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WP/CEAUP/#2022/2

**Statistical Report: 1st Semester of the
II Western Sahara War**



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Abstract

This paper results from the application of a statistical analysis process to the conflict that is taking place in Western Sahara. The application of quantitative analysis methods allowed us to understand, in a more precise way, what is really happening in the theatre of operations.

By obtaining and analyse this quantitative data, the actual dimension of the conflict emerges. And the Average, Median, Mode and Standard Deviation can also be calculated, and all Data can be put into table, graphs and maps, thus, allowing us to see further patterns like: the most and least attacked place, by total numbers and percentage, but also the frequency in which the attacks occur, in the defined timeframe.

The objective of this Paper is to present such information in a cohesive form.

Keywords: Western Sahara; War; Statistical Analysis

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Introduction

One of the main objectives of the WSWA Project is to analyse all the sides of this conflict. So, in order to fully grasp what is happening on the ground, a special team was created with the task to establish standards and a work methodology for the statistical retravel and processing of the qualitative data generated by the parts in conflict.

The following report is the culmination of a six-month long collection and analysis of the war reports, issue by SADR and published in SPS, by the WSWA Project- Statistics team, a CEAUP research team, specially dedicated to the monitoring of the II^a Western Sahara War.

It is divided into four different sections: Chapter 1 is dedicated to the explanation of the methodology of work. Chapter 2 is dedicated to an overall statistical analysis of the conflict. While Chapter 3 is the in-depth analysis of the conflict. Finally, in Chapter 4 will be shown the collect data in the form of coloured maps, in order to summarize all the information.

1. Analysis Methodology

For this report, the following methodology will be used:

1. It was intended to use data from both sides of the conflict but so far, the Kingdom of Morocco does not recognize that there is such a conflict. Therefore, we do not have data on the Moroccan side;
2. Sahara Press Service is the official news source of the Saharawi Arab Democratic Republic
 - 2.1. Henceforth we will use the acronym SADR when referring to The Saharawi Arab Democratic Republic;
 - 2.2. Henceforth we will use the acronym SPS, when referring to Sahara Press Service;
 - 2.3. SPS reports are our information base on the conflict, on the Frente POLISARIO side;
 - 2.4. SPS Communiqués refer to the attacks by the Frente POLISARIO “... *intensos bombardeos a* [...] .” (SPS, 2021). In the absence of a specific number, we count all attacks described as “intense”, as 1 attack.
3. In order to make the statistical data easier to analyze, and after several meetings with official Saharawi entities and the analysis of the War Communiqués, it was possible to divide the territory of Western Sahara into analyzable portions:
 - 3.1. **this** division consists of two levels:
 - 3.1.1. Military Region - large geographic regions, that is, the macro unit;
 - 3.1.1.1. So far, 3 (three) Military Regions have been counted;
 - 3.1.1.2. The Military Regions to consider are:
 - Military Region 1-Oued Daraa;
 - Military Region 2-Saguia El Hamara;
 - Military Region 3-Rio de Oro.
 - 3.1.1.3. Saguia El Hamara and Rio de Oro are the two former Spanish administrative regions, with Oued Daraa being added;
 - 3.1.1.4. From now on, we will use the term RM, when referring to Military Regions;



3.1.1.5. We will use the acronym RM+N° as an abbreviation when referring to a particular region, i.e., R1, when referring to Region 1 –

Oued Daraa. Therefore, we will designate the Military Regions as follows:

- RM 1
- RM 2
- RM 3

3.1.2. Sector- smaller regions within large regions, that is, the micro unit;

3.1.2.1. Up to the present moment, 13 sectors have been accounted for;

3.1.2.2. The Sectors to consider are:

- Sector 1 – Aaga;
- sector 2 – Touizgui;
- Sector 3 – El Mahabas;
- Sector 4 – Farsia;
- Sector 5 – Haouza;
- Sector 6 – Smara;
- Sector 7 – Amgala;
- Sector 8 – Guelta Zemmour;
- Sector 9 – Oum Dreiga;
- Sector 10 – El Bagari;
- Sector 11 – Auserd;
- Sector 12 – Techla;
- Sector 13 – Bir Guendouz;

3.1.3. We will use the acronym S+N° as an abbreviation when referring to a particular Sector, i.e., S1, when referring to Sector 1-Aaga. Therefore, we will designate the Sectors as follows:

- S1;
- S2;
- S3;
- S4;
- S5;
- S6;
- S7;



- S8;
- S9;
- S10;
- S11;
- S12;
- S13;

4. In practice, for this Report, the territorial division is as follows:

- RM 1 is comprised by:
 - S1
 - S2
 - S3
 - S4
- RM 2 is comprised by:
 - S5
 - S6
 - S7
 - S8
- RM 3 is comprised by:
 - S9
 - S10
 - S11
 - S12
 - S13

5. The statistical Data were obtained from the information in the War Communiqués edited in the SPS, which were compiled in the War Reports of the website: <https://www.westernsahara-wa.com/>;

6. We will only use Data relating to the first 6 (six) months of the conflict:

6.1. Although the conflict has only started on November 13th, we consider November as month 1, so:

- Month 1 starts on the 13th of November and ends on the 30th of November 2020;
- Month 2 starts on the 1st of December and ends on 31th December 2020;
- Month 3 starts on the 1st of January and ends on 31st January 2021;



- Month 4 starts from the 1st of February to 28th February 2021;
- Month 5 starts on the 1st of March and ends on 31st March 2021;
- Month 6 starts on the 1st of April and ends on 30th April 2021;

6.2. Therefore, the period of analysis is the timeframe between 11/13/2020 and 04/30/2021;

6.3. We will use the acronym N°+S as an abbreviation, when referring to the period of analysis. Therefore, we will designate this period as: 1S;

6.4. The values of 1S will be divided into two quarters:

6.4.1. November-December-January

6.4.2. February-March-April

6.4.3. We will use the acronym Q+N° as an abbreviation when referring to one of the Quarters, i.e., Q1, when referring to the Quarter of November-December-January. Therefore, we will designate the two Quarters as follows:

- Q1
- Q2

7. The statistical data will be systematized into tables, graphs and maps, posted along the report;

7.1. The collected data will be analyzed in the following way:

❖ General View;

▪ Per Region View:

- Oued Daraa;
- Saguia El Hamara;
- Rio de Oro;

• Maps:

- Month 1;
- Month 2;
- Month 3;
- Month 4;
- Month 5;
- Month 6;

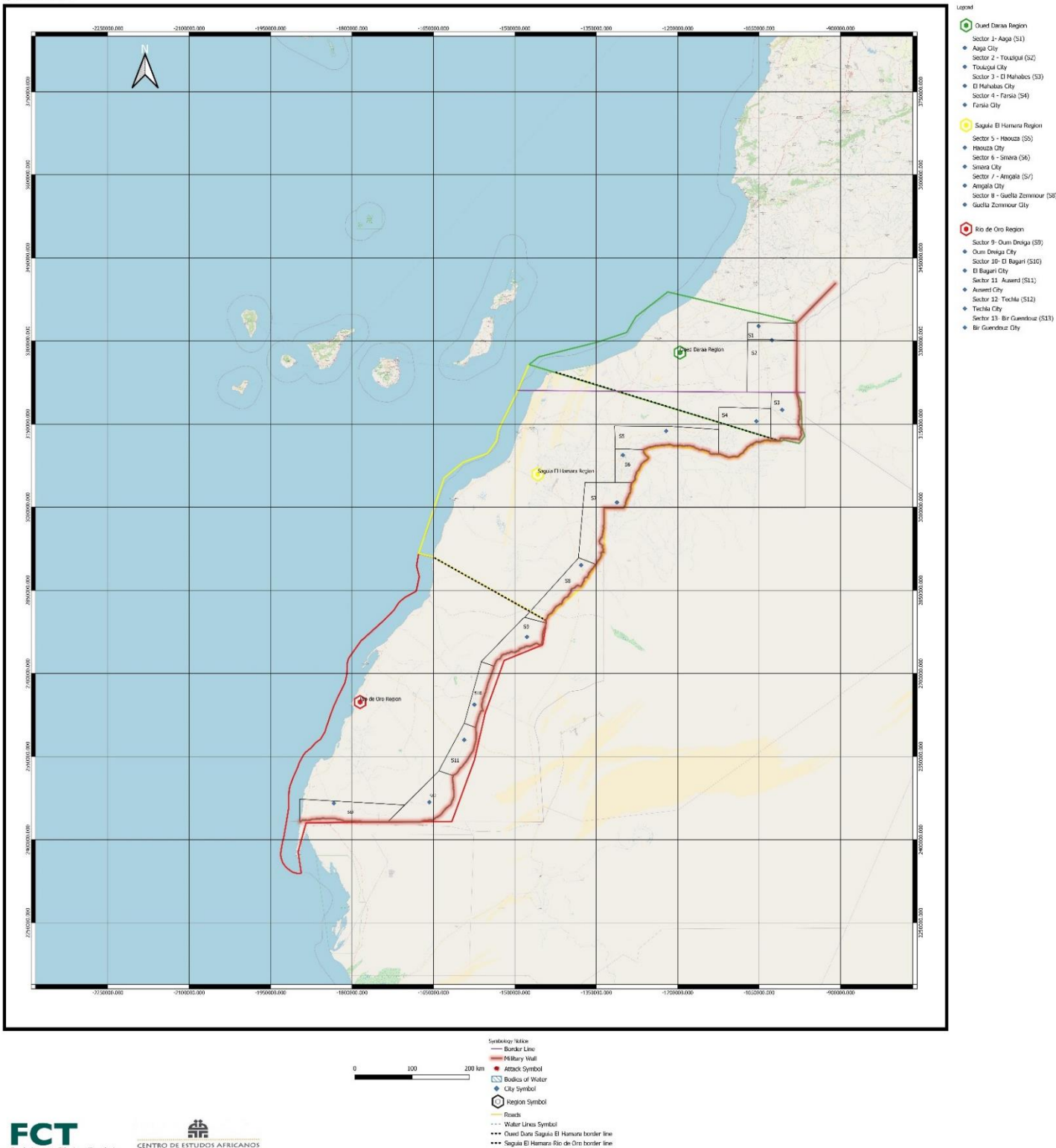
• Table, Graphs and Maps will be coloured;



- The coloured schematics will be explained in the **beginning** of each analysis;



Western Sahara War Map General Map



FCT

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CENTRO DE ESTUDOS AFRICANOS
UNIVERSIDADE DE PORTO

Map 1-Western Sahara War Map; Source: <https://www.westernsahara-wa.com>

2. Statistical Analysis of the First Semester - Overview

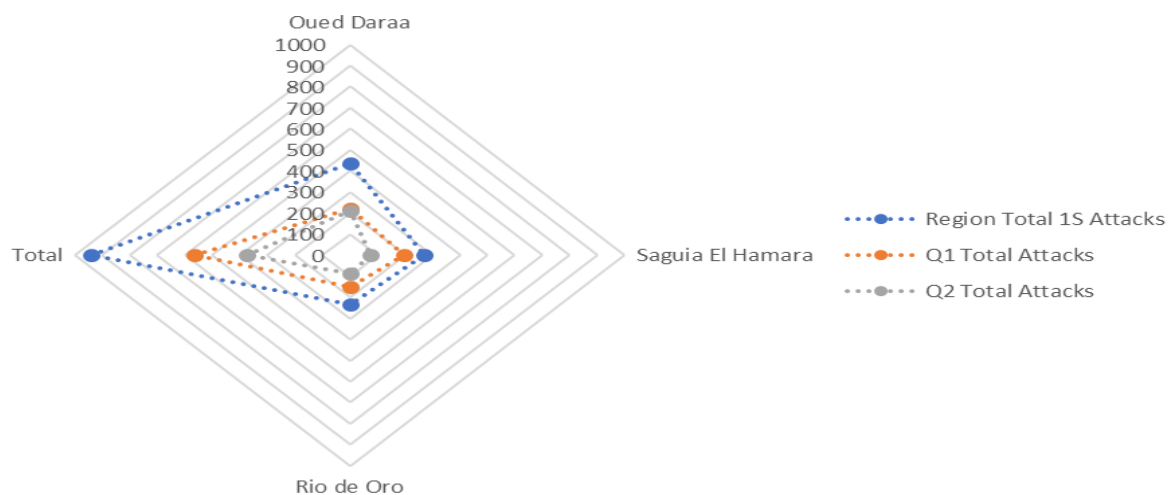
For methodological reasons, we decided to differentiate the three regions in three colours in table and in some graphs. Therefore, Oued Daraa will be represented by the colour green, Saguia El Hamara by the yellow colour; Rio de Oro by the Red colour. The same concept will be applied to the values of Q1, Q2 and 1S. By this logic, Q1 will be represented by the orange colour, Q2 will be in grey, and 1S deep blue.

By analysing the reports of 1S, we obtain the following tables:

Table 1-1st Semester War Reports Analysis

RM	Quarter	N° of Attacks Per Quarter	Quarter %	Total of Attacks per Region in 1S	RM % Of 1S	Total of Attacks In Q1	Total of Attacks In Q2	Total of Attacks In 1S	1S Average	1S Median	1S Mode	1S Standard Deviation
R1	Q1	221	39%	434	46%	567	373	940	157	173	-	64,217
	Q2	213	57%									
R2	Q1	195	34%	270	29%							
	Q2	75	20%									
R3	Q1	151	27%	236	25%							
	Q2	85	23%									

1S TOTAL NUMBER OF ATTACKS REGION/QUARTER



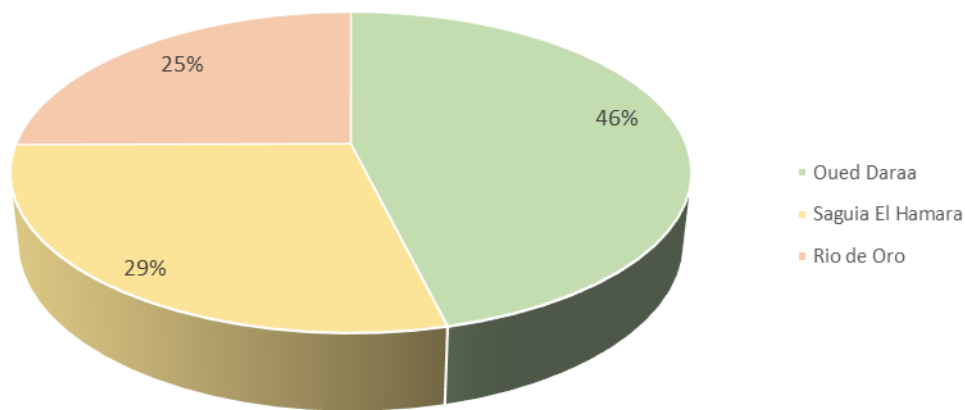


Between November 13 of 2020 and April 31 of 2021, a total of 940 attacks of unspecified types were counted. With an Average of 157 per RM, with a Standard Deviation of 64,217 attacks and a Median of 173.

Graphic 1, represents this distribution in a Radar matrix. It is possible to observe that the most attacked RM was R1, with 434 attacks counted. Closely followed by R2, with 270. It was in R3 that the lowest number of RM attacks were recorded, only 236.

Translated into percentages, R1 represents 46% of the total. R2 represents 29% and R3 the remaining 25%.

1S Totality of Attacks (%) per Region

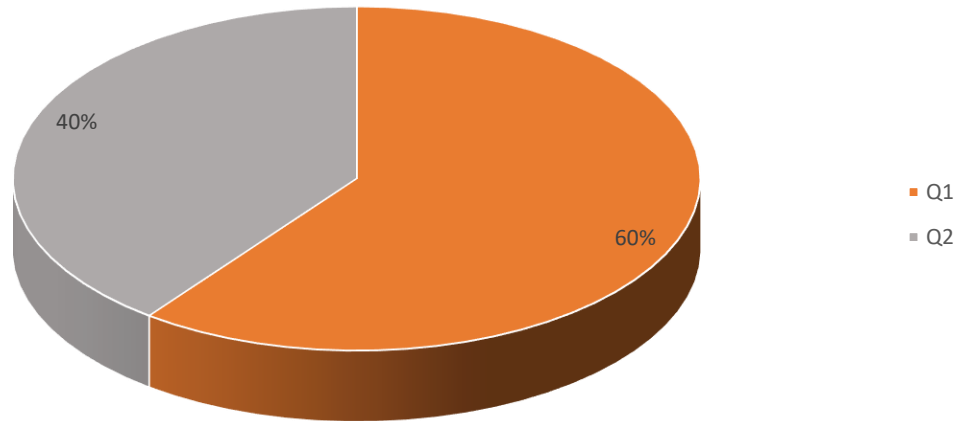


Graphic 2- 1S Totality of Attacks per Region (%)

The quarter with the most attacks was in Q1, with 567 occurrences, 60% of the 1S Total. While in Q2 373 attacks were registered, with 40% of 1S. We also observed that there was a downward trend in the number of attacks, from Q1 to Q2, in all RM



Percentage of Attacks 1S/Q



Graphic 3- Percentage of Attacks 1S/Q

The attacks were distributed as follows:

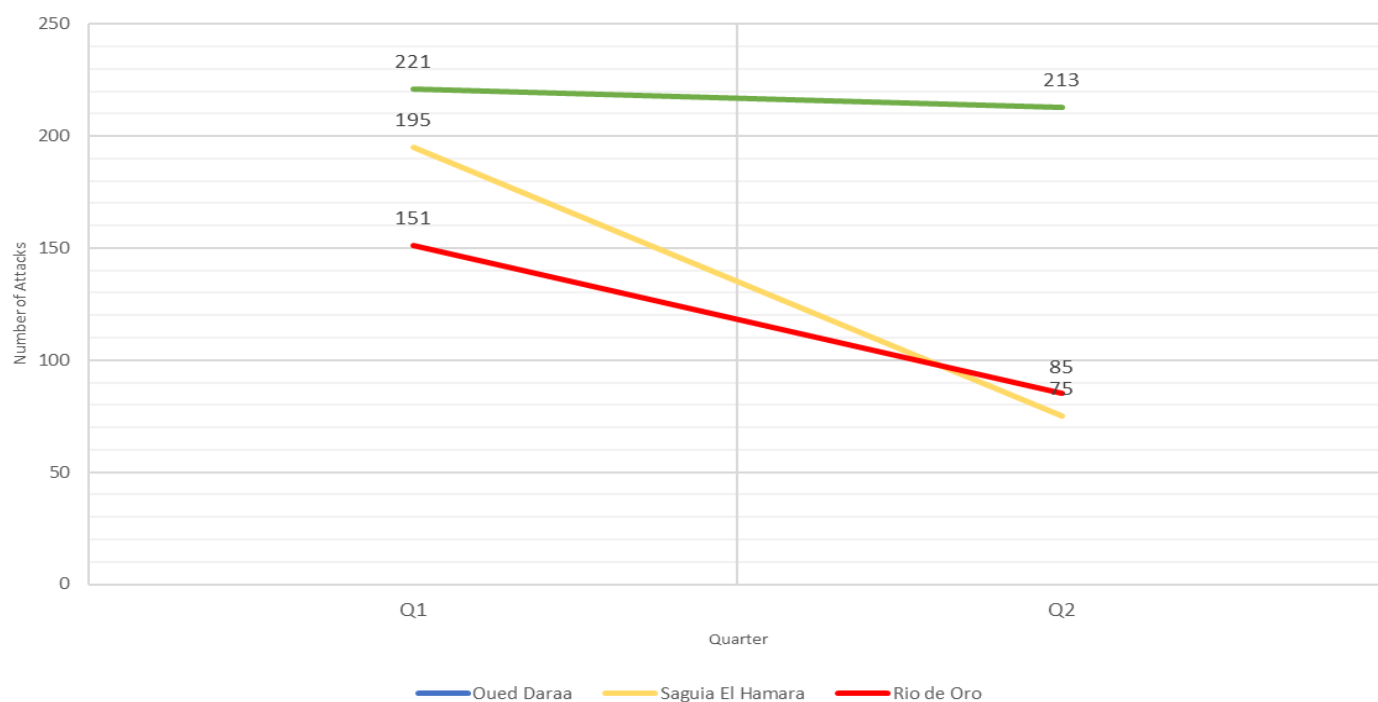
- Q1: 567 attacks:
 - ❖ R1: 221 attacks, 39%;
 - ❖ R2: 195 attacks, 34%;
 - ❖ R3: 151 attacks, 27%.
- Q2: 373 attacks;
 - ❖ R1: 213 attacks, 57%;
 - ❖ R2: 75 attacks, 20%;
 - ❖ R3: 85 attacks, 23%;

Table 2-Percentage of Attacks 1S/Q

Quarter/Semester Number	Q1	Q2	1S
Total of Attacks	567	373	940
Percentage	60,3%	39,7%	100%

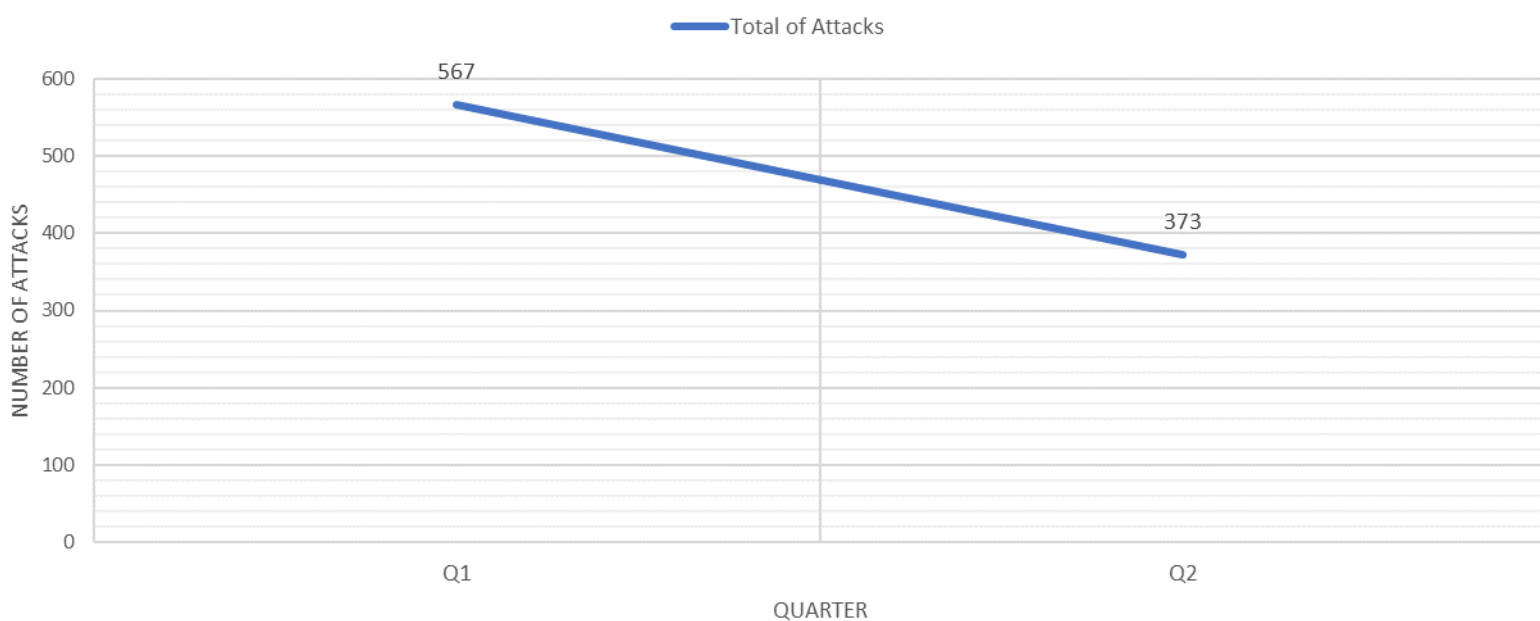


Western Sahara 1S Military Encounters Evolution- Per Sector/Quarter



Graphic 4- Western Sahara 1S Military Encounters Evolution- Per Sector/Quarter

Western Sahara 1S Military Encounters Evolution



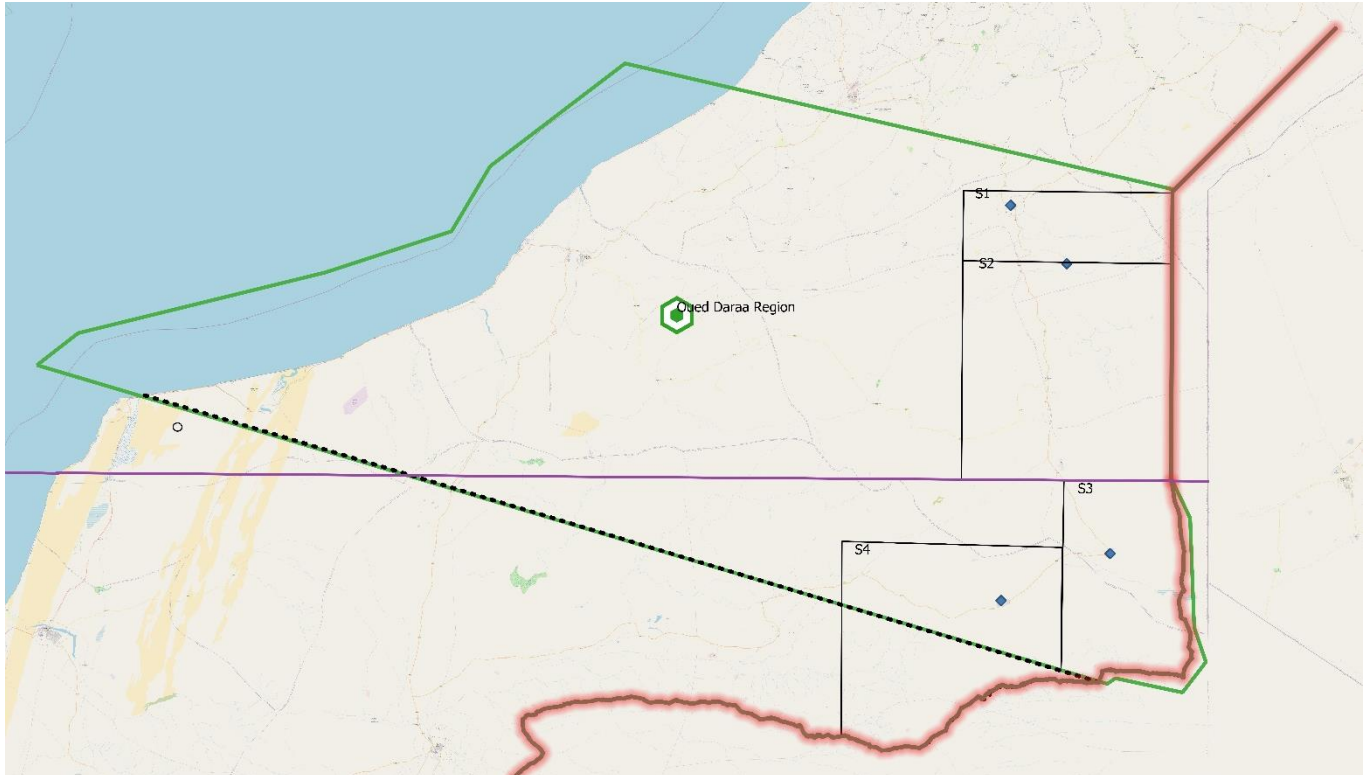
Graphic 5- Western Sahara 1S Military Encounters Evolution



The attacks registered in R1 represented 46%, in R2 they represented 29% and in R3 they represented 24% of the total attacks registered in 1S. Therefore, R1 was the most attacked RM, with an Average of 217 attacks and a Standard Deviation of 6 attacks for the period considered (see Table 1). R2 was the second RM with the most recorded attacks, 270 (29%), an Average of 135 and a Standard Deviation of 85. R3 was the least attacked, with 218 recorded attacks (24%), with an Average of 109 attacks, with a Standard Deviation of 67 attacks.

3. Statistical Analysis of the First Semester - Detail View

3.1. Oued Daraa



Map 2-Oued Daraa Region Map; Source: <https://www.westernsahara-wa.com>

Having observed and analysed the general context, it is now important to systematize and analyse what happened inside the RM, in order to have a more complete view. With that in mind, we'll start by looking at the events in R1.

R1 is divided into four sectors: Sector 1 - Aaga, represented in blue in the tables and in some graphs; Sector 2 - Touizgui, represented by the color orange; Sector 3 - El Mahbas, represented by the gray color; Sector 4 - Farsia, represented by the color yellow.

R1 is the only RM that has two Sectors, which are not within the territorial limits, considered as the territory of Western Sahara, we speak of S1 and S2. These territories are to the north of the claimed international border, in other words, S1 and S2 belong to Morocco.



Table 3- Oued Daraa Region Sectors Analysis- Q1

Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q1	S1	Month 1	0	0	0%
		Month 2	0		
		Month 3	0		
	S2	Month 1	0	3	1%
		Month 2	0		
		Month 3	3		
	S3	Month 1	19	130	59%
		Month 2	59		
		Month 3	52		
	S4	Month 1	25	88	40%
		Month 2	38		
		Month 3	25		
Total				221	100%

Table 4- Oued Daraa Region Sectors Analysis- Q2

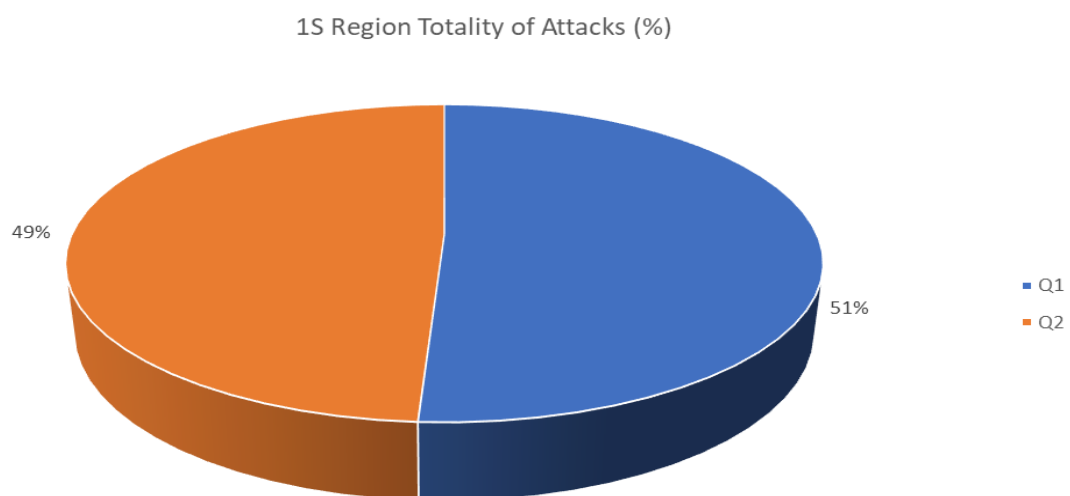
Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q2	S1	Month 4	0	0	0%
		Month 5	0		
		Month 6	0		
	S2	Month 4	13	27	13%
		Month 5	10		
		Month 6	4		
	S3	Month 4	34	116	54%
		Month 5	41		
		Month 6	41		
	S4	Month 4	19	70	33%
		Month 5	38		
		Month 6	13		
Total				213	100%



Table 5 - Oued Daraq Region 1S Totality of Attacks Analysis (%)

Quarter	Total of Attacks	Percentage
Q1	221	51%
Q2	213	49%
Total	434	100%

The number of attacks that happened during Q1, represented 51% of the total attacks recorded in R1 during 1S. Thus, the first quarter was the most prolific, by a small margin, in terms of total confrontations (Graphic 5 e Graphic 6).



Graphic 6-1S Region Totality of Attacks (%)

By systematizing the information and using the same matrix table used for the analysis of RM, we obtain the following table:

Table 6- Western Sahara War- 1st Quarter War Reports Analysis- Oued Daraa Region

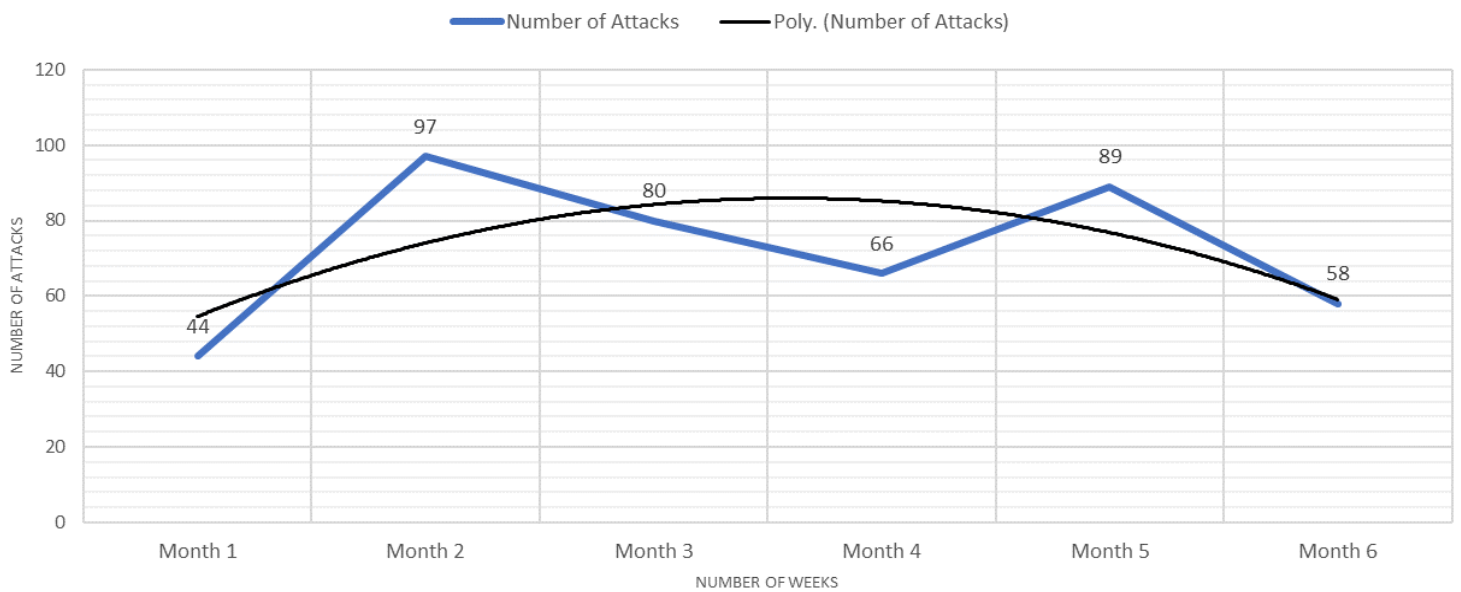
Month	N° of Attacks per Months	Month to Month Differential	Month Percentage	Average	Median	Mode	Standard Deviation
1	44	+44	10%	72	73	-	18,2
2	97	+53	22%				
3	80	-17	18%				
4	66	-14	15%				
5	89	+23	21%				
6	59	+31	13%				
Total	434		100%				

When performing a first analysis we were able to build a Radar Matrix (Graphic 8) and become aware of the following:

- S1 never suffered an attack during the fourteen weeks analysed, representing 0% of Total Attacks;
- In S2, 30 meetings were recorded, representing 7% of the total attacks in R1;
- S3 and S4 are the most attacked sectors. They represent 93% of all R1 attacks, having a combined average of 34 attacks per month, with a Standard Deviation of 13 attacks per month, a Median of 36 and a model of 19 attacks per month;
- With the exception of S1, all Sectors were attacked at least once a month, during 1S;
- Higher number of attacks recorded in R1 was in Q1, 221;
- There were an Average of 72 attacks per month, with a Median of 73 attacks and a Standard Deviation of 18,2 attacks.

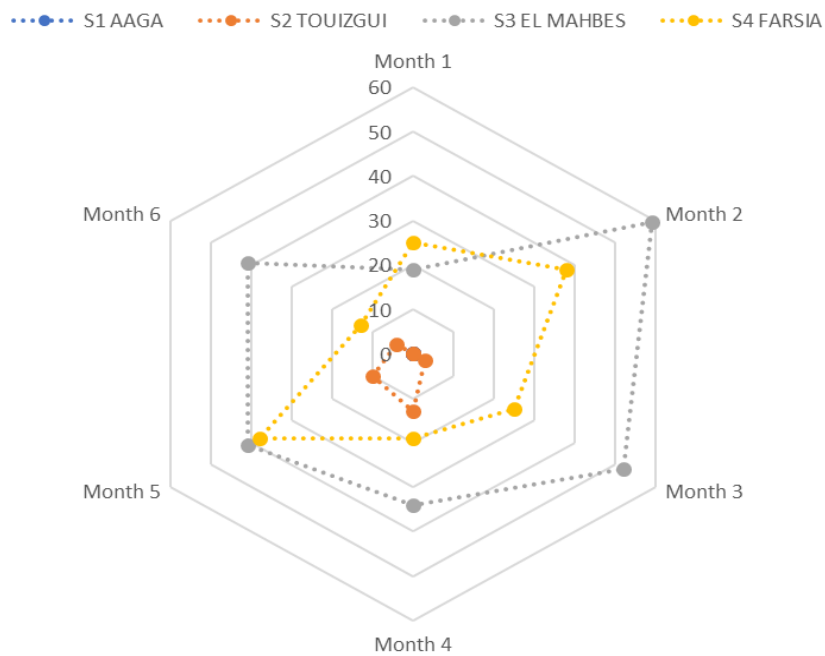


Oued Daara Military Encounters Evolution- Region



Graphic 7- Oued Daara Military Encounters Evolution- Region

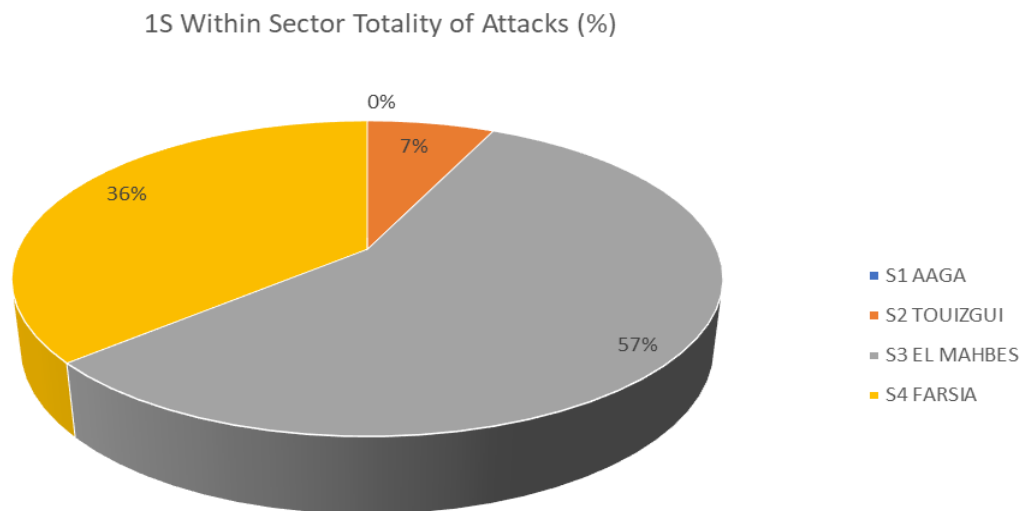
WITHIN SECTOR 1S ATTACKS SECTOR/MONTH



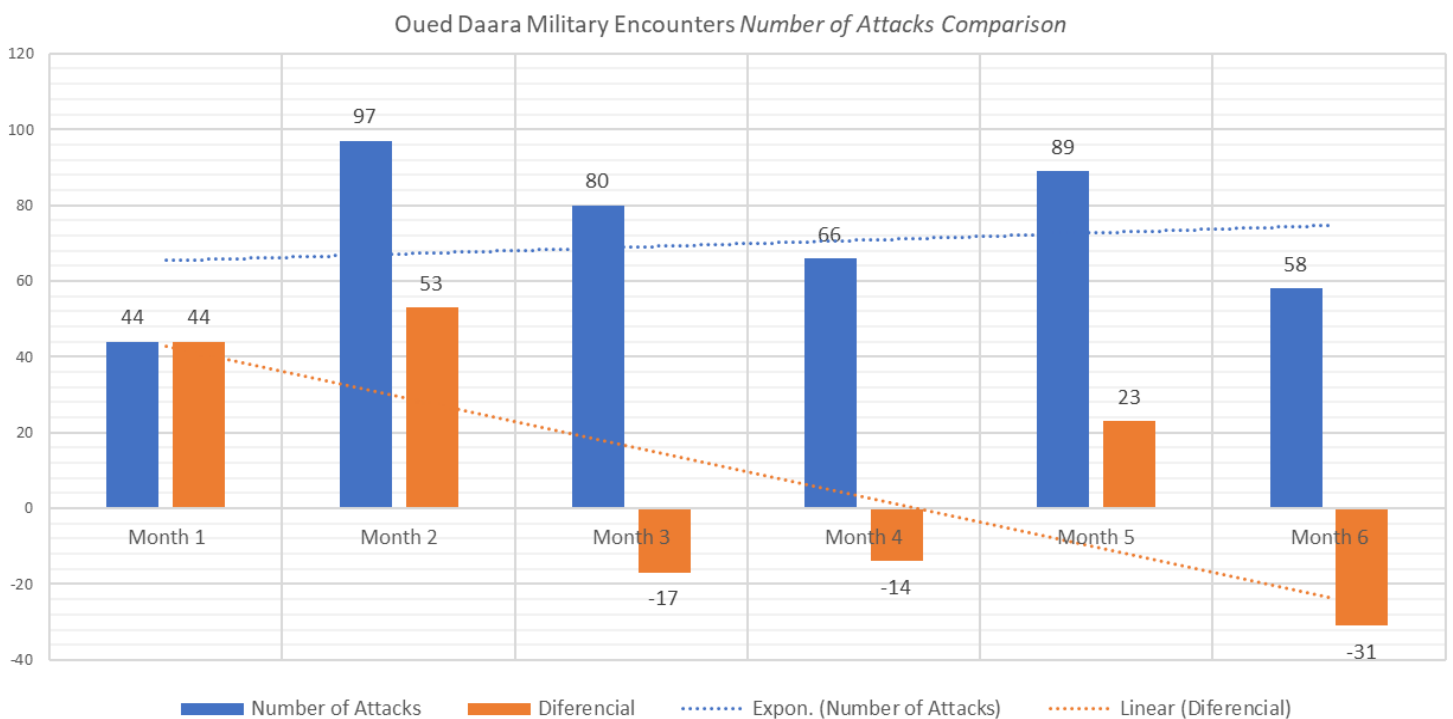
Graphic 8- Region Oued Daraa S1 Total Number of Attacks



The month in which there were more attacks was February, with 97 occurrences, 22% of the total of R1 in 1S. The month in which the lowest number of attacks was recorded was November with 44, which represents 10% of the total (Graphic 8). In terms of evolution, after having registered the maximum peak in the number of attacks in the month 2-December, the number of attacks shows a downward trend, despite registering a new peak



Graphic 10- 1S Within Sector Totality of Attacks (%)



Graphic 9- Oued Daara Military Encounters Number of Attacks Comparison



in the month 5-March, with 89 attacks. And this can be seen in Graphic 9. Translated into percentages, S3 represents 57% of the total, S4 represents 36% and S2 the remaining 7% (Graphic 10). S1 has a value of 0%.

Looking carefully at the numbers, we see that in S2 a total of 30 attacks were accounted for, with the following distribution:

- November 2020: 0 attacks, 0,0%;
- December 2020: 0 attacks, 0,0%;
- January 2021: 3 attacks, 0,7%;
- February 2021: 13 attacks, 3,0%;
- March 2021: 10 attacks, 2,3%;
- April 2021: 4 attacks, 0,9%

The month in which there were more attacks was February, with 13 occurrences, 3.0% of the total of R1 in 1S the month in which there were fewer occurrences were: November and December with 0 attacks.

In S3, for the period considered, 130 attacks were registered, which represents a +216 attack than in S2, distributed as follows:

- November 2020: 19 attacks, 4,4%;
- December 2020: 59 attacks, 13,6%;
- January 2021: 52 attacks, 12,0%;
- February 2021: 34 attacks, 7,8%;
- March 2021: 41 attacks, 9,4%;
- April 2021: 41 attacks, 9,4%.

The month in which there were more attacks was December, with 59 occurrences, 13.6% of the total of R1 in 1S. The month in which there were fewer occurrences was November with 19 attacks, 4.4% of the total of R1 in 1S.

Finally, in S4 there were -88 attacks, in the general compendium when compared to S3, thus registering a total of 158 occurrences, distributed as follows:

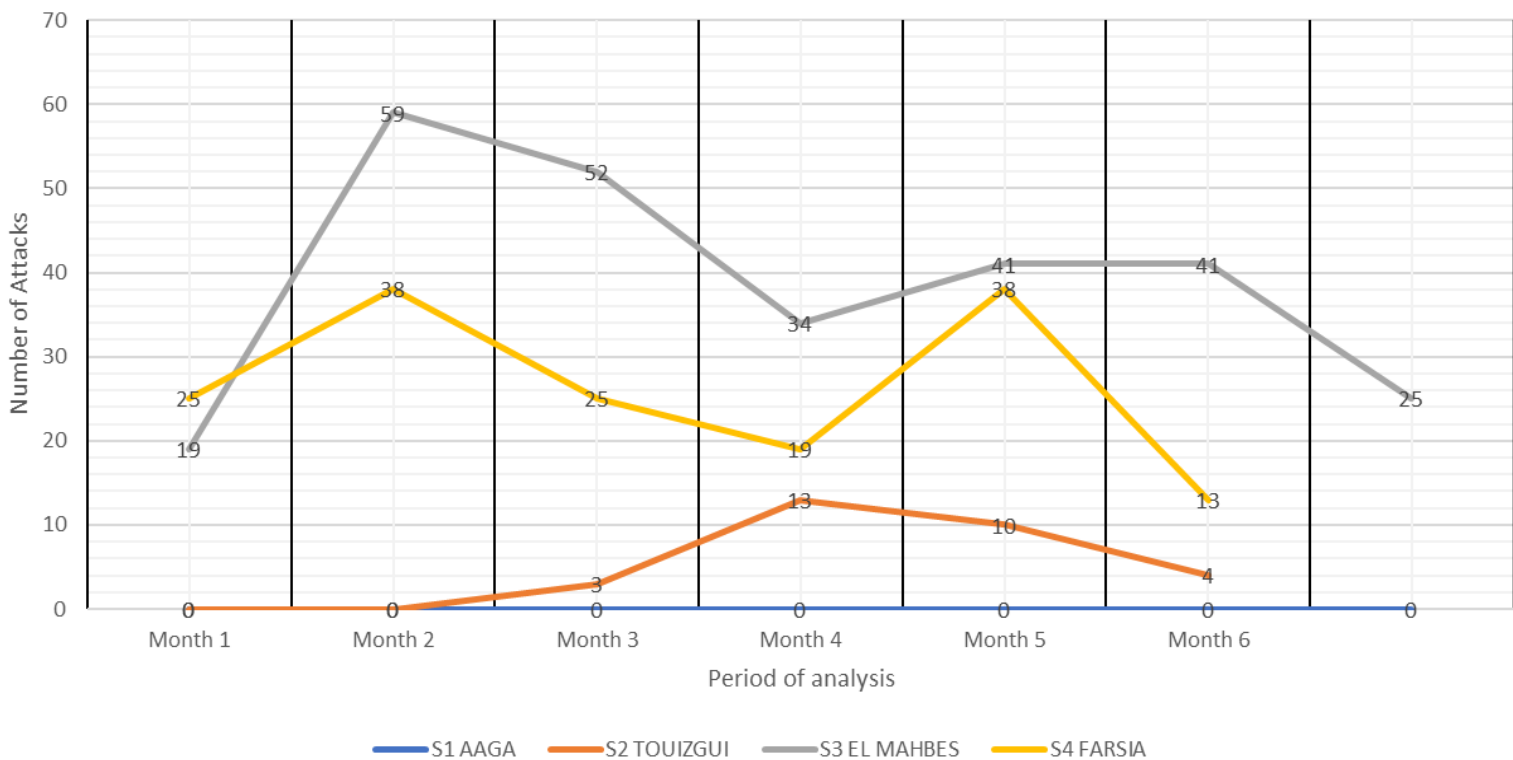
- November 2020: 25 attacks, 5,8%;
- December 2020: 38 attacks, 8,8%;
- January 2021: 25 attacks, 5,8%;
- February 2021: 19 attacks, 4,4%;
- March 2021: 38 attacks, 8,8%;



- April 2021: 13 attacks, 3,0%

The month in which there were more attacks were two: December, with 38 occurrences, and March, with 38 attacks. Both represent 8.8% of the total R1 in 1S. The month in which there were fewer occurrences was April, with 13 attacks, 3.0% of the total of R1 in 1S.

Oued Daara 1S Military Encounters Evolution- Per Sector/Month



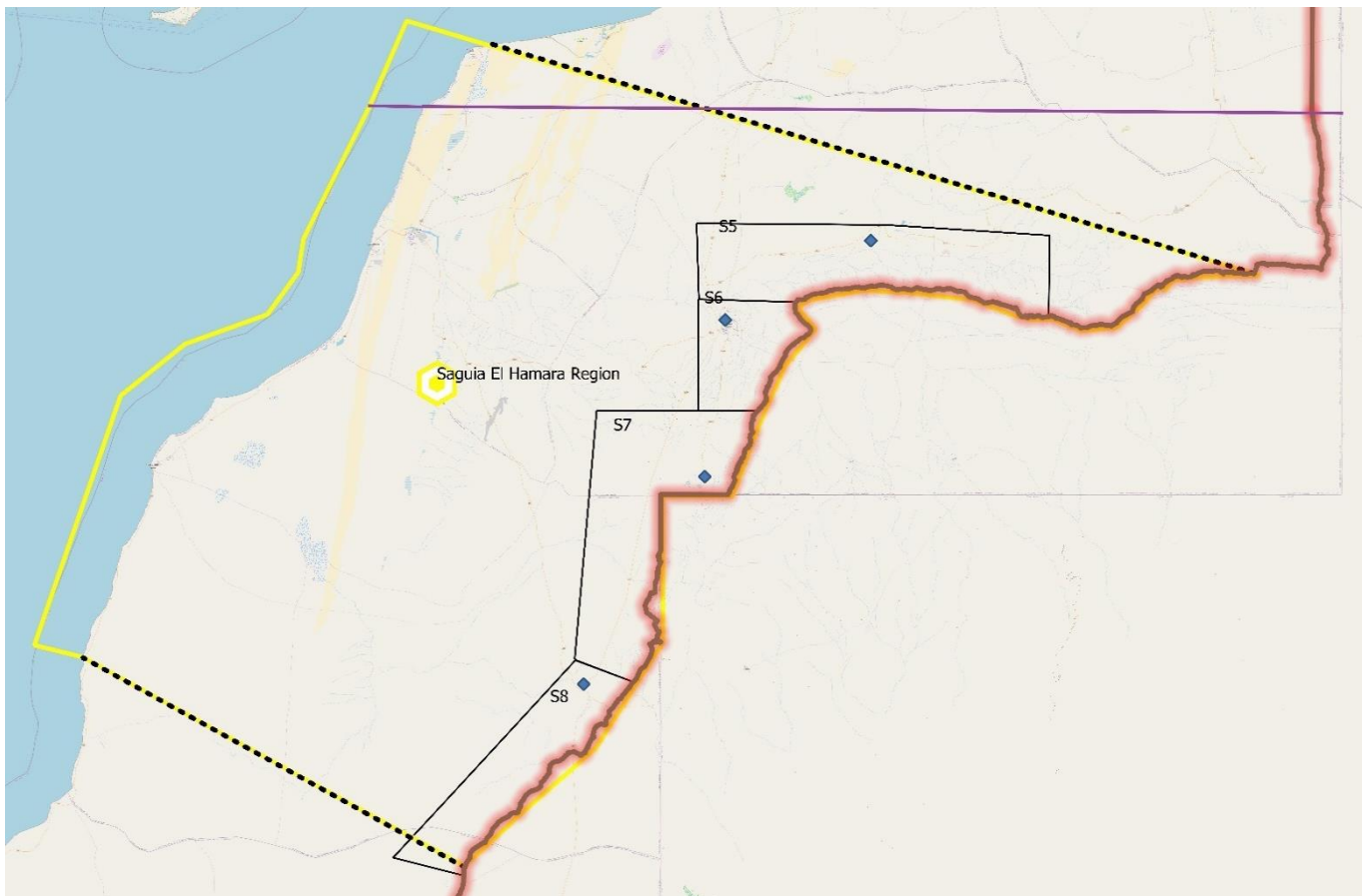
Graphic 11- Oued Daara 1S Military Encounters Evolution- Per Sector/Month

When we graphically represent the evolution of the number of attacks, we obtain Graphic 9 e Graphic 11 as a result. As can be seen, the lines, in general, show a stable trend, with a slight downward slope in the General. It shows a slight upward curve between month 4 and 5. It exhibits two peaks, one at S3/December with 59 attacks (the highest) and a second at S2/January with 3 attacks (the lowest). The line representing S1 remains stable, never leaving 0 attacks.



3.2. Saguia El Hamara

R2 is divided into four sectors: Sector 5 - Haouza, represented in blue in the tables and in some graphs; Sector 6 - Smara, represented by the color orange; Sector 7 - Amgala, represented by the gray color; Sector 8 – Guelta Zemmour, represented by the color yellow.



Map 3- Saguia El Hamara Region Map; Source: <https://www.westernsahara-wa.com>



Table 7- Saguia El Hamara Region Sectors Analysis- Q1

Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q1	S5	Month 1	27	90	46%
		Month 2	35		
		Month 3	28		
	S6	Month 1	5	57	29%
		Month 2	32		
		Month 3	20		
	S7	Month 1	12	36	18%
		Month 2	14		
		Month 3	10		
	S8	Month 1	0	12	6%
		Month 2	2		
		Month 3	10		
Total				195	100%

Table 8- Saguia El Hamara Region Sectors Analysis- Q1

Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q2	S5	Month 4	6	37	49%
		Month 5	15		
		Month 6	16		
	S6	Month 4	2	2	3%
		Month 5	0		
		Month 6	0		
	S7	Month 4	1	1	1%
		Month 5	0		
		Month 6	0		
	S8	Month 4	11	35	47%
		Month 5	11		
		Month 6	13		
Total				75	100%

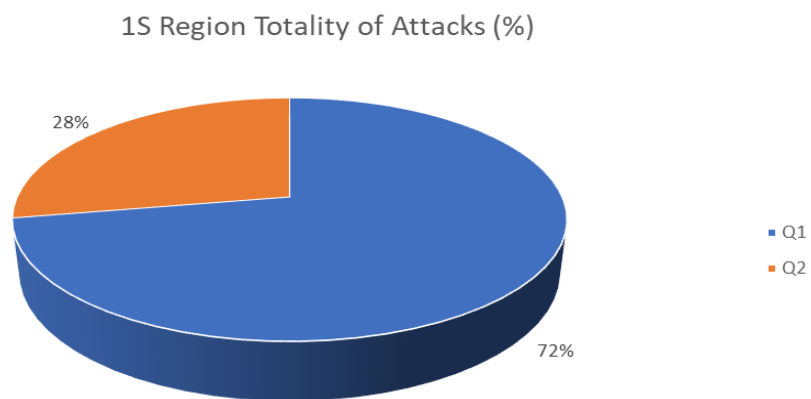


Table 9- 1S Saguia El Hamara Region Totality of Attacks Analysis (%)

Quarter	Total of Attacks	Percentage
Q1	195	72%
Q2	75	28%
Total	270	100%

The number of attacks that happened during Q1, represented 72% of the total attacks recorded in R2 during 1S. So, the first quarter was the most prolific in terms of confrontations (

Table 9 e Graphic 12).



Graphic 12-1S Region Totality of



By systematizing the information and using the same matrix table used for the analysis of RM, we obtain the following table:

Table 10- Western Sahara War- 1st Semester War Reports Analysis- Saguia El Hamara Region

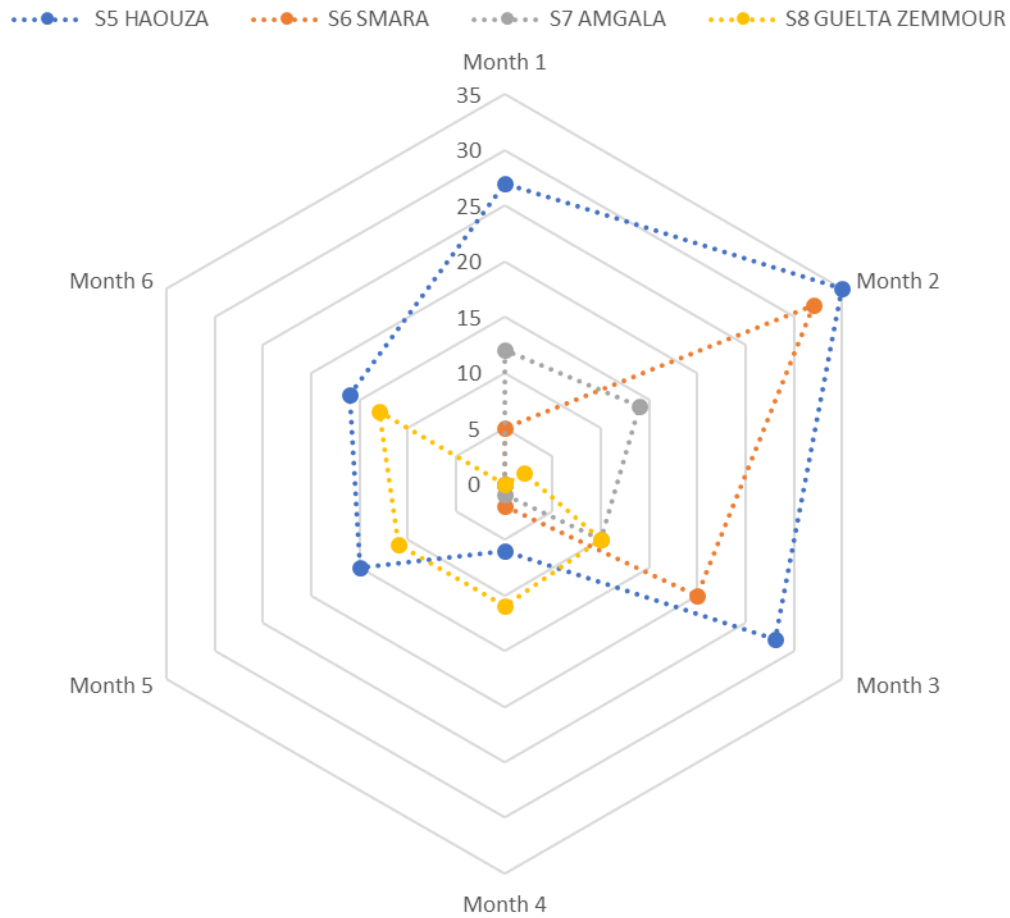
Month	N° of Attacks per Month	Month to Month Differential	Month Percentage	Average	Median	Mode	Standard Deviation
1	44	+44	16%	45	36,5	-	23,1
2	83	+39	31%				
3	68	-15	25%				
4	20	-48	7%				
5	26	+6	10%				
6	29	+3	11%				
Total	434		100%				

When performing a first analysis, we were able to build a Radar Matrix (Graphic 14) realize the following:

- S7 was the less attacked sector in the period considered, with 37 attacks accounted, which represents 37% of total R2 in 1S;
- In S8, 47 encounters were recorded, representing 17% of the total attacks in R2;
- In S6, 59 encounters were recorded, representing 22% of the total attacks in R2;
- S5 was the most attacked sector, with 127 attacks recorded. It represents 47% of all R2 attacks, having an average of 21.16 attacks per month, with a Standard Deviation of 9.71 attacks per month, a Median of 21.5;
- All sectors were attacked at least once a month, during 1S;
- Biggest number of attacks recorded in R2 was in Q1, 195;
- On Average 72 attacks happened per month, with a Median of 73 with a Standard Deviation of 18.

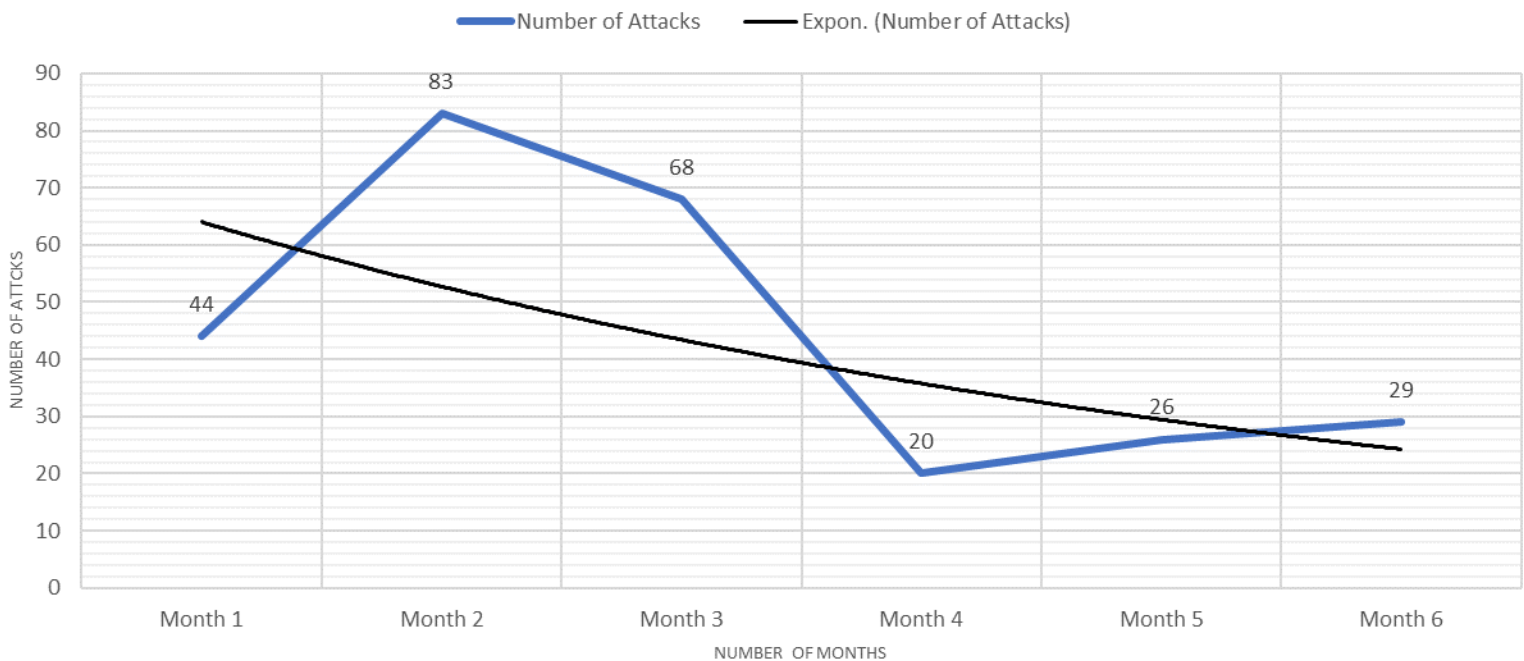


WITHIN SECTOR 15 ATTACKS SECTOR/MONTH



Graphic 14- Region Saguia El Hamara Q1 Total Number of Attacks

Saguia El Hamara Military Encounters Evolution in 1S

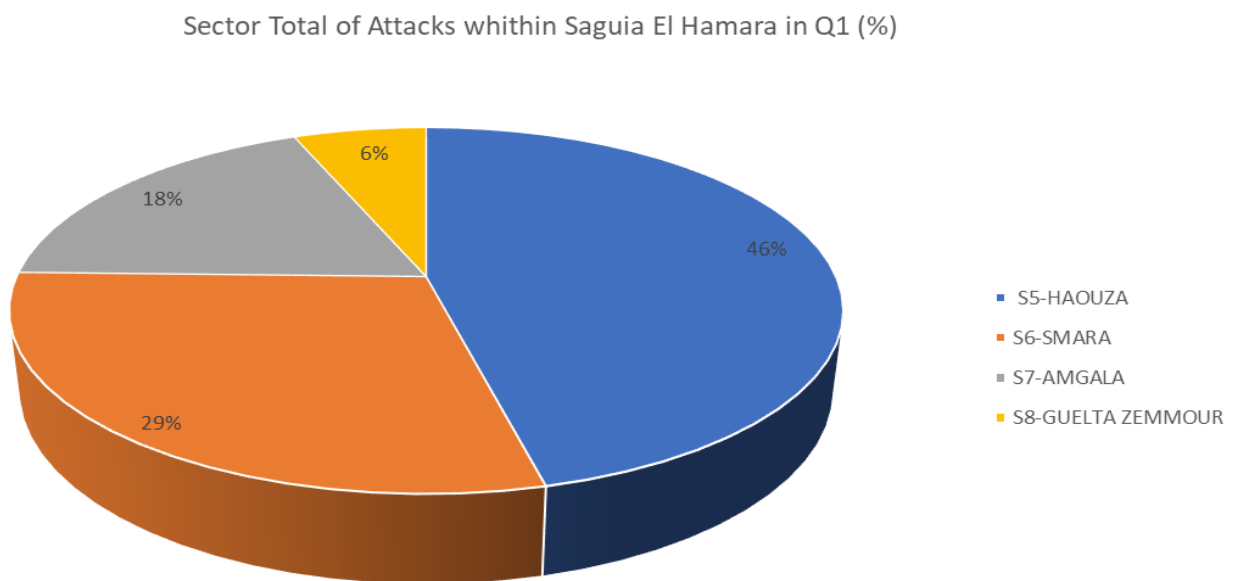


Graphic 13-Saguia El Hamara Military Encounters Evolution in 1S



The month in which there were more attacks was December, with 83 occurrences, 31% of the total of R2 in 1S. The month in which the lowest number of attacks was registered was February with 20, which represents 7% of the total (Graphic 14). In terms of evolution, after having registered the maximum peak in the number of attacks in the month 2-December, the number of attacks shows a downward trend. And this can be verified in the Graphic 13 and Graphic 16.

Translated into percentages, S5 represents 47% of the total, S6 represents 22%, S7 represents 14%, finally, S8 has a value of 17% (Graphic 15).



Graphic 15- 1S Within Sector Totality of Attacks (%)

Looking closely at the numbers, we see that, in S5, for the period considered, 127 attacks were recorded, distributed as follows:

- November 2020: 27 attacks, 10,0%;
- December 2020: 35 attacks, 13,0%;
- January 2021: 28 attacks, 10,4%;
- February 2021: 6 attacks, 2,2%;
- March 2021: 15 attacks, 5,6%;
- April 2021: 16 attacks, 5,9%.

The month in which there were more attacks was December, with 35 occurrences, 13.0% of the total of R2 in 1H. The month in which the lowest number of attacks occurred was February, 6, which represents 2.2% of the total of R2 in 1s.



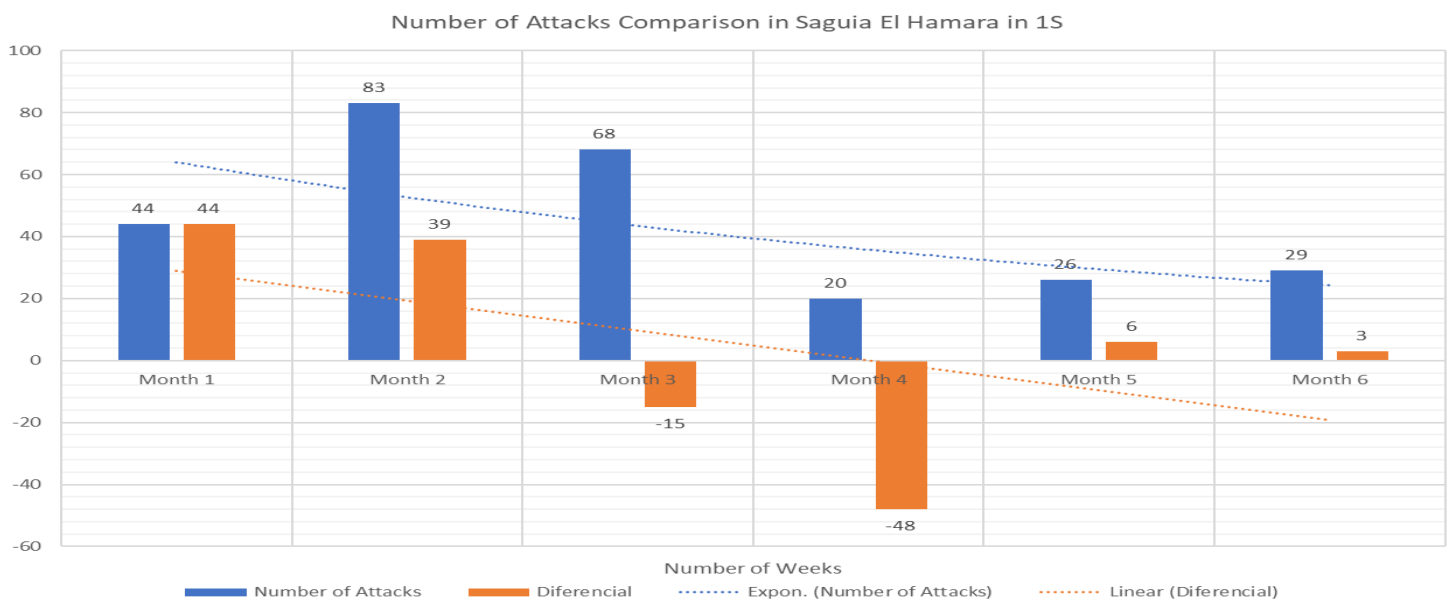
In S6 there were -68 attacks, in the general compendium when compared to S5, registering a total of 59 occurrences, distributed as follows:

- November 2020: 5 attacks, 1,9%;
- December 2020: 32 attacks, 11,9%;
- January 2021: 20 attacks, 7,4%;
- February 2021: 2 attacks, 0,7%;
- March 2021: 0 attacks, 0,0%;
- April 2021: 0 attacks, 0,0%

The month in which there were more attacks was December, with 32 occurrences, which represents 11.9% of the total of R2 in 1S. The month in which there were fewer occurrences were two: March and April with 0 attacks, 0.0% of the total of R2 in 1S.

In S7, a total of 37 attacks were counted, which corresponds to -22 attacks than in S6, with the following distribution:

- November 2020: 12 attacks, 4,4%;
- December 2020: 14 attacks, 5,2%;
- January 2021: 10 attacks, 3,7%;
- February 2021: 0 attacks, 0,4%;
- March 2021: 0 attacks, 0,0%;
- April 2021: 0 attacks, 0,0%;



Graphic 16- Number of Attacks Comparison in Sagaia El Hamara

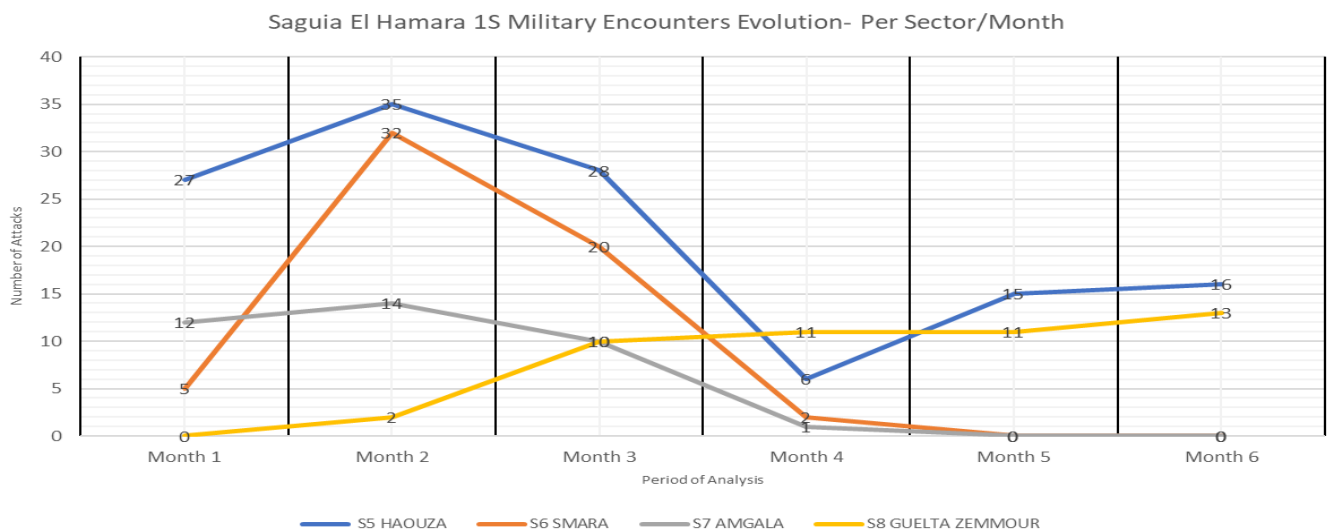


The month in which there were more attacks was December, with 14 occurrences, 5.2% of the total of R2 in 1S. The month in which there were the fewest occurrences were March and April with 0 attacks. 0.0% of total R2 in 1S.

Finally, in S8 a total of 34 attacks were counted, which represents -3 attacks than in S7, with the following distribution:

- November 2020: 0 attacks, 0,0%;
- December 2020: 2 attacks, 0,1%;
- January 2021: 10 attacks, 3,7%;
- February 2021: 11 attacks, 4,1%;
- March 2021: 11 attacks, 4,1%;
- April 2021: 13 attacks, 4,8%

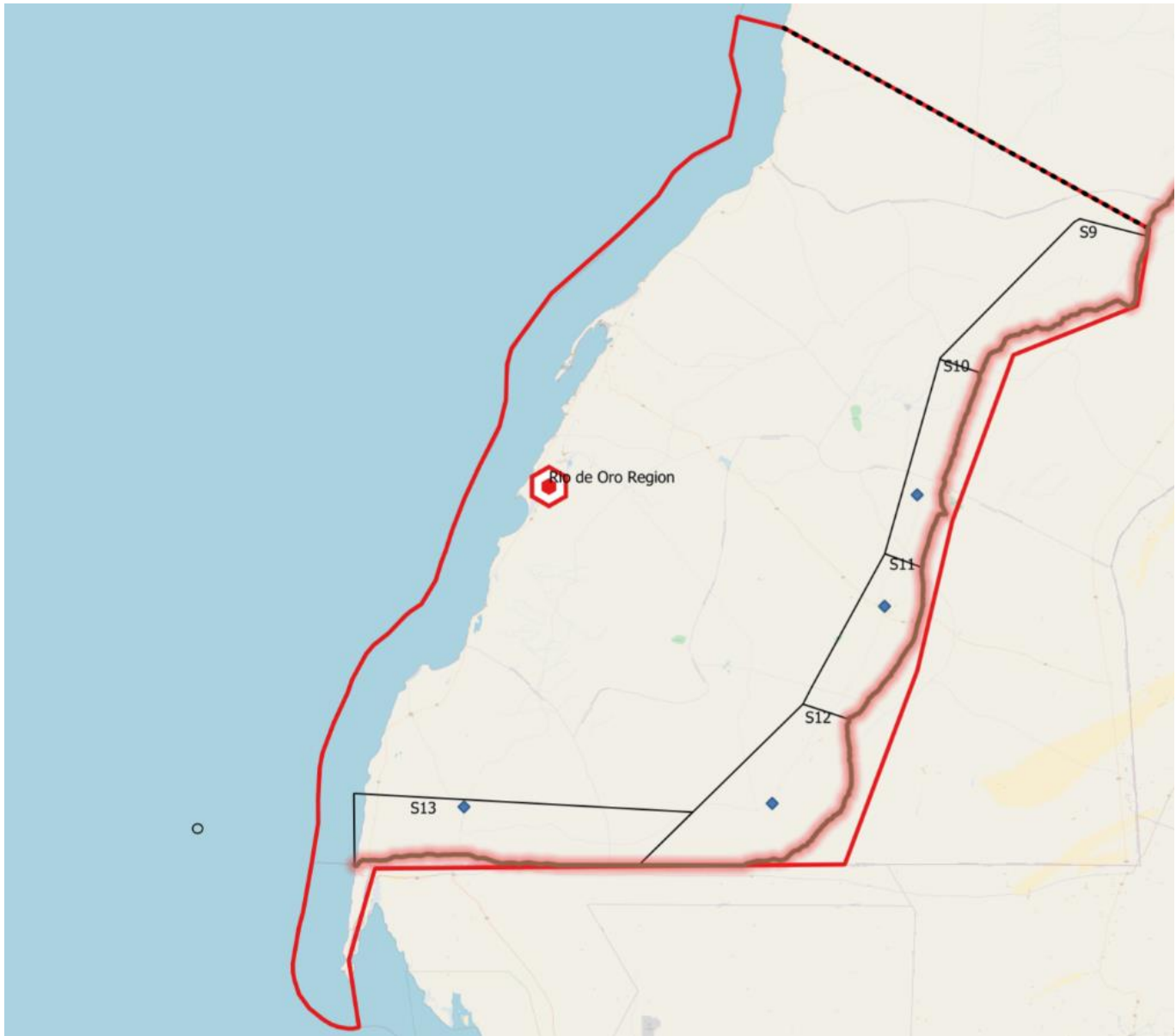
The month in which there were more attacks was April, with 13 occurrences, 4.8% of the total of R2 in 1S. The month with the lowest number of occurrences was November with 0 attacks, 0.0% of the total of R2 in 1S.



When we graphically represent the evolution of the number of attacks, we obtain Graphic 16 e o Graphic 17. as a result. As it is possible to observe the lines, in general, present a descending tendency, with a slight, in the case of a pronounced S6, an ascending curve between the month 1 and 2. It has two peaks, one at S5/December with 35 attacks (the highest) and a second at S7/February with 1 attack (the lowest). We can also see that from month 5, on S6 and S7, there were no more attacks.



3.3. Rio de Oro



Map 4- Rio de Oro Region Map; Source: <https://www.westernsahara-wa.com>

R3 is divided into five sectors: Sector 9 – Oum Dreiga, represented in blue in the tables and in some graphs; Sector 10 – El Bagari, represented by the colour orange; Sector 11 – Auserd, represented by the grey colour; Sector 12 – Techla, represented by the colour yellow; Sector 13 – Bir Guendouz, represented by the light blue colour.



Table 11- Rio de Oro Region Sectors Analysis- Q1

Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q1	S9	Month 1	9	23	17%
		Month 2	6		
		Month 3	8		
	S10	Month 1	14	48	36%
		Month 2	15		
		Month 3	19		
	S11	Month 1	2	56	37%
		Month 2	17		
		Month 3	19		
	S12	Month 1	2	19	13%
		Month 2	9		
		Month 3	8		
	S13	Month 1	1	5	3%
		Month 2	0		
		Month 3	4		
Total				133	100%

Table 12- Rio de Oro Region Sectors Analysis- Q2

Quarter	Sector	Month	Total of Attacks per Month	Total of Attacks	Percentage
Q2	S9	Month 4	5	15	18%
		Month 5	5		
		Month 6	5		
	S10	Month 4	12	33	39%
		Month 5	12		
		Month 6	9		
	S11	Month 4	9	29	34%
		Month 5	9		
		Month 6	11		
	S12	Month 4	7	8	9%
		Month 5	1		
		Month 6	0		
	S13	Month 4	0	0	0%
		Month 5	0		
		Month 6	0		
Total				85	100%



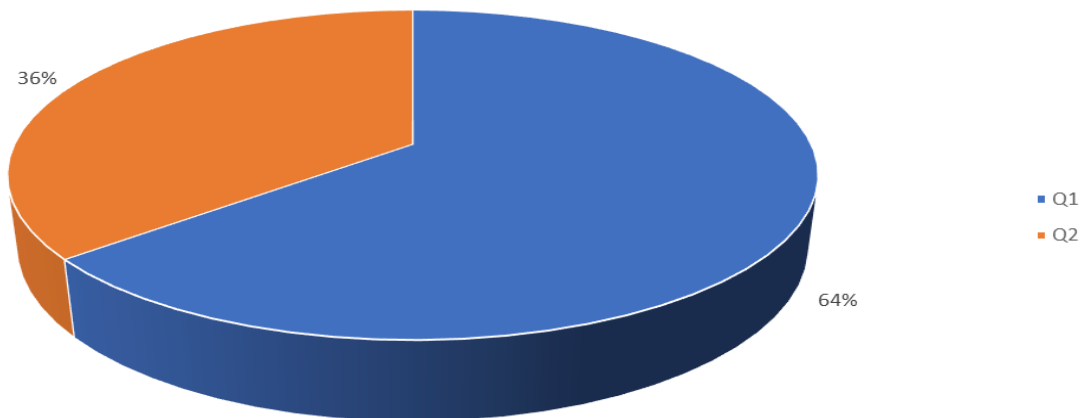
Table 13- Rio de Oro Region 1S Totality of Attacks Analysis (%)

Quarter	Total of Attacks	Percentage
Q1	151	64%
Q2	85	39%
Total	218	100%

The attacks that happened during Q1, represented 64% of the total attacks recorded in R3 during 1S. So, the first quarter was the most prolific in terms of confrontations (Table 13 e Graphic 18).



1S Region Totality of Attacks (%)



Graphic 18- 1S Region Totality of Attacks (%)

By systematizing the information and using the same matrix table used for the analysis of Rm, we obtain the following table:

Table 14- Western Sahara War- 1st Semester War Reports Analysis- Rio de Oro Region.

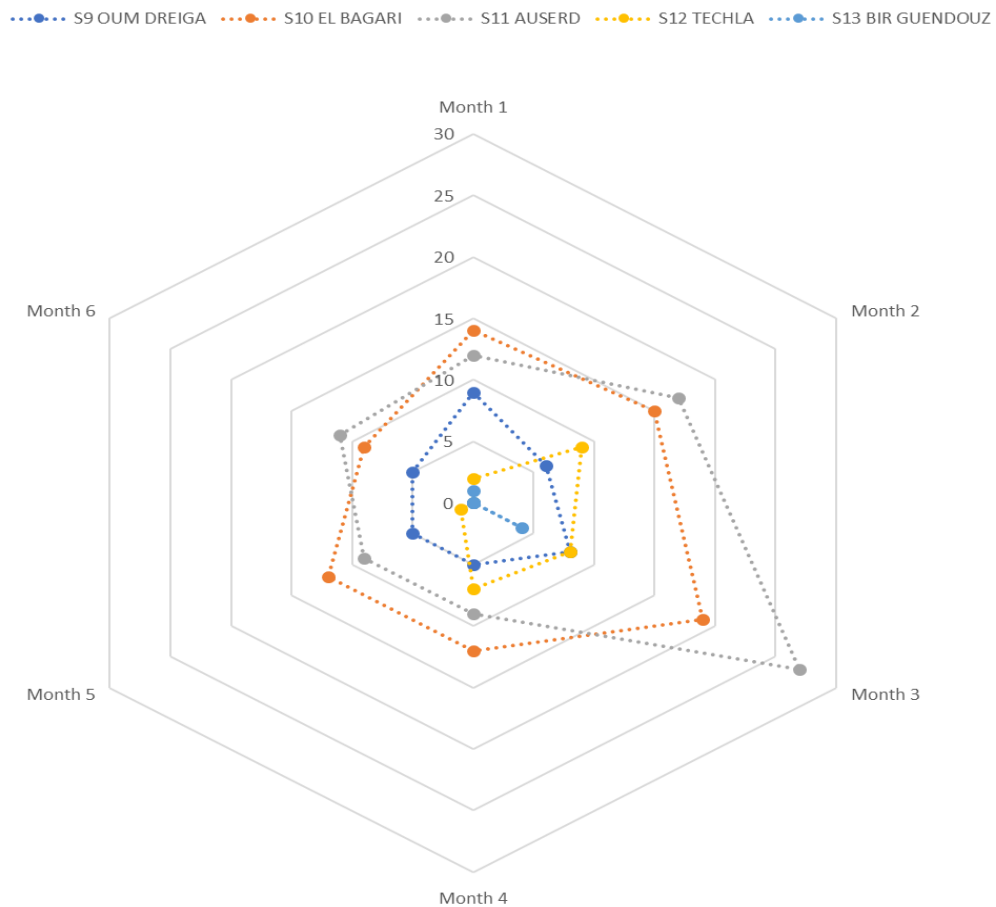
Month	N° of Attacks per Month	Month to Month Differential	Month Percentage	Average	Median	Mode	Standard Deviation
1	38	+38	16%	39,33	35,5	-	13,96
2	47	+9	20%				
3	66	+19	28%				
4	33	-33	14%				
5	27	-6	11%				
6	25	-2	11%				
Total	236		100%				



When performing a first analysis we were able to build a Radar Matrix (Graphic 18) and notice the following:

- S13 was the less attacked sector, with 5 attacks recorded, which represents 2% of total attacks in R3 during 1S;
- Within the considered period, all R3 sectors were attacked at least once;
- S10 and S11 are the most attacked sectors, with a combined total of 148 attacks. They represent 68% of all r3 attacks, having a combined average of 12,333 attacks per month, with a Standard Deviation of 4.8865 attacks per month, with a Median of 12 and a mode of 9;
- It was during Q1 that the highest number of attacks recorded occurred, 133, in R3;
- There are on average 39.33 attacks per month, with a Median of 35.5 attacks and a Standard Deviation of 13.96 attacks per month.

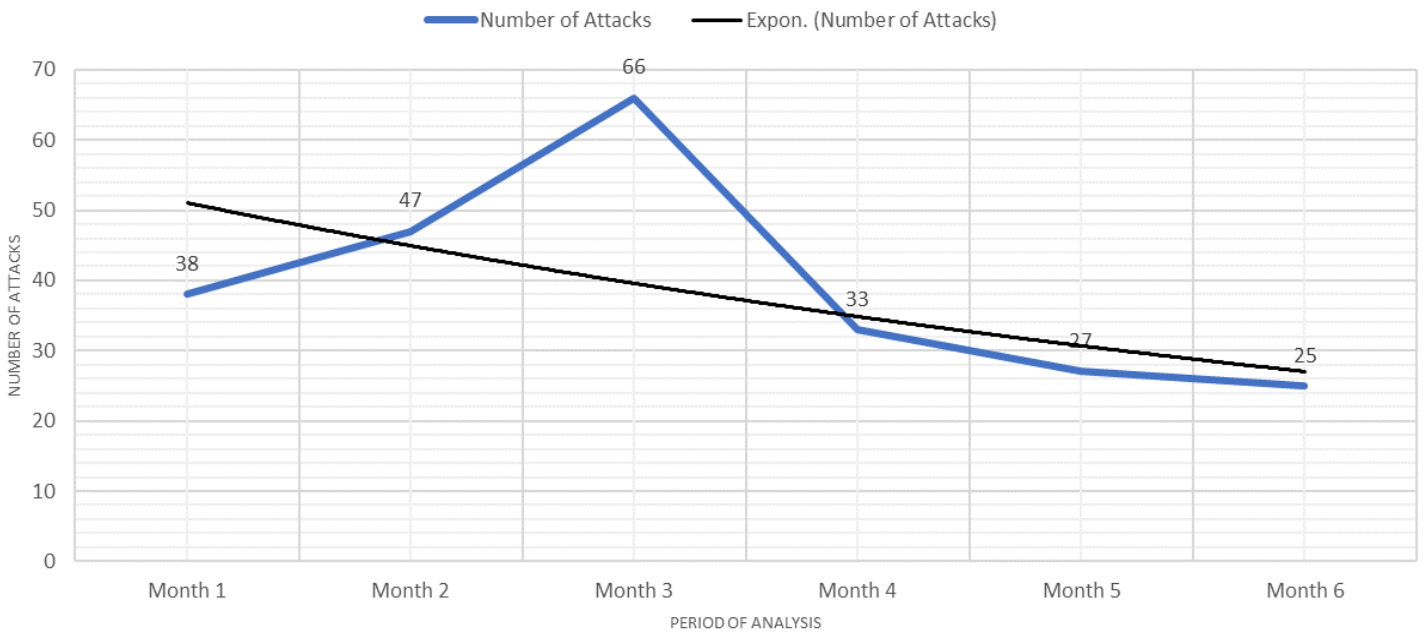
WITHIN SECTOR 1S ATTACKS SECTOR/MONTH



Graphic 19- Within Sector 1S Attacks Sector/Month



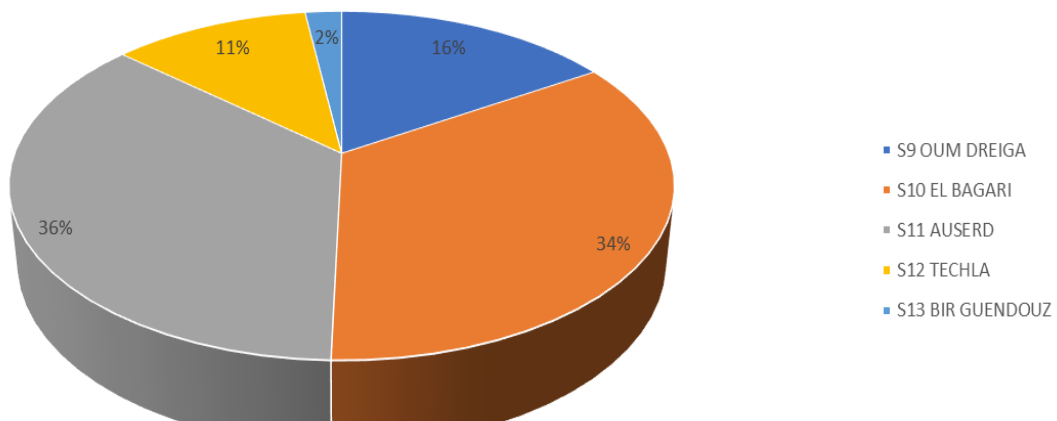
Rio de Oro Military Encounters Evolution- 1S



Graphic 20- Rio de Oro Military Encounters Evolution-

The month in which the highest number of attacks was recorded was January, with 66 occurrences, 28% of the total of R3 in 1s. The month in which the lowest number of attacks was recorded was April with 25, which represents 11% of the total (Graphic 19). In terms of evolution, after having registered the maximum peak in the number of attacks in the month 3-January, the number of attacks shows a downward trend. And this can be seen in the Graphic 20 and Graphic 22.

1S Within Sector Totality of Attacks (%)



Graphic 21- 1S Within Sector Totality of Attacks (%)

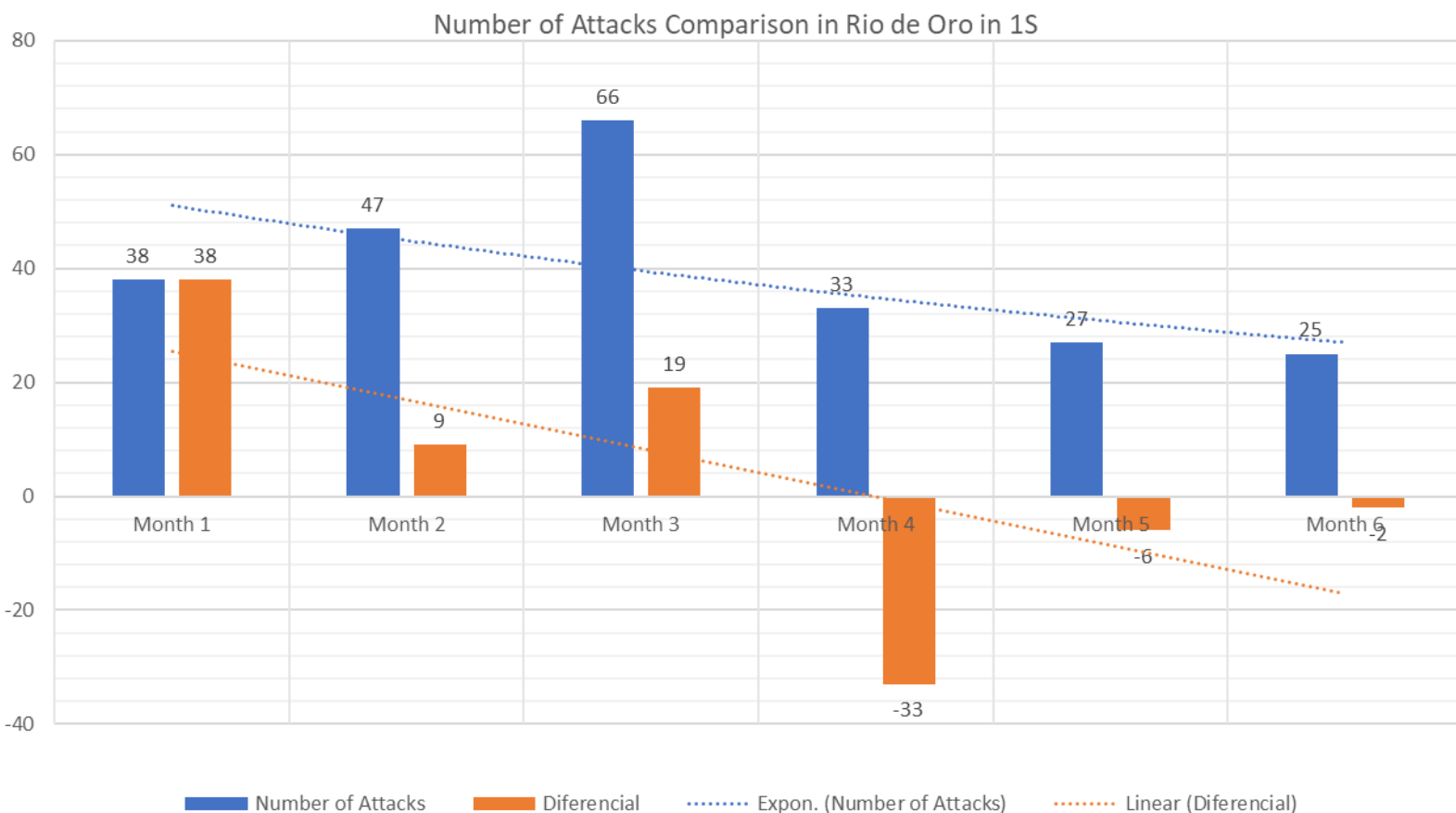


Translated into percentages, S9 represents 16% of the total, S10 represents 34%, S11 represents 36%, S12 represents 11% finally, S13 has a value of 2% (Graphic 21).

Looking carefully at the numbers, we see that, in S9, for the period considered, 38 attacks were recorded, distributed as follows:

- November 2020: 9 attacks, 3,8%;
- December 2020: 6 attacks, 2,5%;
- January 2021: 8 attacks, 3,4%;
- February 2021: 5 attacks, 2,1%;
- March 2021: 5 attacks, 2,1%;
- April 2021: 5 attacks, 2,1%.

The month in which there were more attacks was November, with 6 occurrences, 3.8% of the total of R3 in 1H. The month in which the lowest number of attacks occurred were three: February, March and April with 5, which represents 2.1% of the total of R3 in 1S. In S10 there were +43 attacks, in the general compendium when compared to S9, registering a total of 81 occurrences, distributed as follows:



Graphic 22- Number of Attacks Comparison in Rio de Oro in 1S



- November 2020: 14 attacks, 5,9%;
- December 2020: 15 attacks, 6,4%;
- January 2021: 19 attacks, 8,1%;
- February 2021: 12 attacks, 5,1%;
- March 2021: 12 attacks, 5,1%;
- April 2021: 9 attacks, 3,8%

The month in which there were more attacks was January, with 19 occurrences, which represents 8.1% of the total of R3 in 1H. The month in which there were fewer occurrences was April with 9 attacks, 3.8% of the total of R3 in 1S.

In S11 there were +4 attacks, in the general compendium when compared to S10. A total of 85 attacks were counted with the following distribution:

- November 2020: 12 attacks, 5,1%;
- December 2020: 17 attacks, 7,2%;
- January 2021: 27 attacks, 11,4%;
- February 2021: 9 attacks, 3,8%;
- March 2021: 9 attacks, 3,8%;
- April 2021: 11 attacks, 4,7%

The month in which there were more attacks was January, with 27 occurrences, 11.4% of the total of R3 in 1S. The month in which the lowest number of occurrences was recorded were two: February and March with 9 attacks, 3.8% of the total of R3 in 1S.

In S12 there were -58 attacks, in the general compendium when compared to S11, with a total of 27 attacks with the following distribution:

- November 2020: 2 attacks, 0,8%;
- December 2020: 9 attacks, 3,8%;
- January 2021: 8 attacks, 3,4%;
- February 2021: 7 attacks, 3,0%;
- March 2021: 1 attack, 0,4%;
- April 2021: 0 attacks, 0,0%

The month in which there were more attacks was December, with 9 occurrences, 3.8% of the total of R3 in 1S. The month in which the lowest number of occurrences was recorded was April with 0 attacks.

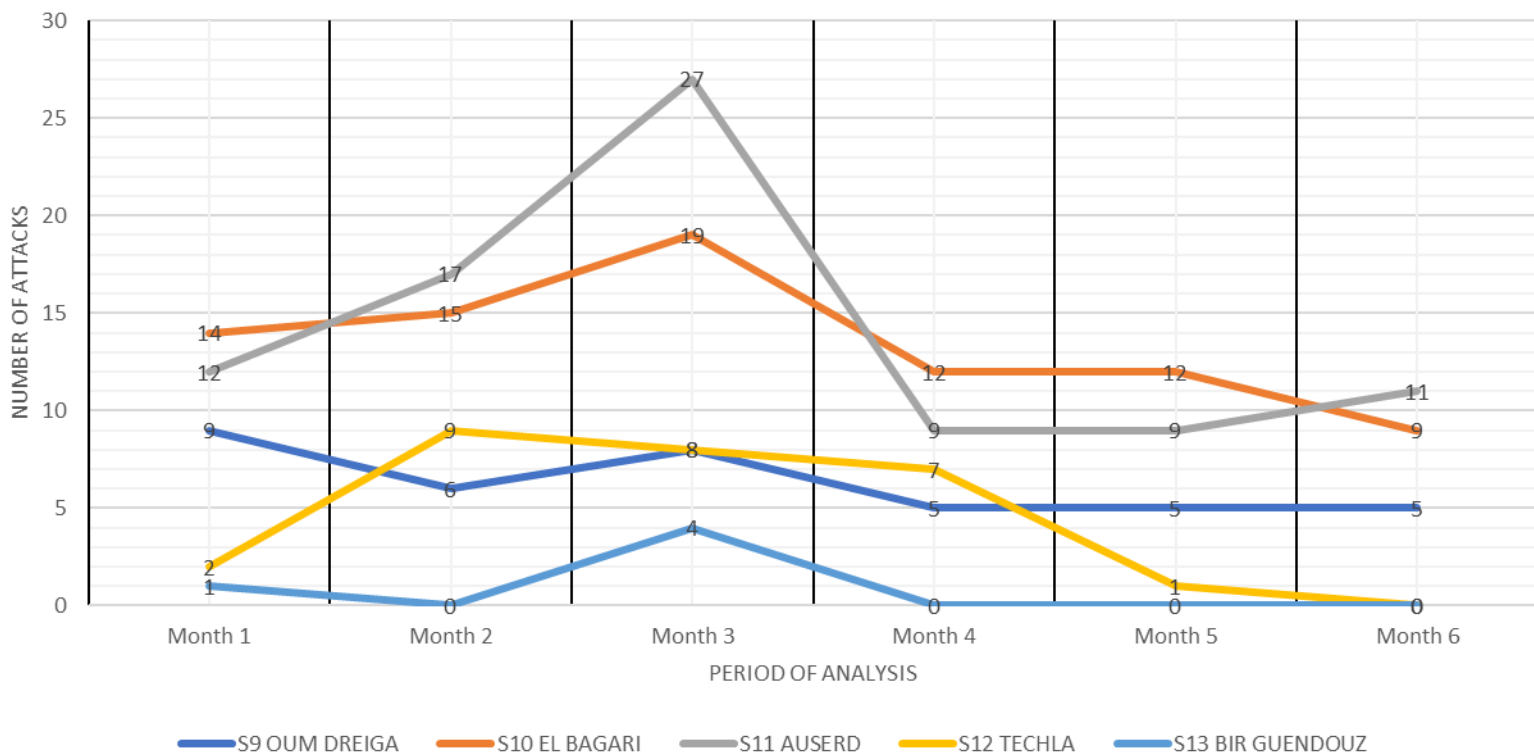


Finally, in S13 there were -22 attacks, in the general compendium when compared to S12, a total of 5 were counted, with the following distribution:

- November 2020: 1 attack, 0,4%;
- December 2020: 0 attacks, 0.0%;
- January 2021: 4 attacks, 1,7%;
- February 2021: 0 attacks, 0,0%;
- March 2021: 0 attacks, 0,0%;
- April 2021: 0 attacks, 0,0%.

The month in which there were more attacks was January, with 4 occurrences, 1.7% of the total of R3 in 1S. The months in which there were the fewest occurrences were four: December, February, March and April with 0 attacks.

Rio de Oro 1S Military Encounters Evolution- Per Sector/Month



Graphic 23- Rio de Oro 1S Military Encounters Evolution- Per Sector/Month

When we only graphically represent the evolution of the number of attacks, we obtain Graphic 20 and Graphic 23. as a result. As it is possible to observe the line, in general for the considered period, presents a downward trend, with a slight upward trend between the



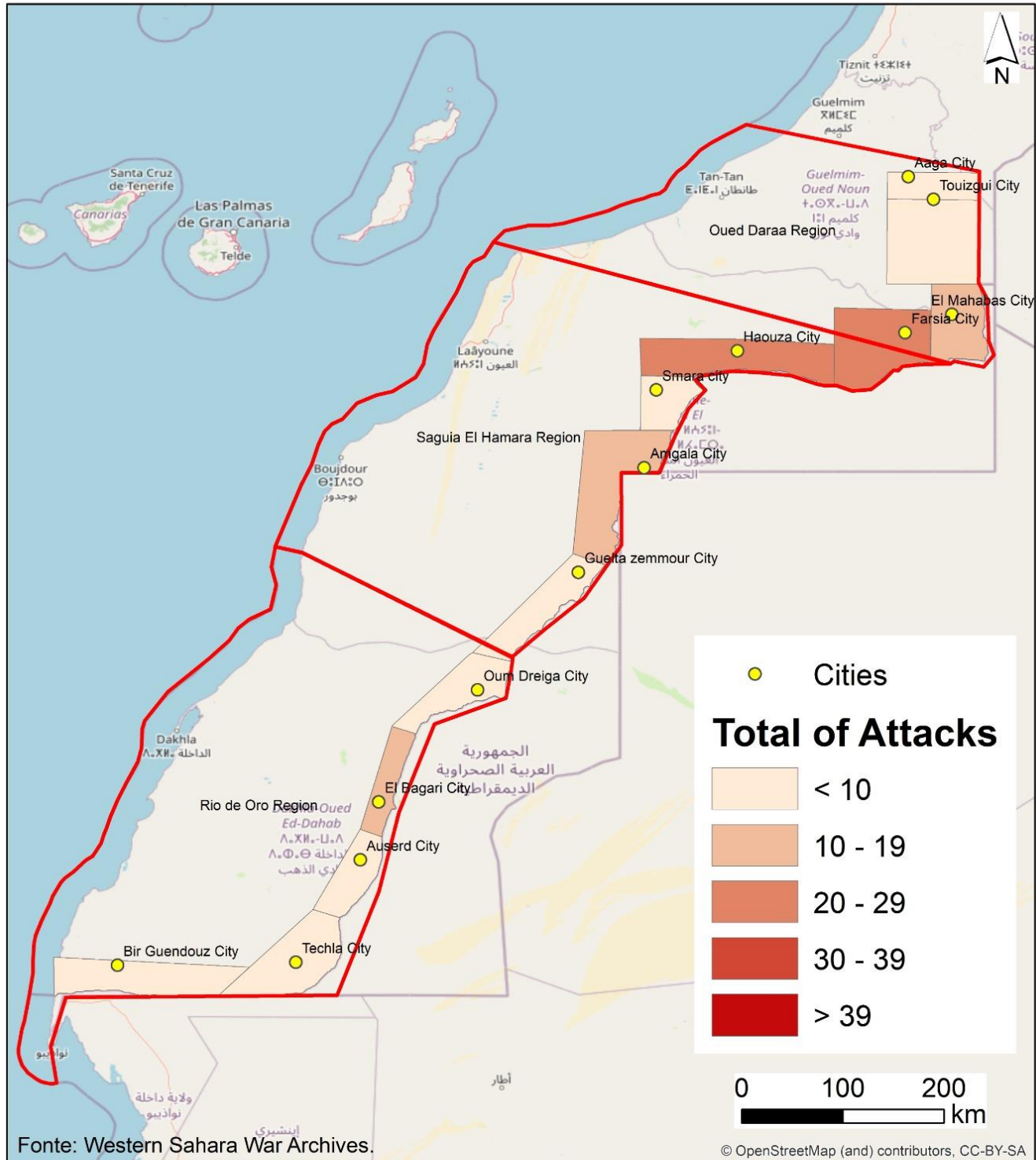
month 2 and 3. Conversely, between month 1 and 2, in S9, we saw a slight drop. From month 4 onwards, there is a general stabilization of the number of attacks in all sectors. We found two peaks, one at S11/January with 27 attacks (the highest) and a second at S12/March with 1 attack (the lowest). We were also able to notice that from month 4 onwards, in S13, there were no more attacks. Being accompanied by S12/April, which also hits 0 attacks.

4. Maps

The following six maps, one per month, represent the totality of attacks, in number of totals, not percentage. They will be coloured in shades of Red, from Light Red to Bright Red, by Sector and will use scales of 10, ranging from <10 up to >39, representing the number of attacks catalogued.

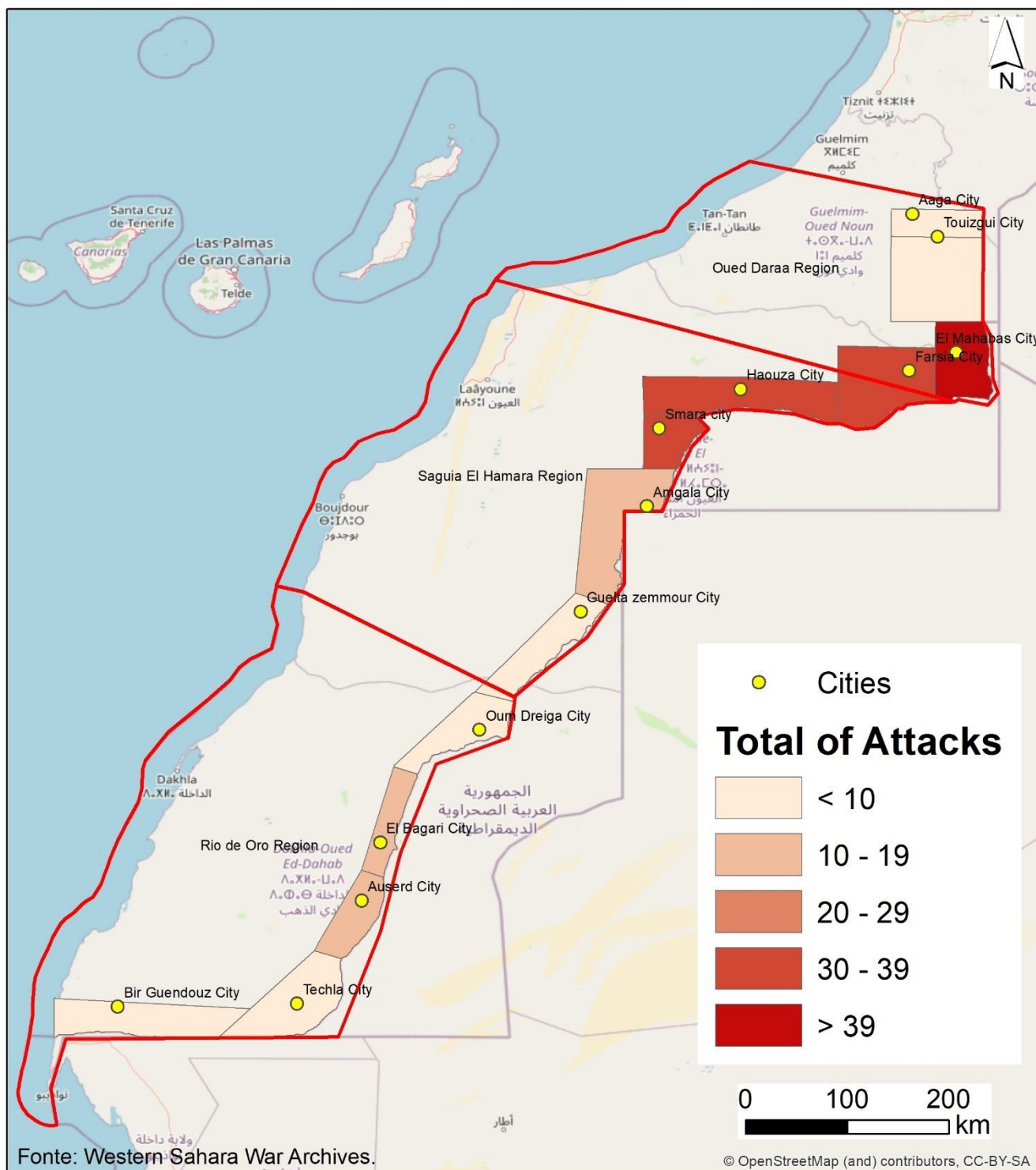


Western Sahara War Map (November, 2020)



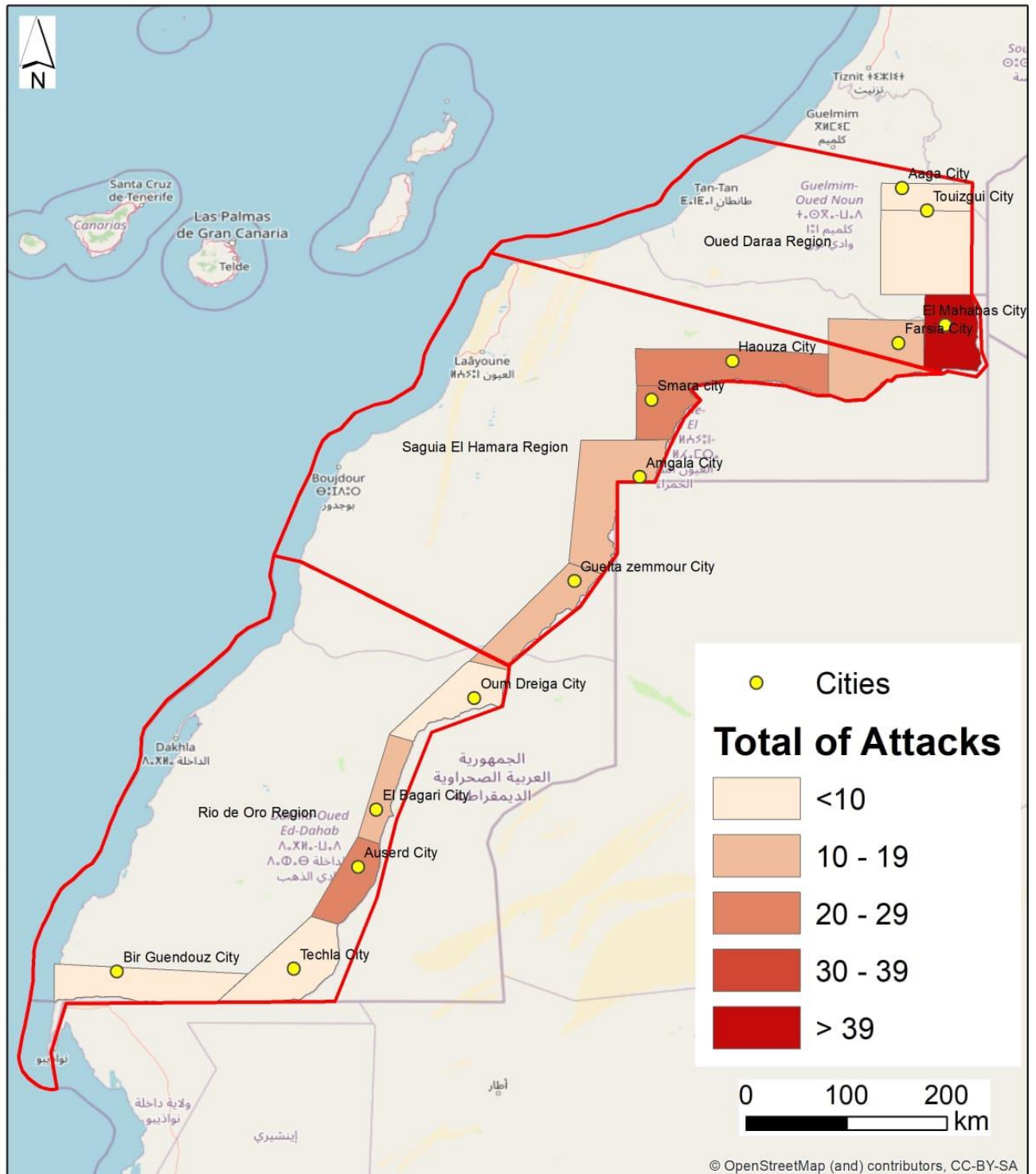


Western Sahara War Map (December, 2020)





Western Sahara War Map (January, 2021)

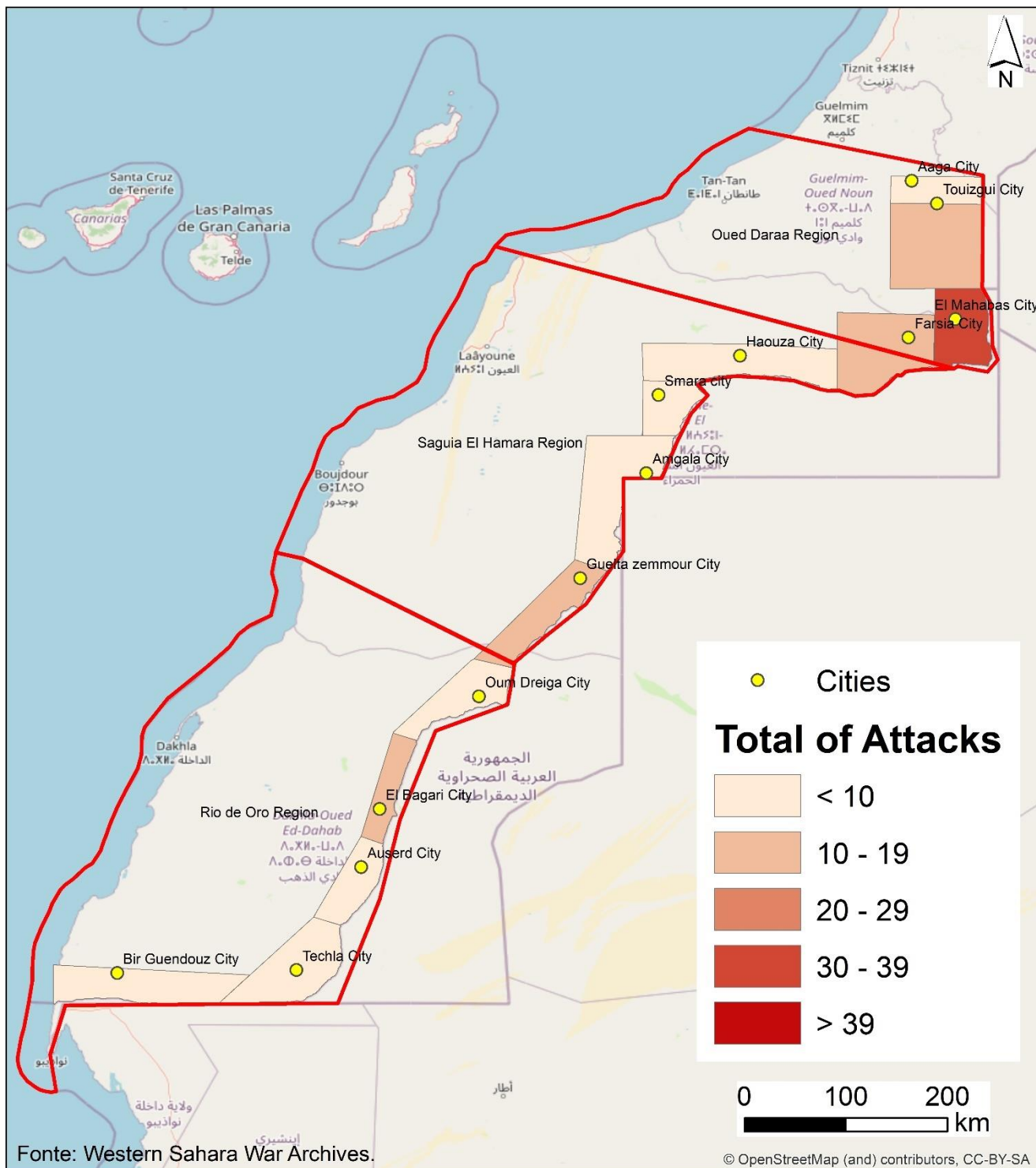


Fonte: Elaboração própria com dados fornecidos por Western Sahara War Archives

Map 7- Statistical Map of January 2021 Attacks

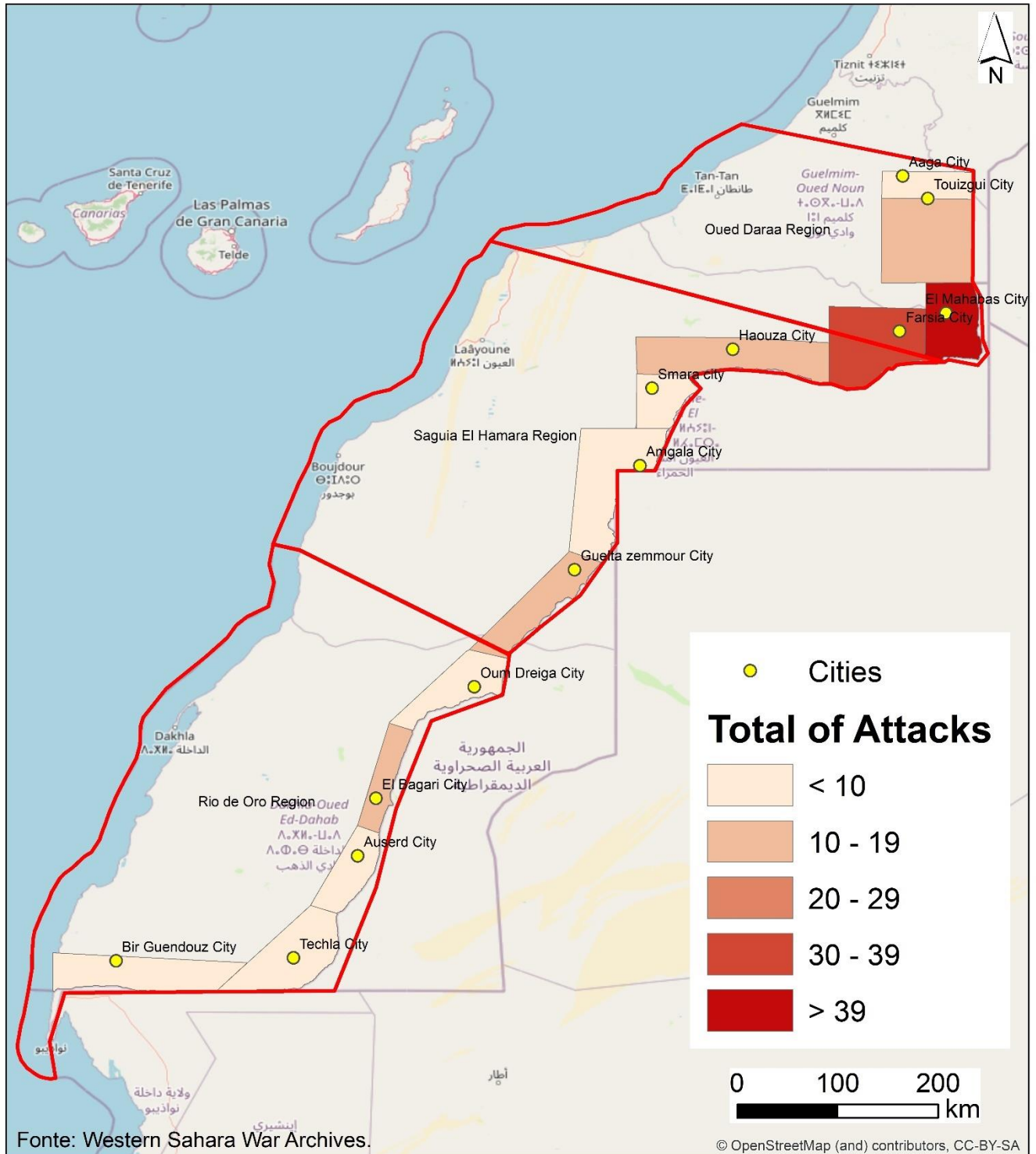


Western Sahara War Map (February, 2021)



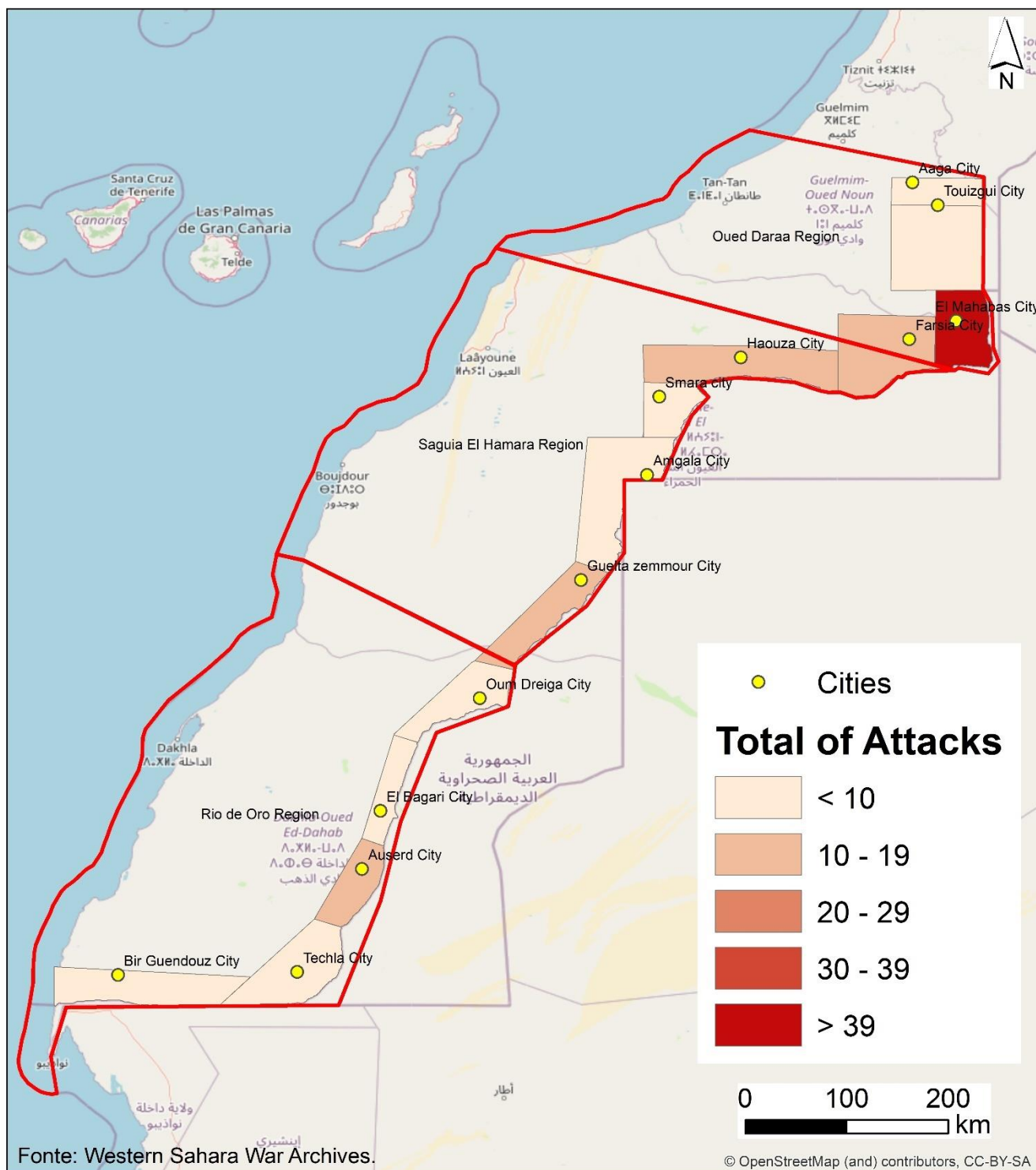


Western Sahara War Map (March, 2021)





Western Sahara War Map (April, 2021)



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Map 10- Statistical Map of April 2021 Attacks