



TRAINING ON SEASONAL FORECAST VERIFICATION PRESAGG

<https://rcc.acmad.org/>



Context

La vérification des prévisions est une composante essentielle des prévisions que ça soit météorologique ou climatiques. En prévision climatique saisonnière dont sa période tend aux incertitudes, sans information sur la qualité des prévisions, comment peut-on savoir et s'il faut en à croire ? Il est très facile de faire une prévision, mais il est beaucoup plus difficile de faire une bonne prévision, et il revient donc au prévisionniste de démontrer que ses prévisions valent la peine d'être prises en compte dans le cas s'ils bonnes ou mauvaises et voir comment les améliorées.

La vérification n'est en fait qu'un aspect de la qualité d'une prévision. On la définit généralement comme l'évaluation de la qualité de la prévision par la mesure objective du degré de correspondance entre la prévision et la situation météorologique réelle, révélée par les observations



Methode de vérification

Méthode visuelle

- Anomalie
- Pourcentage par rapport à la normal

Méthode Statistique

- Tercile
- Quantile
- RPSS



Méthode Visuelle

La méthode visuelle est utilisée pour faire la comparaison de la valeur d'une indice issue de la valeur observée à celle qui a été prévue par rapport la valeur climatologique (indice d'anomalie ou pourcentage par rapport à la normal).

L'indice d'anomalie est obtenue par la différence entre la valeur l'observée et la moyenne de la série climatologique pour une seule période ($Anom = Obs - MoyClim$), ou elle est aussi obtenue par la valeur observée divisée avec la moyenne et multipliée par 100 ($\% = Obs / Moy - Clim * 100$)

Toutes ces indices sont représentées par une carte ou un tableau



LES OUTILS DE LA VERIFICATION DE PREVISION

Outil statistique : Excel, R, Rstudio, NCL, GradS, Python... : pour le calcul de cumul, la moyenne, l'anomalie, pourcentage par rapport à la moyenne et RPSS;

Outil GIS: SURFER, QGIS, ARC GIS, GradS, R, Rstudio, NCL... pour la production des cartes de cumul, moyenne, d'anomalie, pourcentage par rapport à la moyenne et RPSS



Vérification avec anomalie



Calcul de cumul saisonnier

Calcul des données mensuelles en cumule saisonnière (les données pour Mars, Avril et Mai)

$$\text{CUM-MAM} = \text{Mar} + \text{Avril} + \text{Mai}$$

Le calcul doit être calculer pour toutes les stations



Calcul cumule saisonnière

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	MAM
1991	103.2194	110.6116	66.7058	186.5809	171.3848	18.0603	2.368392	3.533568	9.040176	83.10246	244.0765	5.55216	=SOMME(D2:F2)
1992	25.82743	136.3635	356.4955	309.2534	191.6989	5.184827	1.316073	6.843635	94.50436	144.6346	321.1938	242.2512	
1993	196.7327	262.5817	171.1504	153.2263	173.058	12.50269	23.60239	91.81673	24.70888	241.8652	293.1183	157.4513	
1994	17.57937	223.2973	359.1036	146.458	174.4733	9.791952	2.715501	2.29169	130.9762	292.4771	169.4023	193.4205	
1995	22.59804	124.4638	166.9369	81.99264	69.31069	96.56192	6.055738	43.2058	131.0469	533.4681	199.9886	114.1948	
1996	47.02995	108.741	317.4543	125.412	278.4464	37.23013	0.3544901	4.765953	100.0118	214.9367	366.6974	140.8179	
1997	56.55148	178.9563	111.6416	358.9123	130.2059	66.08255	60.17751	70.60816	82.80766	282.6629	129.0897	261.5045	
1998	206.0212	165.24	114.0563	191.427	252.9272	148.0209	47.10491	86.93134	256.8482	311.3002	271.3234	198.11	
1999	155.1049	170.8341	199.8416	257.7622	425.7668	24.47968	7.470544	54.31755	192.4236	418.7033	379.461	166.8899	
2000	163.6389	142.2151	184.5679	128.5213	149.8136	125.1278	2.738759	29.88992	84.19882	426.3631	424.4808	144.8255	
2001	66.08896	130.6762	212.7072	201.8522	304.445	65.74113	10.86334	2.703421	83.00668	265.6287	222.1555	165.0507	
2002	135.0375	282.0462	302.999	311.7197	224.6987	7.092994	0.6401437	4.345893	110.8906	303.2365	332.6171	178.0482	
2003	273.143	117.712	177.3593	163.6154	119.3703	67.97152	70.90749	14.65472	211.2221	316.6255	572.4904	238.799	
2004	307.0465	287.2957	183.0111	201.7997	141.2904	119.5038	2.091311	21.29347	173.693	498.5884	250.7148	385.7116	
2005	120.6556	282.0743	272.0821	149.0839	3.807969	0.5527995	1.390284	132.2238	202.9282	171.5533	462.7516	239.4865	
2006	236.7234	393.8433	245.3911	329.1032	50.61072	147.8557	35.75012	10.30697	116.8367	291.2936	338.9113	242.3078	
2007	171.4605	194.8568	308.7687	234.7453	443.6357	82.93295	6.691668	6.716176	351.4197	399.3145	414.2869	279.3226	
2008	370.2983	144.0312	289.9331	66.86627	337.8439	1.509887	0.02206175	10.39461	191.1061	507.536	427.3985	335.7613	
2009	162.8841	334.1371	249.3282	307.208	391.7789	24.39242	0.2624289	9.508995	31.17099	310.8449	331.2837	333.2328	
2010	279.9689	293.1838	423.9736	303.1529	26.02336	6.345819	1.73302	3.560169	152.1161	338.782	774.2739	313.0288	
2011	178.5398	364.1932	266.6324	236.9298	28.98571	2.669306	0.3504139	2.438575	94.44225	591.0431	373.1654	105.6903	
2012	167.935	240.8831	254.9443	210.5775	207.3719	35.77579	1.042942	65.65244	150.6774	768.6297	276.4625	189.0039	
2013	374.0374	246.5957	337.486	309.452	196.5547	12.53172	2.843693	1.487753	39.8091	304.2712	626.5192	356.9394	
2014	217.978	214.18	400.7014	254.9339	394.5856	26.85215	6.071326	40.71086	203.4904	431.6647	785.832	342.031	
2015	151.7258	322.9956	334.6368	380.288	138.082	0.5241026	2.694485	2.616198	35.24678	247.7817	464.3918	418.8361	
2016	422.6093	217.8271	447.3778	425.6857	231.7971	39.98967	9.68272	30.02059	52.92028	189.714	435.1791	291.7877	
2017	669.3675	325.3829	399.9592	420.0616	110.7852	18.4245	0.8602543	8.768933	124.5686	559.4509	628.1839	371.7567	
2018	280.18	244.5592	329.9695	280.199	358.9789	2.781112	0.6156176	21.99008	385.571	195.9002	470.5719	171.1108	

Calcul cumule saisonnière

Classeur3 - Excel

Fichier Accueil Insertion Mise en page Formules Données Révision Affichage Aide Rechercher des outils adaptés

Coller Presse-papiers Police Alignement Nombre Styles

N2 =SOMME(D2:F2)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	MAM	
2	1991	103.2194	110.6116	66.7058	186.5809	171.3848	18.0603	2.368392	3.533568	9.040176	83.10246	244.0765	5.55216	424.6715	
3	1992	25.82743	136.3635	356.4955	309.2534	191.6989	5.184827	1.316073	6.843635	94.50436	144.6346	321.1938	242.2512	857.4478	
4	1993	196.7327	262.5817	171.1504	153.2263	173.058	12.50269	23.60239	91.81673	24.70888	241.8652	293.1183	157.4513	497.4347	
5	1994	17.57937	223.2973	359.1036	146.458	174.4733	9.791952	2.715501	2.29169	130.9762	292.4771	169.4023	193.4205	680.0349	
6	1995	22.59804	124.4638	166.9369	81.99264	69.31069	96.56192	6.055738	43.2058	131.0469	533.4681	199.9886	114.1948	318.24023	
7	1996	47.02995	108.741	317.4543	125.412	278.4464	37.23013	0.3544901	4.765953	100.0118	214.9367	366.6974	140.8179	721.3127	
8	1997	56.55148	178.9563	111.6416	358.9123	130.2059	66.08255	60.17751	70.60816	82.80766	282.6629	129.0897	261.5045	600.7598	
9	1998	206.0212	165.24	114.0563	191.427	252.9272	148.0209	47.10491	86.93134	256.8482	311.3002	271.3234	198.11	558.4105	
10	1999	155.1049	170.8341	199.8416	257.7622	425.7668	24.47968	7.470544	54.31755	192.4236	418.7033	379.461	166.8899	883.3706	
11	2000	163.6389	142.2151	184.5679	128.5213	149.8136	125.1278	2.738759	29.88992	84.19882	426.3631	424.4808	144.8255	462.9028	
12	2001	66.08896	130.6762	212.7072	201.8522	304.445	65.74113	10.86334	2.703421	83.00668	265.6287	222.1555	165.0507	719.0044	
13	2002	135.0375	282.0462	302.999	311.7197	224.6987	7.029994	0.6401437	4.345893	110.8906	303.2365	332.6171	178.0482	839.4174	
14	2003	273.143	117.712	177.3593	163.6154	119.3703	67.97152	70.90749	14.65472	211.2221	316.6255	572.4904	238.799	460.345	
15	2004	307.0465	287.2957	183.0111	201.7997	141.2904	119.5038	2.091311	21.29347	173.693	498.5884	250.7148	385.7116	526.1012	
16	2005	120.6556	282.0743	272.0821	149.0839	3.807969	0.5527995	1.390284	132.2238	202.9282	171.5533	462.7516	239.4865	424.97369	
17	2006	236.7234	393.8433	245.3911	329.1032	50.61072	147.8557	35.75012	10.30697	116.8367	291.2936	338.9113	242.3078	625.10502	
18	2007	171.4605	194.8568	308.7687	234.7453	443.6357	82.93295	6.691668	6.716176	351.4197	399.3145	414.2869	279.3226	987.1497	
19	2008	370.2983	144.0312	289.9331	66.86627	337.8439	1.509887	0.02206175	10.39461	191.1061	507.536	427.3985	335.7613	694.64327	
20	2009	162.8841	334.1371	249.3282	307.208	391.7789	24.39242	0.2624289	9.508995	31.17099	310.8449	331.2837	333.2328	948.3151	
21	2010	279.9689	293.1838	423.9736	303.1529	26.02336	6.345819	1.73302	3.560169	152.1161	338.782	774.2739	313.0288	753.14986	
22	2011	178.5398	364.1932	266.6324	236.9298	28.98571	2.669306	0.3504139	2.438575	94.44225	591.0431	373.1654	105.6903	532.54791	
23	2012	167.935	240.8831	254.9443	210.5775	207.3719	35.77579	1.042942	65.65244	150.6774	768.6297	276.4625	189.0039	672.8937	
24	2013	374.0374	246.5957	337.486	309.452	196.5547	12.53172	2.843693	1.487753	39.8091	304.2712	626.5192	356.9394	843.4927	
25	2014	217.978	214.18	400.7014	254.9339	394.5856	26.85215	6.071326	40.71086	203.4904	431.6647	785.832	342.031	1050.2209	
26	2015	151.7258	322.9956	334.6368	380.288	138.082	0.5241026	2.694485	2.616198	35.24678	247.7817	464.3918	418.8361	853.0068	
27	2016	422.6093	217.8271	447.3778	425.6857	231.7971	39.98967	9.68272	30.02059	52.92028	189.714	435.1791	291.7877	1104.8606	
28	2017	669.3675	325.3829	399.9592	420.0616	110.7852	18.4245	0.8602543	8.768933	124.5686	559.4509	628.1839	371.7567	930.806	
29	2018	280.18	244.5592	329.9695	280.199	358.9789	2.781142	0.6156476	21.99008	385.571	195.9002	470.5719	171.1108	969.1474	

Feuille1



Calcul de la Moyenne

La moyenne permet de calculer l'indice d'anomalie ou de pourcentage,

Dans le cadre la vérification de la prévision, elle est obtenue par la somme des valeurs observées de la 1^{ère} année jusqu'au 30^{ème} années ou plus et divisé par le total des nombres des années observées

Moyenne=

$$N1+N2+N3+\dots\dots\dots N30/\text{Nb}re30$$



Calcul de la Moyenne

	A	B	C	D	E	F
1	YEAR	BUTARE				
2	1991	321.742401				
3	1992	238.847946				
4	1993	256.786102				
5	1994	211.622696				
6	1995	312.879425				
7	1996	439.128601				
8	1997	258.928528				
9	1998	213.988617				
10	1999	284.393555				
11	2000	361.337524				
12	2001	284.08371				
13	2002	266.590485				
14	2003	272.302704				
15	2004	235.27356				
16	2005	287.36795				
17	2006	558.9151				
18	2007	362.154633				
19	2008	312.981751				
20	2009	357.337494				
21	2010	350.372315				
22	2011	357.332916				
23	2012	299.534821				
24	2013	385.964813				
25	2014	260.797913				
26	2015	274.857239				
27	2016	373.550415				
28	2017	262.102936				
29	2018	451.404999				
30	2019	392.761749				
31	2020	431.525024				
32	2021	294.686462				
33	2022					
34	MEAN	=MOYENNE(B2:B33)				

	A	B	C	D	E	F
1	YEAR	BUTARE				
2	1991	321.742401				
3	1992	238.847946				
4	1993	256.786102				
5	1994	211.622696				
6	1995	312.879425				
7	1996	439.128601				
8	1997	258.928528				
9	1998	213.988617				
10	1999	284.393555				
11	2000	361.337524				
12	2001	284.08371				
13	2002	266.590485				
14	2003	272.302704				
15	2004	235.27356				
16	2005	287.36795				
17	2006	558.9151				
18	2007	362.154633				
19	2008	312.981751				
20	2009	357.337494				
21	2010	350.372315				
22	2011	357.332916				
23	2012	299.534821				
24	2013	385.964813				
25	2014	260.797913				
26	2015	274.857239				
27	2016	373.550415				
28	2017	262.102936				
29	2018	451.404999				
30	2019	392.761749				
31	2020	431.525024				
32	2021	294.686462				
33	2022	465.978668				
34	MEAN	326.172908				



Calcul de l'anomalie

La vérification c'est à partir du fichier qui contiens les valeurs de cumules saisonnière avec les stations que l'indice de l'anomalies doit être calculer,

Dans le contenu du fichier, y a les nom de stations sont en colonne, les années en ligne et les valeurs de cumules saisonnières sont en colonnes et lignes représentant les stations et les années



Calcul de la moyenne et anomalie

Togo_MAM_2022 - Excel

FICHIER ACCUEIL INSERTION MISE EN PAGE FORMULES DONNÉES RÉVISION AFFICHAGE

Collier

Police

Alignement

Nombre

B4 : $=\text{MOYENNE}(B4:B35)$

	A	B	C	D	E	F	G	H	I	J
1	Station	ATAKPAME	DAPAON	KARA	KOUMA-KON	LOME	MANGO	NIAMTOUGCSOKODE	TABLIGBO	
19	2006	317.405853	115.888588	189.349106	351.274445	426.444733	142.608521	166.968201	211.729996	397.433289
20	2007	320.219391	171.073105	272.416016	314.65329	350.271271	206.080994	242.31282	302.519196	332.975159
21	2008	286.893036	197.346268	243.099396	311.319794	353.980927	213.855347	227.364304	258.834503	278.495667
22	2009	379.727234	129.806854	262.428955	410.694641	449.507721	177.253036	222.418015	302.439941	408.545227
23	2010	325.60498	196.259979	258.134674	330.459625	358.110901	211.686478	232.565399	283.703979	350.05722
24	2011	275.240204	127.576393	227.151871	282.457428	313.02005	164.257813	199.970337	254.333405	280.191498
25	2012	286.814392	179.818726	245.902832	281.413086	334.202087	203.090729	226.057541	265.748108	312.929565
26	2013	391.403931	208.86937	317.335022	392.746704	436.022278	247.934448	286.402802	348.267303	416.97113
27	2014	296.695129	151.069519	239.28299	302.483643	345.190735	181.893768	213.587067	264.978943	338.637878
28	2015	198.714462	89.6026917	152.500351	215.233231	242.037796	113.066147	136.2173	168.783401	221.878983
29	2016	337.259247	201.591492	274.943939	330.109619	388.828674	227.105148	255.67746	294.210449	379.593262
30	2017	264.330566	178.265549	212.378128	278.002625	314.351074	183.3853	196.051208	228.705002	288.841522
31	2018	251.925278	170.163406	215.277267	269.343262	288.125916	185.380005	202.523468	228.031021	262.491333
32	2019	329.136353	210.950607	243.661148	350.374176	412.638031	219.183365	229.814651	257.507629	384.817261
33	2020	412.207733	164.687027	295.560272	412.603882	473.884491	209.150436	256.369324	334.751116	453.720978
34	2021	262.216888	114.983604	202.080109	270.499359	299.37204	142.267792	173.050323	231.109924	272.681396
35	2022	340.214233	169.759293	242.256256	367.706665	421.960388	195.134018	217.544418	266.968079	386.613892
36	MEAN	$=\text{MOYENNE}(B4:B35)$								
37		$\text{MOYENNE}(\text{nombre1}; [\text{nombre2}]; \dots)$								

Togo_MAM_2022 - Excel

FICHIER ACCUEIL INSERTION MISE EN PAGE

Collier

Police

MOYENNE

$=B35-B36$

	A	B	C	D
1	Station	ATAKPAME	DAPAON	KARA
19	2006	317.405853	115.888588	189.349106
20	2007	320.219391	171.073105	272.416016
21	2008	286.893036	197.346268	243.099396
22	2009	379.727234	129.806854	262.428955
23	2010	325.60498	196.259979	258.134674
24	2011	275.240204	127.576393	227.151871
25	2012	286.814392	179.818726	245.902832
26	2013	391.403931	208.86937	317.335022
27	2014	296.695129	151.069519	239.28299
28	2015	198.714462	89.6026917	152.500351
29	2016	337.259247	201.591492	274.943939
30	2017	264.330566	178.265549	212.378128
31	2018	251.925278	170.163406	215.277267
32	2019	329.136353	210.950607	243.661148
33	2020	412.207733	164.687027	295.560272
34	2021	262.216888	114.983604	202.080109
35	2022	340.214233	169.759293	242.256256
36	MEAN	308.171851	164.151697	239.253645
37	ANOMALIE	$=B35-B36$	5.60759544	3.00261068

Togo_MAM_2022 - Excel

FICHIER ACCUEIL INSERTION MISE EN PAGE FORMULES DONNÉES RÉVISION AFFICHAGE

Collier

Police

Alignement

Nombre

M31

	A	B	C	D	E	F	G	H	I	J
1	Station	ATAKPAME	DAPAON	KARA	KOUMA-KON	LOME	MANGO	NIAMTOUGCSOKODE	TABLIGBO	
19	2006	317.405853	115.888588	189.349106	351.274445	426.444733	142.608521	166.968201	211.729996	397.433289
20	2007	320.219391	171.073105	272.416016	314.65329	350.271271	206.080994	242.31282	302.519196	332.975159
21	2008	286.893036	197.346268	243.099396	311.319794	353.980927	213.855347	227.364304	258.834503	278.495667
22	2009	379.727234	129.806854	262.428955	410.694641	449.507721	177.253036	222.418015	302.439941	408.545227
23	2010	325.60498	196.259979	258.134674	330.459625	358.110901	211.686478	232.565399	283.703979	350.05722
24	2011	275.240204	127.576393	227.151871	282.457428	313.02005	164.257813	199.970337	254.333405	280.191498
25	2012	286.814392	179.818726	245.902832	281.413086	334.202087	203.090729	226.057541	265.748108	312.929565
26	2013	391.403931	208.86937	317.335022	392.746704	436.022278	247.934448	286.402802	348.267303	416.97113
27	2014	296.695129	151.069519	239.28299	302.483643	345.190735	181.893768	213.587067	264.978943	338.637878
28	2015	198.714462	89.6026917	152.500351	215.233231	242.037796	113.066147	136.2173	168.783401	221.878983
29	2016	337.259247	201.591492	274.943939	330.109619	388.828674	227.105148	255.67746	294.210449	379.593262
30	2017	264.330566	178.265549	212.378128	278.002625	314.351074	183.3853	196.051208	228.705002	288.841522
31	2018	251.925278	170.163406	215.277267	269.343262	288.125916	185.380005	202.523468	228.031021	262.491333
32	2019	329.136353	210.950607	243.661148	350.374176	412.638031	219.183365	229.814651	257.507629	384.817261
33	2020	412.207733	164.687027	295.560272	412.603882	473.884491	209.150436	256.369324	334.751116	453.720978
34	2021	262.216888	114.983604	202.080109	270.499359	299.37204	142.267792	173.050323	231.109924	272.681396
35	2022	340.214233	169.759293	242.256256	367.706665	421.960388	195.134018	217.544418	266.968079	386.613892
36	MEAN	308.171851	164.151697	239.253645	322.109065	364.848778	190.336515	216.572348	261.934945	338.041872
37	ANOMALIE	32.0423827	5.60759544	3.00261068	45.5976	57.1116099	4.79750299	0.97207069	5.03313351	48.5720143



Production de la carte d'anomalie

Mettre les données calculée en cumules saisonnières en série climatologique (1991 à 2022 dans un fichier selon format Station, Long, Lat de 1ere à 3eme ligne et Moyenne comme dernière ligne des données

Extraire ou copiée les lignes Station, Long, Lat et Moyenne collée et transposé les dans une autre feuille ou fichier

Convertir le fichier en format requis (excel, csv, netcdf, texte

Importé le fichier dans SURFER, QGIS, Rstudio pour être convertis en format GRID, raster

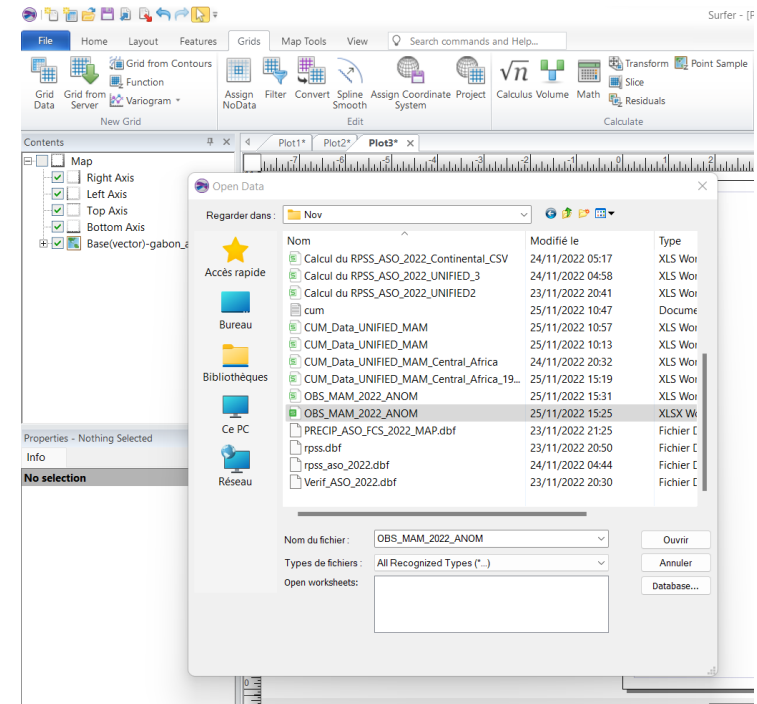
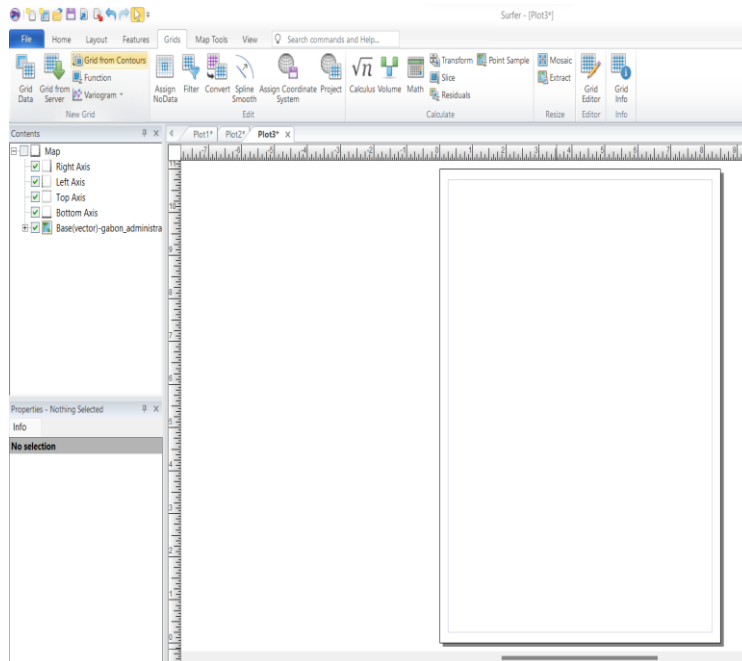
Production de la carte d'anomalie

Microsoft Excel interface showing the ribbon (FICHIER, ACCUEIL, INSERTION, MISE EN PAGE, FORMULES, DONNÉES) and the data table below.

	A	B	C	D	E	F
1	Station	Lon	Lat	MEAN	ANOMALIE	
2	ATAKPAME	1.11666	7.58333	308.171851	32.0423827	
3	DAPAON	0.25	10.86666	164.151697	5.60759544	
4	KARA	1.16666	9.55	239.253645	3.00261068	
5	KOUMA-KOM	0.58333	6.95	322.109065	45.5976	
6	LOME	1.25	6.16666	364.848778	57.1116099	
7	MANGO	0.46666	10.36666	190.336515	4.79750299	
8	NIAMTOUGC	1.1	9.76666	216.572348	0.97207069	
9	SOKODE	1.15	8.98333	261.934945	5.03313351	
10	TABLIGBO	1.5	6.58333	338.041877	48.5720143	

Production de carte avec SURFER

Importation du fichier



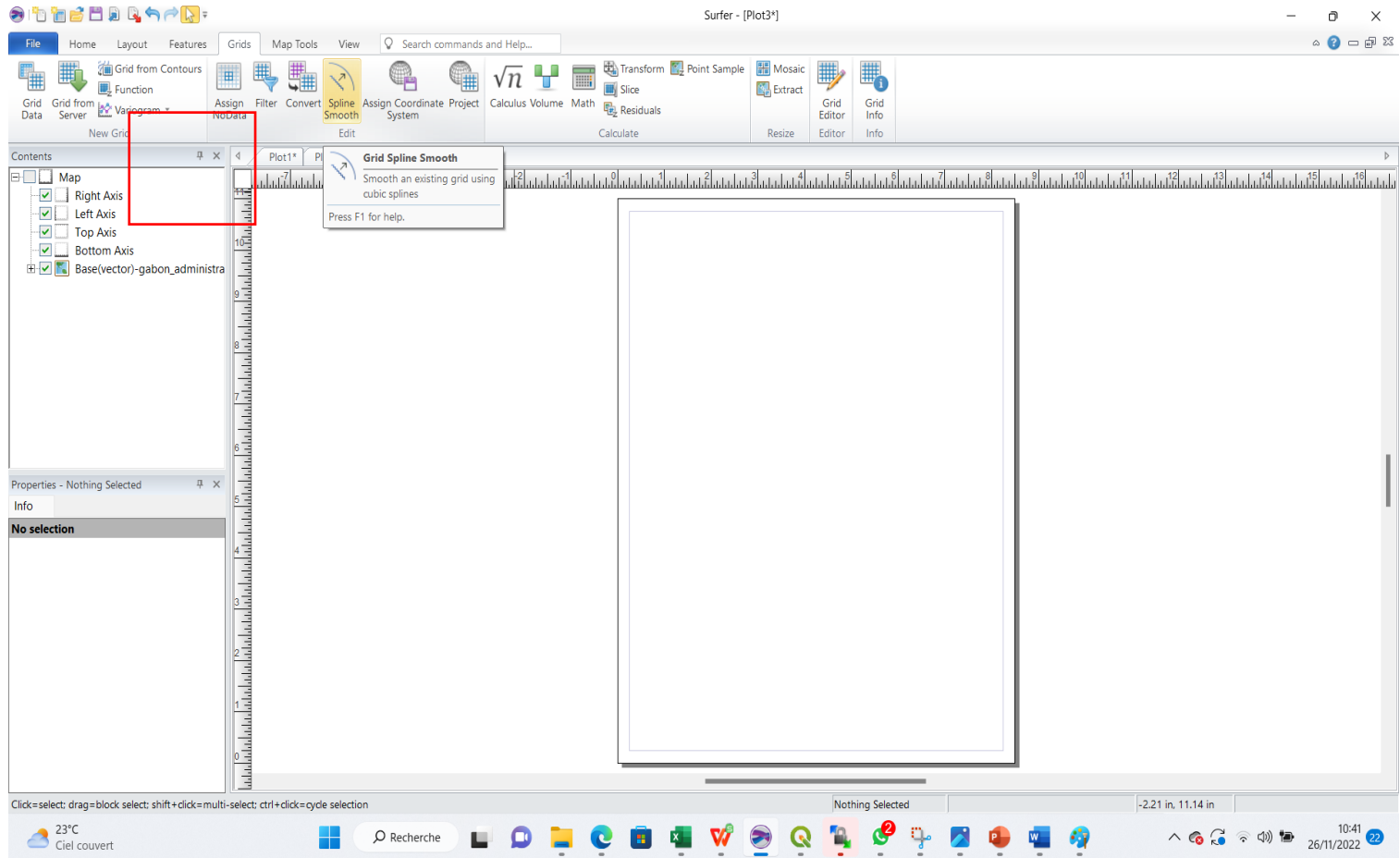


Conversion du fichier en format GRID

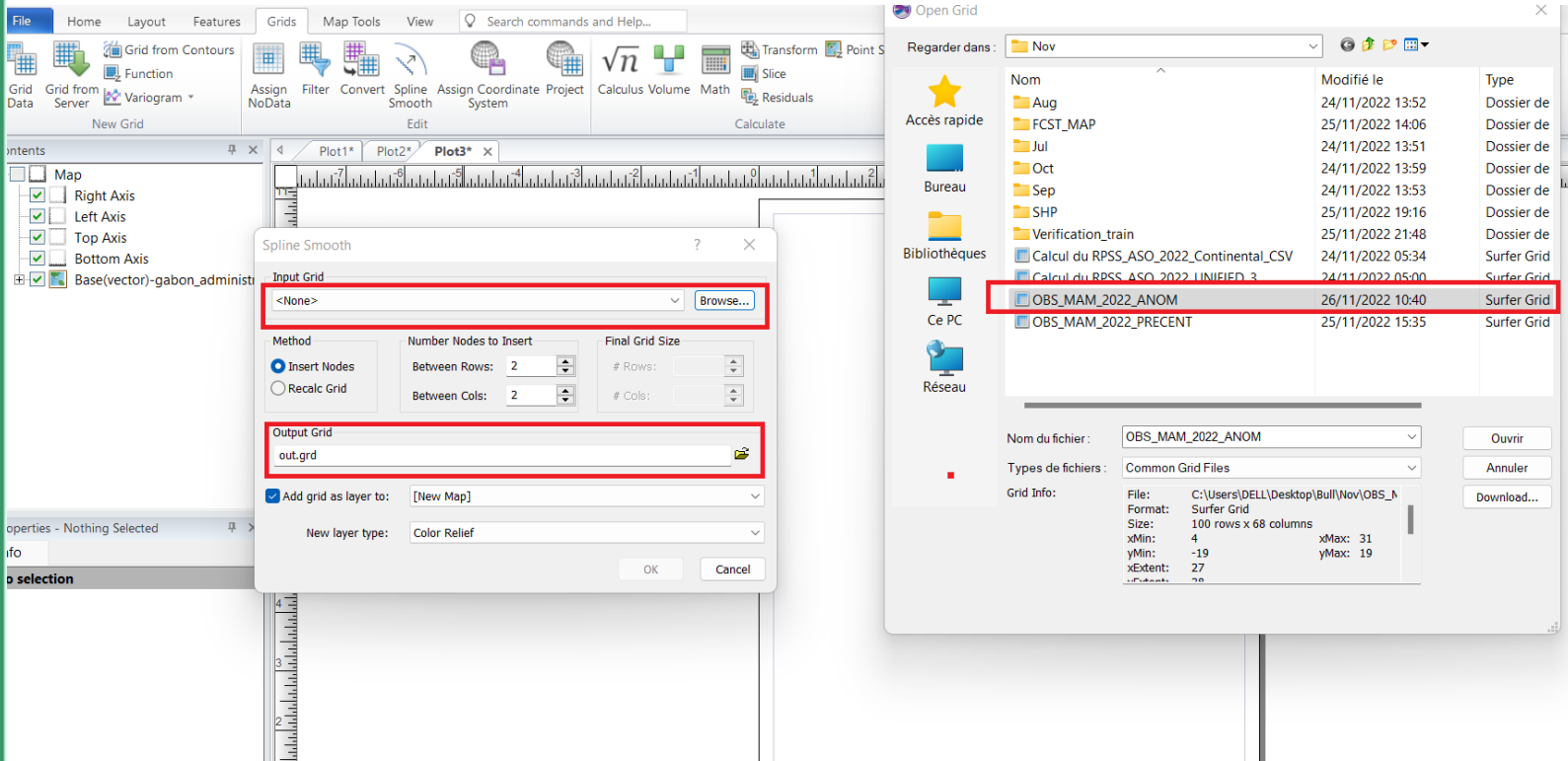
The screenshot displays the ACMAD software interface with the 'Grid Data' dialog box open. The dialog box is titled 'Grid Data - C:\Users\DELL\Desktop\Bull\Nov\OBS_MAM_2022_...' and contains the following settings:

- Data Columns (169 data points):**
 - X: Column B: Lon
 - Y: Column C: Lat
 - Z: Column F: ANOM
- Filtering:** Filter Data..., View Data, Statistics
- Grid Report:** Grid Report
- Gridding Method:** Kriging
- Advanced Options...** button
- Cross Validate...** button
- Output Grid Geometry:**
 - Copy geometry from: <Custom>
 - Minimum: 4, Maximum: 31, Spacing: 0.402985074626, # of Nodes: 68 (X Direction)
 - Minimum: -19, Maximum: 19, Spacing: 0.383838383838, # of Nodes: 100 (Y Direction)
- Grid Z Limits:** Minimum: None, Maximum: None
- Z Transform:** Linear
- Assign NoData outside convex hull of data
- Inflate convex hull by: 0
- Output Grid:** C:\Users\DELL\Desktop\Bull\Nov\OBS_MAM_2022_ANOM.grd

Spline smooth/lissage



Spline smooth/lissage



The screenshot displays the ACMAD software interface with two dialog boxes open. The 'Spline Smooth' dialog box is in the foreground, and the 'Open Grid' dialog box is in the background.

Spline Smooth Dialog Box:

- Input Grid:** <None> (highlighted with a red box)
- Method:** Insert Nodes, Recalc Grid
- Number Nodes to Insert:** Between Rows: 2, Between Cols: 2
- Final Grid Size:** # Rows: [empty], # Cols: [empty]
- Output Grid:** out.grd (highlighted with a red box)
- Add grid as layer to:** [New Map] (checked)
- New layer type:** Color Relief

Open Grid Dialog Box:

Regarder dans: Nov

Nom	Modifié le	Type
Aug	24/11/2022 13:52	Dossier de
FCST_MAP	25/11/2022 14:06	Dossier de
Jul	24/11/2022 13:51	Dossier de
Oct	24/11/2022 13:59	Dossier de
Sep	24/11/2022 13:53	Dossier de
SHP	25/11/2022 19:16	Dossier de
Verification_train	25/11/2022 21:48	Dossier de
Calcul du RPSS_ASO_2022_Continental_CSV	24/11/2022 05:34	Surfer Grid
Calcul du RPSS_ASO_2022_UNIFIED_3	24/11/2022 05:00	Surfer Grid
OBS_MAM_2022_ANOM	26/11/2022 10:40	Surfer Grid
OBS_MAM_2022_PRECENT	25/11/2022 15:35	Surfer Grid

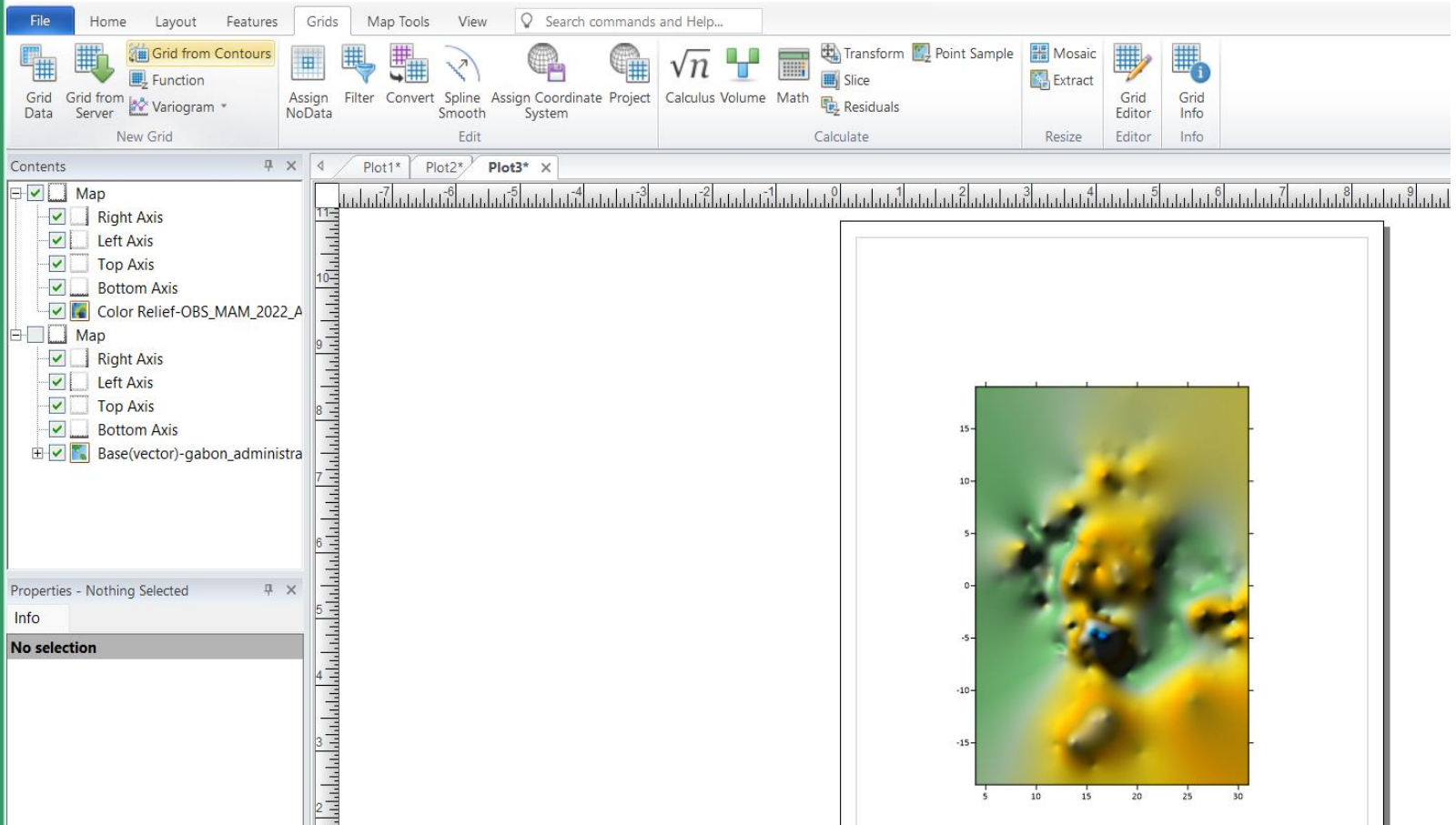
Nom du fichier: OBS_MAM_2022_ANOM (highlighted with a red box)

Types de fichiers: Common Grid Files

Grid Info:

File:	C:\Users\DELL\Desktop\Bull\Nov\OBS_M
Format:	Surfer Grid
Size:	100 rows x 68 columns
xMin:	4
yMin:	-19
xExtent:	27
yExtent:	31

Spline smooth/lissage





Assign No data/extraction de donnée

The screenshot displays the Surfer software interface. The title bar reads "Surfer - [Plot3*]". The ribbon menu is set to "Grids", with sub-tabs for "Map Tools" and "View". The "Assign NoData" tool is highlighted in the ribbon, and a tooltip is visible over it. The tooltip text reads: "Assign NoData", "Assigns a NoData value to grid nodes inside or outside specified boundaries", and "Press F1 for help." The main workspace is a large white area with a grid, currently empty. The bottom status bar shows "Nothing Selected" and coordinates "-7.76 in, 8.74 in". The Windows taskbar at the bottom includes the search bar, task view, and various application icons. The system tray shows the date and time as "26/11/2022 11:11".

File Home Layout Features Grids Map Tools View Search commands and Help...

Grid from Contours Grid from Data Grid from Server Variogram New Grid

Assign NoData Filter Convert Spline Smooth Edit

Assign Coordinate System Project

Calculus Volume Math

Transform Point Sample Mosaic Extract Grid Editor Grid Info

Contents

Assign NoData

Assigns a NoData value to grid nodes inside or outside specified boundaries

Press F1 for help.

Properties - Nothing Selected

Info

No selection

Click=select; drag=block select; shift+click=multi-select; ctrl+click=cycle selection

Nothing Selected -7.76 in, 8.74 in

23°C Pluie imminente

Recherche

11:11 26/11/2022



Assign No data/extraction de donnée

The screenshot displays the ACMAD software interface. The main window shows a grid plot with a ruler. Overlaid on this are two dialog boxes:

- Assign NoData to Grid:** This dialog box has several fields:
 - Input Grid:** A dropdown menu currently set to '<None>', with a 'Browse...' button to its right.
 - NoData Polygon Boundary:** A dropdown menu currently set to '<None>', with a 'Browse...' button to its right.
 - Loaded 0 polygons total (0 inside, 0 outside):** Three radio buttons are present: 'NoData Inside', 'NoData Outside', and 'Mixed'. A checkbox for 'Selected objects only' is also present.
 - Output Grid:** A text field containing 'out.grd' with a file icon to its right.
 - Add grid as layer to:** A dropdown menu set to '[New Map]'. Below it, 'New layer type:' is set to 'Color Relief'.
- Open Grid:** A file explorer window showing the contents of a folder named 'Nov'. The file 'OBS_MAM_2022_ANOM' is selected and highlighted in red. The file details at the bottom show:
 - Nom du fichier: OBS_MAM_2022_ANOM
 - Types de fichiers: Common Grid Files
 - Grid Info: File: C:\Users\DELL\Desktop\Bull\Nov\OBS_M...; Format: Surfer Grid; Size: 298 rows x 202 columns; xMin: 4, xMax: 31; yMin: -19, yMax: 19; xExtent: 27; yExtent: 28.



Assign No data/extraction de donnée

The screenshot displays the ACMAD software interface with the 'Assign NoData to Grid' dialog box open. The dialog box has the following fields and options:

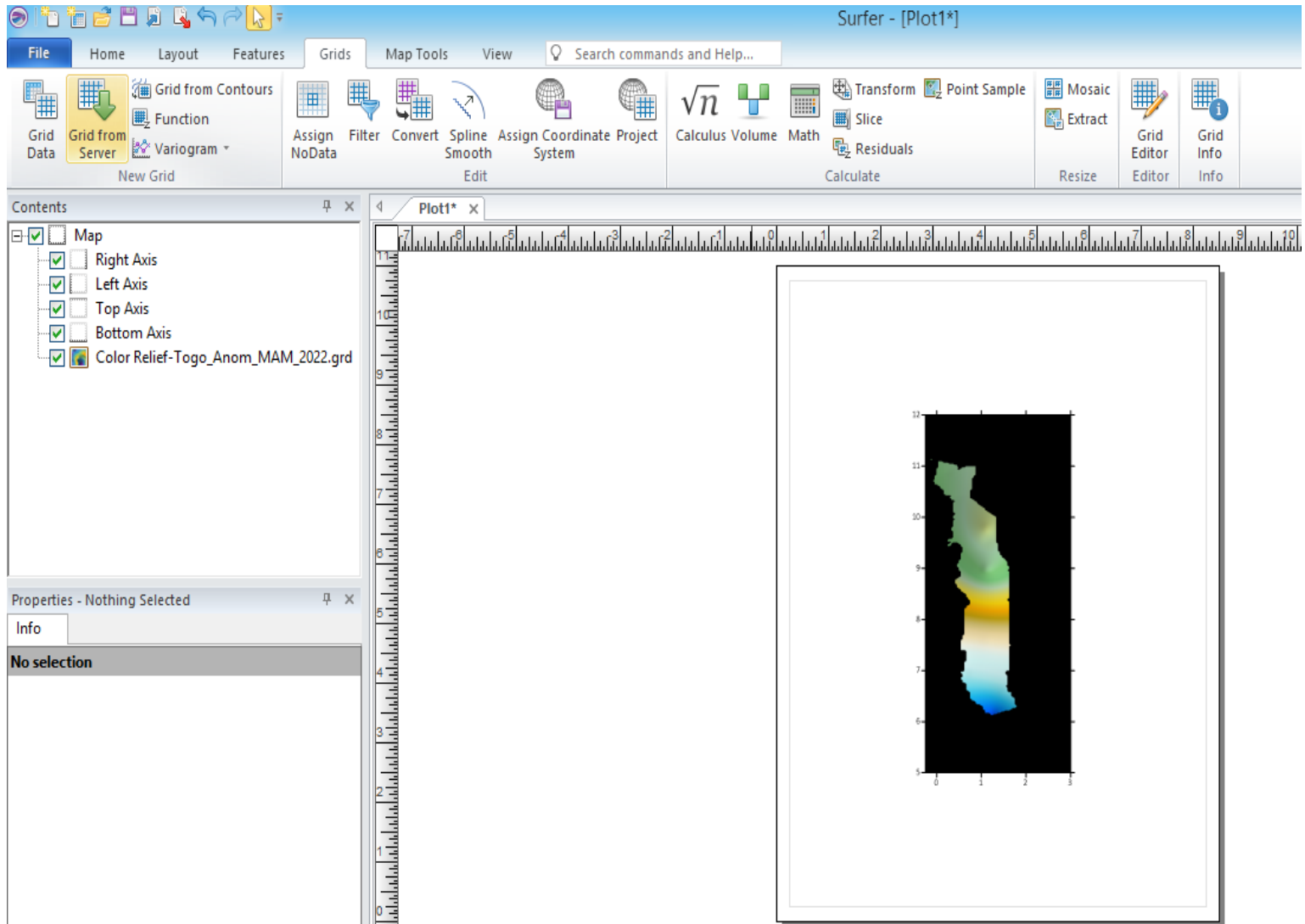
- Input Grid:** C:\Users\DELL\Desktop\OBS_MAM_2022_ANOM.grd
- NoData Polygon Boundary:** <None> (highlighted with a red box)
- Loaded 0 polygons total (0 inside, 0 outside)**
- Options:** NoData Inside, NoData Outside, Mixed, Selected objects only
- Output Grid:** C:\Users\DELL\Desktop\Bull\Nov\OBS_MAM_2022_ANOM.grd
- Add grid as layer to:** [New Map]
- New layer type:** Color Relief

In the background, a file explorer window shows the directory C:\Users\DELL\Desktop\Bull\Nov\OBS_MAM_2022_ANOM.grd. The file list is as follows:

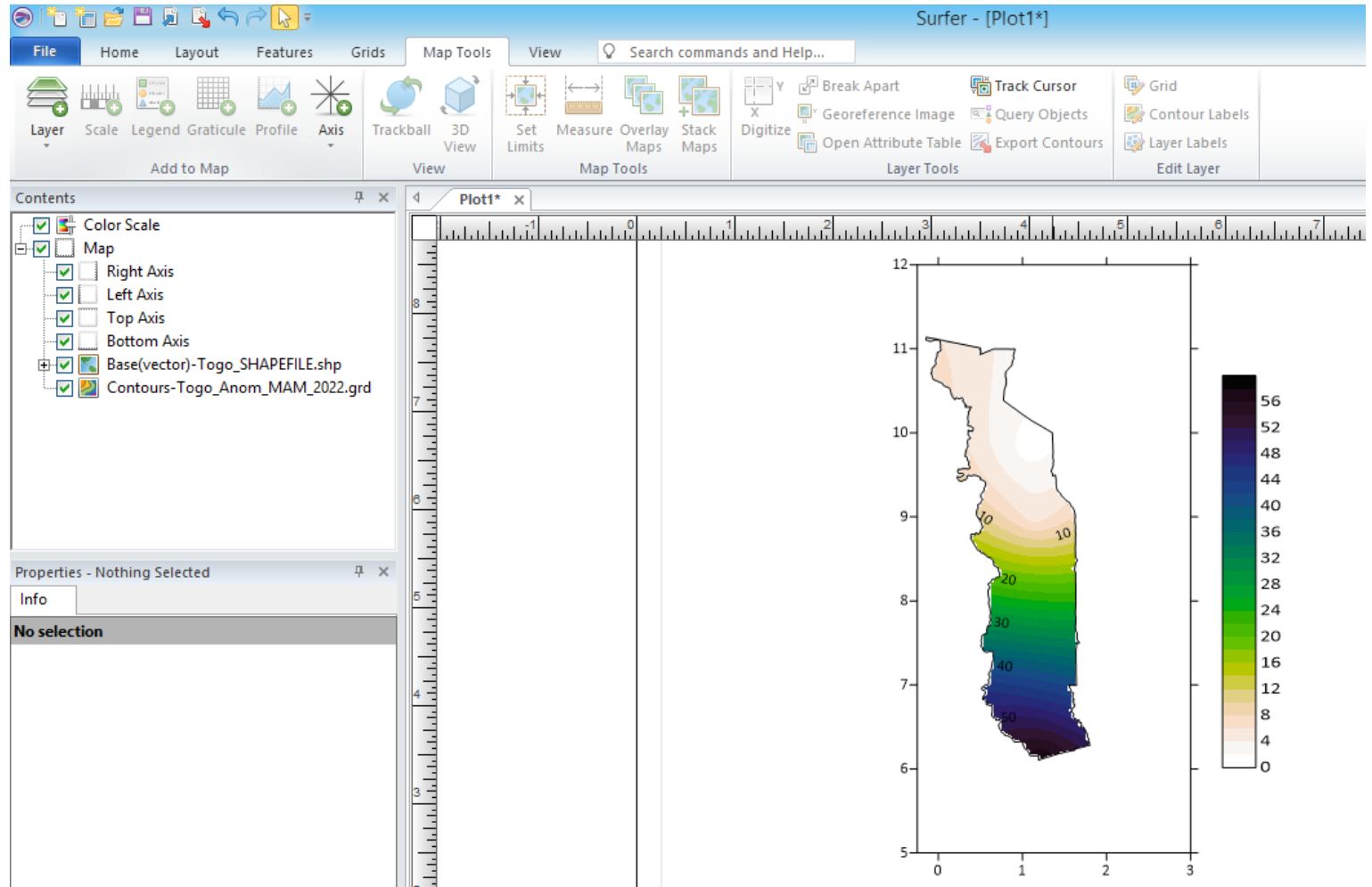
Nom	Modifié le	Type	Taille
FCST_MAP	25/11/2022 19:19	Dossier de fichiers	
PRESAC_MAP.shp	25/11/2022 11:48	Fichier SHP	514
PRESAC_MAP_bln.blm	25/11/2022 11:48	Fichier BLN	273

The 'Assign NoData to Grid' dialog box is also shown in a smaller, semi-transparent view in the foreground, where the 'NoData Outside' option is selected and highlighted with a red box.

Assign No data/extraction de donnée



Carte d'anomalie





VERIFICATION AVEC POURCENTAGE

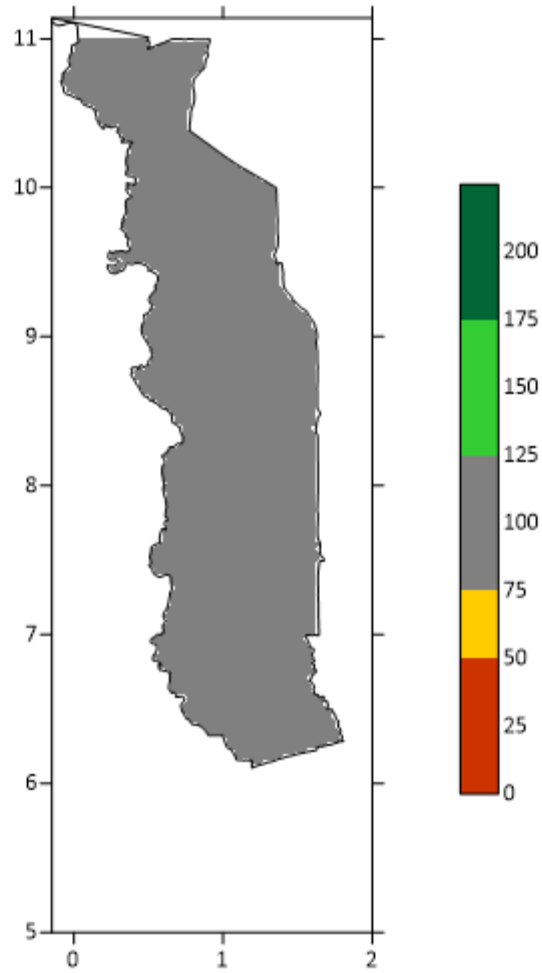
Microsoft Excel interface showing the formula bar with $=D2/E2*100$ and a table with columns: Station, Lon, Lat, 2022, MEAN, Obs%.

	A	B	C	D	E	F
1	Station	Lon	Lat	2022	MEAN	Obs%
2	ATAKPAME	1.11666	7.58333	340.214233	308.171851	$=D2/E2*100$
3	DAPAON	0.25	10.86666	169.759293	164.151697	
4	KARA	1.16666	9.55	242.256256	239.253645	
5	KOUMA-KON	0.58333	6.95	367.706665	322.109065	
6	LOME	1.25	6.16666	421.960388	364.848778	
7	MANGO	0.46666	10.36666	195.134018	190.336515	
8	NIAMTOUGC	1.1	9.76666	217.544418	216.572348	
9	SOKODE	1.15	8.98333	266.968079	261.934945	
10	TABLIGBO	1.5	6.58333	386.613892	338.041877	
11						

Microsoft Excel interface showing the completed table with calculated values in the Obs% column.

	A	B	C	D	E	F
1	Station	Lon	Lat	2022	MEAN	Obs%
2	ATAKPAME	1.11666	7.58333	340.214233	308.171851	110.39757
3	DAPAON	0.25	10.86666	169.759293	164.151697	103.416106
4	KARA	1.16666	9.55	242.256256	239.253645	101.254991
5	KOUMA-KON	0.58333	6.95	367.706665	322.109065	114.155951
6	LOME	1.25	6.16666	421.960388	364.848778	115.653502
7	MANGO	0.46666	10.36666	195.134018	190.336515	102.520537
8	NIAMTOUGC	1.1	9.76666	217.544418	216.572348	100.448843
9	SOKODE	1.15	8.98333	266.968079	261.934945	101.92152
10	TABLIGBO	1.5	6.58333	386.613892	338.041877	114.368638

Production de la carte



VERIFICATION AVEC RPSS

RPSS_MAM_2022_GABON

Fichier Accueil Insertion Mise en page Formules Données Révision Affichage Aide Rechercher des outils adaptés

Coller Arial 10 Renvoyer à la ligne automatiquement Standard

Police Alignement

L19

	A	B	C	D	E	F	G
1	Station	Lon	Lat	2022	MEAN	Obs%	Obs%Cor
2	BITAM	11.48333	2.08333	108.6576233	336.7918618	32.26254421	32.26254421
3	KELLE	13.55	0.1	740.0015259	460.7091885	160.6222633	160.6222633
4	LAMBARENE	10.23333	-0.71666	432.8609619	578.1047692	74.87586765	74.87586765
5	LIBREVILLE	9.41666	0.45	572.5282593	688.6872425	83.13327502	83.13327502
6	MAKOKOU	12.86666	0.56666	611.5090332	469.3278543	130.2946389	130.2946389
7	MAYUMBA	10.65	-3.41666	125.6251068	296.5737755	42.35880484	42.35880484
8	MITZIC	11.53333	0.78333	128.5335388	411.7605045	31.2156065	31.2156065
9	MOUILLA-VILLE	11.057	-1.845	118.2881012	430.1427456	27.49973175	27.49973175
10	MVENGUE	13.43333	-1.65	462.4387207	449.6372564	102.8470649	102.8470649
11	OYEM	11.56666	1.58333	109.5358353	366.4081609	29.89448571	29.89448571
12	PORT-GENTIL	8.75	-0.7	451.3140869	561.8896666	80.32076647	80.32076647
13	TCHIBANGA	11.01666	-2.85	113.2444992	302.0754365	37.48881423	37.48881423
14							



Calcul RPSS

Calcul du RPSS_PRESAGG_2023 [Mode de compatibilité] - Excel

Station	Lon	Lat	2020 MEAN	Obs%	OBS cor (en%)	Cat Obs	Above	Normal	Below	Prevision AMJ 2015	ABOVE	NORM/	BELOW	Calcul RPSS	RPS for	RPS clim	RPSS	RPSS cor
ATAKPAME	1.11666	7.5833	412.208	308.1718507	133.759	133.7590478	Above	100	0	0	33.3	33.3	33.3	0.56	0.56	0.00	0.00	
DAPAON	0.25	10.867	164.687	164.1516972	100.3261	100.326119	Normal	0	100	0	33.3	33.3	33.3	0.22	0.22	0.00	0.00	
KARA	1.16666	9.55	295.56	239.2536454	123.5343	123.5342817	Normal	0	100	0	33.3	33.3	33.3	0.22	0.22	0.00	0.00	
KOUMA-KON	0.58333	6.95	412.604	322.1090651	128.0945	128.0944645	Above	100	0	0	33.3	33.3	33.3	0.56	0.56	0.00	0.00	
LOME	1.25	6.1667	473.884	364.8487782	129.8852	129.8851796	Above	100	0	0	33.3	33.3	33.3	0.56	0.56	0.00	0.00	
MANGO	0.46666	10.367	209.15	190.3365149	109.8846	109.8845571	Normal	0	100	0	33.3	33.3	33.3	0.22	0.22	0.00	0.00	
NIAMTOUGC	1.1	9.7667	256.369	216.5723476	118.3758	118.3758345	Normal	0	100	0	33.3	33.3	33.3	0.22	0.22	0.00	0.00	
SOKODE	1.15	8.9833	334.751	261.9349451	127.7994	127.7993509	Above	100	0	0	33.3	33.3	33.3	0.56	0.56	0.00	0.00	
TABLIGBO	1.5	6.5833	453.721	338.0418773	134.2203	134.2203461	Above	100	0	0	33.3	33.3	33.3	0.56	0.56	0.00	0.00	

Observation

Obs/Cat

FCST/Cat

RPSS/Cat



Production de la carte RPSS

Calcul du RPSS_PRESAGG_2020_Cote_d'Ivoire [Mode de compatibilité] - Excel

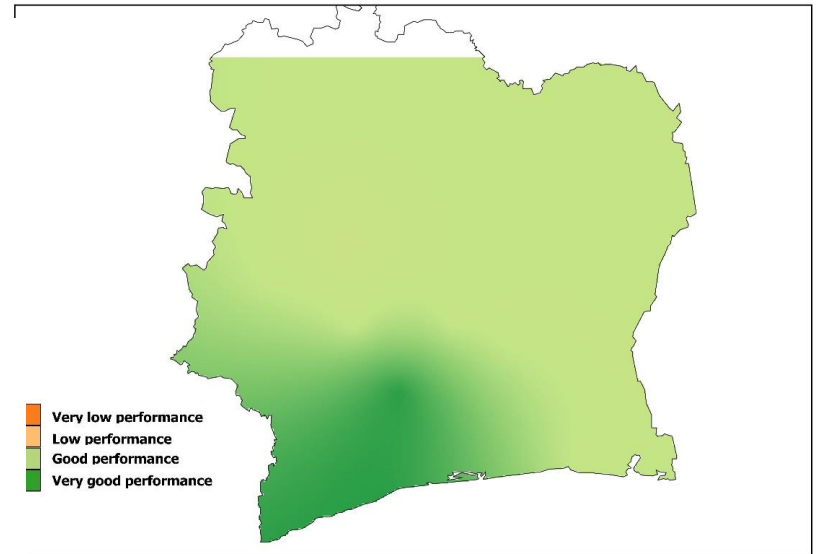
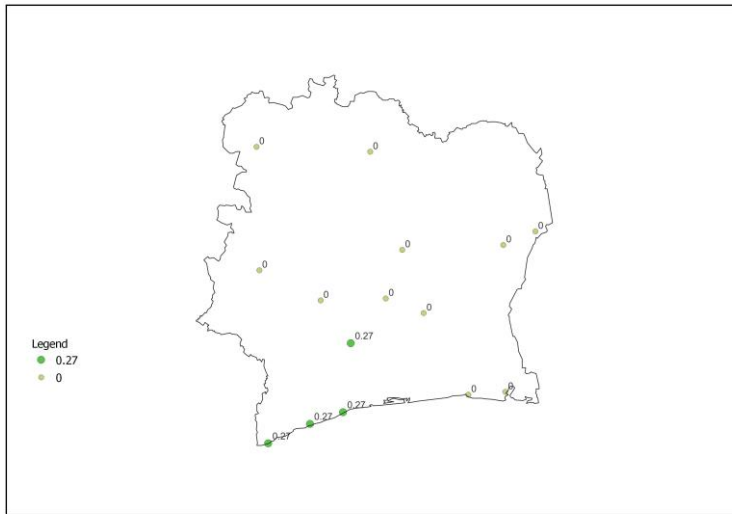
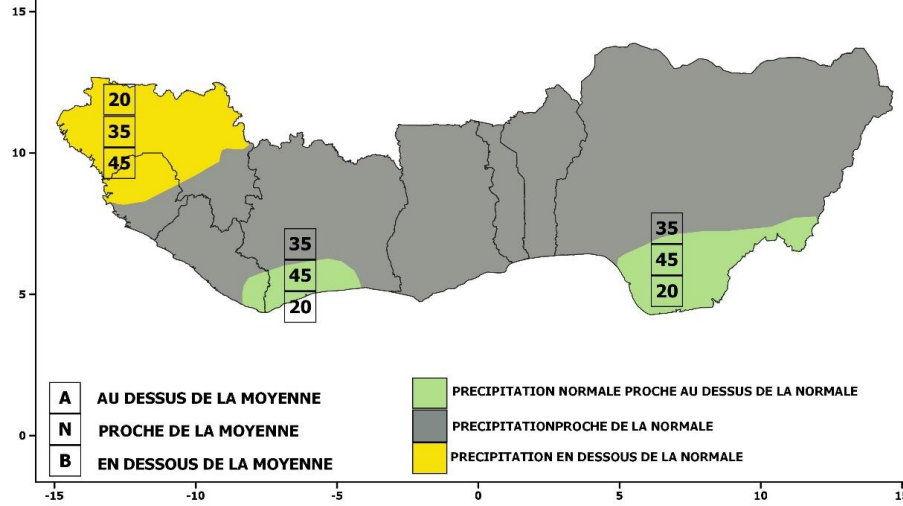
FICHER ACCUEIL INSERTION MISE EN PAGE FORMULES DONNÉES RÉVISION AFFICHAGE

Calibri 11 Renvoyer à la ligne automatiquement Standard

Coller G I S Fusionner et centrer Mise en forme conditionnelle Mettre sous forme de tableau Styles de cellules Insérer Supprimer Format Trier et Rechercher et filtrer sélectionner Édition

G18

Station	Lon	Lat	2020 MEAN	Obs%	OBS cor (en%)	Cat Obs	Above	Normal	Below	Prevision AMJ 2015	ABOVE	NORM/	BELOW	Calcul RPSS	RPS for	RPS clim	RPSS	RPSS cor
ABIDJAN	-3.93333	5.25	414.917	433.3217669	95.75272	95.75272249	Normal	0	100	0	fait en Mars 2015	33.3	33.3	33.3	0.22	0.22	0.00	0.00
ADIAKE	-3.3	5.3	409.553	432.6968756	94.65132	94.65132228	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
BONDOUKOU	-2.78333	8.05	311.828	308.2841401	101.1497	101.1496829	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
BOUAKE	-5.06666	7.7333	351.455	341.4987359	102.9153	102.9153414	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
DALOA	-6.46666	6.8667	391.826	364.2725167	107.5639	107.5638717	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
DIMBOKRO	-4.7	6.65	402.272	391.3689308	102.7859	102.7859043	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
GAGNOA	-5.95	6.1333	439.045	407.6372094	107.7049	107.7049471	Normal	0	100	0		35	45	20	0.16	0.22	0.27	0.27
KETE-KRACHI	-3.33333	7.8167	311.737	314.9931855	98.96631	98.96630655	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
KORHOGO	-5.61666	9.4167	244.96	239.9311838	102.0958	102.0957531	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
MAN	-7.51666	7.3833	340.78	330.588922	103.0828	103.0828144	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
ODIENNE	-7.56666	9.5	230.658	227.2310531	101.5082	101.5081688	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00
SAN-PEDRO	-6.65	4.75	437.192	415.0411358	105.3371	105.3371356	Normal	0	100	0		35	45	20	0.16	0.22	0.27	0.27
SASSANDRA	-6.08333	4.95	432.233	418.124259	103.3742	103.3742066	Normal	0	100	0		35	45	20	0.16	0.22	0.27	0.27
TABOU	-7.36666	4.4167	463.488	430.8494625	107.5754	107.5754364	Normal	0	100	0		35	45	20	0.16	0.22	0.27	0.27
YAMOOUSSOU	-5.35	6.9	387.121	366.4795794	105.6324	105.6323528	Normal	0	100	0		33.3	33.3	33.3	0.22	0.22	0.00	0.00





MERCI