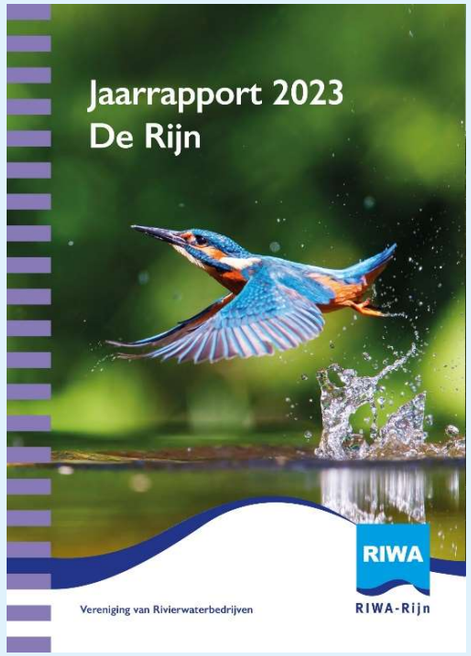
RIWA-Rijn Annual Report 2023



Graphs from chapter 1

The quality of the Rhine water in 2023

The concentrations of the substances were compared to target values from the European River Memorandum (ERM). More information on the ERM can be found on our website:
https://www.riwa-rijn.org/en/riwa-rijn-en/european-river-memorandum-2/

ERM-streefwaarde = ERM target value

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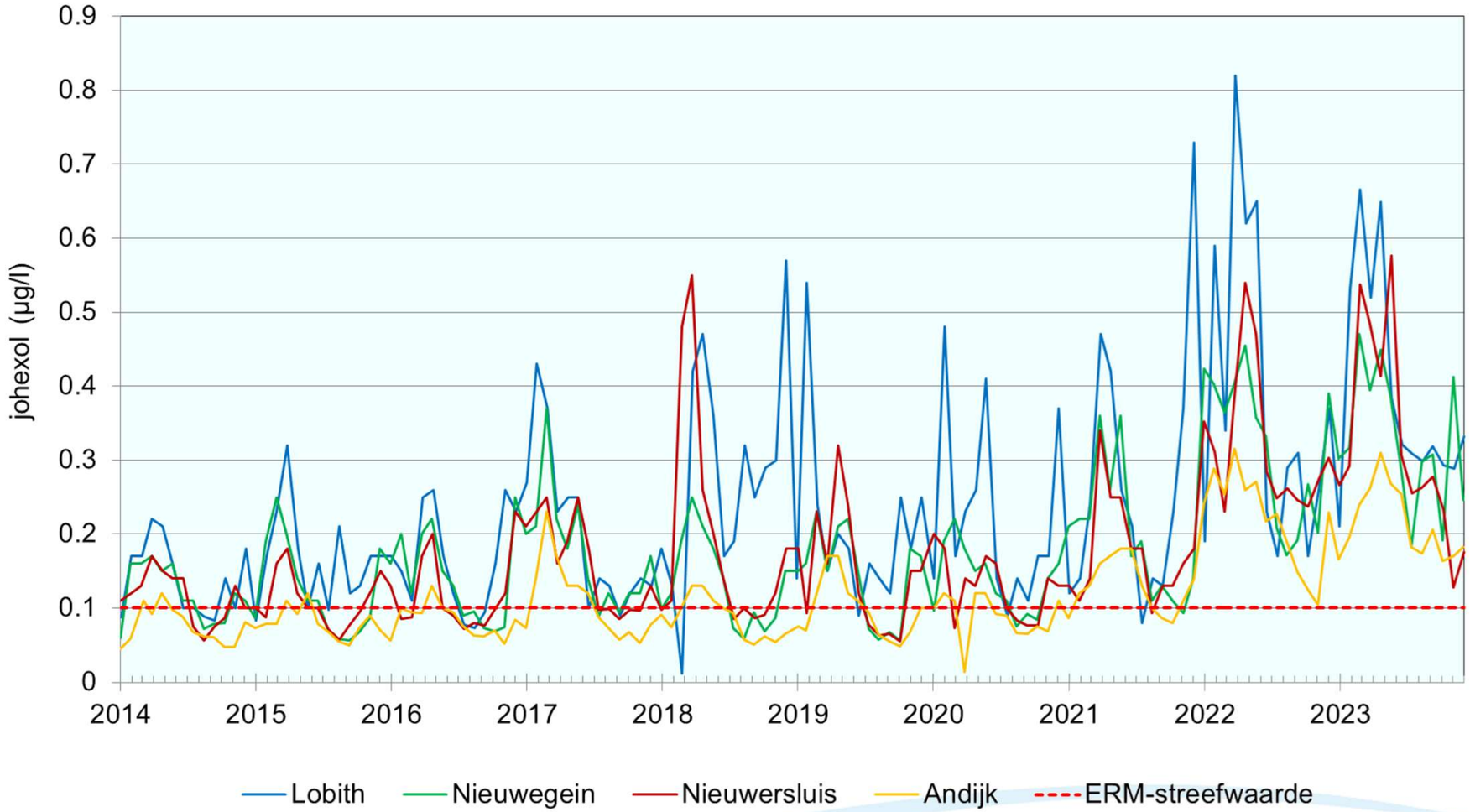

Graph 1.1 Concentrations of johexol at the Rhine locations in the past 10 years

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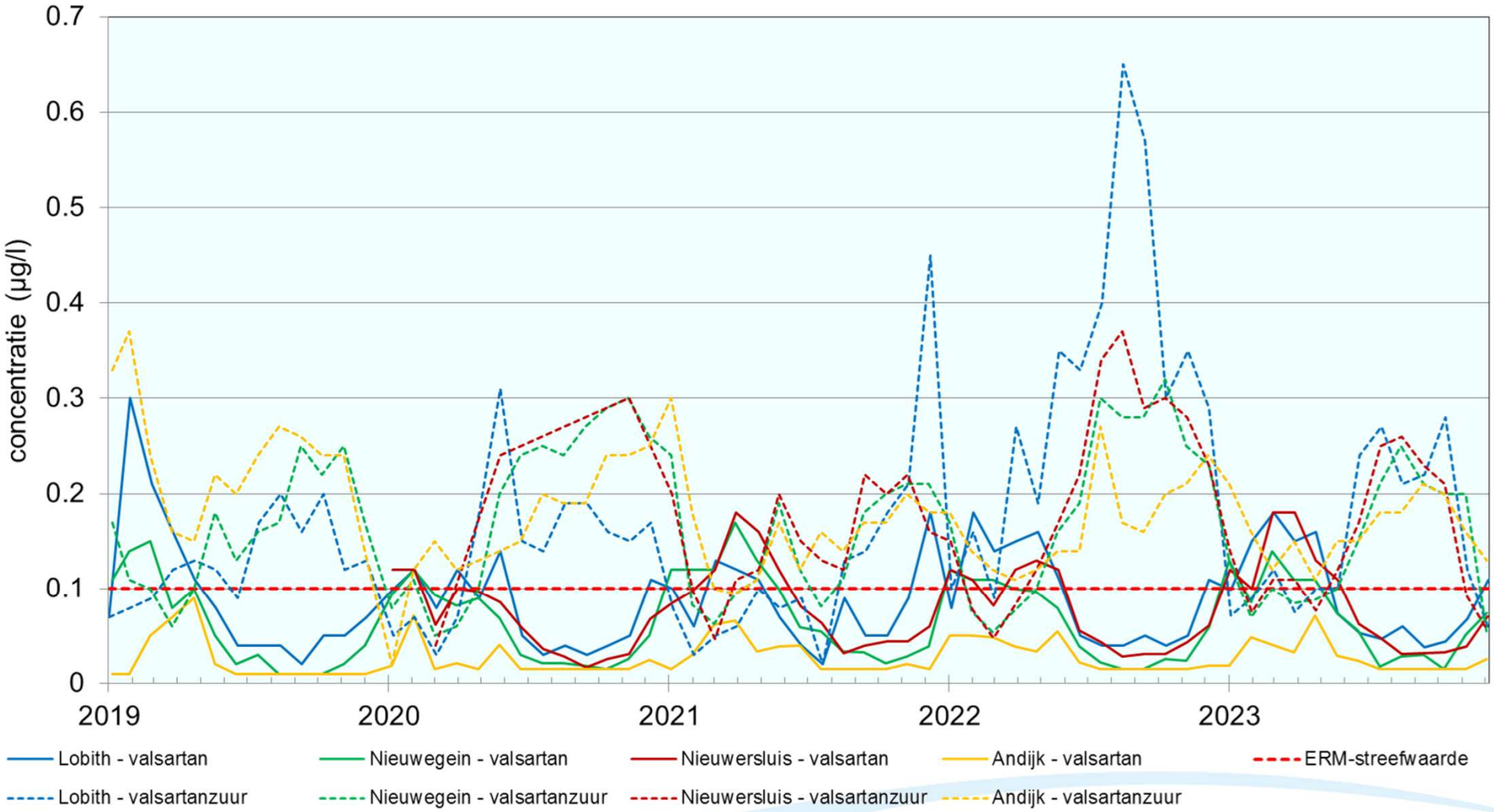

Graph 1.2 Concentrations of valsartan and valsartan acid at the Rhine locations during the period 2019 - 2023

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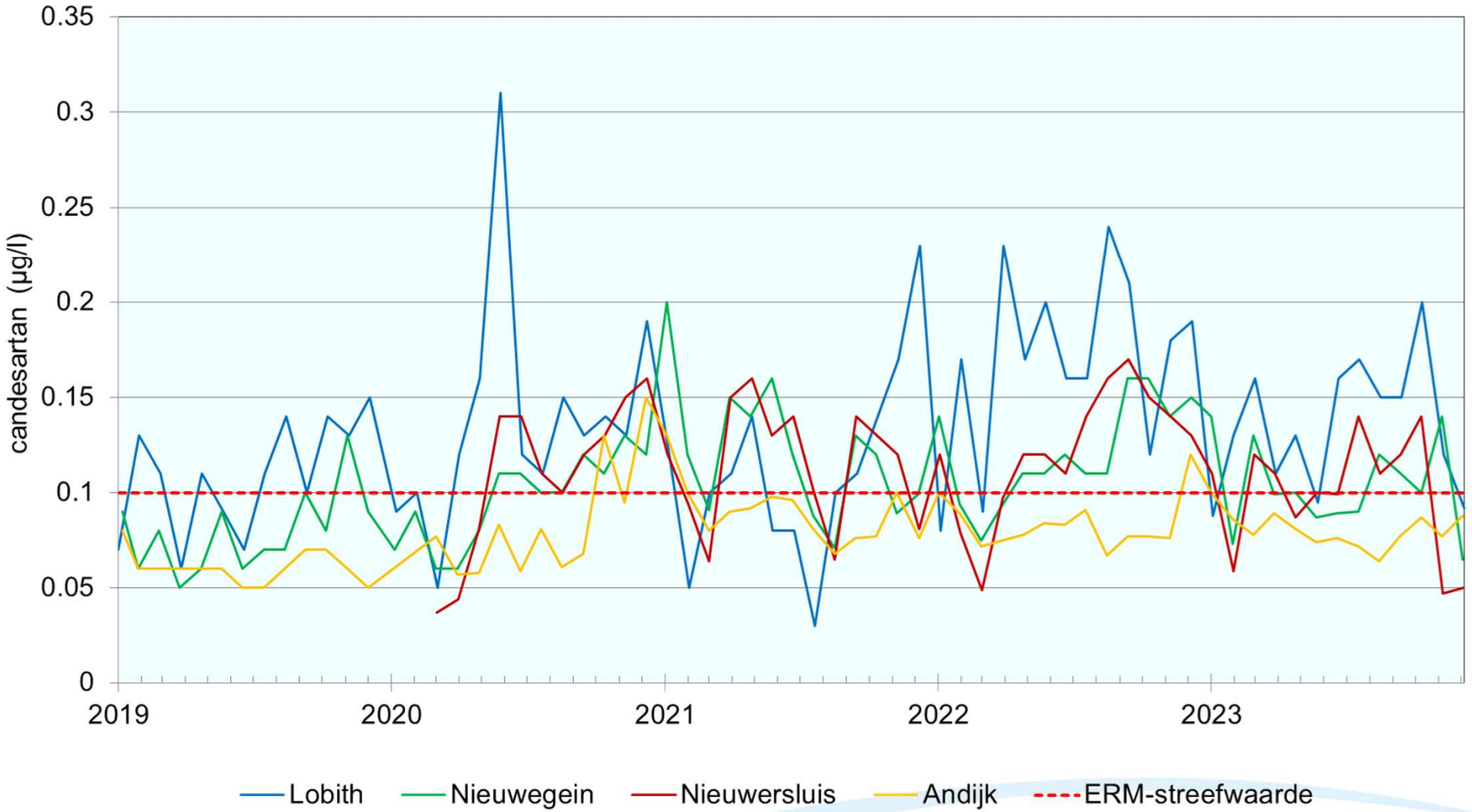

Graph 1.3 Concentrations of candesartan at the Rhine locations during the period 2019 - 2023

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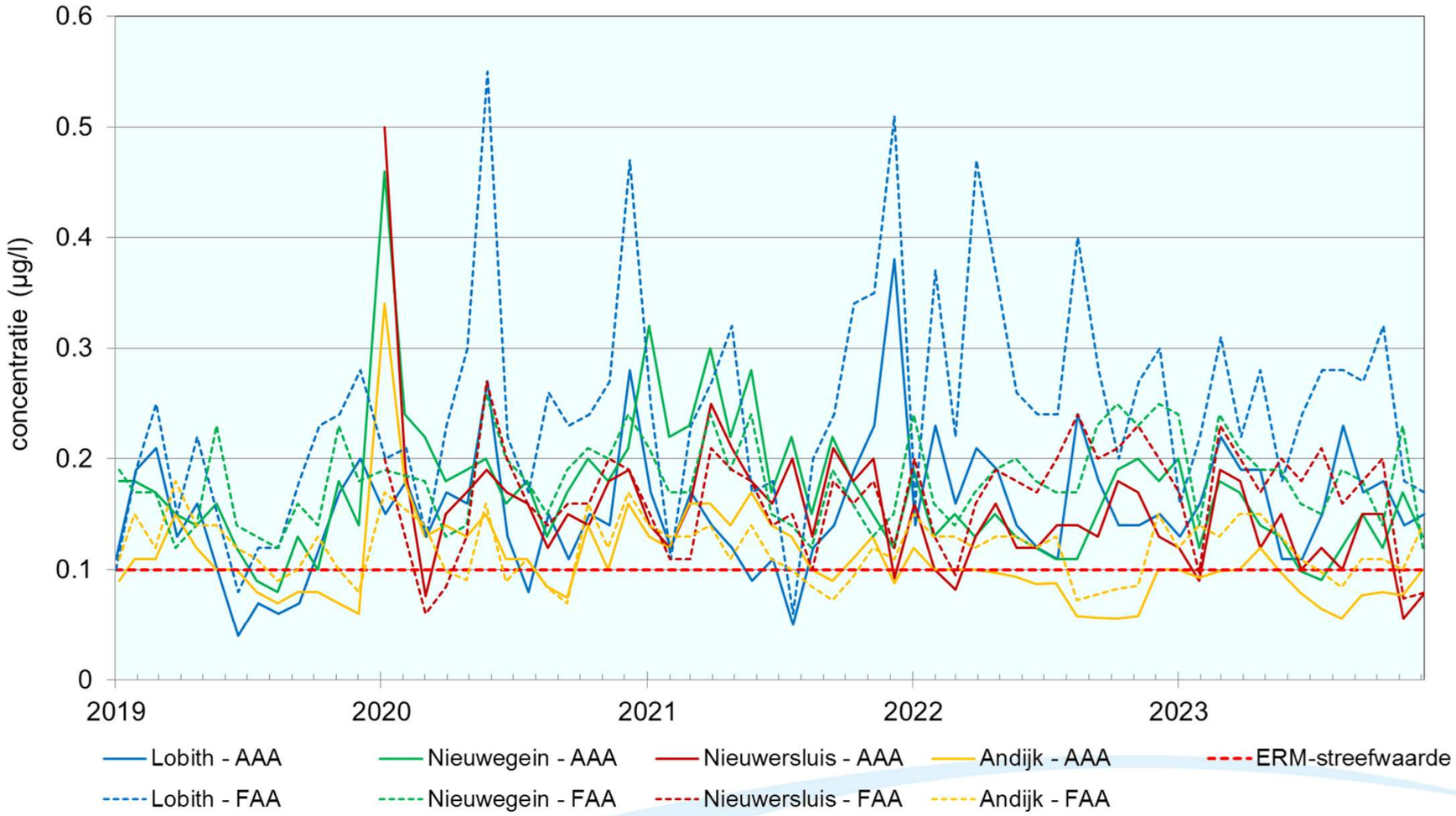

Graph 1.4 Concentrations N-acetyl-aminoantipyrine (AAA) and N-formyl-4-aminoantipyrine (FAA) at the Rhine locations during the period 2019 - 2023

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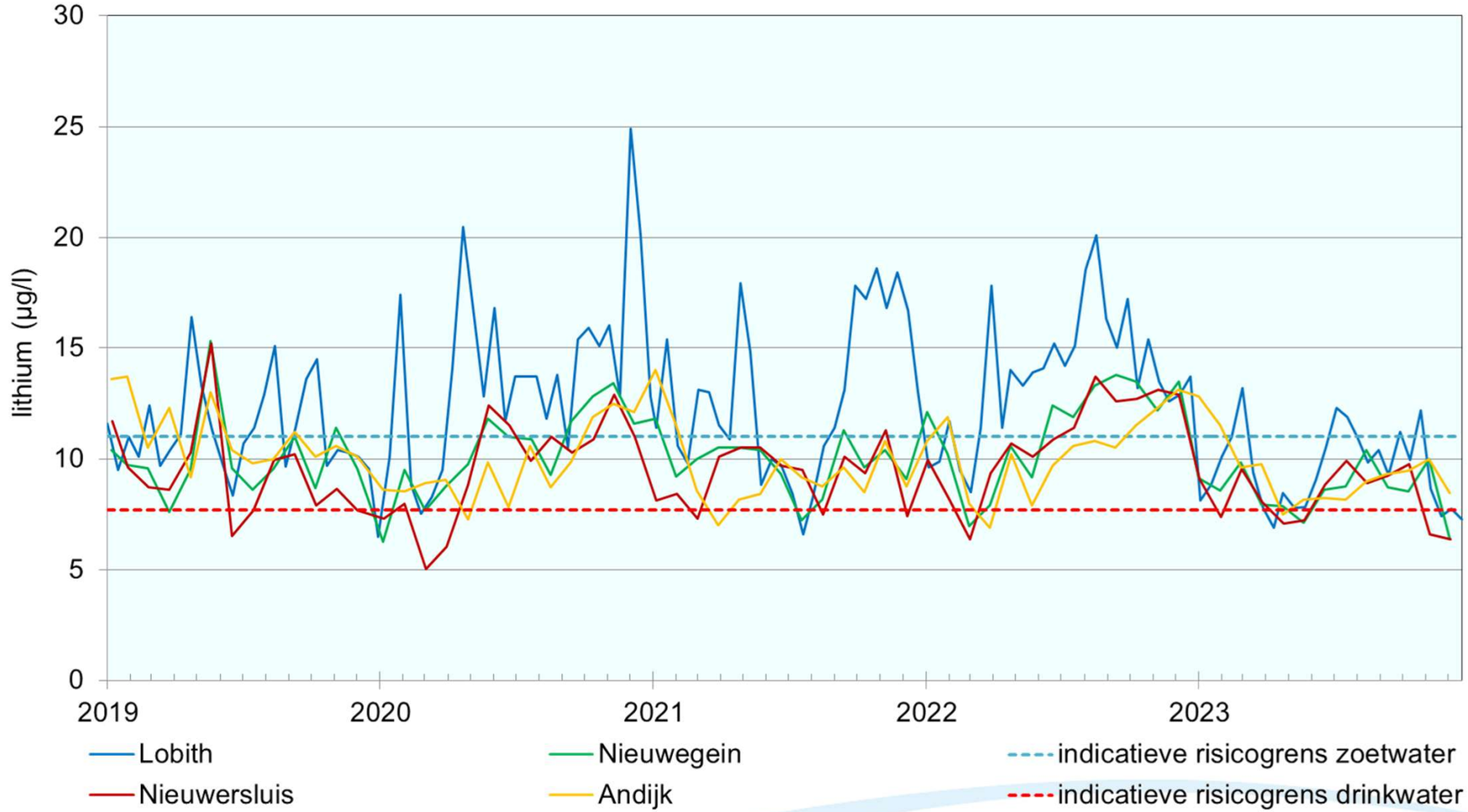

Graph 1.5 Concentrations of lithium measured at the Rhine locations during the period 2019-2023. The graph shows the indicative risk limits derived by RIVM for lithium in freshwater (blue dotted line) and for drinking water (red dotted line).

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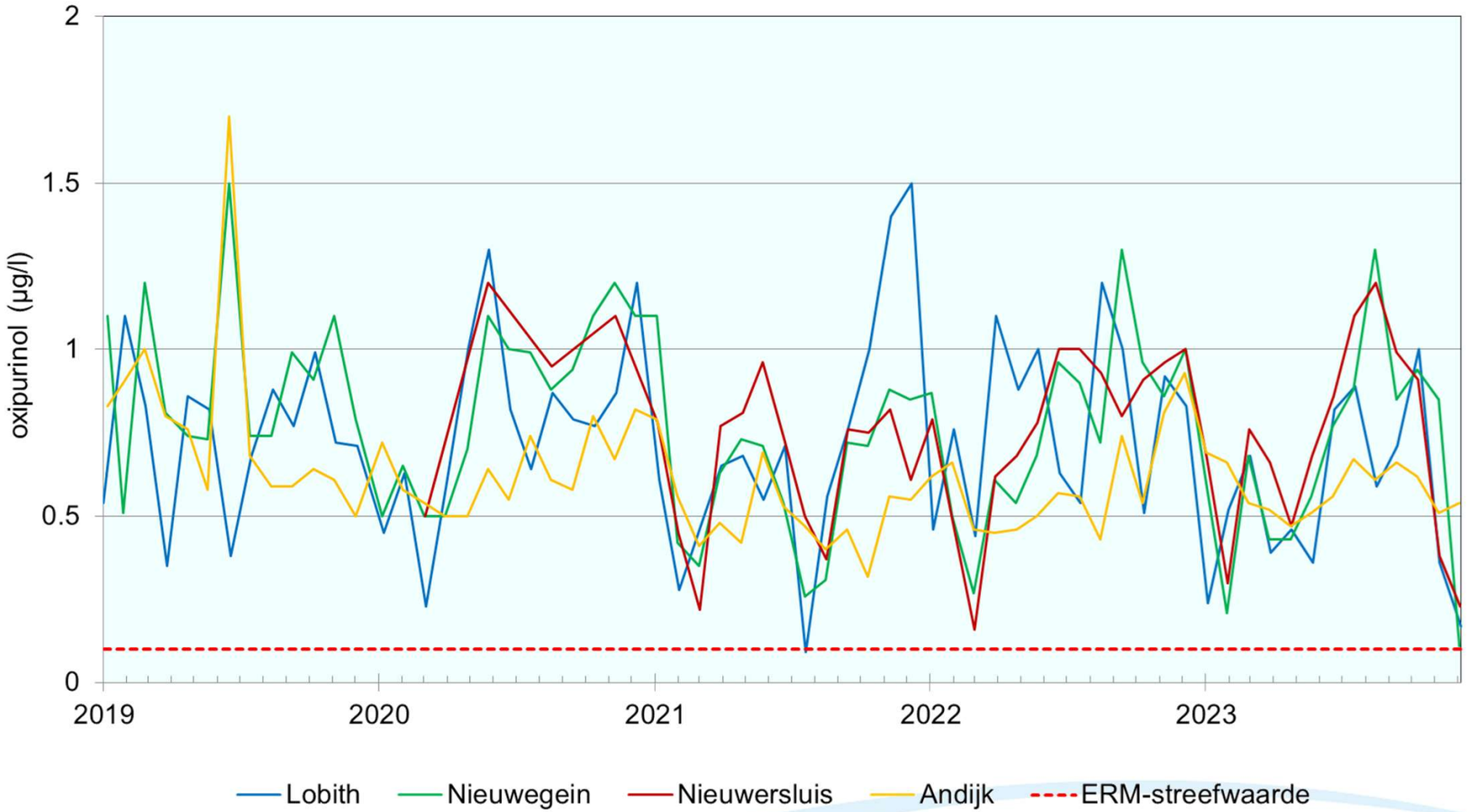

Graph 1.6 Concentrations of oxipurinol at the Rhine locations during the period 2019 - 2023

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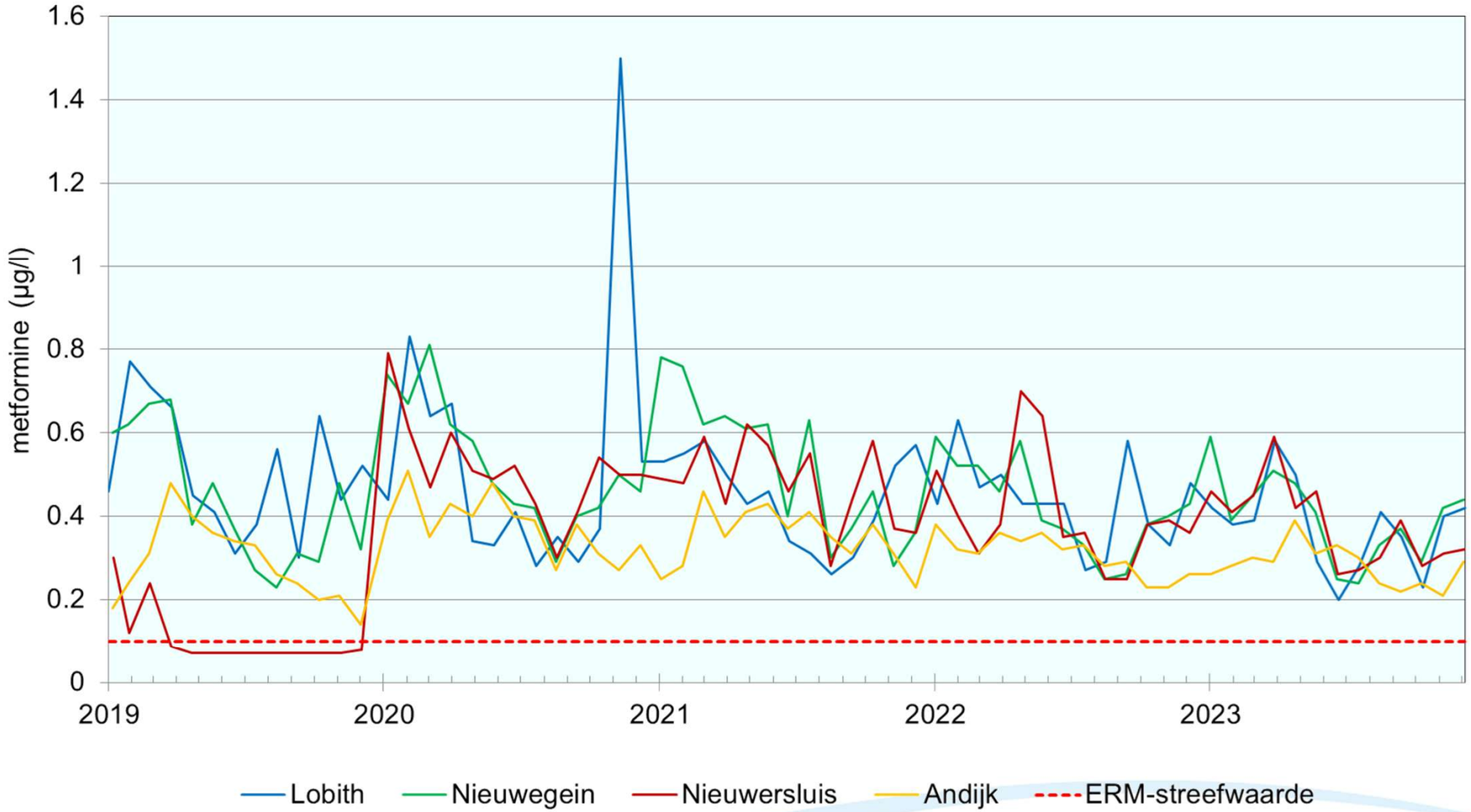

Graph 1.7 Concentrations of metformin at the Rhine locations during the period 2019 - 2023

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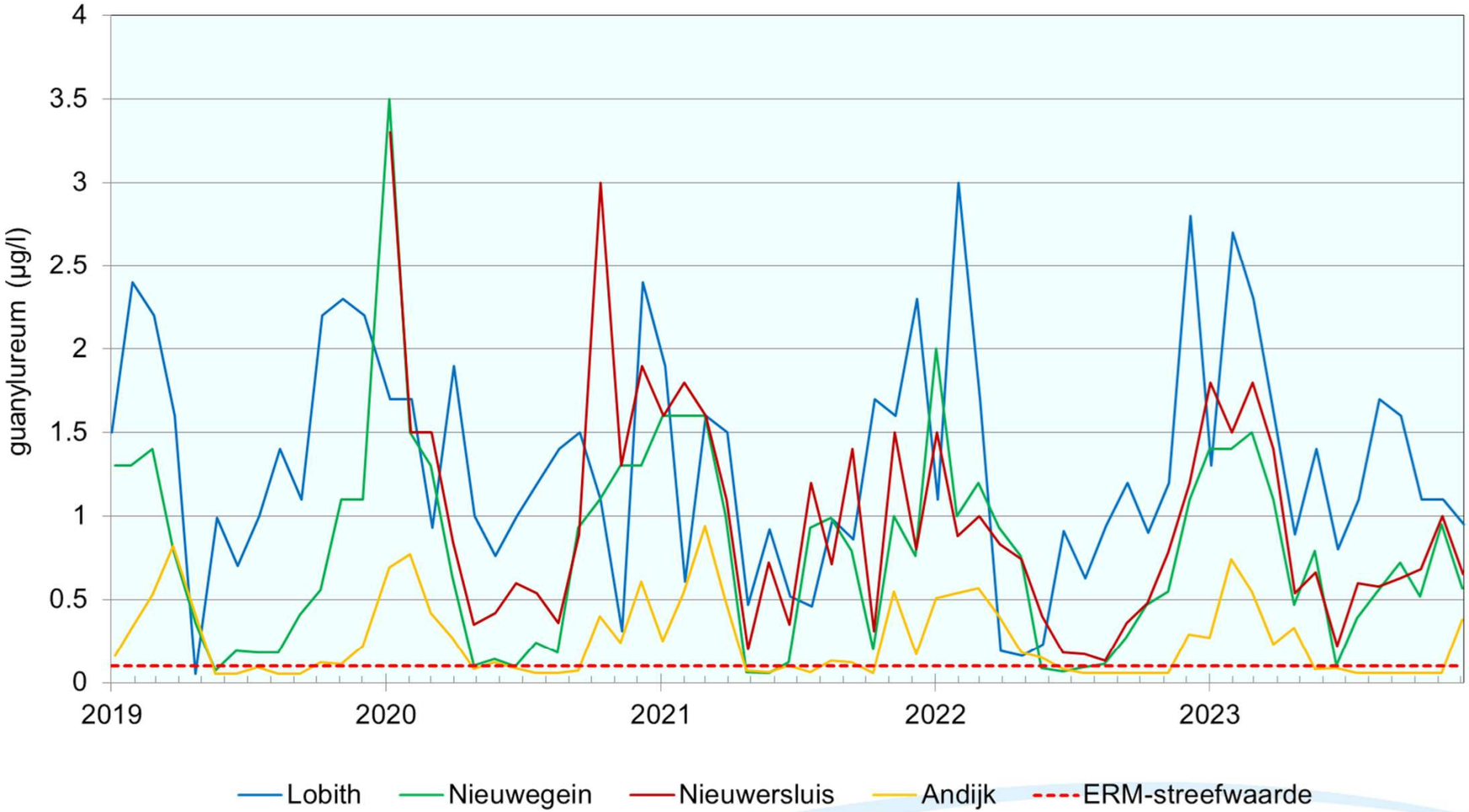

Graph 1.8 Concentrations of guanylurea at the Rhine locations during the period 2019 - 2023

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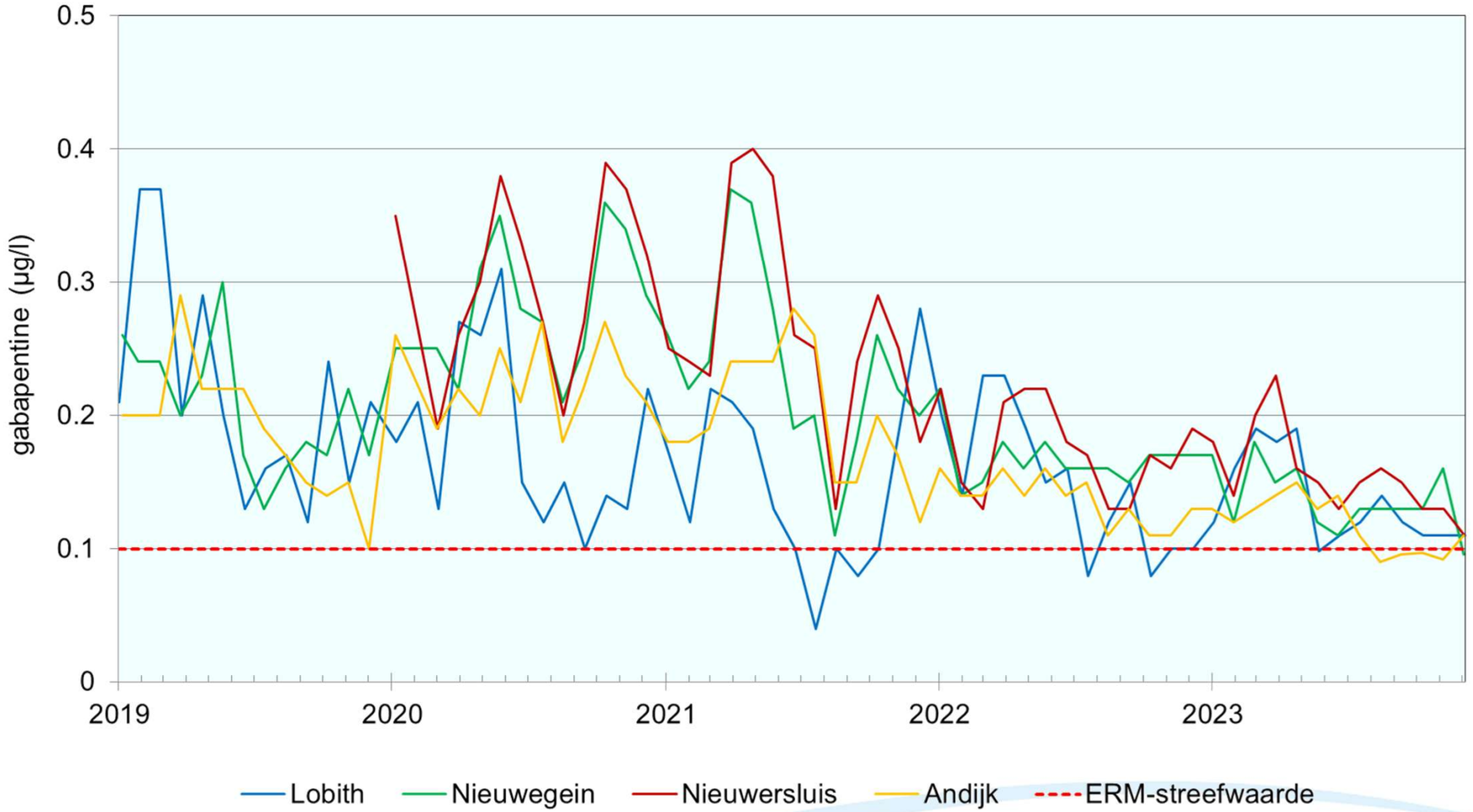

Graph 1.9 Concentrations of gabapentin at the Rhine locations during the period 2019 - 2023

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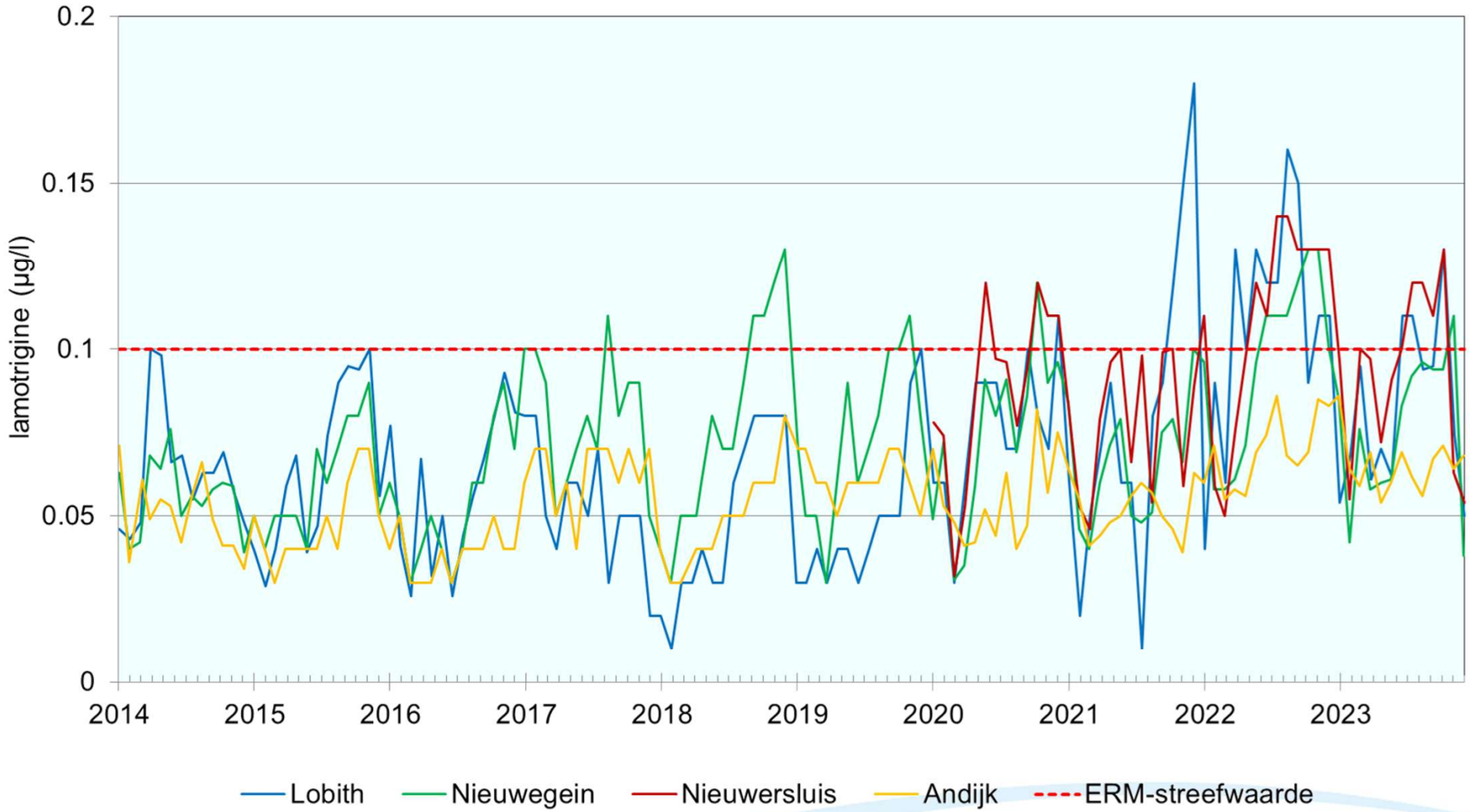

Graph 1.10 Concentrations of lamotrigine measured at the Rhine locations in the past ten years

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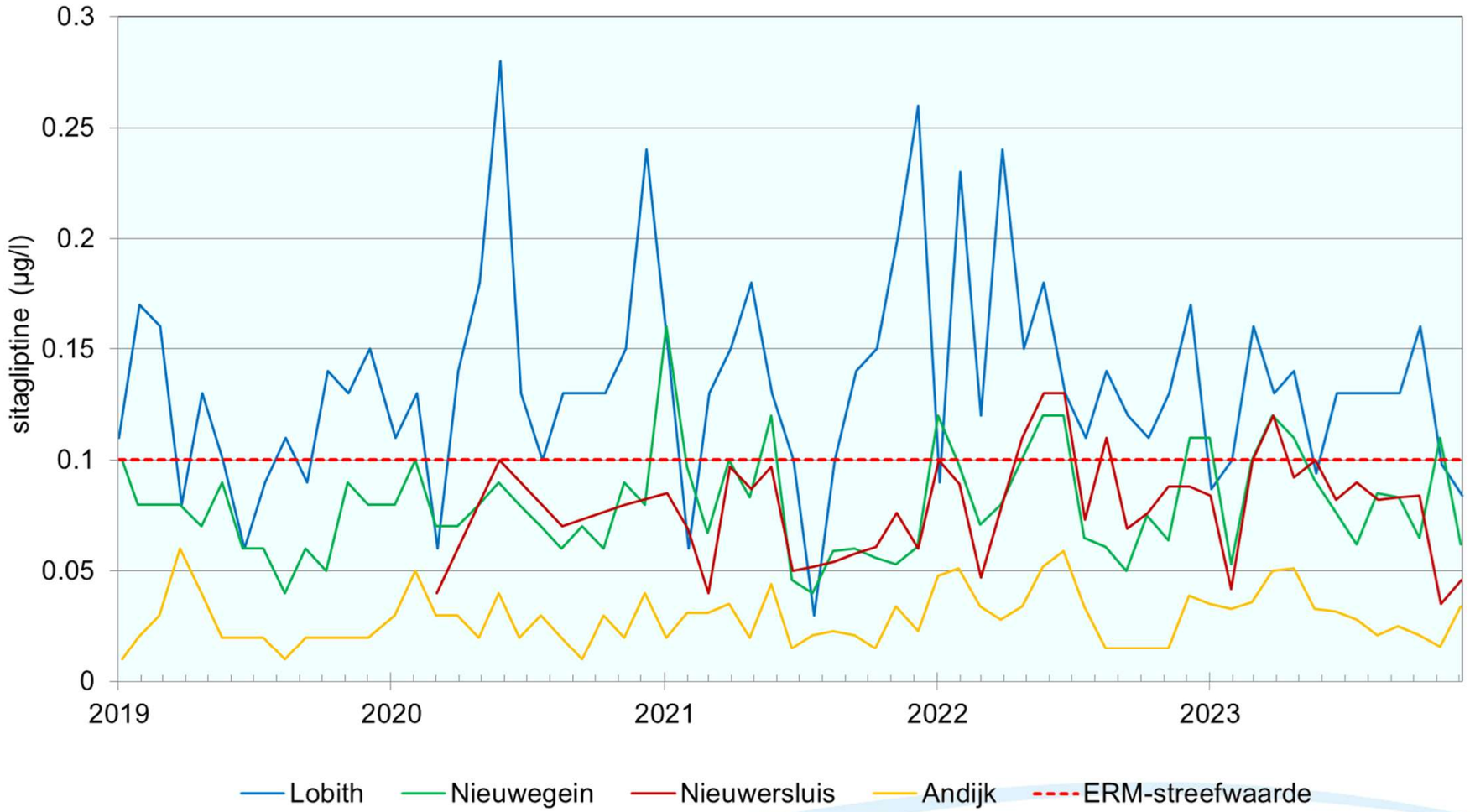

Graph 1.11 Concentrations of sitagliptine at the Rhine locations during the period 2019 - 2023

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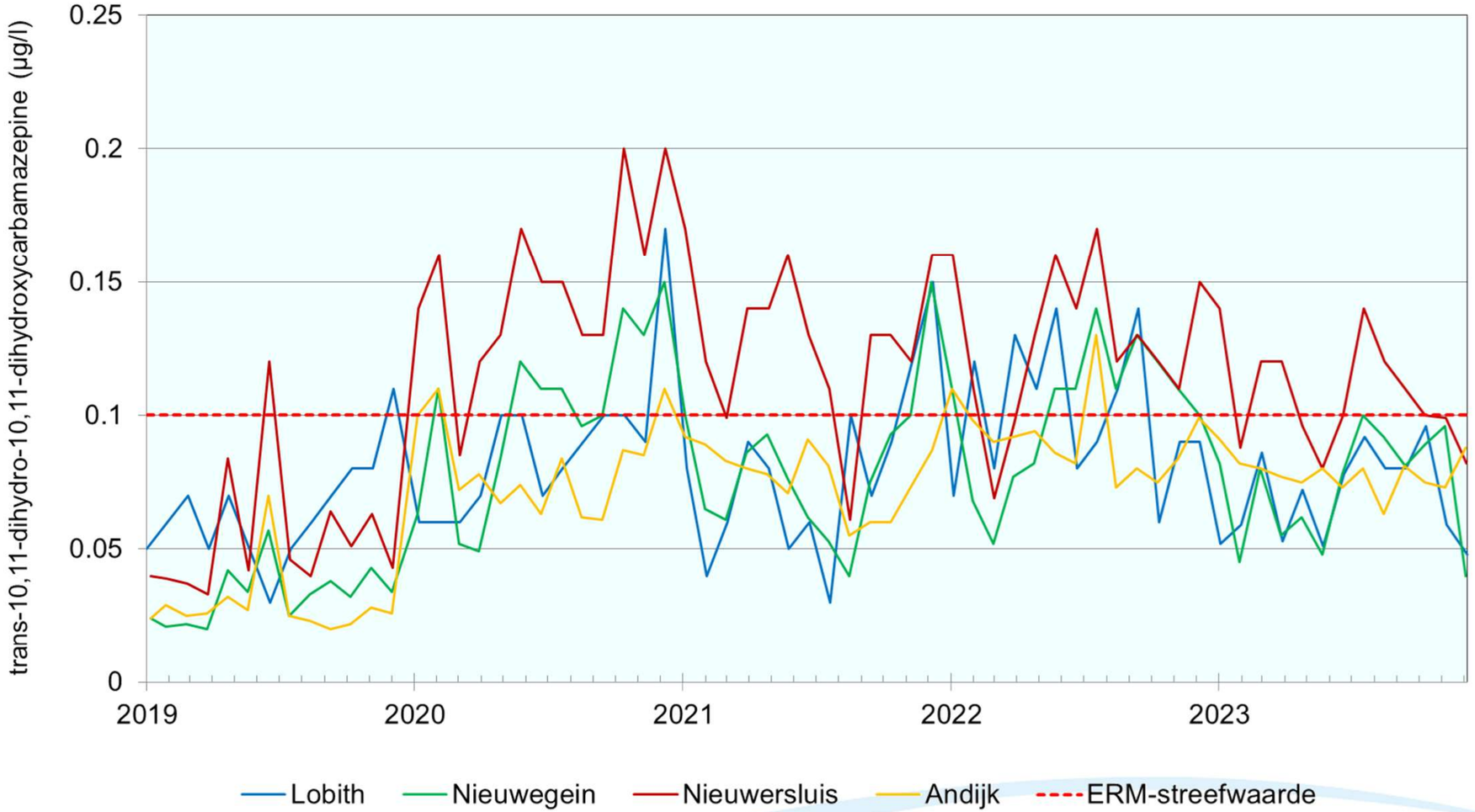

Graph 1.12 Concentrations of trans-10,11-dihydro-10,11-dihydroxycarbamazepine at the Rhine locations during the period 2019 - 2023

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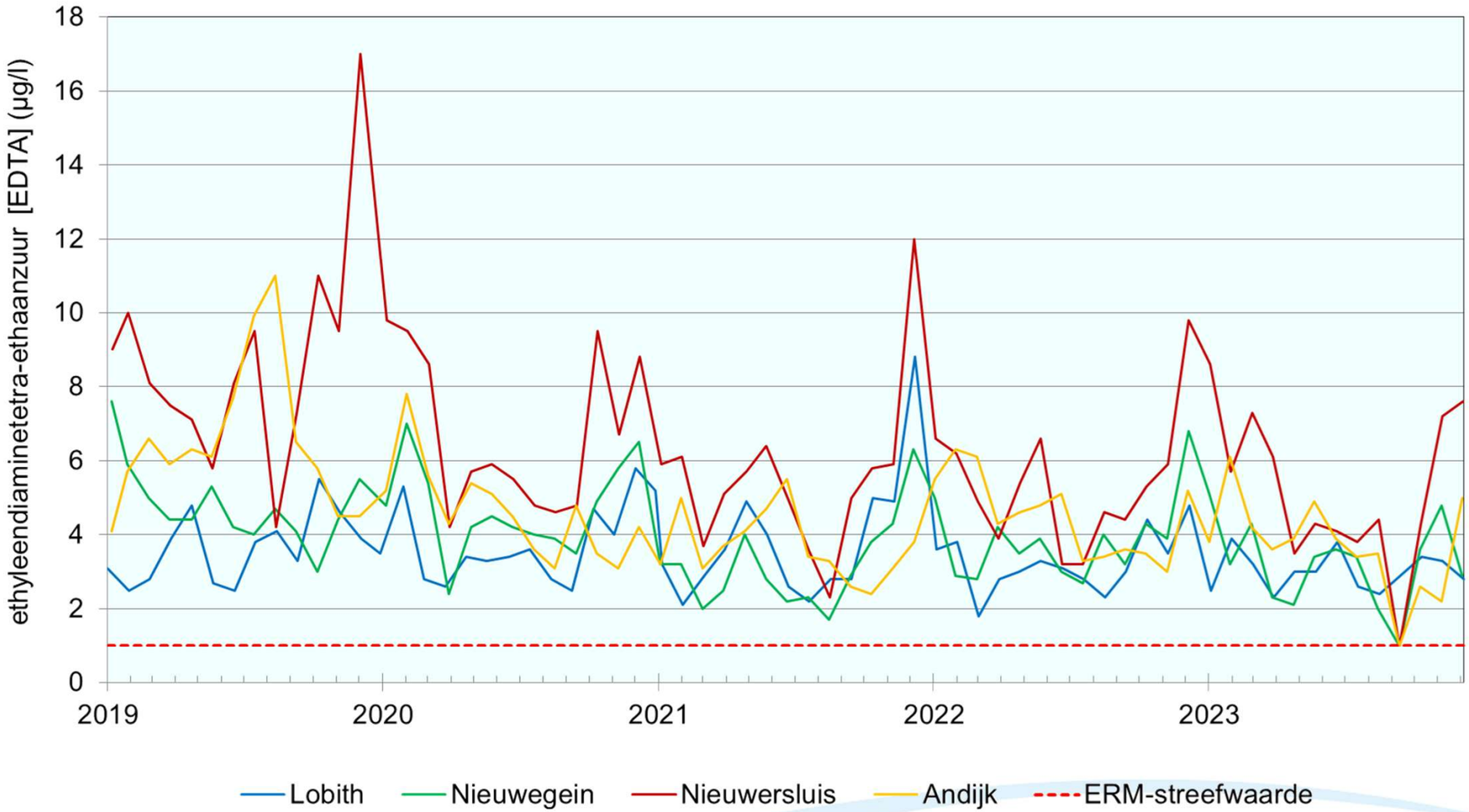

Graph 1.13 Concentrations of EDTA measured at the Rhine locations during the period 2019 - 2023

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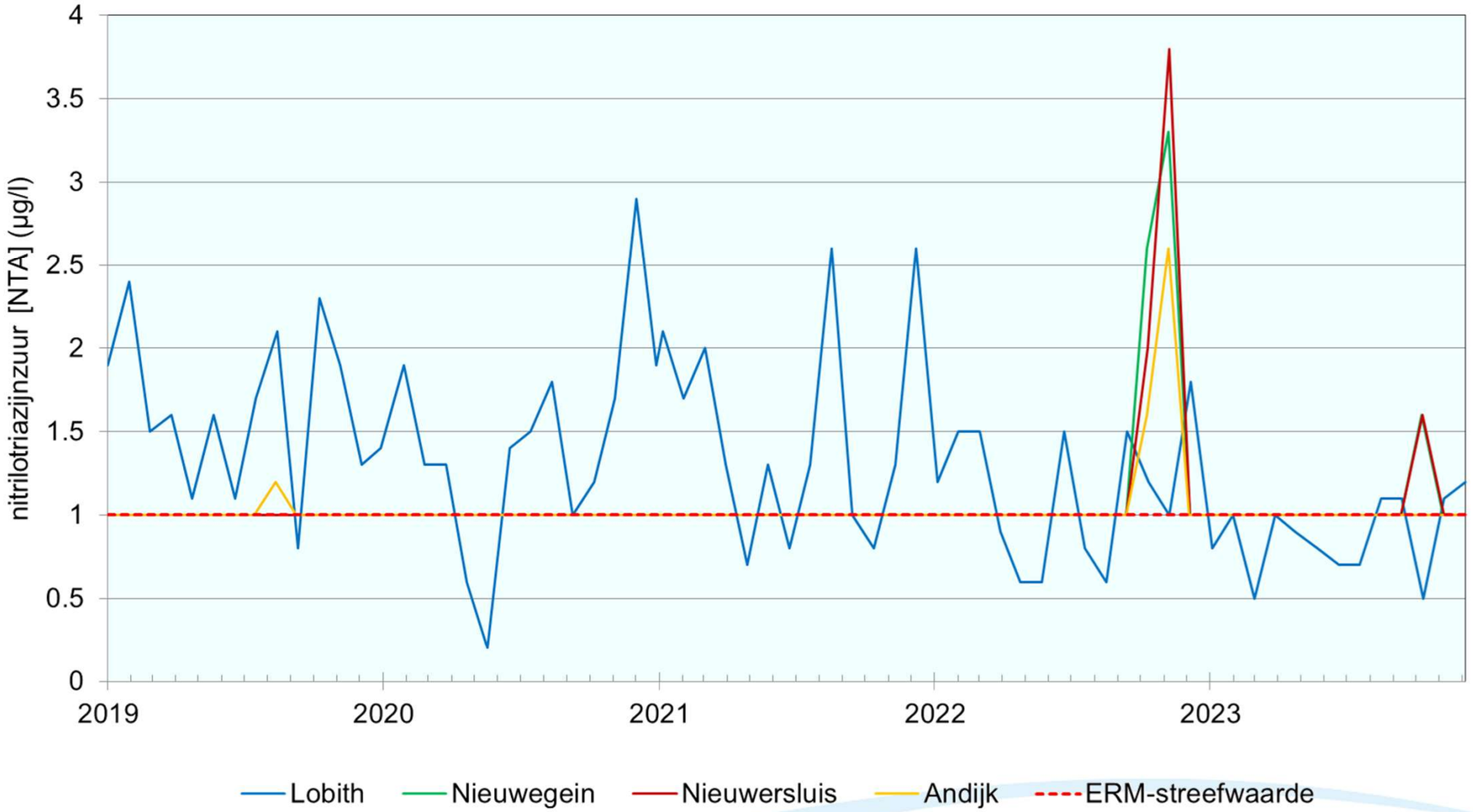

Graph 1.14 Concentrations of NTA measured at Lobith during the period 2019 - 2023

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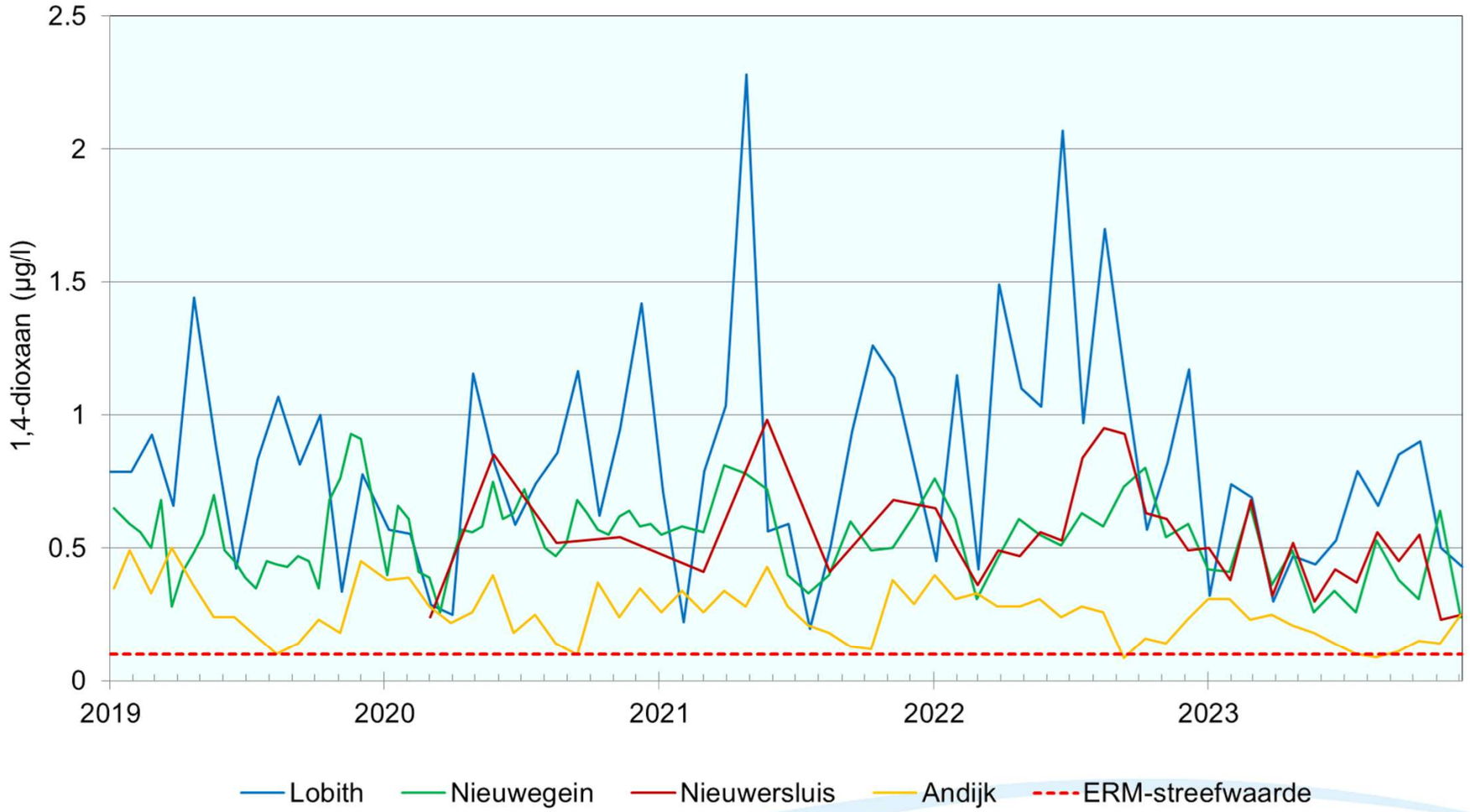

Graph 1.15 Concentrations of 1,4-dioxane at the Rhine locations during the period 2019 - 2023

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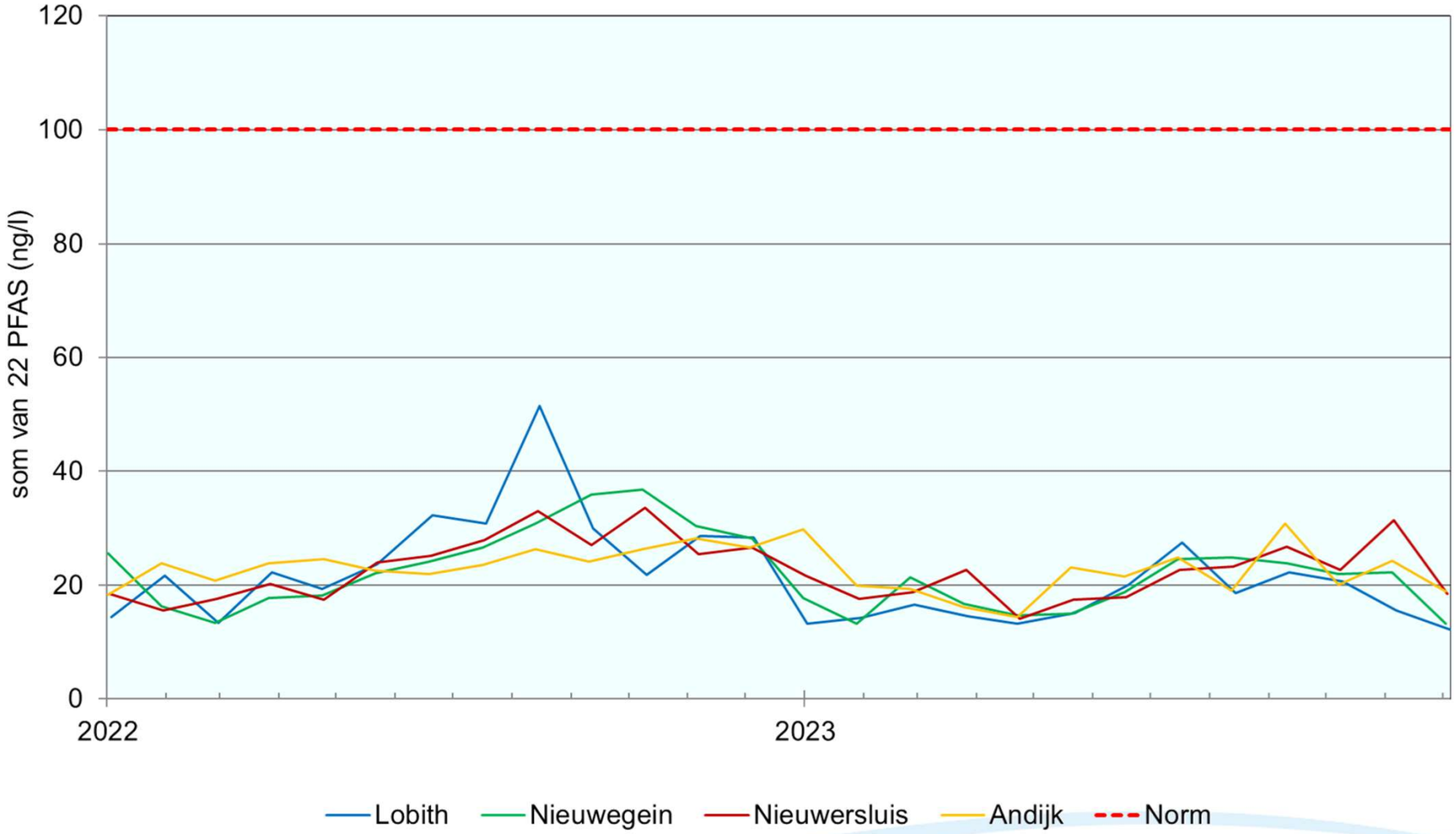

Graph 1.16 Sum of 22 PFAS at the Rhine locations in 2022 and in 2023, calculated with the Lower Bound-methode. Values reported below the reporting limit have been set to 0 ng/L when calculating the sum. The standard shown ('Norm') is the standard that applies to drinking water and comes into force on 12 January 2026.

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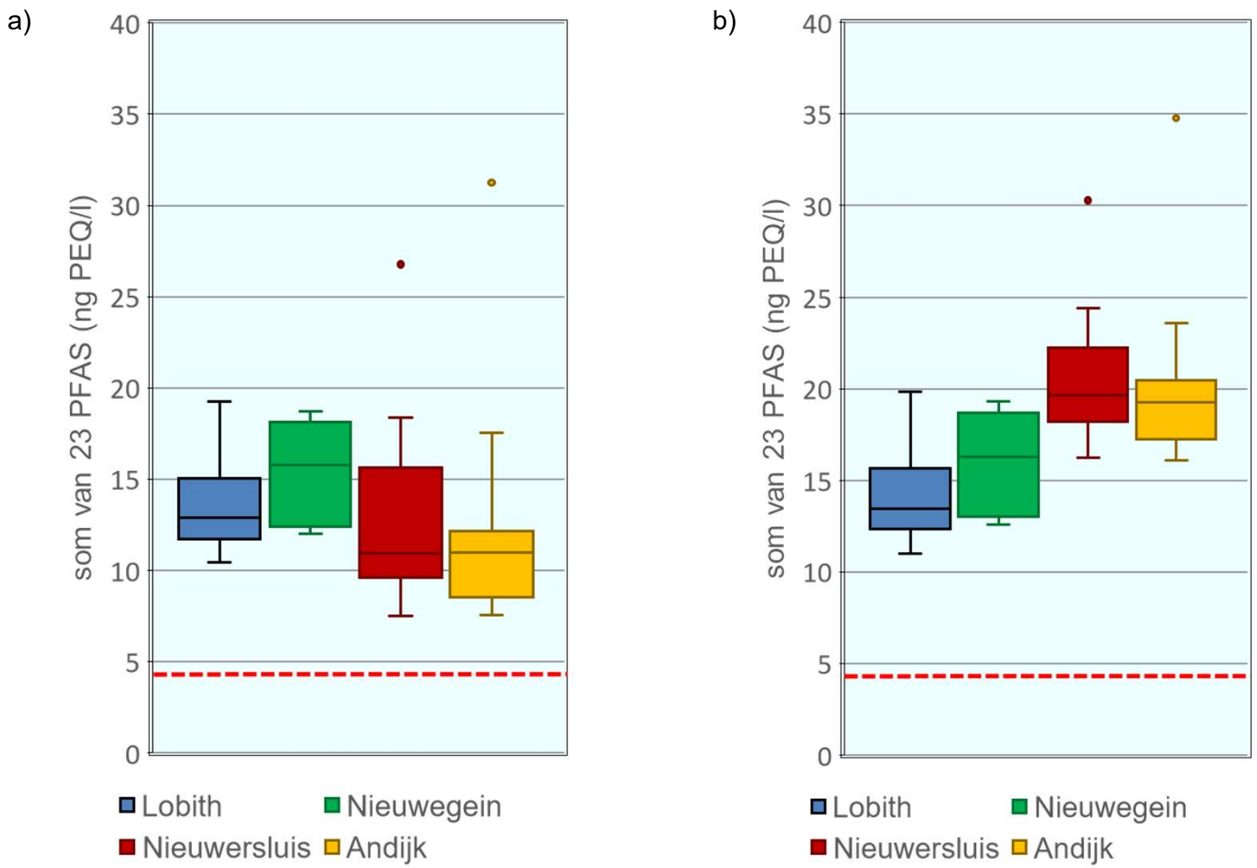

Graph 1.17 Boxplots of the sum of 23 PFAS at the Rhine locations in 2023, expressed in PFOA-equivalents (PEQ). For the boxplots in graph a*) the Lower Bound calculation methode has been used and for those in graph b) the Medium Bound methode. The graphs also show the indicative drinking water value of 4.4 ng PEQ/L derived by RIVM (red dotted line).*

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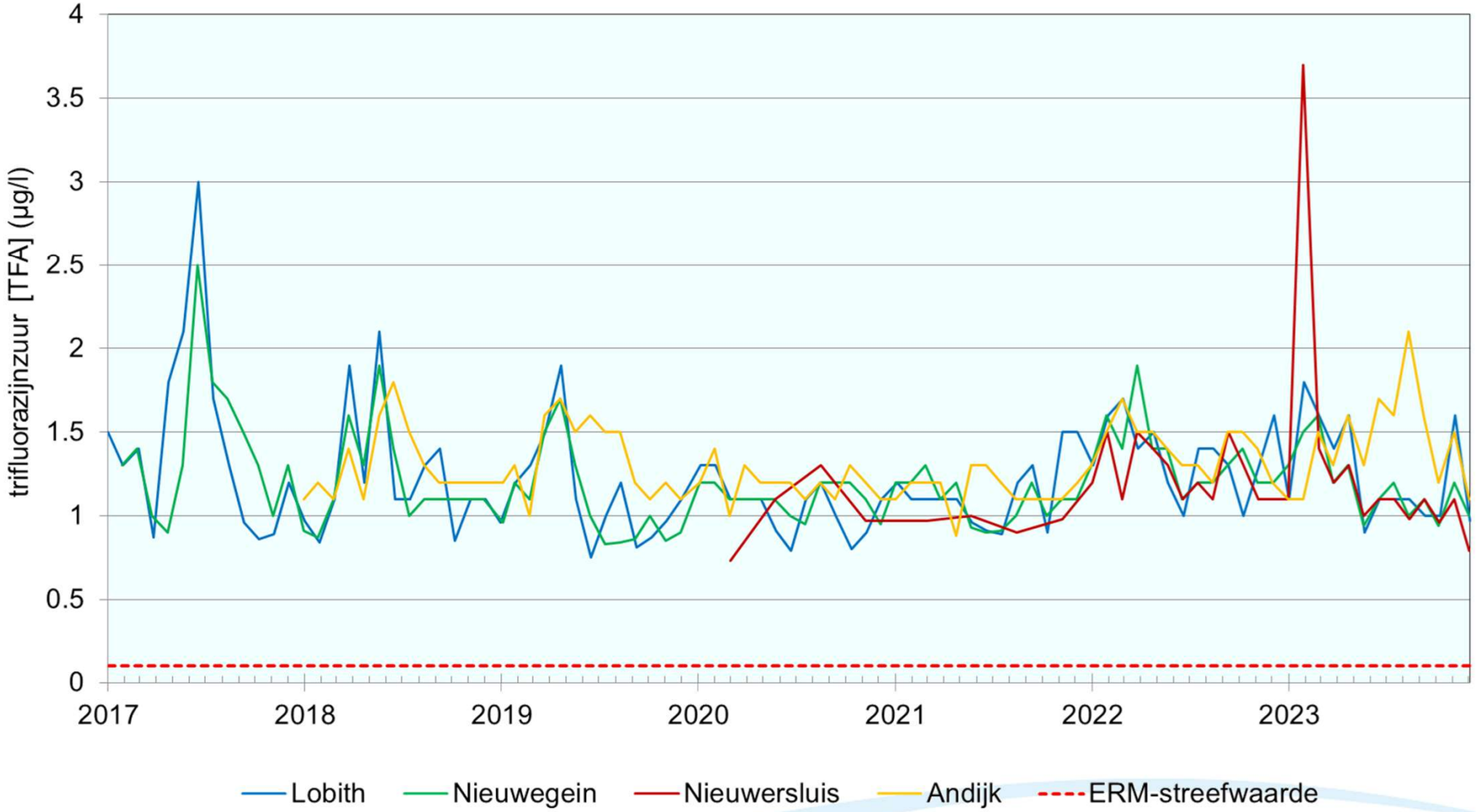

Graph 1.18 Concentrations of trifluoroacetic acid (TFA) at the Rhine locations during the period 2017 - 2023

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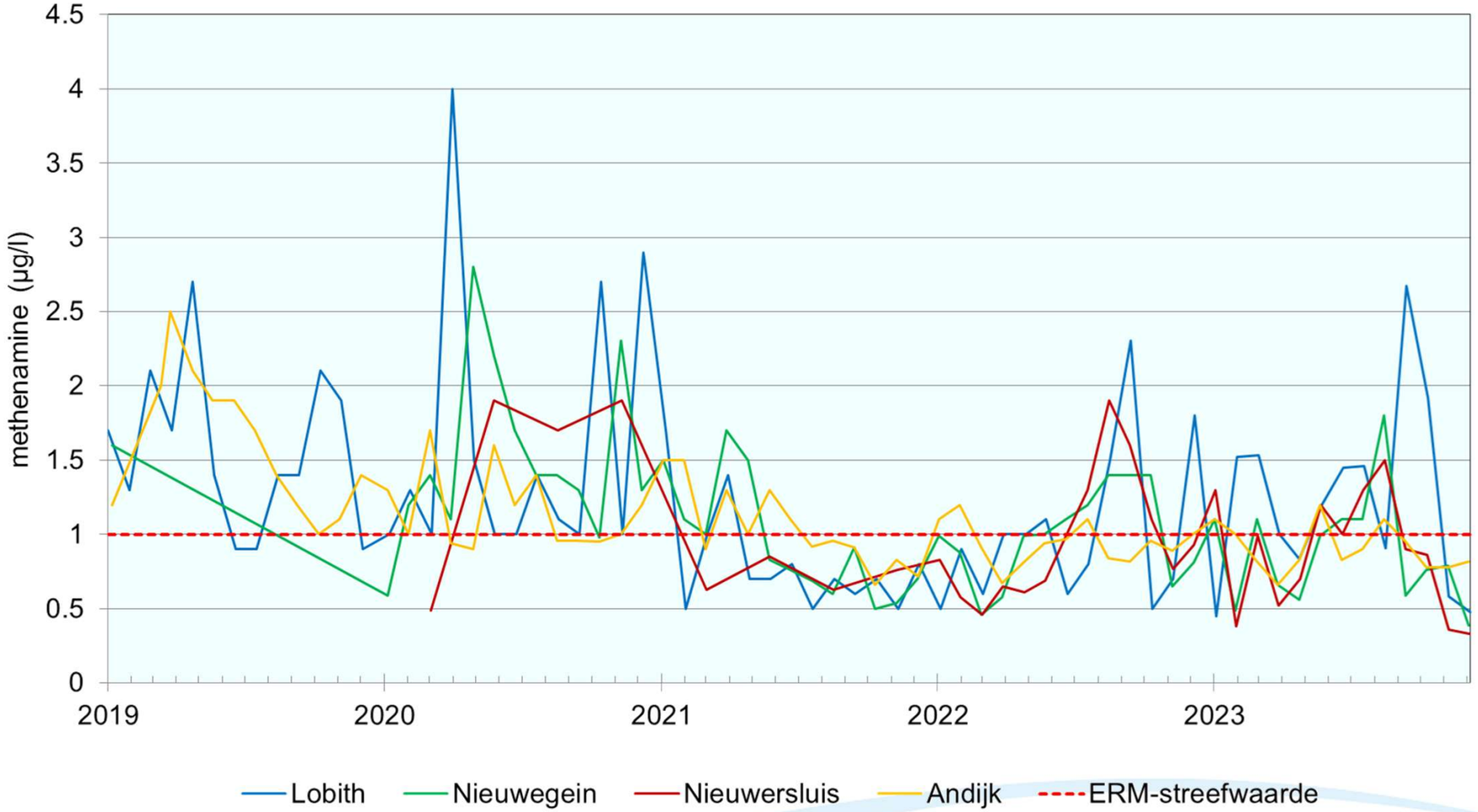

Graph 1.19 Concentrations of methenamine at the Rhine locations during the period 2019 - 2023

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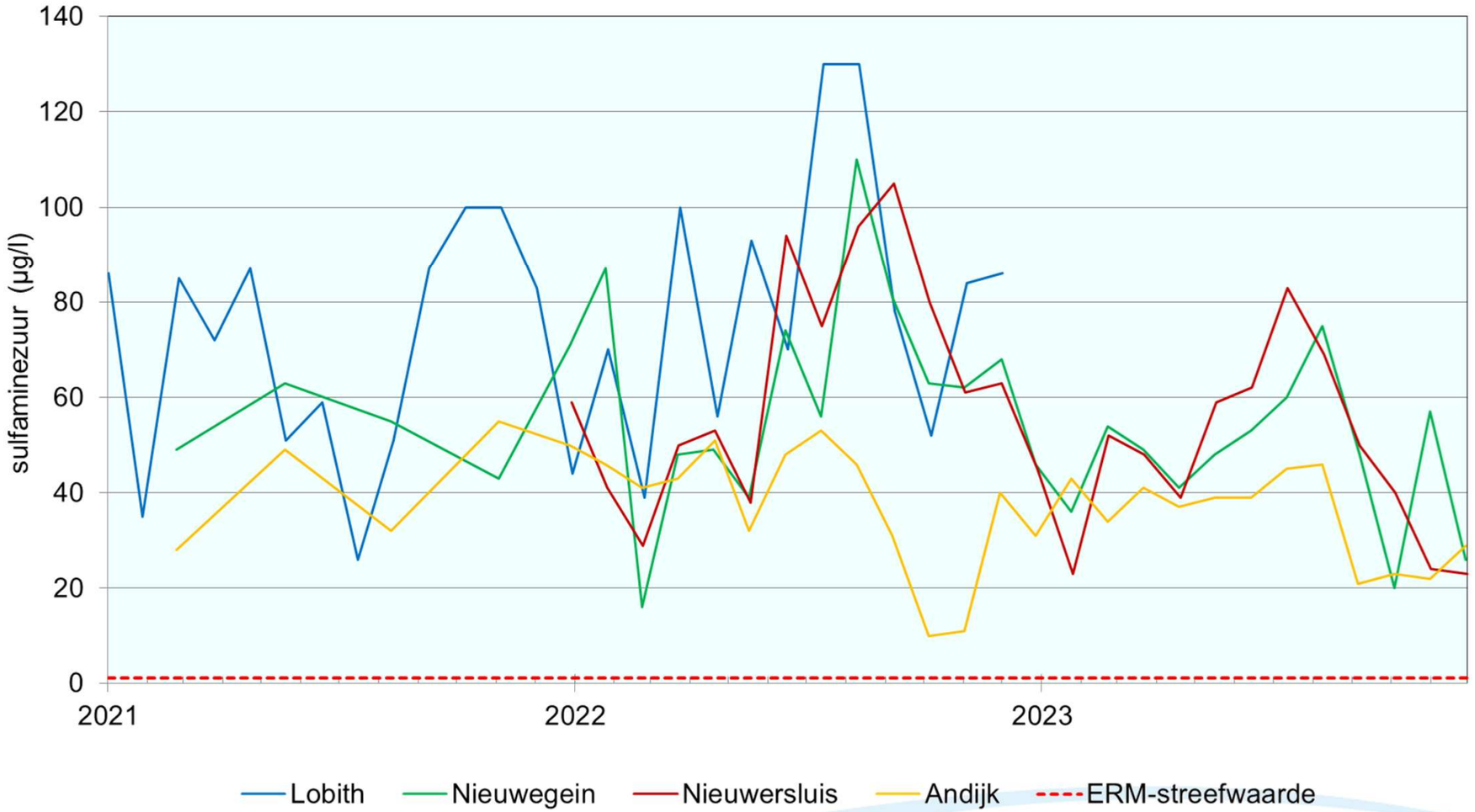

Graph 1.20 Concentrations of sulphamic acid at the Rhine locations during the period 2021 - 2023

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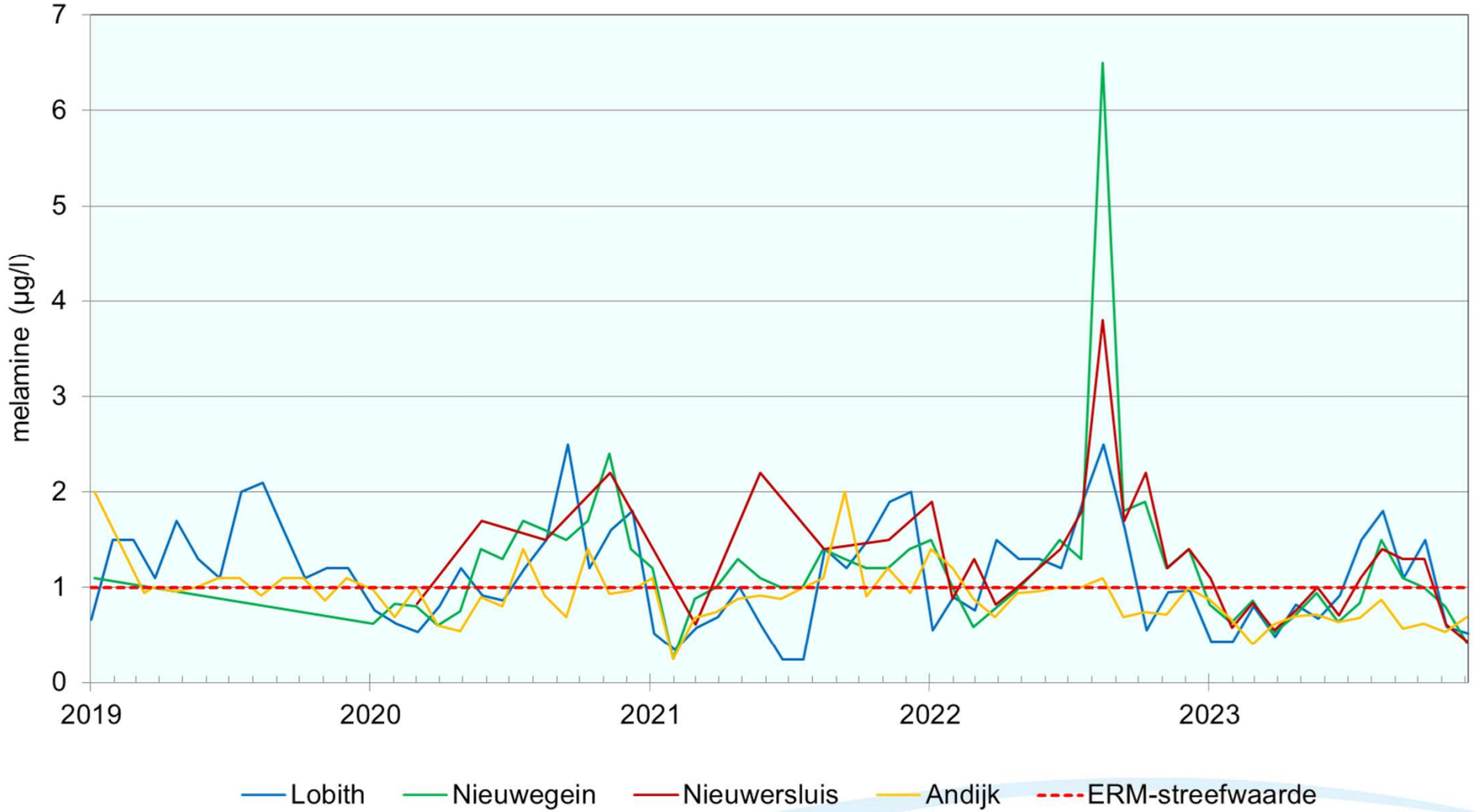

Graph 1.21 Concentrations of melamine at the Rhine locations during the period 2019 - 2023

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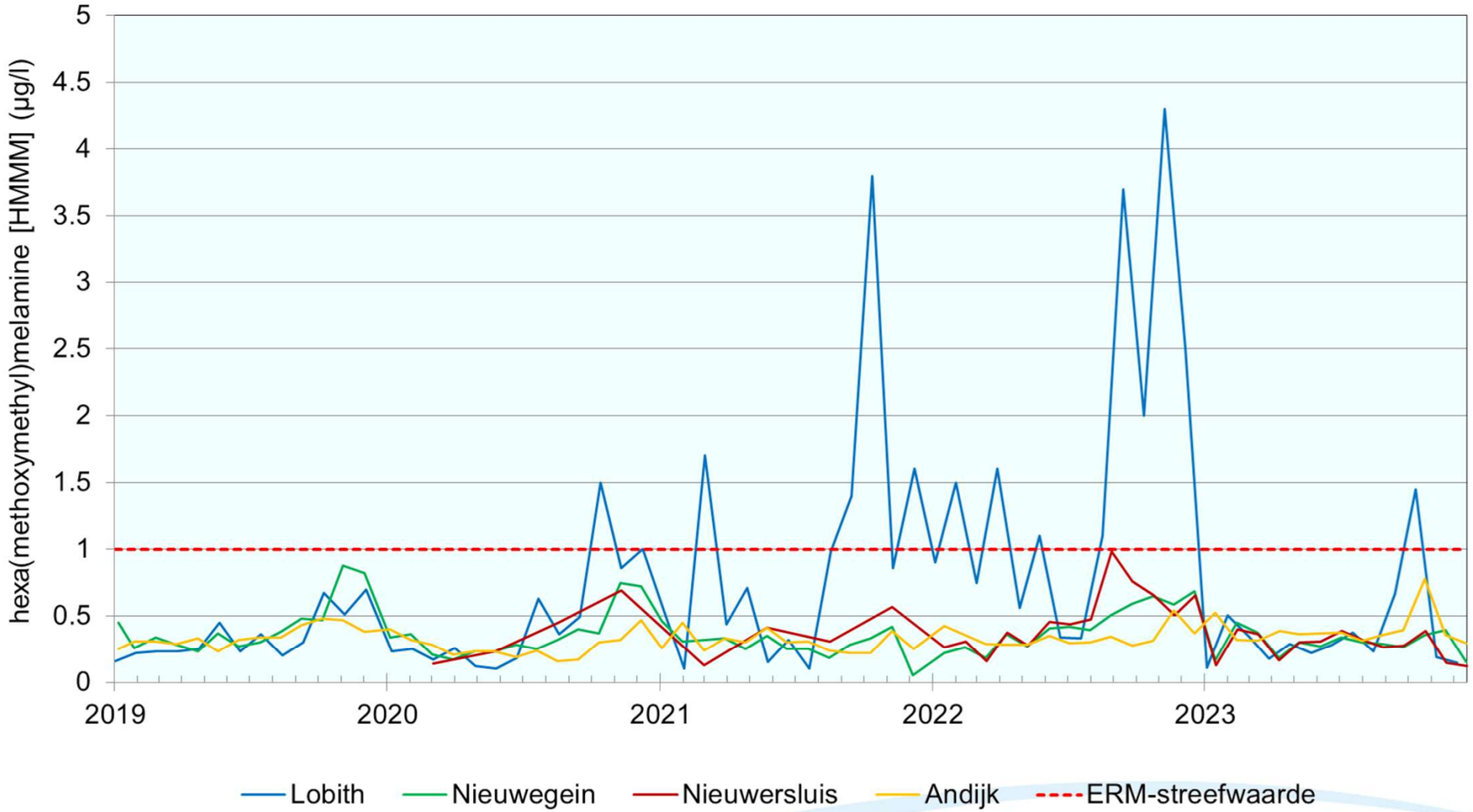

Graph 1.22 Concentrations hexa(methoxymethyl)melamine (HMMM) measured at the Rhine locations during the period 2019 - 2023

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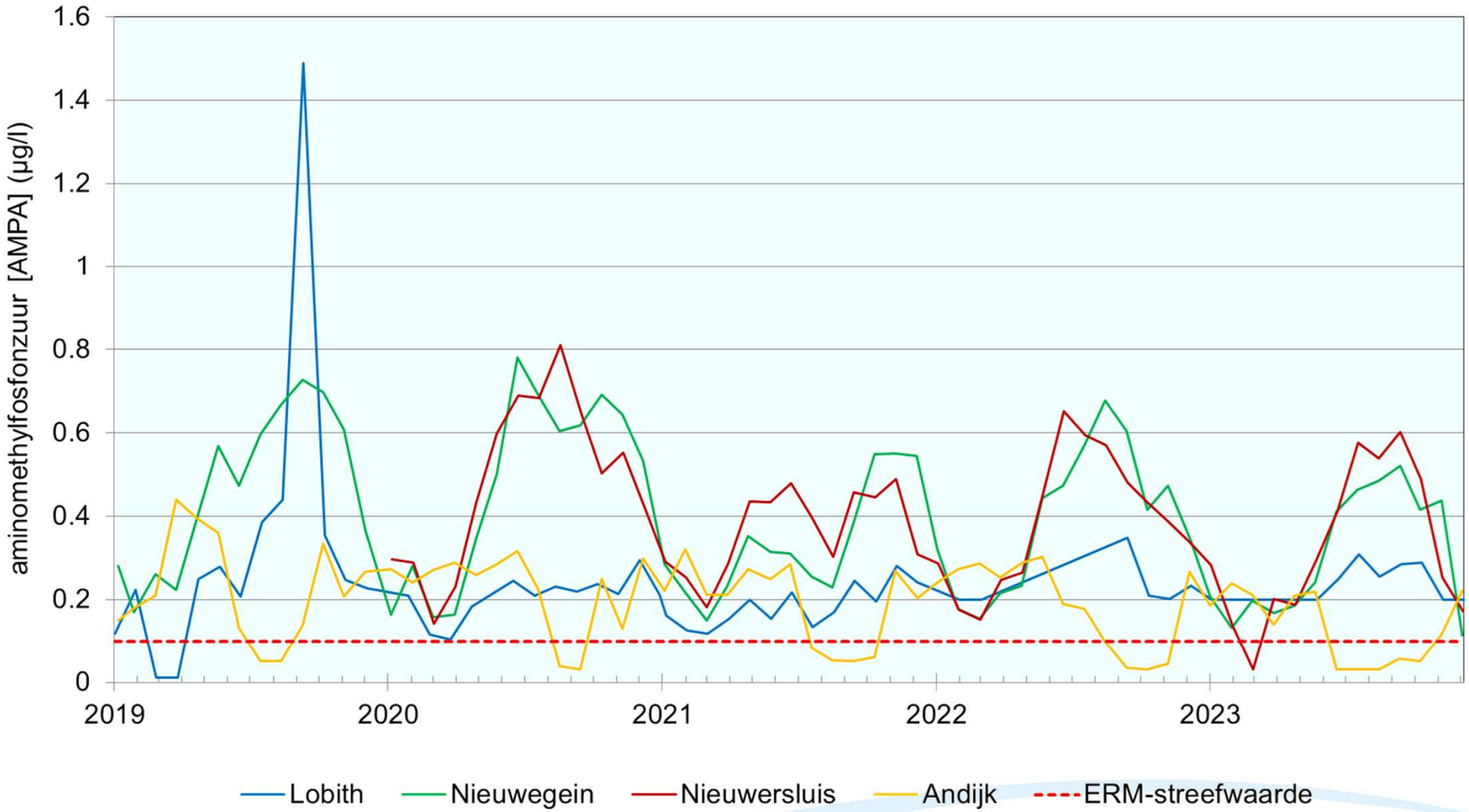

Graph 1.23 Concentrations of aminomethylphosphonic acid (AMPA) at the Rhine locations during the period 2019 - 2023

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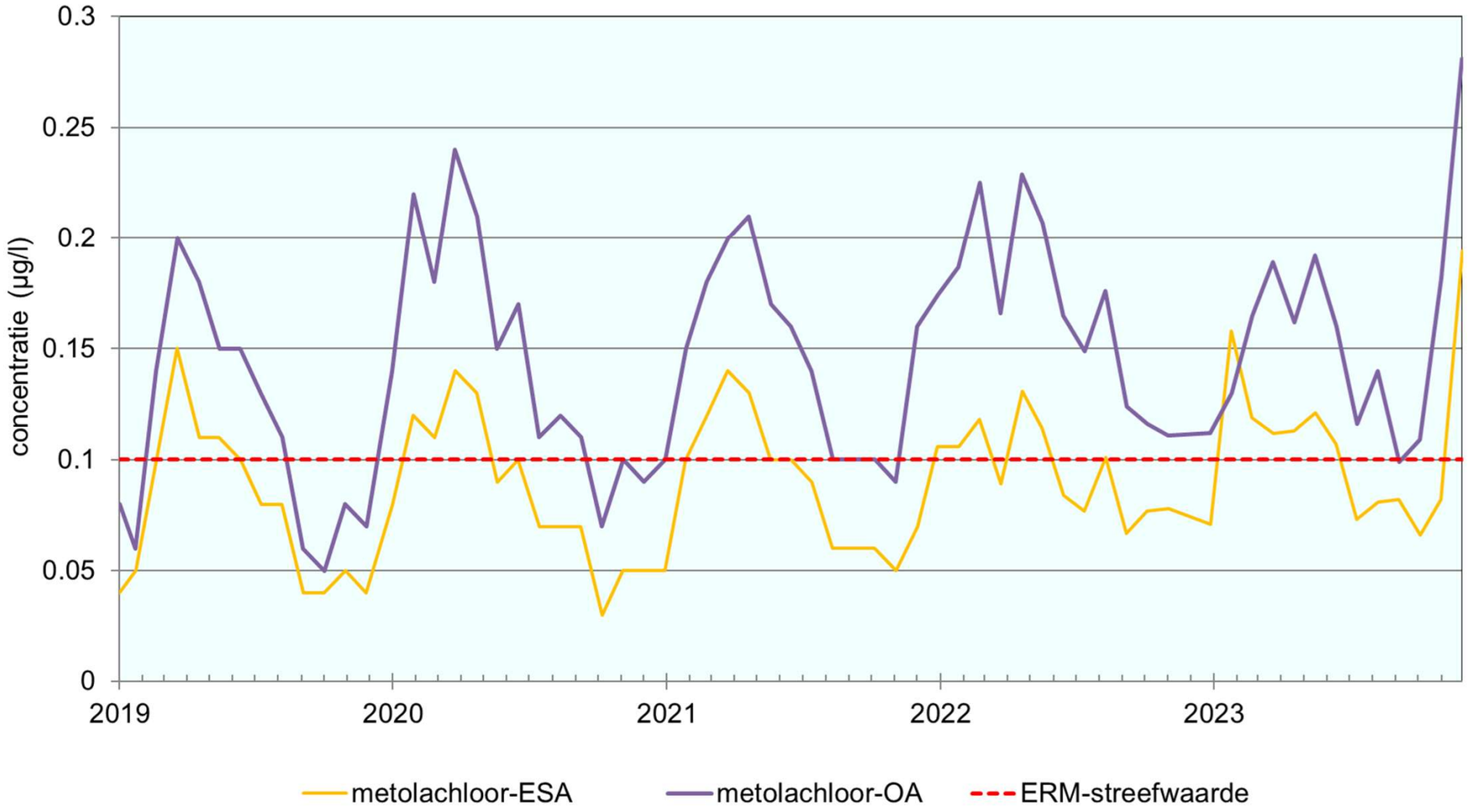

Graph 1.24 Concentrations of metolachlor-ESA en metolachlor-OA measured at Andijk during the period 2019 - 2023

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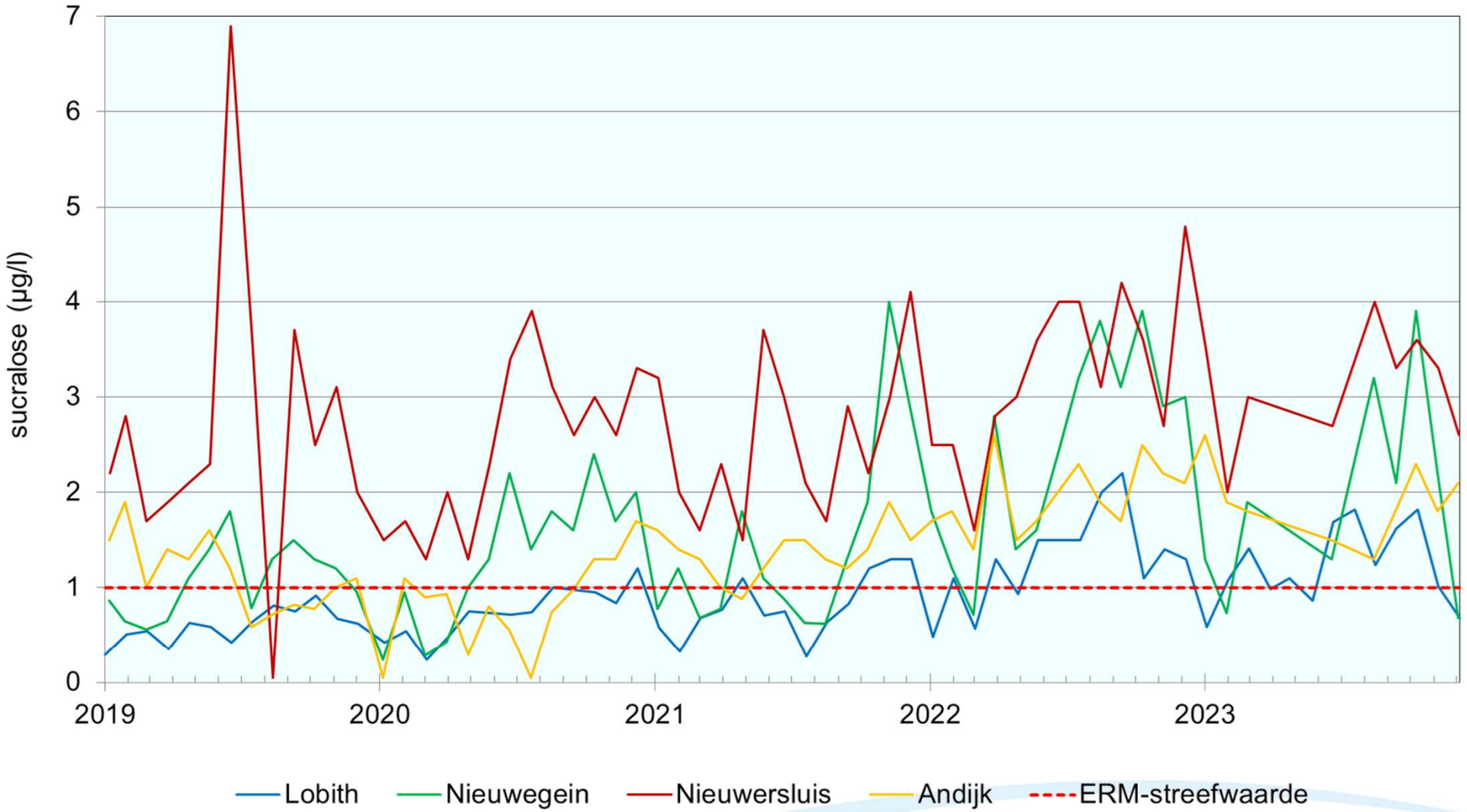

Graph 1.25 Concentrations of sucralose at the Rhine locations during the period 2019 - 2023

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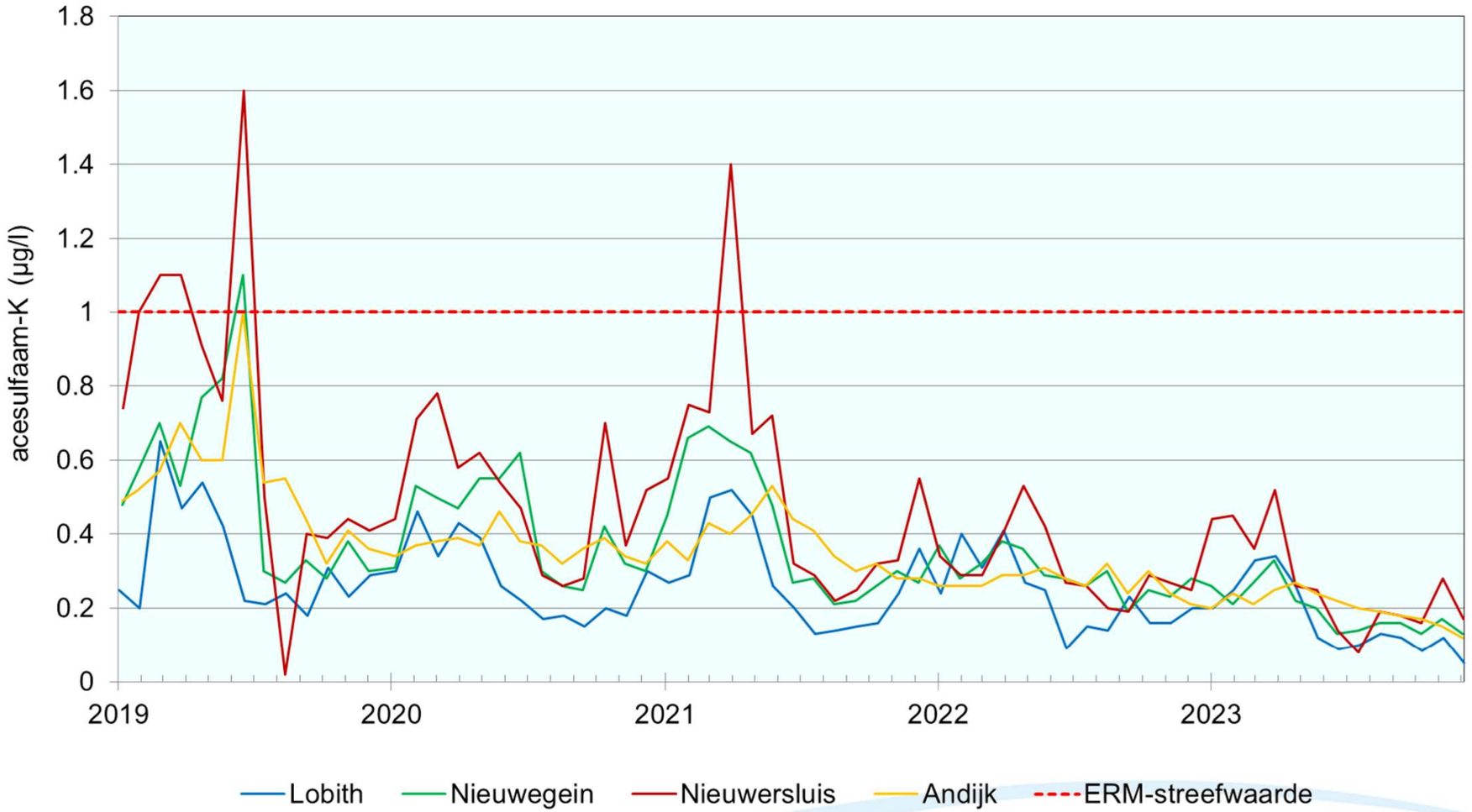

Graph 1.26 Concentrations of acesulfame-K at the Rhine locations during the period 2019 - 2023

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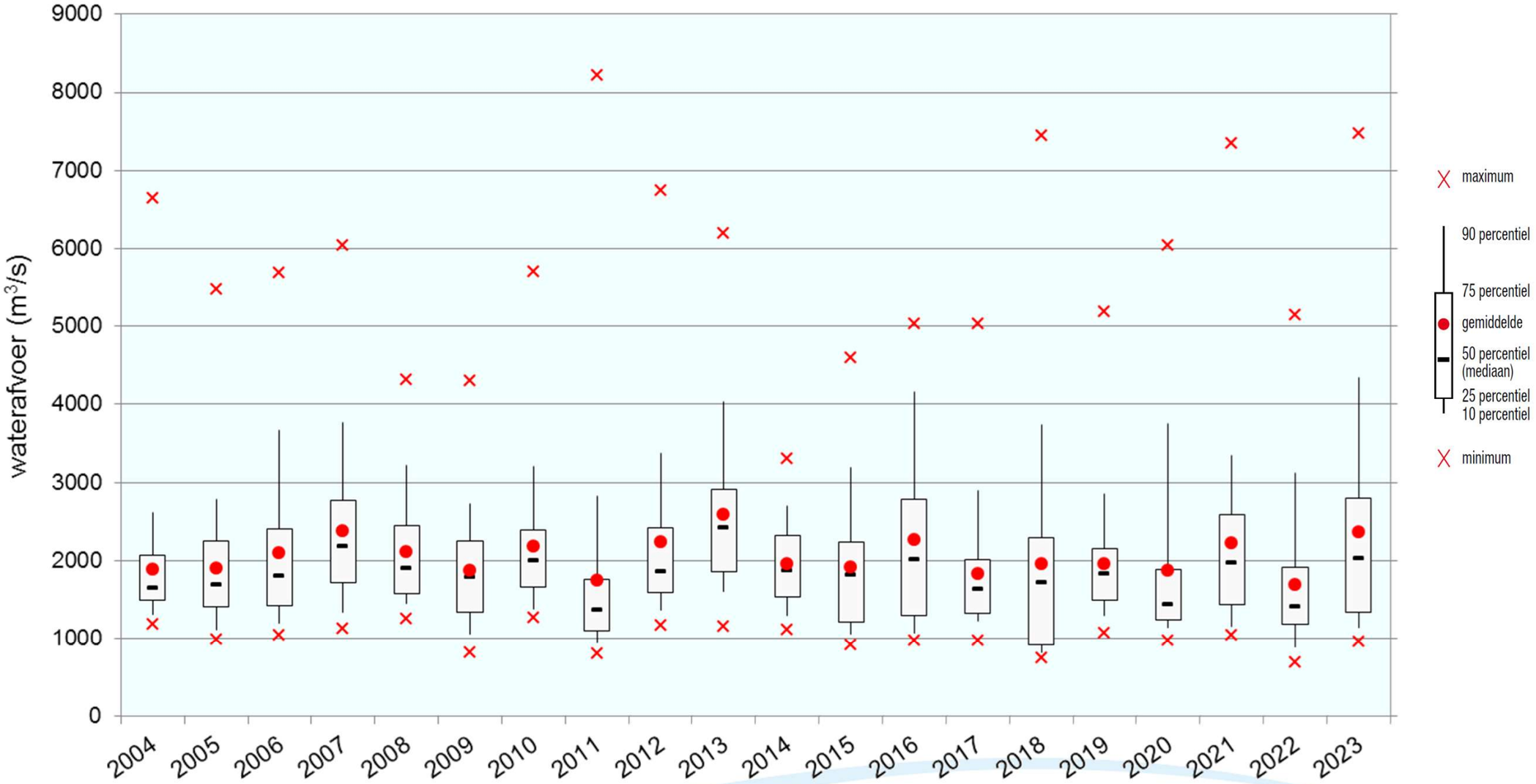

Graph 1.27 Boxplots of the water discharge of the Rhine at Lobith during the period 2004 - 2023

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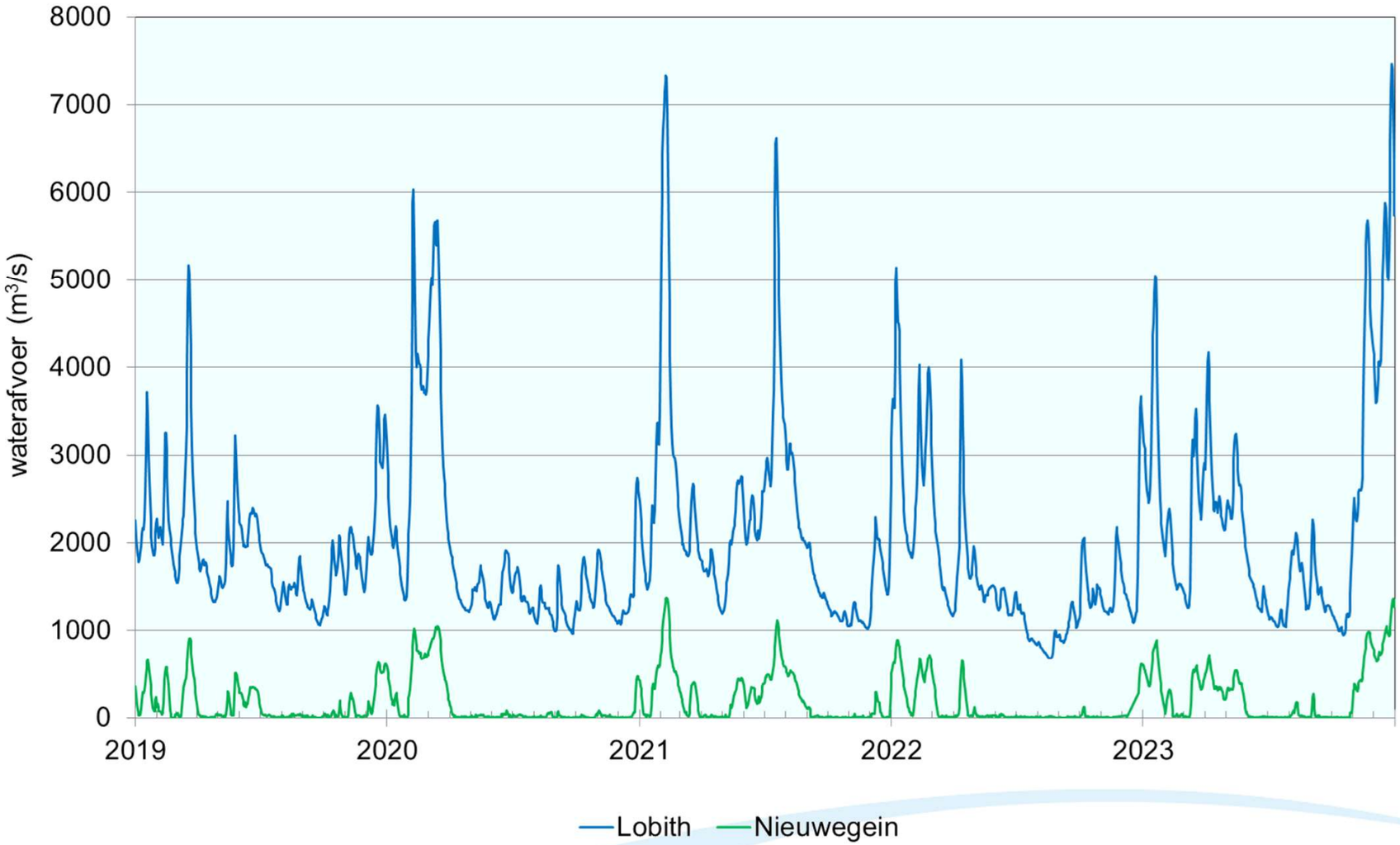

Graph 1.28 Water discharge at Lobith and at Nieuwegein during the period 2019 - 2023. For Nieuwegein, the discharge from the Lek at Hagestein is used as representative discharge.

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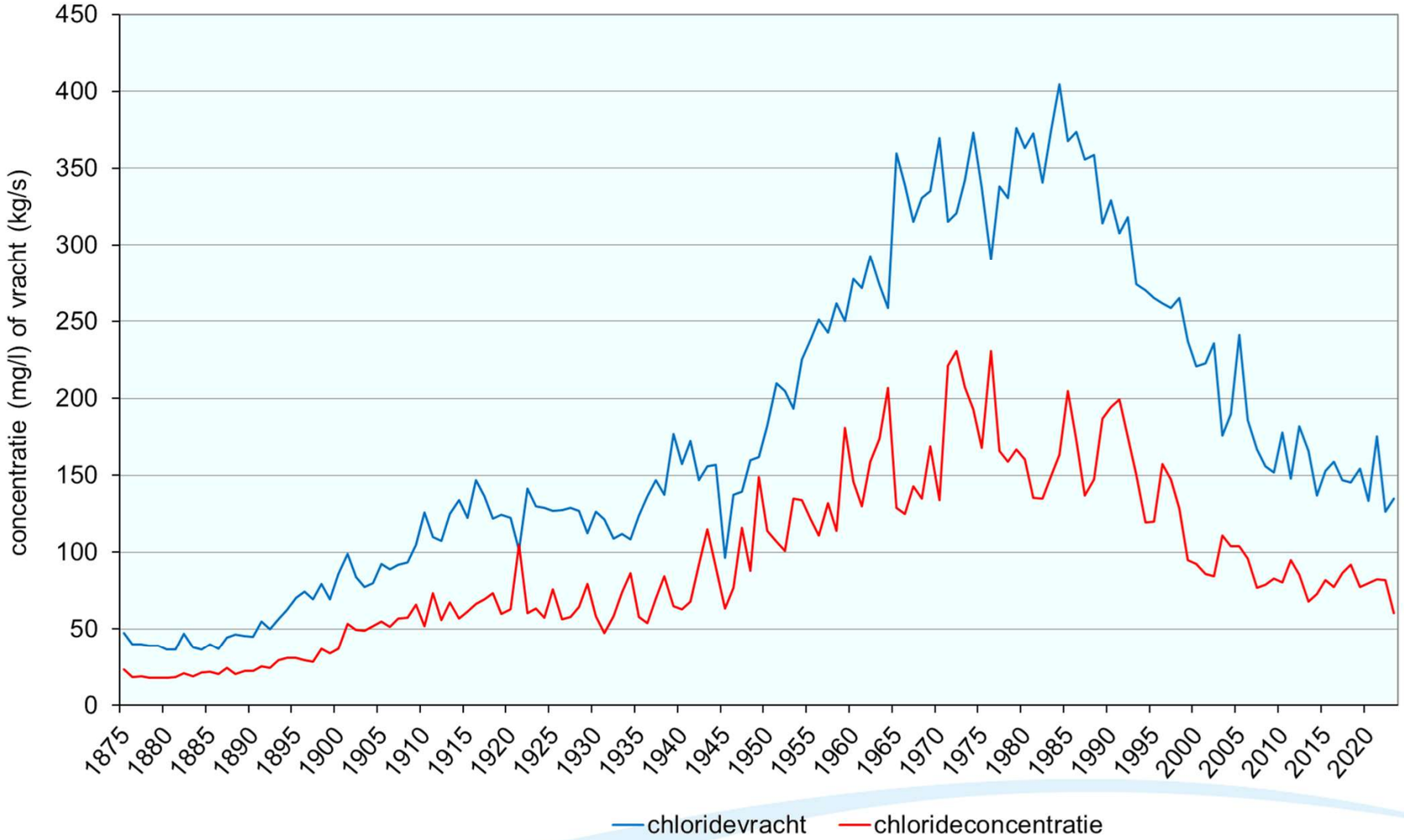

Graph 1.29 Average chloride concentration (red line) and average chloride load (blue line) at Lobith for each year during the period 1875 - 2023

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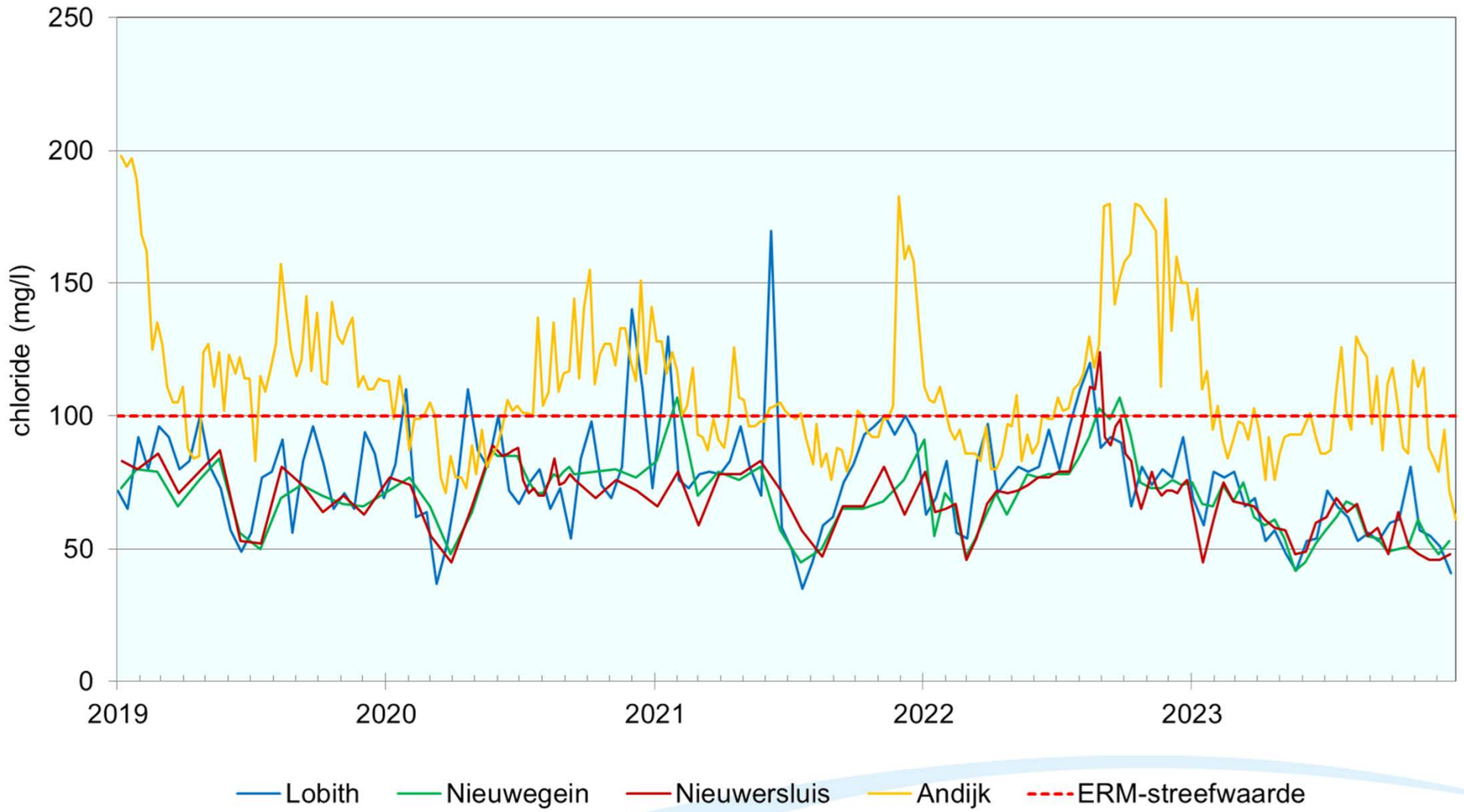

Graph 1.30 Concentrations of chloride (measured weekly or fortnightly) at the Rhine locations during the period 2019 - 2023

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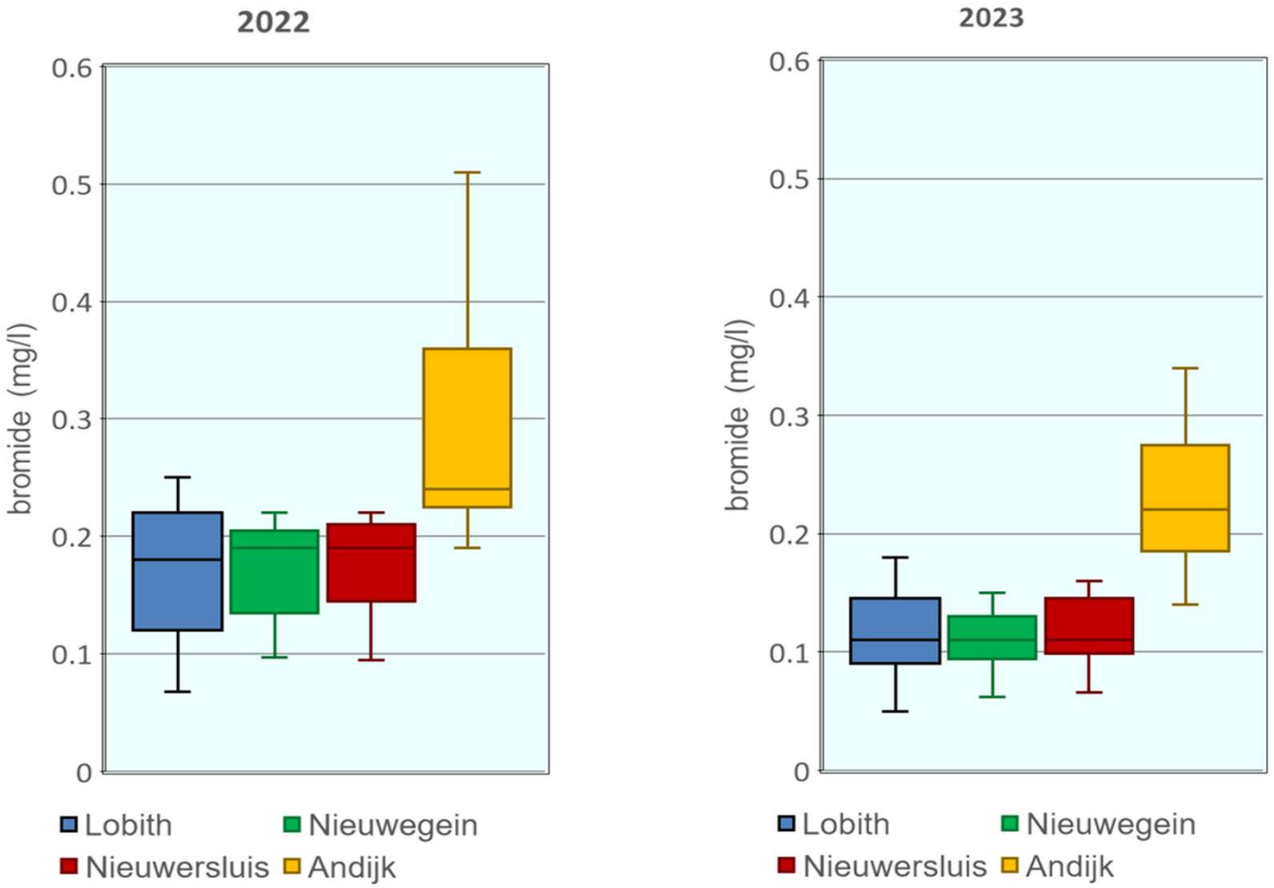

Graph 1.31 Boxplots of bromide concentrations at each reporting location in 2022 en 2023. The locations are presented from left to right from upstream to downstream.

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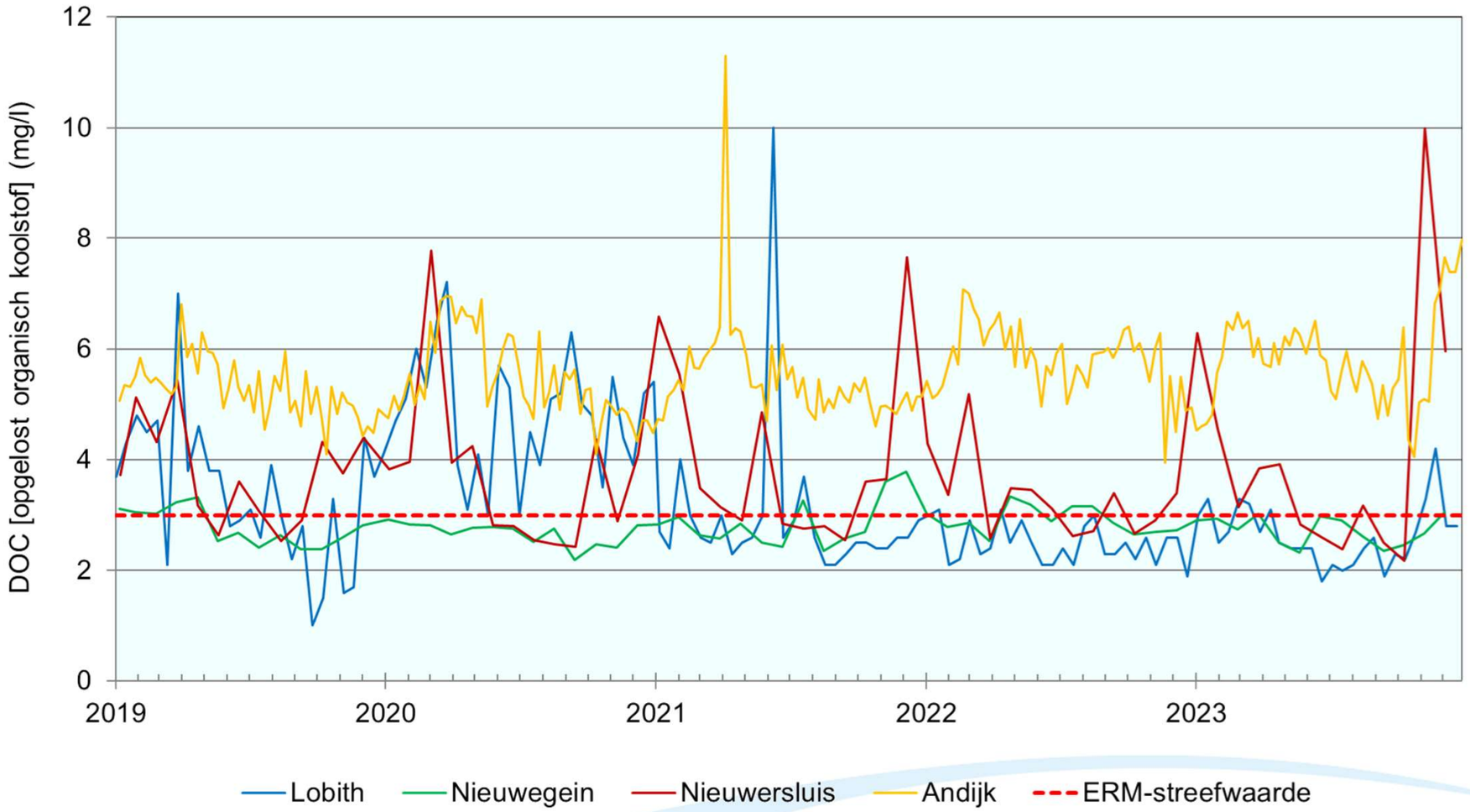

Graph 1.32 De concentrations of dissolved organic carbon (DOC) at the Rhine locations during the period 2019 - 2023

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