634	438.8714	419.7648	273.6399	178.9599	259.773	342.1096	384.7741	343.2982	333.9168
MEAN	450.65704	490.01305	520.82221	412.47474	416.00079	419.09191	380.5566	577.23921	181.61443	503.17382	596.93891	AVGLOMIE	558.02347	111.88503	299.70273	547.5644	487.29435	441.40151	336.80305

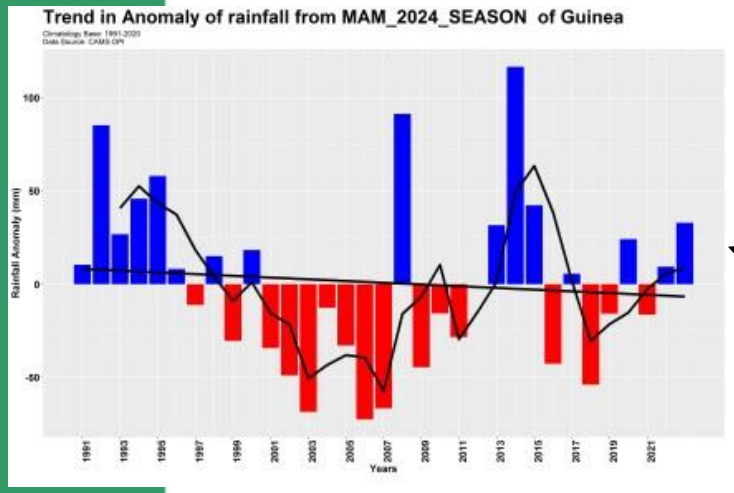
Year	ABONG-MBA	BAFIA	BAMENDA	BANYO	BATOURI	BERTOUA	BETARE-OYA	DOUALA-OB	GAROUA	KOUNDJA	KRIBI	LOMIE	MAMFE	MAROUA-SA	NGAOUNDERE	NKONGSAMBA	YAOUNDE	YOKO	MEIGANGA
1990	-106.481241	-116.937947	-53.0046412	-137.949547	-105.027441	-150.103347	-112.556741	-48.9949471	-252.752941	-98.9016471	31.2367588	-137.210447	-35.6641412	-379.141347	-153.959941	-74.1887471	-93.0519412	-127.2020447	-132.306841
1991	65.1143588	117.826653	122.448859	7.67315294	13.8291588	-15.9270471	-5.83024118	110.797453	-177.395541	94.0794529	209.166559	26.2734529	122.582559	-307.534347	-53.6301412	99.5371529	168.664859	-44.5277529	-45.4017412
1992	-70.4508412	-11.8181471	159.389859	-14.7741471	-85.5127412	-116.692547	-75.1714412	24.2006529	-213.266041	63.5336529	141.929859	-57.1124471	184.977459	-358.338547	-99.0311412	66.7479529	-28.7295412	-29.4241471	-92.2575412
1993	41.1281588	-10.8275471	-29.4011412	118.411747	-15.1154412	-34.9221471	-60.5360412	95.6380529	-253.129541	-42.9720471	142.085159	28.5113529	-4.53394118	353.898147	-139.842241	12.9943529	55.1994588	-60.3840471	-121.606241
1994	7.15495882	-17.8740471	92.9130588	-122.958847	-34.4342412	-76.5251471	-100.422541	139.278553	-276.735441	4.36865294	194.285659	-0.21004706	178.278459	-380.441447	-180.250741	96.5461529	34.2637588	-84.1621471	-154.230941
1995	-1.11814118	95.9577529	227.170559	23.3467529	-35.3608412	-74.1764471	-43.9986412	182.004453	-260.719941	144.664753	157.249859	55.8094471	269.692959	384.956247	-115.000941	181.115153	99.2641588	29.4827529	-69.2536412
1996	206.198559	219.637453	224.950259	48.4738529	111.810359	111.247953	88.4193588	340.974653	-200.570241	186.578053	470.834959	169.703753	279.883559	-348.317847	-19.6341412	266.283953	297.327059	125.346553	24.7377588
1997	156.987759	173.352253	304.133159	80.1827529	92.4623588	91.8320529	91.5820588	313.532153	-190.633741	213.621553	268.740359	125.187553	376.117059	-309.625147	-10.9415412	286.848553	200.977859	125.164053	25.9016588
1998	-140.885341	-197.221147	-154.479841	-237.656247	-140.786441	-182.802447	-148.621141	-167.781647	-283.800441	-202.440447	-72.4448412	-190.288847	-133.821941	-396.408077	-195.367841	-179.276147	-143.473141	-202.642047	-164.828841
1999	-16.0710412	-12.5887471	24.3351588	-99.7372471	-67.9599412	-89.4045471	-94.5765412	-21.0194471	-291.992341	-16.6927471	140.993759	-26.5125471	25.7343588	-385.021247	-165.854441	-16.9070471	28.8842588	-60.8973471	-139.308941
2000	-13.5936412	30.4140529	138.992559	-44.1999471	-67.4929412	-89.2167471	-94.3186412	163.107353	-290.342541	69.1575529	162.346059	-86.5481471	188.799059	-418.967607	-158.860441	126.482053	44.2767588	-29.6608471	-148.12941
2001	93.1090588	127.2255553	192.933459	-26.7740471	16.7101588	-17.1630471	-59.1750412	253.220253	-315.911541	127.666053	311.063559	100.293653	257.538559	-419.290037	-177.128041	204.5010053	182.915859	17.8147529	-134.376741
2002	24.4901588	80.4352529	154.408059	-82.8755471	-65.3786412	-99.5499471	-152.818241	240.787453	-334.406341	85.0952529	305.306059	14.5954529	231.281959	-423.029277	-239.204741	178.187253	133.511459	-50.6351471	-217.759241
2003	22.5584588	-61.1888471	-3.20484118	-157.953947	-13.2674118	-48.4509471	-73.3864412	5.83215294	-369.466571	-61.5762471	54.5643588	44.7691529	36.7798588	-430.550957	-222.174441	16.9139471	-1.47184118	-94.5246471	-140.676241
2004	-76.6388412	-99.0076471	2.41865882	-149.534347	-96.4787412	-137.549147	-133.134541	0.67495294	-284.717341	-69.9030471	53.1720588	-90.7866471	-89.9478588	-387.893647	-192.876841	-20.3323471	-68.0803412	-130.078647	-171.746641
2005	-107.025241	-45.6325471	-79.9614588	-115.798647	-143.405441	-185.877747	-177.541941	61.4405529	-346.643641	-0.82544706	51.2026588	-162.793347	129.415059	-418.592357	-246.994641	47.2129529	-34.4931412	-112.247347	-208.314541
2006	6.12295882	4.86325294	71.4133588	-96.0998471	-30.7623412	-67.9832471	-68.9642412	106.693153	-300.730541	12.6581529	146.280859	-90.9385471	117.889059	-391.098757	-166.404241	68.7768529	-89.5168588	-50.6685471	-116.611541
2007	-50.6520412	-100.401947	-19.5138412	-145.898947	-64.9996412	-107.168847	-106.306741	-67.7479471	-284.580441	-82.5037471	45.7838588	-55.9765471	-4.96564118	-393.435017	-177.915441	-77.9832471	-64.6898412	-115.614747	-150.456641
2008	-25.7095412	-43.9255471	13.5240588	-115.532447	-58.5972412	-93.8626471	-95.4801412	19.4673529	-273.440441	-36.1322471	73.2539588	-51.8481471	39.0134588	-383.645547	-164.583141	-4.31264706	-5.42854118	-83.7129471	-135.076241
2009	-143.317241	-96.0370471	7.09955882	-177.534747	-186.351941	-222.133547	-213.591241	35.7318529	-354.383181	-67.2412471	127.960959	-197.067147	66.6658588	-433.680767	-270.228441	-0.78774706	-68.2851412	-165.888947	-240.952341
2010	79.7846588	19.5324529	19.5499588	-95.6811471	37.4198588	-1.85725294	-19.8799412	89.7729529	-258.510541	-12.9383471	180.382159	91.6132529	40.2037588	-376.890347	-123.709941	18.8939529	95.5106588	-30.6109471	-79.1461412
2011	-157.890441	-133.345647	-43.8858412	-202.872247	-197.539841	-228.797547	-219.847341	-66.2024471	-365.085501	-112.791447	-13.2874412	-210.304847	-5.03644118	-446.313677	-275.946441	-75.3107471	-100.785741	-186.851147	-253.992741
2012	-73.9338412	-61.3571471	-6.30354118	-132.519947	-112.306541	-141.958647	-131.997941	-4.48494706	-288.015241	-55.7331471	97.9516588	-114.754547	18.1719588	-388.845847	-188.155741	-25.7329471	-23.4058412	-108.894247	-166.790441
2013	95.2152588	182.2771153	234.023459	-2.26324706	2.90275882	-26.2632471	-63.9373412	459.230153	-306.792241	180.692453	455.320959	46.5891529	134.182459	-420.030407	-166.930441	123.5756853	234.639759	40.5536529	-132.167041
2014	49.1278588	99.6263529	212.5055559	18.7070529	-4.46154118	-34.9822471	-44.3017412	154.858653	-253.077641	135.4760653	226.8485559	9.16405294	247.267259	-378.894747	-121.426641	162.2342653	157.196759	30.7788529	-95.8478412
2015	22.8315588	7.35875294	13.1967588	-138.315247	-28.5808412	-69.5743471	-89.9086412	134.825353	-326.077041	-21.9835471	229.682659	14.2123529	84.7099588	-417.599617	-201.117641	56.1120529	81.9218588	-75.0779471	-142.651441
2016	124.0056559	117.172453	183.528559	33.1543529	94.9222588	58.1320529	55.8133588	236.998453	-203.064641	132.981053	282.155659	97.7598529	229.765659	-336.887947	-37.4679412	187.065853	148.538259	76.4545529	-5.62824118
2017	-7.30944118	55.2638529	197.041959	20.2117529	-26.0857412	-57.2706471	-15.9650412	231.306153	-220.993641	117.708553	193.609759	-75.5464471	256.324859	-360.217647	-72.9075412	186.063253	47.8811588	22.5814529	-43.1700412
2018	7.89195882	-37.4310471	81.7392588	-52.7896471	15.9850588	-38.3682471	-28.2479412	-31.7285471	-271.468141	7.66835294	99.5783588	-6.71924706	93.0813588	-387.527747	-127.468241	2.56835294	-25.9317412	-34.4872471	-79.2385412
2019	-165.773141	-211.011247	-106.798241	-192.587947	-149.350741	-197.925047	-164.191241	-187.380847	-287.564941	-168.422447	-168.848941	-187.989747	-101.063941	-383.338547	-205.405441	-171.270447	-203.952641	-191.655347	-180.854841
2020	137.969759	109.798853	142.475259	76.3545529	131.077359	90.1874529	131.163559	187.175953	-242.165841	118.247253	193.418859	147.215753	146.289559	-364.685347	-52.8991412	139.934553	132.835559	101.015653	119.110559
2021	-11.6782412	-107.394047	51.1542588	-135.758547	13.4159588	-58.7715471	-52.7781412	51.0429529	-203.730541	-47.8916471	64.1628588	-7.04404706	142.225459	-344.888447	-126.607941	29.8560529	-66.6927412	-112.975247	-86.7883412
2022	83.9030588	54.3301529	24.0935588	66.8030529	53.6233588	9.18255294	-12.2034412	75.6225529	-99.3879412	33.7686529	108.829459	93.6112529	-7.16694118	234.712647	-91.6359412	26.1370529	86.6971588	18.4273529	-74.2829412
2023	-55.0666412	-131.063847	-173.213041	-214.753047	-44.6551412	-108.337047	-90.7006412	-83.1836471	-265.895941	-171.549647	-11.7856412	-70.2482471	-177.017141	-311.053147	-190.884041	-147.912447	-65.8829412	-146.714847	-116.740241

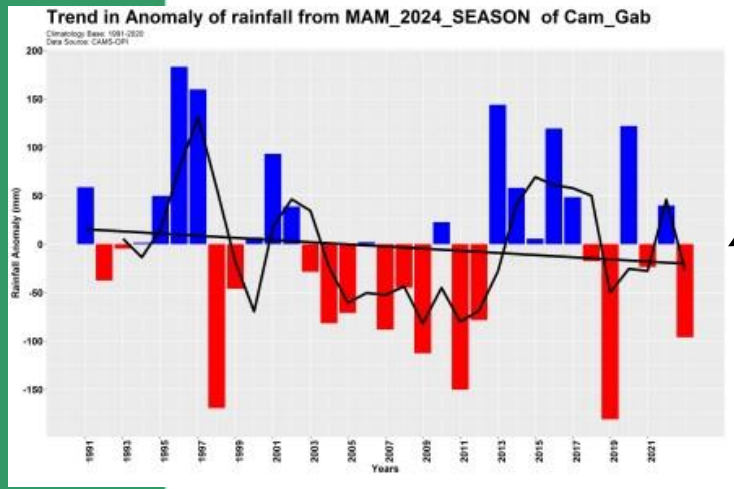


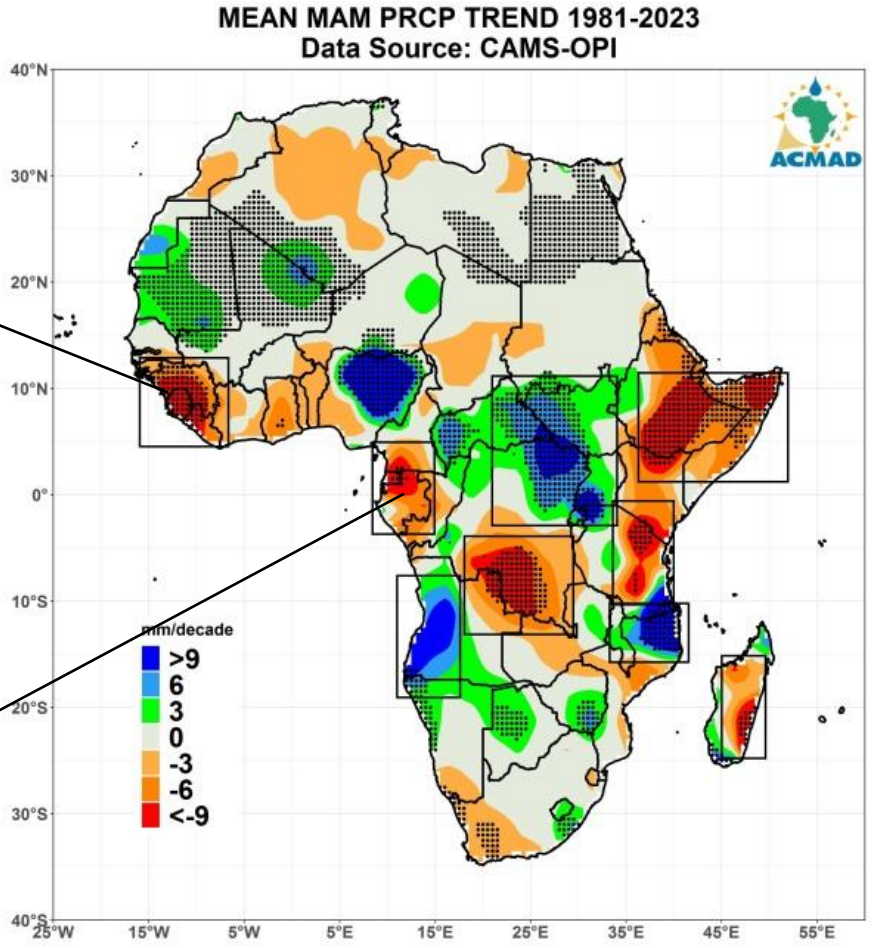


Time series analysis of Climate variability (seasonal and annual cycles, interannual/interdecadal variability) and trends (1/5)

MAM Season 1







II. IDENTIFICATION OF ANALOG YEARS BASED ON SSTA OVER THE ENSO REGION

Identification of Analogue Years (2)

Blue – La Nina

Red– El Nino

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2000	-1.7	-1.4	-1.1	-0.8	-0.7	-0.6	-0.6	-0.5	-0.5	-0.6	-0.7	-0.7
2001	-0.7	-0.5	-0.4	-0.3	-0.3	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3
2002	-0.1	0.0	0.1	0.2	0.4	0.7	0.8	0.9	1.0	1.2	1.3	1.1
2003	0.9	0.6	0.4	0.0	-0.3	-0.2	0.1	0.2	0.3	0.3	0.4	0.4
2004	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.6	0.7	0.7	0.7	0.7
2005	0.6	0.6	0.4	0.4	0.3	0.1	-0.1	-0.1	-0.1	-0.3	-0.6	-0.8
2006	-0.9	-0.8	-0.6	-0.4	-0.1	0.0	0.1	0.3	0.5	0.8	0.9	0.9
2007	0.7	0.2	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-1.1	-1.3	-1.5	-1.6
2008	-1.6	-1.5	-1.3	-1.0	-0.8	-0.6	-0.4	-0.2	-0.2	-0.4	-0.6	-0.7
2009	-0.8	-0.8	-0.6	-0.3	0.0	0.3	0.5	0.6	0.7	1.0	1.4	1.6
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2010	1.5	1.2	0.8	0.4	-0.2	-0.7	-1.0	-1.3	-1.6	-1.6	-1.6	-1.6
2011	-1.4	-1.2	-0.9	-0.7	-0.6	-0.4	-0.5	-0.6	-0.8	-1.0	-1.1	-1.0
2012	-0.9	-0.7	-0.6	-0.5	-0.3	0.0	0.2	0.4	0.4	0.3	0.1	-0.2
2013	-0.4	-0.4	-0.3	-0.3	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.3
2014	-0.4	-0.5	-0.3	0.0	0.2	0.2	0.0	0.1	0.2	0.5	0.6	0.7
2015	0.5	0.5	0.5	0.7	0.9	1.2	1.5	1.9	2.2	2.4	2.6	2.6
2016	2.5	2.1	1.6	0.9	0.4	-0.1	-0.4	-0.5	-0.6	-0.7	-0.7	-0.6
2017	-0.3	-0.2	0.1	0.2	0.3	0.3	0.1	-0.1	-0.4	-0.7	-0.8	-1.0
2018	-0.9	-0.9	-0.7	-0.5	-0.2	0.0	0.1	0.2	0.5	0.8	0.9	0.8
2019	0.7	0.7	0.7	0.7	0.5	0.5	0.3	0.1	0.2	0.3	0.5	0.5
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	

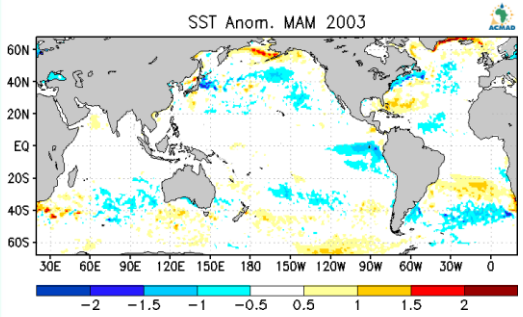
Forecasted SST evolution

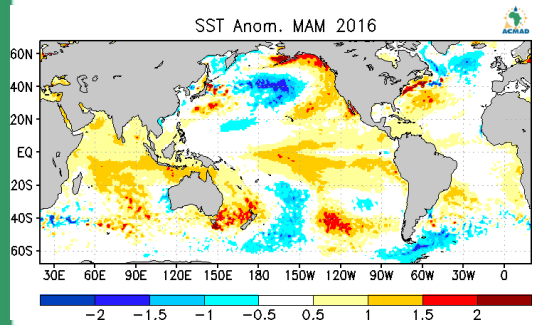
Seasons (2024 – 2024)

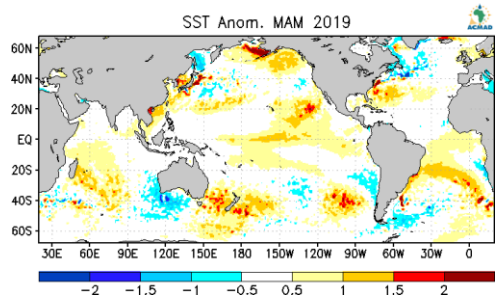
Model	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON
Average, Dynamical models	**1.576**	**1.178**	**0.720**	**0.285**	**-0.194**	**-0.617**	**-0.813**	**-0.762**	**-0.827**
Average, Statistical models	**1.432**	**1.094**	**0.728**	**0.392**	**0.074**	**-0.223**	**-0.465**	**-0.627**	**-0.750**
Average, All models	**1.526**	**1.149**	**0.722**	**0.322**	**-0.085**	**-0.430**	**-0.639**	**-0.686**	**-0.783**

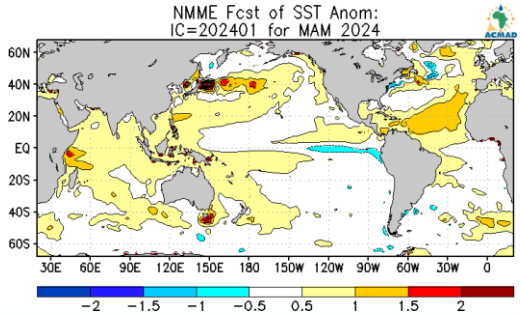
Forecasted evolution of SSTs during the coming target seasons indicate a transition from an ENSO positive (El Nino) phase to an ENSO Neutral phase during the coming target seasons

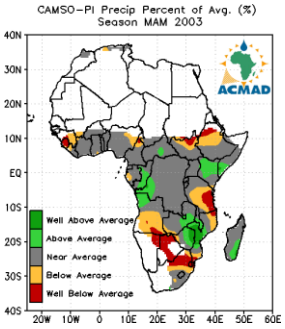
Analogue Analysis (3) – Identical Years– MAM

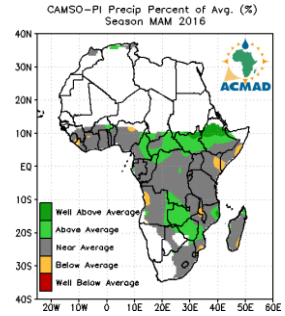


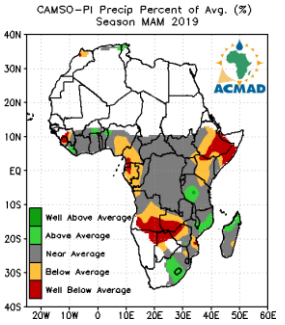


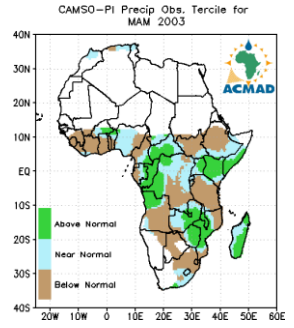


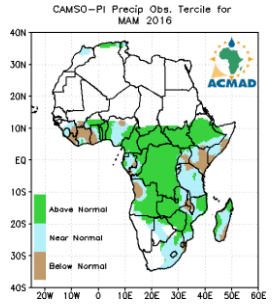


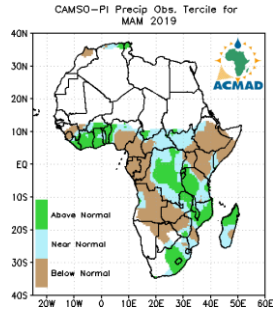


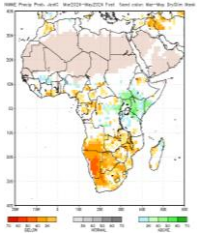


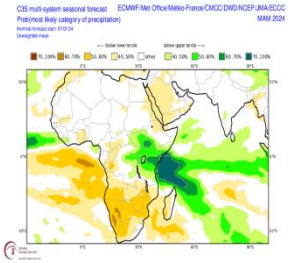


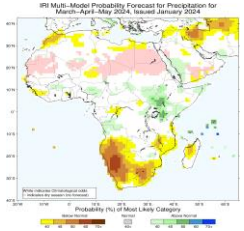


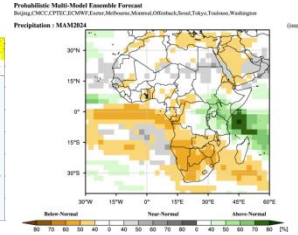






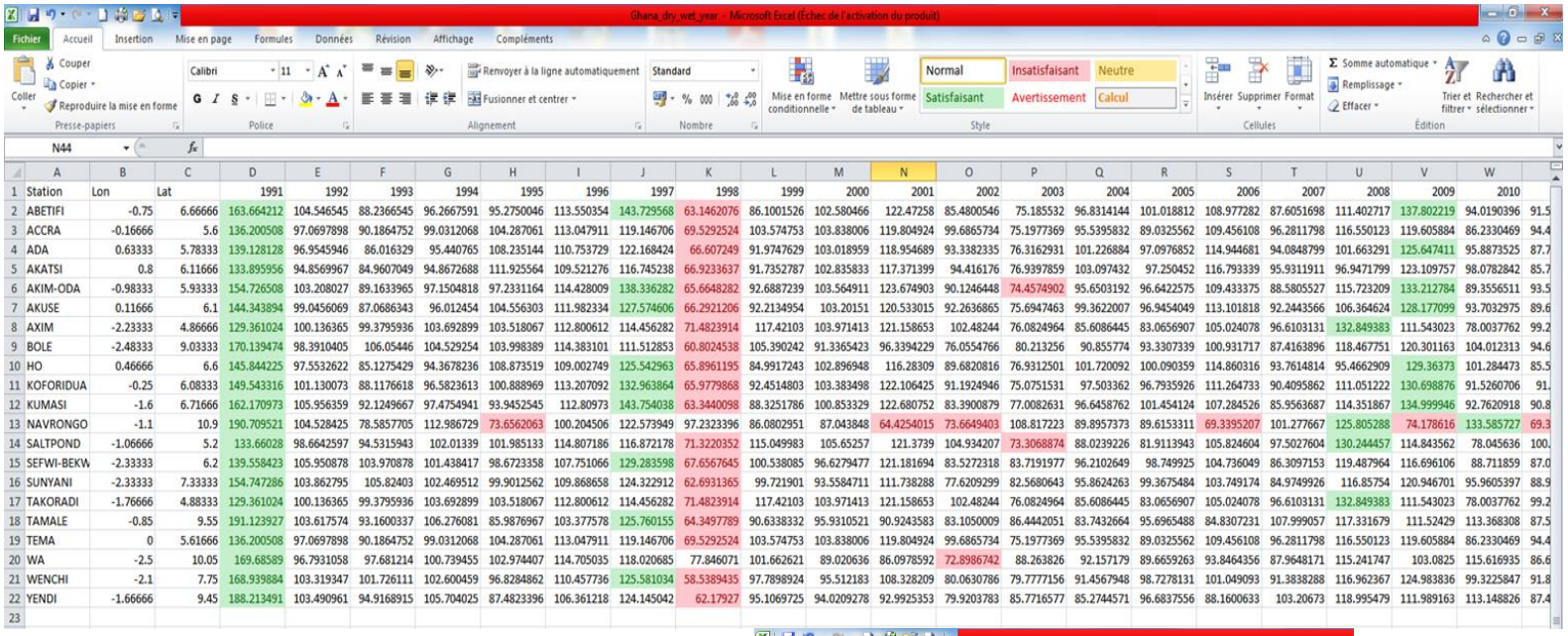




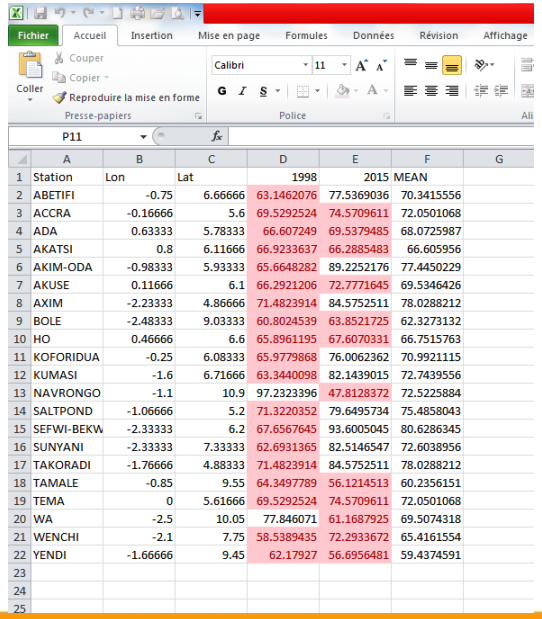


Identification of wet and Dry and Analysis of the drivers related patterns

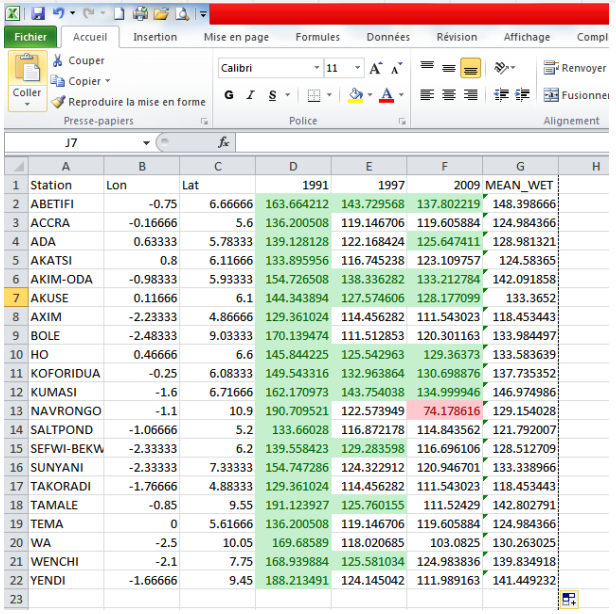
Process



Station	Lon	Lat	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ABETIFI	-0.75	6.66666	163.664212	104.546545	88.2366545	96.2667591	95.2750046	113.550354	143.729568	63.1462076	86.1001526	102.580466	122.47258	85.4800546	75.185532	96.8314144	101.018812	108.977282	87.6051698	111.402717	137.802219	94.0190396
ACCRA	-0.16666	5.6	136.200508	97.0697898	90.1864752	99.0312068	104.287061	113.047911	119.146706	69.5292524	103.574753	103.838006	119.804924	99.6865734	75.1977369	95.5395832	89.0325562	109.456108	96.2811798	116.550123	119.605884	86.2330469
ADA	0.63333	5.78333	139.128128	96.9545946	86.016329	95.440765	108.235144	110.753729	122.168424	66.607249	91.9747629	103.018959	118.954689	93.3382335	76.3162931	101.226884	97.0976852	114.944681	94.0848799	101.663291	125.647411	95.8873525
AKATSI	0.8	6.11666	133.895956	94.8569967	84.9607049	94.8672688	111.925564	109.521276	116.745238	66.9233637	91.7352787	102.835833	117.371399	94.416176	76.9397859	103.097432	97.250452	116.793339	95.9311911	96.9471799	123.109757	98.0782842
AKIM-ODA	-0.98333	5.93333	154.726508	103.208027	89.1633965	97.1504818	97.2331164	114.428009	138.336282	65.6648282	92.6887239	103.564911	123.674903	90.1246448	74.4574902	95.6503192	96.6422575	109.433375	88.5805527	115.723209	133.212784	89.3556511
AKUSE	0.11666	6.1	144.343894	99.0456069	87.0686343	96.012454	104.556303	111.982334	127.574606	66.2921206	92.2134954	103.20151	120.533015	92.2636865	75.6947463	99.3622007	96.9454049	113.101818	92.2443566	106.364624	128.177099	93.7032975
AXIM	-2.23333	4.86666	129.361024	100.136365	99.3795936	103.692899	103.518067	112.800612	114.456282	71.4823914	117.42103	103.971413	121.158653	102.48244	76.0824964	85.6086445	83.0656907	105.024078	96.6103131	132.849383	111.543023	78.0037762
BOLE	-2.48333	9.03333	170.139474	98.3910405	106.05446	104.529254	103.998389	114.383101	111.512853	60.8024538	105.390242	91.3365423	96.3394229	76.0554766	80.213256	90.855774	93.3307339	100.931717	87.4163896	118.467751	120.301163	104.012313
HO	0.46666	6.6	145.844225	97.5532622	85.1275429	94.3678236	108.873519	109.002749	125.542963	65.8961195	84.9917243	102.896948	116.28309	89.6820816	76.9312501	101.720092	100.090359	114.860316	93.7614814	95.4662909	129.36373	101.284473
KOFORIDUA	-0.25	6.08333	149.543316	101.130073	88.1176618	96.5823613	100.888969	113.207092	132.963864	65.9779868	92.4514803	103.383498	122.106425	91.1924946	75.0751531	97.503362	96.7935926	111.264733	90.4095862	111.051222	130.698876	91.5260706
KUMASI	-1.6	6.71666	162.170973	105.956359	92.1249667	97.4754941	93.9452545	112.80973	143.754038	63.3440098	88.3251786	100.853329	122.680752	83.3900879	77.0082631	96.6458762	101.454124	107.284526	85.9563687	114.351867	134.999946	92.7620918
NAVRONGO	-1.1	10.9	190.709521	104.528425	78.5857705	112.986729	73.6562063	100.204506	122.573949	97.2323396	86.0802951	87.043848	64.4254015	73.6649403	108.817223	89.8957373	89.6153311	69.3395207	101.277667	125.805288	74.178616	133.585727
SALTPOND	-1.06666	5.2	133.66028	98.6642597	94.5315943	102.01339	101.985133	114.807186	116.872178	71.3220352	115.049983	105.65257	121.3739	104.934207	73.3068874	88.0239226	81.9113943	105.824604	97.5027604	130.244457	114.843562	78.045636
SEFWI-BEKW	-2.33333	6.2	139.558423	105.950878	103.970878	101.438417	98.6723358	107.751066	129.283598	67.6567645	100.538085	96.6279477	121.181694	83.5272318	83.7191977	96.2102649	98.749925	104.736049	86.3097153	119.487964	116.696106	88.711859
SUNYANI	-2.33333	7.33333	154.747286	103.862795	105.82403	102.469512	99.9012562	109.868658	124.322912	62.6931365	99.721901	93.5584711	111.738288	77.6209299	82.5680643	95.8624263	99.3675484	103.749174	84.9749926	116.85754	120.946701	95.9605397
TAKORADI	-1.76666	4.88333	136.200508	100.136365	99.3795936	103.692899	103.518067	112.800612	114.456282	71.4823914	117.42103	103.971413	121.158653	102.48244	76.0824964	85.6086445	83.0656907	105.024078	96.6103131	132.849383	111.543023	78.0037762
TAMALE	-0.85	9.55	191.123927	103.617574	93.1600337	106.276081	85.9876967	103.377578	125.760155	64.3497789	90.6338332	95.9310521	90.9243583	83.1050009	86.4442051	83.7432664	95.6965488	84.8307231	107.999057	117.331679	111.52429	113.368308
TEMA	0	5.61666	136.200508	97.0697898	90.1864752	99.0312068	104.287061	113.047911	119.146706	69.5292524	103.574753	103.838006	119.804924	99.6865734	75.1977369	95.5395832	89.0325562	109.456108	96.2811798	116.550123	119.605884	86.2330469
WA	-2.5	10.05	169.68589	96.7931058	97.681214	100.739455	102.974407	114.705035	118.020685	77.846071	101.662621	89.020636	86.0978592	72.8986742	88.263826	92.157179	89.6659263	93.8464356	87.9648171	115.241747	103.0825	115.616935
WENCHI	-2.1	7.75	168.939884	103.319347	101.726111	102.600459	96.8284862	110.457736	125.581034	58.5389435	97.7898924	95.512183	108.328209	80.0630786	79.7777156	91.4567948	98.7278131	101.049093	91.3838288	116.962367	124.983836	99.3225847
YENDI	-1.66666	9.45	188.213491	103.490961	94.9168915	105.704025	87.4823396	106.361218	124.145042	62.17927	95.1069725	94.0209278	92.9925353	79.9203783	85.7716577	85.2744571	96.6837556	88.1600633	103.20673	118.995479	111.989163	113.148826



Station	Lon	Lat	1998	2015	MEAN
ABETIFI	-0.75	6.66666	63.1462076	77.5369036	70.3415556
ACCRA	-0.16666	5.6	69.5292524	74.5709611	72.0501068
ADA	0.63333	5.78333	66.607249	69.5379485	68.0725987
AKATSI	0.8	6.11666	66.9233637	66.2885483	66.605956
AKIM-ODA	-0.98333	5.93333	65.6648282	89.2252176	77.4450229
AKUSE	0.11666	6.1	66.2921206	72.7771645	69.5346426
AXIM	-2.23333	4.86666	71.4823914	84.5752511	78.0288212
BOLE	-2.48333	9.03333	60.8024539	63.8521725	62.3273132
HO	0.46666	6.6	65.8961195	67.6070331	66.7515763
KOFORIDUA	-0.25	6.08333	65.9779868	76.0062362	70.9921115
KUMASI	-1.6	6.71666	63.3440098	82.1439015	72.7439556
NAVRONGO	-1.1	10.9	97.2323396	47.8128372	72.5225884
SALTPOND	-1.06666	5.2	71.3220352	79.6495734	75.4858043
SEFWI-BEKW	-2.33333	6.2	67.6567645	93.6005045	80.6286345
SUNYANI	-2.33333	7.33333	62.6931365	82.5146547	72.6038956
TAKORADI	-1.76666	4.88333	71.4823914	84.5752511	78.0288212
TAMALE	-0.85	9.55	64.3497789	56.1214513	60.2356151
TEMA	0	5.61666	69.5292524	74.5709611	72.0501068
WA	-2.5	10.05	77.846071	61.1687925	69.5074318
WENCHI	-2.1	7.75	58.5389435	72.2933672	65.4161554
YENDI	-1.66666	9.45	62.17927	56.6956481	59.4374591



Station	Lon	Lat	1991	1997	2009	MEAN_WET
ABETIFI	-0.75	6.66666	163.664212	143.729568	137.802219	148.398666
ACCRA	-0.16666	5.6	136.200508	119.146706	119.605884	124.984366
ADA	0.63333	5.78333	139.128128	122.168424	125.647411	128.981321
AKATSI	0.8	6.11666	133.895956	116.745238	123.109757	124.58365
AKIM-ODA	-0.98333	5.93333	154.726508	138.336282	133.212784	142.091858
AKUSE	0.11666	6.1	144.343894	127.574606	128.177099	133.3652
AXIM	-2.23333	4.86666	129.361024	114.456282	111.543023	118.453443
BOLE	-2.48333	9.03333	170.139474	111.512853	120.301163	133.984497
HO	0.46666	6.6	145.844225	125.542963	129.36373	133.583639
KOFORIDUA	-0.25	6.08333	149.543316	132.963864	130.698876	137.735352
KUMASI	-1.6	6.71666	162.170973	143.754038	134.999946	146.974986
NAVRONGO	-1.1	10.9	190.709521	122.573949	74.178616	129.154028
SALTPOND	-1.06666	5.2	133.66028	116.872178	114.843562	121.792007
SEFWI-BEKW	-2.33333	6.2	139.558423	129.283598	116.696106	128.512709
SUNYANI	-2.33333	7.33333	154.747286	124.322912	120.946701	133.338966
TAKORADI	-1.76666	4.88333	129.361024	114.456282	111.543023	118.453443
TAMALE	-0.85	9.55	191.123927	125.760155	111.52429	142.802791
TEMA	0	5.61666	136.200508	119.146706	119.605884	124.984366
WA	-2.5	10.05	169.68589	118.020685	103.0825	130.263025
WENCHI	-2.1	7.75	168.939884	125.581034	124.983836	139.834918
YENDI	-1.66666	9.45	188.213491	124.145042	111.989163	141.449232

Script Composite SST wet and dry year

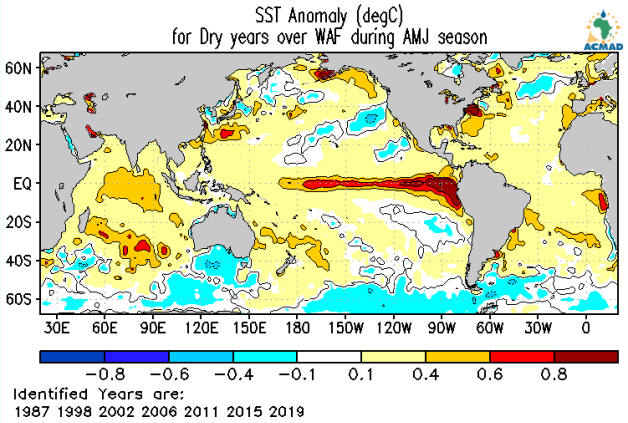
Composite SST
Composite for 1999, 2002 and 2010 MAM season

```
expert
 SOURCES .NOAA .NCEP .EMC .CMB .GLOBAL .Reyn_SmithOIv2 .monthly .ssta
  T (Mar 1999) (May 1999) RANGEEDGES
  [T]average
  SOURCES .NOAA .NCEP .EMC .CMB .GLOBAL .Reyn_SmithOIv2 .monthly .ssta
   T (Mar 2002) (May 2002) RANGEEDGES
   [T]average
    SOURCES .NOAA .NCEP .EMC .CMB .GLOBAL .Reyn_SmithOIv2 .monthly .ssta
   T (Mar 2010) (May 2010) RANGEEDGES
   [T]average
   add
  3 div
```

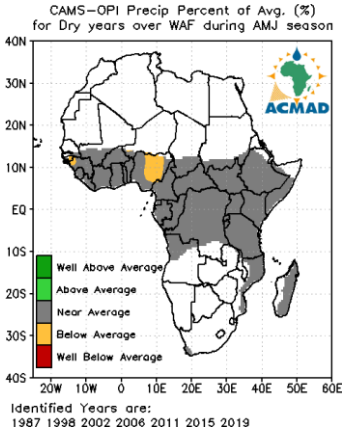
Composite analysis (Dry Years) – SSTs & Rainfall (AMJ)

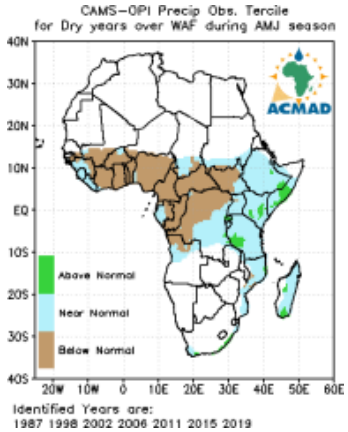
DRY

SST Composite



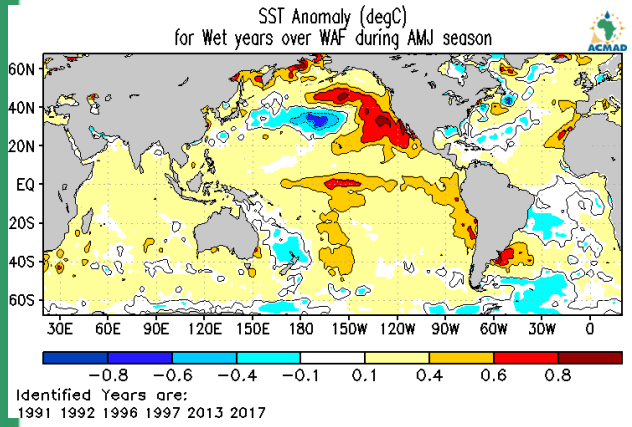
Rainfall Composite

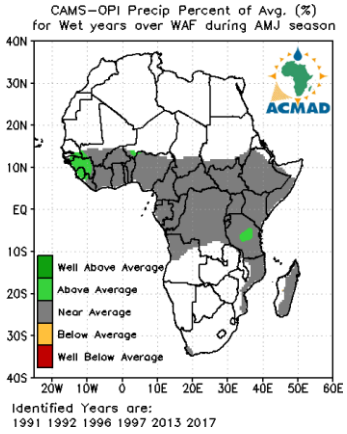


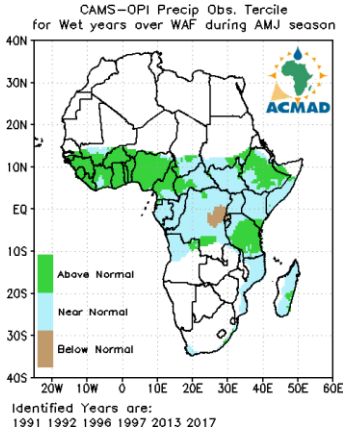


WAF
1987
1998
2002
2006
2011
2015
2019

WET



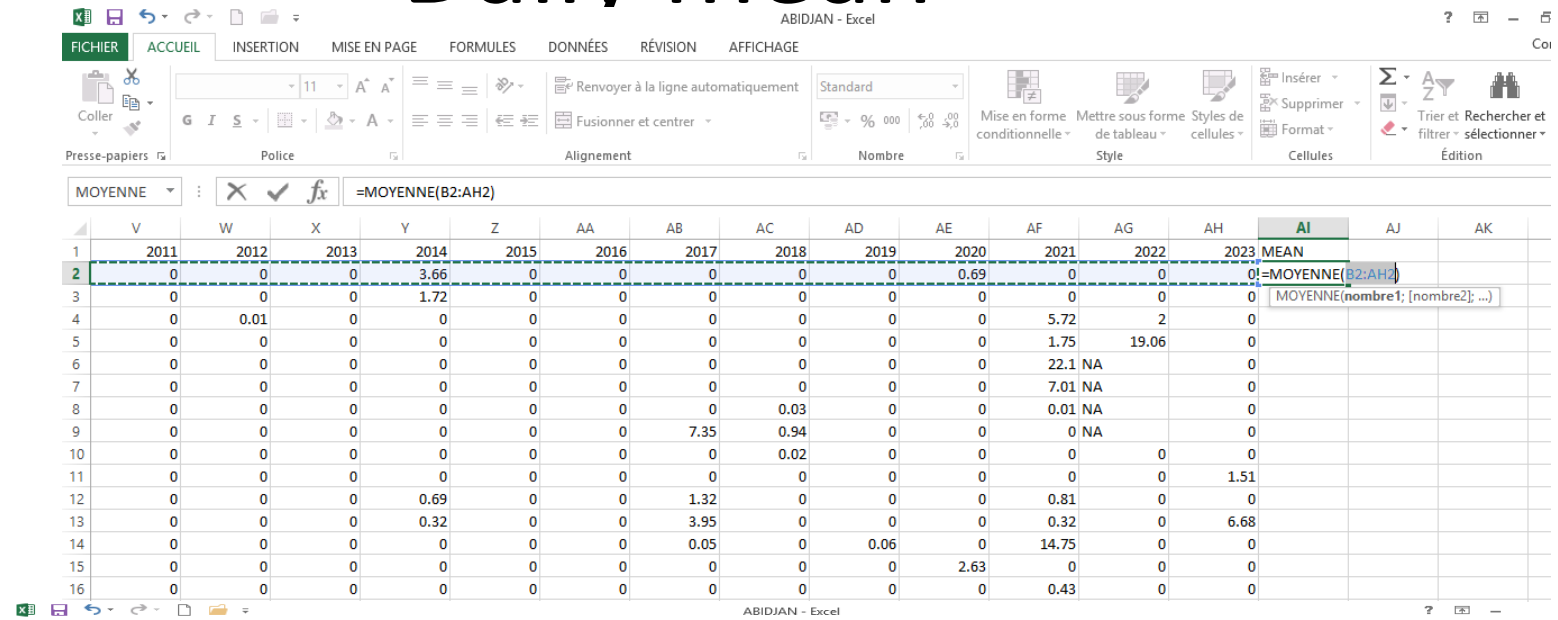




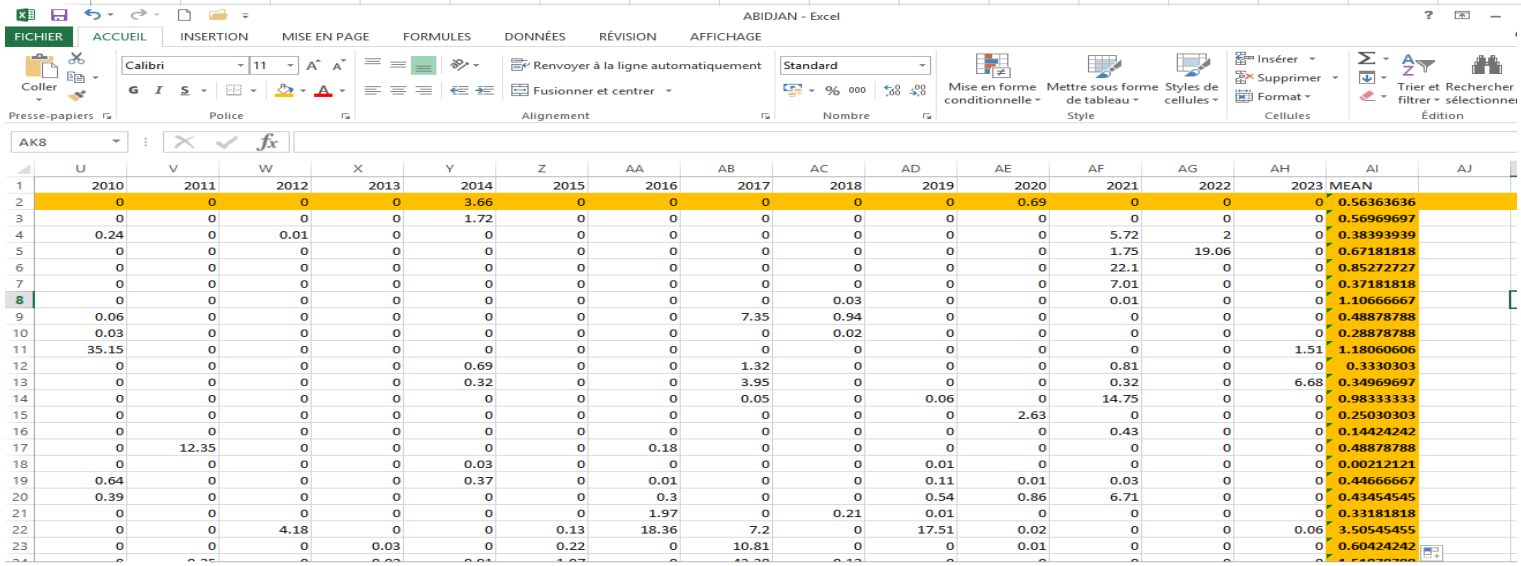
WAF
1991
1992
1996
1997
2013
2017

V. *ANALYSIS OF CUMULATIVE ESTIMATED PRECIPITATION*

Daily mean



	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
1	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	MEAN		
2	0	0	0	3.66	0	0	0	0	0	0.69	0	0	0	=MOYENNE(B2:AH2)		
3	0	0	0	1.72	0	0	0	0	0	0	0	0	0			
4	0	0.01	0	0	0	0	0	0	0	0	5.72	2	0			
5	0	0	0	0	0	0	0	0	0	0	1.75	19.06	0			
6	0	0	0	0	0	0	0	0	0	0	22.1	NA	0			
7	0	0	0	0	0	0	0	0	0	0	7.01	NA	0			
8	0	0	0	0	0	0	0	0.03	0	0	0.01	NA	0			
9	0	0	0	0	0	0	7.35	0.94	0	0	0	NA	0			
10	0	0	0	0	0	0	0	0.02	0	0	0	0	0			
11	0	0	0	0	0	0	0	0	0	0	0	0	1.51			
12	0	0	0	0.69	0	0	1.32	0	0	0	0.81	0	0			
13	0	0	0	0.32	0	0	3.95	0	0	0	0.32	0	6.68			
14	0	0	0	0	0	0	0.05	0	0.06	0	14.75	0	0			
15	0	0	0	0	0	0	0	0	0	2.63	0	0	0			
16	0	0	0	0	0	0	0	0	0	0	0.43	0	0			



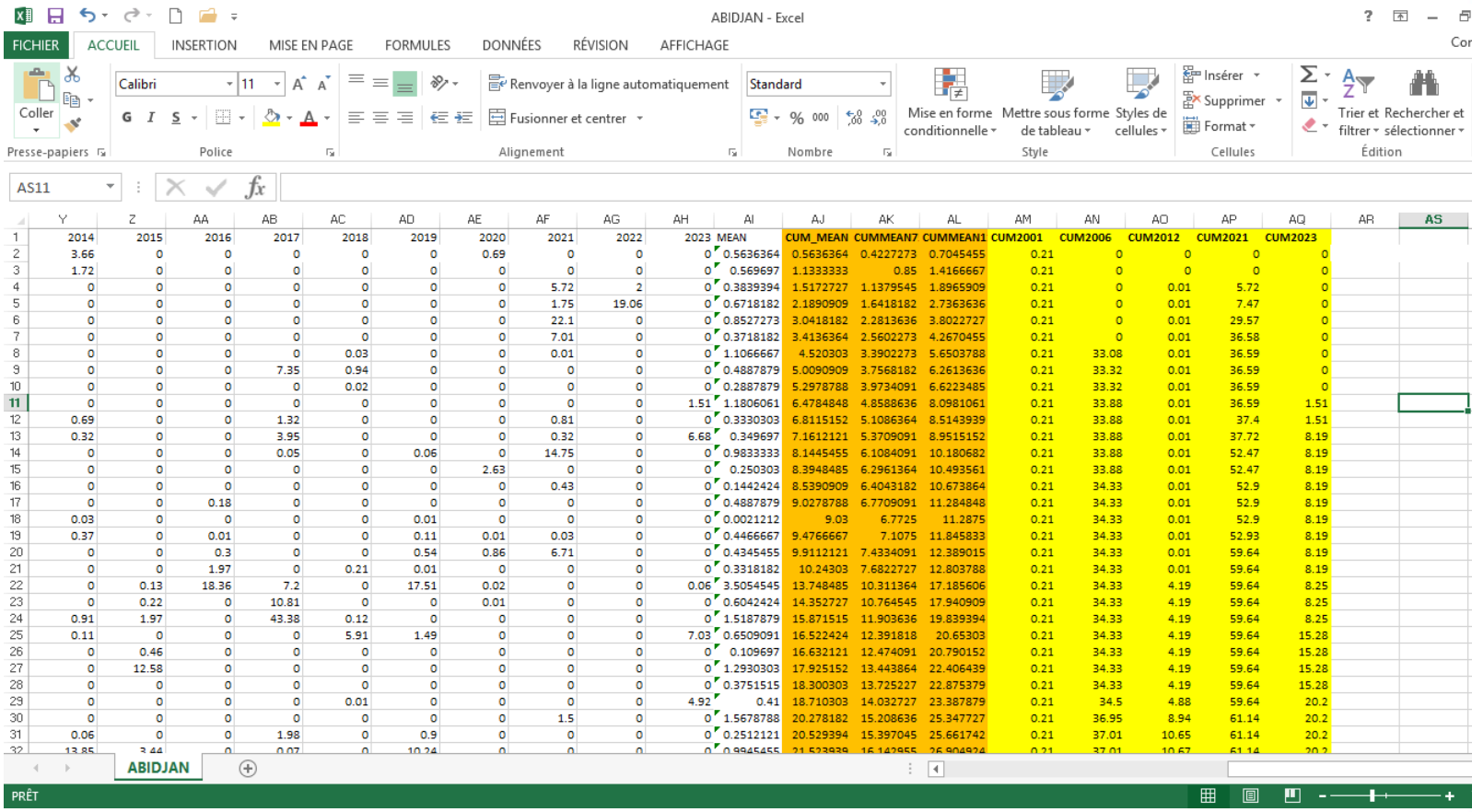
	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	MEAN	
2	0	0	0	0	3.66	0	0	0	0	0	0.69	0	0	0	0.56363636	
3	0	0	0	0	1.72	0	0	0	0	0	0	0	0	0	0.56969697	
4	0.24	0	0.01	0	0	0	0	0	0	0	0	5.72	2	0	0.38393939	
5	0	0	0	0	0	0	0	0	0	0	0	1.75	19.06	0	0.67181818	
6	0	0	0	0	0	0	0	0	0	0	0	22.1	0	0	0.85272727	
7	0	0	0	0	0	0	0	0	0	0	0	7.01	0	0	0.37181818	
8	0	0	0	0	0	0	0	0	0.03	0	0	0.01	0	0	1.10666667	
9	0.06	0	0	0	0	0	0	7.35	0.94	0	0	0	0	0	0.48878788	
10	0.03	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0.28878788	
11	35.15	0	0	0	0	0	0	0	0	0	0	0	0	1.51	1.18060606	
12	0	0	0	0	0.69	0	0	1.32	0	0	0	0.81	0	0	0.3330303	
13	0	0	0	0	0.32	0	0	3.95	0	0	0	0.32	0	6.68	0.34969697	
14	0	0	0	0	0	0	0	0.05	0	0.06	0	14.75	0	0	0.98333333	
15	0	0	0	0	0	0	0	0	0	0	2.63	0	0	0	0.25030303	
16	0	0	0	0	0	0	0	0	0	0	0	0.43	0	0	0.14424242	
17	0	12.35	0	0	0	0	0.18	0	0	0	0	0	0	0	0.48878788	
18	0	0	0	0	0.03	0	0	0	0	0	0.01	0	0	0	0.00212121	
19	0.64	0	0	0	0.37	0	0.01	0	0	0.11	0.01	0.03	0	0	0.44666667	
20	0.39	0	0	0	0	0	0.3	0	0	0.54	0.86	6.71	0	0	0.43454545	
21	0	0	0	0	0	0	1.97	0	0.21	0.01	0	0	0	0	0.33181818	
22	0	0	4.18	0	0	0.13	18.36	7.2	0	17.51	0.02	0	0	0.06	3.50545455	
23	0	0	0	0.03	0	0.22	0	10.81	0	0	0.01	0	0	0	0.60424242	

Daily Cumulative Mean

AF	AG	AH	AI	AJ
2021	2022	2023	MEAN	CUM_MEAN
0	0	0	0.56363636	0.56363636
0	0	0	0.56969697	=AJ2+AI3
5.72	2	0	0.38393939	
1.75	19.06	0	0.67181818	
22.1	0	0	0.85272727	
7.01	0	0	0.37181818	
0.01	0	0	1.10666667	
0	0	0	0.48878788	
0	0	0	0.28878788	
0	0	1.51	1.18060606	
0.81	0	0	0.3330303	
0.32	0	6.68	0.34969697	
14.75	0	0	0.98333333	
0	0	0	0.25030303	
0.43	0	0	0.14424242	
0	0	0	0.48878788	
0	0	0	0.00212121	
0.03	0	0	0.44666667	
6.71	0	0	0.43454545	
0	0	0	0.33181818	
0	0	0.06	3.50545455	
0	0	0	0.60424242	

AG	AH	AI	AJ	AK
2022	2023	MEAN	CUM_MEAN	CUMMEAN75%
0	0	0.56363636	0.56363636	=AJ2*0.75
0	0	0.56969697	1.13333333	
2	0	0.38393939	1.51727273	
19.06	0	0.67181818	2.18909091	
0	0	0.85272727	3.04181818	
0	0	0.37181818	3.41363636	
0	0	1.10666667	4.52030303	
0	0	0.48878788	5.00909091	
0	0	0.28878788	5.29787879	
0	1.51	1.18060606	6.47848485	
0	0	0.3330303	6.81151515	
0	6.68	0.34969697	7.16121212	
0	0	0.98333333	8.14454545	
0	0	0.25030303	8.39484848	
0	0	0.14424242	8.53909091	
0	0	0.48878788	9.02787879	
0	0	0.00212121	9.03	

Analog Daily Cum mean



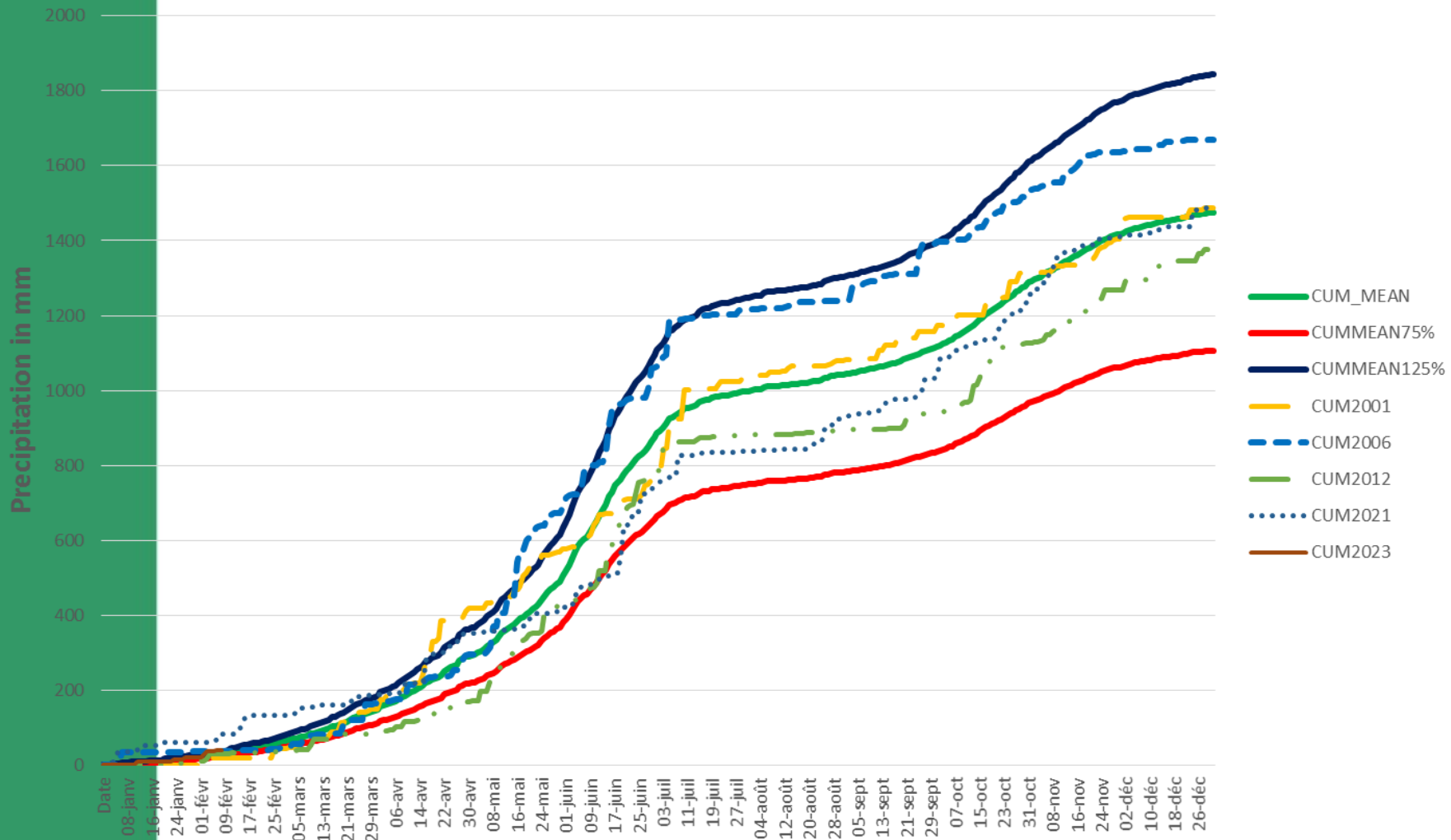
ABIDJAN - Excel

	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
1	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	MEAN	CUM_MEAN	CUMMEAN7	CUMMEAN1	CUM2001	CUM2006	CUM2012	CUM2021	CUM2023		
2	3.66	0	0	0	0	0	0.69	0	0	0	0.5636364	0.5636364	0.4227273	0.7045455	0.21	0	0	0	0		
3	1.72	0	0	0	0	0	0	0	0	0	0.569697	1.1333333	0.85	1.4166667	0.21	0	0	0	0		
4	0	0	0	0	0	0	0	5.72	2	0	0.3839394	1.5172727	1.1379545	1.8965909	0.21	0	0.01	5.72	0		
5	0	0	0	0	0	0	0	1.75	19.06	0	0.6718182	2.1890909	1.6418182	2.7363636	0.21	0	0.01	7.47	0		
6	0	0	0	0	0	0	0	22.1	0	0	0.8527273	3.0418182	2.2813636	3.8022727	0.21	0	0.01	29.57	0		
7	0	0	0	0	0	0	0	7.01	0	0	0.3718182	3.4136364	2.5602273	4.2670455	0.21	0	0.01	36.58	0		
8	0	0	0	0	0.03	0	0	0.01	0	0	1.1066667	4.520303	3.3902273	5.6503788	0.21	33.08	0.01	36.59	0		
9	0	0	0	7.35	0.94	0	0	0	0	0	0.4887879	5.0090909	3.7568182	6.2613636	0.21	33.32	0.01	36.59	0		
10	0	0	0	0	0.02	0	0	0	0	0	0.2887879	5.2978788	3.9734091	6.6223485	0.21	33.32	0.01	36.59	0		
11	0	0	0	0	0	0	0	0	0	1.51	1.1806061	6.4784848	4.8588636	8.0981061	0.21	33.88	0.01	36.59	1.51		
12	0.69	0	0	1.32	0	0	0	0.81	0	0	0.3330303	6.8115152	5.1086364	8.5143939	0.21	33.88	0.01	37.4	1.51		
13	0.32	0	0	3.95	0	0	0	0.32	0	6.68	0.349697	7.1612121	5.3709091	8.9515152	0.21	33.88	0.01	37.72	8.19		
14	0	0	0	0.05	0	0.06	0	14.75	0	0	0.9833333	8.1445455	6.1084091	10.180682	0.21	33.88	0.01	52.47	8.19		
15	0	0	0	0	0	0	2.63	0	0	0	0.250303	8.3948485	6.2961364	10.493561	0.21	33.88	0.01	52.47	8.19		
16	0	0	0	0	0	0	0	0.43	0	0	0.1442424	8.5390909	6.4043182	10.673864	0.21	34.33	0.01	52.9	8.19		
17	0	0	0.18	0	0	0	0	0	0	0	0.4887879	9.0278788	6.7709091	11.284848	0.21	34.33	0.01	52.9	8.19		
18	0.03	0	0	0	0	0.01	0	0	0	0	0.0021212	9.03	6.7725	11.2875	0.21	34.33	0.01	52.9	8.19		
19	0.37	0	0.01	0	0	0.11	0.01	0.03	0	0	0.4466667	9.4766667	7.1075	11.845833	0.21	34.33	0.01	52.93	8.19		
20	0	0	0.3	0	0	0.54	0.86	6.71	0	0	0.4345455	9.9112121	7.4334091	12.389015	0.21	34.33	0.01	59.64	8.19		
21	0	0	1.97	0	0.21	0.01	0	0	0	0	0.3318182	10.24303	7.6822727	12.803788	0.21	34.33	0.01	59.64	8.19		
22	0	0.13	18.36	7.2	0	17.51	0.02	0	0	0.06	3.5054545	13.748485	10.311364	17.185606	0.21	34.33	4.19	59.64	8.25		
23	0	0.22	0	10.81	0	0	0.01	0	0	0	0.6042424	14.352727	10.764545	17.940909	0.21	34.33	4.19	59.64	8.25		
24	0.91	1.97	0	43.38	0.12	0	0	0	0	0	1.5187879	15.871515	11.903636	19.839394	0.21	34.33	4.19	59.64	8.25		
25	0.11	0	0	0	5.91	1.49	0	0	0	7.03	0.6509091	16.522424	12.391818	20.65303	0.21	34.33	4.19	59.64	15.28		
26	0	0.46	0	0	0	0	0	0	0	0	0.109697	16.632121	12.474091	20.790152	0.21	34.33	4.19	59.64	15.28		
27	0	12.58	0	0	0	0	0	0	0	0	1.2930303	17.925152	13.443864	22.406439	0.21	34.33	4.19	59.64	15.28		
28	0	0	0	0	0	0	0	0	0	0	0.3751515	18.300303	13.725227	22.875379	0.21	34.33	4.19	59.64	15.28		
29	0	0	0	0	0.01	0	0	0	0	4.92	0.41	18.710303	14.032727	23.387879	0.21	34.5	4.88	59.64	20.2		
30	0	0	0	0	0	0	0	1.5	0	0	1.5678788	20.278182	15.208636	25.347727	0.21	36.95	8.94	61.14	20.2		
31	0.06	0	0	1.98	0	0.9	0	0	0	0	0.2512121	20.529394	15.397045	25.661742	0.21	37.01	10.65	61.14	20.2		
32	13.85	3.44	0	0.07	0	10.24	0	0	0	0	0.9945455	21.523939	16.142955	26.904924	0.21	37.01	10.67	61.14	20.2		

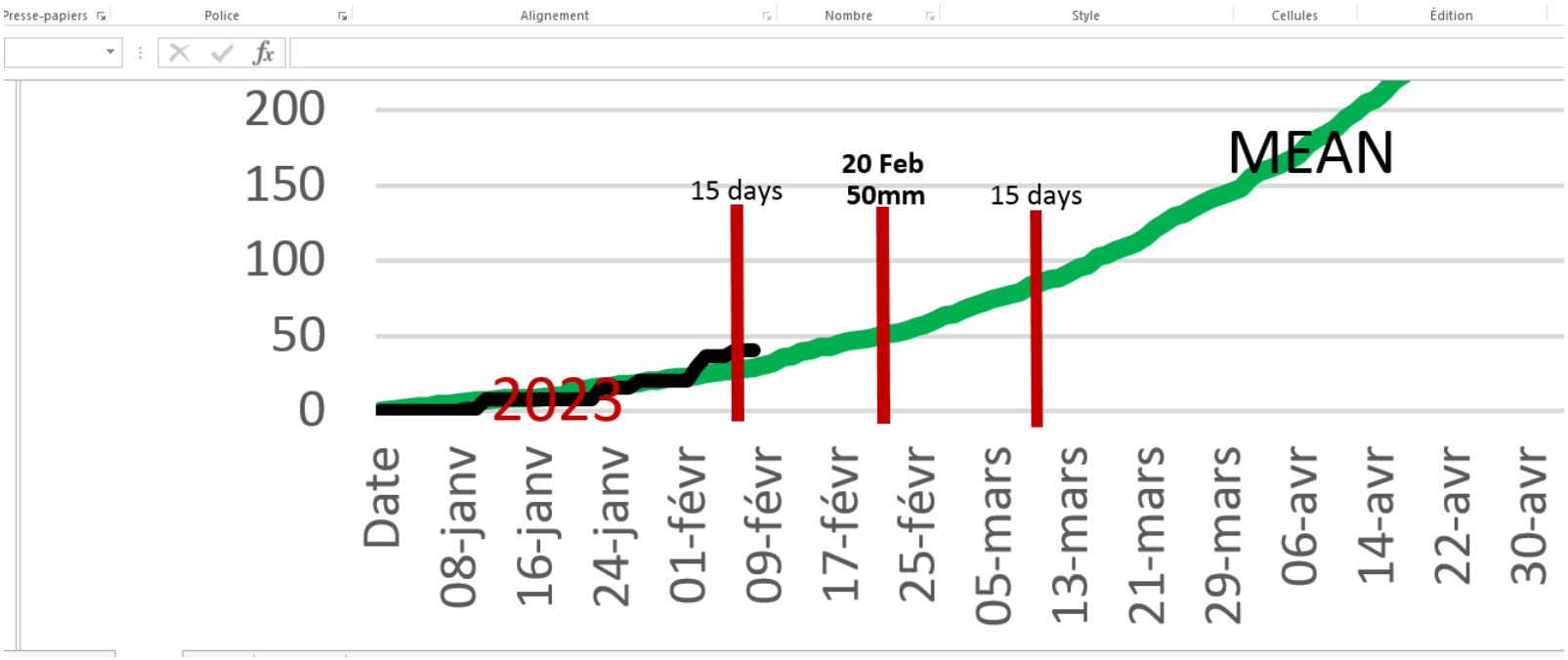
ABIDJAN

PRÊT

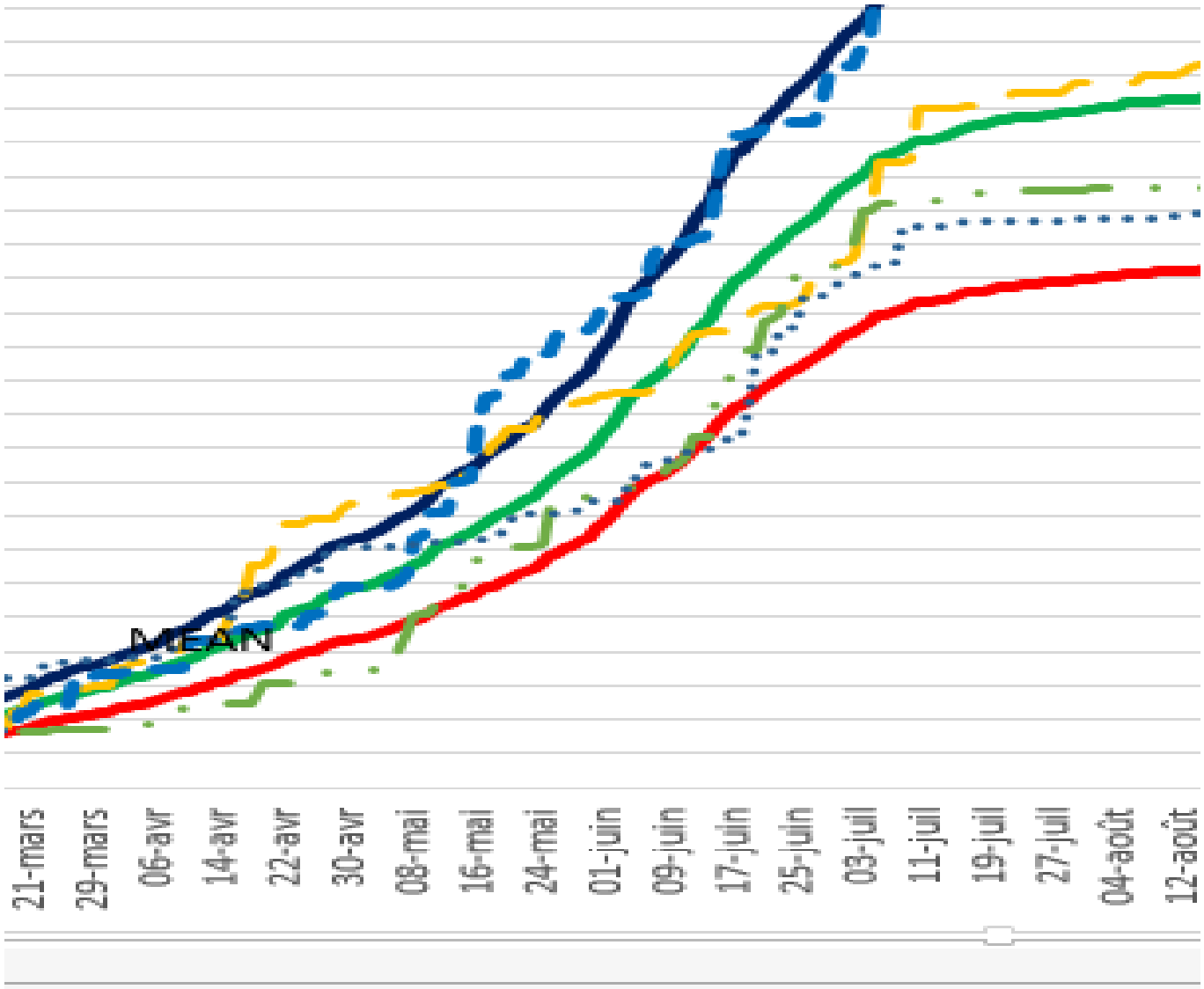
Daily rainfall profil



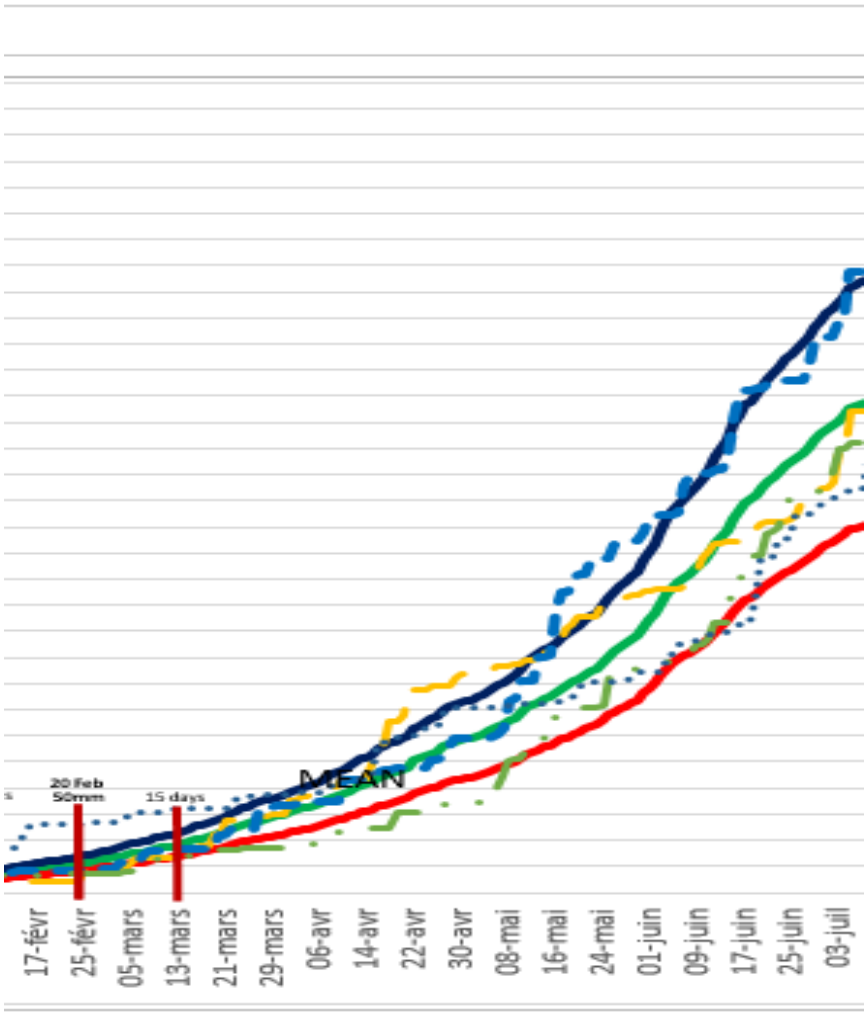
ONSET SEASON



Rainfall distribution



Quality of the season



Step 7:

DRIVERS

THANK YOU

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