

Taller de Entrenamiento WIS2, Brasilia · Septiembre 2026

Implementación de Grafana en Chile

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¿Qué necesitábamos monitorear?

ESTACIONES

Conectividad y disponibilidad de información

DATOS

Recepción y procesamiento

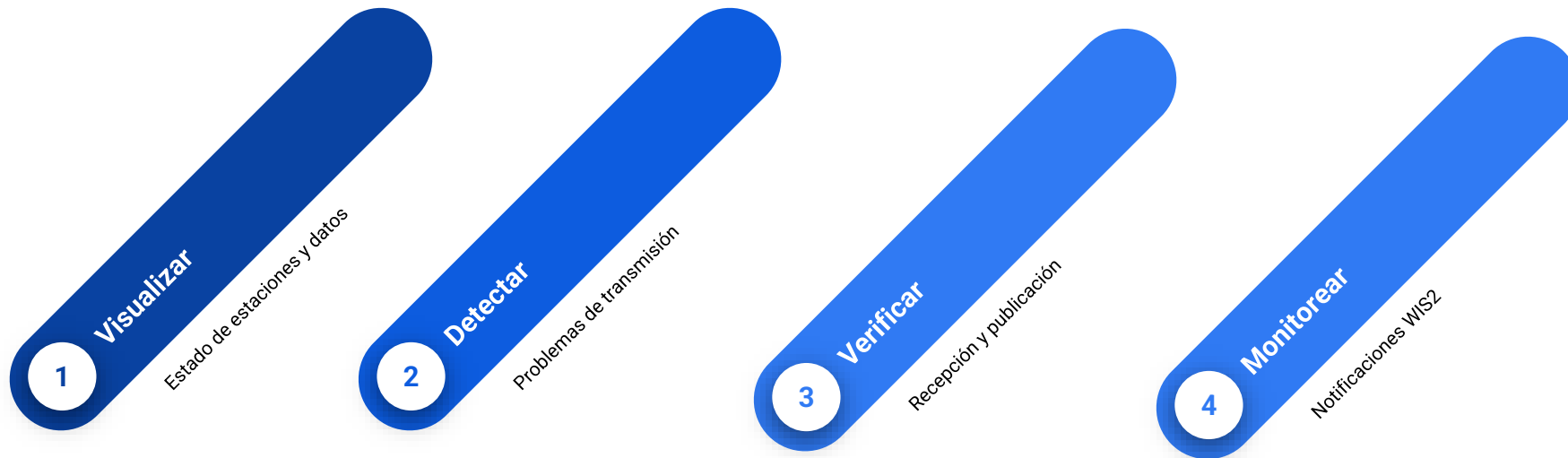
PUBLICACIÓN

Archivos y notificaciones WIS2

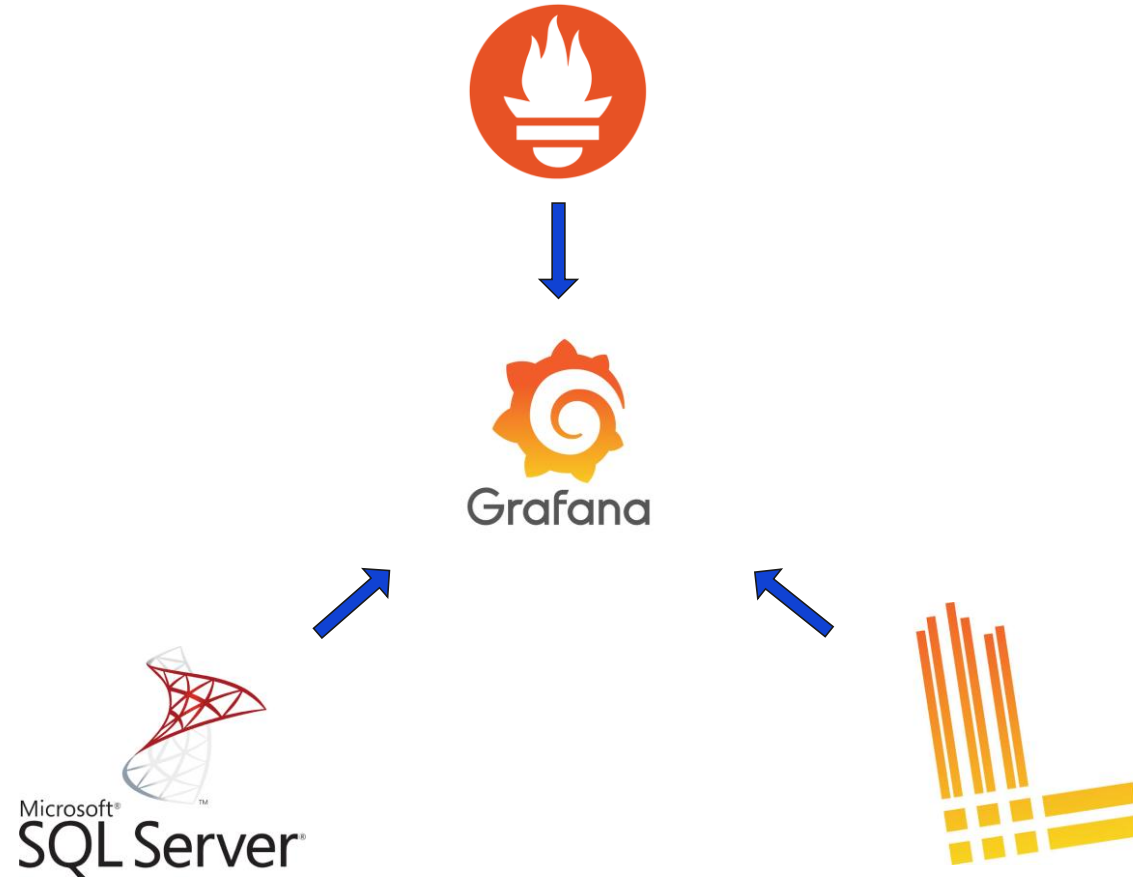


Objetivos

Construir una herramienta de monitoreo que permita visualizar el estado de la operación de WIS2Box y detectar oportunamente problemas en la transmisión y publicación de información.



Integración de fuentes de información



Métricas + Datos operacionales + Registros

De los datos a los indicadores

Datos disponibles

Consultas /
metricas

Indicadores

Paneles Grafana

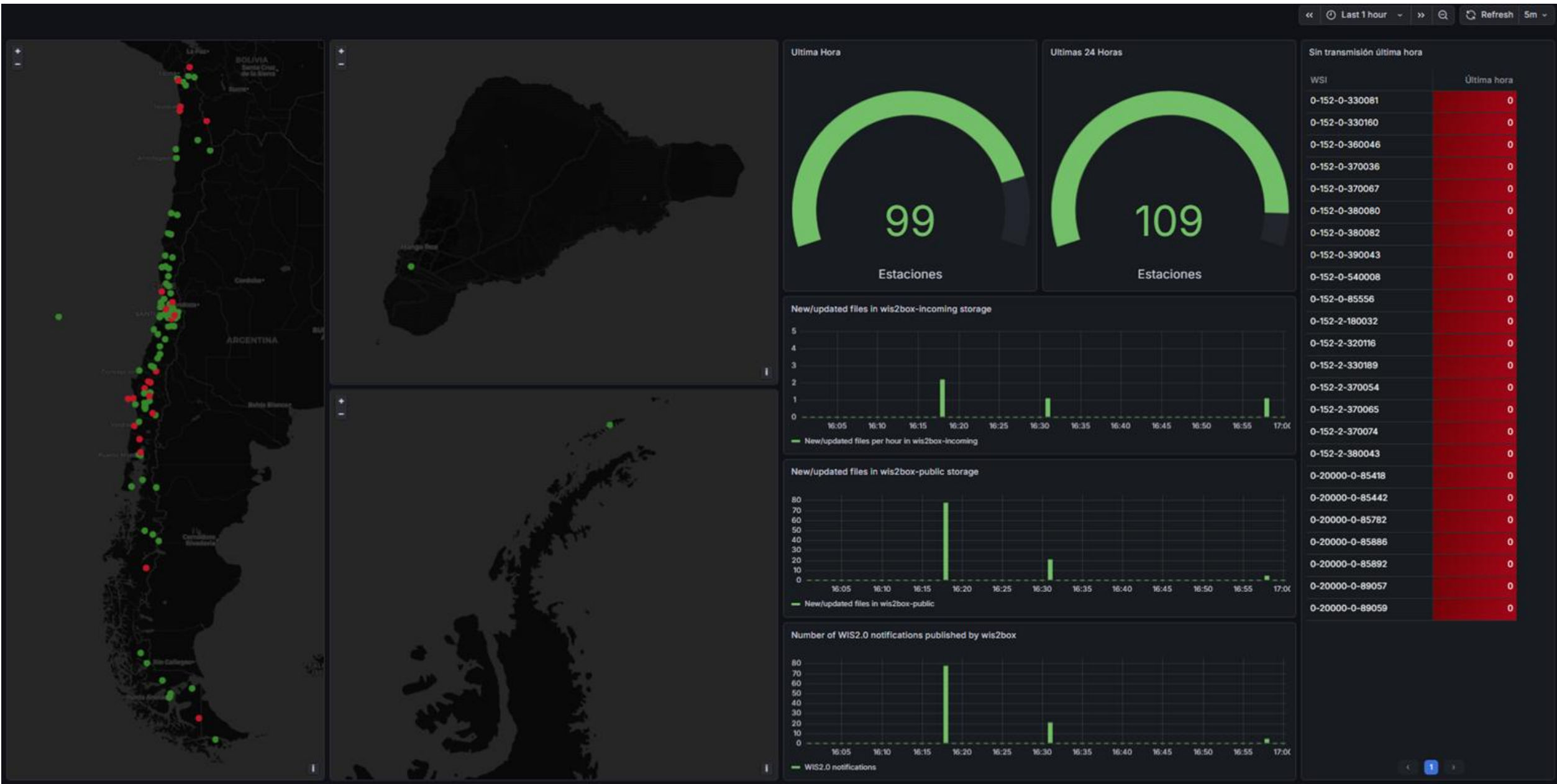
Dashboard

Qué necesitábamos visualizar?

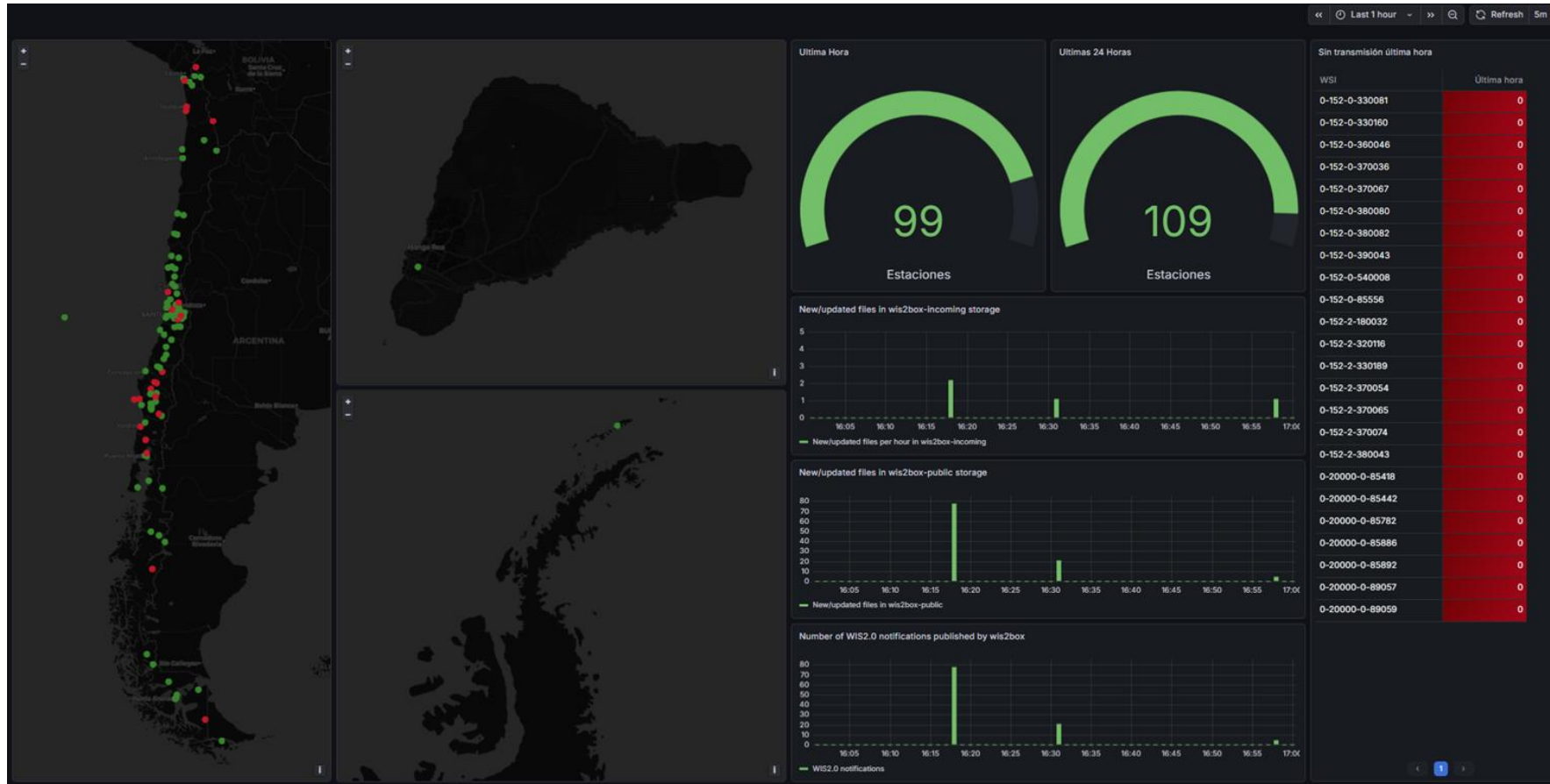
- *Estaciones activas*
- *Estaciones sin transmisión*
- *Archivos recibidos*
- *Archivos publicados*
- *Notificaciones WIS2*
- *Etc.*



Dashboard de monitoreo WIS2Box



Dashboard de monitoreo WIS2Box



- Estado de estaciones
- Cobertura geográfica
- Tx Última hora
- Tx Últimas 24 horas
- Estaciones sin Tx
- Archivos recibidos
- Archivos publicados
- Notificaciones Wis2

Monitoreo WIS2Box



A WSI	latitude	longitude	Publish last 24 hrs
0-152-0-180017	-18.2	-69.6	1.00
0-152-0-180018	-18.5	-70.3	1.00
0-152-0-230002	-23.7	-70.4	1.00
0-152-0-230004	-23.2	-68.0	1.00
0-152-0-230022	-23.1	-70.4	1.00
0-152-0-270009	-27.4	-70.4	1.00
0-152-0-280010	-28.5	-71.0	1.00
0-152-0-300024	-30.6	-71.2	1.00
0-152-0-300046	-30.0	-70.7	1.00
0-152-0-300047	-30.7	-71.0	1.00
0-152-0-310024	-31.2	-71.0	1.00
0-152-0-310040	-31.6	-71.2	1.00
0-152-0-310044	-31.8	-71.0	1.00
0-152-0-320041	-32.9	-71.5	1.00
0-152-0-320045	-32.9	-70.9	1.00
0-152-0-320049	-32.2	-70.8	1.00
0-152-0-320056	-32.8	-71.5	1.00

Geomap

Change

Panel options

Title

Description

Transparent background

Panel links

Repeat options

Map view

Map layers

Basemap layer

Map controls

Standard options

Data links and actions

Value mappings

Thresholds

2

Override 1

Fields with name

Publish last 24 hrs

Thresholds

+ Add threshold

1

0

Base

Monitoreo WIS2Box

Queries 5 Transformations 5

Data source: -- Mixed --

Query options: MD = auto = 514 Interval = 1d

A wis2box-prometheus

Explain ☐

Metrics browser > `avg by(WSI) (wis2box_stations_wsi{WSI!="none"})`

Options Legend: Verbose Format: Table Step: Type: Instant

D wis2box-prometheus

Explain ☐

Metrics browser > `sum by(WSI, description) (increase(wis2box_failure_descr_wsi_total{WSI!="none"}[1h]))`

Options Legend: Verbose Format: Table Step: auto Type: Instant

B wis2box-prometheus

Explain ☐

Metrics browser > `sum by(WSI) (increase(wis2box_notify_wsi_total{WSI!="none"}[1h]))`

Options Legend: Verbose Format: Table Step: auto Type: Instant

C wis2box-prometheus

Explain ☐

Metrics browser > `sum by(WSI) (increase(wis2box_failure_wsi_total{WSI!="none"}[1h]))`

Options Legend: Auto Format: Table Step: auto Type: Instant

E SacIm

Format: Table

```
1 SELECT e.CodigoWIGOS as WSI,
2       (e.LatitudGrado+(e.LatitudMinuto/60.0)+(e.LatitudSegundo/ 3600.0))*-1 AS latitude,
3       (e.LongitudGrado + (e.LongitudMinuto / 60.0) + (e.LongitudSegundo / 3600.0))*-1 AS longitude
4 FROM GrupoEstacionEstacionAgrupada g LEFT JOIN GrupoEstacion d ON g.GrupoEstacionId = d.Id
5 LEFT JOIN EstacionMeteorologica e ON g.EstacionAgrupadaId = e.Id
6 WHERE g.GrupoEstacionId = (SELECT id FROM GrupoEstacion WHERE Nombre = 'EmaRegional')
7 ORDER BY e.CodigoNacional;
```

Queries 5 Transformations 5

1 - Join by field

Mode: Outer (time series)

Field: WSI

2 - Add field from calculation

Mode: Reduce row

Operation: WSI Time 1 Value #A Time 2 Value #B ✓ Time 3 Value #C latitude longitude

Calculation: Total

Alias: Publish last 24 hrs

Replace all fields: ☐

3 - Add field from calculation

Mode: Reduce row

Operation: WSI Time 1 Value #A Time 2 Value #B Time 3 Value #C ✓ latitude longitude Publish last 24 hrs

Calculation: Total

Alias: Fail last 24 hrs

Replace all fields: ☐

4 - Add field from calculation

Mode: Reduce row

Operation: WSI Time 1 Value #A Time 2 Value #B Time 3 Value #C latitude longitude Publish last 24 hrs Fail last 24 hrs

Calculation: All unique values

Alias: All unique values

Replace all fields: ☐

5 - Organize fields by name

Field order: Manual Auto

WSI	Rename WSI
Time 1	Rename Time 1
Value #A	Rename Value #A
Time 2	Rename Time 2

Monitoreo WIS2Box



Table view ☒

Time	count(sum by(WSI) (increase(wis2box_notify_wsi_total{WSI!="none"}[1h])) > 0)
2026-09-11 10:22:45	88
2026-09-11 10:23:00	88
2026-09-11 10:23:15	88
2026-09-11 10:23:30	88
2026-09-11 10:23:45	88
2026-09-11 10:24:00	88
2026-09-11 10:24:15	88
2026-09-11 10:24:30	88
2026-09-11 10:24:45	88
2026-09-11 10:25:00	88
2026-09-11 10:25:15	88
2026-09-11 10:25:30	88
2026-09-11 10:25:45	88

Queries 1 Transformations 0

Data source wis2box-prometheus

Query options MD = auto = 410 Interval = 15s

A (wis2box-prometheus)

Explain

Metrics browser > `count(sum by(WSI) (increase(wis2box_notify_wsi_total{WSI!="none"}[1h])) > 0)`

Options Legend: Verbose Format: Time series Step: auto Type: Range Exemplars: false

Gauge Change

Panel options

Title Ultima Hora

Description

Transparent background

Panel links

Repeat options

Value options

Gauge

Orientation Layout orientation Auto Horizontal Vertical

Show threshold labels Render the threshold values around the gauge bar

Show threshold markers Renders the thresholds as an outer bar

Neutral Leave empty to use Min as neutral point auto

Thresholds

+ Add threshold

80

50

0

Base

Thresholds mode Percentage means thresholds relative to min & max

Absolute Percentage

+ Add field override

Monitoreo WIS2Box

Sin transmisión última hora	
WSI	Última hora
0-152-0-330081	0
0-152-0-330160	0
0-152-0-360046	0
0-152-0-370036	0
0-152-0-370067	0
0-152-0-380080	0
0-152-0-380082	0
0-152-0-390043	0
0-152-0-540008	0
0-152-0-85556	0
0-152-2-180032	0
0-152-2-320116	0
0-152-2-330189	0
0-152-2-370054	0
0-152-2-370065	0
0-152-2-370074	0
0-152-2-380043	0
0-20000-0-85418	0
0-20000-0-85442	0
0-20000-0-85782	0
0-20000-0-85886	0
0-20000-0-85892	0
0-20000-0-89057	0
0-20000-0-89059	0

Queries 4

Transformations 6

Data source

-- Mixed --

Query options

MD = auto = 410

Interval = 1d

A

wis2box-prometheus

Explain

Metrics browser

avg by(WSI) (wis2box_stations_wsi{WSI!="none"})

Options

Legend: Verbose

Format: Table

Step: Type: Instant

D

wis2box-prometheus

Explain

Metrics browser

sum by(WSI, description) (increase(wis2box_failure_descr_wsi_total{WSI!="none"}[1h]))

Options

Legend: Verbose

Format: Table

Step: auto

Type: Instant

B

wis2box-prometheus

Explain

Metrics browser

sum by(WSI) (increase(wis2box_notify_wsi_total{WSI!="none"}[1h]))

Options

Legend: Verbose

Format: Table

Step: auto

Type: Instant

C

wis2box-prometheus

Explain

Metrics browser

sum by(WSI) (increase(wis2box_failure_wsi_total{WSI!="none"}[1h]))

Options

Legend: Auto

Format: Table

Step: auto

Type: Instant

+ Add query

+ Expression

Table

Change

Panel options

Table

Table footer

Cell options

Standard options

Data links and actions

Value mappings

Thresholds 4

Override 1

WIGOS-ID

Column width

Override 2

Fail last 24 hrs

Cell type, Column width

Override 3

Publish last 24 hrs

Column width

Override 4

Fields with name

WSI

Table

Column width

206

+ Add override property

Override 5

Fields with name

Publicadas últimas 24 horas (not fo...

Table

Column width

225

+ Add override property

+ Add field override

Monitoreo WIS2Box

Queries 4 Transformations 6

1 - Join by field

Mode

Outer (time series)

Field

WSI

2 - Add field from calculation

Mode

Reduce row

Operation

WSI

Time 1

Value #A

Time 2

Value #B

Time 3

Value #C

Calculation

Total

Alias

Publish last 24 hrs

Replace all fields

3 - Add field from calculation

Mode

Reduce row

Operation

WSI

Time 1

Value #A

Time 2

Value #B

Time 3

Value #C

Publish last 24 hrs

Calculation

Total

Alias

Fail last 24 hrs

Replace all fields

4 - Add field from calculation

Mode

Reduce row

Operation

WSI

Time 1

Value #A

Time 2

Value #B

Time 3

Value #C

Publish last 24 hrs

Fail last 24 hrs

Calculation

All unique values

Alias

All unique values

Replace all fields

5 - Organize fields by name

Field order

Manual

Auto

WSI

Rename WSI

Time 1

Rename Time 1

Value #A

Rename Value #A

Time 2

Rename Time 2

Value #B

Rename Value #B

Time 3

Rename Time 3

Value #C

Rename Value #C

Publish last 24 hrs

Última hora

Fail last 24 hrs

Fallas últimas 24 horas

All unique values

Rename All unique values

6 - Filter data by values

Filter type

Include

Exclude

Field

Última hora

Match

Is equal

Value

0

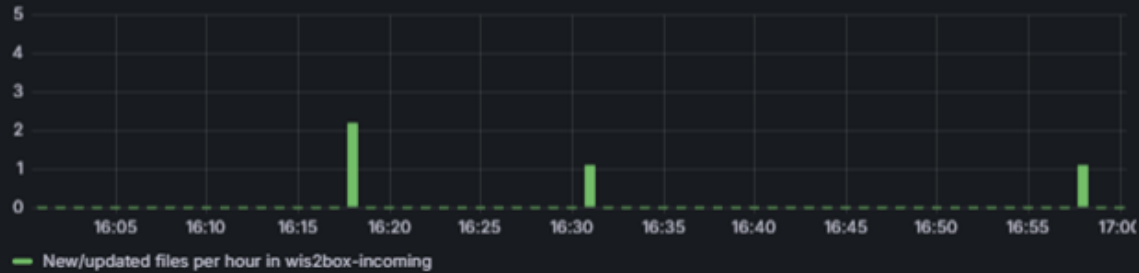
+ Add condition

+ Add another transformation

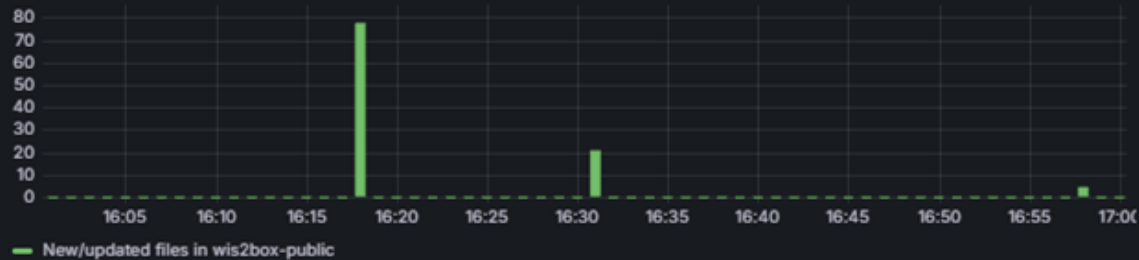
× Delete all transformations

Monitorio WIS2Box

New/updated files in wis2box-incoming storage



New/updated files in wis2box-public storage



Number of WIS2.0 notifications published by wis2box



Table view

Time	New/updated files per hour in wis2box-incoming
2026-09-11 10:27:58	0
2026-09-11 10:28:58	0
2026-09-11 10:29:58	2.18
2026-09-11 10:30:58	1.09
2026-09-11 10:31:58	0
2026-09-11 10:32:58	0
2026-09-11 10:33:58	0
2026-09-11 10:34:58	0
2026-09-11 10:35:58	0
2026-09-11 10:36:58	0
2026-09-11 10:37:58	0
2026-09-11 10:38:58	0
2026-09-11 10:39:58	0

Queries 1 Transformations 0 Alert 0

Data source wis2box-prometheus Query options MD = 3000 Interval = 1m

A (wis2box-prometheus)

Explain

Metrics browser > `delta(wis2box_storage_incoming_total){$__interval})`

Options Legend: New/updated files per hour in wis2box-incoming Format: Time series Step: 60.0000

+ Add query + Expression

Monitoreo WIS2BOX

Se logró:

- ✓ *Construir indicadores específicos para WIS2Box*
- ✓ *Visualizar el flujo de recepción y publicación*
- ✓ *Facilitar la detección de problemas*

Próximos pasos:

- *Ajustar dashboards según necesidad*
- *Continuar mejorando la visualización y monitoreo*

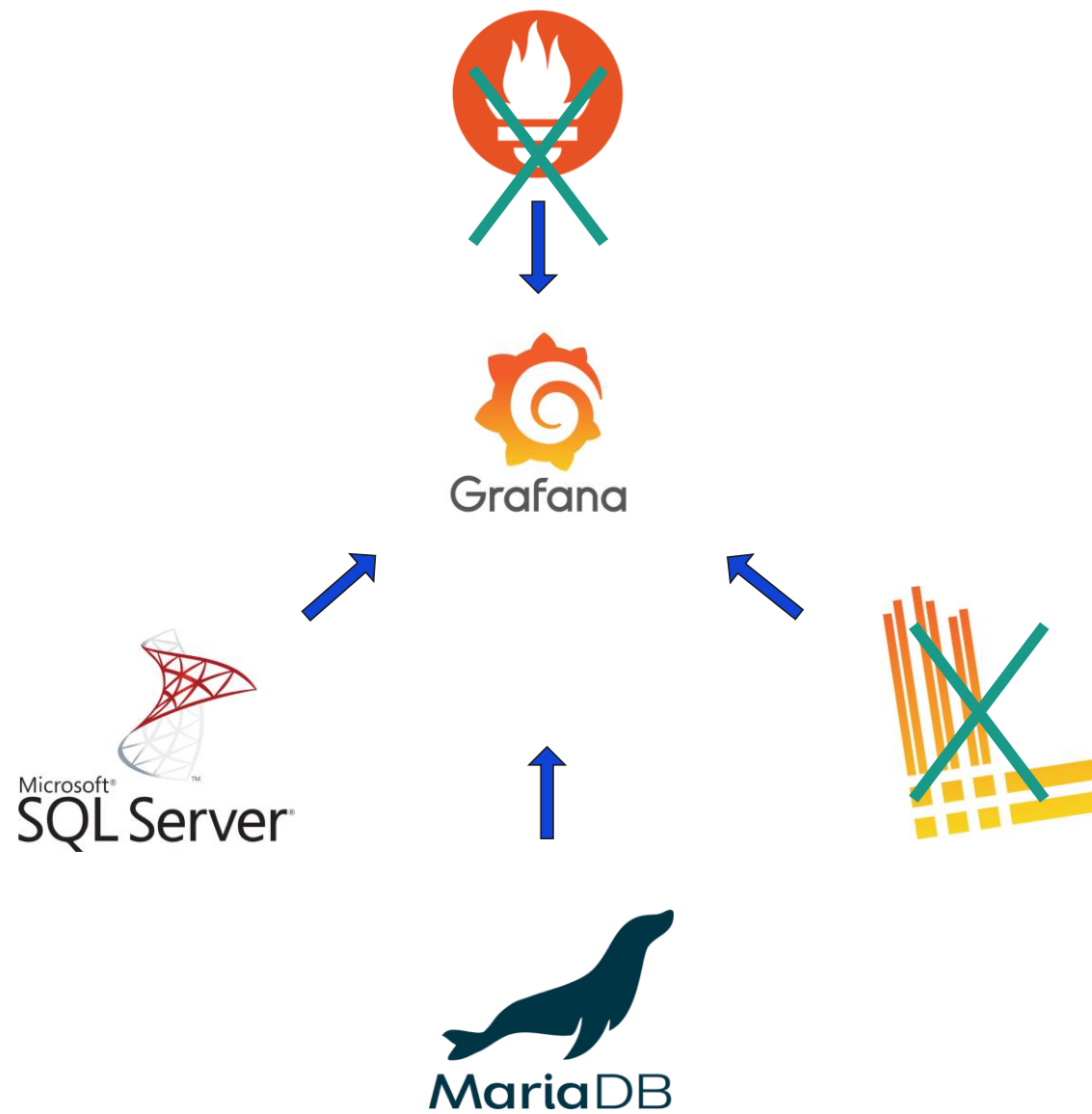


Un día cualquiera en una reunión de equipo, surgió la siguiente necesidad...

“No tenemos monitoreo sobre la transmisión de datos de las estaciones automáticas, sabemos cuando un proceso se queda pegado, pero no sabemos si están recibiendo datos o no, especialmente, en las estaciones automáticas de organismos externos.”



Integración de fuentes de información

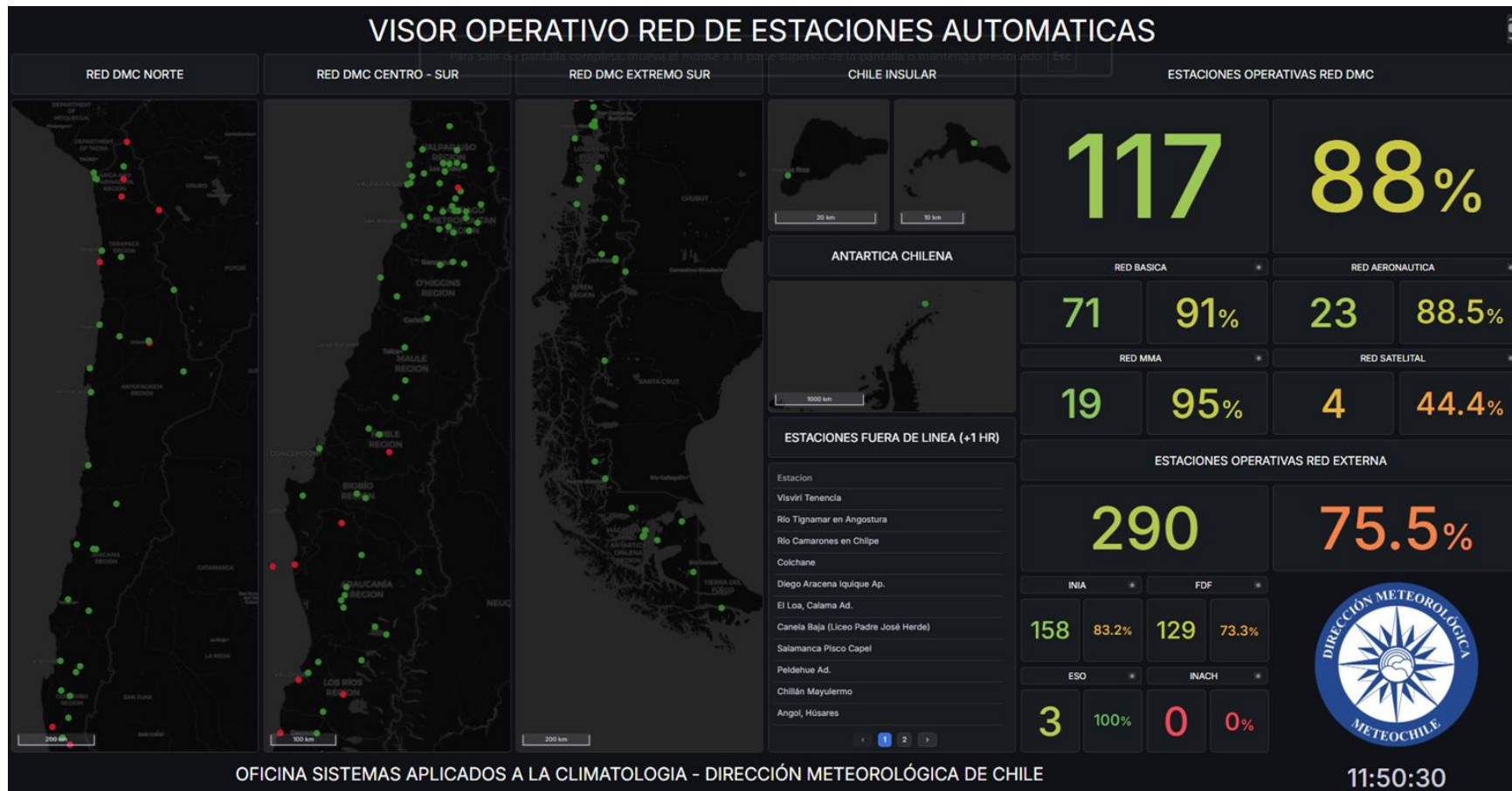


Visor Red EMA

VISOR OPERATIVO RED DE ESTACIONES AUTOMATICAS



Visor Red EMA



- Estado de estaciones
- Mapas por zonas
- Tx Última hora
- % Disponibilidad estaciones
- Estaciones sin Tx
- Redes Internas y Externas



Visor Red EMA

Settings

General Annotations **Variables** Links Versions Permissions JSON Model

Variable	Definition
----------	------------

RedBasica	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN E
-----------	--

RedAeronautica	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN E
----------------	--

RedSatelital	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
--------------	--

RedInia	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
---------	--

RedDGA	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
--------	--

EstacionesDMC	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
---------------	--

RedFDF	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
--------	--

RedESO	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
--------	--

RedMMA	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN E
--------	--

RedINACH	SELECT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN EstacionMe
----------	--

RedExterna	SELECT DISTINCT e.CodigoNacional FROM GrupoEstacionEstacionAgrupada g JOIN G
------------	--

EstacionesDMC

Variable type

Query

General

Name

The name of the template variable. (Max. 50 characters)

EstacionesDMC

Label

Optional display name

Label name

Description

Descriptive text

Display

Hidden

Query options

Data source

Saclim

Query

```
SELECT DISTINCT e.CodigoNacional
FROM GrupoEstacionEstacionAgrupada g
```

Refresh

When to update the values of this variable

On dashboard load

On time range change

Static options

Use static options

Add custom options in addition to query results

Selection options

☒ Multi-value

Enables multiple values to be selected at the same time

☒ Allow custom values

Enables users to add custom values to the list

☒ Include All option

Enables an option to include all values

Custom all value

Preview of values (81)

All

180017

180018

180027

180028

180042

200007

200010

Show more

Delete

Back to list

Run query



Visor Red EMA



Queries 2 Transformations 2

Data source: > Query options MD = auto = 415 Interval = 500ms

A

Format: Table

```
1 SELECT
2   CodigoNacional as codigoNacional,
3   (LatitudGrado + LatitudMinuto / 60.0 + LatitudSegundo / 3600.0) *-1 AS latitude,
4   (LongitudGrado + LongitudMinuto / 60.0 + LongitudSegundo / 3600.0) *-1 AS longitude
5 FROM EstacionMeteorologica WHERE CodigoNacional in(${EstacionesDMC:csv})
```

B

Format: Table

```
1 SELECT
2   codigoNacional,
3   CASE
4     WHEN TIMESTAMPDIFF(MINUTE, momento, UTC_TIMESTAMP()) < 60 THEN 1
5     ELSE 0
6   END AS estado
7 FROM RegistroRecientes
8 WHERE codigoNacional IN (${EstacionesDMC:csv})
```

Queries 2 Transformations 2

1 - Join by field

Mode:

Field:

2 - Filter data by values

Filter type:

Field: Match: Value:

+ Add condition

+ Add another transformation × Delete all transformations

Geomap

Panel options

Map view

Map layers

Basemap layer

Map controls

Standard options

Data links and actions

Value mappings

Thresholds

+ Add threshold

☐ 1

☐ 0

☐ Base

Thresholds mode

Percentage means thresholds relative to min & max

+ Add field override

Visor Red EMA

121

```
Queries 1 Transformations 0
Data source MySQL Query options MD = auto
A (MySQL)
Format: Table
1 SELECT COUNT(*) AS estaciones_en_linea
2 FROM RegistroRecientes
3 WHERE codigoNacional IN (${EstacionesDMC:csv})
4 AND TIMESTAMPDIFF(MINUTE, momento, UTC_TIMESTAMP()) < 60;
```

12.4 Stat Change

Panel options

Value options

Stat styles

Text size

Standard options

Data links and actions

Value mappings

Thresholds

+ Add threshold

80

Base

Thresholds mode

Percentage means thresholds relative to min & max

Absolute Percentage

+ Add field override

91%

```
Queries 1 Transformations 0
Data source MySQL Query options MD = auto = 410 Int
A (MySQL)
Format: Table
1 SELECT ROUND(
2 COUNT(*) * 100.0 /
3 (SELECT COUNT(*)
4 FROM RegistroRecientes
5 WHERE codigoNacional IN (${EstacionesDMC:csv})
6 ),
7 1) AS Porcentaje
8 FROM RegistroRecientes
9 WHERE codigoNacional IN (${EstacionesDMC:csv})
10 AND TIMESTAMPDIFF(MINUTE, momento, UTC_TIMESTAMP()) < 60;
```

12.4 Stat Change

Panel options

Value options

Stat styles

Text size

Standard options

Unit

Percent (0-100)

Min

Leave empty to calculate based on all values

0

Max

Leave empty to calculate based on all values

138

Value mappings

Thresholds

+ Add threshold

80

Base

Thresholds mode

Percentage means thresholds relative to min & max

Absolute Percentage

+ Add field override



Visor Red EMA

ESTACIONES FUERA DE LINEA (+1 HR)

Estacion

Río Camarones en Chilpe

Diego Aracena Iquique Ap.

El Loa, Calama Ad.

Canela Baja (Liceo Padre José Herde)

Río Clarillo

Chillán Mayulermo

Angol, Húsares

Lequecahue Tirúa Ad.

Isla Mocha Ad.

Corral ESSAL

San Juan de la Costa, Bahía Mansa

<

1

2

>

Queries 2

Transformations 3

Data source  -- Mixed --  > Query options MD = auto = 410 Interval = 500ms

A

MySQL

Format: Table

```
1 SELECT codigoNacional, 1 as estado
2 FROM RegistroRecientes
3 WHERE codigoNacional IN (${EstacionesDMC:csv})
4 | AND TIMESTAMPDIFF(MINUTE, momento, UTC_TIMESTAMP()) > 60;
```

B

Sacim

Format: Table

```
1 SELECT CodigoNacional as codigoNacional, NombreEstacion as Estacion
2 FROM EstacionMeteorologica
3 WHERE codigoNacional IN (${EstacionesDMC:csv})
```

Queries 2

Transformations 3

1 - Join by field

Mode Outer (time series)

Field codigoNacional

2 - Filter data by values

Filter type Include Exclude

Field estado Match Is equal Value 1

+ Add condition

3 - Organize fields by name

Field order Manual Auto

codigoNacional

estado

Estacion

Codigo Nacional

Rename estado

Rename Estacion

+ Add another transformation x Delete all transformations

Table Change

Panel options

Table

Show table header 

Frozen columns
Columns are frozen from the left side of the table
none

Cell height
Small Medium Large

Max row height
none

Enable pagination 

Conclusiones

Se logró:

- ✓ *Construir indicadores específicos para WIS2Box*
- ✓ *Visualizar el flujo de recepción y publicación*
- ✓ *Facilitar la detección de problemas*
- ✓ *Centralizar el monitoreo*
- ✓ *Integrar distintas fuentes de información*

Próximos pasos:

- *Ajustar dashboards según necesidad*
- *Continuar mejorando la visualización y monitoreo*
- *Incorporación de nuevos indicadores*



Preguntas

