

WIS2 Gateways

Overview

- Transition infrastructure
- GTStoWIS2 gateway
- WIS2toGTS gateway

Transition infrastructure

As explained in the WIS2 strategy, the goal is to replace the GTS by WIS2

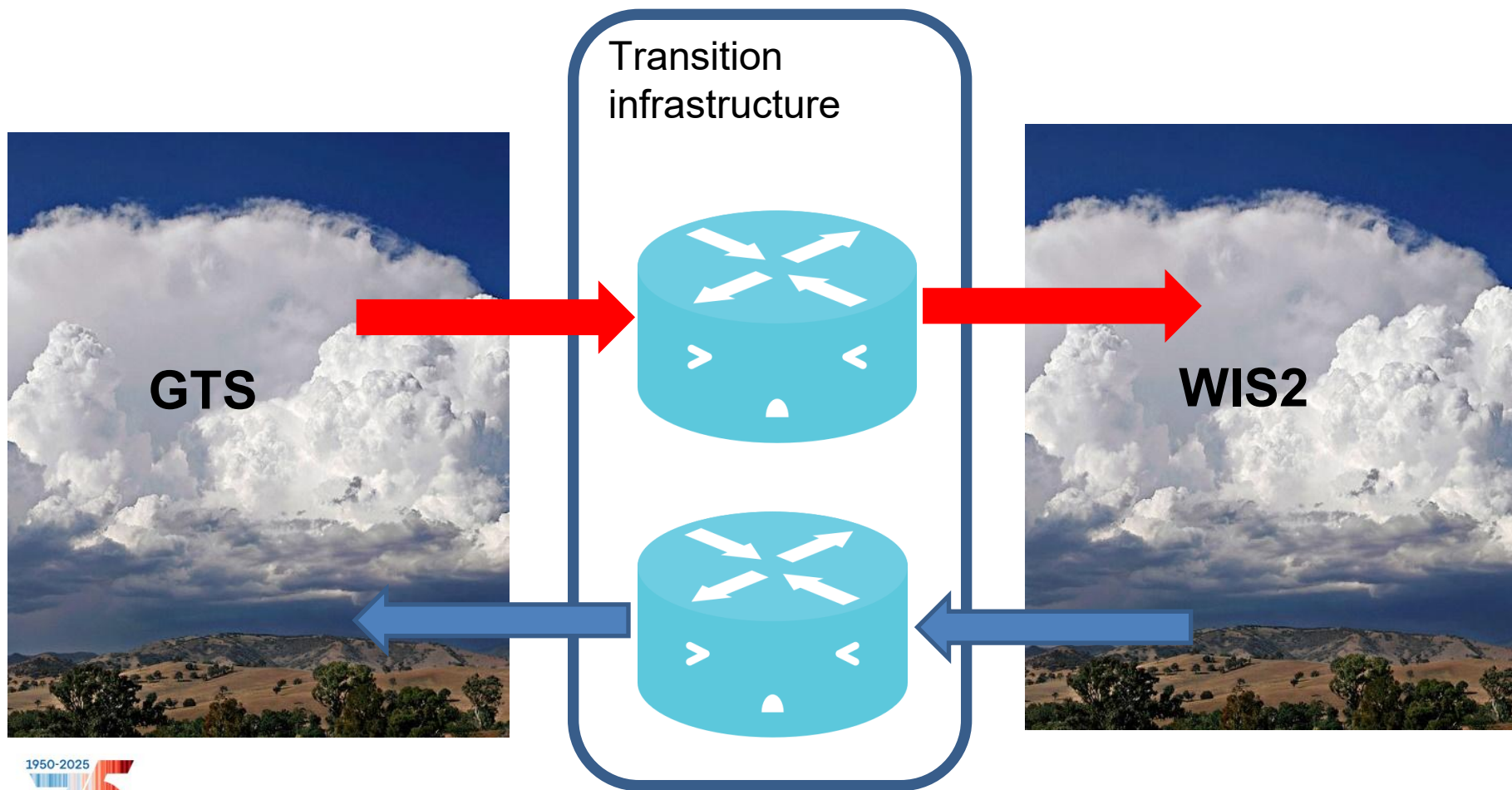
- Replacing here means:
 - Message Switching replaced by MQTT
 - GTS Headers (TTAAii) replaced by WIS Topic Hierarchy
 - WMCP 1.3 replaced by WMCP 2
 - Statically managed routing tables replaced by Subscriptions
 - Store-and-forward of files/bulletins (push) replaced by direct downloads (pull)

WIS2 transition strategy endorsed by Congress 2023

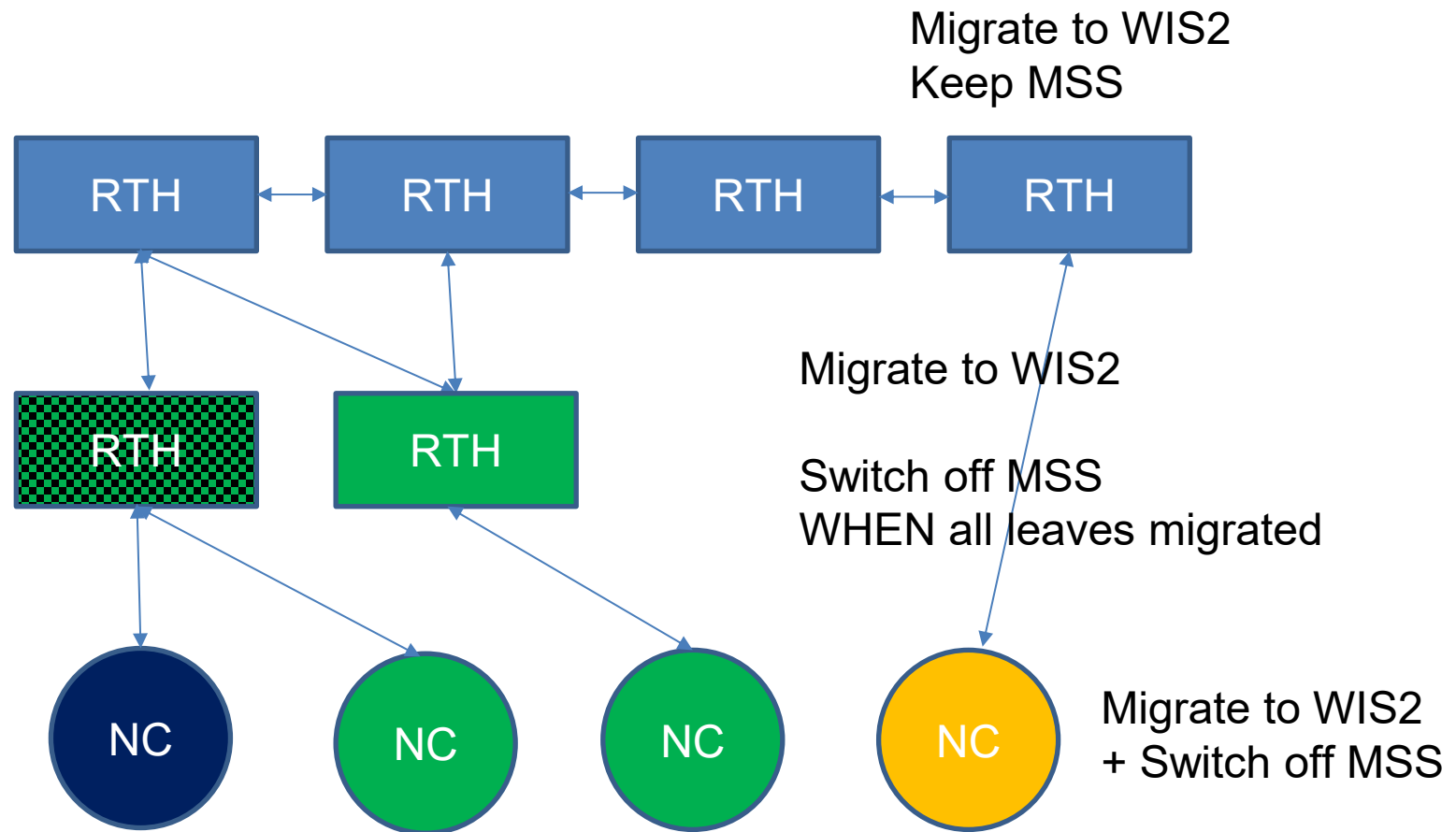
Transition infrastructure

1. Each Center will be able to make the migration during the agreed period (2024-2030) independently
2. After migration, the Center will decide when and if they want to stop their MSS
3. No « GTS » data loss during the migration
 - Data sent on the GTS can be received on WIS2
 - Data, **previously** sent on the GTS, sent on WIS2 can be received on the GTS
4. New data (eg. GBON) will be exchanged **solely** on WIS2
5. **Data exchange with local systems is a task for NCs**
 - Must be able to handle data that are not bulletins and don't have a TTAAii header

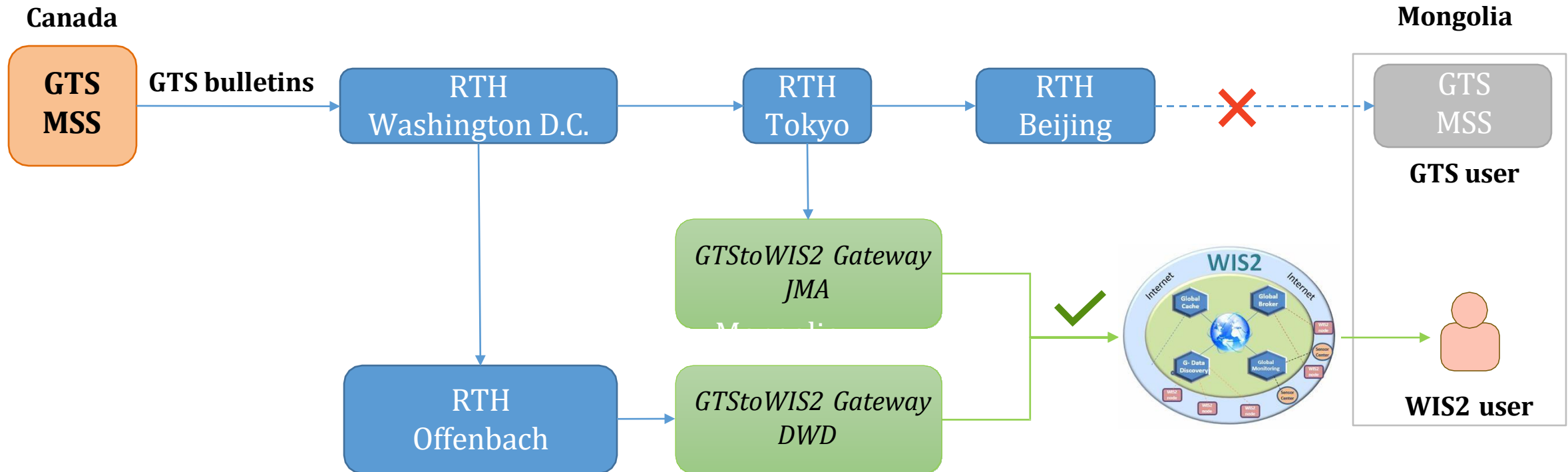
Transition infrastructure



Transition infrastructure



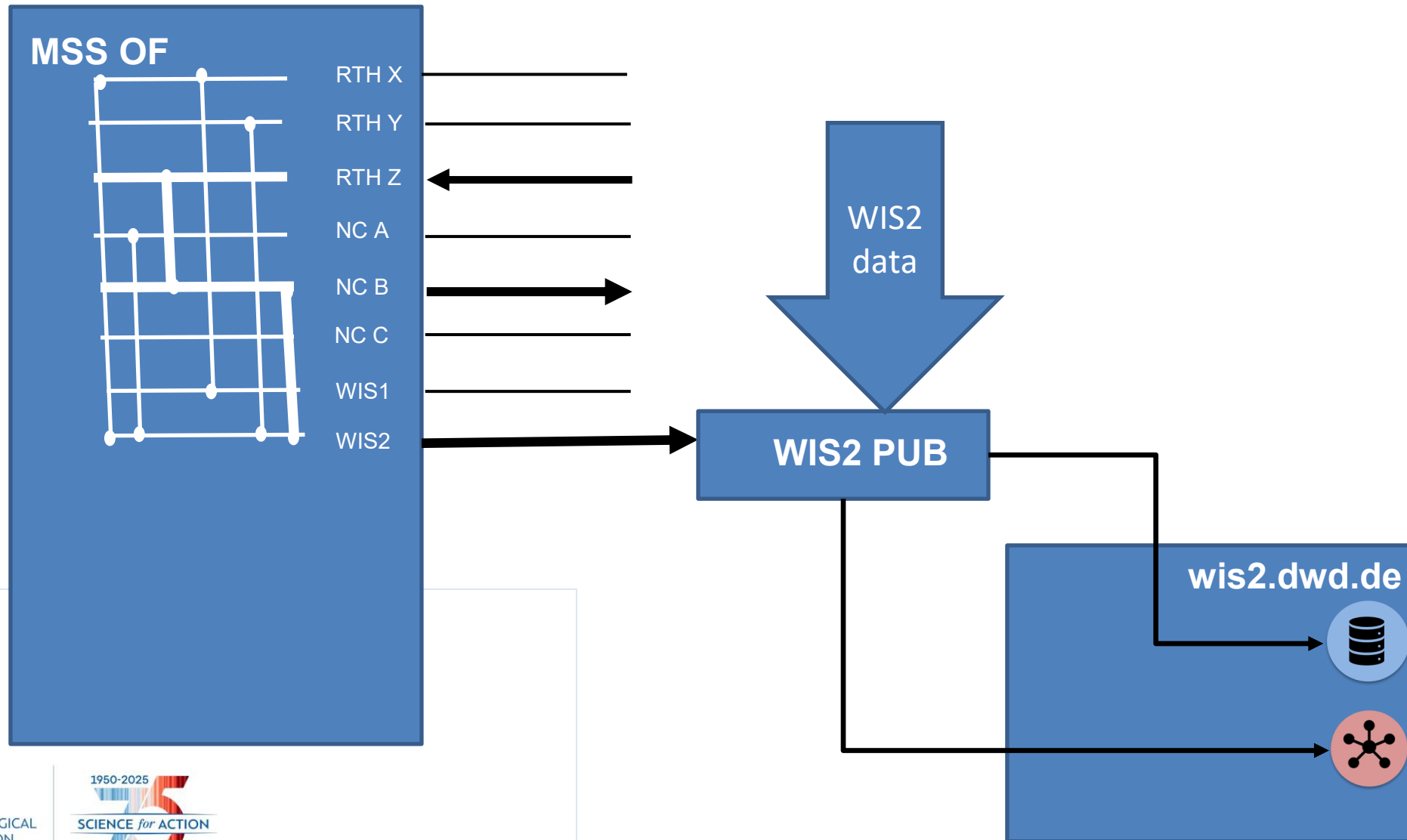
GTStoWIS2 gateway



[origin/a/wis2/de-dwd-gts-to-wis2/data/\[core|recommended\]/T1/T2/A1/A2/ii/CCCC](origin/a/wis2/de-dwd-gts-to-wis2/data/[core|recommended]/T1/T2/A1/A2/ii/CCCC)

The purpose of the GTStoWIS2 gateway is to enable members to receive GTS data on WIS2

GTStoWIS2 gateway



GTStoWIS2 gateway

MQTT Explorer

Search...

DISCONNECT

gb.wis.cma.cn

cache

a

wis2 (381 topics, 9243 messages)

origin

a

wis2

de-dwd-gts-to-wis2

data

recommended (291 topics, 652 messages)

core

I

S

M

I (1 topic, 2 messages)

N

53

DAMM = {"id": "7a76f18c-8aeb-11f0-9a65-0242ac1cff29", "conformsTo": ["http://wis.wmo.int/spec/wnm/1/conf/core"], "type": "core", "value": "DAMM"}

35

BABJ = {"id": "7aba1a98-8aeb-11f0-9312-0242ac1cff29", "conformsTo": ["http://wis.wmo.int/spec/wnm/1/conf/core"], "type": "core", "value": "BABJ"}

37 (1 topic, 1 message)

01 (1 topic, 1 message)

D (1 topic, 1 message)

A (9 topics, 11 messages)

I (1 topic, 2 messages)

G (9 topics, 9 messages)

Z (1 topic, 7 messages)

U (28 topics, 46 messages)

S

M (9 topics, 9 messages)

Z (5 topics, 5 messages)

U (2 topics, 2 messages)

P (1 topic, 1 message)

ru-aviamettelecom (1 topic, 1 message)

ca-eccc-msc (3 topics, 1995 messages)

jp-jma-gts-to-wis2 (108 topics, 368 messages)

cn-cma (1 topic, 39 messages)

hk-hko-swic (1 topic, 5 messages)

za-weathera (1 topic, 107 messages)

de-dwd (1 topic, 1 message)

kr-kma (2 topics, 2 messages)

us-noaa-nws (2 topics, 9 messages)

ir-irimo (1 topic, 1 message)

th-tmd (1 topic, 1 message)

us-noaa-synoptic (1 topic, 21 messages)

Topic

origin / a / wis2 / de-dwd-gts-to-wis2 / data / core / I / S / M / N / 35 / BABJ

Value

<>

☰

QoS: 0
2025/09/06 14:34:03

```
{
  "value": "S4SQermh+Y5Vh9FVaZdHxN+o8Px9q257LIo0XhgAhaWJcw8DayP4vdSxa17+gbU93lSiMUvELwZJ09QeNazkZg==",
  "datetime": "2025-09-06T06:00:00Z",
  "links": [
    {
      "href": "https://wis2.dwd.de/gts/babj/A_ISMN358ABJ060600_C_EDZW_20250906063402_73898409",
      "rel": "canonical",
      "type": "application/octet-stream",
      "length": 4683
    }
  ]
}
```

History 1

Publish

Topic

origin/a/wis2/de-dwd-gts-to-wis2/data/core/I/S/M/N/35/BABJ

raw xml json

PUBLISH

GTStoWIS2 gateway

MQTT Explorer

Search...

DISCONNECT

gb.wis.cma.cn

▼ cache

▼ a

▶ wis2 (510 topics, 22888 messages)

▼ origin

▼ a

▼ wis2

▶ de-dwd-gts-to-wis2 (689 topics, 1974 messages)

▶ ru-aviamettelecom (1 topic, 73 messages)

▶ ca-eccc-msc (4 topics, 5034 messages)

▼ jp-jma-gts-to-wis2

▼ data

▶ core (181 topics, 470 messages)

▼ recommended

▼ I

▼ U

▼ A

▼ X

▼ 02

▶ KARP = {"id": "5dfb7003-8277-4a4d-bb20-fa61d098e110", "version": "v04", "type": "application/octet-stream", "length": 13118, "security": {"default": {"type": "http", "scheme": "basic", "description": "Please contact JMA Team for WIS2 Global Cache via wis-jma@met.kishou.go.jp for accessing this secured resource."}}

▶ 07 (1 topic, 1 message)

▶ 03 (1 topic, 1 message)

▶ G (1 topic, 1 message)

▶ P (2 topics, 2 messages)

▶ U (1 topic, 62 messages)

▶ S (1 topic, 1 message)

▶ cn-cma (1 topic, 77 messages)

▶ hk-hko-swic (1 topic, 6 messages)

▶ za-weatherza (1 topic, 107 messages)

▶ de-dwd (1 topic, 2 messages)

▶ kr-kma (2 topics, 3 messages)

▶ us-noaa-nws (2 topics, 11 messages)

▶ ir-irimo (1 topic, 1 message)

▶ th-tmd (1 topic, 1 message)

▶ us-noaa-synoptic (1 topic, 21 messages)

▶ sg-mss (1 topic, 1 message)

▶ in-imd (1 topic, 1 message)

▶ nz-metservice (1 topic, 2 messages)

▶ dz-meteoalgerie (1 topic, 24 messages)

▶ cy-dom (1 topic, 1 message)

Topic

origin / a / wis2 / jp-jma-gts-to-wis2 / data / recommended / I / U / A / X / 02 / KARP

Value

<> ☰

```
~ {"type": "application/octet-stream",
  "length": 13118,
  "security": {
    "default": {
      "type": "http",
      "scheme": "basic",
      "description": "Please contact JMA Team for WIS2 Global Cache via wis-jma@met.kishou.go.jp for accessing this secured resource."
    }
  }
}
```

QoS: 0
2025/09/06 14:34:30

History 4

Publish

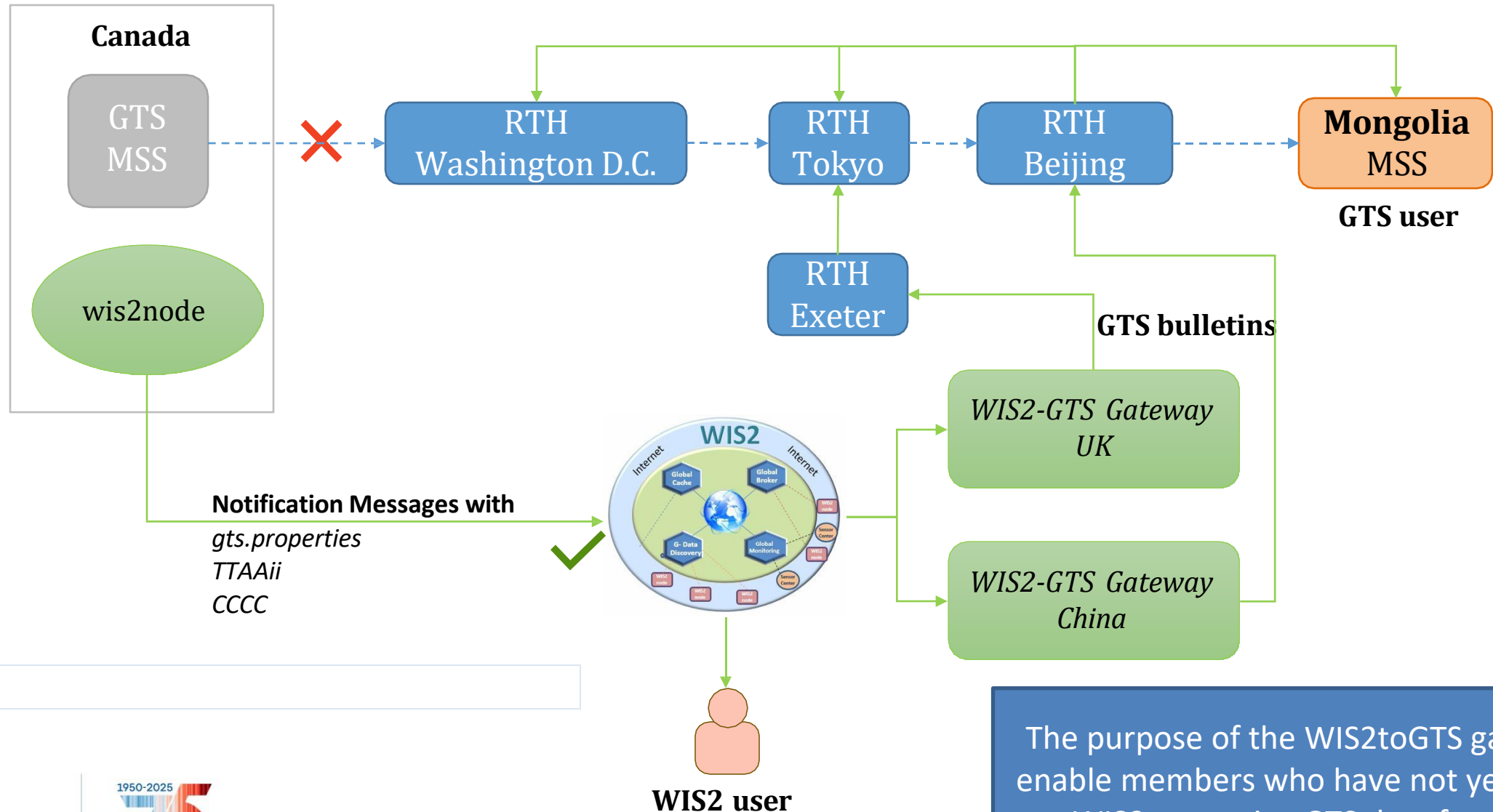
Topic

origin/a/wis2/jp-jma-gts-to-wis2/data/recommended/I/U/A/X/02/KARP

raw xml json

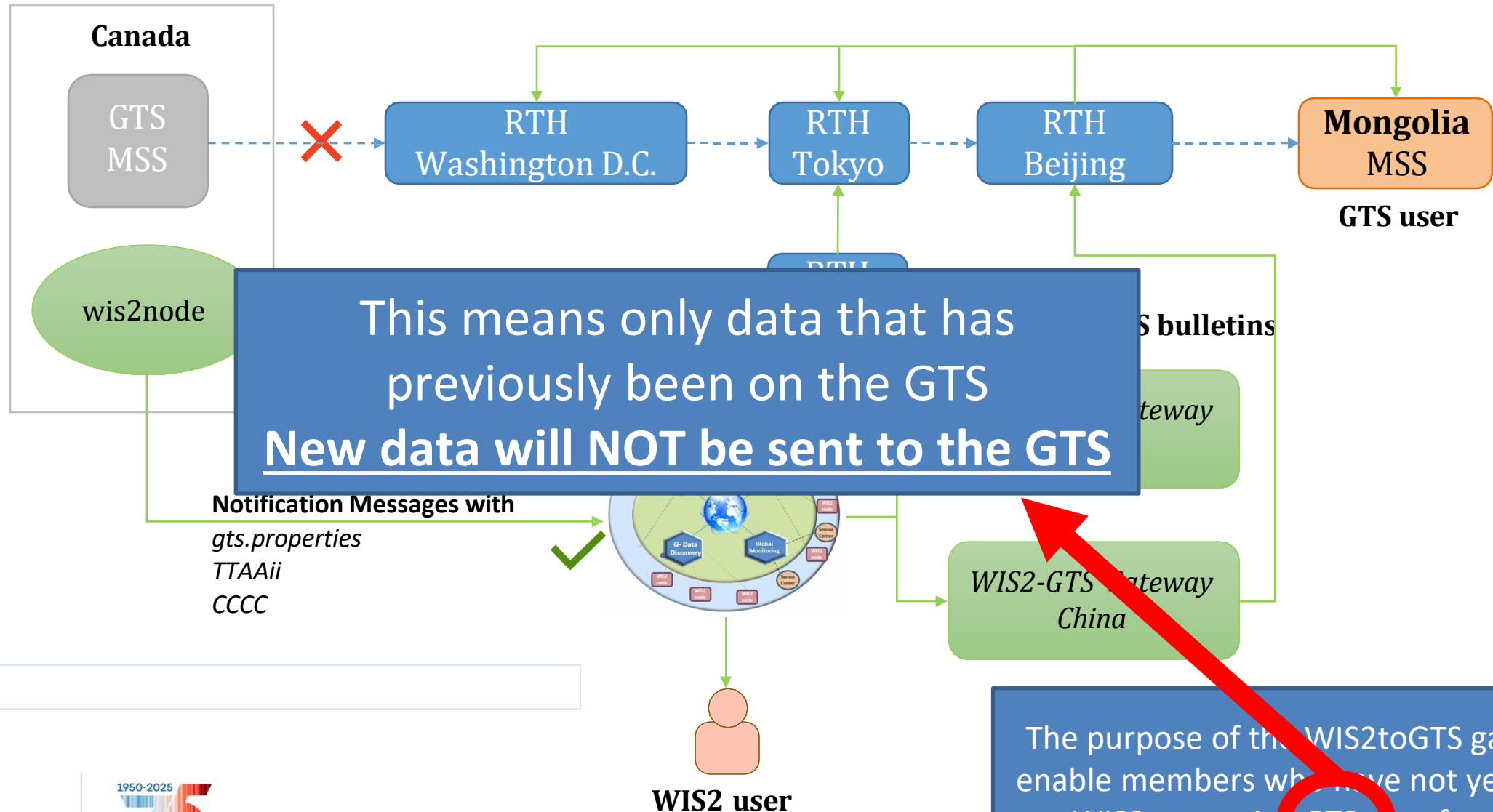
PUBLISH

WIS2toGTS gateway



The purpose of the WIS2toGTS gateway is to enable members who have not yet connected to WIS2 to receive GTS data from members who already have migrated

WIS2toGTS gateway



WIS2toGTS gateway

GB France GB China

core

recommended

sub & get msgs

whitelist filter

download

deduplication

TEMP/PILOT/SYNOP in BUFR?

bulletins with multiple stations

ISAD01 LCLK

...

ISAD02 LCLK

...

ISAD05 LCLK

...

bulletins with single station

12345: properties:gts:ISAD06,LCLK

...

54321: properties:gts:ISAD06,LCLK

...

encode

bulletin with multiple stations

ISAD06 LCLK

set [BBB][YYGGgg] according to
datetime/pubtime

add the GTS header

envelope[SOH...ETX]&pack

LCLKnnnnnnnnn.[abf]

2 server
(primary/backup)

simulate dir

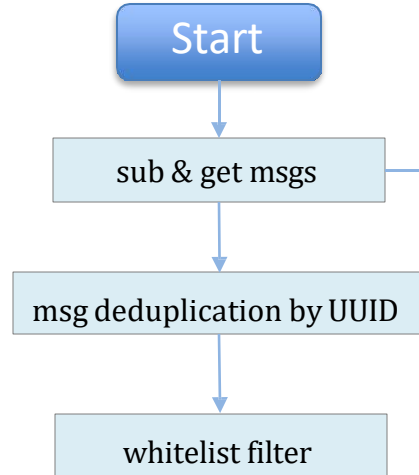
GTS

RTH Offenbach

RTH Tokyo

RTH Beijing

WIS2toGTS gateway



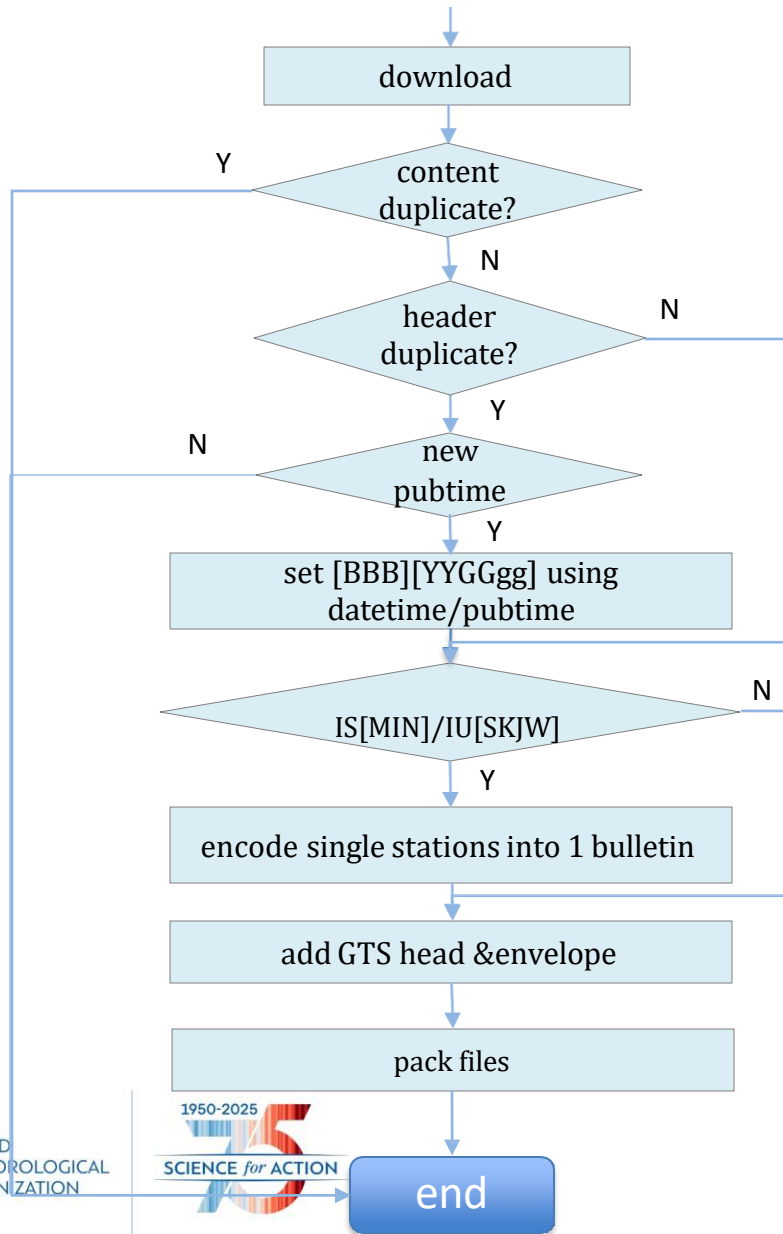
- **centerId:** "cy-dom"
ttaaia: "ISAD59"
cccc: "LCLK"
- **centerId:** "uk-metoffice-nmc"
ttaaia: "*****"
cccc: "EGRR"
- **centerId:** "sa-ncm"
ttaaia: "IS*D*"
cccc: "*****"
- **centerId:** "cg-met"
ttaaia: " SICG20"
cccc: "*****"
- **centerId:** "cg-met"
ttaaia: " SMCG20"
cccc: "*****"

```
{
  "id": "4b1ff663-69e1-4d07-ae5e-cb1cec796dc2",
  "version": "v04",
  "type": "Feature",
  "geometry": null,
  "properties": {
    "pubtime": "2025-02-21T05:37:03.853Z",
    "datetime": "2025-02-21T05:37:00.809Z",
    "integrity": {
      "method": "sha3-512",
      "value": "KwbRgYiftJv3GHptjTT5vQ8v6j4QDUBvveEzKKgT8/KuYsr00YgA0dOKLE4z/YGssAymaVNXoI49WNMTYVe5Ng=="
    },
    "data_id": "data/core/weather/surface-based-observations/synop/A_ISAD59LCLK210530_C_LCNC_20250221053700",
    "metadata_id": "urn:wmo:md:cy-dom:surface-based-observations.synop",
    "cache": true,
    "gts": {
      "ttaaia": "ISAD59",
      "cccc": "LCLK"
    }
  },
  "links": [
    {
      "href": "https://www.dom.org.cy/wis2/data/core/weather/surface-based-observations/synop/A_ISAD59LCLK210530_C_LCNC_20250221053700",
      "rel": "canonical",
      "type": "application/x-bufr",
      "length": 15400
    }
  ]
}
```

center-id: cy-dom
TAAai: ISAD59
CCCC: LCLK

both exact matches and
wildcards are supported

WIS2toGTS gateway



BUFR file: ISAD59 LCLK 210530 (no GTS header and envelop)

A_ISAD59LCLK210530_C_LCNC_20250221053700

```

00000000h: 42 55 46 52 00 3C 28 04 00 00 16 00 00 E6 00 00 ; BUFR.<{.....?.
00000010h: 00 00 00 07 FF 1F 00 07 E9 02 15 05 1E 00 00 00 ; .... ..?.....
00000020h: 09 00 00 34 80 C7 5C 00 3B FD 00 00 0C 40 00 03 ; ...4€药.;?...0..
00000030h: 03 13 43 63 62 02 02 02 02 02 02 02 02 02 0F ; ..Ccb.....
00000040h: FF FA 32 0A 92 6A 0A 5A 0A 99 01 01 01 01 01 ; ?.药.Z.?.....
  
```

pack bulletins into LCLK00519263.b(add GTS header and envelop)

LCLK00519263.b

```

00000000h: 30 30 30 31 35 34 33 37 30 30 01 0D 0D 0A 37 34 ; 0001543700...74
00000010h: 36 36 38 0D 0D 0A 49 53 41 44 35 39 20 4C 43 4C ; 668...ISAD59 LCL
00000020h: 4B 20 32 31 30 35 33 37 0D 0D 0A 42 55 46 52 00 ; K 210537...BUFR.
00000030h: 3C 28 04 00 00 16 00 00 E6 00 00 00 00 00 07 FF ; <{.....?.....
00000040h: 1F 00 07 E9 02 15 05 1E 00 00 00 09 00 00 34 80 ; ...?.....4€
  
```

Packing rules:

- ✓ Max file size : 1M
- ✓ Max bulletin number in a file : 100
- ✓ Packing frequency: 60 seconds



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

Thank you
Merci
Gracias
ارکشی
谢谢
Спасибо