



Australian Government
Bureau of Meteorology

WIS Monitoring Elements

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The 4th Workshop on WIS Implementation – 6-8 Dec.
2016, Tokyo*

Overview

- How messages are published
- Comment elements of monitoring JSON messages
- Detailed look at each type of JSON message

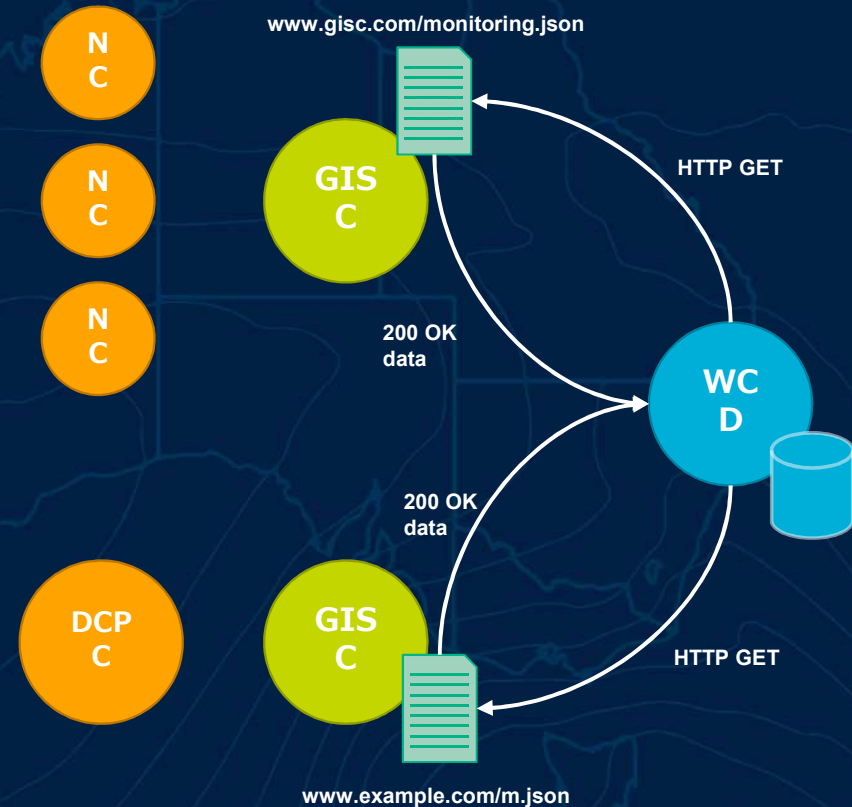
How Messages Are Published

- Uses standard HTTP technology: JSON over HTTP
- In general, metric collection and dissemination follows a WIS centre's area of responsibility:
 - E.g. GISCs are responsible for determine number of products & metadata records for NC/DCPCs
- BUT, monitoring can extend **beyond** these line of responsibilities:
 - GISCs contacting other GISCs to determine response time.



How Messages Are Published

- Reporting centres make available metrics by **announcing a URL** to the JSON message.
- Consuming centre makes HTTP GET request to retrieve JSON message.
- Metrics are updated by reporting centre when required:
 - Consuming centres may schedule updates at any time
- Consuming centres are responsible for storing metrics to produce trends.



JSON Messages

- Four different JSON message types
 - *monitoring.json* – monitoring statistics of the GISC
 - *cache.json* – statistics of the GISC's cache
 - *centres.json* – statistics of other centres connect to the GISC
 - *events.json* – any pending calendar events
- The monitoring specification outlines for each message type:
 - Payload structure (adheres to JSON schema definition)
 - Optionality (is message mandatory?)
 - Expected update frequency
 - Expected life-time of data

Common Elements

Each message type shares the following "header" information:

Version Number

- Identifies this message as a WMO WIS monitoring message.
- Identifies the version of the specification this message conforms to.
- Current version = 1.1

```
{  
  "wmo_wis_monitoring": "1.1",  
  "centre": "GISC Melbourne [AU]",  
  "timestamp": "2014-11-10T00:00:00Z",  
  ...  
}
```

Common Elements

Centre Name

- Identifies the publishing centre.

All WIS centres have a monitoring identifier of the form:

classifier description [location]

- *classifier*: identifies the centre type (GISC, DCPC, NC)
- *description*: describes the center (based on the centre's type).
- *location*: ISO 3316-1 country code OR organization acronym

```
{  
  "wmo_wis_monitoring": "1.1",  
  "centre": "GISC Melbourne [AU]",  
  "timestamp": "2014-11-10T00:00:00Z",  
  ...  
}
```


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Common Elements

Some example centre names:

Classification	City / Description	Country / Org	Identifier
GISC	Tokyo	Japan	GISC Tokyo [JP]
DCPC	RSMC Medium Range Forecasting	ECMWF	DCPC RSMC Medium Range Forecasting [ECMWF]
DCPC	Trans-boundary Forest Fires	Indonesia	DCPCP Trans-boundary Forest Fires [ID]
NC	National Meteorological Centre	Myanmar	NC NMC [MN]
NC	National Meteorological Centre	Thailand	NC NMC [TH]

Common Elements

Timestamp

- The reporting timestamp
- Time when the sampling period ends:
 - Samples occur **before** this time
 - Report generation occurs **after** this time.



```
{  
  "wmo_wis_monitoring": "1.1",  
  "centre": "GISC Melbourne [AU]",  
  "timestamp": "2014-11-10T00:00:00Z",  
  ...  
}
```


monitor.json

- Static information and overview metrics of a GISC
- Mandatory for GISCs

Key Metrics:

- Number of metadata records
- Size of cache
- Status and services
- GISC properties – links to services and other JSON messages
- Contact information
- Remarks

```
{  
  "wmo_wis_monitoring": "1.1",  
  "centre": "GISC Tokyo [JP]",  
  "timestamp": "2014-11-10T00:00:00Z",  
  
  "gisc_properties": { ... },  
  "metrics": {  
    "metadata_catalogue": { ... },  
    "cache_24h": { ... },  
    "services": { ... },  
  },  
  "remarks": "..."  
}
```

monitor.json

Metadata Catalogue:

- Number of metadata at the reporting time
- Number of metadata records that have changed.

Cache Details:

- Number of products in the cache
- Size of the cache
- Number of products in the cache with missing metadata.

```
"metadata_catalogue": {  
  "number_of_metadata": 150000,  
  "number_of_changes_insert_modify":  
    200,  
  "number_of_changes_delete": 100  
},  
"cache_24h": {  
  "number_of_product_instances": 310000,  
  "size_of_cache": 1300000000,  
  "number_of_product_instances  
    _missing_metadata": 3100,  
  "size_of_product_instances  
    _missing_metadata": 1300000,  
  "number_of_unique_products  
    _missing_metadata": 1000,  
  "number_of_unique_products  
    _missing_metadata_AoR": 1  
}
```

monitor.json

Services:

- Activate status of:
 - OAI-PMH
 - Portal
 - Distribution System (a.k.a. dissemination)
 - SRU Search

```
"services": {  
  "oaipmh": {  
    "status": true  
  },  
  "portal": {  
    "status": true  
  },  
  "distribution_system": {  
    "status": true  
  },  
  "sru": {  
    "status": false  
  }  
}
```

monitor.json

GISC Properties:

- Various properties of the GISC:
 - URLs to other monitoring JSON messages
 - URLs to key services (OAI-PMH, portal, etc).
 - List of backup GISCs
 - Contact information
 - Links to RMDCN Information

Remarks:

- Any other comments to make

```
"gisc_properties": {  
  "cache_url":  
    "http://www.wis-jma.go.jp/...",  
  "portal_url":  
    "http://www.wis-jma.go.jp/cms",  
  ...  
  "backup_giscs": [  
    "GISC Beijing [CN]",  
    "GISC Melbourne [AU]",  
    "GISC Offenbach [DE]"  
  ],  
  "contact_info": {  
    "voice": "+860000000000",  
    "email": "email@example.com"  
  },  
  "rmdcm": { ... },  
},  
"remarks": "Any additional text message"
```




cache.json

- Metrics of the contents of the GISCs cache.
- Mandatory for GISCs
- Individual metrics for each centre within a GISCs AoR

Key Metrics For Each NC:

- Number of product instances
- Total size of product instances
- Product instances missing metadata
- Number of metadata records

```
{
  "wmo_wis_monitoring": "1.1",
  "centre": "GISC Melbourne [AU]",
  "timestamp": "2014-11-10T00:00:00Z",

  "centres": [
    {
      "centre": "DCPC JATWC [AU]",
      "metrics": {
        "number_of_product_instances": 42,
        "size_of_product_instances": 20102,
        "number_of_product_instances_missing_metadata": 3,
        "size_of_product_instances_missing_metadata": 345,
        "number_of_unique_products_missing_metadata": 1,
        "number_of_metadata": 7
      }, {
        "centre": "NC NMC [PG]",
        ...
      }
    }
  ]
}
```

centres.json

- Publishes statistics about *other* with centres from the point of view of the reporting centre.
- Mandatory for GISCs.
- Published more often (every 10 minutes vs. daily)

Key Metrics For Each Centre

- Portal response time
- OAI-PMH response time
- SRU response time

```
{
  "wmo_wis_monitoring": "1.1",
  "centre": "GISC Melbourne [AU]",
  "timestamp": "2014-11-10T00:00:00Z",

  "centres": [
    {
      "centre": "GISC Offenbach [DE]",
      "metrics": {
        "portal_response_time": 1.3792,
        "oaipmh_response_time": 0.6970,
        "sru_response_time": 1.4022,
      }
    }, {
      "centre": "GISC Jeddah [SA]",
      ...
    }, {
      ...
    }
  ]
}
```

events.json

- Used to announce important activities that will be performed by the reporting centre (or within the centre's AoR).
- Optional

Details Of Each Event

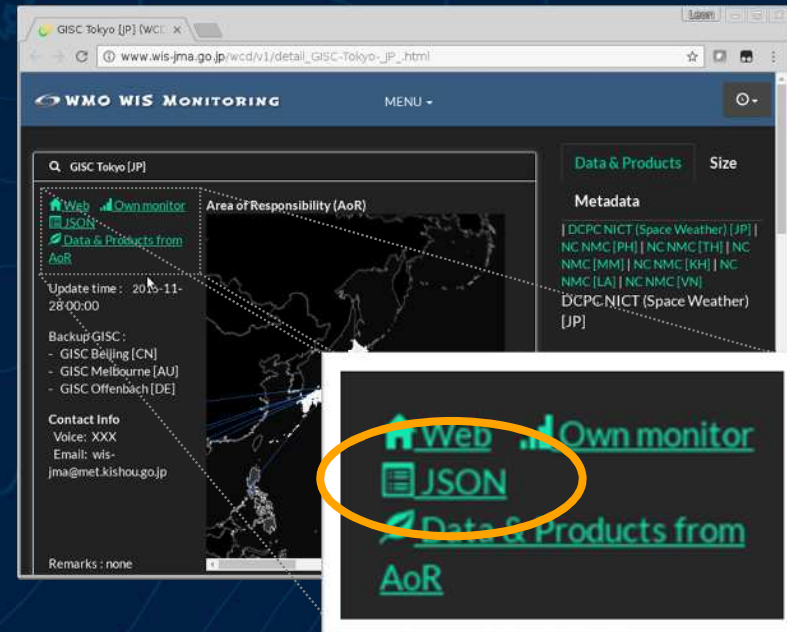
- A local identifier
- A title or summary of the event
- Details of the event
- Start/end dates and times

```
{
  "wmo_wis_monitoring": "1.1",
  "centre": "GISC Offenbach [DE]",
  "timestamp": "2014-11-10T00:00:00Z",

  "events": [
    {
      "id": 1,
      "title": "GISC Maintenance",
      "text": "Database update, OAI
              Provider will function
              while catalogue is down",
      "start": "2014-11-11T00:00:00Z",
      "end": "2014-11-10T02:00:00Z",
    },
    ...
  ]
}
```

Learning More

- JSON Message Spec v1.1 draft
2016-11-08
- WMO monitoring wiki page:
<https://wiswiki.wmo.int/tiki-index.php?page=WIS-Monitoring>
- View the JSON file for each GISC



The screenshot shows the WMO WIS Monitoring website interface. The main content area displays the 'GISC Tokyo [JP]' page, which includes a map of the Area of Responsibility (AoR) and a sidebar with navigation links. The sidebar contains the following links: 'Web', 'Own monitor', 'JSON', 'Data & Products from AoR'. The 'JSON' link is highlighted with a yellow circle. The main content area also displays 'Update time: 2015-11-28 00:00', 'Backup GISC' information, and 'Contact Info'.



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Thank you

Any questions?

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