

JMA Activity on Lead Centres for GCOS in 2025

1 Performances of GSN and CLIMAT stations

JMA serves as the Lead Centre for GCOS in its area of responsibility, which covers East Asia and Southeast Asia (Brunei, Cambodia, China, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, the Philippines, the Republic of Korea, Singapore, Thailand, and Vietnam).

The left part of Table 1 highlights the performance of GSN (GCOS Surface Network) stations in the region. JMA received CLIMAT reports from most stations (CA: 0.9 or more for most countries) with a low number of format errors (CC: 0.9 or more for most countries), and there were no silent stations.

JMA routinely performs quality checking of reports based on statistics from past data, comparison against SYNOP reports, and/or comparison among nearby stations. Ratios of valid monthly mean temperature were generally good in the region (CT: 0.9 or more for most countries).

Errors for GSN stations tend to be found similarly for CLIMAT stations, as per the scores shown on the right of Table 1. Station evaluation is based on the Performance Indicator of the GSN Monitoring Centre¹.

Table 1 Performances of CLIMAT reports

Country	# Stn	GSN			# Stn	CLIMAT		
		CA	CC	CT		CA	CC	CT
Brunei	-	-	-	-	1	1.0	0.7	1.0
Cambodia	-	-	-	-	2	0.0	0.0	0.0
China	32	1.0	1.0	1.0	78	0.9	0.9	0.9
Japan	13	1.0	1.0	1.0	52	1.0	1.0	1.0
Lao PDR	-	-	-	-	4	0.7	0.0	0.7
Malaysia	6	0.8	0.8	1.0	15	0.8	0.8	1.0
Mongolia	10	0.9	0.9	1.0	36	0.9	0.9	0.9
Myanmar	3	1.0	1.0	1.0	5	1.0	1.0	1.0
Philippines	6	1.0	1.0	1.0	8	0.9	0.8	0.9
R. of Korea	3	1.0	1.0	1.0	11	1.0	1.0	1.0
Singapore	-	-	-	-	1	1.0	1.0	1.0
Thailand	6	1.0	1.0	1.0	13	1.0	1.0	1.0
Vietnam	1	1.0	0.5	1.0	16	0.9	0.4	0.9

Ratios against expected total reports are evaluated for CA here based on available reports transmitted in a timely manner; CC: correct reports with no format errors; CT: valid reports of monthly mean temperature passing quality control. Scores equal to and below 0.7, shown in red, indicate that JMA recognizes a need for LC action.

¹ https://gcoss.dwd.de/DWD-GCOS/EN/nationalcontributions/servicesforgcos/centresforqualityassurance/gsmnc/gsmnc_monitoring_produkte/gsmnc/performance_indicator/performance_indicator_node.html

2 2025 BUFR CLIMAT reports

Transition from TAC to BUFR format for CLIMAT reports remains ongoing worldwide. Here summarizes the results of JMA's analysis regarding the current BUFR CLIMAT situation in the region.

Table 2 summarizes the progress of transition to BUFR format in individual countries and the quality of BUFR reports based on comparison with TAC reports. Most CLIMAT reports were transmitted in dual BUFR/TAC format, with provision rates varying by country. A high percentage of BUFR reports were received from China, Japan, the Republic of Korea, Singapore, and Thailand, while intermediate percentage of the reports were received from Myanmar and Vietnam. No correct BUFR reports were received from Brunei, Cambodia, Lao PDR, Malaysia, Mongolia and the Philippines in 2025. Tendencies in transition to BUFR have not generally changed in the last five years. Noticeable improvement has been seen for Myanmar. BUFR reports show close agreement with TAC in countries providing both formats (shown as discrepancies in Table 2). Correspondence between BUFR and TAC for these countries has generally improved in the last five years. It should be noted that the comparison results are preliminary, and some of the discrepancies might be attributable to errors on JMA's part.

Table 2 Summary of 2025 CLIMAT reports with BUFR format in the region

Country	Reported format	BUFR	Discrepancies w/ TAC
Brunei	TAC	-	-
Cambodia	No CLIMAT reports in 2025		
China	BUFR	100%	-
Japan	TAC & BUFR	100% (98%)	0% (0%)
Lao PDR	TAC	-	-
Malaysia	TAC	-	-
Mongolia	TAC	-	-
Myanmar	TAC & BUFR	94% (27%)	3% (12%)
Philippines	TAC	-	-
R. of Korea	TAC & BUFR	100% (96%)	0% (1%)
Singapore	TAC & BUFR	100% (96%)	0% (0%)
Thailand	TAC & BUFR	100% (96%)	0% (1%)
Vietnam	TAC & BUFR	50% (43%)	1% (14%)

Ratios against all reports for received BUFR format in 2025 (for 2020 – 2024). Ratios of disparity between BUFR and TAC reports are also shown for countries with both formats available. Red indicates suggestion of incomplete BUFR transition (i.e., ratios below 90% and/or a discrepancy of more than 0% from TAC).

3 Lead Centre activities of JMA in 2025

3.1 Visualization tool

JMA provides a visualization tool for monthly mean temperatures, monthly total precipitation amounts, and Standardized Precipitation Index (SPI) derived from CLIMAT reports (ClimatView²). This is expected to be useful in monitoring of reports from other NMHSs.

3.2 Direct inquiries

JMA contacted NMHSs in relation to the following:

- Thailand: inconsistency between CLIMAT and SYNOP reports from 2025
- Singapore: sharing of the procedure for nomination of GSN stations
- Lao PDR: initiation of error report provision as of July 2025
- Mongolia: missing reports from certain observation stations for June and July 2025
- Vietnam: errors in BUFR and TAC formats from 2023

Some of these issues were resolved promptly in collaboration with the relevant NMHSs, while others are still being addressed. Other minor issues were also highlighted and resolved within a framework of error-reporting activity.

3.3 Error-report sharing

Since October 2022, JMA has shared monthly information summarizing CLIMAT report errors for GSN stations provided by DWD with NMHSs in the region to encourage reporting improvement based on common understanding and interaction with focal points/supervisors of member countries. The work has significantly reduced reporting errors, and a lower error rate has been maintained despite a temporary increase in the number of errors observed (Figure 1). As of late 2025, JMA shared reports regularly with Lao PDR (focal-point contact established in July 2025), Malaysia, Mongolia, Myanmar, the Republic of Korea, Singapore, Thailand and Vietnam.

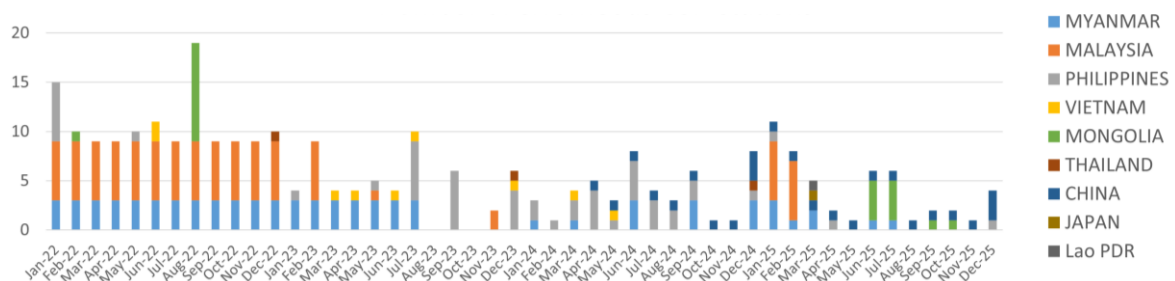


Figure 1 Time evolution of number of erroneous GSN stations in the region

² <https://www.data.jma.go.jp/tcc/tcc/products/climate/climatview/frame.php>

3.4 Training

Selected NMHS staff are invited to JMA's Group Training Course for Reinforcement of Meteorological Services (*) annually. The 12 attendees on the 2025 course learned about CLIMAT reports and the activities of the Lead Centre for GCOS in JMA Tokyo.

* The course is organized by the Japan International Cooperation Agency (JICA) and JMA.

4 Remarks on JMA's activity

4.1 Decoding of DAYCLI reports

Daily-CLIMAT (DAYCLI) reports are now a required component in the Climate Data Management System Specifications (WMO-No. 1131). As the number of DAYCLI reports is expected to increase, JMA developed a trial DAYCLI decoder in 2024 and has monitored DAYCLI reports continuously ever since. The Agency currently receives reports from only around 13 countries globally, and will continue to monitor the situation.

4.2 Decoding of BUFR reports

Further improvement of JMA's decoding system is under consideration for adaptation to WIGOS-ID in BUFR decoding.

4.3 Regional progress in transition to BUFR format

Transition progress in recent years has been limited. JMA recognizes the need to monitor the progress of each country in the region.