

**Report of the 21st Inter-laboratory
Comparison Project 2025
on Dry Deposition
(Filter Pack Method)
Preliminary Draft**

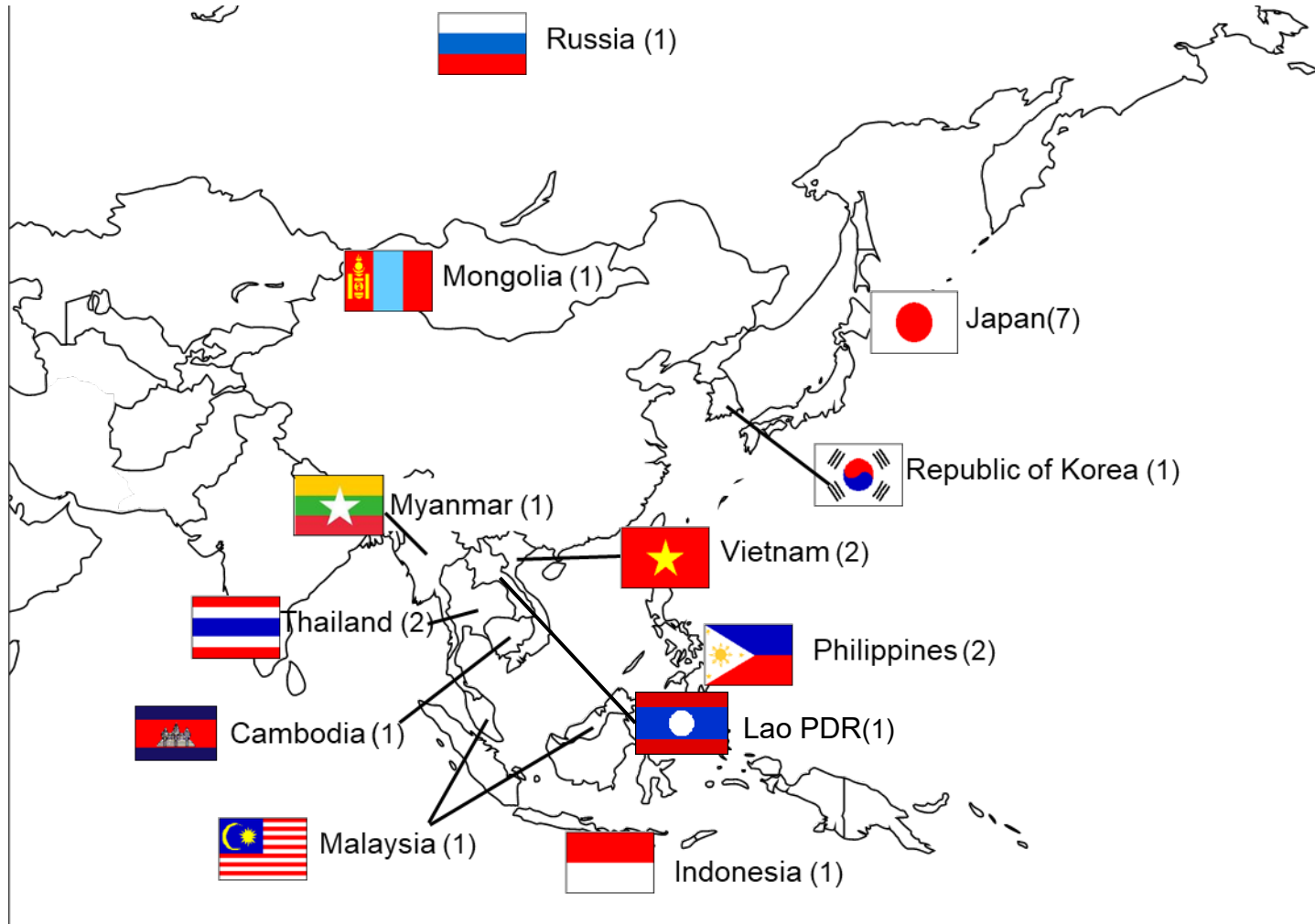
SAC26

**October 20-22, 2025
Kuala Lumpur, Malaysia
Network Center for the EANET**



Participating Laboratories

The Network Center shipped the sample filters to 22 laboratories in 12 countries. Participating laboratories and their codes are listed in Table 1.1.



Outline of filter samples

Name	Details	Container	Number of filters	Note
No.251d-1	Alkali (K_2CO_3) impregnated filter	Polyethylene centrifuge tube	3	Each filter contains a known quantity of sulfate and chloride ions.
No.251d-2	Acid (H_3PO_4) impregnated filter	Polyethylene centrifuge tube	3	Each Filter contains a known quantity of ammonium ions.
No.252d-1	Alkali (K_2CO_3) impregnated filter	Polyethylene centrifuge tube	3	Each filter contains a known quantity of sulfate and chloride ions.
No.252d-2	Acid (H_3PO_4) impregnated filter	Polyethylene centrifuge tube	3	Each Filter contains a known quantity of ammonium ions.
No.253d-1	Alkali (K_2CO_3) impregnated filter	Polyethylene centrifuge tube	3	Blank
No.253d-2	Acid (H_3PO_4) impregnated filter	Polyethylene centrifuge tube	3	Blank

Summary of the analytical results

Table 2.2

Analyte	Prepared (Vp)	Average (Va)	Va/Vp [%]	S.D.	N	Min.	Max.
<u>Sample No. 251d</u>							
SO ₄ ²⁻ [μg]	8.25	7.60	-7.9	0.68	17	5.77	8.74
Cl ⁻ [μg]	5.83	5.15	-11.7	1.36	18	1.32	6.90
NH ₄ ⁺ [μg]	23.0	24.0	4.3	2.73	18	20.1	31.7
<u>Sample No. 252 d</u>							
SO ₄ ²⁻ [μg]	27.1	25.7	-5.2	2.75	18	20.1	31.2
Cl ⁻ [μg]	14.0	13.2	-5.6	1.70	17	9.08	16.3
NH ₄ ⁺ [μg]	57.1	56.2	-1.5	4.73	17	45.3	64.3

Prepared* : Prepared Values

$\Delta V/Vp^*$: (Average (Va)- Prepared (Vp)) / Prepared (Vp) × 100 (%)



The Data Quality Objectives (DQOs)

Deviation (%) = (Determined value – Prepared value) / Prepared value x 100 (%)

Flag E : **$15\% < |\text{Deviation}| \leq 30\%$**

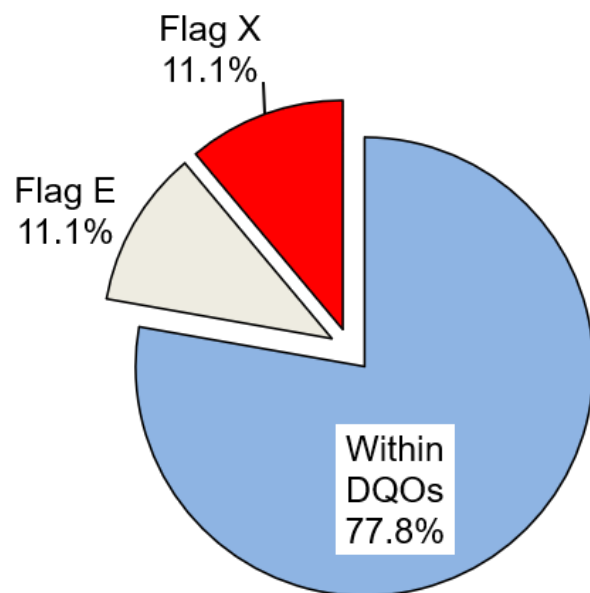
Flag X : **$30\% < |\text{Deviation}|$**



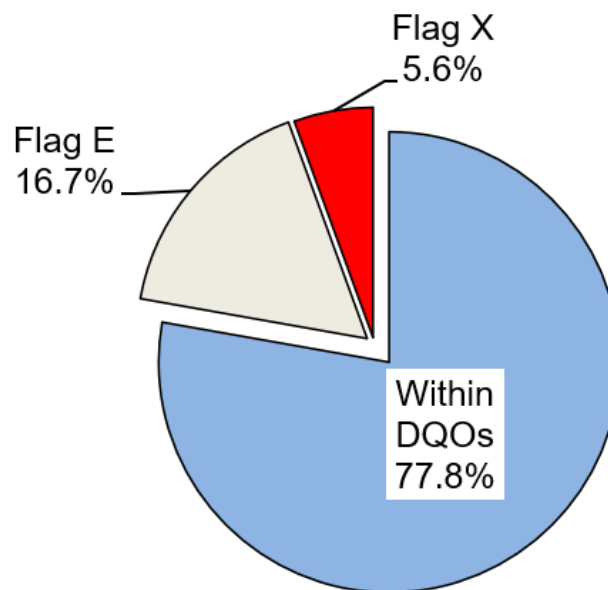
Percentage of flagged data for Sample No.251d and No.252d

Figures 2.1, 2.2

**Sample No.251d (n =54)
(Small Quant.)**



**Sample No.252d (n = 54)
(Large Quant.)**

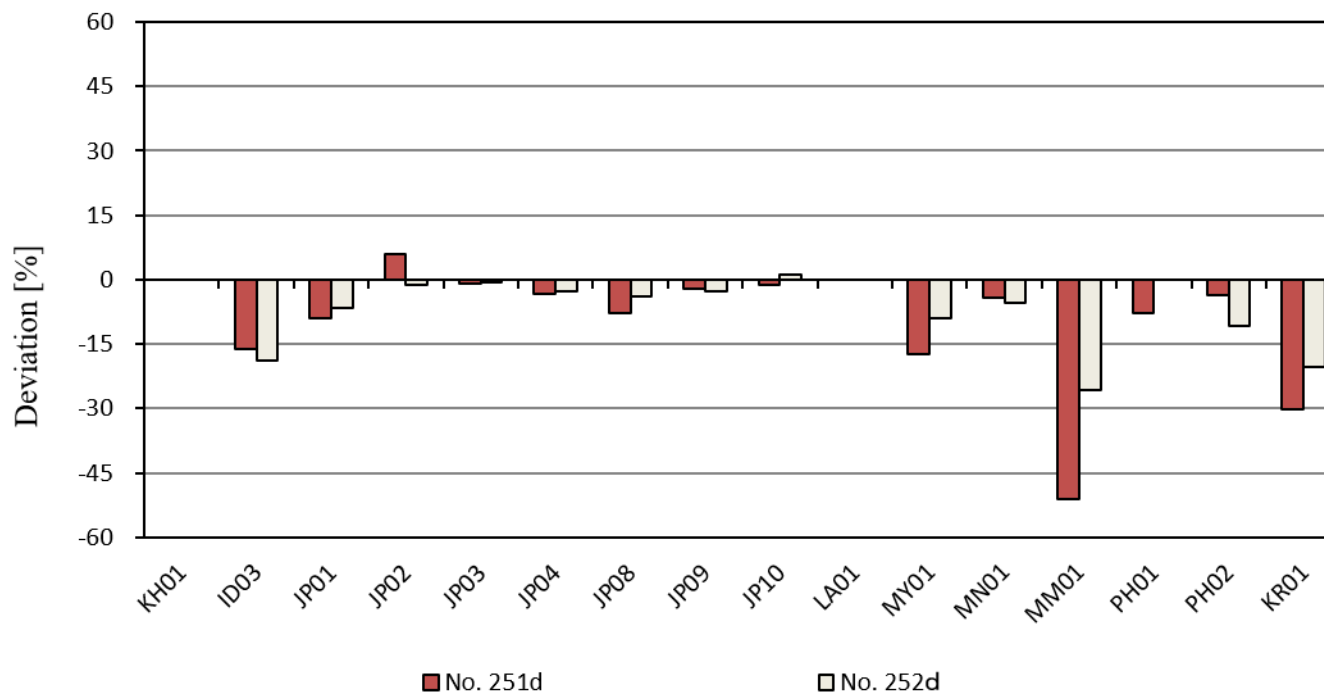


**Flag E; $15 \% < | \text{Deviation} | \leq 30 \%$
Flag X; $30 \% < | \text{Deviation} |$**



Deviation for SO_4^{2-} (by laboratory)

Figure 2.3



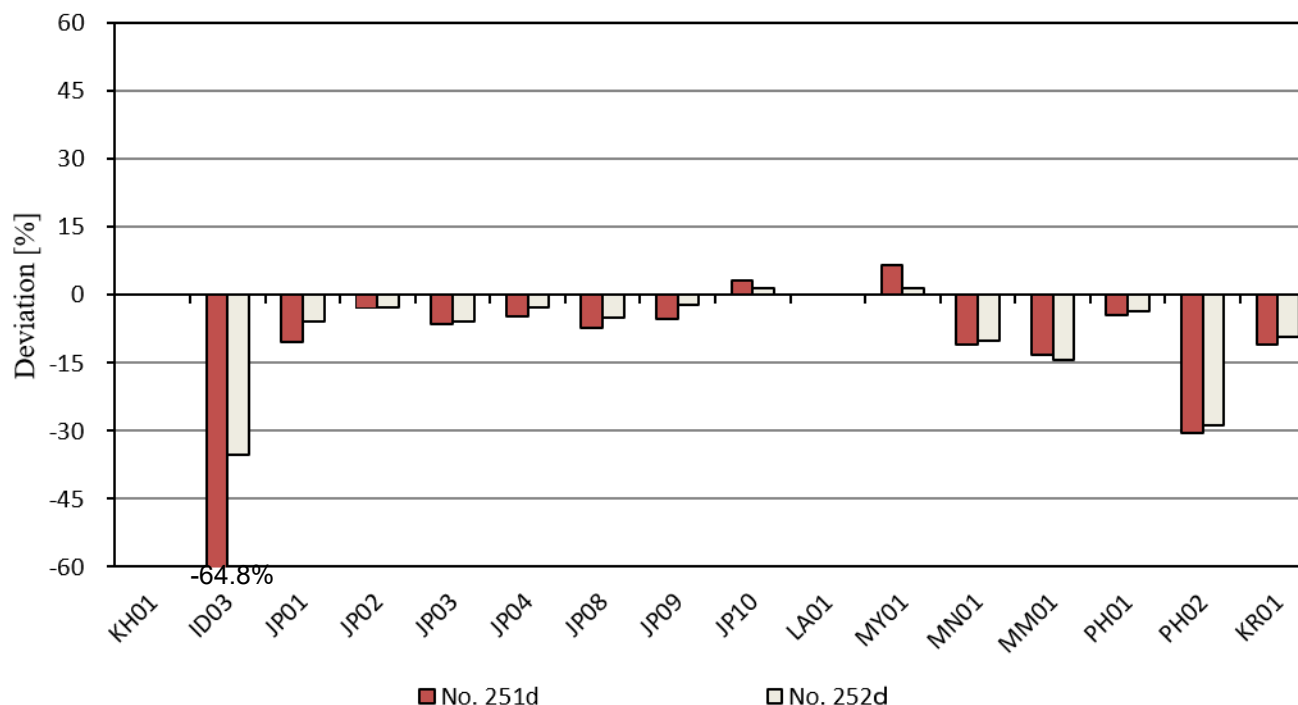
Deviation (%) = (Determined value – Prepared value)/ Prepared value x 100 (%)

One laboratory used the spectrophotometry method, and the other laboratories used the Ion Chromatography method for the analysis of SO_4^{2-} .



Deviation for Cl⁻ (by laboratory)

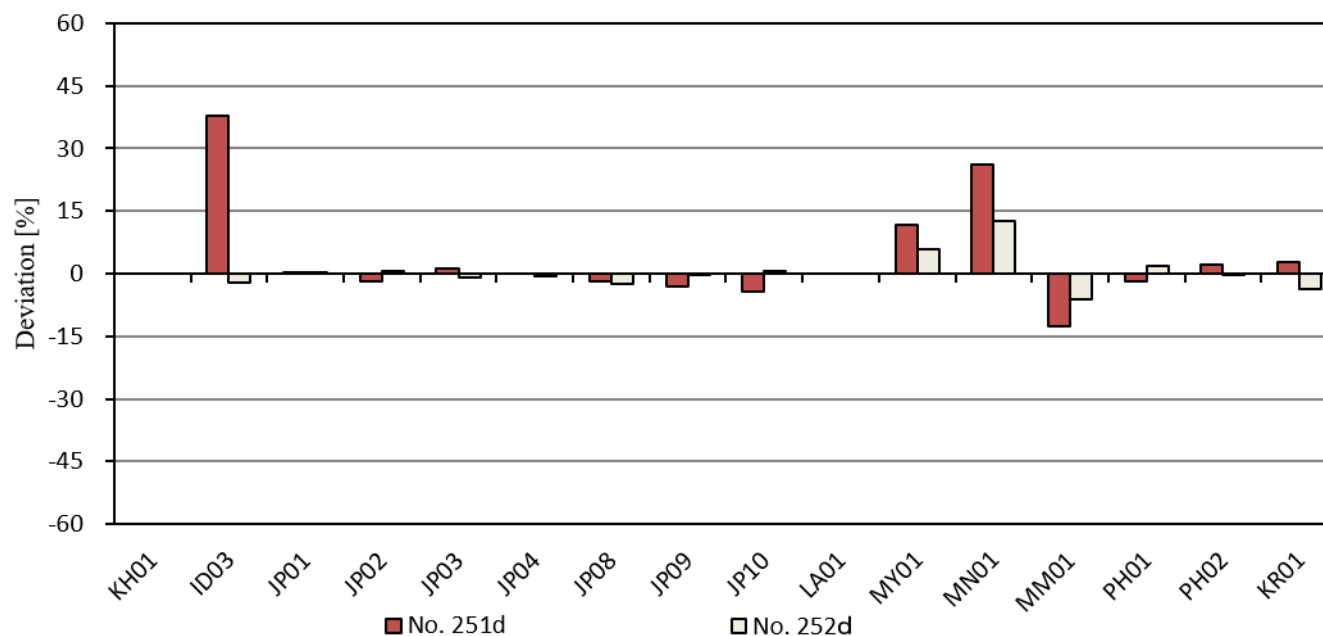
Figure 2.4



One laboratory used the spectrophotometry method, and the other laboratories used the Ion Chromatography method for the analysis of Cl⁻.

Deviation for NH_4^+ (by Laboratory)

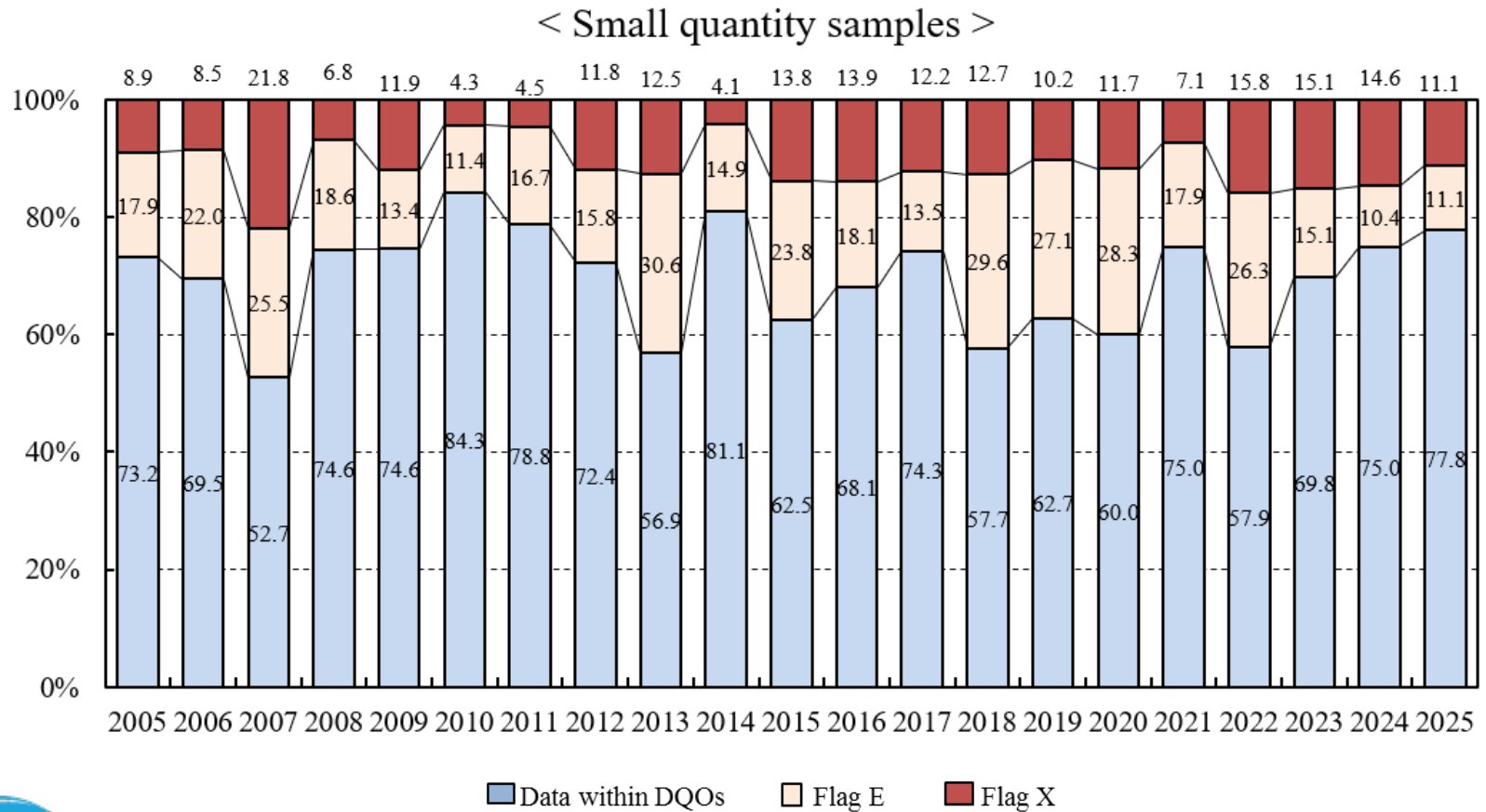
Figure 2.5



One laboratory used the spectrophotometry method, and the other laboratories used the Ion Chromatography method for the analysis of NH_4^+ .

Comparison with past studies

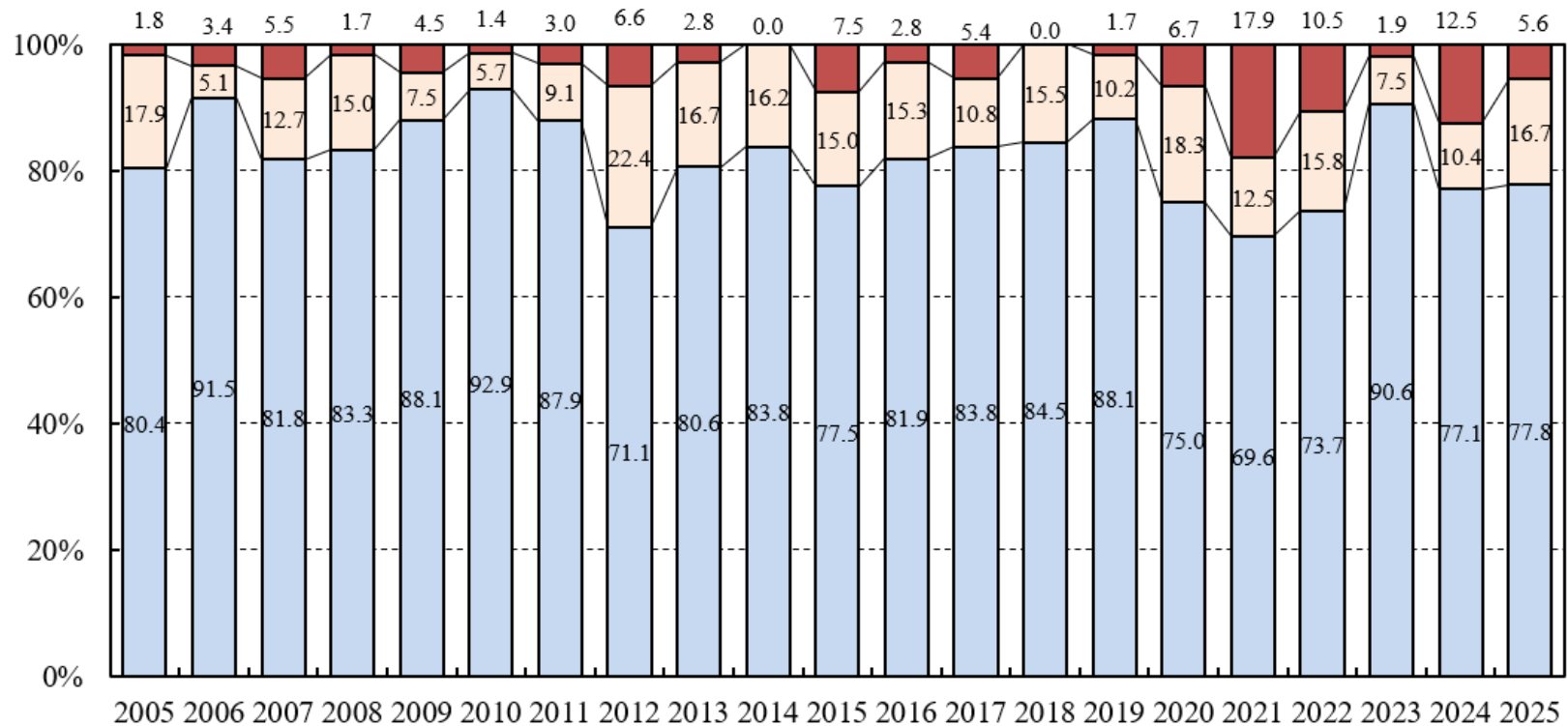
Figure 2.31



Comparison with past studies

Figure 2.31

<Large quantity samples >

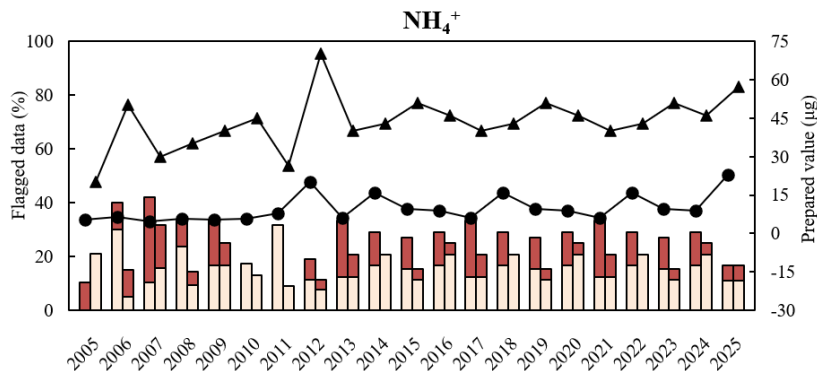
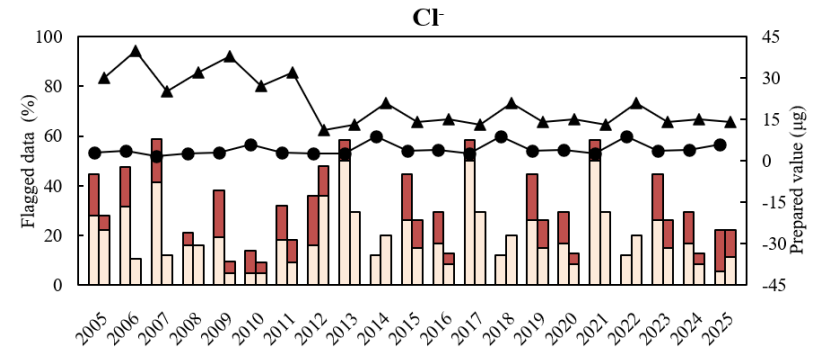
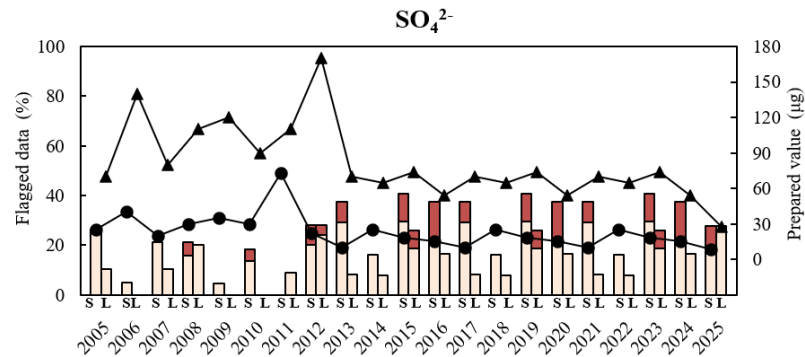


■ Data within DQOs ■ Flag E ■ Flag X



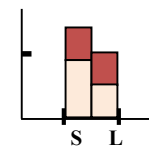
Flagged data of each year

Figure 2.32



*X axis; year of project

**Left Y axis; percentage of flagged data (%)



"X" Flag percentage
"E" Flag percentage

S : Sample 1 (Small Quantity Sample)

L : Sample 2 (Large Quantity)

***Right Y axis; concentration of prepared samples (µg)

● Prepared value of Sample 1
▲ Prepared value of Sample 2

Thank you for your attention!