## Variable description

## Trends in groundwater chemistry across Sweden during 1980-2020

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For details, see Klaus, M (in revision): Decadal increase in groundwater inorganic carbon concentrations across Sweden. Under consideration for publication in *Communications Earth & Environment* 

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Table 1 Variable description for the dataset on decadal trends in groundwater chemistry across Sweden during 1980–2020. NA is not available.

Variable	Unit	Characteristic	Period	Measure	Comment
		Name of successful states and			
Station_name	unitless	Name of groundwater well location			
		ID of groundwater well			
Station_ID	unitless	location			
		Latitude (WGS84) of			
Latitude	°N	groundwater well location			
		Langituda (MCCOA) af			
Longitude	°E	Longitude (WGS84) of groundwater well location			
		Aquifer type			
Aquifer_type	unitless	(unconfined/confined)			
		Depth of water intake in			
   Well_Depth	m	groundwater well (set to zero for wells in springs)			
Wen_bepan					
Canada Landth		Vertical extent of water intake			
Screen_Length	m	in well  Dominant minerals in			
		reservoir bedrock (Silicate /			
Lithology	unitless	Carbonate)			
		Disselved in organic carbon			
Median_1980-2000_DIC	mg C / L	Dissolved inorganic carbon concentration	1980-2000	Median	

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		Dissolved inorganic carbon		
Median_2000-2020_DIC	mg C / L	concentration	2000-2020	Median
	0.4.	Dissolved inorganic carbon		
Median_1980-2020_DIC	mg C / L	concentration	1980-2020	Median
		Dissolved carbon dioxide		
Median 1980-2000 CO2	mg C / L	concentration	1980-2000	Median
	8 0 / -			
		Dissolved carbon dioxide		
Median_2000-2020_CO2	mg C / L	concentration	2000-2020	Median
		a		
Madia: 4000 2020 CO2	C / I	Dissolved carbon dioxide	1000 2020	N do dio o
Median_1980-2020_CO2	mg C / L	concentration	1980-2020	Median
		Dissolved bicarbonate		
Median_1980-2000_HCO3	mEq / L	concentration	1980-2000	Median
	1,			
		Dissolved bicarbonate		
Median_2000-2020_HCO3	mEq / L	concentration	2000-2020	Median
		Bissel additional action		
Madia: 4000 2020 UCO2		Dissolved bicarbonate	1000 2020	N do dio o
Median_1980-2020_HCO3	mEq / L	concentration	1980-2020	Median
Median_1980-2000_pH	unitless	pH value	1980-2000	Median
Median_2000-2020_pH	unitless	pH value	2000-2020	Median
Madian 1000 2020 mll	:+	allualua	1000 2020	Madian
Median_1980-2020_pH	unitless	pH value	1980-2020	iviedian

1	I	1	1	
Median_1980-2000_Ca	mEq / L	Ca2+ concentrations	1980-2000	Median
	IIILY / L	Cazi concentrations	1380 2000	Iviediaii
Median_2000-2020_Ca	mEq / L	Ca2+ concentrations	2000-2020	Median
	meq / E	cazi concentrations	2000 2020	Wedian
Median_1980-2020_Ca	mEq / L	Ca2+ concentrations	1980-2020	Median
ea.a1300		Caz · concentrations	1300 2020	- Treatan
Median_1980-2000_Mg	mEq / L	Mg2+ concentration	1980-2000	Median
	7, -			
Median_2000-2020_Mg	mEq / L	Mg2+ concentration	2000-2020	Median
	1,	0		
Median_1980-2020_Mg	mEq / L	Mg2+ concentration	1980-2020	Median
Median_1980-2000_Na	mEq / L	Na+ concentration	1980-2000	Median
Median_2000-2020_Na	mEq / L	Na+ concentration	2000-2020	Median
Median_1980-2020_Na	mEq / L	Na+ concentration	1980-2020	Median
Median_1980-2000_K	mEq / L	K+ concentration	1980-2000	Median
Median_2000-2020_K	mEq / L	K+ concentration	2000-2020	Median

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mFa / I	K+ concentration	1980-2020	Median
111111111111111111111111111111111111111	N. Concentration	1300 2020	Median
mEa / L	SO4 2- concentration	1980-2000	Median
-17			
mEq / L	SO4 2- concentration	2000-2020	Median
-			
mEq / L	SO4 2- concentration	1980-2020	Median
mEq / L	NO3- concentrations	1980-2000	Median
_ ,.			
mEq / L	NO3- concentrations	2000-2020	Median
Га: / I	NO2 compositions	1000 2020	N 4 o di o o
mEq / L	NO3- concentrations	1980-2020	Iviedian
mEa / I	Cl- concentration	1080_2000	Median
IIIEq / L	CI- CONCENTIATION	1980-2000	Niediaii
mFa / I	Cl- concentration	2000-2020	Median
	C. Concentration	2000 2020	- Median
mEq / L	Cl- concentration	1980-2020	Median
	SO42-/(SO42-+HCO3-) (proxv		
L)	of acidification)	1980-2000	Median
	mEq/L  mEq/L  mEq/L  mEq/L  mEq/L  mEq/L  mEq/L  (mEq/L) /(mEq/)	mEq / L SO4 2- concentration  mEq / L SO4 2- concentration  mEq / L SO4 2- concentration  mEq / L NO3- concentrations  mEq / L NO3- concentrations  mEq / L NO3- concentrations  mEq / L Cl- concentration  mEq / L SO42-/(SO42-+HCO3-) (proxy)	mEq / L       SO4 2- concentration       1980–2000         mEq / L       SO4 2- concentration       2000–2020         mEq / L       SO4 2- concentration       1980–2020         mEq / L       NO3- concentrations       1980–2000         mEq / L       NO3- concentrations       2000–2020         mEq / L       Cl- concentration       1980–2020         mEq / L       Cl- concentration       2000–2020         mEq / L       Cl- concentration       1980–2020         mEq / L       Cl- concentration       1980–2020         mEq / L       Cl- concentration       1980–2020         mEq / L       Cl- concentration       1980–2020

1	(mEq / L)			
Median 2000-	/ (mEq /	SO42-/(SO42-+HCO3-) (proxy		
2020 SO4 SO4HCO3	L)	of acidification)	2000-2020	Median
	(mEq / L)	•		
Median_1980-	/ (mEq /	SO42-/(SO42-+HCO3-) (proxy		
2020_SO4_SO4HCO3	L)	of acidification)	1980-2020	Median
	(mEq / L)			
Median_1980-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy		
2000_CaMg_HCO3	L)	of acidification)	1980-2000	Median
	(mEq / L)			
Median_2000-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy		
2020_CaMg_HCO3	L)	of acidification)	2000-2020	Median
	(mEq / L)			
Median_1980-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy		
2020_CaMg_HCO3	L)	of acidification)	1980-2020	Median
Modian 1090 2000 T	°C	Mater temperature	1980-2000	Madian
Median_1980-2000_T	C	Water temperature	1980-2000	Niedlan
Median 2000-2020 T	°C	Water temperature	2000-2020	Median
		•		
Median_1980-2020_T	°C	Water temperature	1980-2020	Median
l		Total organic carbon		
Median_2000-2020_TOC	mg C / L	concentration	2000-2020	Median
		dissolved oxygen		
Median_1980-2000_O2	mg / L	concentration	1980-2000	Median
111.Calaii_1300 2000_02	1115/ -	Concentration	1300 2000	THE COLOR OF THE C
		dissolved oxygen		
Median_2000-2020_O2	mg / L	concentration	2000-2020	Median

1	I	1		I I
	dissolved oxygen			
mg / L	, -	1980-2020	Median	
67 =				
m	Groundwater level	1980-2000	Median	
m	Groundwater level	2000-2020	Median	
m	Groundwater level	1980-2020	Median	
				Trends were not calculated
	Binal adallina and aller	4000 2000	n a lt	because of significant data
mg / L	Dissolved silica concentration	1980-2000	Median	gaps
				Trends were not calculated
	Discolated siling as a second-ordinal	2000 2020	NA a aliana	because of significant data
mg / L	Dissolved silica concentration	2000-2020	Median	gaps
				Trends were not calculated
	Discolused siling as a secretary	1000 2020	Madian	because of significant data
mg / L	Dissolved silica concentration	1980-2020	Median	gaps
				Trends were not calculated
				because of many values below detection limit and
mEa / I	NH4 L concentration	1000 2000	Modian	decreasing detection limit over time
IIIEq / L	NH4+ Concentration	1980-2000	Mediali	Trends were not calculated
				because of many values
				below detection limit and
				decreasing detection limit
mEq./I	NH4+ concentration	2000-2020	Median	over time
IIIEY / L	INTIAT CONCENTIATION	2000-2020	IVICUIAII	Over time
				Trends were not calculated
mEq / L	NH4+ concentration	1980-2020	Median	because of many values
		m Groundwater level  m Groundwater level  m Groundwater level  mg / L Dissolved silica concentration  mg / L Dissolved silica concentration  mg / L Dissolved silica concentration  mg / L NH4+ concentration  mEq / L NH4+ concentration	mg / Lconcentration1980–2020mGroundwater level1980–2000mGroundwater level2000–2020mg / LDissolved silica concentration1980–2000mg / LDissolved silica concentration2000–2020mg / LDissolved silica concentration1980–2020mg / LNH4+ concentration1980–2000mEq / LNH4+ concentration2000–2020	mg / L       concentration       1980–2020       Median         m       Groundwater level       1980–2000       Median         m       Groundwater level       2000–2020       Median         mg / L       Dissolved silica concentration       1980–2000       Median         mg / L       Dissolved silica concentration       2000–2020       Median         mg / L       Dissolved silica concentration       1980–2020       Median         mEq / L       NH4+ concentration       1980–2000       Median         mEq / L       NH4+ concentration       2000–2020       Median

					below detection limit and
					decreasing detection limit
					over time
	mg C / L	Dissolved inorganic carbon			
Trend_1980-2000_DIC	/ yr	concentration	1980-2000	Theil Sen slope (trend)	
	mg C / L	Dissolved inorganic carbon			
Trend_2000-2020_DIC	/ yr	concentration	2000-2020	Theil Sen slope (trend)	
		Discolved in a grant a contact			
Trend 1980-2020 DIC	mg C / L / yr	Dissolved inorganic carbon concentration	1980-2020	Theil Sen slope (trend)	
110114_1300 1010_510	1, 1,	Concentration	1300 2020	men sen siope (crema)	
	mg C / L	Dissolved carbon dioxide			
Trend_1980-2000_CO2	/ yr	concentration	1980-2000	Theil Sen slope (trend)	
	mg C / L	Dissolved carbon dioxide			
Trend_2000-2020_CO2	/yr	concentration	2000-2020	Theil Sen slope (trend)	
				, , , ,	
	mg C / L	Dissolved carbon dioxide			
Trend_1980-2020_CO2	/ yr	concentration	1980-2020	Theil Sen slope (trend)	
	mEq / L /	Dissolved bicarbonate			
Trend_1980-2000_HCO3	yr	concentration	1980-2000	Theil Sen slope (trend)	
	m [a / l /	Dissolved bicarbonate			
Trend 2000-2020 HCO3	mEq / L / yr	concentration	2000-2020	Theil Sen slope (trend)	
110114_2000 2020_11003	y'	Concentration	2000 2020	men sen siope (denu)	
	mEq / L /	Dissolved bicarbonate			
Trend_1980-2020_HCO3	yr	concentration	1980-2020	Theil Sen slope (trend)	
Trend_1980-2000_pH	1 / yr	pH value	1980-2000	Theil Sen slope (trend)	

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Trend_2000-2020_pH	1 / yr	pH value	2000-2020	Theil Sen slope (trend)	
	1 '	1			
Trend_1980-2020_pH	1 / yr	pH value	1980-2020	Theil Sen slope (trend)	
	mEq / L /				
Trend_1980-2000_Ca	yr	Ca2+ concentrations	1980-2000	Theil Sen slope (trend)	
	m Fa / I /				
Trend_2000-2020_Ca	mEq / L /	Ca2+ concentrations	2000-2020	Theil Sen slope (trend)	
11e1id_2000-2020_Ca	yr	Caz+ concentrations	2000-2020	Their seri slope (trend)	
	mEq/L/				
Trend_1980-2020_Ca	yr ,	Ca2+ concentrations	1980-2020	Theil Sen slope (trend)	
	1				
	mEq/L/				
Trend_1980-2000_Mg	yr	Mg2+ concentration	1980-2000	Theil Sen slope (trend)	
	mEq / L /				
Trend_2000-2020_Mg	yr	Mg2+ concentration	2000-2020	Theil Sen slope (trend)	
	m Fa / I /				
Trend 1980-2020 Mg	mEq / L /	Mg2 L concentration	1000 2020	Theil Sen slope (trend)	
11e1id_1980-2020_lvig	yr	Mg2+ concentration	1980-2020	Their seri slope (trend)	
	mEq / L /				
Trend_1980-2000_Na	yr	Na+ concentration	1980-2000	Theil Sen slope (trend)	
	1			1 , /	
	mEq/L/				
Trend_2000-2020_Na	yr	Na+ concentration	2000-2020	Theil Sen slope (trend)	
	mEq / L /				
Trend_1980-2020_Na	yr	Na+ concentration	1980–2020	Theil Sen slope (trend)	

I		1	Ì		
	mEq/L/				
Trend_1980-2000_K	yr	K+ concentration	1980-2000	Theil Sen slope (trend)	
	mEq / L /				
Trend_2000-2020_K	yr	K+ concentration	2000–2020	Theil Sen slope (trend)	
	m F a / l /				
Trend 1980-2020 K	mEq / L /	K+ concentration	1090_2020	Theil Sen slope (trend)	
11e1id_1980-2020_K	yr	R+ concentration	1980-2020	men sen siope (trenu)	
	mEq / L /				
Trend 1980-2000 SO4	yr	SO4 2- concentration	1980-2000	Theil Sen slope (trend)	
	,				
	mEq/L/				
Trend_2000-2020_SO4	yr	SO4 2- concentration	2000-2020	Theil Sen slope (trend)	
	mEq / L /		1000 0000		
Trend_1980-2020_SO4	yr	SO4 2- concentration	1980-2020	Theil Sen slope (trend)	
	mEq / L /				
Trend_1980-2000_NO3	yr	NO3- concentrations	1980-2000	Theil Sen slope (trend)	
Trend_1380-2000_NO3	yı	NOS- concentrations	1380 2000	men sen siope (trend)	
	mEq/L/				
Trend 2000-2020 NO3	yr	NO3- concentrations	2000-2020	Theil Sen slope (trend)	
				, , ,	
	mEq / L /				
Trend_1980-2020_NO3	yr	NO3- concentrations	1980-2020	Theil Sen slope (trend)	
T 1 1000 2000 CI	mEq / L /	a	4000 0000	TI 11.6 1 (1 1)	
Trend_1980-2000_Cl	yr	Cl- concentration	1980-2000	Theil Sen slope (trend)	
	mEq/L/				
Trend_2000-2020_Cl	yr	Cl- concentration	2000-2020	Theil Sen slope (trend)	
110110_2000 2020_0	y <sup>1</sup>	Ci concentration	2000 2020	Then sen slope (trend)	

	mEq / L /				
Trend_1980-2020_Cl	yr	Cl- concentration	1980-2020	Theil Sen slope (trend)	
	(mEq / L)				
Trend_1980-	/ (mEq /	SO42-/(SO42-+HCO3-) (proxy			
2000_SO4_SO4HCO3	L) / yr	of acidification)	1980-2000	Theil Sen slope (trend)	
	(mEq / L)				
Trend_2000-	/ (mEq /	SO42-/(SO42-+HCO3-) (proxy			
2020_SO4_SO4HCO3	L) / yr	of acidification)	2000-2020	Theil Sen slope (trend)	
	(mEq / L)				
Trend_1980-	/ (mEq /	SO42-/(SO42-+HCO3-) (proxy			
2020_SO4_SO4HCO3	L) / yr	of acidification)	1980-2020	Theil Sen slope (trend)	
	(mEq / L)				
Trend_1980-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy			
2000_CaMg_HCO3	L) / yr	of acidification)	1980-2000	Theil Sen slope (trend)	
	(mEq / L)				
Trend_2000-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy			
2020_CaMg_HCO3	L) / yr	of acidification)	2000-2020	Theil Sen slope (trend)	
	(mEq / L)				
Trend_1980-	/ (mEq /	(Ca2+ + Mg2+)/HCO3- (proxy			
2020_CaMg_HCO3	L) / yr	of acidification)	1980-2020	Theil Sen slope (trend)	
Trans d 1000 2000 T	9 <i>C</i> /	NA/-tt	1000 2000	The sil Commelous (toponal)	
Trend_1980-2000_T	°C / yr	Water temperature	1980-2000	Theil Sen slope (trend)	
Trend_2000-2020_T	°C / yr	Water temperature	2000-2020	Theil Sen slope (trend)	
	<i>- 7 y</i> .	Trace: temperature	2300 2020	men sen siope (arena)	
Trend_1980-2020_T	°C / yr	Water temperature	1980-2020	Theil Sen slope (trend)	
	mg C / L	Total organic carbon			Evaluation for period
Trend_2000-2020_TOC	/ yr	concentration	2000-2020	Theil Sen slope (trend)	1980–2000 not possible

					because of significant data gaps
Trend_1980-2000_O2	mg/L/ yr	dissolved oxygen concentration	1980-2000	Theil Sen slope (trend)	Time series have significant data gaps
Trend_2000-2020_O2	mg / L / yr	dissolved oxygen concentration	2000-2020	Theil Sen slope (trend)	Time series have significant data gaps
Trend_1980-2020_O2	mg / L / yr	dissolved oxygen concentration	1980-2020	Theil Sen slope (trend)	Time series have significant data gaps
Trend_1980-2000_WL	m / yr	Groundwater level	1980-2000	Theil Sen slope (trend)	
Trend_2000-2020_WL	m / yr	Groundwater level	2000-2020	Theil Sen slope (trend)	
Trend_1980-2020_WL	m / yr	Groundwater level	1980-2020	Theil Sen slope (trend)	
p_1980-2000_DIC	unitless	Dissolved inorganic carbon concentration	1980-2000	p-value of trend based on the seasonal Kendall test with corrections for serial dependence	
		Dissolved inorganic carbon		p-value of trend based on the seasonal Kendall test with corrections for serial	
p_2000-2020_DIC	unitless	concentration	2000-2020	dependence p-value of trend based	
p_1980-2020_DIC	unitless	Dissolved inorganic carbon concentration	1980-2020	on the seasonal Kendall test with	

I				corrections for serial	
				dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved carbon dioxide		corrections for serial	
p_1980-2000_CO2	unitless	concentration	1980-2000		
p_1300 1000_001	unitiess		1300 2000	p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved carbon dioxide		corrections for serial	
p_2000-2020_CO2	unitless	concentration	2000-2020		
<u>p_</u> ====================================				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved carbon dioxide		corrections for serial	
p_1980-2020_CO2	unitless	concentration	1980-2020	dependence	
P				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved bicarbonate		corrections for serial	
p_1980-2000_HCO3	unitless	concentration	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved bicarbonate		corrections for serial	
p_2000-2020_HCO3	unitless	concentration	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Dissolved bicarbonate		corrections for serial	
p_1980-2020_HCO3	unitless	concentration	1980-2020	dependence	

p_1980-2000_pH unitless pH value 1980-2000 dependence  p_1980-2000_pH unitless pH value 1980-2000 dependence  p_2000-2020_pH unitless pH value 2000-2020 dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_1980-2020_pH unitless pH value 1980-2020 dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence  p_value of trend based on the seasonal Kendall test with corrections for serial dependence	1	1	1	ı	1
New Part of the Content of the Con					p-value of trend based
p_1980-2000_pH unitless pH value 1980-2000 dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial dependence p-value of trend based on the seasonal kendall test with corrections for serial d					
p_1980-2000_pH unitless pH value 1980-2000 dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial d					
p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal Kendall test with corrections for serial dependence p-value of trend based on the seasonal dependence					
p_2000-2020_pH unitless pH value 2000-2020 dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal Kendall test with corrections for serial dependence  p-value of trend based on the seasonal with the seasonal dependence  p-value of trend based on the seasonal dependence	p_1980-2000_pH	unitless	pH value	1980-2000	'
Page 2000-2020   PH   Unitless   PH value   2000-2020   dependence   P-value   On the seasonal   Rendall test with   Corrections for serial   Page 2000-2020   PH   Unitless   PH value   1980-2020   Ph value   1980-2020   Ph value   Page 2000-2020   Ph value   Page 2000   Ph value   Page 2000   Ph value   Page 2000   Ph value					
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p_1980-2020_Ca unitless Ca2+ concentrations 1980–2020 dependence p-value of trend based on the seasonal	. = _ =				·
p_1980-2020_Ca unitless Ca2+ concentrations 1980-2020 dependence p-value of trend based on the seasonal					·
p_1980-2020_Ca unitless Ca2+ concentrations 1980-2020 dependence p-value of trend based on the seasonal					
p_1980-2020_Ca unitless Ca2+ concentrations 1980-2020 dependence p-value of trend based on the seasonal					
p-value of trend based on the seasonal	p 1980-2020 Ca	unitless	Ca2+ concentrations	1980-2020	
on the seasonal					'
					'
	p_1980-2000_Mg	unitless	Mg2+ concentration	1980-2000	

				corrections for serial	
				dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_2000-2020_Mg	unitless	Mg2+ concentration	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2020_Mg	unitless	Mg2+ concentration	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2000_Na	unitless	Na+ concentration	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_2000-2020_Na	unitless	Na+ concentration	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2020_Na	unitless	Na+ concentration	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2000_K	unitless	K+ concentration	1980-2000	dependence	

				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_2000-2020_K	unitless	K+ concentration	2000-2020	dependence
<u></u>				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_1980-2020_K	unitless	K+ concentration	1980-2020	dependence
·				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_1980-2000_SO4	unitless	SO4 2- concentration	1980-2000	dependence
				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_2000-2020_SO4	unitless	SO4 2- concentration	2000-2020	dependence
				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_1980-2020_SO4	unitless	SO4 2- concentration	1980-2020	dependence
				p-value of trend based
				on the seasonal
				Kendall test with
				corrections for serial
p_1980-2000_NO3	unitless	NO3- concentrations	1980-2000	dependence
				p-value of trend based
				on the seasonal
p_2000-2020_NO3	unitless	NO3- concentrations	2000-2020	Kendall test with

				corrections for serial	
				dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2020_NO3	unitless	NO3- concentrations	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2000_Cl	unitless	Cl- concentration	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_2000-2020_Cl	unitless	Cl- concentration	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2020_Cl	unitless	Cl- concentration	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
p_1980-		SO42-/(SO42-+HCO3-) (proxy		corrections for serial	
2000_SO4_SO4HCO3	unitless	of acidification)	1980-2000	dependence	
<u></u>				p-value of trend based	
				on the seasonal	
				Kendall test with	
p_2000-		SO42-/(SO42-+HCO3-) (proxy		corrections for serial	
2020_SO4_SO4HCO3	unitless	of acidification)	2000-2020	dependence	

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				p-value of trend based	
				on the seasonal	
				Kendall test with	
p_1980-		SO42-/(SO42-+HCO3-) (proxy		corrections for serial	
2020_SO4_SO4HCO3	unitless	of acidification)	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		(Ca2+ + Mg2+)/HCO3- (proxy		corrections for serial	
p_1980-2000_CaMg_HCO3	unitless	of acidification)	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		(Ca2+ + Mg2+)/HCO3- (proxy		corrections for serial	
p_2000-2020_CaMg_HCO3	unitless	of acidification)	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		(Ca2+ + Mg2+)/HCO3- (proxy		corrections for serial	
p_1980-2020_CaMg_HCO3	unitless	of acidification)	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2000_T	unitless	Water temperature	1980-2000	dependence	
<u>p_</u>		Tracer temperature		p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p 2000-2020 T	unitless	Water temperature	2000-2020	dependence	
P_2000 2020_1	arricies3	Water temperature	2000 2020	p-value of trend based	
				on the seasonal	
p 1980-2020 T	unitless	Water temperature	1080_2020	Kendall test with	
h_1300-2020_1	unitiess	water temperature	1300-2020	Neman test With	

				corrections for serial	
				dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		Total organic carbon		corrections for serial	
p_2000-2020_TOC	unitless	concentration	2000-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		dissolved oxygen		corrections for serial	
p_1980-2000_O2	unitless	concentration	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
		dissolved oxygen		corrections for serial	
p_2000-2020_O2	unitless	concentration	2000-2020	dependence	
. = _				p-value of trend based	
				on the seasonal	
				Kendall test with	
		dissolved oxygen		corrections for serial	
p_1980-2020_O2	unitless	concentration	1980-2020	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2000_WL	unitless	Groundwater level	1980-2000	dependence	
				p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_2000-2020_WL	unitless	Groundwater level	2000-2020	dependence	

		1		p-value of trend based	
				on the seasonal	
				Kendall test with	
				corrections for serial	
p_1980-2020_WL	unitless	Groundwater level	1980-2020	dependence	
<u> </u>					
		Dissolved inorganic carbon		number of	
n_1980-2020_DIC	unitless	concentration	1980-2020	observations	
		Dissolved carbon dioxide		number of	
- 1000 2020 602	:+		1000 2020		
n_1980-2020_CO2	unitless	concentration	1980-2020	observations	
		Dissolved bicarbonate		number of	
n_1980-2020_HCO3	unitless	concentration	1980-2020	observations	
				number of	
n_1980-2020_pH	unitless	pH value	1980-2020	observations	
				number of	
n_1980-2020_Ca	unitless	Ca2+ concentrations	1980-2020	observations	
				number of	
n 1000 2020 Mg	unitless	Mg2 L concentration	1980-2020	observations	
n_1980-2020_Mg	unitiess	Mg2+ concentration	1960-2020	Observations	
				number of	
n_1980-2020_Na	unitless	Na+ concentration	1980-2020	observations	
	5				
				number of	
n_1980-2020_K	unitless	K+ concentration	1980-2020	observations	
				number of	
n_1980-2020_SO4	unitless	SO4 2- concentration	1980-2020	observations	

1	1	I		I	l
				number of	
n 1980-2020 NO3	unitless	NO3- concentrations	1980-2020	observations	
				number of	
n_1980-2020_Cl	unitless	Cl- concentration	1980-2020	observations	
n_1980-		SO42-/(SO42-+HCO3-) (proxy		number of	
2020_SO4_SO4HCO3	unitless	of acidification)	1980-2020	observations	
		(C-2: 1 NA-2: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
- 1000 2020 C-M- UCO2		(Ca2+ + Mg2+)/HCO3- (proxy	1000 2020	number of	
n_1980-2020_CaMg_HCO3	unitless	of acidification)	1980-2020	observations	
				number of	
n_1980-2020_T	unitless	Water temperature	1980-2020		
11_1360 2020_1	unitiess	vater temperature	1300 2020	Observations	
		Total organic carbon		number of	
n_1980-2020_TOC	unitless	concentration	1980-2020	observations	monitoring started in 1992
		dissolved oxygen		number of	
n_1980-2020_O2	unitless	concentration	1980-2020	observations	
				number of	
n_1980-2020_WL	unitless	Groundwater level	1980-2020	observations	
10000000 00:		S. 1 1	1000 2000	number of	
n_19802020_DSi	unitless	Dissolved silica concentration	1980-2020	observations	
				number of	
n_19802020_NH4	unitless	NH4+ concentration	1980-2020	observations	
11_13602020_NH4	unitiess	INTIAT CONCENTIATION	1300-2020	Year of change point (a	
		Dissolved inorganic carbon		point in time when the	
Changenoint DIC	vr	_	1980-2020	<b>'</b>	
Changepoint_DIC	yr	concentration	1980-2020	local linear trend	

I				changed significantly in	
				slope)	
				Year of change point (a	
				point in time when the	
				local linear trend	
		Dissolved carbon dioxide		changed significantly in	
Changepoint_CO2	yr	concentration	1980-2020	' '	
				Year of change point (a	
				point in time when the	
				local linear trend	
		Dissolved bicarbonate		changed significantly in	
Changepoint_HCO3	yr	concentration	1980-2020	slope)	
				Year of change point (a	
				point in time when the	
				local linear trend	
				changed significantly in	
Changepoint_pH	yr	pH value	1980-2020	slope)	
				Year of change point (a	
				point in time when the	
				local linear trend	
				changed significantly in	
Changepoint_Ca	yr	Ca2+ concentrations	1980-2020	slope)	
				Year of change point (a	
				point in time when the	
				local linear trend	
				changed significantly in	
Changepoint_Mg	yr	Mg2+ concentration	1980-2020	slope)	
				Year of change point (a	
				point in time when the	
				local linear trend	
				changed significantly in	
Changepoint_Na	yr	Na+ concentration	1980-2020		

point in time when the local linear trend changed significantly in Slope)  Year of change point (a point in time when the local linear trend changed significantly in Slope)  Changepoint_SO4  Yr SO4 2- concentration  1980–2020  Slope)  Year of change point (a point in time when the local linear trend changed significantly in Slope)  Year of change point (a point in time when the local linear trend changed significantly in Slope)  Changepoint_NO3  Yr NO3- concentrations  1980–2020  Slope)  Year of change point (a point in time when the local linear trend changed significantly in Slope)	ı	1	1	ſ		ı
Changepoint_K   yr					Year of change point (a	
Changepoint_K yr K+ concentration 1980–2020 slope)  Changepoint_SO4 yr SO4 2- concentration 1980–2020 slope)  Changepoint_SO4 yr SO4 2- concentration 1980–2020 slope)  Changepoint_NO3 yr NO3- concentrations 1980–2020 slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a year of change point (a year of change significantly in slope)					•	
Changepoint_K yr K+concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_NO3 yr NO3-concentrations 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl-concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)						
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Changepoint_SO4	Changepoint_K	yr	K+ concentration	1980-2020	. ,	
Changepoint_SO4   yr   SO4 2- concentration   1980-2020   slope)					• ' '	
Changepoint_SO4 yr SO4 2- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_NO3 yr NO3- concentrations 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)					•	
Changepoint_SO4					local linear trend	
Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_NO3 yr NO3- concentrations 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)					changed significantly in	
point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_CaMg_HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)	Changepoint_SO4	yr	SO4 2- concentration	1980-2020	slope)	
Changepoint_NO3   yr   NO3- concentrations   1980–2020   Slope					Year of change point (a	
Changepoint_NO3 yr NO3- concentrations 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_CaMg_HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)					point in time when the	
Changepoint_NO3					local linear trend	
Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in time when the local linear trend changed significantly in slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a yr of acidification)					changed significantly in	
point in time when the local linear trend changed significantly in slope)  Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a Year of Change poin	Changepoint_NO3	yr	NO3- concentrations	1980-2020	slope)	
Changepoint_Cl   yr   Cl- concentration   1980–2020   slope   Year of change point (a point in time when the local linear trend changed significantly in slope   SO42-/(SO42-+HCO3-) (proxy of acidification)   1980–2020   Year of change point (a point in time when the local linear trend changed significantly in slope   Year of change point (a point in time when the local linear trend changed significantly in slope   Year of change point (a point in time when the local linear trend changed significantly in slope   Year of change point (a Point in time when the local linear trend changed significantly in slope   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of change point (a Point in time when the local linear trend changed significantly in slope)   Year of changed significantl					Year of change point (a	
Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a Year of change point (					point in time when the	
Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Changepoint_SO4_SO4HCO3 yr of acidification)  1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Changepoint_CaMg_HCO3 yr of acidification)  1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Year of change point (a Point in time when the local linear trend changed significantly in slope)  Year of change point (a Point in time when the local linear trend changed significantly in slope)					local linear trend	
Changepoint_Cl yr Cl- concentration 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Changepoint_SO4_SO4HCO3 yr of acidification)  1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Changepoint_CaMg_HCO3 yr of acidification)  1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Year of change point (a Point in time when the local linear trend changed significantly in slope)  Year of change point (a Point in time when the local linear trend changed significantly in slope)					changed significantly in	
point in time when the local linear trend changed significantly in slope)  Changepoint_SO4_SO4HCO3 yr of acidification)  1980-2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  (Ca2+ + Mg2+)/HCO3- (proxy changed significantly in of acidification)  1980-2020 slope)  Year of change point (a	Changepoint_Cl	yr	Cl- concentration	1980-2020		
Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a year of change point					Year of change point (a	
SO42-/(SO42-+HCO3-) (proxy of acidification)  1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification)  Changepoint_CaMg_HCO3 yr of acidification)  1980–2020 slope)  Year of change point (a yrear of ch					point in time when the	
Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a					local linear trend	
Changepoint_SO4_SO4HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a point in time when the local linear trend changed significantly in of acidification) 1980–2020 slope)  Changepoint_CaMg_HCO3 yr of acidification) 1980–2020 slope)  Year of change point (a			SO42-/(SO42-+HCO3-) (proxy		changed significantly in	
Year of change point (a point in time when the local linear trend changepoint_CaMg_HCO3 yr of acidification)  Year of change point (a point in time when the local linear trend changed significantly in slope)  Year of change point (a Pear of chang	Changepoint SO4 SO4HCO3	yr		1980-2020		
point in time when the local linear trend changed significantly in of acidification)  1980–2020 slope)  Year of change point (a	<u> </u>	,				
Changepoint_CaMg_HCO3 yr of acidification)   Changepoint_CaMg_HCO3   Changepoi					• • •	
Changepoint_CaMg_HCO3 yr					•	
Changepoint_CaMg_HCO3     yr     of acidification)     1980-2020 slope)       Year of change point (a			(Ca2+ + Mg2+)/HCO3- (proxv			
Year of change point (a	Changepoint CaMg HCO3	vr	1	1980-2020		
		,	,		1 /	
					• • •	
	Changepoint_T	yr	Water temperature	1980-2020	•	

				changed significantly in slope)	
Changepoint_O2	yr	dissolved oxygen concentration	1980-2020	Year of change point (a point in time when the local linear trend changed significantly in slope)	
Changepoint_WL	yr	Groundwater level	1980-2020	Year of change point (a point in time when the local linear trend changed significantly in slope)	
Median_19802020_DICplr	arbitrary unit	Pivot coordinates of DIC concentrations			calculated using 'PivotCoord' function in R package 'robcompositions' for the composition of Ca2+, Mg2+, Na+, K+, SO4 2-, NO3-, Cl-, H+, DIC
Median_19802020_CO2plr	arbitrary unit	Pivot coordinates of CO2 concentrations	1980-2020	Median	calculated using 'PivotCoord' function in R package 'robcompositions' for the composition of Ca2+, Mg2+, Na+, K+, SO4 2-, NO3-, Cl-, H+, CO2, HCO3-, CO32-
Median_19802020_HCO3plr	arbitrary unit	Pivot coordinates of HCO3-concentrations	1980-2020	Median	calculated using 'PivotCoord' function in R package 'robcompositions' for the composition of Ca2+, Mg2+, Na+, K+, SO4 2-, NO3-, Cl-, H+, CO2, HCO3-, CO32-

					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_Hplr	arbitrary	Pivot coordinates of H+			Na+, K+, SO4 2-, NO3-, Cl-,
Wedian_13002020p.ii	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_Caplr	arbitrary	Pivot coordinates of Ca2+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions'1 for the
					composition of Ca2+, Mg2+,
Median_19802020_Mgplr	arbitrary	Pivot coordinates of Mg2+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_Naplr	arbitrary	Pivot coordinates of Na+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_Kplr	arbitrary	Pivot coordinates of K+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
Median_19802020_SO4plr	arbitrary	Pivot coordinates of SO4 2-			function in R package
	unit	concentrations	1980-2020	Median	'robcompositions' for the

					composition of Ca2+, Mg2+,
					Na+, K+, SO4 2-, NO3-, Cl-,
					H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_NO3plr	arbitrary	Pivot coordinates of NO3-			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Median_19802020_Clplr	arbitrary	Pivot coordinates of CI-			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Median	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_DICplr	arbitrary	Pivot coordinates of DIC			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, DIC
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_CO2plr	arbitrary	Pivot coordinates of CO2			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_HCO3plr	arbitrary	Pivot coordinates of HCO3-			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-

					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Tara d. 10002020 Hala	arbitrary	Pivot coordinates of H+			Na+, K+, SO4 2-, NO3-, Cl-,
Trend_19802020_Hplr	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
	unit	Concentrations	1980-2020	Their sen slope (trend)	calculated using 'PivotCoord'
					<u> </u>
					function in R package
					'robcompositions' for the
		D' -1 (C-2)			composition of Ca2+, Mg2+,
Trend_19802020_Caplr	arbitrary 	Pivot coordinates of Ca2+	1000 0000	TI 11.6 I (1 I)	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_Mgplr	arbitrary	Pivot coordinates of Mg2+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_Naplr	arbitrary	Pivot coordinates of Na+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_Kplr	arbitrary	Pivot coordinates of K+			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
				,	calculated using 'PivotCoord'
Trend_19802020_SO4plr	arbitrary	Pivot coordinates of SO4 2-			function in R package
	unit	concentrations	1980-2020	Theil Sen slope (trend)	'robcompositions' for the

					composition of Ca2+, Mg2+,
					Na+, K+, SO4 2-, NO3-, Cl-,
					H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_NO3plr	arbitrary	Pivot coordinates of NO3-			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
					function in R package
					'robcompositions' for the
					composition of Ca2+, Mg2+,
Trend_19802020_Clplr	arbitrary	Pivot coordinates of Cl-			Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	Theil Sen slope (trend)	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_DICplr	arbitrary	Pivot coordinates of DIC		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, DIC
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
P 19802020 CO2plr	arbitrary	Pivot coordinates of CO2		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' <sup>1</sup> for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_HCO3plr	arbitrary	Pivot coordinates of HCO3-		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-

					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_Hplr	arbitrary	Pivot coordinates of H+		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
F_19802020_11pii	unit	concentrations	1980-2020		H+, CO2, HCO3-, CO32-
	anic	Concentrations	1300 2020	аеренаенее	calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
D 10902020 Caple	arbitrary	Pivot coordinates of Ca2+		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
P_19802020_Caplr	unit	concentrations	1980-2020		H+, CO2, HCO3-, CO32-
	unit	Concentrations	1980-2020	dependence	calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
	ر سمید: ماسد	Divist as and instance of Ma2.		corrections for serial	
P_19802020_Mgplr	arbitrary	Pivot coordinates of Mg2+	1000 2020		Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_Naplr	arbitrary	Pivot coordinates of Na+		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' <sup>1</sup> for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_Kplr	arbitrary	Pivot coordinates of K+		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
-	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-
				p-value of trend based	calculated using 'PivotCoord'
P_19802020_SO4plr	arbitrary	Pivot coordinates of SO4 2-		on the seasonal	function in R package
	unit	concentrations	1980-2020	Kendall test with	'robcompositions'1 for the

				corrections for serial	composition of Ca2+, Mg2+,
				dependence	Na+, K+, SO4 2-, NO3-, Cl-,
					H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions'¹ for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_NO3plr	arbitrary	Pivot coordinates of NO3-		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-
					calculated using 'PivotCoord'
				p-value of trend based	function in R package
				on the seasonal	'robcompositions' <sup>1</sup> for the
				Kendall test with	composition of Ca2+, Mg2+,
P_19802020_Clplr	arbitrary	Pivot coordinates of CI-		corrections for serial	Na+, K+, SO4 2-, NO3-, Cl-,
	unit	concentrations	1980-2020	dependence	H+, CO2, HCO3-, CO32-

<sup>&</sup>lt;sup>1</sup> Matthias Templ, Karel Hron, P. F. robCompositions: an R-package for robust statistical analysis of compositional data. v. 2.3.1. in *Compositional Data Analysis. Theory and Applications* (eds. Pawlowsky-Glahn, V. & Buccianti, A.) 341–355 (John Wiley & Sons, 2011).