

# Segundo Informe de Calidad de Aire - 2024

Distrito de Alto de la Alianza

Gobierno Regional de Tacna

2024-08-01

El presente reporte muestra los resultados del monitoreo de la calidad de aire, el cual fue realizado con la estación de monitoreo de calidad de aire del Gobierno Regional de Tacna en un espacio proporcionado por el ITESP “Francisco de Paula Gonzales Vigil” en el distrito de Alto de la Alianza durante el 17 de julio del 2024 al 31 de julio del 2024. Los parámetros de calidad de aire evaluados fueron  $PM_{2.5}$ ,  $PM_{10}$ ,  $NO_2$ ,  $O_3$ ,  $CO$ ,  $SO_2$ ,  $H_2S$  y datos meteorológicos generados por la estación de monitoreo. Las concentraciones de cada uno de estos parámetros no deben superar el Estándar de Calidad Ambiental para Aire (ECA-aire), establecidos mediante el D.S. N° 003-2017-MINAM (MINAM, 2017), a fin de evitar problemas en la salud de las personas y el ambiente. También se ha considerado en el análisis los niveles recomendados por las Directrices de la Organización Mundial de la Salud (OMS, 2021) sobre la calidad del aire. Como principales paquetes computacionales de R para llevar a cabo el procesamiento de la información se tiene a openair (Carslaw & Ropkins, 2012), zoo (Zeileis & Grothendieck, 2005) y tidyverse (Wickham et al., 2019).

Tabla 1: Estándares de Calidad Ambiental para Aire - D.S. N° 003-2017 MINAM

Parámetros	Período	Valor (ug/m <sup>3</sup> )	Criterios de evaluación	Método de análisis <sup>1</sup>
$SO_2$	24 horas	250	NE <sup>2</sup> más de 7 veces al año	Fluorescencia ultravioleta (método automático)
$NO_2$	1 hora	200	NE más de 24 veces al año	Quimioluminiscencia (método automático)
$PM_{2.5}$	24 horas	50	NE más de 7 veces al año	Separación inercial/filtración (gravimetría)
$PM_{10}$	24 horas	100	NE más de 7 veces al año	Separación inercial/filtración (gravimetría)
CO	1 hora	10000	NE más de 1 vez al año	Infrarrojo no dispersivo (NDIR) (método automático)
	8 horas	30000	Media aritmética móvil	
$O_3$	8 horas	100	Máxima media diaria	Fotometría de absorción ultravioleta (método automático)
			NE más de 24 veces al año	
$H_2S$	24 horas	150	Media aritmética	Fluorescencia ultravioleta (método automático)

Una manera muy útil de medir la calidad de aire de diferentes zonas del país era utilizando el Índice de Calidad de Aire del Perú, sin embargo, este instrumento técnico se encuentra desactualizado respecto a la normativa vigente. Por lo cual en este estudio se utilizó el Índice de Calidad de Aire (AQI por sus siglas en inglés) de la Agencia de Protección Ambiental de los Estados Unidos (US-EPA, 2024), cuya simbología se aprecia en la tabla 2.

Tabla 2: Rangos del AQI y su simbología de colores

Categoría	Rango AQI	Color
Buena	0 - 50	Verde
Moderada	51 - 100	Amarillo
No saludable para grupos sensibles	101 - 150	Naranja
No saludable	151 - 200	Rojo
Muy no saludable	201 - 300	Púrpura
Peligrosa	301 - 500	Marrón

<sup>2</sup>NE: No exceder más de una cantidad

<sup>1</sup>O método equivalente aprobado

# 1 Estación de monitoreo de calidad de aire EMCA - 02

Durante el 17 de julio del 2024 al 31 de julio del 2024 se realizó el monitoreo de calidad del aire, en el Instituto de Educación Superior Público “Francisco de Paula Gonzales Vigil” en el distrito de Alto de la Alianza, utilizando la Estación Móvil de Monitoreo de Calidad de aire del Gobierno Regional de Tacna.

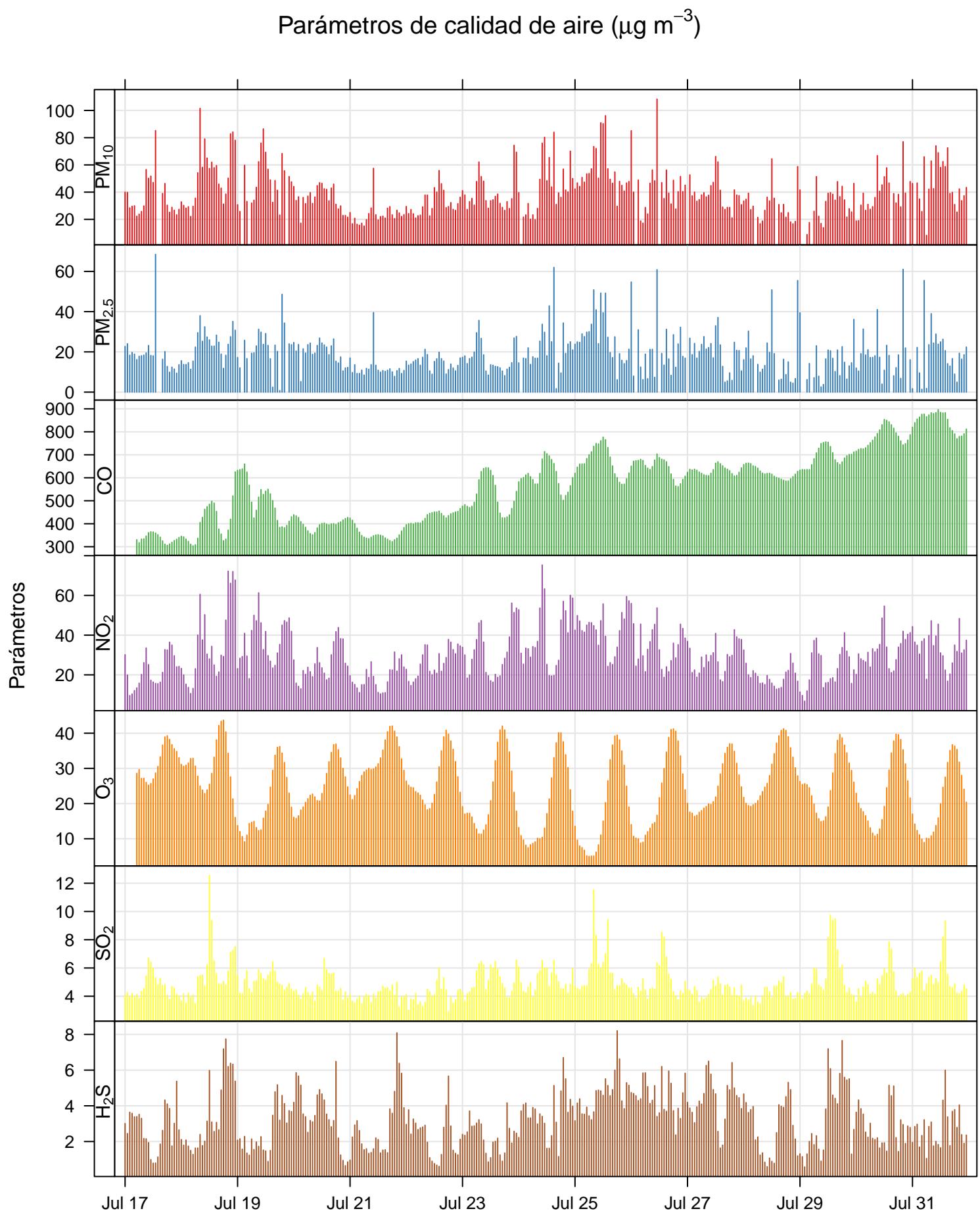
Figura 1: Mapa de Ubicación de la estación EMCA - 02



## 2 Parámetros de calidad de aire

Con los datos obtenidos de la estación de monitoreo de la calidad del aire del Gobierno Regional de Tacna, se realizó un análisis de la variabilidad horaria de las concentraciones de  $PM_{10}$ ,  $PM_{2.5}$ ,  $CO$ ,  $NO_2$ ,  $O_3$ ,  $SO_2$  y  $H_2S$  las cuales se presentan en la figura 2 y están expresadas en  $\mu g/m^3$ .

Figura 2: Datos horarios de calidad de aire ( $\mu g/m^3$ )



## 2.1 Comparación con el Estándar de Calidad de aire

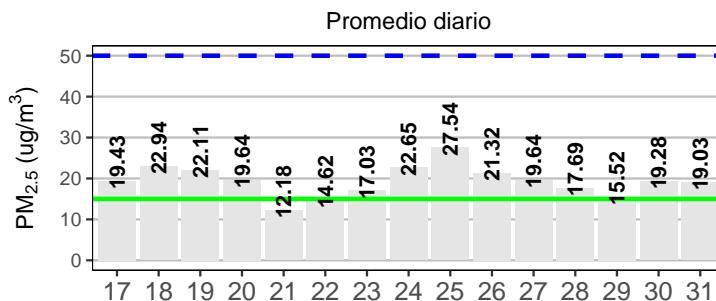
### 2.1.1 Concentraciones diarias de los parámetros monitoreados

A continuación, se presenta la comparación de las concentraciones diarias obtenidas durante el monitoreo de calidad de aire, con los valores que establece el Estándar de Calidad Ambiental de Aire (D.S. N° 003-2017-MINAM). Así mismo se compara con los niveles recomendados de las Directrices de la OMS sobre la calidad del aire, la cual ofrece recomendaciones cuantitativas relativas a la salud para la gestión de la calidad del aire.

Figura 3: Comparación de concentraciones diarias con el ECA-aire del 17 de julio al 31 de julio

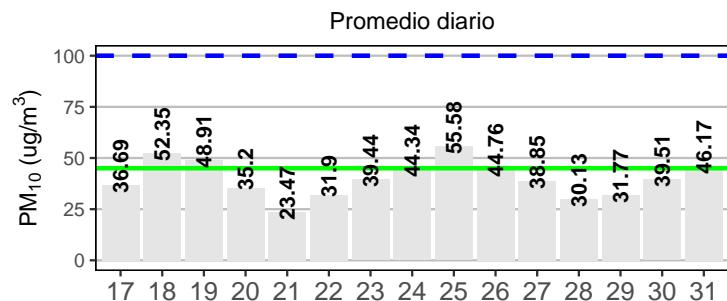
A

#### Material particulado menor a 2.5 micras



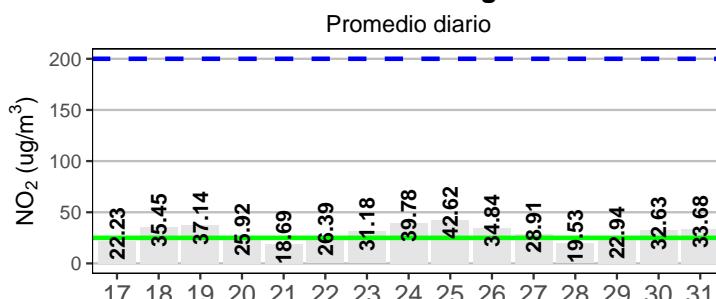
B

#### Material particulado menor a 10 micras



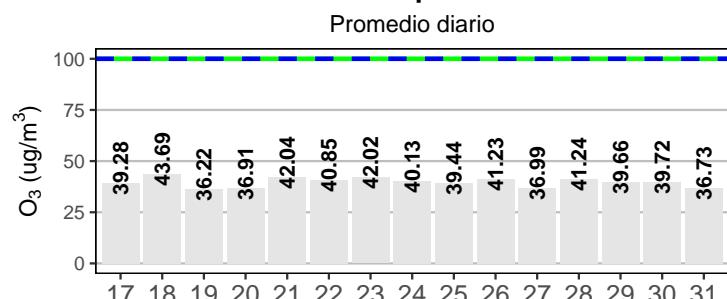
C

#### Dióxido de nitrógeno



D

#### Ozono troposférico



Estándar — ECA — OMS

Por otro lado, las concentraciones diarias de los parámetros  $SO_2$ ,  $H_2S$  y  $CO$  se muestran en la siguiente tabla:

Tabla 3: Comparación de concentraciones diarias con el ECA-aire

Parámetros	17-07	18-07	19-07	20-07	21-07	22-07	23-07	24-07	25-07	26-07	27-07	28-07	29-07	30-07	31-07	ECA	OMS
SO <sub>2</sub>	4.7	5.7	5.1	4.6	4.1	4.1	5.1	5.2	5.8	5.0	4.4	4.2	5.6	4.8	5.4	250	40
H <sub>2</sub> S	2.7	3.5	2.6	3.5	2.8	2.3	2.3	3.6	4.7	4.5	4.3	2.8	3.4	2.9	2.7	150	NA
CO (8h)	338.1	471.8	451.9	393.3	352.8	440.9	541.7	611.6	674.4	639.4	636.1	618.2	699.4	793.5	846.4	30000	10000
CO (1h)	335.6	401.1	504.8	399.2	355.1	430.6	521.7	606.7	671.2	644.2	631.4	621.3	690.6	777.3	844.2	10000	35000

Lo visto en la figura 3 y la tabla 3 muestra que las concentraciones diarias no superan el Estándar de Calidad Ambiental de Aire en ningún día de monitoreo. En el caso del  $PM_{2.5}$  la concentración diaria más alta se dio el jueves 25 de julio con 27.54 ug/m<sup>3</sup> y en el caso del  $PM_{10}$  la concentración diaria más alta también se dio el día 25 de julio con 55.58 ug/m<sup>3</sup>.

Sin embargo, al realizar la comparación con las Directrices sobre la calidad de aire de la Organización Mundial de la Salud (OMS), los parámetros  $PM_{2.5}$ ,  $PM_{10}$  y  $NO_2$  superan estos valores en varios días de monitoreo.

### 2.1.2 Concentraciones horarias de los parámetros monitoreados

A continuación, se muestran las concentraciones horarias de los parámetros comparados de forma referencial con los Estándares de Calidad Ambiental (ECA) para aire del Perú y los niveles de la Directriz de la Organización Mundial de la Salud (OMS). El gráfico muestra que los parámetros que superan ambos marcos de referencia son  $PM_{2.5}$  y  $PM_{10}$ . Como parámetro que llega a superar solo las directrices de la OMS tenemos al  $NO_2$ . El resto de parámetros  $O_3$ ,  $SO_2$ , y  $CO$  se encuentran dentro de los rangos referenciales del ECA y de la directriz de la OMS. Así también, de forma

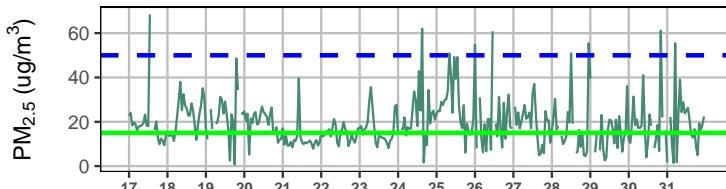
complementaria en la figura 5 para una mejor comprensión, se muestra el comportamiento semanal de cada uno de los parámetros monitoreados.

Figura 4: Comparación referencial de concentraciones horarias con el Estándar de Calidad Ambiental de Aire del 17 de julio al 31 de julio

A

### Material particulado menor a 2.5 micras

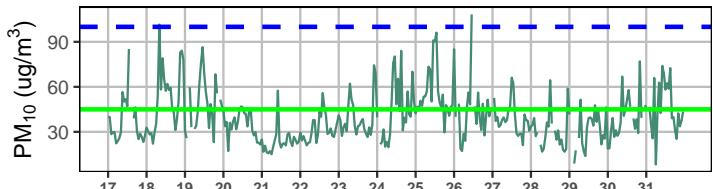
Promedio horario



B

### Material particulado menor a 10 micras

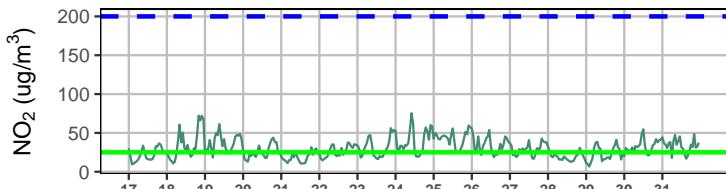
Promedio horario



C

### Dióxido de nitrógeno

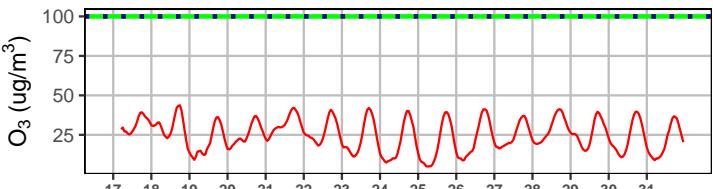
Promedio horario



D

### Ozono troposférico

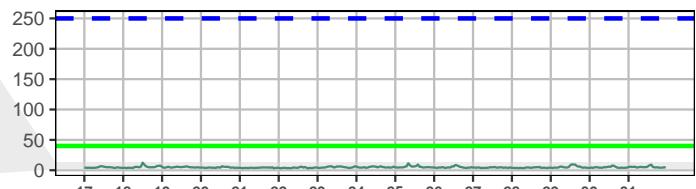
Promedio horario



E

### Dióxido de azufre

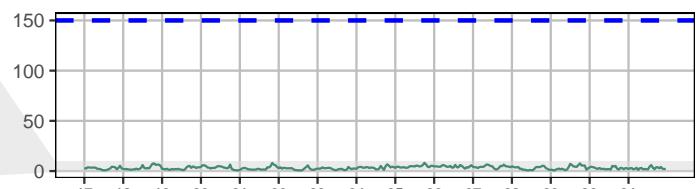
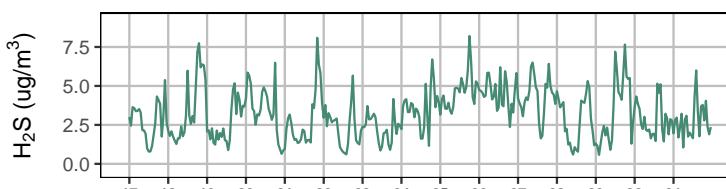
Promedio horario



F

### Sulfuro de hidrógeno

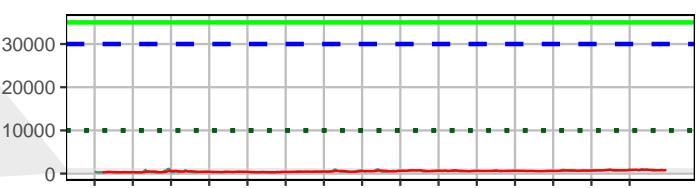
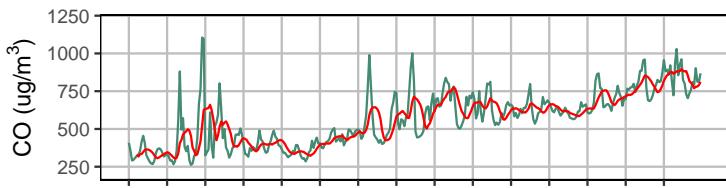
Promedio horario



G

### Monóxido de carbono

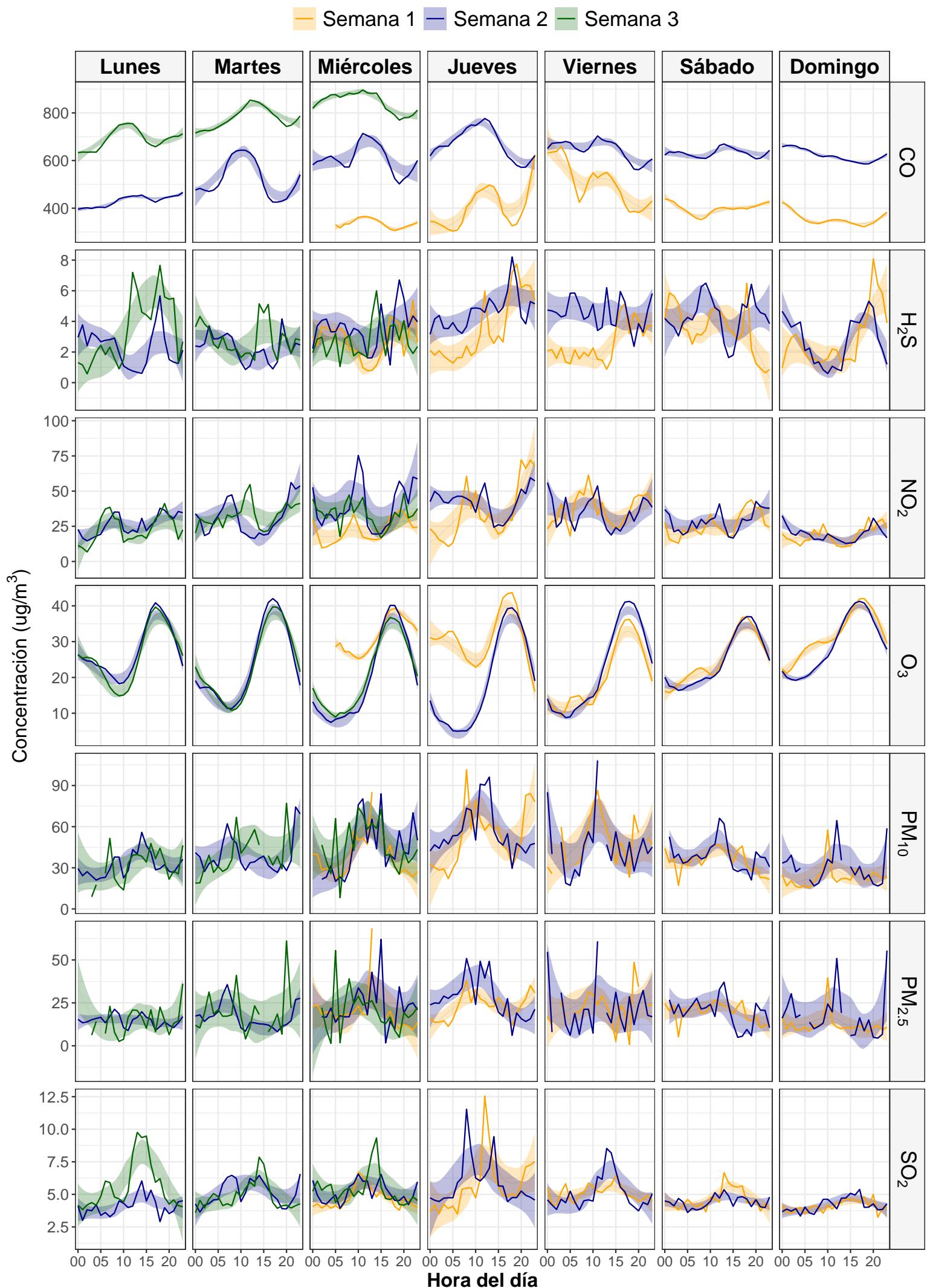
Promedio horario



#### Leyenda

- Media aritmética
- Media móvil
- ECA
- ECA(8h)
- OMS
- OMS(8h)

Figura 5: Comportamiento semanal de datos horarios - 17 de julio al 31 de julio

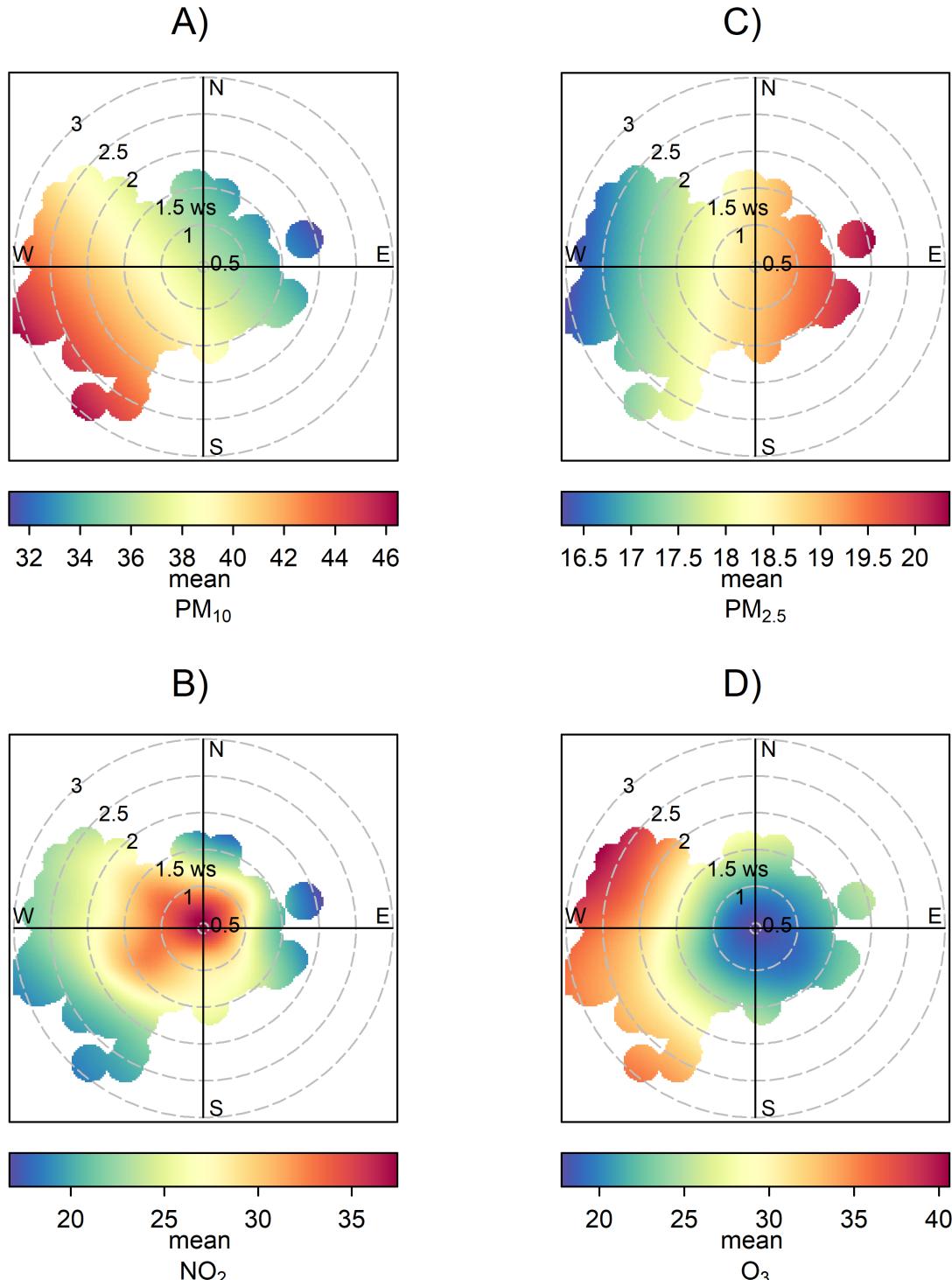


## 2.1.3 Gráficos polares

Son gráficos que presentan una relación entre las concentraciones horarias de los contaminantes y el comportamiento de los vientos. La dirección del viento se muestra en el plano cartesiano, la velocidad del viento en las circunferencias, la cual aumenta a medida que se aleja del origen, y la concentración en la paleta de colores.

En la figura 6 se aprecia que la representación polar de 4 parámetros de calidad de aire de interés  $PM_{10}$ ,  $PM_{2.5}$ ,  $NO_2$  y  $O_3$ . En el caso del parámetro  $PM_{10}$  muestra mayores concentraciones con mayores niveles de velocidad de viento los cuales provienen principalmente de dirección oeste y suroeste, en el caso del  $PM_{2.5}$  las mayores concentraciones se dan a bajos niveles de velocidad del viento, y en mayor medida de dirección este. Así mismo según el gráfico, las mayores concentraciones de  $NO_2$  se presentan a valores reducidos de velocidad de viento, en todas las direcciones de viento. Las mayores concentraciones de  $O_3$  se presentan con valores altos de velocidad de viento y provenientes con mayor predominancia de dirección noroeste y oeste.

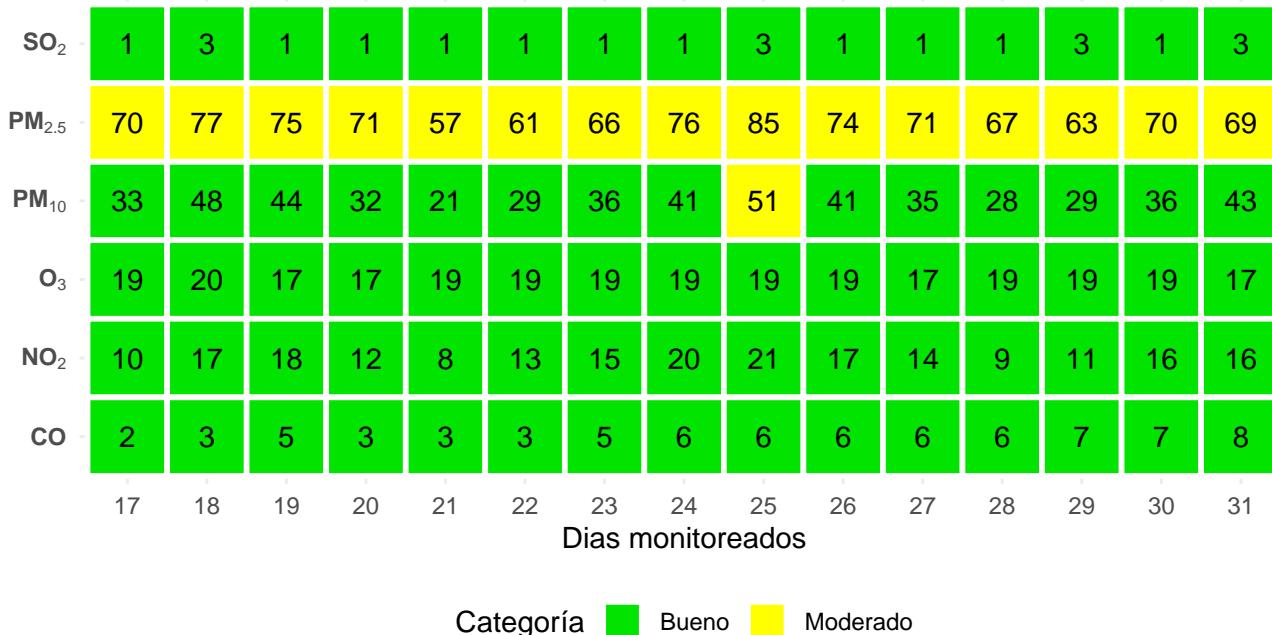
Figura 6: Gráficos polares de los principales parámetros evaluados



## 2.2 Índice de Calidad de Aire

El índice de Calidad de Aire (AQI por sus siglas en inglés) muestra los estados de la calidad del aire, en general la zona monitoreada durante el 17 de julio del 2024 al 31 de julio del 2024 presenta estados de calidad de aire “**Bueno**” en los parámetros  $NO_2$ ,  $O_3$ ,  $SO_2$ , y  $CO$ , durante todos los días de medición. En el caso del  $PM_{2.5}$  se observa que presenta todos los días estado de calidad del aire “**Moderado**”, que puede no ser favorable para personas sensibles a una exposición prolongada de este parámetro en la zona de evaluación. Finalmente, los valores de  $PM_{10}$  presenta estado de calidad de aire “**Bueno**” en casi todos los días monitoreados, a excepción del día jueves 25 con estado de calidad del aire “**Moderado**”.

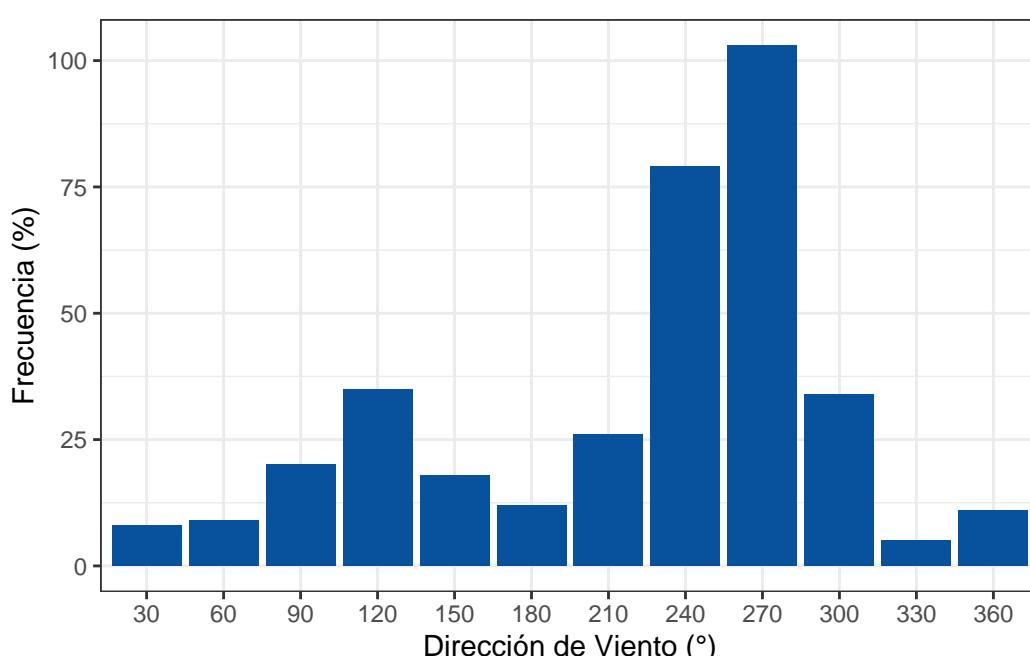
Figura 7: Índice de Calidad de Aire - 17 de julio al 31 de julio



## 3 Parámetros meteorológicos

El siguiente gráfico muestra la distibución de los vientos en intervalos de 30 grados sexagesimales, de manera que, la dirección predominante del viento se da a los 270 grados en sentido horario.

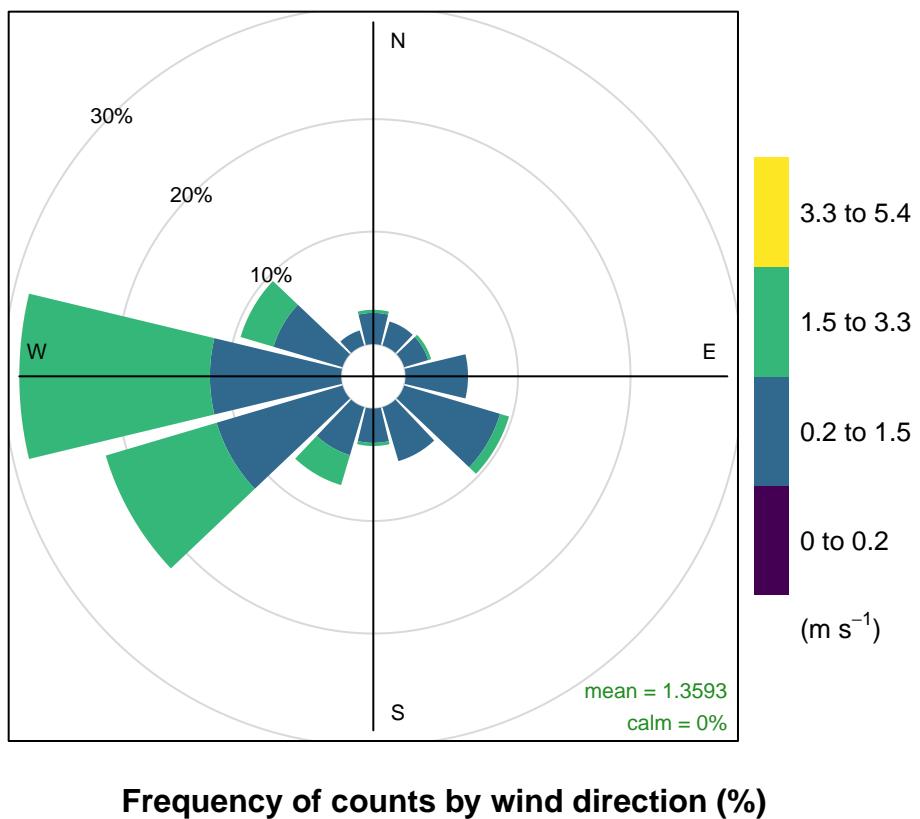
Figura 8: Distibución de la dirección de los vientos



Así también se presenta el gráfico de rosa de viento donde se evidencia que el promedio de velocidades es de 1.36 m/s. De acuerdo con los rangos propuestos por la OMM (2023), los rangos de velocidades de viento en este periodo de monitoreo,

se encuentran en las categorías de “brisa muy débil” y “brisa débil”.

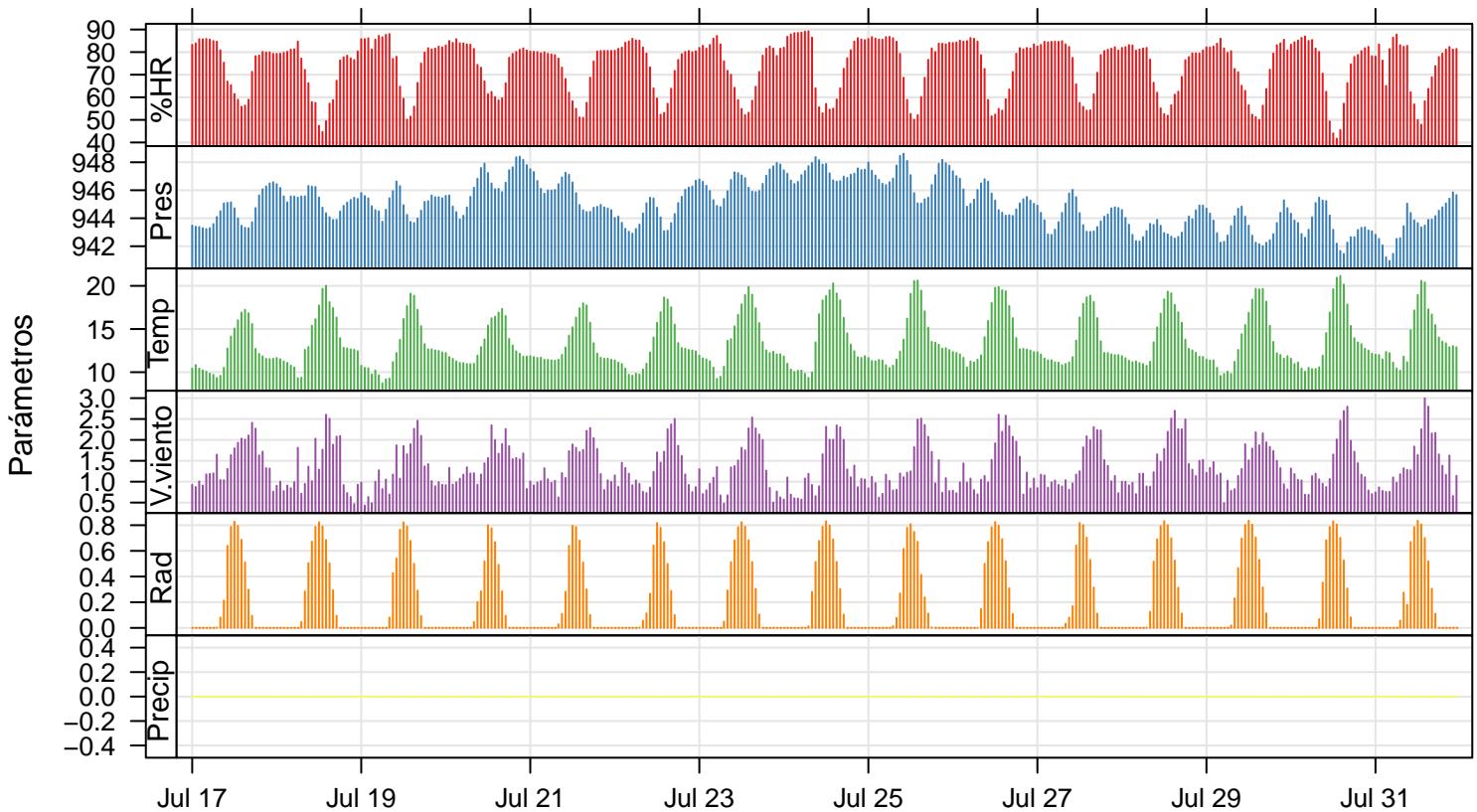
Figura 9: Rosa de vientos



**Frequency of counts by wind direction (%)**

A continuación, se presenta la información obtenida durante el periodo de monitoreo respecto a los parámetros temperatura, precipitación, humedad relativa, presión, velocidad del viento y radiación solar.

Figura 10: Datos horarios de los parámetros meteorológicos de la estación evaluada



## 4 Conclusiones

- Las concentraciones diarias de material particulado en la zona evaluada cumplen con los Estándares de Calidad Ambiental para aire, establecidos en el D.S. N° 003-2017-MINAM. Asimismo, en el caso del  $PM_{2.5}$  la concentración diaria más alta se dio el jueves 25 de julio con 27.54 ug/m<sup>3</sup> y en el caso del  $PM_{10}$  la concentración diaria más alta se dio el jueves 25 de julio con 55.58 ug/m<sup>3</sup>.
- Los contaminantes gaseosos  $NO_2$ ,  $O_3$ ,  $SO_2$ ,  $H_2S$  y CO no superaron sus respectivos ECA-aire. Asimismo, la mayor concentración de  $NO_2$  se registró el día jueves 25 de julio del 2024 con 42.62 ug/m<sup>3</sup> y de  $O_3$  el día domingo 21 de julio con 42.04 ug/m<sup>3</sup>.
- El Índice de Calidad de Aire utilizado para determinar los estados de la calidad de aire en la zona de estudio muestra que durante los días de monitoreo los parámetros evaluados presentan la categoría de “**Bueno**” en la mayoría de los casos (a excepción de los parámetros  $PM_{2.5}$  y  $PM_{10}$ ). Asimismo, para el parámetro  $PM_{2.5}$  presenta estado de calidad del aire “**Moderado**” en todos los días de monitoreo y respecto al parámetro  $PM_{10}$  este presenta estado de calidad de aire “**Bueno**” en casi todos los días monitoreados, a excepción del día 25 de julio con estado de calidad del aire “**Moderado**”.
- Respecto a la comparación con las Directrices de la Organización Mundial de la Salud (OMS) sobre la calidad del aire, los parámetros  $PM_{2.5}$ ,  $PM_{10}$  y  $NO_2$  superan sus valores de referencia respectivos.
- En cuanto a los parámetros meteorológicos se destaca la predominancia del viento suroeste (270°) y el valor medio de la velocidad del viento en 1.36 m/s.

## 5 Referencias

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# **ANEXOS**

TABLA : HOJA DE DATOS - TEMPERATURA (°C)



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: Sensor de Temperatura del Aire	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: °C
Este	: 368367	<b>Límite de Detección</b>	: ---°C
Norte	: 8010120		

DIA \ HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	10.4	10.8	10.4	10.2	10.1	9.8	9.7	9.3	9.6	10.5	12.7	14.1	15.1	16.0	16.9	17.2	16.8	15.6	12.7	12.1	11.8	11.6	11.5	11.6	12.4	17.2	9.3
18/07/2024	11.7	11.5	11.3	11.1	10.8	10.6	9.3	9.4	12.6	12.9	15.4	16.1	17.7	19.7	20.0	18.1	17.4	16.3	14.0	12.8	12.8	12.7	12.6	12.4	13.7	20.0	9.3
19/07/2024	10.7	10.5	10.5	9.7	10.2	9.7	8.7	9.2	9.3	11.2	12.2	13.8	16.2	17.7	19.1	18.9	17.2	15.3	13.3	12.7	12.7	12.5	12.5	12.3	12.7	19.1	8.7
20/07/2024	12.2	11.8	11.6	11.3	11.1	11.1	11.0	10.9	11.0	11.9	12.9	13.8	15.4	16.3	16.4	16.9	17.3	16.5	13.9	13.1	12.4	12.2	11.8	11.8	13.1	17.3	10.9
21/07/2024	11.9	11.8	11.7	11.7	11.5	11.4	11.4	11.3	11.5	12.0	12.9	14.2	15.2	16.3	17.4	18.0	17.7	15.7	13.4	12.2	11.7	11.6	11.6	11.5	13.1	18.0	11.3
22/07/2024	11.4	11.1	11.0	10.4	9.7	9.6	9.8	9.7	10.3	11.0	12.3	14.0	15.7	17.0	18.7	18.4	17.5	15.5	13.4	12.8	12.7	12.6	12.5	12.4	12.9	18.7	9.6
23/07/2024	11.9	11.6	11.5	11.3	10.5	9.2	9.5	10.6	13.7	13.8	15.3	16.7	17.9	19.0	19.9	19.0	17.4	15.7	13.5	12.5	12.2	12.4	12.1	12.1	13.7	19.9	9.2
24/07/2024	11.8	11.0	10.3	10.0	10.2	10.2	9.8	9.4	10.0	13.5	16.7	18.3	18.8	19.5	20.3	19.1	18.3	16.3	14.5	13.2	12.4	11.7	11.7	11.9	13.7	20.3	9.4
25/07/2024	11.7	11.3	11.3	11.4	11.4	10.8	10.5	10.8	11.5	12.4	13.8	16.2	19.1	20.6	20.6	19.5	17.1	15.2	13.5	13.4	13.2	12.7	12.8	12.6	13.9	20.6	10.5
26/07/2024	12.3	12.2	12.1	11.7	10.6	11.3	11.1	11.5	12.0	14.1	15.9	18.0	19.8	19.9	19.5	19.4	17.7	16.3	14.0	12.7	12.7	12.6	12.5	12.3	14.3	19.9	10.6
27/07/2024	12.3	12.1	11.6	11.4	11.4	11.2	11.1	10.8	11.0	11.1	11.8	13.7	16.4	17.9	18.7	18.9	18.1	16.3	13.6	12.2	12.2	12.1	12.0	12.0	13.3	18.9	10.8
28/07/2024	11.9	11.6	11.3	11.2	11.3	11.1	11.0	10.7	11.2	13.5	15.2	16.8	18.4	19.3	19.1	17.8	17.0	15.7	13.8	12.7	12.5	12.3	11.8	11.8	13.7	19.3	10.7
29/07/2024	11.5	11.4	11.4	10.5	9.6	9.8	10.1	9.8	11.2	12.6	14.4	15.5	16.9	18.4	19.7	19.6	19.7	18.2	15.4	13.5	12.2	12.0	11.6	11.9	13.6	19.7	9.6
30/07/2024	11.6	11.0	11.1	10.4	10.1	10.5	10.4	10.4	10.6	11.9	14.5	16.9	19.6	21.0	21.2	20.2	17.9	15.4	14.0	13.5	13.3	12.7	12.5	12.2	13.9	21.2	10.1
31/07/2024	12.0	12.0	11.5	12.3	12.2	11.1	10.4	10.2	11.8	11.2	14.9	17.2	19.0	20.6	20.4	17.3	16.7	15.5	14.0	13.5	13.4	12.9	13.0	12.9	14.0	20.6	10.2
Prom.	11.7	11.4	11.2	11.0	10.7	10.5	10.2	10.3	11.1	12.2	14.1	15.7	17.4	18.6	19.2	18.5	17.6	16.0	13.8	12.9	12.5	12.3	12.2	12.1			
Max.	12.3	12.2	12.1	12.3	12.2	11.4	11.4	11.5	13.7	14.1	16.7	18.3	19.8	21.0	21.2	20.2	19.7	18.2	15.4	13.5	13.4	12.9	13.0	12.9			
Min.	10.4	10.5	10.3	9.7	9.6	9.2	8.7	9.2	9.3	10.5	11.8	13.7	15.1	16.0	16.4	16.9	16.7	15.2	12.7	12.1	11.7	11.6	11.5	11.5			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - HUMEDAD RELATIVA (%)



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: Sensor de Humedad Relativa	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>			<b>Unidades</b> : %
Este	: 368367	<b>Límite de Detección</b>	: ---%
Norte	: 8010120		

DIA \ HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	83.2	83.9	85.7	85.7	85.8	85.5	84.9	84.6	80.8	75.3	67.0	65.4	61.5	58.9	55.8	56.4	58.9	71.3	78.2	78.5	80.1	79.9	79.9	79.3	75.3	85.8	55.8
18/07/2024	79.2	79.3	79.7	80.2	81.1	81.3	84.7	77.2	72.1	66.3	57.9	57.5	47.4	44.7	49.5	57.2	58.8	67.3	76.3	77.7	78.4	77.2	76.5	80.4	70.3	84.7	44.7
19/07/2024	85.7	85.8	86.1	81.2	85.5	87.2	86.6	87.7	88.0	77.0	78.0	64.7	59.4	50.1	51.5	55.9	66.4	75.0	79.8	81.8	81.2	81.6	82.4	82.1	76.7	88.0	50.1
20/07/2024	83.0	85.0	84.1	85.7	83.9	83.9	83.5	83.3	81.4	74.4	73.1	67.1	61.4	62.4	60.1	58.7	59.6	66.2	77.5	79.3	80.1	81.1	81.7	80.7	75.7	85.7	58.7
21/07/2024	80.3	80.2	80.0	79.5	79.9	79.3	79.0	78.7	77.1	73.2	68.1	62.1	58.3	54.9	51.1	51.0	57.6	68.7	75.9	80.3	80.5	80.6	80.5	80.6	72.4	80.6	51.0
22/07/2024	80.6	81.5	82.0	84.2	84.8	85.9	85.2	85.1	82.1	79.4	73.3	63.9	59.5	52.3	53.1	57.2	63.8	71.7	76.6	79.1	80.1	80.5	80.0	80.4	75.1	85.9	52.3
23/07/2024	81.9	82.8	81.6	83.2	86.0	87.2	83.4	76.0	71.7	70.0	64.2	58.8	54.8	52.1	53.2	58.5	64.7	71.3	78.4	81.5	82.5	81.6	78.3	81.5	73.6	87.2	52.1
24/07/2024	82.0	86.8	87.9	88.4	88.5	88.7	89.1	89.2	86.5	64.0	55.6	52.9	57.1	54.6	55.0	59.1	64.0	72.6	77.3	80.8	84.7	86.2	85.6	85.3	75.9	89.2	52.9
25/07/2024	85.8	86.7	86.0	85.6	85.5	86.7	86.8	86.2	84.6	79.3	68.7	58.8	52.7	50.1	52.1	60.1	68.6	76.6	81.7	80.0	83.8	83.7	83.5	84.2	76.6	86.8	50.1
26/07/2024	84.1	84.3	85.1	84.6	84.9	86.2	85.9	84.7	78.6	72.6	58.8	51.6	52.4	54.9	54.1	59.1	63.5	71.2	79.3	81.8	81.2	81.9	81.6	83.5	74.4	86.2	51.6
27/07/2024	82.5	83.2	84.6	84.4	84.6	84.7	84.6	84.9	83.4	82.3	77.5	65.7	57.5	55.8	54.1	54.3	61.4	70.9	78.7	80.5	81.1	81.5	82.2	80.7	75.9	84.9	54.1
28/07/2024	81.9	82.2	83.1	83.0	80.7	81.2	81.6	81.9	76.7	66.4	62.0	55.1	52.6	51.9	56.5	61.2	62.5	69.0	76.5	77.8	79.5	79.4	79.4	80.8	72.6	83.1	51.9
29/07/2024	82.1	82.1	82.5	83.8	86.0	81.7	79.7	80.4	72.6	71.1	65.1	62.9	56.6	52.3	51.2	50.0	56.3	63.7	72.2	79.4	83.1	83.9	85.5	80.8	72.7	86.0	50.0
30/07/2024	83.4	84.4	85.2	86.3	87.0	85.0	85.4	81.6	80.1	70.5	62.5	49.3	44.0	41.7	45.5	57.2	66.3	74.6	77.9	78.7	80.5	81.8	82.3	78.2	72.9	87.0	41.7
31/07/2024	78.0	83.4	76.3	65.0	81.4	86.4	87.8	83.1	82.4	82.8	62.2	56.9	49.9	47.9	58.3	63.7	68.9	73.8	77.9	79.4	81.1	82.3	81.1	81.4	73.8	87.8	47.9
Prom.	82.2	83.4	83.3	82.7	84.4	84.7	84.5	83.0	79.9	73.6	66.3	59.5	55.0	52.3	53.4	57.3	62.7	70.9	77.6	79.8	81.2	81.5	81.4	81.3			
Max.	85.8	86.8	87.9	88.4	88.5	88.7	89.1	89.2	88.0	82.8	78.0	67.1	61.5	62.4	60.1	63.7	68.9	76.6	81.7	81.8	84.7	86.2	85.6	85.3			
Min.	78.0	79.3	76.3	65.0	79.9	79.3	79.0	76.0	71.7	64.0	55.6	49.3	44.0	41.7	45.5	50.0	56.3	63.7	72.2	77.7	78.4	77.2	76.5	78.2			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - VELOCIDAD DEL VIENTO (m/s)



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: Sensor de Velocidad y Dirección del Aire - WINDSONIC I	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: m/s
Este	: 368367	<b>Límite de Detección</b>	: ---m/s
Norte	: 8010120		

DIA \ HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	0.9	0.9	1.0	0.9	1.2	1.2	1.2	1.6	1.0	1.0	1.3	1.6	1.8	1.9	2.0	2.0	2.1	2.4	2.3	1.6	1.7	1.3	1.3	0.8	1.5	2.4	0.8
18/07/2024	0.9	1.0	0.8	0.9	0.8	1.0	1.8	0.7	0.9	1.4	1.0	2.0	1.3	1.8	2.6	2.5	1.9	2.1	2.1	0.9	0.7	0.6	0.5	0.9	1.3	2.6	0.5
19/07/2024	1.0	0.4	0.6	0.5	1.0	1.3	0.8	1.1	0.7	1.2	1.9	1.1	1.9	1.7	1.9	2.3	2.5	2.1	1.4	1.4	1.0	0.9	1.0	0.9	1.3	2.5	0.4
20/07/2024	0.9	1.3	0.9	1.0	1.1	1.2	1.3	1.2	1.2	0.9	1.2	1.4	1.6	2.4	2.0	1.7	1.9	2.3	1.9	1.5	1.6	1.5	1.7	0.8	1.4	2.4	0.8
21/07/2024	1.0	0.9	1.0	1.0	1.3	1.1	1.0	1.0	0.6	1.2	1.1	1.7	1.9	1.8	1.7	1.8	2.2	2.3	2.0	1.8	1.2	0.8	1.0	1.0	1.4	2.3	0.6
22/07/2024	1.2	0.9	1.5	1.3	1.2	0.9	1.0	0.9	0.8	0.7	0.9	1.2	1.7	1.5	1.7	2.3	2.4	2.5	1.9	1.6	1.2	0.9	0.8	0.9	1.3	2.5	0.7
23/07/2024	1.3	0.7	0.8	1.0	1.1	1.4	0.7	0.5	0.7	1.3	1.4	1.5	1.8	1.8	2.3	2.5	2.3	2.1	2.0	1.3	0.9	0.5	0.8	0.6	1.3	2.5	0.5
24/07/2024	0.6	1.1	0.7	0.6	0.6	0.6	1.1	1.2	0.9	0.7	0.9	1.7	2.3	2.0	2.0	2.3	2.3	2.0	1.3	1.1	1.4	0.9	1.1	1.1	1.3	2.3	0.6
25/07/2024	0.8	1.1	1.0	0.6	0.7	1.2	1.0	0.8	0.8	1.2	1.1	1.2	1.2	1.8	2.5	2.5	2.4	2.1	1.7	1.0	1.5	0.7	1.1	0.8	1.3	2.5	0.6
26/07/2024	0.8	0.7	1.0	1.4	1.0	1.1	0.8	0.7	1.0	1.1	1.0	1.5	1.9	2.6	2.2	2.6	2.3	2.1	2.0	1.6	0.7	1.2	0.8	1.1	1.4	2.6	0.7
27/07/2024	0.8	1.2	1.2	0.9	1.0	1.0	0.9	0.9	1.0	0.8	1.0	1.2	1.3	1.8	2.1	2.0	2.3	2.2	2.2	1.5	1.4	1.0	1.1	0.7	1.3	2.3	0.7
28/07/2024	1.0	1.0	0.9	1.0	0.7	1.2	1.2	0.9	0.9	1.2	1.7	1.5	1.8	2.2	2.5	2.7	2.3	2.3	2.5	1.4	1.3	1.1	1.5	1.5	1.5	2.7	0.7
29/07/2024	1.2	1.3	1.5	1.2	1.2	0.5	1.0	0.8	0.8	1.1	1.3	1.9	1.5	1.8	2.2	1.9	2.2	1.9	1.8	1.7	1.5	1.3	0.9	0.8	1.4	2.2	0.5
30/07/2024	1.3	1.2	1.0	1.0	0.7	0.7	1.1	1.2	1.1	1.0	0.9	1.1	1.7	2.0	2.5	2.7	2.8	2.0	1.7	1.4	1.2	1.1	0.8	0.7	1.4	2.8	0.7
31/07/2024	0.7	0.9	0.8	0.8	0.8	1.1	1.0	1.2	1.3	1.3	1.3	1.8	1.6	2.3	3.0	2.8	2.2	2.2	1.7	1.4	1.2	1.6	0.7	1.1	1.4	3.0	0.7
Prom.	1.0	1.0	1.0	0.9	1.0	1.0	1.1	1.0	0.9	1.1	1.2	1.5	1.7	2.0	2.2	2.3	2.3	2.2	1.9	1.4	1.2	1.0	1.0	0.9			
Max.	1.3	1.3	1.5	1.4	1.3	1.4	1.8	1.6	1.3	1.4	1.9	2.0	2.3	2.6	3.0	2.8	2.8	2.5	2.5	1.8	1.7	1.6	1.7	1.5			
Min.	0.6	0.4	0.6	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.9	1.1	1.2	1.5	1.7	1.7	1.9	1.9	1.9	1.3	0.9	0.7	0.5	0.5	0.6		

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - RADIACIÓN SOLAR GLOBAL (kW/m<sup>2</sup>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: Equipo Sensor de Radiación Solar Global - CPM3	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: kW/m <sup>2</sup>
<b>Este</b>		<b>Límite de Detección</b>	: ---kW/m <sup>2</sup>
<b>Norte</b>			

DIA \ HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
18/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
19/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
20/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
21/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
22/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
23/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
24/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
25/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.8	0.8	0.7	0.7	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
26/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
27/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
28/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
29/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
30/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
31/07/2024	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
Prom.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.8	0.8	0.8	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.8	0.7	0.7	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\* ) y Otros (\*\*\*\* )

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - PRESIÓN ATMOSFÉRICA (mbar)



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Período	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: Sensor Presión Atmósferica - CS106	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)		Unidades	: mbar
Este	: 368367	Límite de Detección	: ---mbar
Norte	: 8010120		

DÍA	HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	943.5	943.4	943.4	943.3	943.2	943.3	943.6	944.1	944.5	945.1	945.1	945.1	944.7	944.0	943.5	943.3	943.3	943.7	944.7	945.6	946.1	946.3	946.5	946.5	946.6	944.4	946.6	943.2
18/07/2024	946.4	946.2	945.6	945.1	945.6	945.6	945.5	945.6	945.6	946.3	946.3	946.2	945.5	944.8	944.4	944.1	943.9	943.9	944.5	944.9	945.1	945.3	945.5	945.4	945.3	946.4	943.9	
19/07/2024	945.8	945.6	945.4	944.9	944.6	944.5	943.8	944.6	945.4	945.9	946.6	946.3	944.9	944.2	943.7	943.7	944.0	944.6	945.2	945.2	945.6	945.5	945.5	945.4	945.0	946.6	943.7	
20/07/2024	945.6	945.6	944.8	944.4	943.9	944.2	944.8	945.5	946.2	946.8	947.6	947.9	947.2	946.5	946.1	945.9	946.5	947.4	947.6	948.4	948.4	948.2	947.8	946.4	948.4	943.9		
21/07/2024	947.5	947.3	946.7	946.1	945.8	946.0	946.0	946.0	946.4	946.9	947.3	947.1	946.6	945.8	945.0	944.6	944.4	944.5	944.8	944.8	945.0	944.8	944.7	944.6	945.8	947.5	944.4	
22/07/2024	944.0	944.1	943.7	943.2	943.0	942.9	943.2	943.6	944.4	945.1	945.5	945.4	944.8	944.1	943.1	943.1	943.7	944.3	945.1	945.5	946.0	946.2	946.3	946.7	944.5	946.7	942.9	
23/07/2024	946.8	946.6	946.3	945.9	945.3	944.9	944.8	945.4	945.9	946.7	947.3	947.2	947.1	946.9	946.2	945.9	945.9	945.9	946.5	947.0	947.5	947.7	948.0	947.8	946.5	948.0	944.8	
24/07/2024	947.4	947.2	946.7	946.4	946.6	947.1	947.4	947.7	948.0	948.4	948.2	947.8	947.9	947.2	946.7	946.6	946.7	947.0	946.9	947.1	947.2	947.6	947.4	947.5	947.3	948.4	946.4	
25/07/2024	948.0	947.4	947.1	946.7	946.5	946.4	946.6	946.8	947.8	948.5	948.6	948.1	947.1	945.8	945.1	945.1	945.4	945.5	946.4	947.1	947.9	948.2	947.9	947.8	947.0	948.6	945.1	
26/07/2024	947.4	947.0	946.8	946.1	944.8	945.0	945.3	946.0	946.5	946.8	946.6	945.8	945.3	944.6	944.4	944.2	944.2	944.2	944.6	945.1	945.4	945.5	945.3	945.0	945.5	947.4	944.2	
27/07/2024	944.9	944.4	943.9	942.8	942.8	943.2	943.7	944.4	945.1	945.8	946.0	945.5	944.4	943.5	943.0	943.0	943.1	943.4	943.8	944.1	944.3	944.7	944.8	944.7	944.1	946.0	942.8	
28/07/2024	944.6	944.0	943.5	942.8	942.4	942.3	942.7	943.1	943.6	943.5	943.9	943.5	943.0	942.9	942.7	942.6	942.7	943.0	943.7	944.1	943.9	944.6	944.9	944.9	943.4	944.9	942.3	
29/07/2024	944.7	944.3	943.8	942.9	942.3	942.3	942.8	943.4	944.1	944.7	944.8	944.1	943.5	942.8	942.3	942.3	942.1	942.0	942.3	942.4	942.9	943.7	944.4	945.3	944.7	943.4	945.3	942.0
30/07/2024	944.3	943.8	943.7	942.9	942.6	943.2	944.1	945.1	945.5	945.3	945.2	944.2	943.2	942.2	941.7	941.4	942.3	942.7	942.7	943.2	943.3	943.4	943.1	943.1	943.4	945.5	941.4	
31/07/2024	942.8	942.5	942.1	941.2	941.0	941.5	942.5	942.6	943.4	945.0	944.4	943.9	943.7	943.4	943.5	943.9	943.9	944.2	944.5	944.8	945.1	945.4	945.9	945.7	943.6	945.9	941.0	
Prom.	945.6	945.3	944.9	944.3	944.0	944.2	944.4	944.9	945.5	946.1	946.2	945.9	945.2	944.6	944.1	944.0	944.1	944.4	944.9	945.3	945.6	945.9	945.9	945.8				
Max.	948.0	947.4	947.1	946.7	946.6	947.1	947.4	947.7	948.0	948.5	948.6	948.1	947.9	947.2	946.7	946.6	946.7	947.0	947.4	947.6	948.4	948.4	948.2	947.8				
Min.	942.8	942.5	942.1	941.2	941.0	941.5	942.5	942.6	943.4	943.5	943.9	943.5	943.0	942.2	941.7	941.4	942.0	942.3	942.4	942.9	943.3	943.4	943.1	943.1	943.6	945.9	941.0	

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - MATERIAL PARTICULADO RESPIRABLE (PM<sub>10</sub>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Período	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: THERMO SCIENTIFIC - TEOM 1405	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)		Unidades	: ug/m <sup>3</sup>
Este	: 368367	Límite de Detección	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DÍA/HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	40.0	39.8	28.4	29.6	29.9	22.3	23.8	25.8	29.8	56.5	50.2	51.7	47.1	85.2	0.0	0.0	39.0	46.3	30.4	25.2	28.8	26.7	23.3	27.3	33.6	85.2	0.0
18/07/2024	32.8	30.3	28.3	29.2	22.1	29.6	35.5	54.2	101.5	58.2	79.1	65.0	57.4	62.0	57.9	59.5	45.9	42.9	31.2	38.6	50.3	82.8	84.1	78.1	52.3	101.5	22.1
19/07/2024	30.7	25.7	9.7	59.7	33.1	3.0	31.9	34.1	43.5	62.3	76.0	86.4	69.2	56.8	48.9	32.5	48.5	41.3	23.1	68.4	55.7	21.4	51.5	47.5	44.2	86.4	3.0
20/07/2024	44.1	33.8	36.6	17.2	36.1	31.5	37.1	39.6	31.7	36.4	44.7	46.9	46.4	42.4	42.0	33.6	43.0	45.8	31.0	27.6	29.9	22.9	22.8	21.6	35.2	46.9	17.2
21/07/2024	25.0	16.8	20.8	16.4	15.7	17.2	15.1	19.8	24.2	28.3	57.5	23.3	19.5	22.0	22.4	21.0	28.2	29.4	23.3	20.6	26.7	24.7	22.1	23.5	57.5	15.1	
22/07/2024	29.5	24.2	27.2	24.1	21.0	22.6	23.1	29.2	37.9	37.8	22.6	27.9	43.3	40.0	55.9	46.1	41.3	28.6	29.4	32.3	27.3	26.6	31.5	36.2	31.9	55.9	21.0
23/07/2024	41.1	37.9	27.3	33.0	35.4	30.4	47.8	62.1	51.4	48.0	33.7	28.2	33.7	34.4	36.8	38.6	31.7	28.8	26.6	33.0	27.9	35.1	74.4	69.3	39.4	74.4	26.6
24/07/2024	39.6	0.0	21.7	23.3	31.6	20.1	23.3	19.8	28.0	49.4	76.0	80.3	48.3	65.4	43.8	84.0	30.9	39.5	36.2	56.9	41.5	40.1	70.1	50.0	42.5	84.0	0.0
25/07/2024	42.3	46.8	44.2	50.8	47.3	53.4	53.6	57.1	73.5	72.0	50.2	90.9	90.3	96.1	57.1	49.4	46.5	54.8	29.6	47.9	44.9	40.7	46.7	47.8	55.6	96.1	29.6
26/07/2024	85.1	40.0	18.1	48.8	18.8	17.2	28.7	24.0	46.5	56.3	48.3	108.3	39.8	47.0	35.3	56.2	39.2	31.3	48.7	27.6	40.3	51.5	40.4	45.1	43.4	108.3	17.2
27/07/2024	25.7	52.6	37.2	40.0	33.3	34.5	38.0	39.6	36.5	37.7	44.7	47.2	66.1	62.2	41.4	29.0	27.3	28.8	28.7	21.1	41.6	37.9	37.4	30.7	38.3	66.1	21.1
28/07/2024	33.4	34.7	39.2	27.1	29.7	5.4	21.4	16.8	18.8	26.6	36.3	33.5	64.4	35.5	20.2	30.9	24.8	31.0	21.5	24.9	18.1	16.7	18.5	58.8	28.7	64.4	5.4
29/07/2024	41.6	43.9	0.0	8.8	17.7	0.0	25.9	51.4	22.3	16.9	13.9	33.2	39.2	39.6	38.4	34.1	47.7	36.7	44.3	34.3	21.6	27.8	25.4	46.4	29.6	51.4	0.0
30/07/2024	18.8	19.0	30.4	39.2	26.6	31.0	27.4	29.4	36.1	66.8	40.6	45.3	51.3	57.9	46.7	31.7	38.9	32.0	38.4	29.2	77.0	39.3	0.0	47.8	37.5	77.0	0.0
31/07/2024	46.3	31.1	46.7	34.9	25.7	65.9	8.3	42.2	62.8	42.6	74.0	68.9	58.1	62.4	58.8	72.5	39.0	39.8	30.9	25.3	42.3	33.7	37.3	43.4	45.5	74.0	8.3
Prom.	38.4	31.8	27.7	32.2	28.3	25.6	29.4	36.3	43.0	46.4	49.8	55.8	51.6	53.9	40.4	41.3	38.1	37.1	31.6	34.2	38.3	35.2	39.0	44.9			
Max.	85.1	52.6	46.7	59.7	47.3	65.9	53.6	62.1	101.5	72.0	79.1	108.3	90.3	96.1	58.8	84.0	48.5	54.8	48.7	68.4	77.0	82.8	84.1	78.1			
Min.	18.8	0.0	0.0	8.8	15.7	0.0	8.3	16.8	18.8	16.9	13.9	23.3	19.5	22.0	0.0	0.0	24.8	28.6	21.5	20.6	18.1	16.7	0.0	21.6			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - MATERIAL PARTICULADO RESPIRABLE (PM<sub>2.5</sub>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Período	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: THERMO SCIENTIFIC - TEOM 1405	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)		Unidades	: ug/m <sup>3</sup>
Este	: 368367	Límite de Detección	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DIA HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	22.7	24.0	18.3	19.7	18.9	16.2	17.9	18.1	18.4	19.5	23.2	18.2	18.0	68.5	0.0	0.0	16.3	20.1	12.8	9.9	12.4	11.5	9.4	13.6	17.8	68.5	0.0
18/07/2024	15.6	13.7	13.7	14.6	11.4	15.4	22.4	29.5	38.0	25.3	32.5	27.4	26.0	22.8	22.9	28.3	24.8	18.9	11.8	18.3	23.7	27.5	35.1	30.8	22.9	38.0	11.4
19/07/2024	17.2	12.0	0.0	25.7	16.6	0.0	19.3	19.5	23.0	31.3	29.8	23.7	29.1	23.2	16.6	2.5	23.3	20.2	0.7	48.6	34.3	0.0	24.0	23.6	19.3	48.6	0.0
20/07/2024	24.7	20.4	23.6	5.2	21.5	19.4	23.6	24.4	18.8	19.4	23.2	26.9	24.4	23.4	22.4	18.6	23.0	26.4	15.3	14.5	17.5	10.5	12.0	12.3	19.6	26.9	5.2
21/07/2024	17.0	9.7	13.6	9.2	9.3	10.9	8.5	11.8	11.4	13.6	39.5	13.3	10.9	9.9	10.7	10.3	10.9	11.6	10.1	7.8	10.7	11.7	9.3	10.8	12.2	39.5	7.8
22/07/2024	15.4	13.4	13.9	15.2	15.9	16.6	13.4	17.3	21.3	18.7	10.5	8.9	15.2	16.6	19.8	16.6	15.4	9.0	11.2	13.9	12.0	10.6	13.3	17.0	14.6	21.3	8.9
23/07/2024	17.3	18.0	14.2	16.6	17.4	19.9	29.5	35.7	26.7	18.5	10.5	8.5	13.6	13.4	12.8	12.6	12.1	10.5	8.2	11.4	12.3	14.6	26.9	27.7	17.0	35.7	8.2
24/07/2024	14.5	0.0	16.9	16.6	22.0	13.8	17.6	16.9	16.9	25.3	33.7	29.7	18.1	42.9	25.1	62.0	1.7	14.4	9.5	34.4	19.2	23.8	25.0	21.0	21.7	62.0	0.0
25/07/2024	23.8	24.9	24.7	28.9	27.6	29.8	30.0	33.7	50.8	40.9	24.1	49.2	39.4	49.2	27.3	19.7	17.2	27.5	6.1	19.1	15.8	14.1	15.7	21.3	27.5	50.8	6.1
26/07/2024	54.7	8.0	0.0	31.0	12.4	6.2	18.9	6.7	21.2	21.3	7.4	60.9	0.0	19.2	13.4	31.2	16.5	8.3	28.5	12.3	24.0	32.3	17.8	16.9	19.5	60.9	0.0
27/07/2024	0.0	26.8	18.6	24.2	16.9	20.3	23.7	27.6	21.4	22.2	24.1	17.1	33.0	37.1	23.5	12.8	4.9	5.6	9.5	5.8	24.8	20.8	20.6	10.6	18.8	37.1	0.0
28/07/2024	16.1	22.0	30.3	16.4	18.1	0.0	13.8	9.9	11.4	13.2	24.4	19.7	50.8	19.1	0.0	6.0	6.4	16.3	8.7	15.0	4.9	4.5	6.7	55.5	16.2	55.5	0.0
29/07/2024	39.4	44.0	0.0	6.2	14.2	0.0	7.1	23.0	7.9	2.6	3.8	16.5	20.9	20.5	16.8	10.2	20.9	8.2	22.6	14.8	6.5	13.0	14.6	36.1	15.4	44.0	0.0
30/07/2024	11.9	10.5	19.1	31.3	18.5	21.0	17.2	17.3	18.1	41.0	17.3	4.0	10.9	23.3	18.2	0.0	8.1	12.1	18.5	6.8	61.1	21.9	0.0	16.1	17.7	61.1	0.0
31/07/2024	1.7	0.0	22.2	9.5	1.4	55.5	1.8	23.5	39.0	24.4	28.9	23.8	25.0	26.3	20.6	14.1	12.9	16.7	8.9	4.9	19.3	16.4	18.6	22.4	18.2	55.5	0.0
Prom.	19.5	16.5	15.3	18.0	16.1	16.3	17.6	21.0	22.9	22.5	22.2	23.2	22.4	27.7	16.7	16.3	14.3	15.1	12.2	15.8	19.9	15.6	16.6	22.4			
Max.	54.7	44.0	30.3	31.3	27.6	55.5	30.0	35.7	50.8	41.0	39.5	60.9	50.8	68.5	27.3	62.0	24.8	27.5	28.5	48.6	61.1	32.3	35.1	55.5			
Min.	0.0	0.0	0.0	5.2	1.4	0.0	1.8	6.7	7.9	2.6	3.8	4.0	0.0	9.9	0.0	0.0	1.7	5.6	0.7	4.9	4.9	0.0	0.0	10.6			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - DIÓXIDO DE NITRÓGENO (NO<sub>2</sub>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Periodo	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: THERMO SCIENTIFIC - ANALIZADOR 42i	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)		Unidades	: ug/m <sup>3</sup>
Este	: 368367	Límite de Detección	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DÍA HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	30.1	19.9	9.6	10.4	12.1	13.5	15.8	20.2	26.1	33.5	25.1	17.3	16.4	15.7	15.5	16.3	21.3	32.7	32.5	36.5	35.0	29.6	24.1	24.2	22.2	36.5	9.6
18/07/2024	23.2	20.0	15.3	13.7	10.6	13.2	23.1	40.0	60.6	37.6	50.3	30.5	28.0	34.4	25.0	19.3	21.5	29.9	29.3	47.6	72.2	66.1	72.0	67.7	35.5	72.2	10.6
19/07/2024	23.1	28.4	29.2	40.9	29.5	18.1	42.3	50.0	47.2	61.3	46.2	32.7	41.9	29.7	26.9	23.5	24.8	31.0	35.3	45.0	47.3	46.5	48.7	41.9	37.1	61.3	18.1
20/07/2024	27.5	15.8	14.2	12.9	22.2	20.3	23.8	21.6	19.1	25.5	33.7	26.1	23.5	20.9	17.5	18.3	30.1	36.7	41.7	43.8	38.2	38.1	25.9	24.4	25.9	43.8	12.9
21/07/2024	19.6	16.3	15.2	13.4	11.1	15.0	15.1	22.7	18.7	26.6	19.2	15.1	11.2	10.4	10.9	11.1	16.5	22.5	22.4	31.5	21.9	28.1	30.1	24.0	18.7	31.5	10.4
22/07/2024	22.8	16.7	14.7	16.4	18.0	19.3	25.4	30.1	35.2	35.0	21.8	20.1	22.4	20.8	30.7	21.8	25.8	28.7	37.8	36.4	32.7	30.6	35.5	34.6	26.4	37.8	14.7
23/07/2024	33.9	30.0	18.4	20.0	27.8	32.6	37.8	46.1	47.3	36.5	21.2	19.6	17.0	16.3	20.2	18.8	19.5	25.2	28.3	31.4	39.1	56.1	51.4	53.7	31.2	56.1	16.3
24/07/2024	52.8	30.9	25.4	33.5	33.1	28.9	34.2	33.7	36.8	53.6	75.3	63.3	25.3	19.7	19.5	19.7	24.7	27.4	47.6	57.0	52.3	41.2	60.0	58.7	39.8	75.3	19.5
25/07/2024	42.5	49.8	47.1	42.2	41.5	45.1	46.4	46.3	44.8	42.6	34.9	47.3	55.7	39.4	24.3	26.1	25.2	29.1	34.0	42.2	51.4	48.1	59.4	57.3	42.6	59.4	24.3
26/07/2024	55.9	45.7	24.4	27.9	45.6	29.6	21.6	32.9	36.7	42.7	45.4	53.7	32.6	22.7	18.8	24.0	21.6	27.1	35.9	28.6	35.2	45.5	43.3	38.5	34.8	55.9	18.8
27/07/2024	36.9	33.4	21.1	22.4	18.9	20.9	29.0	23.6	30.0	26.6	29.8	31.1	40.9	26.5	17.5	16.6	21.7	30.3	29.1	29.8	42.7	39.1	38.1	37.8	28.9	42.7	16.6
28/07/2024	32.5	25.8	20.0	18.6	22.1	20.8	19.2	15.7	15.9	15.1	19.7	17.7	15.8	14.3	12.8	13.1	13.7	17.8	21.4	22.2	30.7	25.9	20.9	16.8	19.5	32.5	12.8
29/07/2024	11.4	9.6	6.8	11.9	17.4	31.1	37.3	38.5	30.6	29.7	13.6	15.9	16.2	18.1	18.6	16.4	23.1	30.3	33.8	41.2	31.9	29.1	15.7	22.5	22.9	41.2	6.8
30/07/2024	20.2	30.5	28.1	27.3	26.5	31.4	24.0	33.1	31.6	33.0	35.3	48.6	54.6	34.0	23.1	21.1	21.9	27.6	34.0	35.7	42.0	37.8	40.4	41.3	32.6	54.6	20.2
31/07/2024	44.3	36.5	34.9	30.5	36.9	38.1	17.8	39.8	47.3	34.7	39.6	45.5	31.1	29.6	22.4	16.8	20.4	26.0	35.0	31.8	48.3	31.0	32.6	37.4	33.7	48.3	16.8
Prom.	31.8	27.3	21.6	22.8	24.9	25.2	27.5	33.0	35.2	35.6	34.1	32.3	28.8	23.5	20.2	18.9	22.1	28.2	33.2	37.4	41.4	39.5	39.9	38.7			
Max.	55.9	49.8	47.1	42.2	45.6	45.1	46.4	50.0	60.6	61.3	75.3	63.3	55.7	39.4	30.7	26.1	30.1	36.7	47.6	57.0	72.2	66.1	72.0	67.7			
Min.	11.4	9.6	6.8	10.4	10.6	13.2	15.1	15.7	15.9	15.1	13.6	15.1	11.2	10.4	10.9	11.1	13.7	17.8	21.4	22.2	21.9	25.9	15.7	16.8			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - DIOXIDO DE AZUFRE (SO<sub>2</sub>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Período	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: THERMO SCIENTIFIC - ANALIZADOR 450i	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)		Unidades	: ug/m <sup>3</sup>
Este	: 368367	Límite de Detección	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DIA/HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	4.1	4.3	3.9	4.2	3.9	4.1	3.9	4.3	4.6	5.4	6.7	6.4	6.0	5.3	4.8	5.3	4.7	4.8	4.1	3.8	4.7	4.6	4.1	4.0	4.7	6.7	3.8
18/07/2024	3.7	4.2	3.5	4.2	3.9	4.1	3.5	5.4	5.5	5.5	4.7	6.2	12.5	9.4	6.5	5.6	4.9	4.9	5.1	4.8	5.8	7.1	7.3	7.5	5.7	12.5	3.5
19/07/2024	5.5	4.2	4.2	5.2	5.8	4.5	4.3	5.1	5.1	5.9	5.6	5.2	5.1	5.5	5.7	6.4	5.8	5.0	4.8	4.8	4.4	4.6	4.9	4.5	5.1	6.4	4.2
20/07/2024	4.4	4.4	4.1	3.8	4.2	4.6	4.3	4.1	4.3	3.7	4.8	4.6	4.4	6.7	5.9	5.6	5.6	5.6	4.4	4.4	4.6	3.7	4.3	3.9	4.6	6.7	3.7
21/07/2024	4.1	3.7	3.5	3.8	4.0	3.5	4.0	4.1	4.0	3.5	4.2	3.9	4.3	4.4	4.7	4.6	4.6	4.4	4.8	4.0	5.0	3.2	3.9	4.0	4.1	5.0	3.2
22/07/2024	4.1	3.0	3.8	3.7	4.2	3.4	3.6	3.3	3.6	4.5	4.3	4.0	4.1	5.1	6.0	4.5	5.3	4.4	2.9	4.0	3.5	3.7	4.4	4.5	4.1	6.0	2.9
23/07/2024	4.3	3.6	4.2	4.3	4.6	4.6	5.8	6.3	6.5	6.2	4.4	5.1	6.2	6.0	6.5	5.9	5.4	4.9	4.6	3.9	3.9	4.4	4.9	6.6	5.1	6.6	3.6
24/07/2024	6.1	4.9	4.3	4.3	4.6	5.0	3.9	4.4	5.6	5.8	6.6	6.0	6.0	4.7	5.6	6.5	5.5	5.0	4.5	4.5	4.8	4.2	4.8	6.0	5.2	6.6	3.9
25/07/2024	4.7	4.5	4.5	4.7	4.7	4.7	5.9	6.3	11.5	8.3	6.3	6.0	6.4	7.0	9.4	5.7	5.6	4.4	4.8	4.8	5.3	4.9	4.8	4.6	5.8	11.5	4.4
26/07/2024	4.6	4.2	3.8	4.6	4.4	5.2	4.4	3.8	4.5	4.6	4.5	6.4	6.2	8.5	8.2	6.8	5.6	5.2	4.3	4.0	3.7	4.4	4.2	5.1	5.0	8.5	3.7
27/07/2024	4.5	4.4	4.1	4.7	4.4	3.6	3.9	3.8	3.9	4.1	4.5	5.1	4.7	5.4	4.9	4.1	4.8	4.8	4.6	4.1	4.6	4.0	4.0	4.8	4.4	5.4	3.6
28/07/2024	3.7	3.9	3.7	3.9	3.3	4.0	3.6	3.5	4.0	4.6	4.6	4.3	3.9	4.7	4.7	5.1	4.9	5.4	4.0	4.0	4.3	3.8	3.8	4.3	4.2	5.4	3.3
29/07/2024	4.2	3.8	4.2	4.4	4.2	4.8	6.0	5.9	4.8	4.7	4.4	5.2	8.1	9.8	9.4	9.5	7.3	5.9	6.2	4.8	4.3	4.6	4.1	4.1	5.6	9.8	3.8
30/07/2024	3.6	4.5	4.0	4.6	5.1	4.8	4.1	4.3	4.1	5.2	4.8	5.5	5.9	5.6	7.9	7.3	5.7	4.4	3.9	4.1	4.2	3.9	4.1	4.3	4.8	7.9	3.6
31/07/2024	5.2	6.0	5.3	5.6	5.8	4.4	4.9	5.3	5.5	4.8	5.3	5.0	6.4	8.2	9.3	5.6	4.7	4.6	4.9	4.2	4.2	4.3	4.8	4.5	5.4	9.3	4.2
Prom.	4.4	4.3	4.1	4.4	4.5	4.4	4.4	4.7	5.2	5.1	5.0	5.3	6.0	6.4	6.6	5.9	5.4	4.9	4.5	4.3	4.5	4.4	4.6	4.8			
Max.	6.1	6.0	5.3	5.6	5.8	5.2	6.0	6.3	11.5	8.3	6.7	6.4	12.5	9.8	9.4	9.5	7.3	5.9	6.2	4.8	5.8	7.1	7.3	7.5			
Min.	3.6	3.0	3.5	3.7	3.3	3.4	3.5	3.3	3.6	3.5	4.2	3.9	3.9	4.4	4.7	4.1	4.6	4.4	2.9	3.8	3.5	3.2	3.8	3.9			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - SULFURO DE HIDRÓGENO (H<sub>2</sub>S)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

Ciudad	: Tacna	Período	: 17 al 31 de julio
Nombre/Número de la Estación	: EMCA-02	Año	: 2024
Ubicación	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	Responsable	: GORE - TACNA
Equipo de Muestreo	: THERMO SCIENTIFIC - ANALIZADOR 450i	Tipo de Data	: Horario
Coordenadas UTM (WGS 84)			Unidades
Este	: 368367	Unidades	: ug/m <sup>3</sup>
Norte	: 8010120	Límite de Detección	: --- ug/m <sup>3</sup>

DÍA HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	3.0	2.4	3.6	3.6	3.4	3.4	3.5	3.3	2.2	2.2	1.9	1.0	0.8	0.8	1.1	1.9	2.6	4.3	4.1	3.8	1.8	3.0	5.4	2.6	2.7	5.4	0.8
18/07/2024	2.1	1.8	2.1	1.7	1.5	1.3	1.6	1.6	2.4	1.8	2.0	3.1	6.0	3.1	2.6	3.1	2.7	4.9	7.2	7.7	6.2	6.4	6.3	5.4	3.5	7.7	1.3
19/07/2024	2.1	2.2	1.6	2.3	1.3	1.2	2.1	1.6	2.0	1.7	2.3	1.5	1.5	0.9	1.5	3.5	4.8	5.2	3.2	4.6	4.1	3.0	3.7	3.7	2.6	5.2	0.9
20/07/2024	4.2	5.9	5.7	5.2	3.5	3.4	2.5	3.2	3.1	3.5	4.6	4.9	4.7	4.3	3.5	3.2	2.8	3.2	6.5	2.2	1.2	0.9	0.6	0.9	3.5	6.5	0.6
21/07/2024	1.0	2.2	2.9	3.2	2.6	1.9	1.5	1.6	1.3	1.4	1.6	2.2	2.1	1.4	1.5	1.5	1.4	3.8	3.6	4.8	8.1	6.4	5.8	3.9	2.8	8.1	1.0
22/07/2024	3.0	3.8	2.4	3.3	3.0	2.7	2.8	2.8	2.9	2.0	1.1	0.9	0.8	0.7	0.6	1.3	2.8	4.0	5.7	2.9	1.5	1.3	1.3	2.1	2.3	5.7	0.6
23/07/2024	2.4	2.3	2.5	3.7	2.9	2.9	3.0	3.2	3.0	2.1	1.3	0.9	1.1	2.0	2.0	2.2	1.2	0.9	1.4	4.2	2.7	1.9	2.6	2.5	2.3	4.2	0.9
24/07/2024	2.2	3.7	4.1	4.2	3.3	3.3	3.9	3.8	3.0	3.5	3.4	3.0	1.6	1.6	2.3	5.1	3.1	1.2	4.8	6.7	5.5	3.6	4.4	4.0	3.6	6.7	1.2
25/07/2024	3.2	4.2	4.4	3.5	3.5	3.9	3.4	3.2	3.7	4.8	4.9	4.8	4.6	5.5	5.1	4.6	4.9	6.0	8.2	6.6	4.3	3.8	5.3	5.1	4.7	8.2	3.2
26/07/2024	4.7	4.7	4.6	4.3	4.4	5.8	5.9	5.1	4.1	4.3	5.1	3.4	3.6	6.2	3.8	3.7	5.9	5.3	3.7	2.4	3.9	3.3	4.7	5.8	4.5	6.2	2.4
27/07/2024	4.2	3.9	3.6	3.1	3.9	4.3	4.1	4.7	6.3	6.5	5.8	4.9	4.7	2.6	1.6	1.8	3.3	5.1	4.9	6.4	5.0	4.6	4.5	3.8	4.3	6.5	1.6
28/07/2024	4.7	4.2	3.6	3.8	4.0	2.1	2.3	1.2	1.4	0.8	0.6	1.1	0.9	0.8	2.5	4.1	4.0	3.9	4.5	5.3	4.9	2.9	2.1	1.2	2.8	5.3	0.6
29/07/2024	1.3	1.1	0.6	1.3	2.0	2.4	1.8	2.3	1.6	0.9	1.5	3.8	7.2	6.1	4.6	4.4	4.1	5.8	7.7	5.6	5.4	5.5	1.3	2.7	3.4	7.7	0.6
30/07/2024	3.6	4.3	3.8	3.5	2.5	2.2	3.0	2.2	2.1	2.2	1.6	1.9	1.9	1.5	5.1	4.6	5.1	2.2	1.4	3.2	2.9	1.9	2.9	2.8	2.9	5.1	1.4
31/07/2024	2.0	2.8	3.0	1.7	2.3	3.2	1.0	2.8	3.1	1.7	2.0	1.8	1.6	4.3	6.0	3.4	1.8	3.7	3.8	2.8	4.0	2.4	1.9	2.4	2.7	6.0	1.0
Prom.	2.9	3.3	3.2	3.2	3.0	2.9	2.8	2.8	2.6	2.7	2.6	2.9	2.8	2.9	3.2	3.4	4.0	4.7	4.6	4.1	3.4	3.5	3.3				
Max.	4.7	5.9	5.7	5.2	4.4	5.8	5.9	5.1	6.3	6.5	5.8	4.9	7.2	6.2	6.0	5.1	5.9	6.0	8.2	7.7	8.1	6.4	6.3	5.8			
Min.	1.0	1.1	0.6	1.3	1.3	1.2	1.0	1.2	1.3	0.8	0.6	0.9	0.8	0.7	0.6	1.3	1.2	0.9	1.4	2.2	1.2	0.9	0.6	0.9			

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

**TABLA : HOJA DE DATOS - MONOXIDO DE CARBONO (CO PROMEDIO DE UNA HORA)**



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: THERMO SCIENTIFIC - ANALIZADOR 48i	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: ug/m <sup>3</sup>
Este	: 368367	<b>Límite de Detección</b>	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DÍA	HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	408.4	355.2	290.8	296.5	309.6	322.2	329.4	352.9	415.8	454.8	407.3	325.1	304.6	283.7	271.4	267.3	288.3	340.9	365.8	372.0	364.7	343.3	317.1	326.9	338.1	454.8	267.3	
18/07/2024	331.9	319.4	289.5	292.3	265.9	285.6	356.2	553.2	880.7	495.9	571.8	382.7	352.3	388.2	292.4	261.7	271.2	320.4	338.7	438.5	666.0	766.9	1105.3	1095.8	471.8	1105.3	261.7	
19/07/2024	325.0	345.8	362.9	609.8	385.0	309.7	517.3	543.2	594.1	801.8	628.9	438.8	499.3	377.0	354.8	310.0	332.1	371.3	387.0	460.5	464.8	459.5	503.8	462.9	451.9	801.8	309.7	
20/07/2024	400.9	334.6	329.7	315.6	373.5	355.2	380.5	368.0	358.1	410.3	489.6	430.7	417.0	369.1	342.3	346.9	389.6	417.7	460.2	488.6	449.6	434.9	391.8	385.8	393.3	489.6	315.6	
21/07/2024	367.1	342.8	342.5	327.0	312.4	321.5	329.7	354.7	348.2	394.3	391.8	355.3	320.6	303.3	306.3	285.0	304.5	344.3	357.0	422.2	374.5	416.8	442.8	403.1	352.8	442.8	285.0	
22/07/2024	406.1	376.6	371.9	399.3	413.9	419.1	434.0	475.3	495.7	505.6	416.3	425.7	439.9	417.2	465.1	390.9	415.5	430.6	497.0	490.6	472.3	448.0	482.4	492.4	440.9	505.6	371.9	
23/07/2024	497.6	484.5	434.4	451.6	516.7	586.8	768.5	989.0	784.8	590.6	462.4	444.2	430.0	408.3	427.8	400.6	404.9	427.3	460.7	475.6	502.6	630.9	675.9	745.9	541.7	989.0	400.6	
24/07/2024	738.8	539.8	498.0	564.0	557.0	518.4	574.5	591.6	740.4	905.2	1000.6	822.1	482.6	443.3	446.4	452.6	463.7	486.5	596.8	643.4	649.6	557.3	672.1	734.1	611.6	1000.6	443.3	
25/07/2024	617.4	698.7	703.3	647.2	655.0	739.3	802.8	838.7	810.1	796.4	687.3	757.6	780.4	649.9	533.0	505.4	502.2	523.4	552.6	592.5	713.2	655.6	721.3	703.1	674.4	838.7	502.2	
26/07/2024	743.0	696.6	569.2	601.4	750.3	616.7	548.4	608.2	695.7	800.9	794.2	812.1	625.4	560.0	525.5	542.1	527.5	545.3	605.8	578.4	606.8	658.5	677.8	654.9	639.4	812.1	525.5	
27/07/2024	661.2	649.3	583.0	605.7	572.5	593.0	633.7	604.3	639.8	639.3	667.7	730.2	797.9	643.0	564.2	534.9	559.3	603.2	612.4	630.5	711.9	663.7	674.8	689.7	636.1	797.9	534.9	
28/07/2024	673.1	647.9	619.3	609.8	634.1	644.4	615.0	588.5	600.6	617.7	640.9	614.0	602.3	573.2	570.6	564.0	567.2	579.5	614.8	617.9	677.4	646.8	655.5	663.0	618.2	677.4	564.0	
29/07/2024	608.6	602.4	607.0	625.6	674.1	816.9	862.6	868.3	770.4	765.4	643.1	648.3	662.6	664.8	650.0	619.7	669.4	705.4	730.8	786.0	737.2	712.5	653.7	701.4	699.4	868.3	602.4	
30/07/2024	696.1	766.9	760.6	774.6	776.6	799.1	742.8	787.8	812.8	884.2	885.5	955.2	960.2	770.0	690.2	684.5	694.9	722.7	766.6	791.0	825.0	810.2	814.7	871.9	793.5	960.2	684.5	
31/07/2024	955.6	881.9	892.6	859.1	921.7	818.2	722.6	934.5	1029.5	855.6	925.5	961.6	825.0	801.0	730.8	703.7	735.2	758.8	810.1	793.1	902.5	812.6	812.9	868.7	846.4	1029.5	703.7	
Prom.	562.0	536.1	510.3	532.0	541.2	543.1	574.5	630.5	665.1	661.2	640.9	606.9	566.7	510.1	478.1	457.9	475.0	505.2	543.8	572.1	607.9	601.2	640.1	653.3				
Max.	955.6	881.9	892.6	859.1	921.7	818.2	862.6	989.0	1029.5	905.2	1000.6	961.6	960.2	801.0	730.8	703.7	735.2	758.8	810.1	793.1	902.5	812.6	1105.3	1095.8				
Min.	325.0	319.4	289.5	292.3	265.9	285.6	329.4	352.9	348.2	394.3	391.8	325.1	304.6	283.7	271.4	261.7	271.2	320.4	338.7	372.0	364.7	343.3	317.1	326.9				

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

**TABLA : HOJA DE DATOS - MONOXIDO DE CARBONO (CO MEDIA MOVIL DE 8 HORAS)**



**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: THERMO SCIENTIFIC - ANALIZADOR 48i	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: ug/m <sup>3</sup>
Este	: 368367	<b>Límite de Detección</b>	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DIA	HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	****	****	****	****	330.4	317.3	333.1	334.0	346.5	361.1	364.6	364.0	359.2	352.0	341.3	325.3	311.1	305.9	311.8	319.3	326.7	332.4	339.9	335.6	364.6	305.9		
18/07/2024	345.3	342.6	333.1	323.1	310.8	303.6	308.5	336.7	405.4	427.4	462.7	474.0	484.8	497.6	489.6	453.2	377.0	355.1	325.9	332.9	372.1	419.5	521.1	625.4	401.1	625.4	303.6	
19/07/2024	632.1	635.3	638.3	659.7	624.6	567.4	493.9	424.8	458.5	515.5	548.7	527.4	541.6	550.1	529.7	500.6	467.8	414.0	383.8	386.5	382.2	392.5	411.1	430.2	504.8	659.7	382.2	
20/07/2024	438.8	434.2	427.1	409.0	397.6	384.5	369.1	357.3	351.9	361.4	381.4	395.7	401.2	402.9	398.1	395.5	399.4	400.4	396.7	403.9	408.0	416.2	422.4	427.3	399.2	438.8	351.9	
21/07/2024	424.5	415.1	400.4	380.2	363.0	348.8	341.1	337.2	334.8	341.3	347.4	351.0	352.0	349.7	346.8	338.1	332.6	326.4	322.1	330.4	337.1	351.3	368.4	383.1	355.1	424.5	322.1	
22/07/2024	395.8	399.9	401.7	398.9	403.8	404.1	403.0	412.0	423.2	439.3	444.9	448.2	451.4	451.2	455.1	444.5	434.5	425.1	435.2	443.3	447.4	451.2	453.4	466.1	430.6	466.1	395.8	
23/07/2024	476.4	483.1	475.3	470.4	476.0	493.3	529.1	591.1	627.0	640.3	643.8	642.9	632.0	609.7	567.1	493.6	446.1	425.7	425.5	429.4	438.5	466.3	497.3	540.5	521.7	643.8	425.5	
24/07/2024	582.2	596.3	600.9	612.0	618.8	604.7	592.1	572.8	573.0	618.6	681.5	713.7	704.4	695.0	679.0	661.7	627.1	574.7	524.2	501.9	522.8	537.0	565.2	600.4	606.7	713.7	501.9	
25/07/2024	619.6	646.2	659.5	660.0	660.6	683.4	699.7	712.8	736.9	749.1	747.1	760.9	776.6	765.4	731.7	690.0	651.5	617.4	600.6	579.9	571.5	572.2	595.8	620.5	671.2	776.6	571.5	
26/07/2024	650.6	672.2	674.3	675.4	680.0	675.2	653.6	641.7	635.8	648.9	677.0	703.3	687.7	680.6	677.8	669.5	648.5	616.5	593.0	563.8	561.4	573.7	592.8	606.9	644.2	703.3	561.4	
27/07/2024	623.6	636.6	633.7	637.2	632.9	624.7	619.2	612.8	610.2	608.9	619.5	635.1	663.2	669.5	660.8	652.1	642.1	637.6	630.6	618.2	607.4	610.0	623.8	643.2	631.4	669.5	607.4	
28/07/2024	657.4	663.0	663.9	661.3	651.6	649.1	641.7	629.0	620.0	616.2	618.9	619.4	615.4	606.5	601.0	597.9	593.7	589.0	585.7	586.2	595.6	604.8	615.4	627.8	621.3	663.9	585.7	
29/07/2024	632.9	635.8	634.8	635.8	635.4	656.6	682.5	708.2	728.4	748.8	753.3	756.1	754.7	735.7	709.1	678.0	665.4	657.9	668.9	686.1	695.4	701.4	701.8	712.1	690.6	756.1	632.9	
30/07/2024	715.4	723.1	726.8	725.4	730.3	741.1	752.3	763.1	777.7	792.3	807.9	830.5	853.5	849.8	843.2	830.3	815.6	795.4	780.5	760.0	743.1	748.1	763.7	787.1	777.3	853.5	715.4	
31/07/2024	819.7	839.6	855.4	863.9	875.9	876.9	865.4	873.3	882.5	879.2	883.3	896.2	884.1	881.9	882.9	854.1	817.3	805.2	790.8	769.7	779.4	780.8	791.1	811.7	844.2	896.2	769.7	
Prom.	572.5	580.2	580.4	579.4	575.8	556.3	551.2	553.7	566.6	582.2	598.6	607.9	611.1	607.0	594.9	573.4	549.6	530.1	518.0	513.6	518.8	530.1	550.4	574.8				
Max.	819.7	839.6	855.4	863.9	875.9	876.9	865.4	873.3	882.5	879.2	883.3	896.2	884.1	881.9	882.9	854.1	817.3	805.2	790.8	769.7	779.4	780.8	791.1	811.7				
Min.	345.3	342.6	333.1	323.1	310.8	303.6	308.5	333.1	334.0	341.3	347.4	351.0	352.0	349.7	346.8	338.1	325.3	311.1	305.9	311.8	319.3	326.7	332.4	339.9				

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

TABLA : HOJA DE DATOS - OZONO TROPOSFÉRICO (O<sub>3</sub>)

**GRRNyGA**  
GERENCIA REGIONAL  
DE RECURSOS NATURALES  
Y GESTIÓN AMBIENTAL

<b>Ciudad</b>	: Tacna	<b>Periodo</b>	: 17 al 31 de julio
<b>Nombre/Número de la Estación</b>	: EMCA-02	<b>Año</b>	: 2024
<b>Ubicación</b>	: IESTP - FRANCISCO DE PAULA GONZALES VIGIL	<b>Responsable</b>	: GORE - TACNA
<b>Equipo de Muestreo</b>	: THERMO SCIENTIFIC - ANALIZADOR 48i	<b>Tipo de Data</b>	: Horario
<b>Coordenadas UTM (WGS 84)</b>		<b>Unidades</b>	: ug/m <sup>3</sup>
Este	: 368367	<b>Límite de Detección</b>	: --- ug/m <sup>3</sup>
Norte	: 8010120		

DIA	HORA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Prom.	Max.	Min.
17/07/2024	****	****	****	****	28.6	29.7	27.2	27.2	26.0	25.2	25.7	27.0	28.7	30.5	33.3	36.6	38.9	39.3	38.2	36.8	35.6	34.8	33.0	31.7	39.3	25.2		
18/07/2024	31.1	30.6	30.9	31.5	32.8	32.9	30.6	27.8	25.0	23.8	22.9	23.9	25.5	28.6	33.2	38.1	42.2	43.4	43.7	40.4	34.3	27.6	21.3	16.0	30.8	43.7	16.0	
19/07/2024	13.7	12.0	10.6	9.2	11.0	14.3	14.7	14.9	13.2	12.3	12.5	15.8	17.8	19.7	24.7	29.5	33.7	36.0	36.2	34.3	31.7	27.4	23.0	19.0	20.3	36.2	9.2	
20/07/2024	16.1	15.8	16.5	18.2	19.0	20.4	21.4	22.4	22.7	21.9	20.8	20.7	22.9	25.4	28.5	31.9	34.5	36.7	36.9	35.3	33.0	30.0	27.6	24.7	25.1	36.9	15.8	
21/07/2024	22.4	21.1	22.3	24.3	26.3	28.0	29.0	29.5	30.0	29.7	29.9	30.4	31.3	33.0	35.2	38.1	40.4	41.9	42.0	40.6	38.9	36.2	32.7	29.4	31.8	42.0	21.1	
22/07/2024	26.4	25.2	24.6	24.5	23.4	23.0	22.4	21.0	19.6	18.2	18.5	20.1	22.6	26.1	30.5	35.0	39.0	40.9	39.7	37.8	35.4	31.9	27.6	23.2	27.4	40.9	18.2	
23/07/2024	19.1	17.0	17.3	17.2	16.2	14.3	12.7	11.4	11.3	12.5	14.0	16.8	20.8	26.1	32.2	37.4	40.9	42.0	40.9	38.3	34.7	29.2	23.2	17.8	23.5	42.0	11.3	
24/07/2024	13.2	10.9	9.7	8.2	7.4	8.3	8.7	9.1	10.1	10.0	10.4	13.0	17.1	21.3	27.3	33.1	37.3	40.1	40.1	37.6	33.9	30.2	23.9	17.8	19.9	40.1	7.4	
25/07/2024	13.5	9.6	7.9	7.5	6.7	5.1	5.0	5.1	5.1	6.2	8.3	11.1	15.0	20.3	26.5	32.5	36.7	39.2	39.4	38.1	35.0	30.9	24.9	19.0	18.7	39.4	5.0	
26/07/2024	14.0	10.7	10.2	10.0	8.8	9.0	11.0	12.0	13.0	14.2	14.6	16.7	21.7	25.8	30.0	34.6	38.8	41.0	41.2	40.6	37.8	33.6	28.4	23.9	22.6	41.2	8.8	
27/07/2024	20.0	17.6	17.3	16.4	16.7	17.5	18.0	18.7	19.2	19.9	19.7	20.5	21.9	25.0	28.4	31.3	34.3	36.0	37.0	36.9	34.8	31.4	28.1	24.7	24.6	37.0	16.4	
28/07/2024	21.7	20.0	19.4	19.2	19.7	20.0	20.8	22.2	23.4	24.7	25.7	28.0	31.2	34.2	37.2	39.3	40.8	41.2	40.8	39.0	35.8	33.2	30.2	27.9	29.0	41.2	19.2	
29/07/2024	26.3	25.4	25.6	25.4	24.5	22.2	19.9	17.3	15.7	14.9	15.1	16.3	19.0	23.7	28.7	34.2	38.0	39.7	38.7	36.6	34.4	31.5	29.4	26.1	26.2	39.7	14.9	
30/07/2024	22.9	20.1	18.6	17.7	16.5	15.0	13.1	11.6	10.8	11.2	12.8	15.4	19.2	24.5	29.5	34.4	37.8	39.7	39.6	38.2	35.3	31.3	26.5	21.6	23.5	39.7	10.8	
31/07/2024	17.0	14.2	12.4	11.1	9.9	8.9	10.1	10.0	10.8	11.9	13.8	15.9	19.9	24.6	27.5	31.7	35.1	36.7	36.3	35.4	31.8	28.0	24.1	20.4	20.7	36.7	8.9	
Prom.	19.8	17.9	17.4	17.2	17.1	17.8	17.8	17.3	17.1	17.2	17.6	19.4	22.2	25.8	30.0	34.3	37.7	39.6	39.5	37.8	34.9	31.2	27.0	23.0				
Max.	31.1	30.6	30.9	31.5	32.8	32.9	30.6	29.5	30.0	29.7	29.9	30.4	31.3	34.2	37.2	39.3	42.2	43.4	43.7	40.6	38.9	36.2	34.8	33.0				
Min.	13.2	9.6	7.9	7.5	6.7	5.1	5.0	5.1	5.1	6.2	8.3	11.1	15.0	19.7	24.7	29.5	33.7	36.0	36.2	34.3	31.7	27.4	21.3	16.0				

Observaciones : Corte de Luz (\*), Mantenimiento (\*\*), Calibracion (\*\*\*) y Otros (\*\*\*\*)

Reporta: SGGA - GRRNyGA

Fecha	PM2.5 (ug/m3)	PM10 (ug/m3)	Pres (mbar)	Precip (mm)	Temp (°C)	HR (%)	wd(°)	ws (m/s)	rad (kw/m2)	no (ppb)	no2 (ppb)	so2 (ppb)	h2s (ppb)	co (ppb)	o3 (ppb)
2024/07/17 00:00:00	22.6683	39.9976	943.4762	0	10.42	83.215	322	0.925	0	0.8637275	16.02625	1.552817	2.155963	356.6558	9.394883
2024/07/17 01:00:00	24.0395	39.7849	943.3965	0	10.83	83.856	286	0.874	0	0.84957	10.59808	1.632522	1.755757	310.1925	13.79885
2024/07/17 02:00:00	18.3439	28.4162	943.3743	0	10.42	85.712	241	1.008	0	0.7187683	5.09025	1.507835	2.6112	253.935	18.13816
2024/07/17 03:00:00	19.7086	29.6086	943.2939	0	10.22	85.691	254	0.91	0	0.6980299	5.516358	1.60401	2.565983	258.97	17.02775
2024/07/17 04:00:00	18.8785	29.9314	943.2325	0	10.06	85.817	282	1.177	0	0.6703208	6.425791	1.501816	2.42708	270.3658	15.106
2024/07/17 05:00:00	16.1509	22.3197	943.3011	0	9.84	85.549	106	1.188	0	0.7536633	7.160349	1.578959	2.43625	281.3316	13.95808
2024/07/17 06:00:00	17.8565	23.8096	943.586	0	9.7	84.917	84	1.2	0	0.7889008	8.412833	1.476388	2.525657	287.7008	12.63942
2024/07/17 07:00:00	18.0796	25.7666	944.094	0	9.34	84.638	110	1.649	0.002	2.016844	10.73438	1.657439	2.365581	308.1533	10.65209
2024/07/17 08:00:00	18.3955	29.8304	944.5072	0	9.59	80.794	297	1.041	0.081	2.064925	13.89529	1.74049	1.555173	363.0975	9.461966
2024/07/17 09:00:00	19.4668	56.5173	945.0582	0	10.51	75.333	53	1.037	0.213	10.71398	17.82908	2.076453	1.544824	397.1658	9.131232
2024/07/17 10:00:00	23.1951	50.155	945.1014	0	12.74	66.973	242	1.307	0.64	9.999416	13.36754	2.560178	1.3915	355.6825	14.85187
2024/07/17 11:00:00	18.2329	51.7437	945.1377	0	14.13	65.373	280	1.636	0.787	5.709608	9.185966	2.446195	0.7071778	283.9242	18.885
2024/07/17 12:00:00	18.0293	47.0507	944.713	0	15.06	61.491	235	1.799	0.827	4.913158	8.714482	2.276358	0.5641106	266.0316	20.47
2024/07/17 13:00:00	68.4601	85.2199	943.9881	0	16.02	58.909	217	1.932	0.795	4.517233	8.339458	2.022937	0.5691348	247.7658	20.81617
2024/07/17 14:00:00	-25.6769	-1.18507	943.4679	0	16.92	55.821	268	2.032	0.687	4.506025	8.267716	1.83826	0.8110015	237.0517	20.27925
2024/07/17 15:00:00	-30.9482	-4.20691	943.3238	0	17.22	56.364	277	2.01	0.511	4.083033	8.676608	2.010697	1.333216	233.4625	21.84283
2024/07/17 16:00:00	16.3205	38.9906	943.2936	0	16.84	58.949	240	2.107	0.297	3.724958	11.30088	1.813252	1.88217	251.7308	23.08025
2024/07/17 17:00:00	20.1464	46.3404	943.7177	0	15.58	71.287	260	2.412	0.095	6.280025	17.39457	1.845225	3.102627	297.7275	18.46491
2024/07/17 18:00:00	12.758	30.3847	944.7319	0	12.7	78.236	300	2.272	0	5.562175	17.30558	1.555397	2.944825	319.4842	16.30642
2024/07/17 19:00:00	9.89432	25.1885	945.6371	0	12.12	78.538	231	1.631	0	4.799058	19.38833	1.443329	2.76044	324.8867	14.60294
2024/07/17 20:00:00	12.3987	28.8416	946.0779	0	11.84	80.118	267	1.72	0	4.710739	18.60784	1.790631	1.256188	318.4667	14.45377
2024/07/17 21:00:00	11.4783	26.6619	946.2787	0	11.55	79.851	280	1.326	0	3.14195	15.74225	1.743085	2.164977	299.805	16.04308
2024/07/17 22:00:00	9.41603	23.312	946.4919	0	11.52	79.861	283	1.316	0	1.667248	12.78907	1.582361	3.85845	276.8808	17.07533
2024/07/17 23:00:00	13.5949	27.3299	946.5756	0	11.55	79.25	209	0.763	0	1.186475	12.88597	1.529523	1.899588	285.4683	14.64875
2024/07/18 00:00:00	15.6075	32.823	946.4395	0	11.65	79.241	217	0.905	0	0.7201999	12.35983	1.404707	1.514142	289.815	15.34517
2024/07/18 01:00:00	13.7342	30.2512	946.1649	0	11.51	79.326	263	1.001	0	0.7319833	10.61256	1.594375	1.286548	278.8842	16.22883
2024/07/18 02:00:00	13.719	28.2704	945.5679	0	11.25	79.715	144	0.776	0	0.6560816	8.1529	1.341155	1.494075	252.8058	17.51833
2024/07/18 03:00:00	14.5837	29.2432	945.1318	0	11.08	80.159	208	0.909	0	0.692425	7.280716	1.618084	1.250945	255.2366	17.29383
2024/07/18 04:00:00	11.3588	22.0993	945.5634	0	10.77	81.143	97	0.845	0	0.6151555	5.631608	1.494018	1.074724	232.2342	19.57133
2024/07/18 05:00:00	15.4153	29.563	945.5532	0	10.55	81.283	80	0.992	0	0.7513958	6.996942	1.562527	0.9153831	249.4458	16.2675
2024/07/18 06:00:00	22.365	35.5412	945.4796	0	9.31	84.695	73	1.812	0	2.169323	12.27775	1.334537	1.171377	311.09	8.080058
2024/07/18 07:00:00	29.5456	54.1956	945.5636	0	9.37	77.168	127	0.713	0.046	22.14676	21.28858	2.057382	1.173311	483.0708	2.929608
2024/07/18 08:00:00	37.9774	101.487	945.5718	0	12.59	72.108	269	0.949	0.285	52.76	32.1945	2.090322	1.718924	769.1383	4.006483
2024/07/18 09:00:00	25.2623	58.2253	946.3072	0	12.92	66.263	282	1.36	0.505	16.08112	19.98992	2.099798	1.270157	433.0233	11.53933
2024/07/18 10:00:00	32.4509	79.0519	946.2628	0	15.39	57.91	255	1.014	0.672	20.30908	26.73875	1.805972	1.446976	499.325	13.482
2024/07/18 11:00:00	27.4227	65.0323	946.2313	0	16.14	57.52	264	2.03	0.788	8.323607	16.19461	2.375805	2.250401	334.1858	21.5245
2024/07/18 12:00:00	25.9545	57.3556	945.4879	0	17.74	47.393	173	1.291	0.823	5.972391	14.898	4.790717	4.290591	307.6566	26.11017
2024/07/18 13:00:00	22.8346	61.9743	944.7596	0	19.67	44.664	244	1.767	0.79	6.262575	18.26517	3.576842	2.219461	338.975	28.8555
2024/07/18 14:00:00	22.875	57.9198	944.3633	0	20.01	49.468	252	2.603	0.684	5.181399	13.28751	2.482491	1.836404	255.3517	26.8925
2024/07/18 15:00:00	28.3166	59.4793	944.0781	0	18.12	57.186	210	2.509	0.504	4.635058	10.24609	2.135797	2.20303	288.53	22.94617
2024/07/18 16:00:00	24.8172	45.8523	943.8737	0	17.43	58.755	223	1.887	0.293	4.225992	11.40715	1.85963	1.903505	236.8542	20.7005
2024/07/18 17:00:00	18.8877	42.9083	943.8867	0	16.33	67.344	285	2.079	0.095	5.782958	15.898	1.852792	3.504577	279.7967	16.38592
2024/07/18 18:00:00	11.8284	31.2207	944.4938	0	13.95	76.339	275	2.093	0	4.479291	15.5543	1.929909	5.158533	295.81	14.71017
2024/07/18 19:00:00	18.3083	38.5605	944.8913	0	12.83	77.746	265	0.919	0	7.358638	25.29175	1.838993	5.557666	382.9133	7.987999
2024/07/18 20:00:00	23.7258	50.2619	945.1201	0	12.76	78.435	129	0.728	0	24.65708	38.38383	2.208848	4.4464	581.6442	1.389173
2024/07/18 21:00:00	27.5453	82.8218	945.312	0	12.65	77.231	217	0.635	0	30.44125	35.14983	2.714225	4.580766	669.7541	1.397542
2024/07/18 22:00:00	35.1303	84.1276	945.4694	0	12.6	76.508	265	0.464	0	60.24441	38.30233	2.770625	4.540358	965.2458	1.4222
2024/07/18 23:00:00	30.7803	78.1321	945.3821	0	12.43	80.365	282	0.927	0	57.6814	36.00325	2.873408	3.860008	956.9075	1.436721
2024/07/19 00:00:00	17.1822	30.7118	945.8062	0	10.74	85.741	207	0.981	0	1.721015	12.30217	2.097345	1.488747	283.7858	11.25122
2024/07/19 01:00:00	12.0422	25.7349	945.5886	0	10.51	85.773	291	0.429	0	0.9013947	15.089	1.611653	1.544807	301.9608	9.363825
2024/07/19 02:00:00	-6.62133	9.68918	945.4193	0	10.45	86.141	138	0.633	0	0.9133216	15.54025	1.597555	1.127777	316.8775	9.078808
2024/07/19 03:00:00	25.7351	59.7456	944.8649	0	9.73	81.185	259	0.487	0	11.45416	21.76158	1.975533	1.639042	532.5416	2.06635
2024/07/19 04:00:00	16.6333	33.1272	944.5804	0	10.2	85.524	276	0.999	0	1.412777	15.65863	2.221058	0.9684451	336.2008	8.884316
2024/07/19 05:00:00	-7.40809	2.97509	944.5007	0	9.65	87.199	109	1.273	0	1.05008	9.617541	1.733212	0.8849128	270.4833	14.84065
2024/07/19 06:00:00	19.3057	31.9406	943.7553	0	8.72	86.579	267	0.824	0	8.864979	22.51158	1.626635	1.535959	451.7691	2.827347
2024/07/19 07:00:00	19.4895	34.0522	944.6106	0	9.18	87.654	291	1.052	0	14.06108	26.58042	1.928025	1.113169	474.3765	2.5582

2024/07/20 14:00:00	22.3826	42.0372	946.0763	0	16.43	60.14	217	1.998	0.668	4.672349	9.314333	2.245225	2.537643	298.8842	21.80283
2024/07/20 15:00:00	18.5952	33.615	946.1016	0	16.91	58.672	258	1.673	0.492	3.645525	9.74945	2.144358	2.310956	302.9458	23.46766
2024/07/20 16:00:00	23.0015	42.9519	945.8688	0	17.33	59.572	249	1.901	0.285	5.337108	16.00708	2.125585	2.02674	340.2383	22.09108
2024/07/20 17:00:00	26.421	45.845	946.5438	0	16.51	66.242	270	2.263	0.094	5.899875	19.52375	2.156595	2.277303	364.7375	19.39017
2024/07/20 18:00:00	15.3299	31.0496	947.4302	0	13.86	77.539	261	1.852	0	10.01419	22.19608	1.661907	4.653273	401.8667	10.29215
2024/07/20 19:00:00	14.4647	27.6039	947.6441	0	13.1	79.251	290	1.54	0	10.11113	23.30358	1.668747	1.574579	426.71	7.617475
2024/07/20 20:00:00	17.4615	29.8605	948.3544	0	12.42	80.098	217	1.569	0	7.515558	20.319	1.743947	0.8919352	392.6117	8.873291
2024/07/20 21:00:00	10.5262	22.8575	948.4058	0	12.15	81.078	247	1.532	0	8.251842	20.25125	1.41881	0.6753002	379.8058	8.827974
2024/07/20 22:00:00	12.006	22.8381	948.1774	0	11.8	81.706	258	1.677	0	3.7611	13.74539	1.644016	0.4620293	342.1308	11.88824
2024/07/20 23:00:00	12.273	21.5698	947.7989	0	11.82	80.735	153	0.826	0	1.452539	12.97472	1.47527	0.6141568	336.8958	11.84131
2024/07/21 00:00:00	16.9666	24.9853	947.5002	0	11.86	80.263	289	1.007	0	0.9652541	10.4267	1.573622	0.688466	320.5792	12.65983
2024/07/21 01:00:00	9.7116	16.759	947.3074	0	11.75	80.151	239	0.914	0	0.8708033	8.655749	1.395073	1.613117	299.3375	14.15492
2024/07/21 02:00:00	13.5903	20.801	946.6685	0	11.66	80.029	191	0.984	0	0.8187016	8.0644	1.346565	2.097013	299.09	14.89867
2024/07/21 03:00:00	9.23453	16.3894	946.0979	0	11.69	79.522	259	1.014	0	0.8200983	7.13535	1.454777	2.271039	285.5267	15.73792
2024/07/21 04:00:00	9.26899	15.7017	945.7601	0	11.45	79.927	259	1.323	0	0.8061458	5.894975	1.528915	1.874329	272.8325	17.10792
2024/07/21 05:00:00	10.9241	17.1508	945.9854	0	11.44	79.284	195	1.059	0	1.380077	7.989808	1.324456	1.339063	280.7475	15.83733
2024/07/21 06:00:00	8.47056	15.0683	945.9861	0	11.37	78.987	251	0.975	0	1.290743	8.029249	1.518623	1.104546	287.9275	16.0085
2024/07/21 07:00:00	11.7889	19.7514	946.0211	0	11.34	78.699	240	1.021	0	2.212261	12.07312	1.576327	1.142158	309.7175	13.98466
2024/07/21 08:00:00	11.3503	24.2237	946.4356	0	11.46	77.144	221	0.628	0.028	1.363736	9.945899	1.541658	0.9589595	304.11	14.73462
2024/07/21 09:00:00	13.6263	28.3242	946.9225	0	12.01	73.15	159	1.208	0.11	5.018492	14.13641	1.354977	0.9924438	344.31	12.61002
2024/07/21 10:00:00	39.5385	57.4811	947.2522	0	12.87	68.107	236	1.09	0.281	4.182075	10.21981	1.589194	1.14052	342.165	15.70267
2024/07/21 11:00:00	13.3381	23.3469	947.1104	0	14.24	62.068	260	1.731	0.64	4.1934	8.018049	1.479403	1.577907	310.3108	17.93991
2024/07/21 12:00:00	10.8747	19.5493	946.5604	0	15.2	58.275	261	1.892	0.796	2.903375	5.939533	1.64652	1.512352	279.9908	20.81383
2024/07/21 13:00:00	9.92557	22.0443	945.795	0	16.33	54.903	235	1.812	0.786	2.508025	5.5306	1.66117	0.9759653	264.8991	22.65658
2024/07/21 14:00:00	10.7354	22.3538	944.9505	0	17.41	51.102	268	1.708	0.681	2.145183	5.784108	1.798472	1.089726	267.5117	25.05325
2024/07/21 15:00:00	10.3077	20.9886	944.5723	0	17.99	50.595	276	1.762	0.51	1.260278	5.881791	1.742687	1.104664	248.8633	25.76108
2024/07/21 16:00:00	10.8814	28.2186	944.4464	0	17.74	57.587	242	2.217	0.3	3.106298	8.759716	1.755593	0.9832155	265.8991	24.2685
2024/07/21 17:00:00	11.5738	29.3617	944.4581	0	15.73	68.71	268	2.287	0.101	4.28515	11.98209	1.669278	2.745103	300.6642	18.75283
2024/07/21 18:00:00	10.0665	23.3023	944.7549	0	13.36	75.889	293	2.045	0	3.081567	11.91914	1.83674	2.568546	311.79	16.14875
2024/07/21 19:00:00	7.82685	20.5664	944.822	0	12.16	80.314	276	1.784	0	5.289841	16.75223	1.545391	3.448155	368.7183	12.01182
2024/07/21 20:00:00	10.6623	26.7148	944.9581	0	11.67	80.501	273	1.184	0	2.034699	11.63182	1.910076	5.803908	327.02	14.03283
2024/07/21 21:00:00	11.7447	24.7146	944.7798	0	11.57	80.568	169	0.802	0	1.269687	14.93608	1.238197	4.578666	363.9733	11.47867
2024/07/21 22:00:00	9.25793	22.1299	944.6967	0	11.58	80.526	195	1.034	0	1.781927	15.99407	1.508178	4.178267	386.6708	10.80387
2024/07/21 23:00:00	10.7522	23.4546	944.5859	0	11.45	80.575	352	0.997	0	1.158565	12.74133	1.518937	2.7942	351.9775	12.50975
2024/07/22 00:00:00	15.3851	29.4626	944.0243	0	11.38	80.63	258	1.152	0	0.7420275	12.11646	1.568965	2.122689	354.6342	11.83342
2024/07/22 01:00:00	13.3945	24.233	944.1227	0	11.12	81.478	148	0.879	0	0.5414745	8.884433	1.145249	2.709268	328.8392	13.93242
2024/07/22 02:00:00	13.9272	27.2084	943.6791	0	10.95	82.013	113	1.452	0	0.6783208	7.789558	1.456974	1.73155	324.79	13.7375
2024/07/22 03:00:00	15.1517	24.0694	943.2496	0	10.42	84.178	110	1.329	0	0.6561491	8.71645	1.428035	2.336433	348.6792	11.49567
2024/07/22 04:00:00	15.9265	21.0122	943.0408	0	9.7	84.769	92	1.192	0	0.8071682	9.582209	1.602034	2.173017	361.4425	9.613067
2024/07/22 05:00:00	16.6108	22.6244	942.903	0	9.6	85.933	235	0.915	0	1.821484	10.28767	1.294181	1.914823	365.9983	9.893566
2024/07/22 06:00:00	13.3605	23.0961	943.2393	0	9.84	85.226	8	1.031	0	1.752541	13.50734	1.378779	1.984688	379.0233	8.175959
2024/07/22 07:00:00	17.2909	29.1563	943.5504	0	9.74	85.086	98	0.949	0.002	4.630927	15.99267	1.252659	2.016845	415.03	6.83525
2024/07/22 08:00:00	21.2825	37.88	944.3524	0	10.32	82.078	263	0.761	0.056	6.276333	18.7085	1.366459	2.08808	432.8941	6.362383
2024/07/22 09:00:00	18.6729	37.8254	945.0748	0	11	79.362	234	0.729	0.113	8.293683	18.61691	1.719802	1.406156	441.5033	8.182016
2024/07/22 10:00:00	10.5204	22.5562	945.4721	0	12.29	73.286	347	0.859	0.266	4.778	11.58317	1.647509	0.7825428	363.565	15.055
2024/07/22 11:00:00	8.89701	27.9204	945.4144	0	14.02	63.938	96	1.237	0.643	6.017116	10.669628	1.522292	0.6422946	371.7358	17.74767
2024/07/22 12:00:00	15.227	43.2981	944.7798	0	15.74	59.501	230	1.7	0.817	7.094775	11.9036	1.564847	0.5461121	384.1208	19.84583
2024/07/22 13:00:00	16.5559	40.0368	944.0602	0	16.95	52.289	205	1.456	0.78	4.819091	11.07384	1.956898	0.4843478	364.29	24.34475
2024/07/22 14:00:00	19.8345	55.8588	943.0786	0	18.66	53.113	219	1.719	0.668	6.307849	16.31275	2.30256	0.4343777	406.1841	25.79583
2024/07/22 15:00:00	16.6305	46.147	943.1104	0	18.43	57.159	254	2.256	0.498	4.391425	11.60577	1.711762	0.911289	341.3233	25.27817
2024/07/22 16:00:00	15.4205	41.2931	943.657	0	17.52	63.785	282	2.371	0.287	4.852016	13.70407	2.031718	2.004745	362.8517	22.59758
2024/07/22 17:00:00	8.97975	28.5799	944.3057	0	15.52	71.695	295	2.502	0.1	6.893167	15.26682	1.695051	2.893357	375.9983	15.88925
2024/07/22 18:00:00	11.1928	29.4071	945.089	0	13.38	76.552	267	1.86	0	8.224691	20.1195	1.108967	4.063817	434.01	10.39846
2024/07/22 19:00:00	13.9399	32.307	945.539	0	12.8	79.139	265	1.617	0	6.554358	19.37967	1.517782	2.058719	428.4425	9.878924
2024/07/22 20:00:00	11.9661	27.3375	946.0366	0	12.72	80.08	270	1.175	0	4.300917	17.37716	1.342553	1.082165	412.4425	10.25564
2024/07/22 21:00:00	10.5577	26.6043	946.1954	0	12.58	80.503	139	0.922	0	2.002594	16.28208	1.425361	0.9602696	391.2133	10.13331
2024/07/22 22:00:00	13.2667	31.4995	946.2697	0	12.52	79.973	119								

2024/07/24 05:00:00	13.7917	20.1051	947.0847	0	10.19	88.651	126	0.575	0	1.750749	15.38992	1.895248	2.382583	452.6942	5.7263
2024/07/24 06:00:00	17.5563	23.2963	947.373	0	9.82	89.07	91	1.076	0	2.531038	18.18108	1.502468	2.801841	501.6825	3.148075
2024/07/24 07:00:00	16.8509	19.767	947.722	0	9.35	89.213	131	1.189	0.013	5.0216	17.93042	1.691057	2.740553	516.6358	3.071783
2024/07/24 08:00:00	16.8999	28.0189	947.9556	0	9.97	86.455	262	0.923	0.28	20.8686	19.58792	2.134933	2.142586	646.6008	5.129366
2024/07/24 09:00:00	25.3321	49.4131	948.3738	0	13.46	63.984	8	0.655	0.514	39.01442	28.516	2.226037	2.545378	790.4825	6.615692
2024/07/24 10:00:00	33.7255	75.957	948.1529	0	16.72	55.584	229	0.89	0.678	42.05983	40.05866	2.504225	2.44539	873.815	9.63655
2024/07/24 11:00:00	29.748	80.2962	947.8344	0	18.32	52.923	272	1.658	0.788	24.14862	33.64225	2.290508	2.168265	717.945	15.23883
2024/07/24 12:00:00	18.066	48.3448	947.8778	0	18.83	57.066	236	2.315	0.831	6.756033	13.4402	2.298321	1.15855	421.4391	21.27508
2024/07/24 13:00:00	42.8704	65.4059	947.2115	0	19.5	54.565	274	2.006	0.799	4.764708	10.45193	1.792012	1.161374	387.1166	22.818383
2024/07/24 14:00:00	25.0521	43.8001	946.7111	0	20.3	55.004	217	2.005	0.691	5.311783	10.34402	2.153933	1.669481	389.8066	27.53538
2024/07/24 15:00:00	61.9976	83.9784	946.6219	0	19.12	59.055	305	2.348	0.514	3.532292	10.4926	2.494208	3.68408	395.2583	26.50725
2024/07/24 16:00:00	1.67397	30.933	946.654	0	18.33	63.964	254	2.301	0.303	4.698308	13.13897	2.102948	2.20923	404.9058	22.37775
2024/07/24 17:00:00	14.393	39.5034	946.9786	0	16.31	72.643	279	2.002	0.104	4.33085	14.54198	1.918705	0.8301468	424.8691	18.2145
2024/07/24 18:00:00	9.50431	36.1813	946.8806	0	14.5	77.324	270	1.295	0	7.6379	25.31692	1.733263	3.465492	521.1508	9.561033
2024/07/24 19:00:00	34.3649	56.8892	947.1138	0	13.21	80.816	240	1.109	0	9.403124	30.32733	1.727665	4.811467	561.8958	4.921098
2024/07/24 20:00:00	19.2278	41.5393	947.1879	0	12.44	84.702	245	1.388	0	11.21947	27.80175	1.848867	3.953722	567.28	6.152192
2024/07/24 21:00:00	23.8499	40.1328	947.5625	0	11.73	86.214	35	0.87	0	4.284175	21.8865	1.608477	2.607278	486.6367	8.021041
2024/07/24 22:00:00	25.0076	70.086	947.4442	0	11.66	85.622	70	1.066	0	4.978686	31.92558	1.844838	3.128346	586.9291	1.746183
2024/07/24 23:00:00	20.9563	49.9899	947.4758	0	11.87	85.336	248	1.054	0	8.698957	31.187	2.274845	2.850517	641.0525	1.642782
2024/07/25 00:00:00	23.7998	42.2816	947.9899	0	11.65	85.782	141	0.84	0	1.632577	22.59883	1.806262	2.265743	539.1358	4.9246
2024/07/25 01:00:00	24.9493	46.7533	947.3976	0	11.29	86.661	233	1.116	0	4.501221	26.49417	1.73564	2.980767	610.1741	2.222001
2024/07/25 02:00:00	24.7443	44.1687	947.0567	0	11.27	85.997	35	0.968	0	5.707495	25.04783	1.700183	3.147568	614.2058	2.748957
2024/07/25 03:00:00	28.9455	50.7702	946.7457	0	11.42	85.565	16	0.619	0	1.203202	22.46066	1.797108	2.545265	565.2208	3.066508
2024/07/25 04:00:00	27.5863	47.335	946.4666	0	11.36	85.542	124	0.71	0	1.617683	22.05517	1.810153	2.513266	572.0358	3.02975
2024/07/25 05:00:00	29.8024	53.3827	946.3782	0	10.81	86.676	122	1.169	0	6.471876	23.95633	1.808743	2.815361	645.6033	1.483929
2024/07/25 06:00:00	30.0307	53.6189	946.5755	0	10.49	86.774	103	1.022	0	15.66672	24.65942	2.25045	2.46518	701.0367	1.143087
2024/07/25 07:00:00	33.7387	57.0929	946.8337	0	10.76	86.173	304	0.792	0.014	18.24669	24.60158	2.403792	2.308957	732.4158	2.052425
2024/07/25 08:00:00	50.8342	73.4649	947.7734	0	11.48	84.631	204	0.809	0.078	11.73404	23.80158	4.402841	2.627327	707.465	4.959387
2024/07/25 09:00:00	40.9085	71.9932	948.4553	0	12.39	79.281	196	1.198	0.269	17.49875	22.65891	3.173175	3.477467	695.4625	6.793574
2024/07/25 10:00:00	24.0793	50.2494	948.6178	0	13.78	68.682	235	1.108	0.616	15.27133	18.566	2.387803	3.500683	600.1783	11.21147
2024/07/25 11:00:00	49.2419	90.9474	948.096	0	16.21	58.837	57	1.219	0.78	18.94475	25.13675	3.201153	3.470133	661.5658	14.38458
2024/07/25 12:00:00	39.4307	90.2602	947.0831	0	19.08	52.665	313	1.249	0.808	15.94192	29.63766	2.444758	3.290878	681.4966	19.169
2024/07/25 13:00:00	49.205	96.1281	945.8041	0	20.57	50.083	302	1.83	0.748	8.832566	20.964	2.672577	3.954965	567.5042	22.855
2024/07/25 14:00:00	27.2727	57.1355	945.0662	0	20.62	52.082	267	2.488	0.671	4.516633	12.9203	3.601475	3.68575	465.4716	26.48292
2024/07/25 15:00:00	19.6621	49.4199	945.052	0	19.45	60.115	265	2.511	0.413	4.435317	13.89958	2.157425	3.274	441.3141	26.49483
2024/07/25 16:00:00	17.1591	46.5184	945.3538	0	17.06	68.638	212	2.358	0.238	4.848375	13.41804	2.147395	3.519735	438.5616	22.05667
2024/07/25 17:00:00	27.4861	54.8219	945.4749	0	15.16	76.615	269	2.076	0.111	5.004667	15.47186	1.6965	4.303475	457.0925	17.162
2024/07/25 18:00:00	6.11376	29.6241	946.3752	0	13.52	81.666	246	1.715	0.004	6.390266	18.06508	1.814682	5.888166	482.6142	12.20913
2024/07/25 19:00:00	19.1079	47.8501	947.0847	0	13.43	80.027	96	0.963	0	1.966083	22.4615	1.814829	4.753483	517.4233	8.931324
2024/07/25 20:00:00	15.812	44.9224	947.8958	0	13.19	83.781	232	1.516	0	12.76566	27.32067	2.007215	3.068257	622.8325	6.381133
2024/07/25 21:00:00	14.136	40.7283	948.1788	0	12.72	83.728	355	0.738	0	5.271627	25.581	1.880628	2.754823	572.4916	6.2759
2024/07/25 22:00:00	15.6805	46.7264	947.9301	0	12.78	83.453	290	1.086	0	5.38185	31.60433	1.825587	3.798425	629.8591	2.207275
2024/07/25 23:00:00	21.3347	47.7944	947.7601	0	12.57	84.152	23	0.776	0	2.994541	30.44492	1.741488	3.692125	613.9958	2.332
2024/07/26 00:00:00	54.7143	85.0822	947.361	0	12.34	84.084	143	0.785	0	3.248412	29.74241	1.74871	3.400017	648.8258	1.658271
2024/07/26 01:00:00	7.95705	40.0336	947.01	0	12.24	84.265	118	0.725	0	2.002335	24.31858	1.598	3.363271	608.2924	3.623942
2024/07/26 02:00:00	-3.89565	18.0641	946.822	0	12.07	85.087	18	0.987	0	0.65767675	12.96788	1.466915	3.274567	497.0808	10.10505
2024/07/26 03:00:00	30.9749	48.8252	946.0604	0	11.67	84.642	119	1.439	0	0.8766642	14.8559	1.767128	3.079838	525.23	8.021008
2024/07/26 04:00:00	12.4474	18.7856	944.833	0	10.56	84.907	224	0.981	0	3.093812	24.22183	1.662683	3.151125	655.21	1.486614
2024/07/26 05:00:00	6.1793	17.204	945.0288	0	11.26	86.24	94	1.075	0	2.287327	15.72882	1.999675	4.19015	538.5583	7.278
2024/07/26 06:00:00	18.8914	28.7423	945.335	0	11.14	85.927	140	0.8	0	0.6063091	11.49177	1.69268	4.199458	478.9183	10.31505
2024/07/26 07:00:00	6.65652	23.9704	946.0273	0	11.45	84.66	213	0.698	0.001	2.35317	17.468	1.452125	3.643358	531.1375	6.428625
2024/07/26 08:00:00	21.2318	46.5257	946.4947	0	11.97	78.597	162	1.046	0.147	10.75419	19.5215	2.172287	2.96447	607.5341	5.715808
2024/07/26 09:00:00	21.2641	56.2662	946.793	0	14.07	72.563	250	1.138	0.499	22.76275	22.71292	1.74802	3.092617	699.4291	8.431925
2024/07/26 10:00:00	7.38354	48.3226	946.6174	0	15.94	58.831	264	0.987	0.668	20.237	24.15308	1.710892	3.680933	693.58	11.87057
2024/07/26 11:00:00	60.8683	108.294	945.7733	0	18.02	51.565	247	1.523	0.784	18.38625	28.55767	2.434098	2.44055	709.2025	16.45342
2024/07/26 12:00:00	-0.01123	39.7597	945.2627	0	19.78	52.354	226	1.92	0.825	8.018033	17.34175	3.248333	3.258908	546.1458	21.87983
2024/07/26 13:00:00	19.2168	46.9732	944.5792	0	19.86	54.89	258	2.605	0.796	15.140508</td					

2024/07/27 20:00:00	24.7817	41.6445	944.2692	0	12.23	81.064	312	1.38	0	7.023377	22.7055	1.74985	3.584993	621.6833	8.769474
2024/07/27 21:00:00	20.752	37.8505	944.7142	0	12.07	81.51	240	1.011	0	5.595182	20.80225	1.541645	3.282378	579.6025	9.106333
2024/07/27 22:00:00	20.6209	37.4197	944.7866	0	11.98	82.188	336	1.137	0	2.466694	20.25392	1.519435	3.196446	589.3216	8.748775
2024/07/27 23:00:00	10.5569	30.7204	944.7325	0	11.98	80.713	246	0.726	0	1.260187	20.10208	1.828977	2.759528	602.3083	7.852308
2024/07/28 00:00:00	16.0731	33.4386	944.5928	0	11.86	81.911	216	1	0	1.250128	17.27675	1.400459	3.345108	587.8025	8.824917
2024/07/28 01:00:00	21.9818	34.7448	944.0289	0	11.62	82.213	254	0.999	0	1.05832	13.73083	1.474838	2.999317	565.7599	10.5301
2024/07/28 02:00:00	30.3103	39.1999	943.5423	0	11.34	83.109	131	0.914	0	0.6836949	10.65552	1.416547	2.600073	540.8133	12.24733
2024/07/28 03:00:00	16.4474	27.1277	942.8146	0	11.16	82.958	281	0.974	0	0.6152641	9.909349	1.489366	2.716687	532.53	12.14867
2024/07/28 04:00:00	18.0561	29.6708	942.3767	0	11.26	80.661	342	0.704	0	0.6679925	11.75383	1.274296	2.840871	553.79	10.71496
2024/07/28 05:00:00	-9.19444	5.37286	942.3414	0	11.06	81.198	27	1.193	0	1.667536	11.07042	1.537135	1.499157	562.7208	10.6549
2024/07/28 06:00:00	13.7851	21.4447	942.6528	0	10.95	81.634	313	1.195	0	1.286993	10.21946	1.363869	1.616905	537.0717	11.89022
2024/07/28 07:00:00	9.91566	16.8018	943.0851	0	10.74	81.888	124	0.888	0.003	1.060592	8.334991	1.319612	0.888279	513.9558	13.53225
2024/07/28 08:00:00	11.3702	18.7846	943.5993	0	11.21	76.712	146	0.88	0.125	2.014538	8.45865	1.532253	0.9770647	524.4891	13.72717
2024/07/28 09:00:00	13.2117	26.6282	943.5259	0	13.48	66.433	276	1.228	0.517	4.471091	8.035433	1.761732	0.6034133	539.3925	15.60475
2024/07/28 10:00:00	24.4206	36.2789	943.8893	0	15.19	62.046	109	1.656	0.691	6.493208	10.47299	1.764744	0.4241388	559.7242	16.68558
2024/07/28 11:00:00	19.7263	33.4827	943.4648	0	16.79	55.11	292	1.48	0.794	4.543658	9.420874	1.640033	0.7686236	536.1959	21.21175
2024/07/28 12:00:00	50.8388	64.4223	942.9501	0	18.44	52.55	226	1.786	0.832	3.369958	8.425666	1.485131	0.6378492	525.9592	23.80658
2024/07/28 13:00:00	19.126	35.5017	942.8533	0	19.34	51.877	261	2.196	0.801	3.441125	7.597908	1.795578	0.5585856	500.5316	22.89042
2024/07/28 14:00:00	-2.57424	20.2349	942.6891	0	19.14	56.504	255	2.511	0.698	2.651333	6.801708	1.805681	1.790009	498.3366	24.1655
2024/07/28 15:00:00	5.95909	30.8737	942.5559	0	17.81	61.191	258	2.698	0.528	3.086333	6.990025	1.940298	2.912145	492.5092	22.00275
2024/07/28 16:00:00	6.40757	24.7586	942.6745	0	16.95	62.482	232	2.257	0.313	3.063825	7.285225	1.889183	2.850618	495.3475	20.02208
2024/07/28 17:00:00	16.3092	30.9952	942.9722	0	15.74	69.046	285	2.257	0.112	3.464783	9.444724	2.0531	2.807766	506.0233	17.36058
2024/07/28 18:00:00	8.68846	21.518	943.7236	0	13.77	76.464	283	2.49	0	3.75045	11.36761	1.528855	3.237775	536.8725	14.88975
2024/07/28 19:00:00	15.0222	24.9038	944.1295	0	12.71	77.818	14	1.426	0	2.609486	11.82636	1.533322	3.812208	539.6091	13.7515
2024/07/28 20:00:00	4.92938	18.1397	943.9313	0	12.53	79.473	255	1.288	0	3.690678	16.34689	1.630403	3.517875	591.5233	11.06102
2024/07/28 21:00:00	4.46759	16.7337	944.5621	0	12.25	79.449	346	1.136	0	3.204952	13.78492	1.453215	2.082124	564.8791	12.09094
2024/07/28 22:00:00	6.73713	18.5196	944.9134	0	11.79	79.381	357	1.497	0	2.477915	11.09552	1.467123	1.534129	572.4075	11.87095
2024/07/28 23:00:00	55.4566	58.794	944.9153	0	11.77	80.756	349	1.522	0	2.456774	8.948009	1.632003	0.8573505	578.9866	12.53458
2024/07/29 00:00:00	39.4319	41.5709	944.6875	0	11.46	82.137	340	1.215	0	0.9188467	6.046842	1.593517	0.9384548	531.4666	13.553
2024/07/29 01:00:00	43.9925	43.874	944.335	0	11.36	82.077	80	1.328	0	0.8491083	5.1156	1.462148	0.8236813	526.0325	13.872
2024/07/29 02:00:00	-4.10161	-0.330028	943.8342	0	11.37	82.501	16	1.47	0	0.6630625	3.597117	1.595553	0.4116708	530.1066	15.8185
2024/07/29 03:00:00	6.20329	8.84217	942.9368	0	10.52	83.774	104	1.153	0	0.905305	6.314557	1.668313	0.9339296	546.3049	12.61898
2024/07/29 04:00:00	14.2159	17.6538	942.2648	0	9.58	85.953	76	1.197	0	0.8012858	9.274541	1.589822	1.435531	588.66	7.469758
2024/07/29 05:00:00	-13.6668	-2.02527	942.3171	0	9.8	81.659	77	0.488	0	7.59342	16.151585	1.850263	1.752892	713.3683	2.778
2024/07/29 06:00:00	7.12971	25.9023	942.7675	0	10.07	79.713	127	1.024	0	13.87279	19.83383	2.296486	1.308748	753.2742	2.35735
2024/07/29 07:00:00	23.0323	51.4307	943.4382	0	9.79	80.412	116	0.781	0.019	23.083	20.47658	2.255085	1.665263	758.2358	1.877492
2024/07/29 08:00:00	7.90404	22.2675	944.1462	0	11.21	72.575	286	0.823	0.23	10.33169	16.25308	1.830713	1.124643	672.8075	7.193342
2024/07/29 09:00:00	2.57322	16.9346	944.684	0	12.59	71.088	195	1.141	0.466	12.66392	15.80121	1.776136	0.6459926	668.3766	10.49022
2024/07/29 10:00:00	3.80548	13.8644	944.8335	0	14.4	65.134	249	1.306	0.696	4.332825	7.218858	1.685715	1.091112	561.6141	16.70525
2024/07/29 11:00:00	16.4999	33.1667	944.1127	0	15.47	62.864	238	1.899	0.802	5.310108	8.479125	1.991385	2.74209	566.1799	17.38483
2024/07/29 12:00:00	20.9352	39.1812	943.4744	0	16.88	56.559	249	1.513	0.836	4.976266	8.610158	3.1101	5.162383	578.6308	18.81108
2024/07/29 13:00:00	20.5492	39.6493	942.7615	0	18.42	52.312	261	1.794	0.805	4.310533	9.602124	3.725017	4.362216	580.5867	21.64092
2024/07/29 14:00:00	16.8078	38.4228	942.2589	0	19.66	51.237	224	2.183	0.705	4.136458	9.88336	3.572517	3.302592	567.595	22.83991
2024/07/29 15:00:00	10.2148	34.1257	942.1448	0	19.61	50	250	1.873	0.53	3.177833	8.7456	3.618408	3.170407	541.1458	24.32633
2024/07/29 16:00:00	20.9238	47.7188	942.0186	0	19.65	56.344	261	2.158	0.316	4.154642	12.30262	2.781192	2.951092	584.5549	22.65483
2024/07/29 17:00:00	8.15919	36.6579	942.2505	0	18.18	63.703	308	1.942	0.113	5.139816	16.1005	2.262917	4.171583	616.0183	17.31242
2024/07/29 18:00:00	22.5667	44.2528	942.4283	0	15.37	72.221	258	1.833	0	4.53275	17.95092	2.37159	5.494716	638.2258	12.73478
2024/07/29 19:00:00	14.8326	34.2967	942.8658	0	13.52	79.392	258	1.736	0	8.439325	21.8945	1.819966	4.014743	686.4191	8.899824
2024/07/29 20:00:00	6.47825	21.6317	943.6624	0	12.2	83.075	305	1.499	0	5.298716	16.98399	1.623674	3.908858	643.775	9.835741
2024/07/29 21:00:00	13.0384	27.7852	944.3929	0	12	83.919	261	1.326	0	3.386936	15.46733	1.74746	3.954775	622.2325	9.912158
2024/07/29 22:00:00	14.5747	25.432	945.2852	0	11.57	85.506	39	0.939	0	1.037786	8.350066	1.577703	0.9291289	570.85	14.28808
2024/07/29 23:00:00	36.1214	46.3779	944.7255	0	11.86	80.765	290	0.815	0	1.610643	11.9632	1.547035	1.918769	612.5583	10.72508
2024/07/30 00:00:00	11.9494	18.8362	944.3293	0	11.57	83.354	121	1.316	0	1.031456	10.75021	1.369757	2.612292	607.8674	9.724432
2024/07/30 01:00:00	10.464	19.049	943.843	0	10.95	84.373	242	1.183	0	0.9138966	16.23658	1.73553	3.103058	669.7183	5.908258
2024/07/30 02:00:00	19.1013	30.4391	943.6655	0	11.13	85.169	67	1.044	0	0.8691508	14.92983	1.510133	2.752433	664.1916	6.403525
2024/07/30 03:00:00	31.3443	39.2219	942.8797	0	10.42	86.323	355	1.031	0	0.8367258	14.90831	1.773481	2.535679	675.475	5.29575
2024/07/30 04:00:00	18.47	26.6369	942.6122	0	10.07	86.951	147								

2024/07/31 11:00:00	23.8151	68.8976	943.8538	0	17.16	56.858	241	1.841	0.786	18.51758	24.1985	1.898476	1.313765	839.7575	14.31117
2024/07/31 12:00:00	24.9712	58.1468	943.6562	0	18.95	49.942	267	1.64	0.835	8.7043	16.51608	2.454545	1.182295	720.4733	19.89733
2024/07/31 13:00:00	26.2754	62.4274	943.3581	0	20.59	47.906	267	2.256	0.806	6.797558	15.74013	3.127933	3.09617	699.4875	24.57083
2024/07/31 14:00:00	20.6136	58.7517	943.4802	0	20.4	58.266	253	2.997	0.701	5.355466	11.92042	3.563383	4.303958	638.19	23.88825
2024/07/31 15:00:00	14.1389	72.5223	943.8838	0	17.28	63.732	249	2.797	0.519	4.281933	8.936983	2.121792	2.425692	614.495	20.84616
2024/07/31 16:00:00	12.9152	39.0215	943.9071	0	16.69	68.862	283	2.156	0.306	4.809991	10.85927	1.78677	1.268222	642	18.98767
2024/07/31 17:00:00	16.6529	39.7952	944.1556	0	15.46	73.816	289	2.167	0.11	5.372383	13.8339	1.75544	2.648587	662.6708	15.11983
2024/07/31 18:00:00	8.94995	30.9114	944.5397	0	14.02	77.852	283	1.654	0	6.967441	18.60892	1.859745	2.715509	707.4725	10.51767
2024/07/31 19:00:00	4.94184	25.3302	944.7862	0	13.53	79.354	260	1.384	0	3.869679	16.88983	1.612795	1.999547	692.6075	10.3599
2024/07/31 20:00:00	19.3079	42.3451	945.0614	0	13.35	81.144	260	1.163	0	10.40007	25.70517	1.594609	2.904683	788.1016	5.258725
2024/07/31 21:00:00	16.3813	33.6838	945.4034	0	12.89	82.278	292	1.627	0	6.22726	16.4627	1.65551	1.709335	709.6041	9.222416
2024/07/31 22:00:00	18.5791	37.3187	945.8544	0	13.03	81.147	235	0.658	0	1.718463	17.33633	1.83573	1.361026	709.8575	7.855683
2024/07/31 23:00:00	22.3855	43.4251	945.654	0	12.9	81.424	62	1.141	0	2.403193	19.90733	1.729227	1.69301	758.655	5.752933