

RIWA-Rijn Annual Report 2022

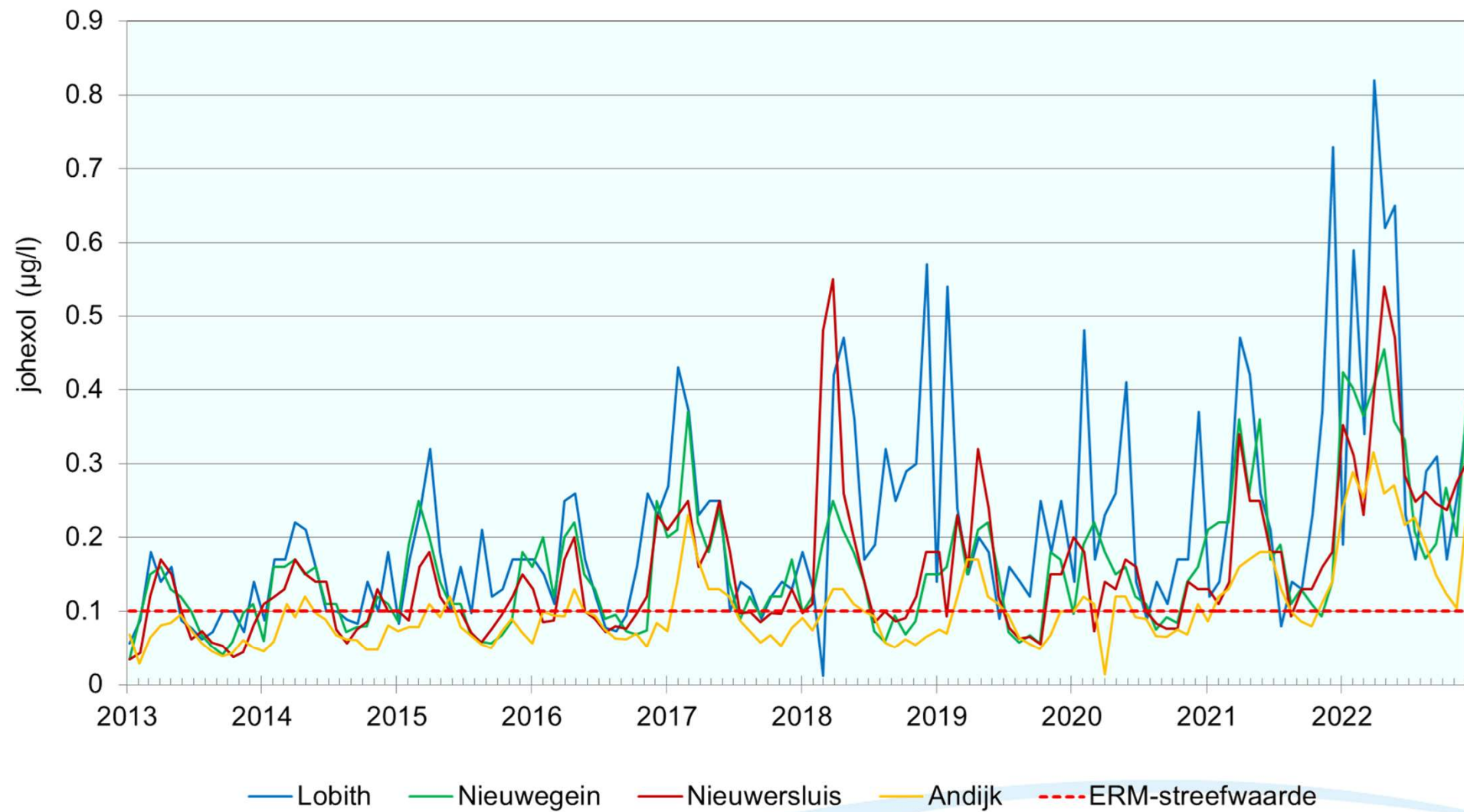
Graphs from chapter 1 The quality of the Rhine water in 2022



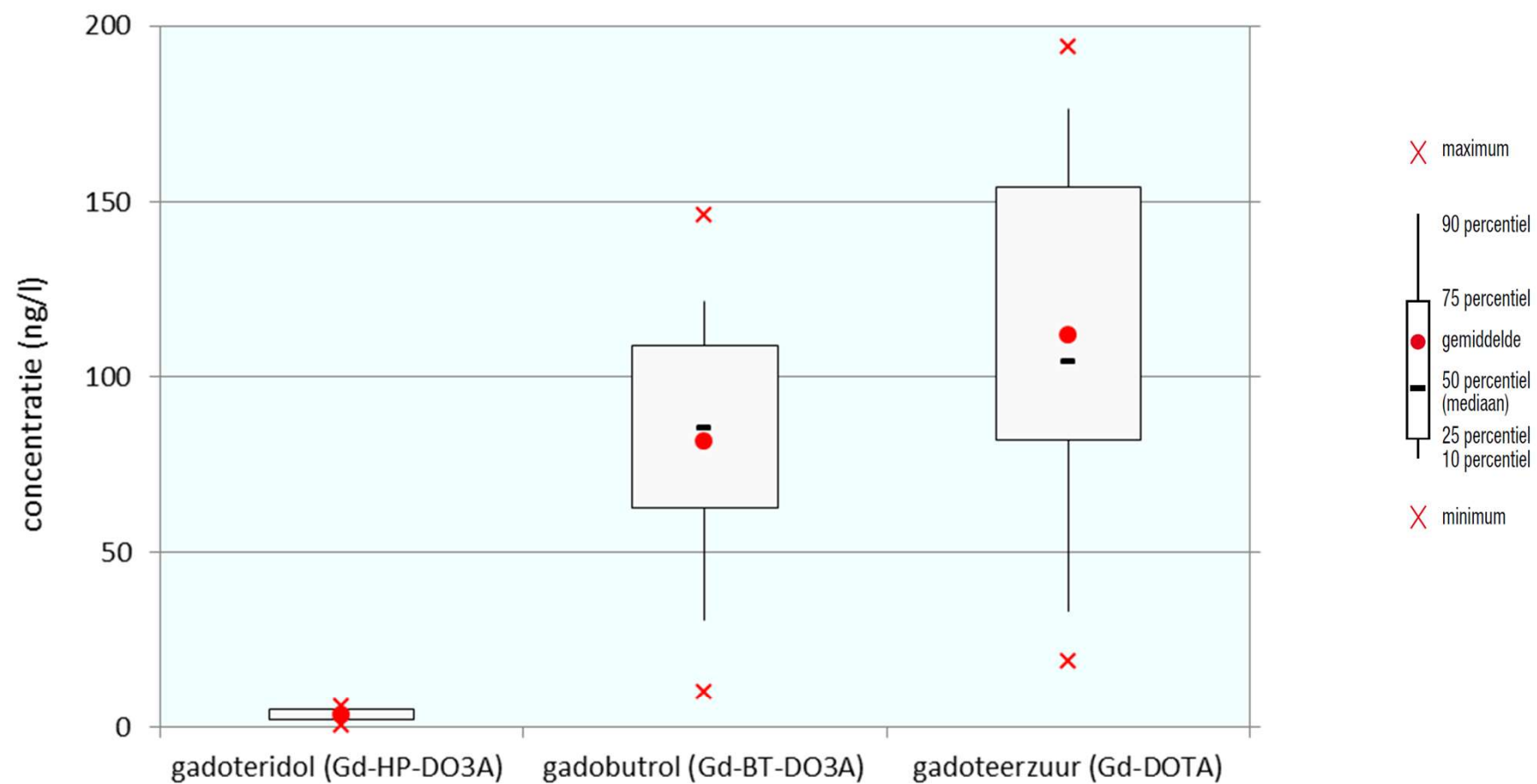
The concentrations of the substances were compared to target values from the European River Memorandum (ERM). More information on the ERM can be found on our website:

<https://www.riwa-rijn.org/en/riwa-rijn-en/european-river-memorandum-2/>

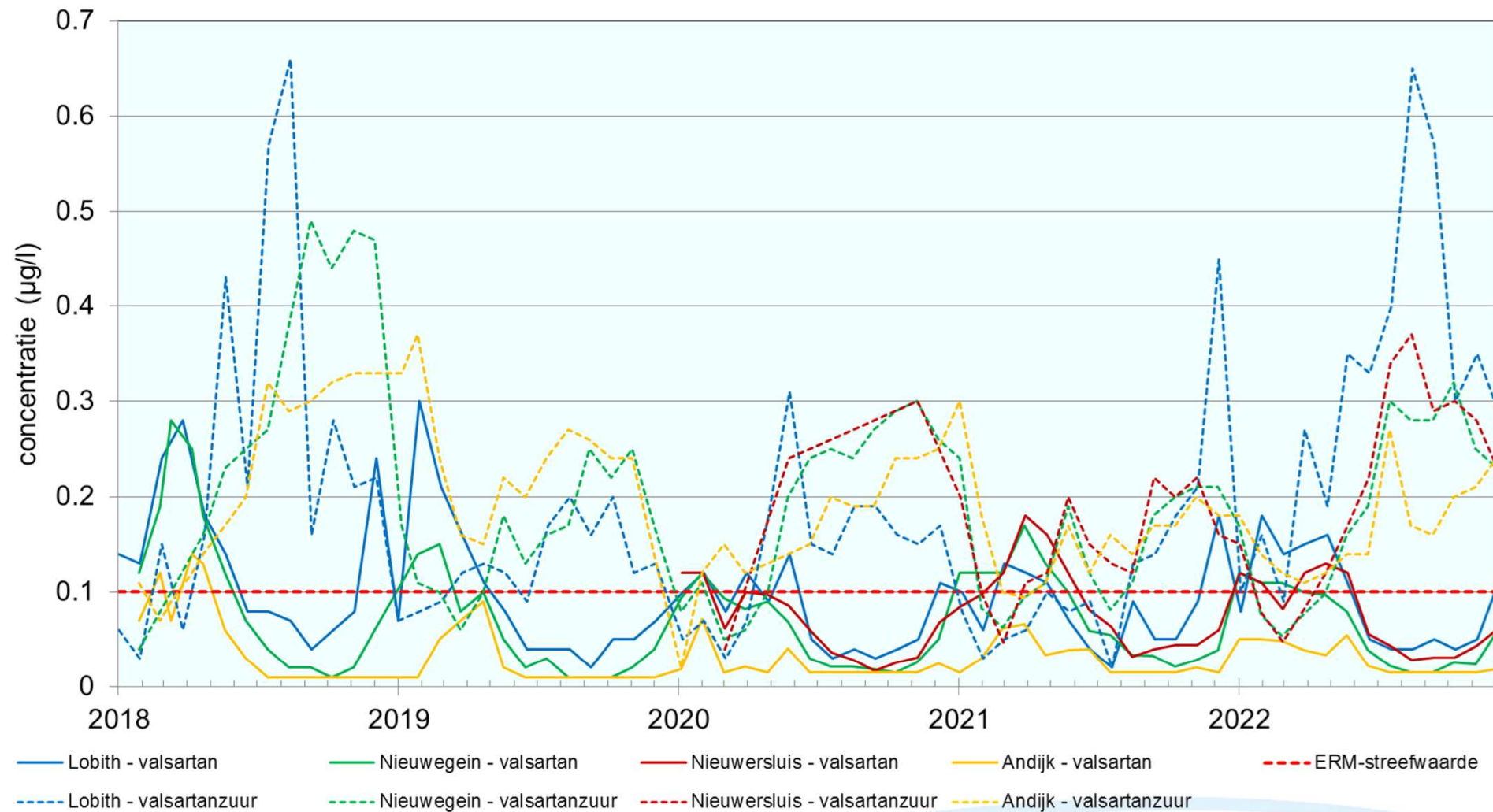
ERM-streefwaarde = ERM target value



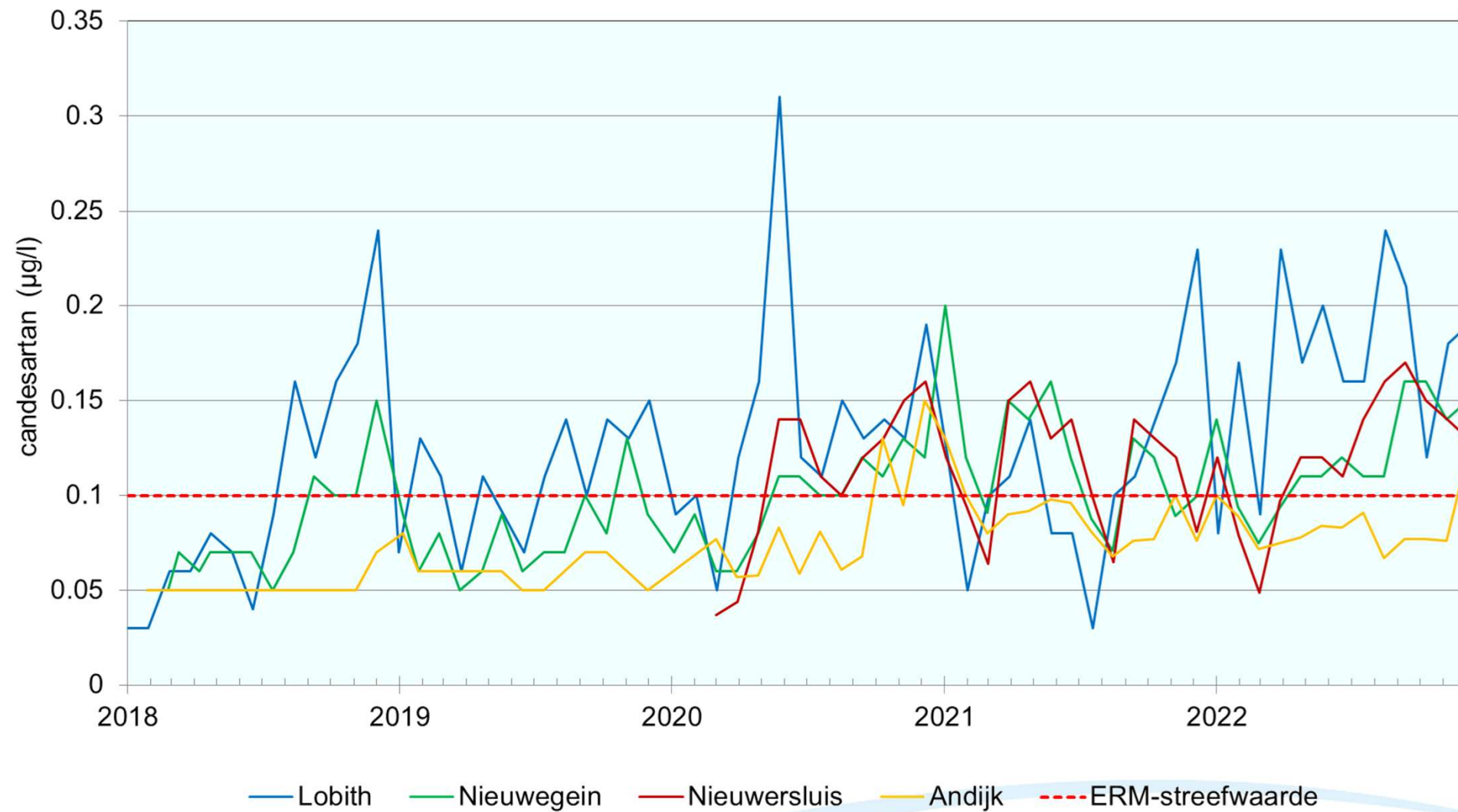
Graph 1.1 Concentrations of johexol at the Rhine locations in the past 10 years



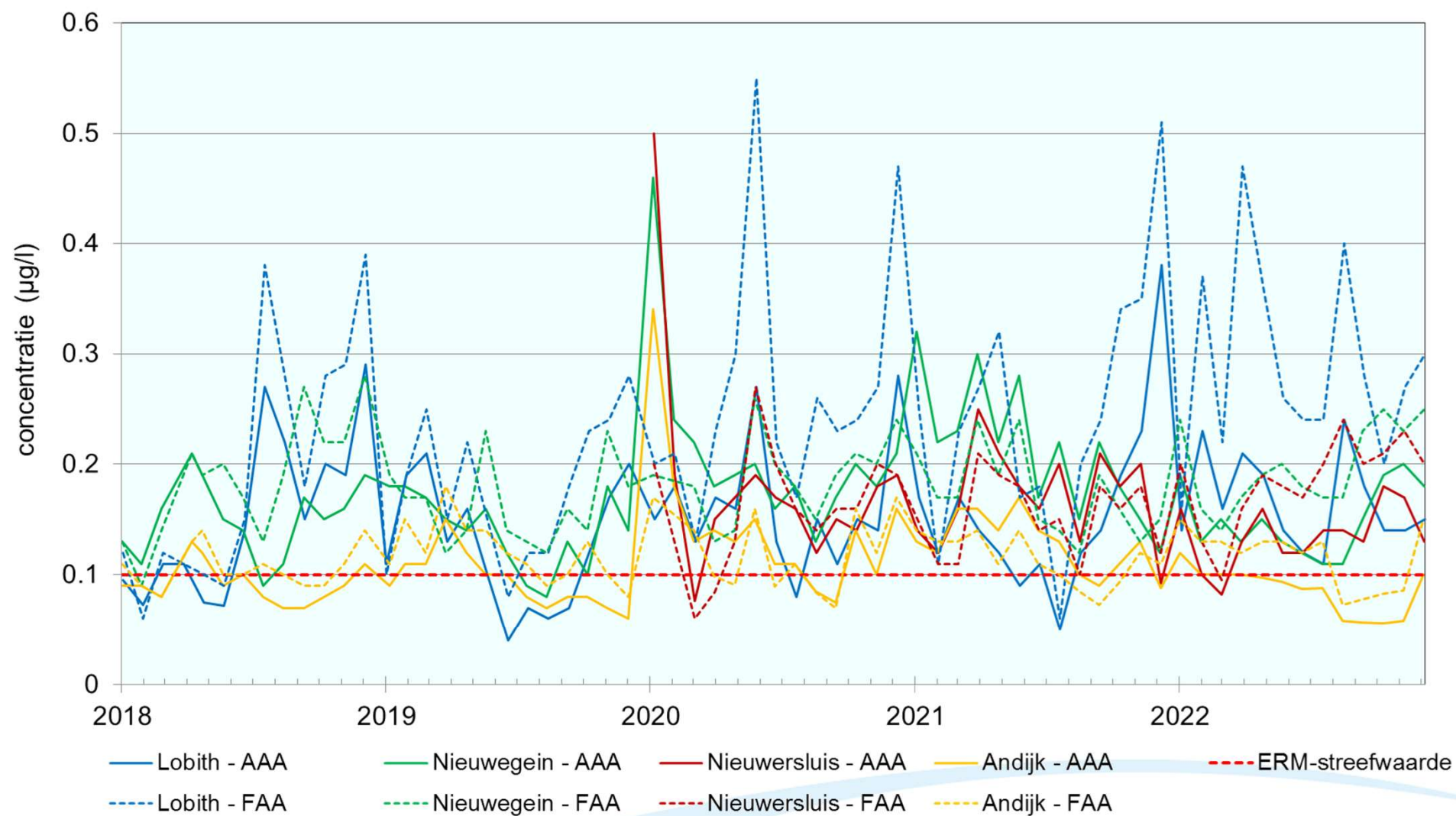
Graph 1.2 Box plots of three gadolinium complexes measured at Lobith in 2021



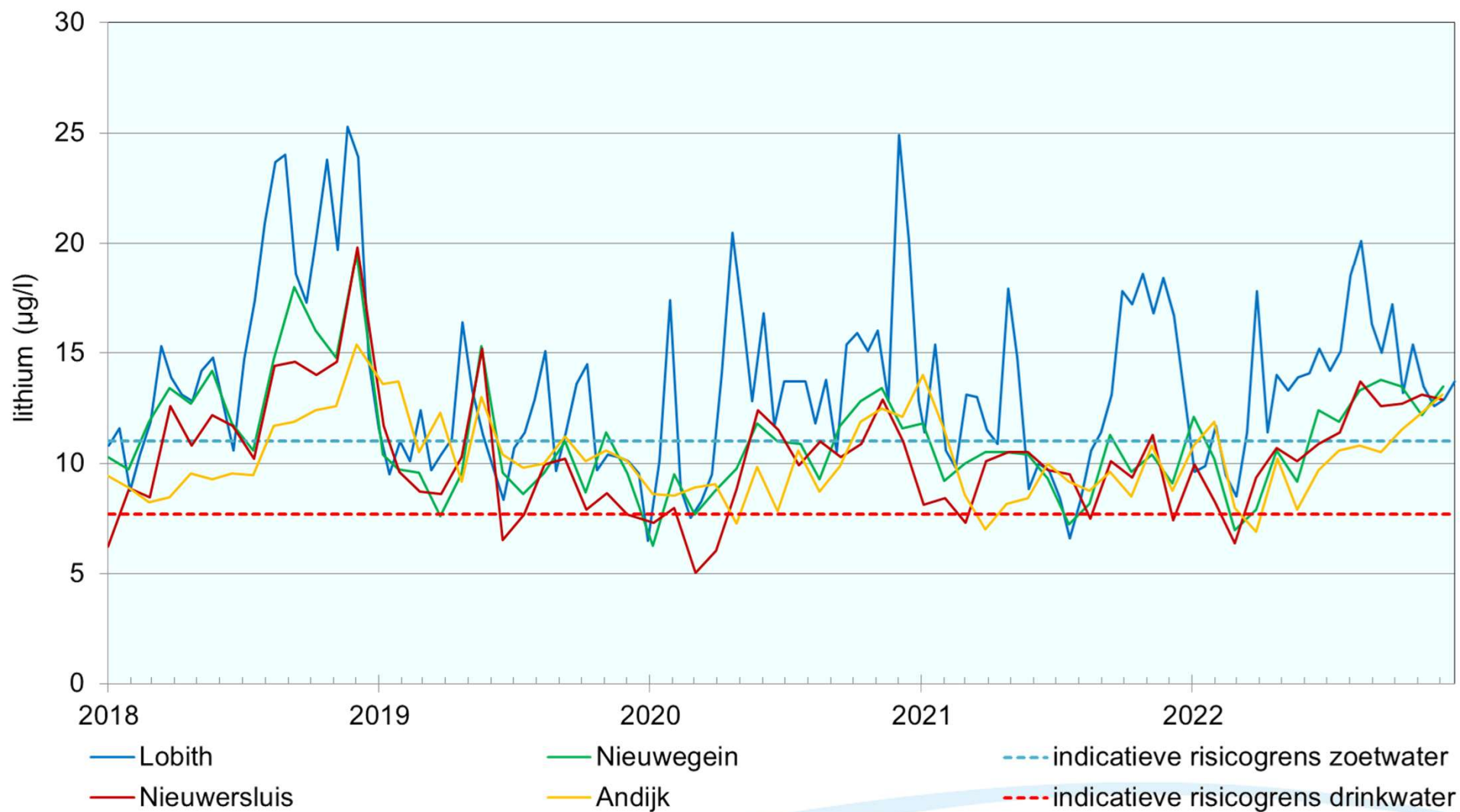
Graph 1.3 Concentrations of valsartan and valsartan acid at the Rhine locations during the period 2018-2022



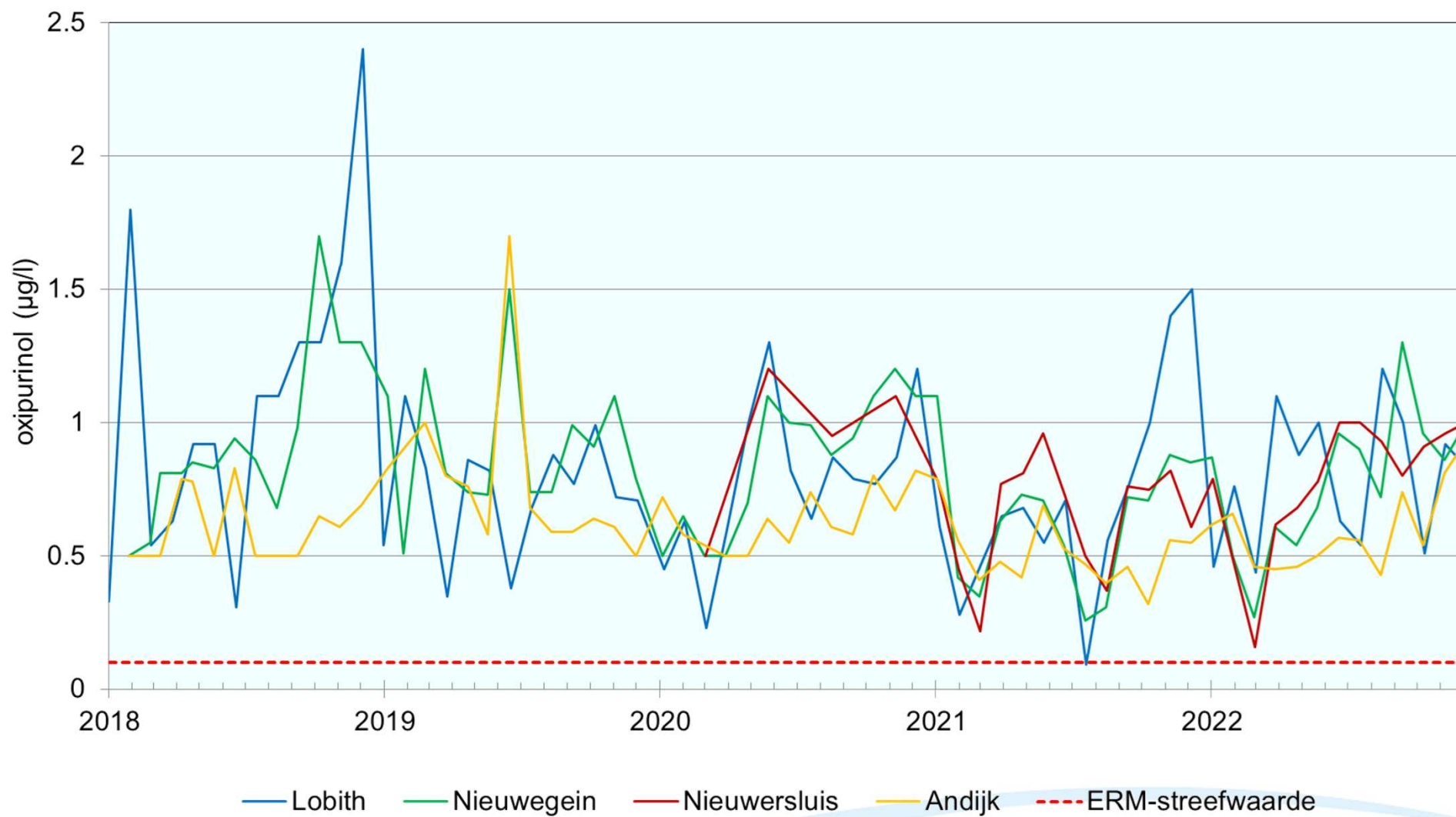
Graph 1.4 Concentrations of candesartan at the Rhine locations during the period 2018-2022



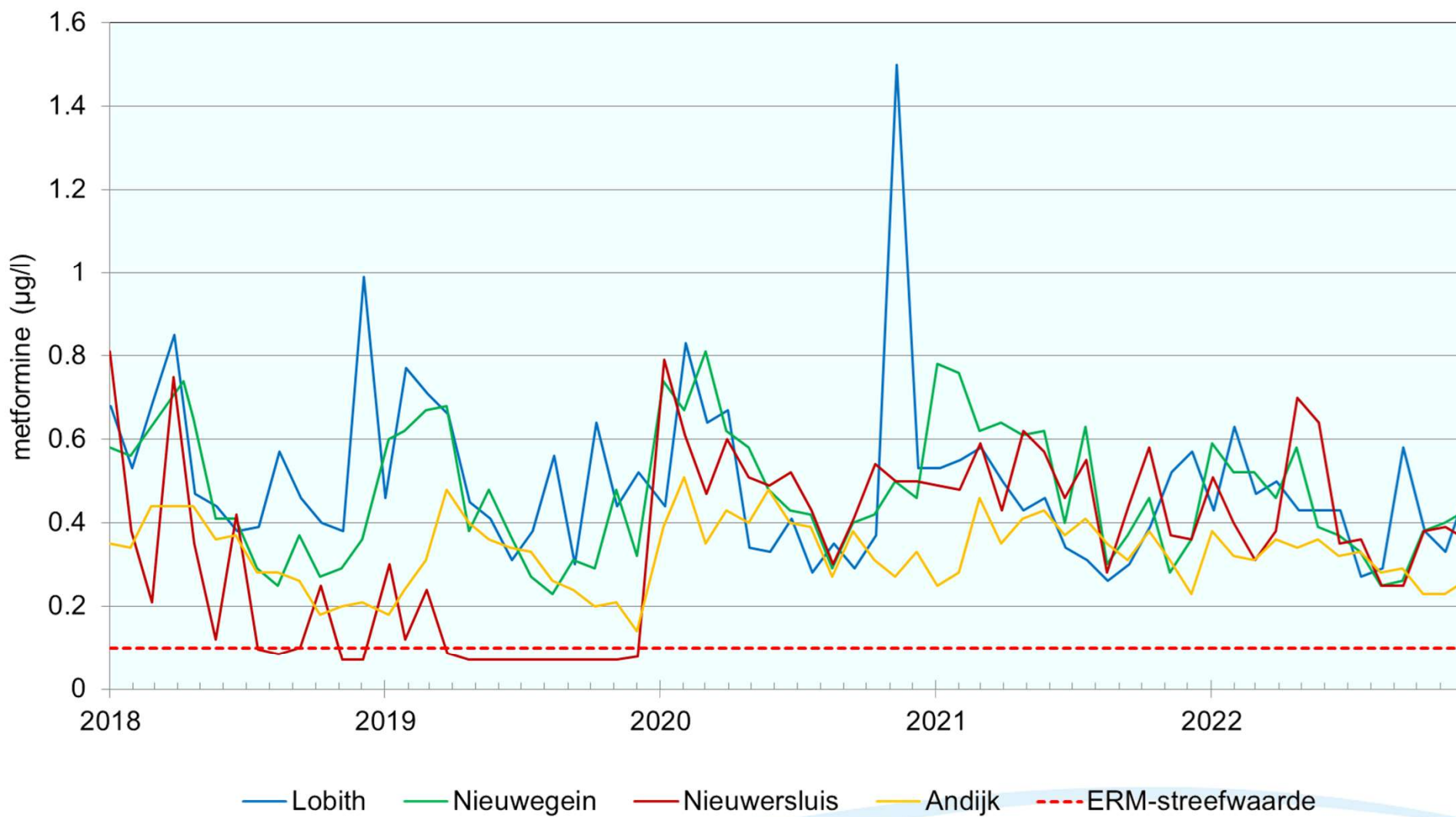
Graph 1.5 Concentrations of N-acetyl-aminoantipyrine (AAA) and N-formyl-aminoantipyrine (FAA) at the Rhine locations during the period 2018-2022



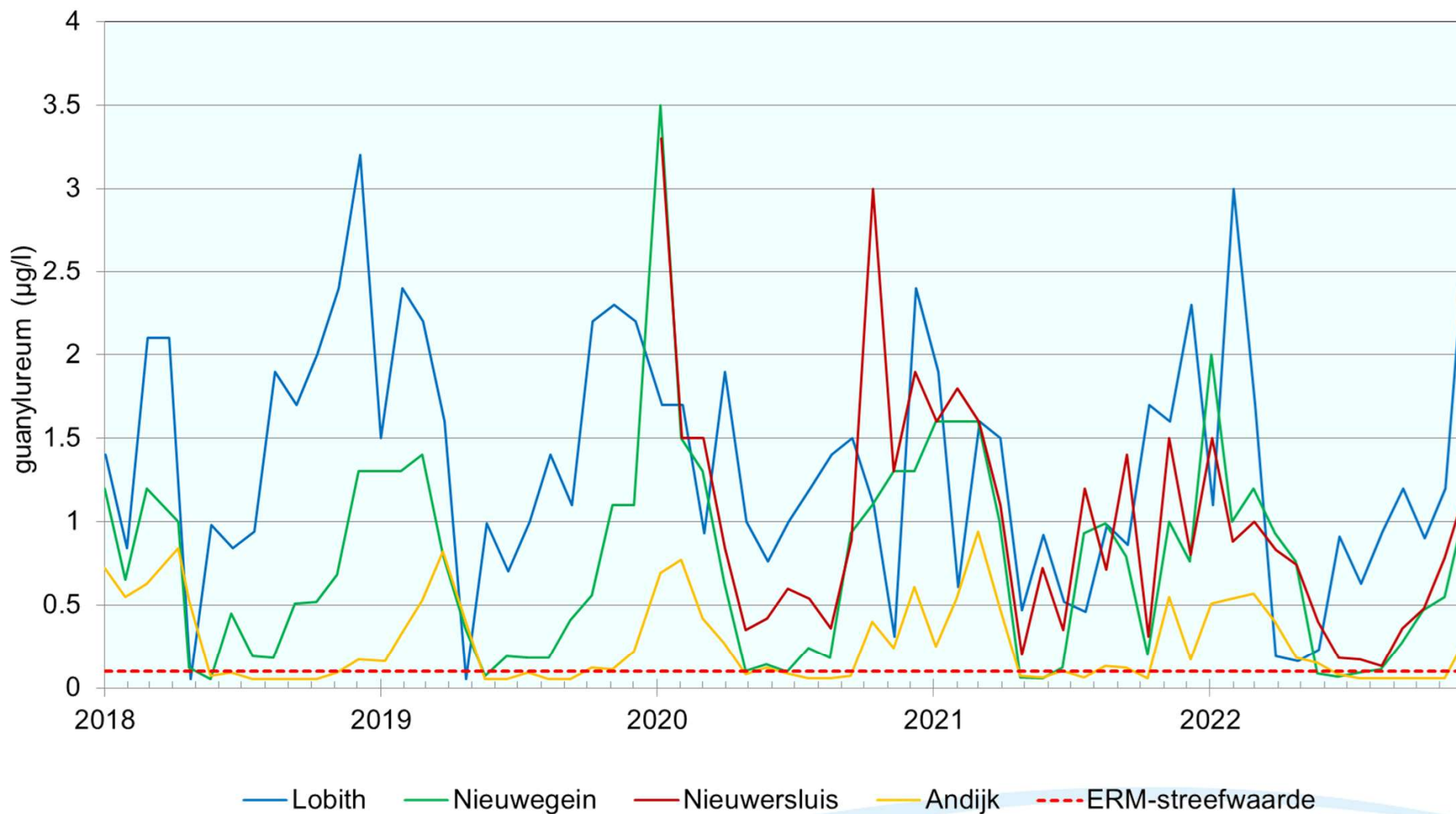
Graph 1.6 Concentrations of lithium measured at the Rhine locations during the period 2018-2022. The graph shows the indicative risk limits derived by RIVM for lithium in freshwater (blue dotted line) and for drinking water (red dotted line).



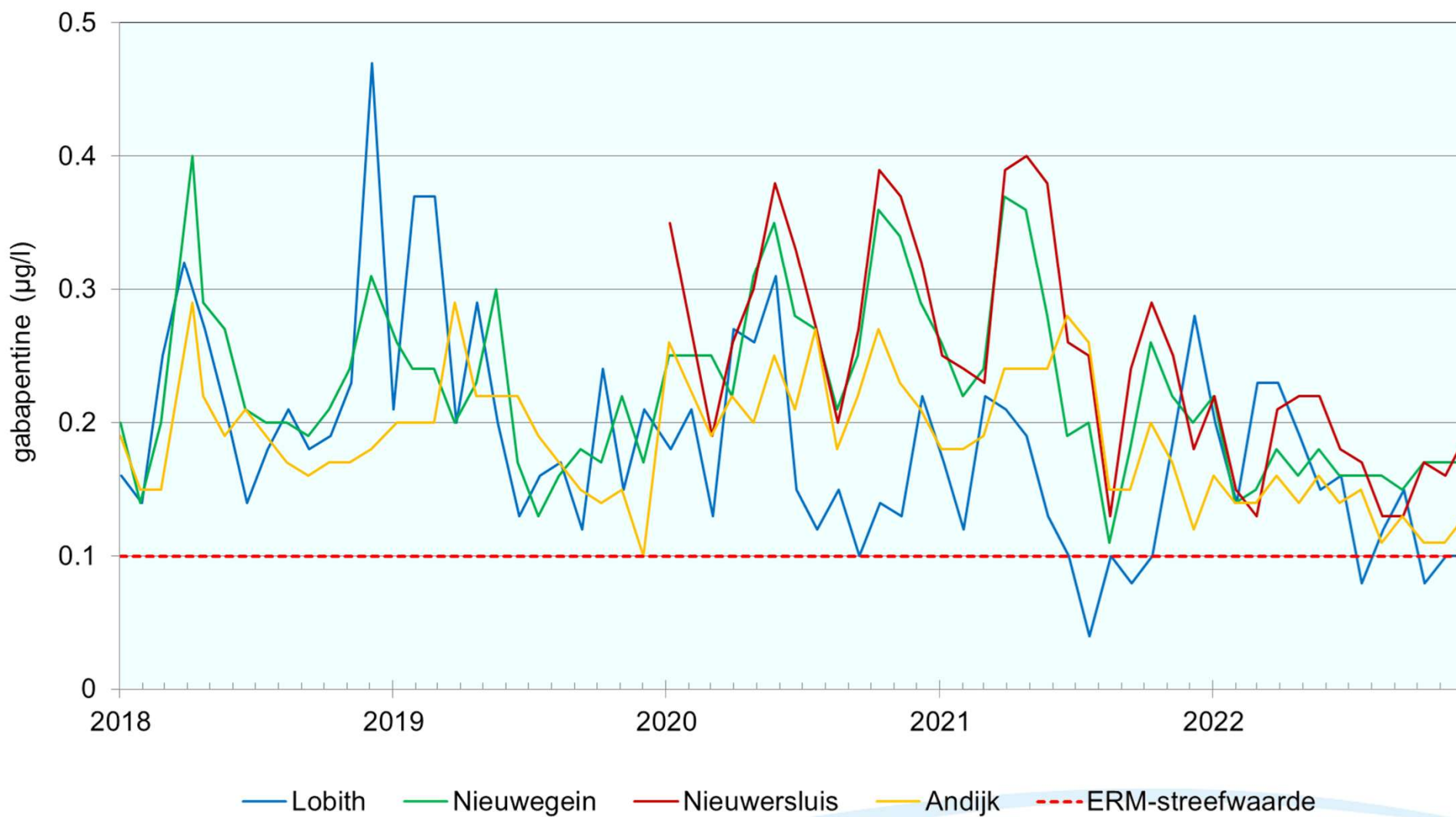
Graph 1.7 Concentrations of oxipurinol at the Rhine locations during the period 2018-2022



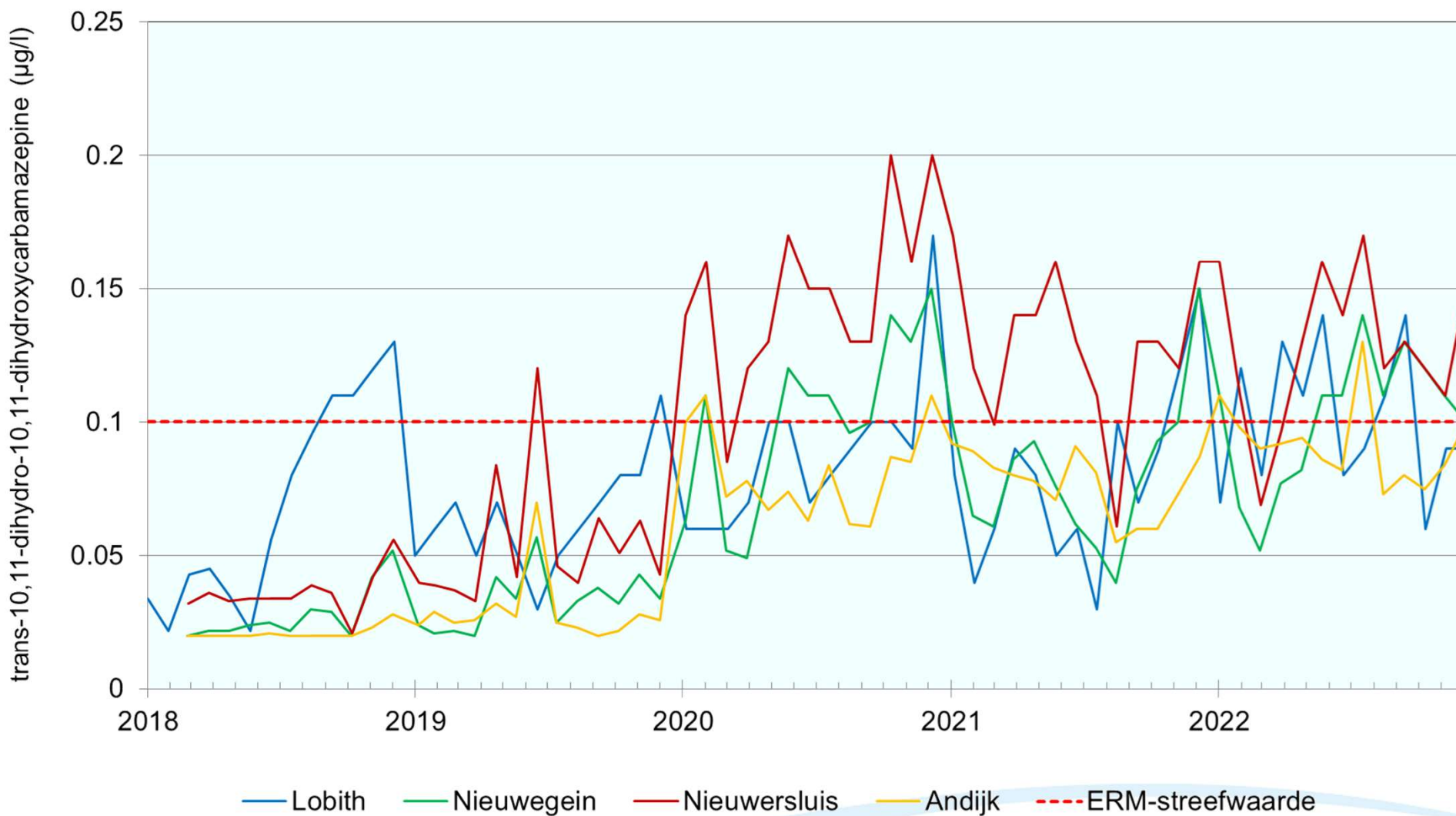
Graph 1.8 Concentrations of metformin at the Rhine locations during the period 2018-2022



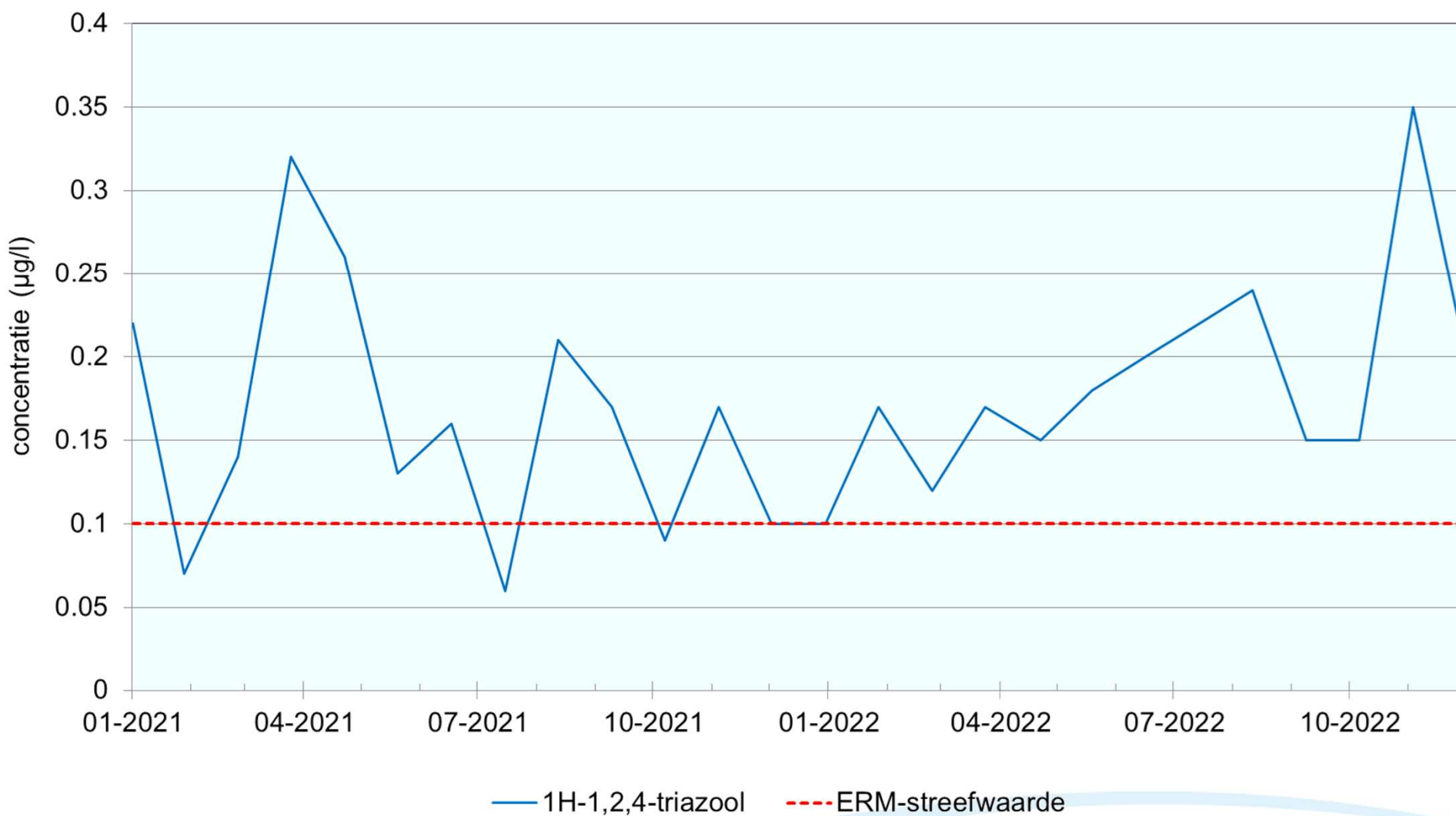
Graph 1.9 Concentrations of guanylurea at the Rhine locations during the period 2018-2022



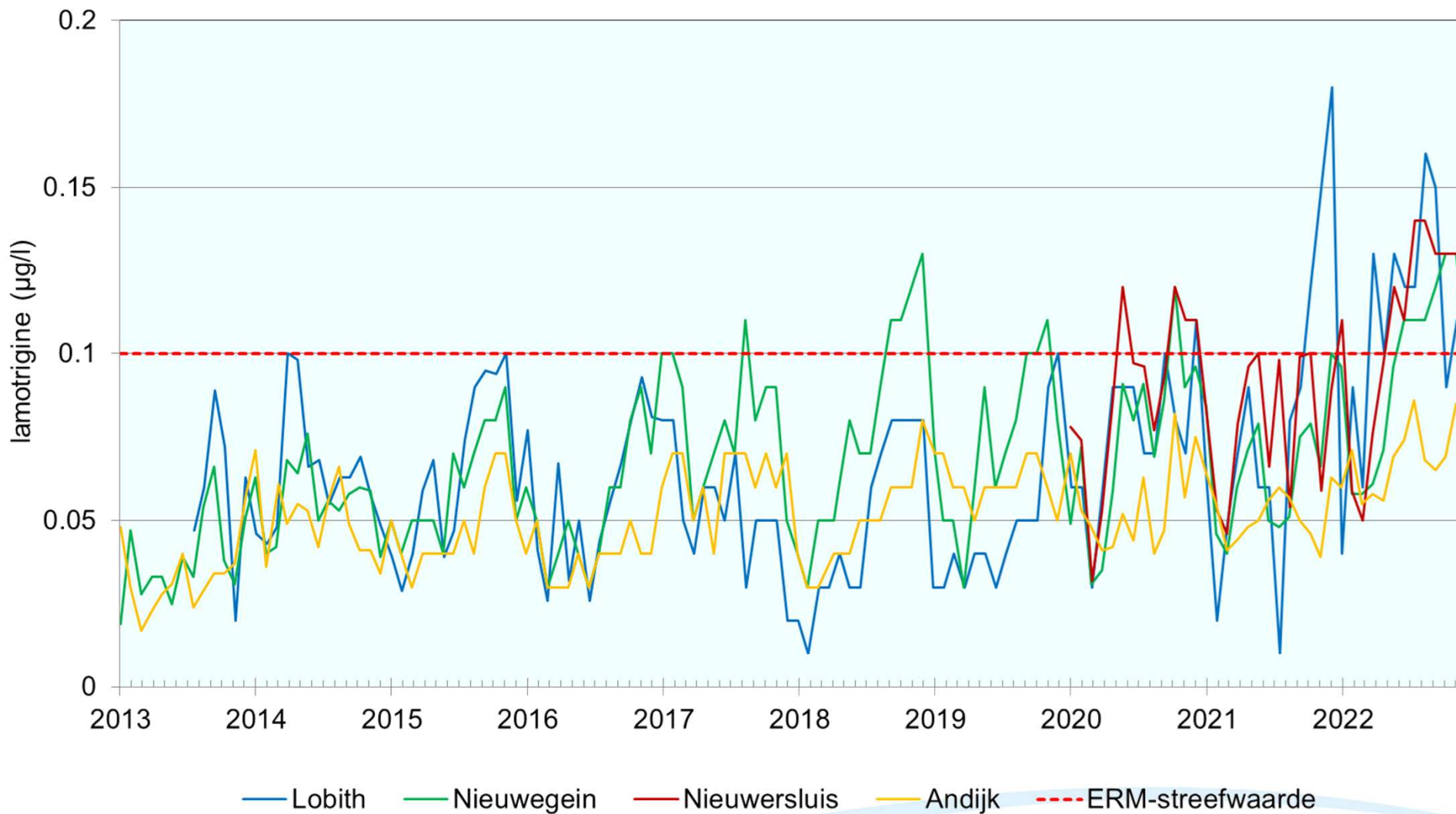
Graph 1.10 Concentrations of gabapentin at the Rhine locations during the period 2018-2022



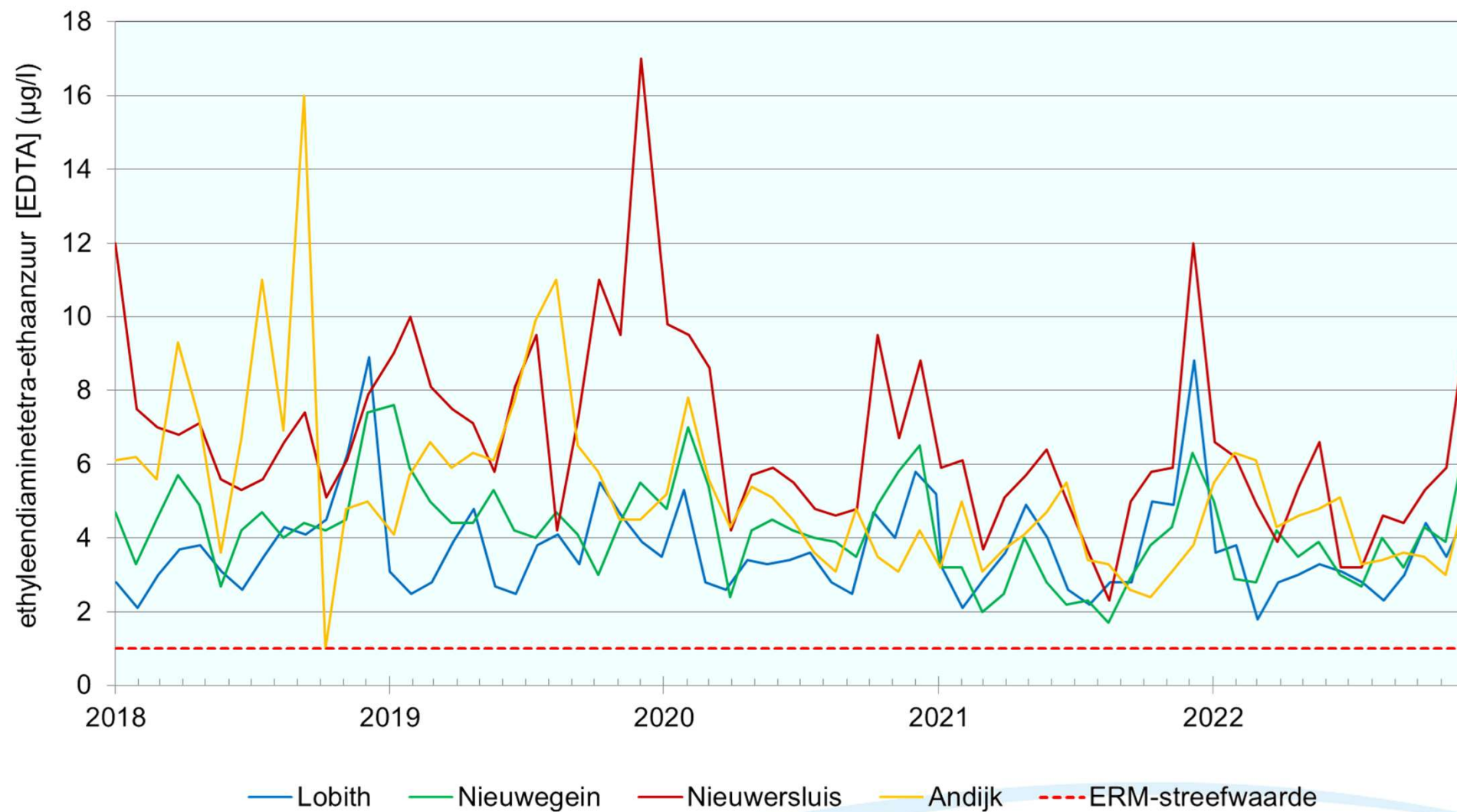
Graph 1.11 Concentrations of trans-10,11-dihydro-10,11-dihydroxycarbamazepine at the Rhine locations (2018-2022)



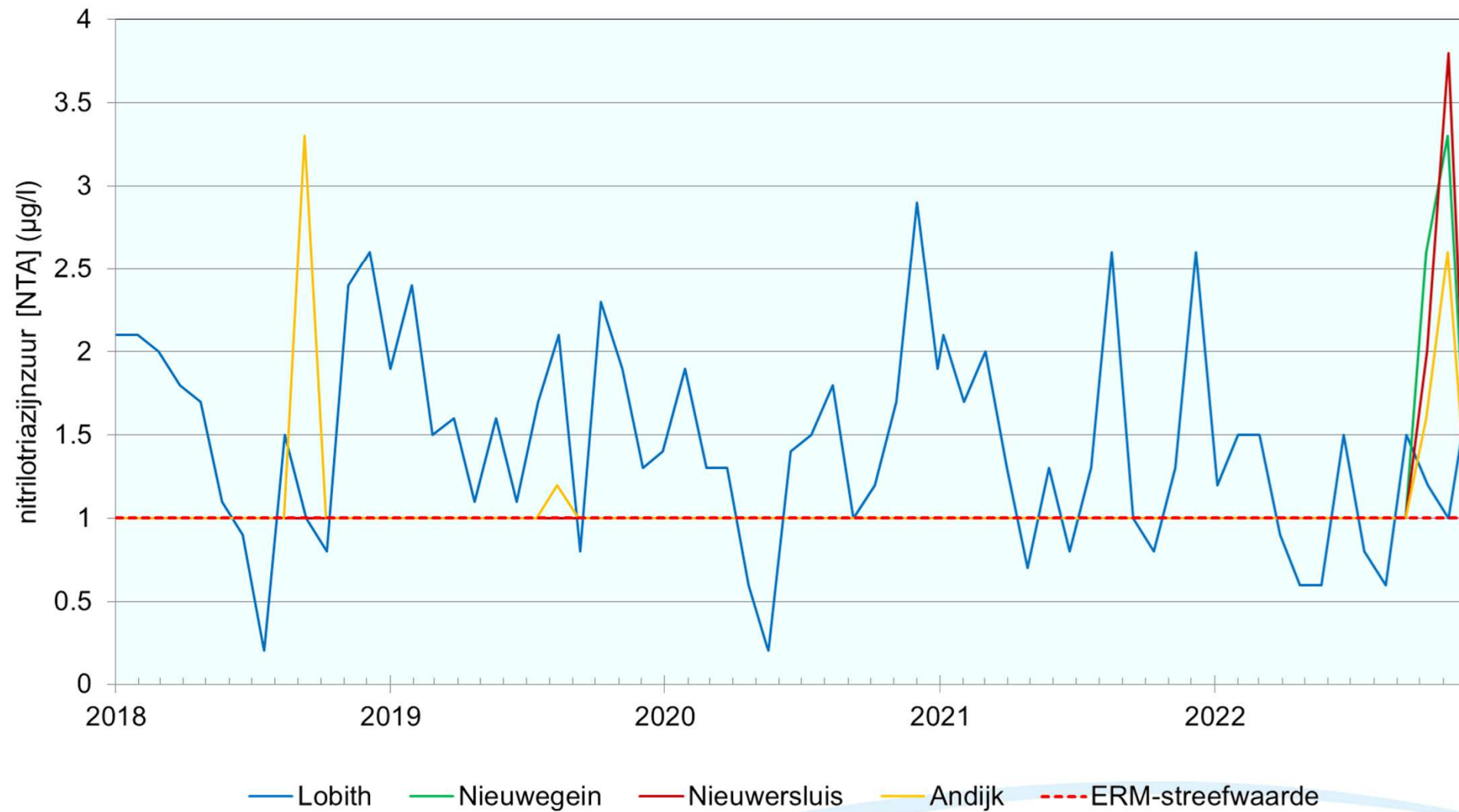
Graph 1.12 Concentrations of 1H-1,2,4-triazole measured at Lobith in 2021 and in 2022



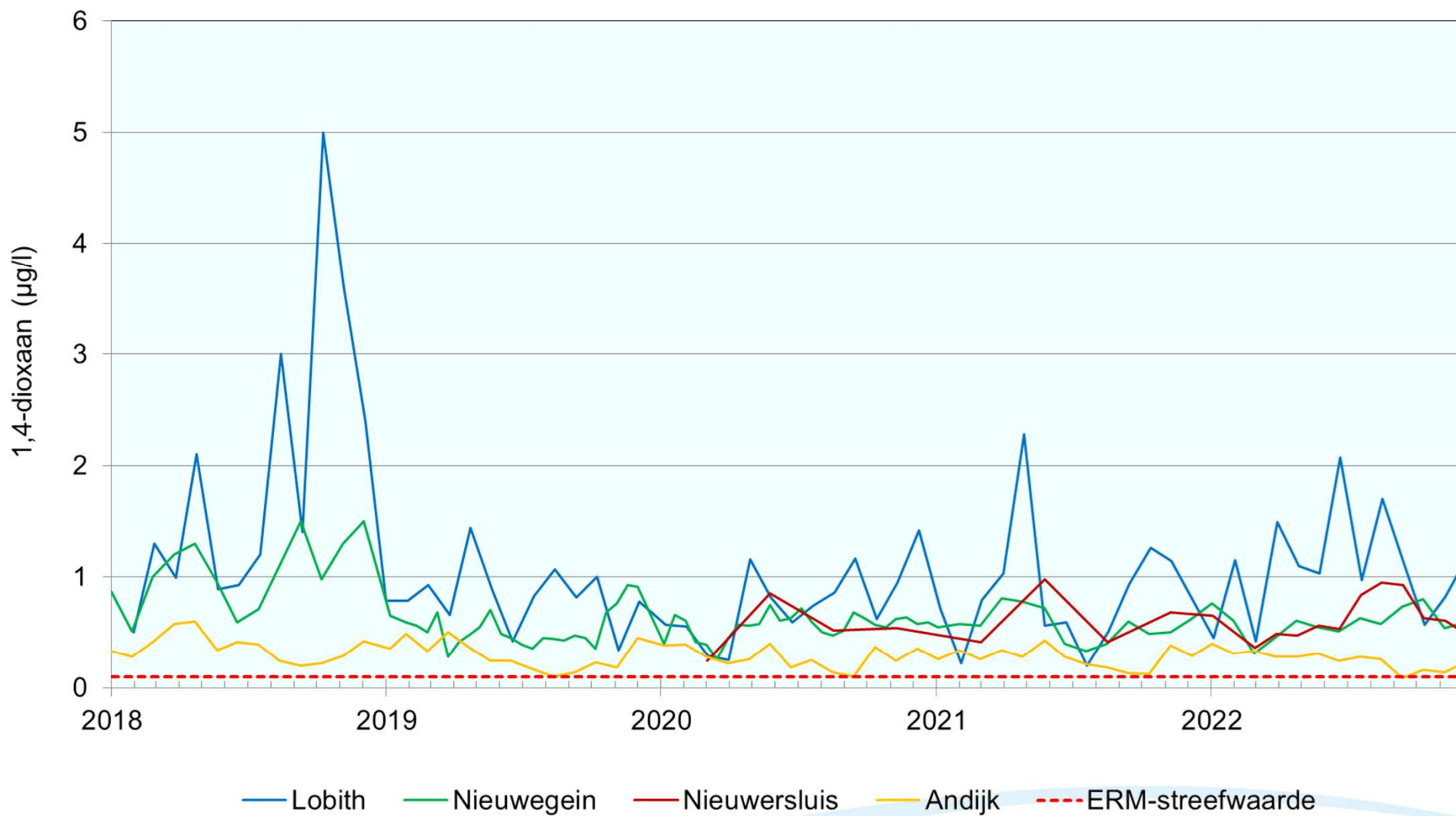
Graph 1.13 Concentrations of lamotrigine measured at the Rhine locations in the past ten years



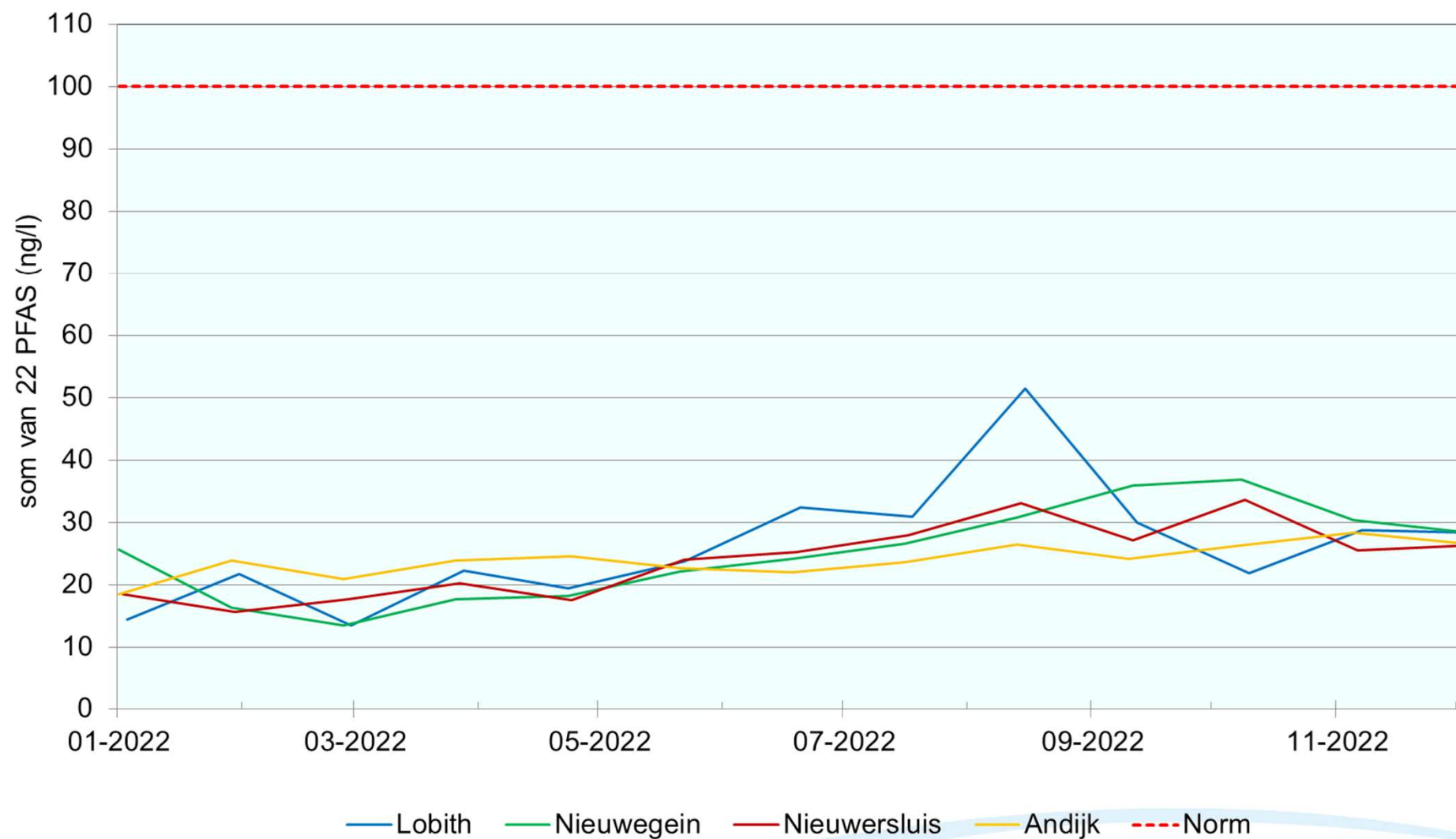
Graph 1.14 Concentrations of EDTA measured at the Rhine locations during the period 2018-2022



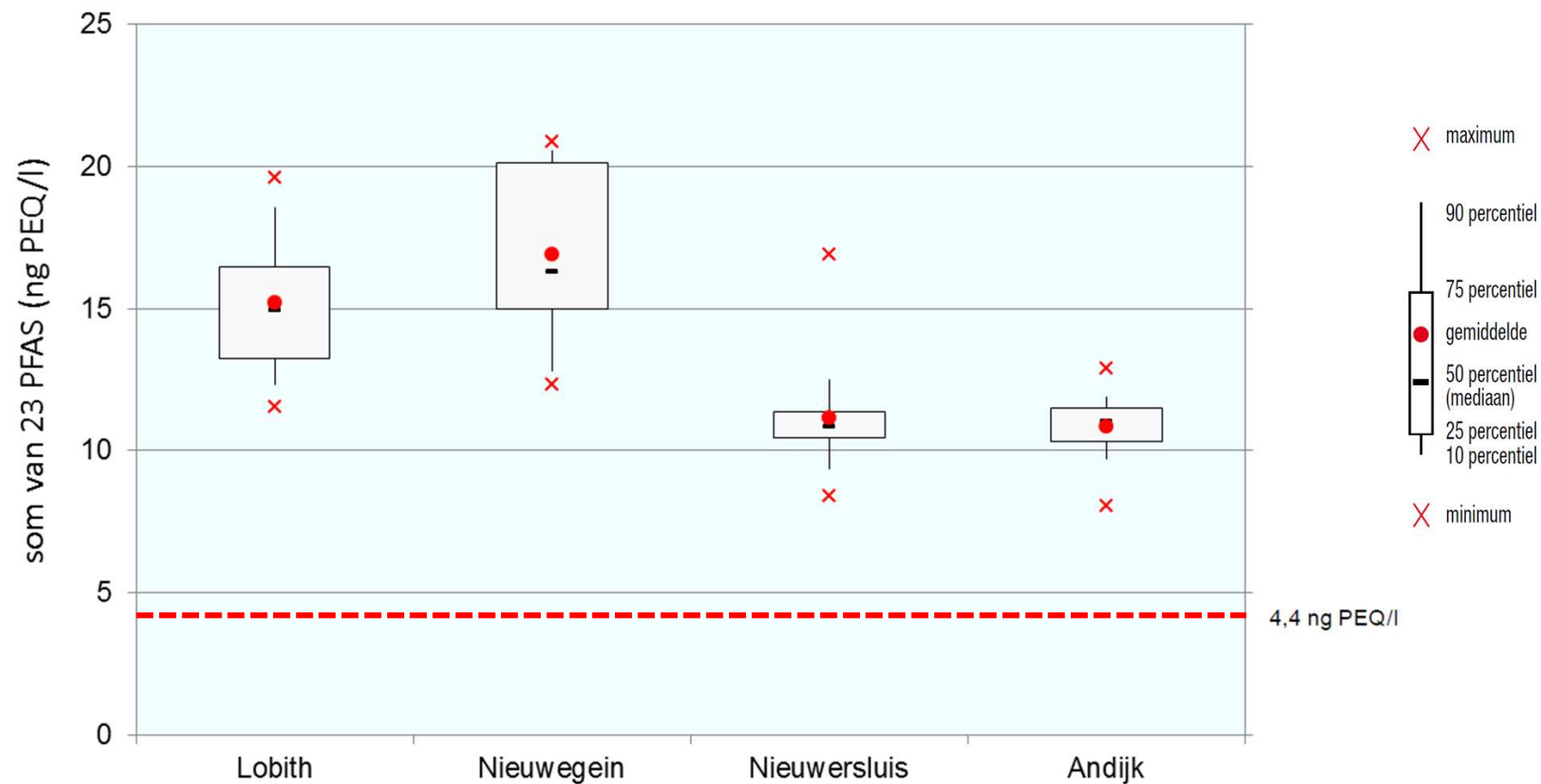
Graph 1.15 Concentrations of NTA measured at Lobith over the past five years (2018-2022)



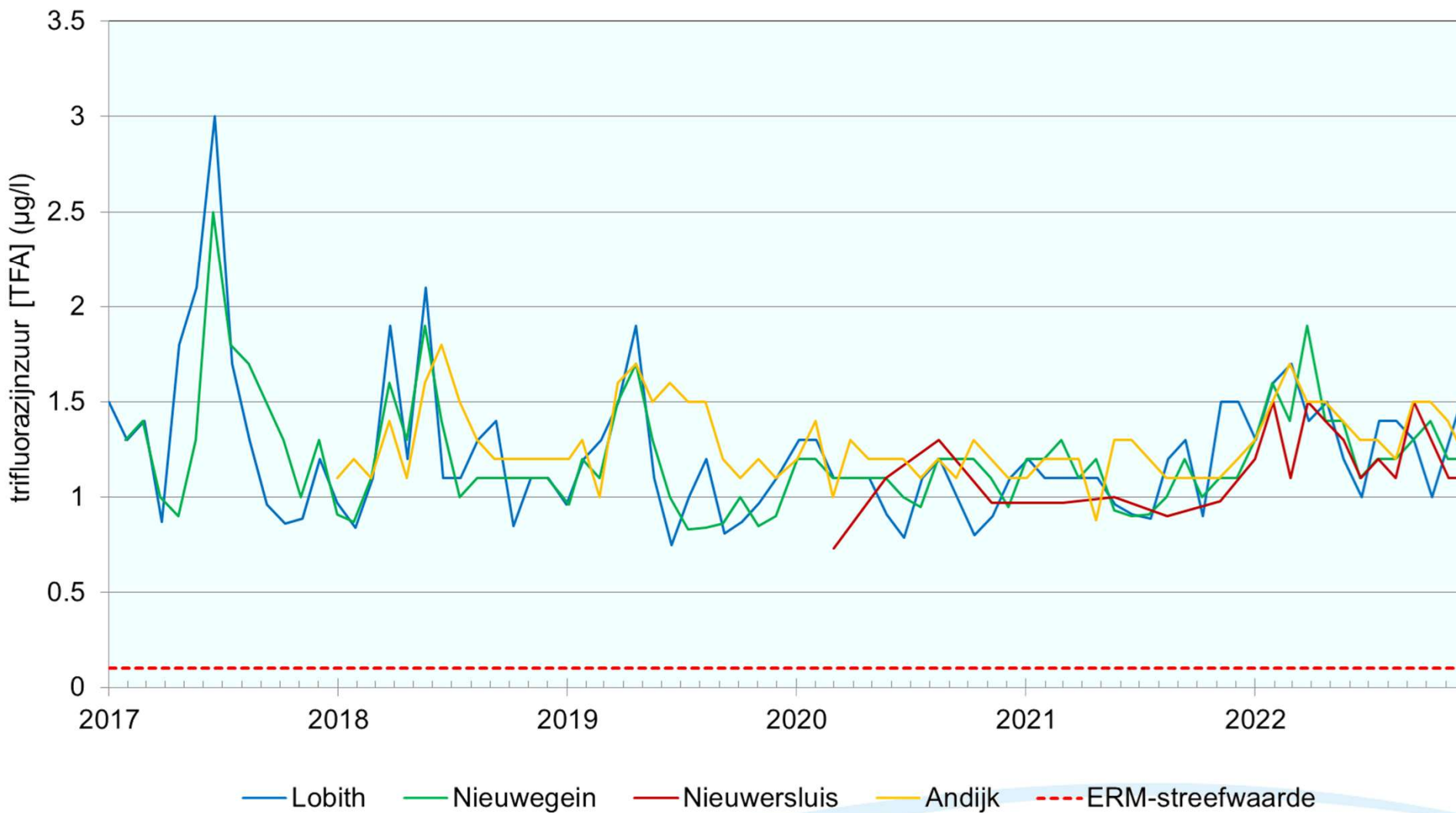
Graph 1.16 Concentrations of 1,4-dioxane at the Rhine locations during the period 2018-2022



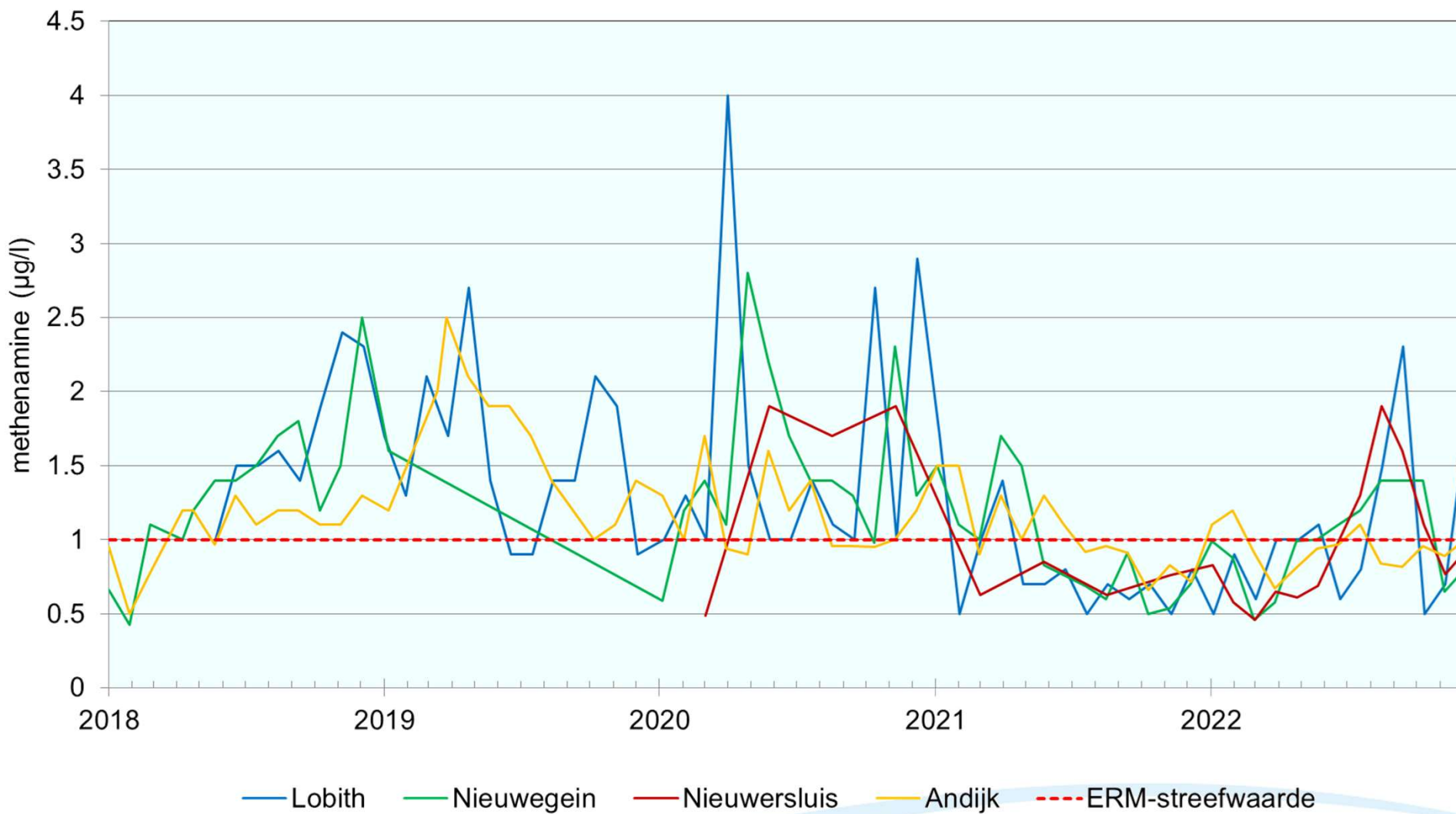
Graph 1.17 Sum of 22 PFAS at the Rhine locations in 2022. Values reported below the reporting limit have been set to 0 ng/l when calculating the sum. The standard shown ('Norm') is the standard that applies to drinking water and comes into force on 12 January 2026.



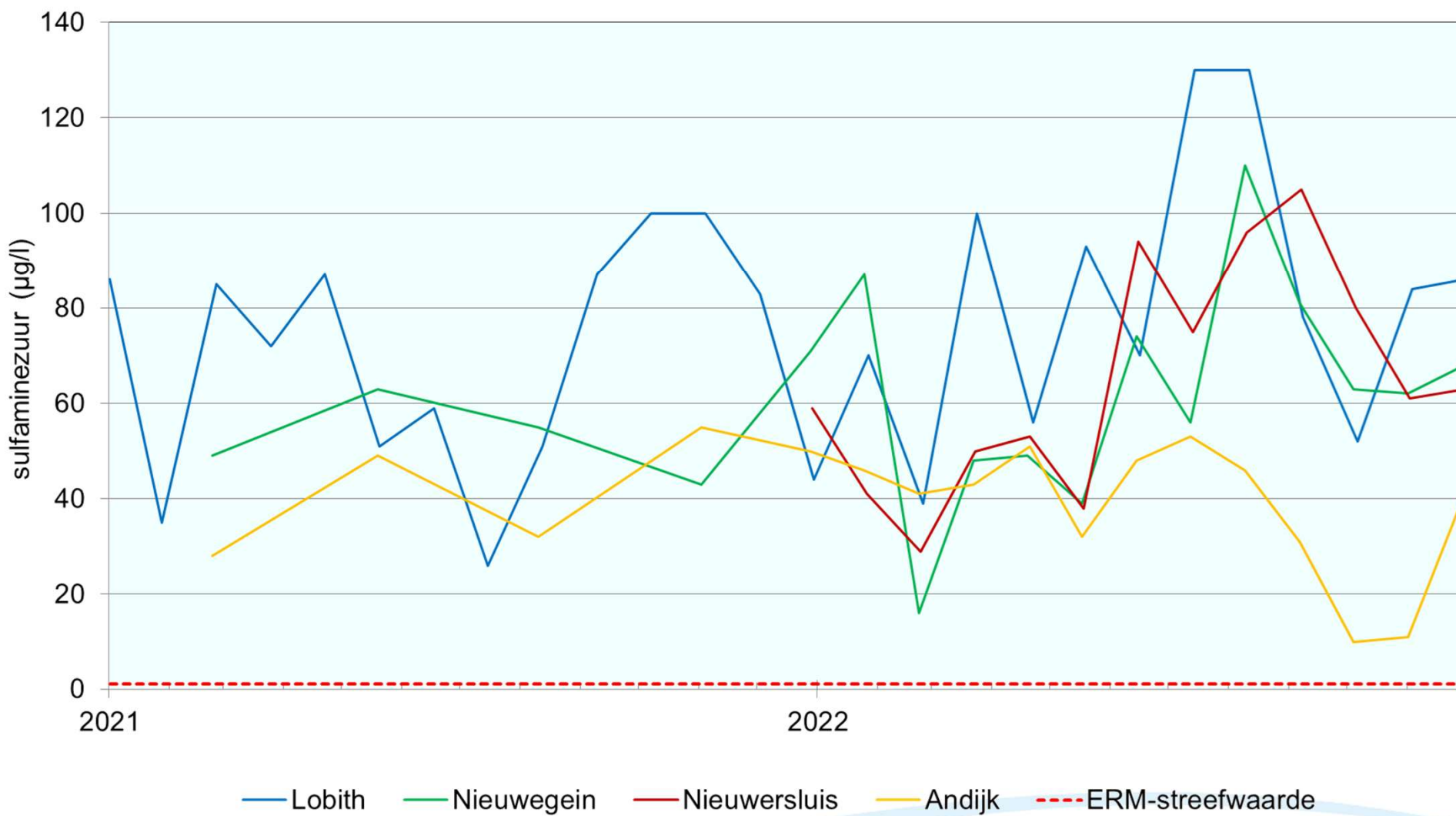
Graph 1.18 Boxplots of the sum of 23 PFAS at the Rhine locations in 2022, expressed in PFOA equivalents (PEQ). Values reported below the reporting limit were set to 0 ng PEQ/l when calculating the sum.



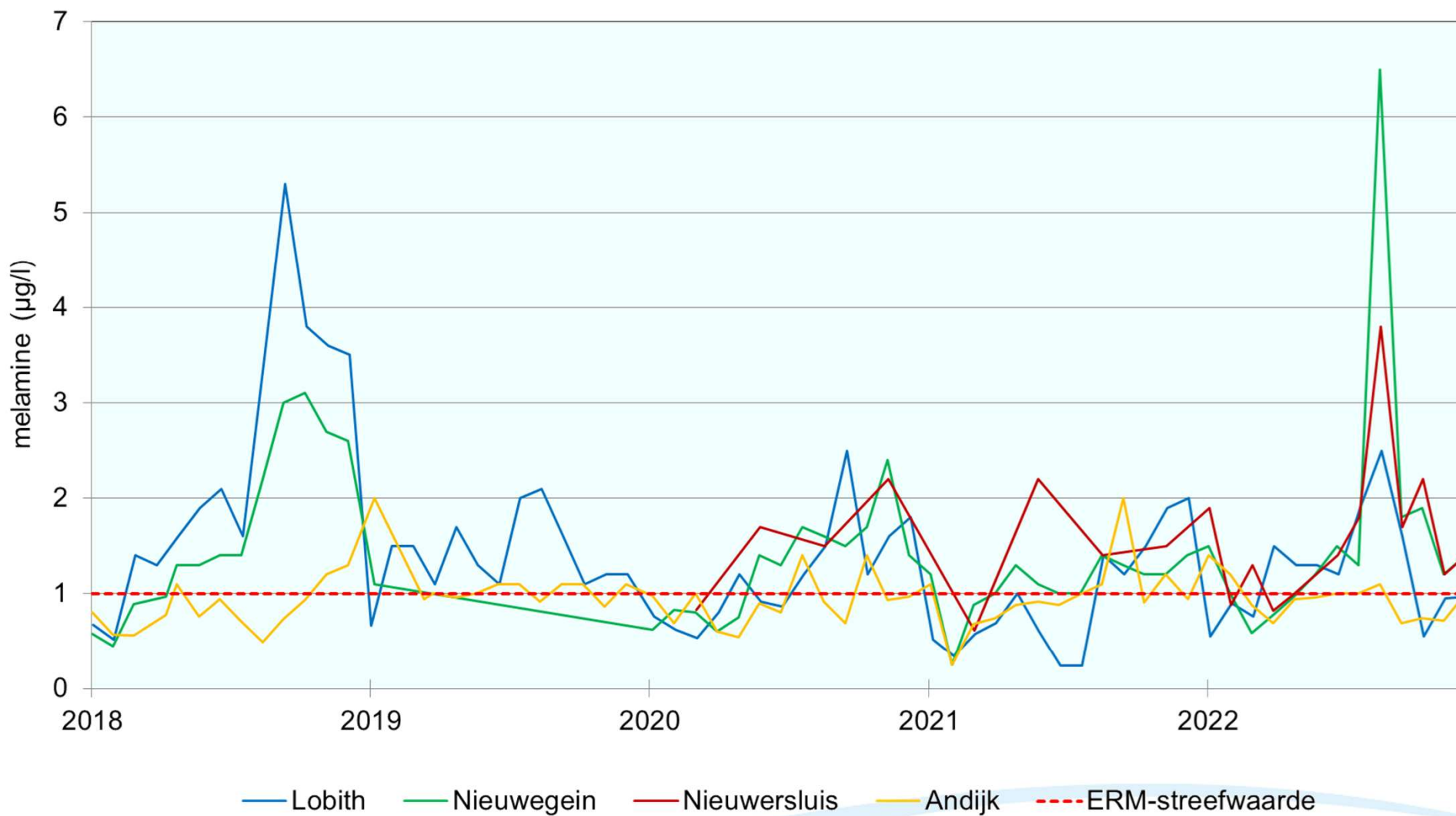
Graph 1.19 Concentrations of trifluoroacetic acid (TFA) at the Rhine locations during the period 2017-2022



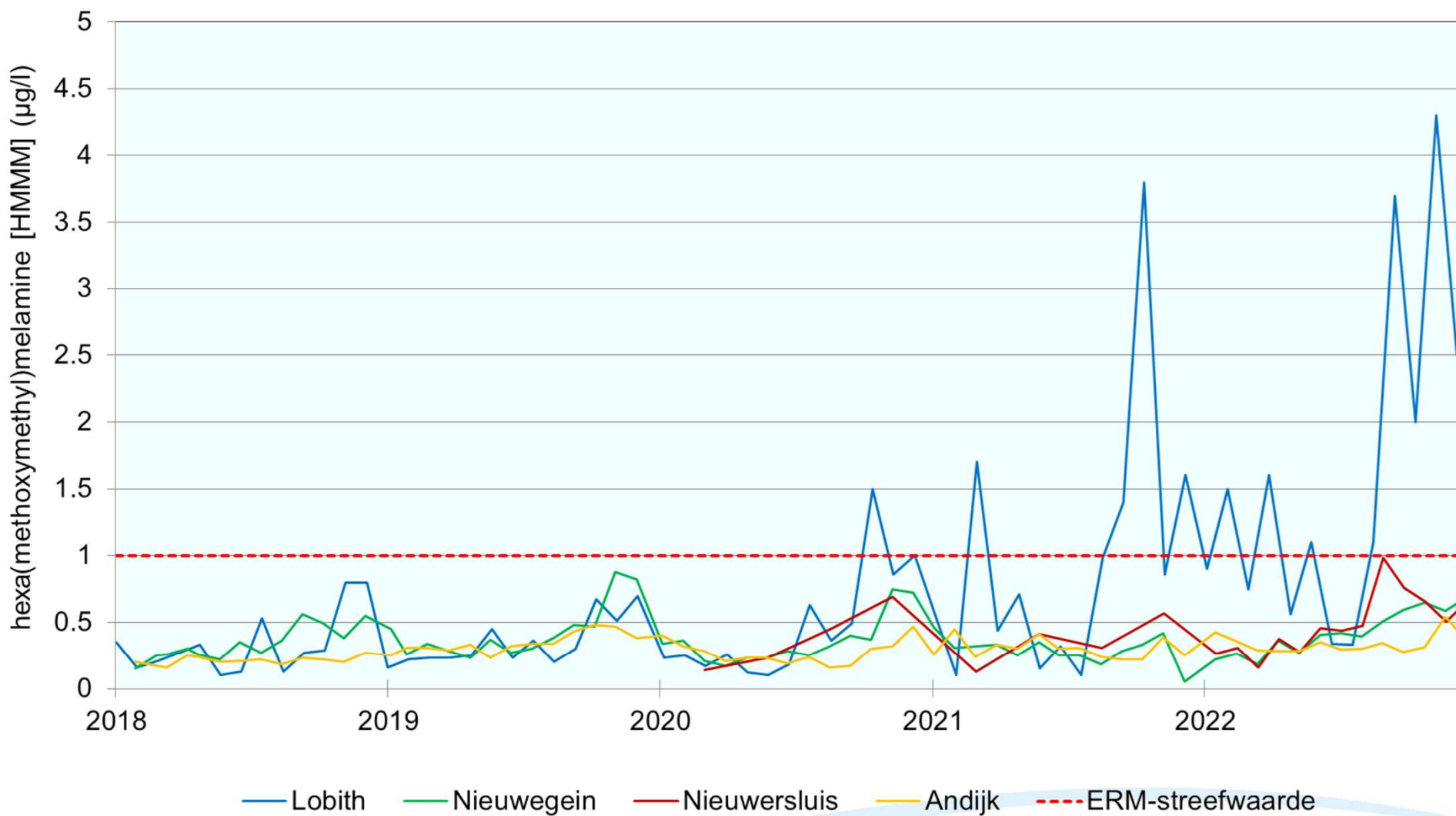
Graph 1.20 Concentrations of methenamine at the Rhine locations during the period 2018-2022



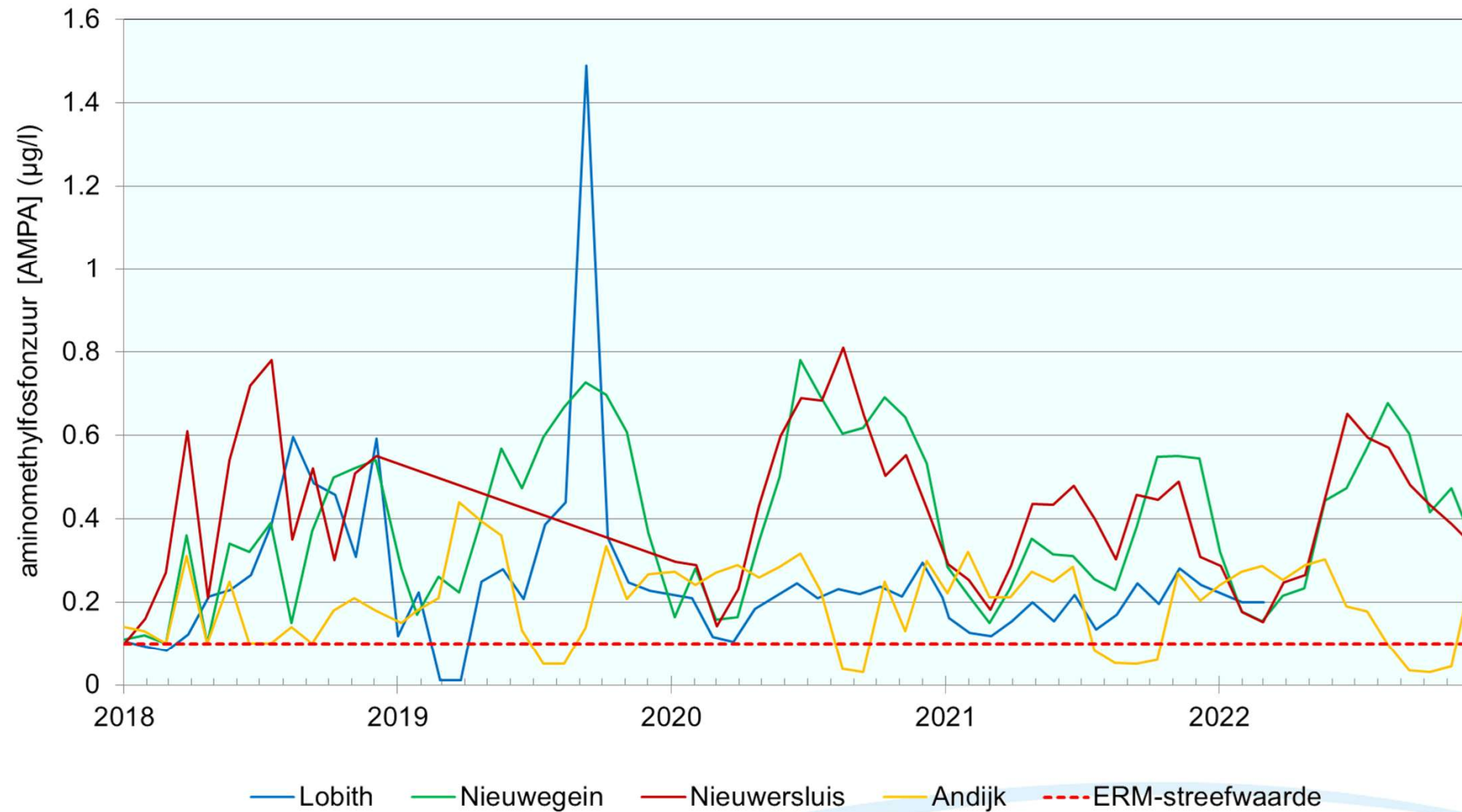
Graph 1.21 Concentrations of sulphamic acid at the Rhine locations in 2021 en 2022



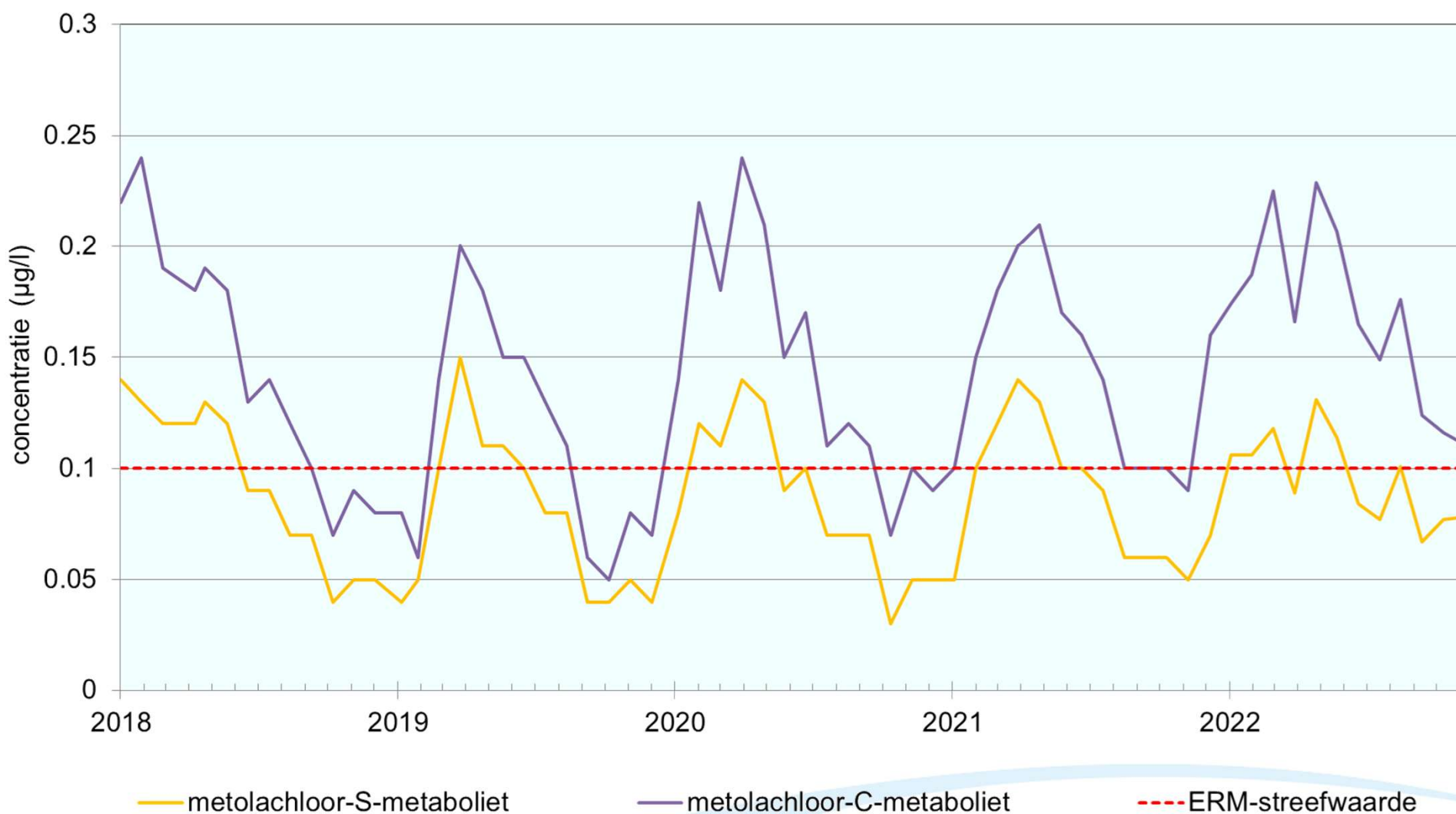
Graph 1.22 Concentrations of melamine measured at the Rhine locations during the period 2018-2022



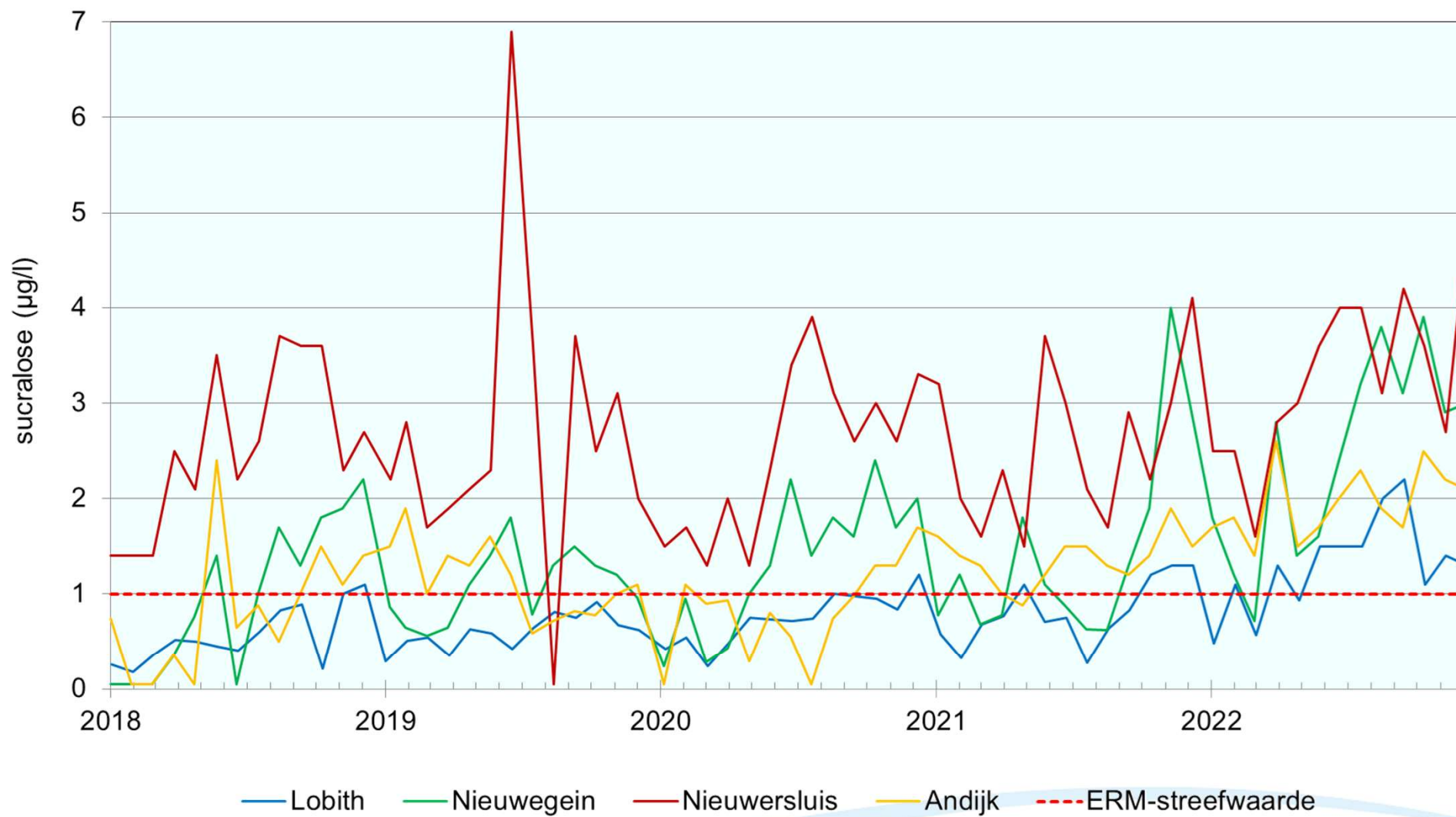
Graph 1.23 Concentrations hexa(methoxymethyl)melamine (HMMM) measured at the Rhine locations during the period 2018-2022



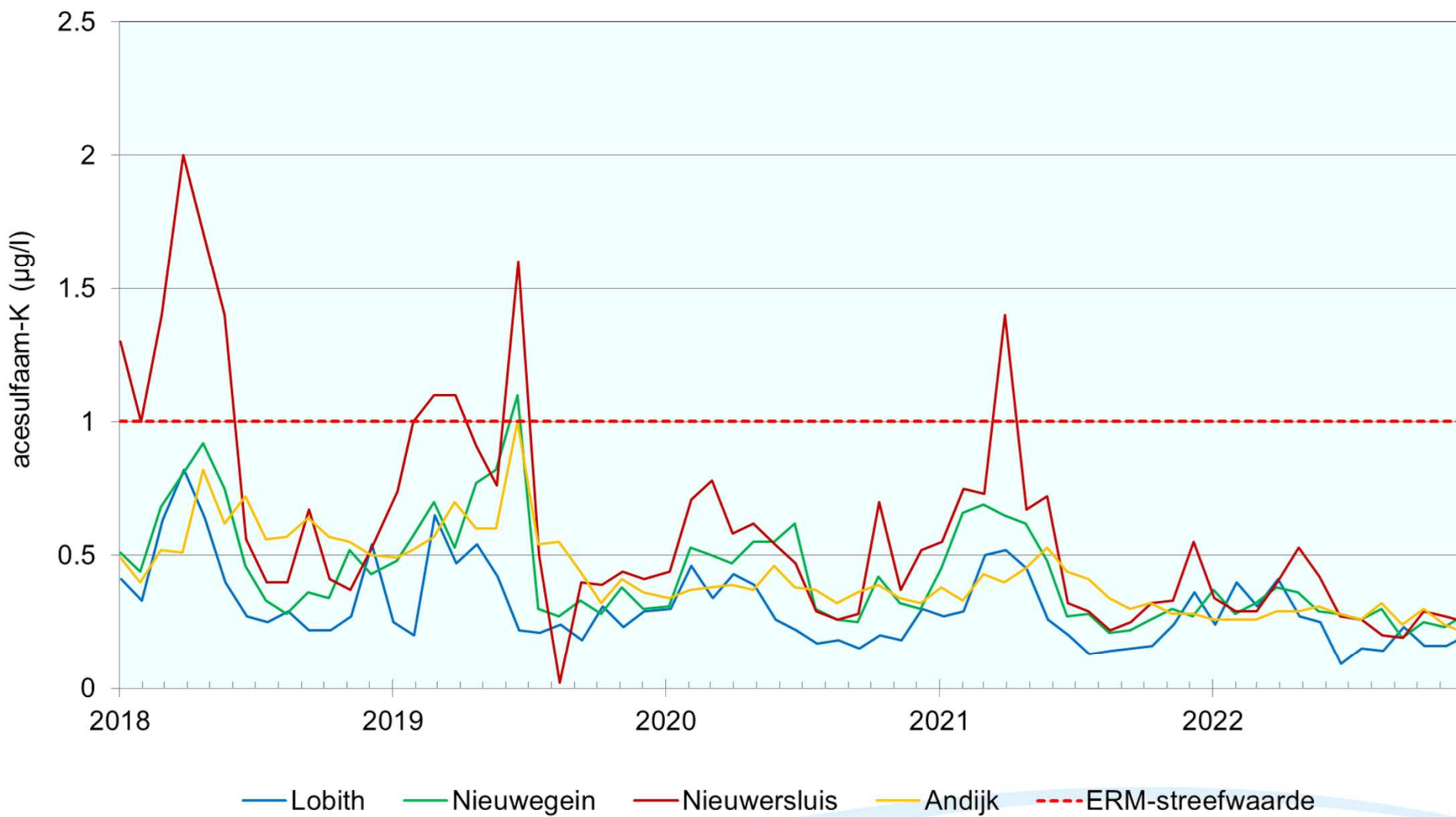
Graph 1.24 Concentrations of aminomethylphosphonic acid (AMPA) at the Rhine locations during the period 2018-2022



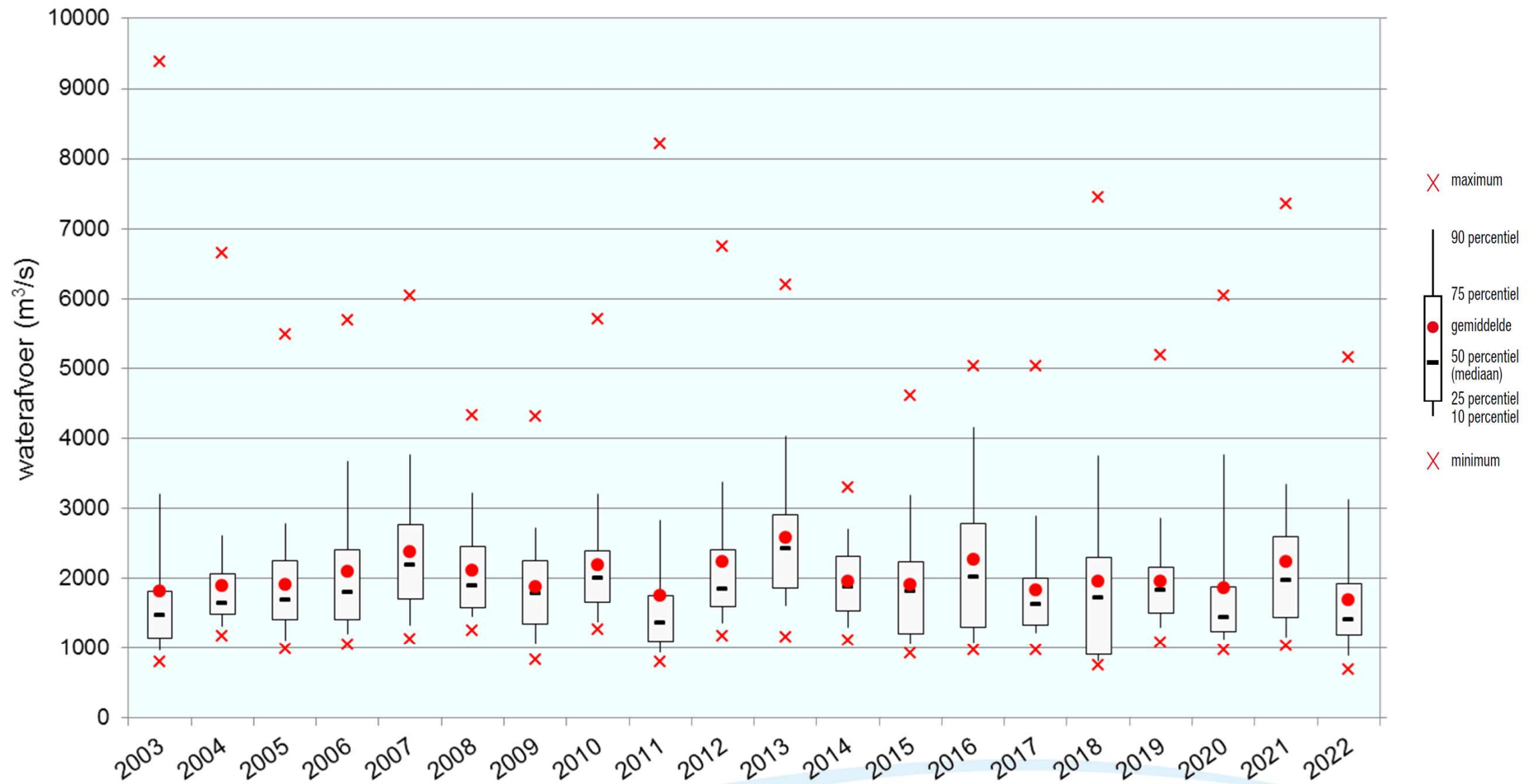
Graph 1.25 Concentrations of metolachlor-S-metabolite (metolachlor ESA) and metolachlor-C-metabolite (metolachlor OA) measured at Andijk (2018-2022)



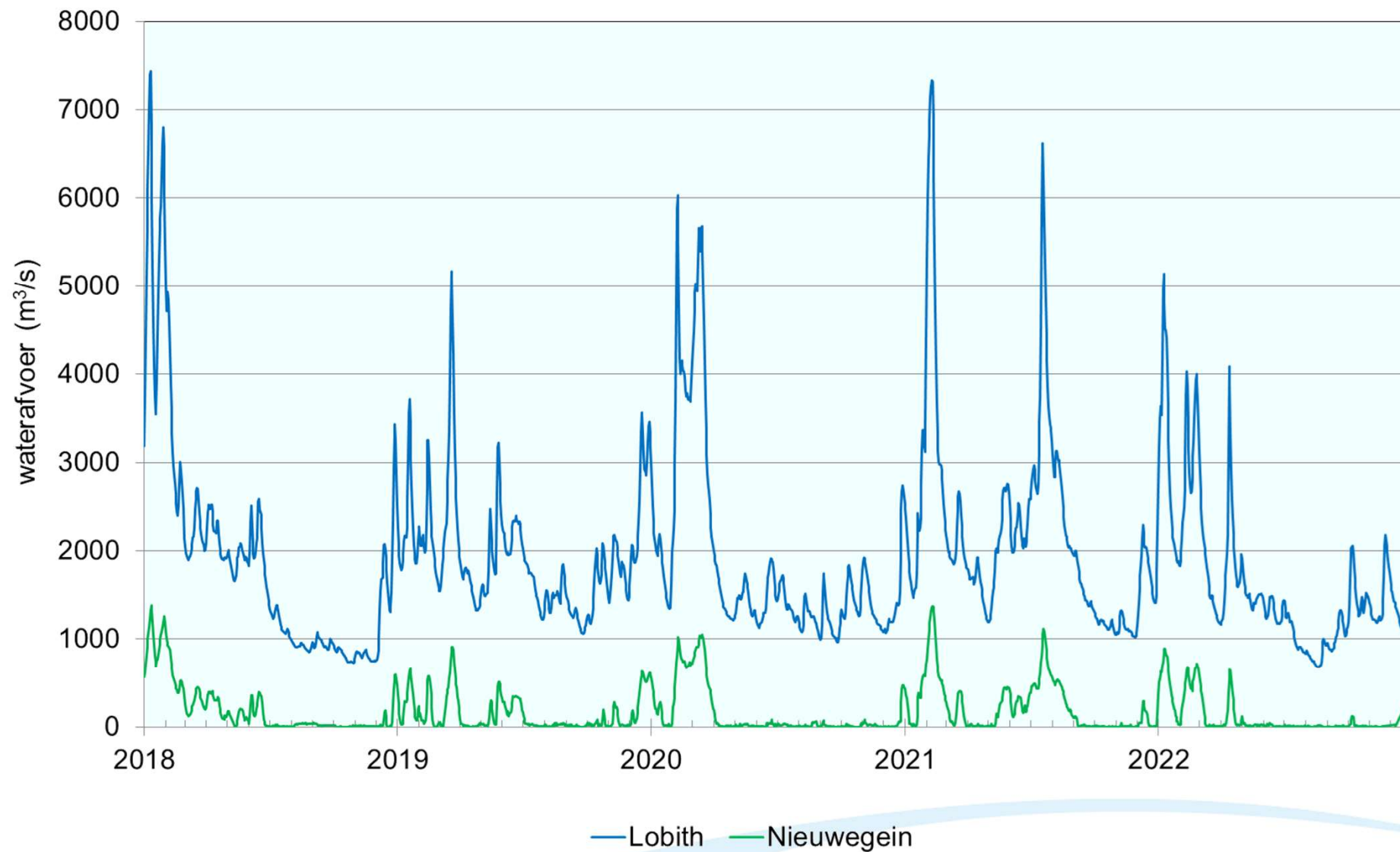
Graph 1.26 Concentrations of sucralose at the Rhine locations during the period 2018-2022



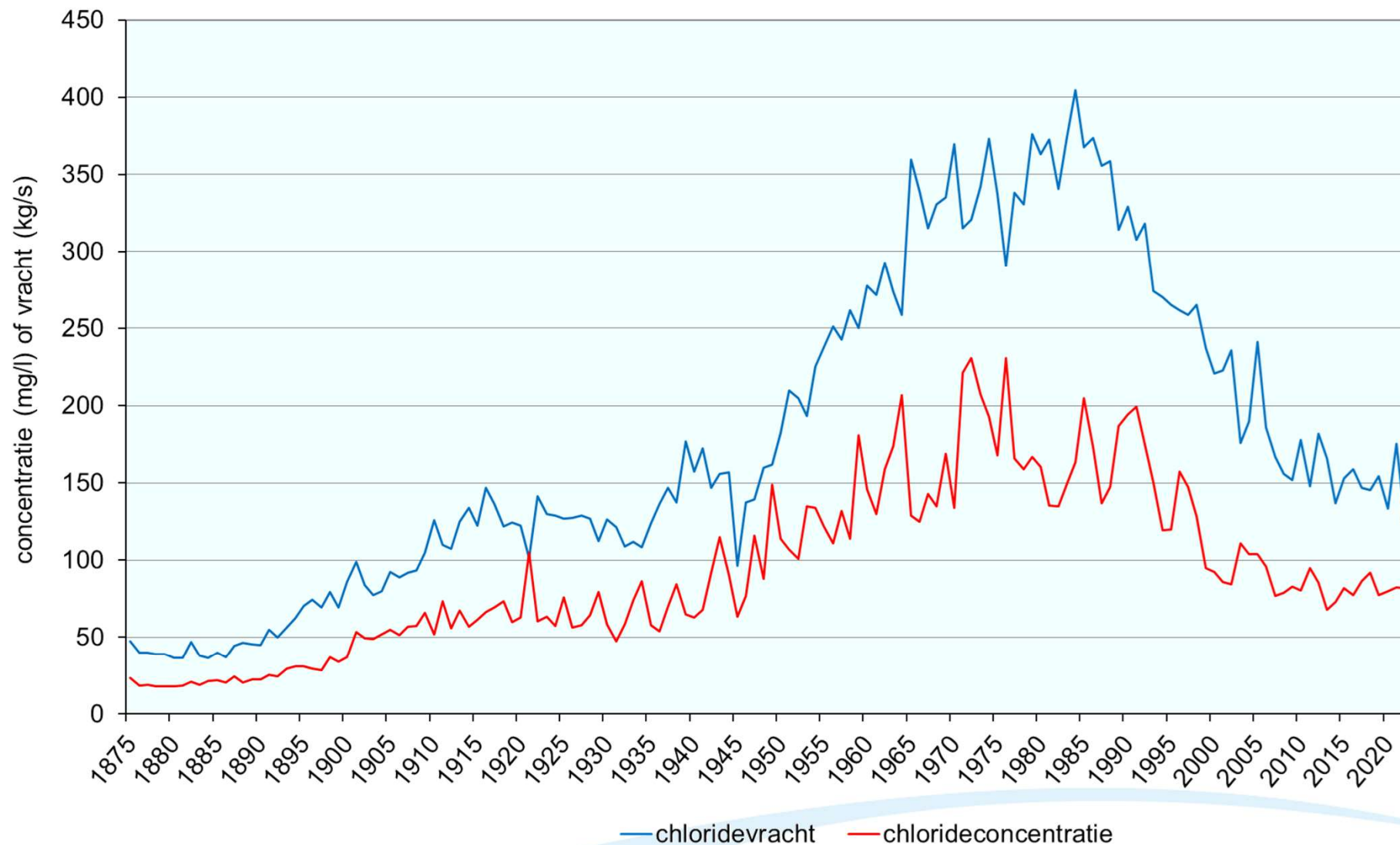
Graph 1.27 Concentrations of acesulfame-K at the Rhine locations during the period 2018-2022



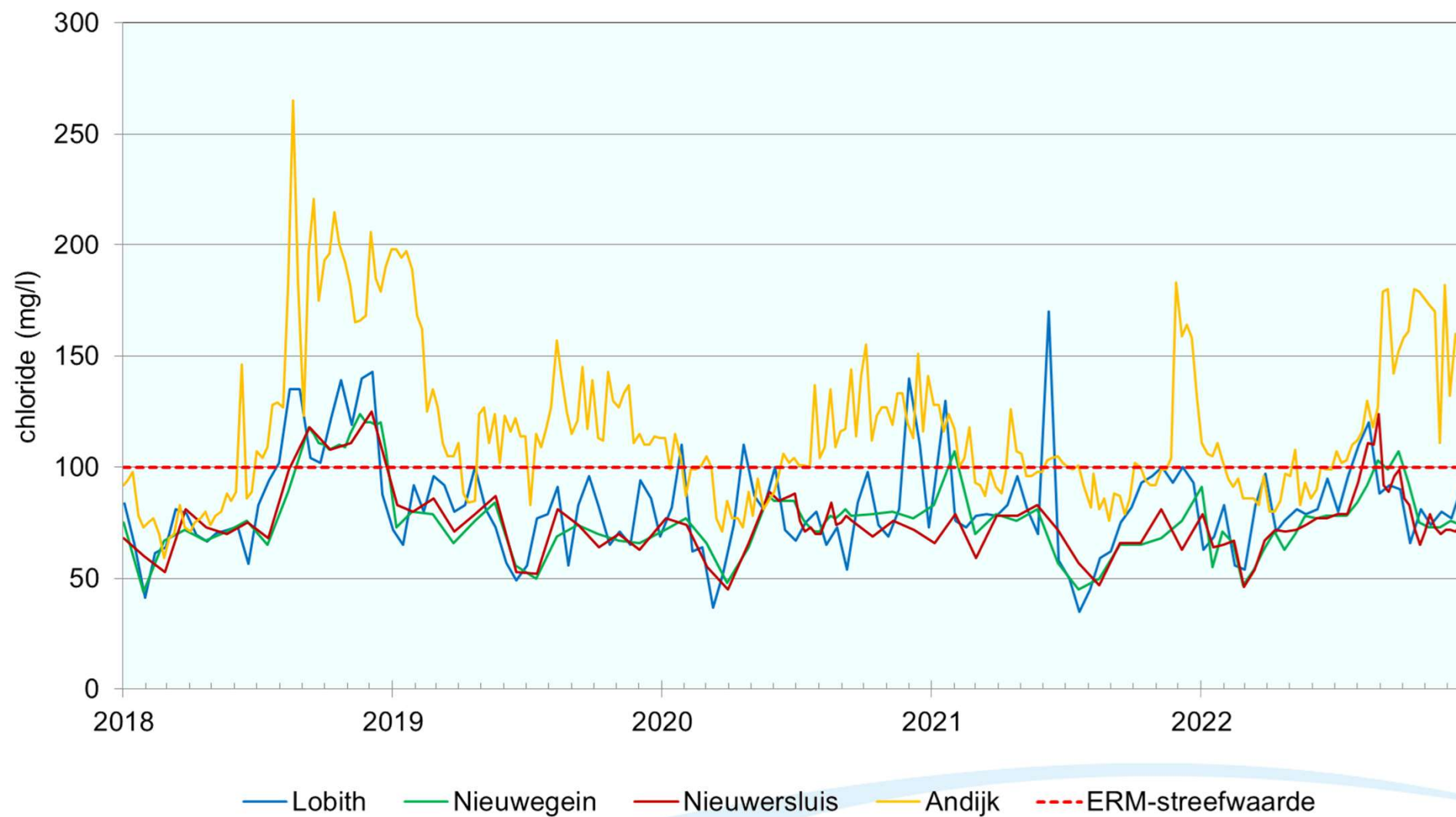
Graph 1.28 Boxplots of the water discharge of the Rhine at Lobith during the period 2003-2022



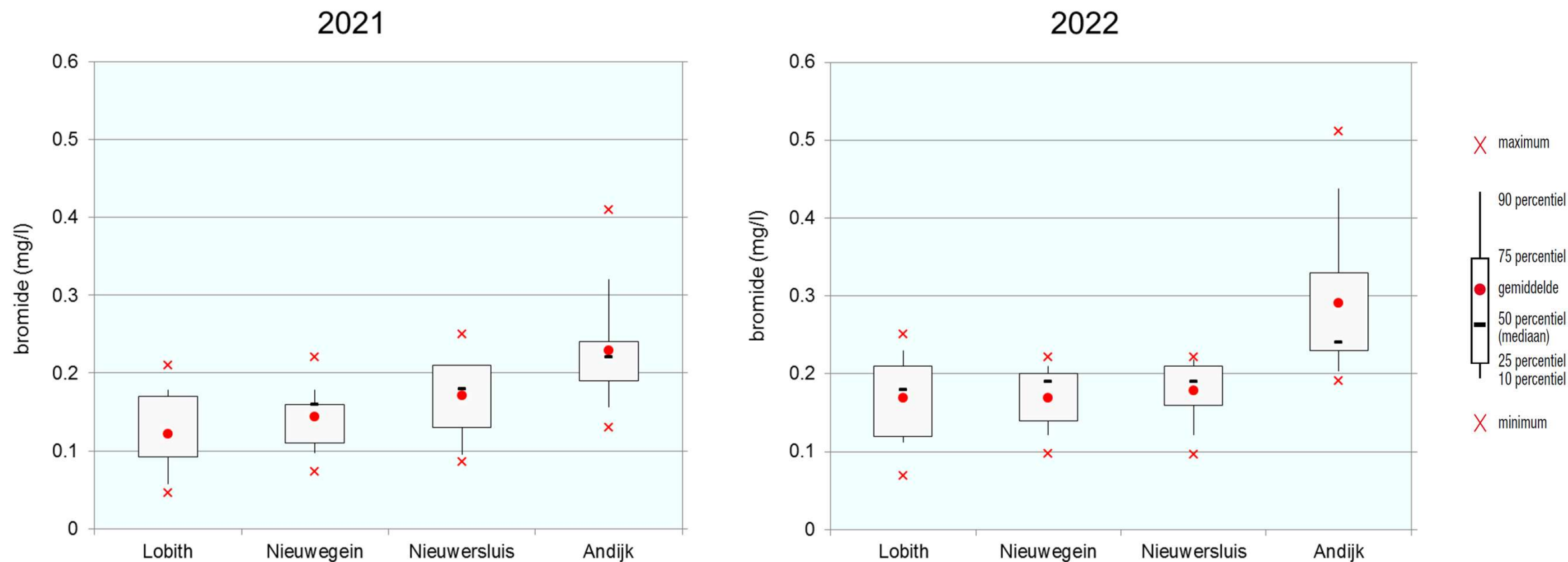
*Graph 1.29 Water discharge at Lobith and at Nieuwegein during the period 2018-2022.
For Nieuwegein, the discharge from the Lek at Hagestein is used as representative discharge.*



Graph 1.30 Average chloride concentration (red line) and average chloride load (blue line) at Lobith for each year during the period 1875 - 2022



Graph 1.31 Concentrations of chloride (measured weekly or fortnightly) at the Rhine locations during the period 2018-2022



Graph 1.32 Boxplots of bromide concentrations at each reporting location in 2021 and in 2022. The locations are presented from left to right from upstream to downstream.