P-08-31

Oskarshamn site investigation

Groundwater flow measurements in permanently installed boreholes

Test campaign no. 3 2007

Pernilla Thur, Geosigma AB

March 2008

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Keywords: Groundwater flow, Dilution test, Tracer test, AP PS 400-07-062.

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Abstract

This report describes the performance and evaluation of measurements of groundwater flow in 37 borehole sections in permanently installed boreholes within the site investigation at Oskarshamn (Simpevarp, Ävrö and Laxemar). The objective was to determine the groundwater flow in all borehole sections instrumented for this purpose. This is the third test campaign performed in the monitoring program and is planned to be repeated once every year.

The groundwater flow in the selected borehole sections was determined through dilution measurements during natural undisturbed conditions. Measured flow rates vary from 6 to 5,000 ml/h in the measured sections with Darcy velocities ranging from 6.9 E–10 to 4.5 E–7 m/s. Hydraulic gradients are calculated according to the Darcy concept and ranging from 0.0037 to 15.

Sammanfattning

Denna rapport beskriver genomförandet och utvärderingen av grundvattenflödesmätningar i 37 borrhålssektioner i permanent installerade borrhål i Oskarshamnområdet (Simpevarp, Ävrö och Laxemar). Syftet var att bestämma grundvattenflödet i samtliga för ändamålet instrumenterade borrhålssektioner. Denna mätning är den tredje som genomförts i moniteringsprogrammet och mätningarna är planerade att återupprepas en gång per år.

Grundvattenflödet i de utvalda borrhålssektionerna mättes med utspädningsmetoden under naturliga ostörda förhållanden. Uppmätta grundvattenflöden ligger i intervallet 6 till 5 000 ml/timme med beräknade Darcy hastigheter mellan 6,9 E–10 och 4,5 E–7 m/s. Hydrauliska gradienten beräknades till mellan 0,0037 och 15.

Contents

1 Introduction

This document reports the results gained by the groundwater flow measurements in permanent installed boreholes, test campaign no. 3, which is one of the activities performed within the site investigation at Oskarshamn. The work was carried out in accordance with Activity Plan AP PS 400-07-062. In Table 1-1 controlling documents for performing this activity are listed. Both Activity Plan and Method Descriptions are SKB's internal controlling documents.

The field work was performed in November 2007 and January to February 2008. A map showing the investigation site at Oskarshamn including the boreholes is presented in Figure 1-1.

The original results are stored in the primary data base Sicada and are traceable by the Activity Plan number.

Table 1-1. Controlling documents for performance of the activity.

Activity Plan	Number	Version
Monitering av grundvattenflöde, 2007	AP PS 400-07-062	1.0
Method Descriptions	**Number**	**Version**
Mätsystembeskrivning (MSB) – Handhavande del: System för hydrologisk och metrologisk datainsamling. Vattenprovtagning och utspädningsmätning i observationshål.	SKB MD 368.010	1.0

***Figure 1-1.** General overview over Oskarshamn site investigation area.*

2 Objective and scope

The objective of this activity was to determine the groundwater flow in borehole sections in permanent installed boreholes at Oskarshamn. 37 borehole sections instrumented for this purpose (circulation sections) were to be measured, cf. Table 2-1. This was the third measuring campaign performed in the monitoring program and it is planned to be repeated once every year.

The groundwater flow in the selected borehole sections was determined through dilution measurements during natural undisturbed conditions.

Table 2-1. Borehole sections used for groundwater flow measurements in Oskarshamn, winter 2007–2008.

Borehole/section	Borehole length (m)	Transmissivity (m^2/s)	Measurement period (YYMMDD–YYMMDD)
HLX20:2	71–80	9.0E–06*	080207–080213
HLX27:1	153–165	2.0E–06*	080124–080130
HLX28:2	70–90	2.0E–05*	080114–080122
HLX32:2	20–30	1.0E–06*	080207–080213
HLX35:2	120–130	1.0E–05*	080207–080213
HLX37:3	95–110	3.0E–07*	080123–080130
HLX39:1	187–199	1.0E–05*	080129–080207
HLX43:1	135–146	4.0E–06*	080206–080213
KAV01:3	391–434	1.8E–05**	071121–071127
KLX01:3	171–190	1.1E–05**	071114–071128
KLX02:2	1,145–1,164	3.2E–07**	071114–071121
KLX02:5	452–494	1.0E–07**	071114–071122
KLX03:1	965–971	1.5E–09**	080110–080130
KLX03:4	729–751	5.9E–06**	080110–080130
KLX04:2	870–897	3.5E–08***	080114–080123
KLX04:5	507–530	2.7E–06**	080114–080123
KLX05:7	241–55	6.2E–07**	080109–080115
KLX06:3	554–570	1.0E–05**	071113–071120
KLX06:6	256–275	5.0E–05**	071113–071120
KLX07A:2	753–780	3.5E–05**	080109–080115
KLX08:3	626–683	2.9E–06**	080114–080123
KLX08:4	594–625	2.5E–06**	080114–080123
KLX10A:2	689–710	1.0E–07**	080129–080207
KLX10A:5	351–368	1.0E–06**	080129–080207
KLX11A:3	573–586	2.0E–05**	080122–080129
KLX11A:7	256–272	2.0E–05**	080122–080129
KLX12A:2	535–545	2.0E–07**	080109–080115
KLX15A:3	623–640	7.0E–07**	080123–080131
KLX15A:6	260–272	5.0E–06***	080123–080131
KLX18A:3	472–489	2.7E–07**	080109–080115
KLX19A:3	509–517	1.0E–06***	080130–080207
KLX20A:2	260–272	2.0E–06***	080128–080213
KLX20A:5	103–144	5.0E–05**	080128–080208
KSH01A:4	532–572	8.4E–07**	071120–071127
KSH01A:7	238–277	7.4E–06**	071120–071127
KSH02:1	955–963	6.8E–08**	071121–071127
KSH02:4	411–439	9.7E–08**	071121–071127

* From HTHB measurements

** From PSS measurements

*** From PFL measurements

3 Equipment

3.1 Description of equipment

The boreholes involved in the tests are instrumented with one to eight packers, two to nine borehole sections each. In Figure 3-1 a drawing of the instrumentation in core boreholes is presented. All isolated borehole sections are connected to the HMS-system for pressure monitoring. In general the sections planned to be used for tracer tests are equipped with three polyamide tubes. Two are used for injection sampling and circulation in the borehole section and one is used for pressure monitoring.

The tracer dilution tests were performed using four to six identical equipment set-ups i.e. allowing four to six sections to be measured simultaneously. The tracer used was Amino-G Acid from Aldrich - Chemie. A schematic drawing of the tracer test equipment is shown in Figure 3-2. The basic idea is to have an internal circulation in the borehole section. The circulation makes it possible to obtain a homogeneous tracer concentration in the borehole section and to sample the tracer concentration outside the borehole in order to monitor the dilution of the tracer with time.

Circulation is controlled by a down-hole pump with variable speed and measured by a flow meter. Tracer injections are made with a peristaltic pump and sampling is made by continuously extracting a small volume of water from the system through another peristaltic pump (constant leak) to a fractional sampler.

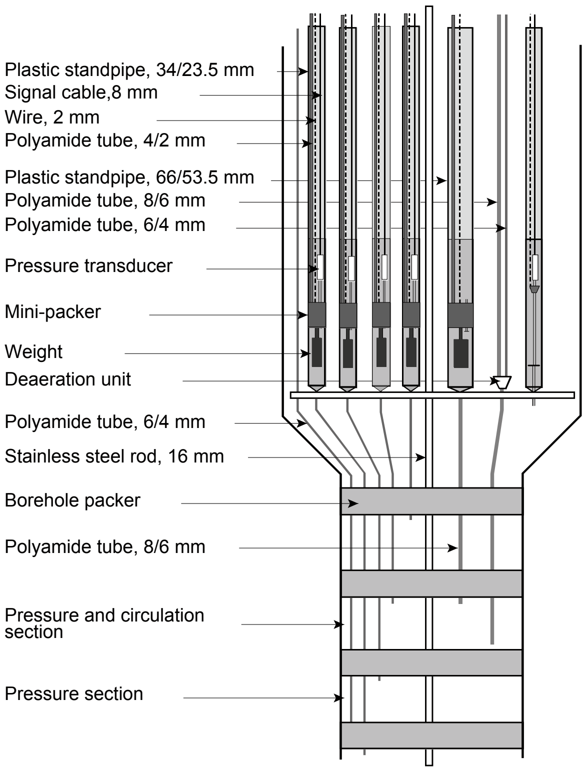

***Figure 3-1.** An example of permanent instrumentation in core boreholes with circulation sections.*

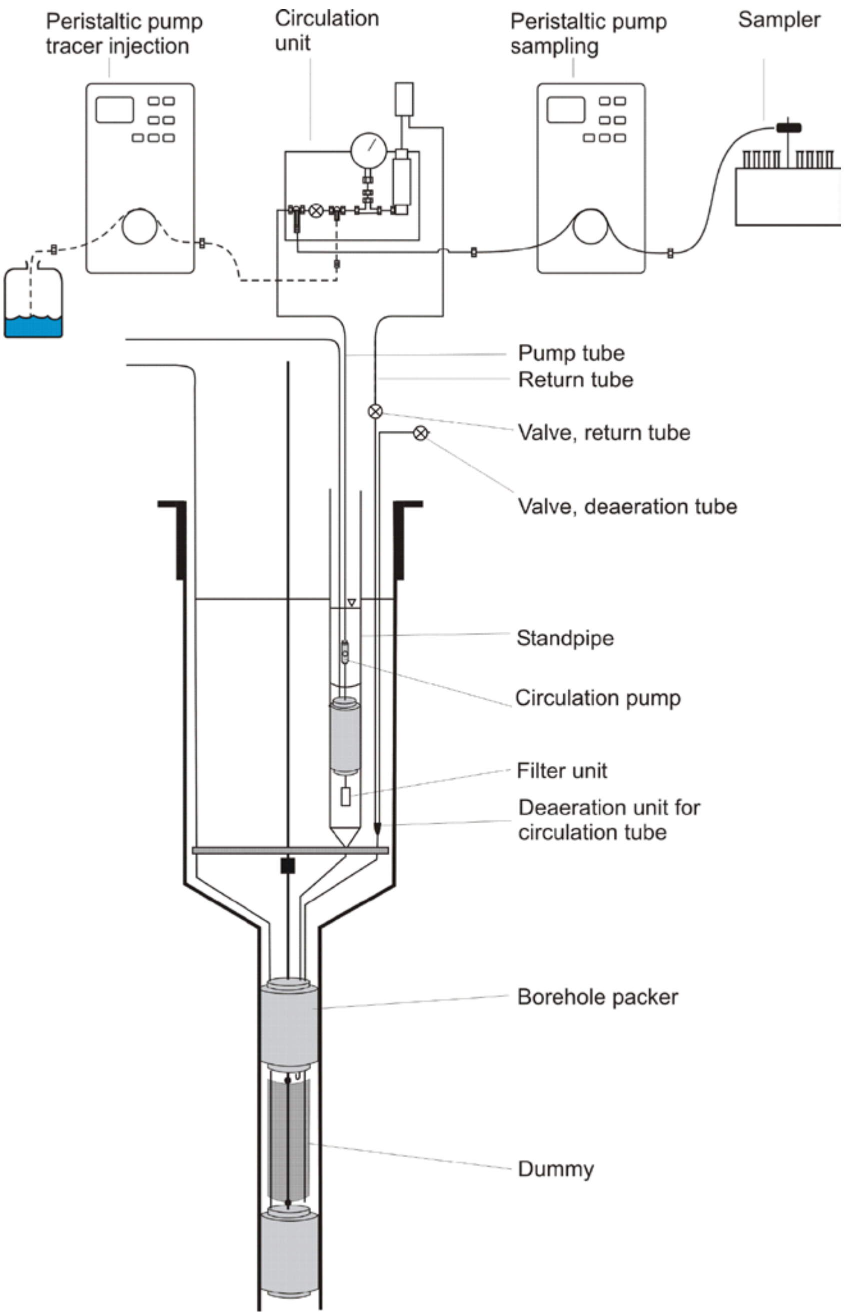

Figure 3-2. *Schematic drawing of the equipment used in tracer dilution measurements.*

4 Execution

4.1 General

In the dilution method a tracer is introduced and homogeneously distributed into a borehole test section. The tracer is subsequently diluted by the ambient groundwater flowing through the borehole test section. The dilution of the tracer is proportional to the water flow through the borehole section and the groundwater flow is calculated as a function of the decreasing tracer concentration with time, Figure 4-1.

4.2 Preparations

Before the field work started, a tracer stock solution (Amino-G 1,000 mg/l) was mixed and the field equipment was functionality tested and calibrated.

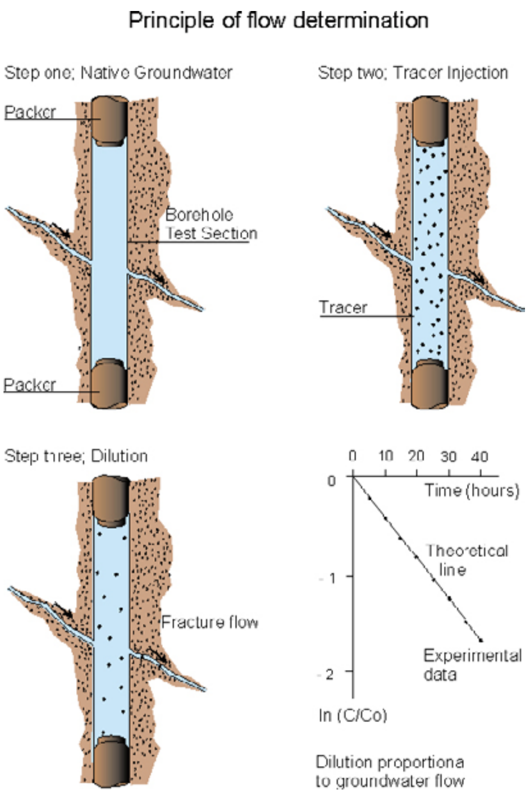

Figure 4-1. General principles of dilution and flow determination.

4.3 Execution of field work

Tracer dilution tests were performed in 37 borehole sections listed in Table 2-1.

The tests were made by injecting a slug of tracer (Amino-G 1,000 mg/l) in the selected borehole section with an adjusted injection flow during the time it takes to circulate one section volume and in this way dilute the tracer to approximately 1 mg/l as a start concentration in the borehole section. Using the equipment described in Section 3.1 the tracer solution in the borehole section was continuously circulated and sampled allowing the natural groundwater flow to dilute the tracer. Circulation was maintained during the test and the sampler was set up to change tubes every two hours.

After completion of each trace dilution test three section volumes are pumped in order to remove remaining tracer from the investigated section.

4.4 Analyses and interpretations

The samples were analysed for dye tracer content at the Geosigma Laboratory using a Jasco FP 777 Spectrofluorometer.

4.4.1 Tracer dilution calculations

Flow rates were calculated from the decay of tracer concentration versus time through dilution with natural unlabelled groundwater. The so-called "dilution curves" were plotted as the natural logarithm of concentration versus time cf. /1/. Theoretically, a straight-line relationship exists between the natural logarithm of the relative tracer concentration (c/c_0) and time (t):

$$\ln (c/c_0) = -(Q_{bh}/V) \cdot \Delta t \qquad (4\text{-}1)$$

where Q_{bh} (m^3/s) is the groundwater flow rate through the borehole section and V (m^3) is the volume of the borehole section. By plotting ln (c/c_0) versus t, and by knowing the borehole volume V, Q_{bh} may then be obtained from the straight-line slope. If c_0 is constant, it is sufficient to use ln c in the plot.

The sampling procedure with a constant flow of 4–8 ml/h also creates a dilution of tracer. The sampling flow rate is therefore subtracted from the value obtained from Equation 4-1.

The flow Q_{bh} may be translated into a Darcy velocity by taking into account the distortion of the flow caused by the borehole and the angle between the borehole and flow direction. In practise a 90° angle between the borehole axis and the flow direction is assumed and the relation between the flow in the rock the Darcy velocity v (m/s) and the measured flow through the borehole section Q_{bh} can be expressed as:

$$Q_{bh} = v \cdot L_{bh} \cdot 2r_{bh} \cdot \alpha \qquad (4\text{-}2)$$

where L_{bh} is the length of the borehole section (m), r_{bh} is the borehole radius (m) and α is the factor accounting for the distortion of flow caused by the borehole.

Hydraulic gradients are roughly estimated from Darcy's law where the gradient I is calculated as the function of the Darcy velocity v with the conductivity K:

$$I = \frac{v}{K} = \frac{Q_{bh} \cdot L_{bh}}{\alpha \cdot A \cdot T_{bh}} = \frac{Q_{bh} \cdot L_{bh}}{2 \cdot d_{bh} \cdot L_{bh} \cdot T_{bh}} \qquad (4\text{-}3)$$

where T_{bh} is the transmissivity of the section, A the cross section area between the packers and d_{bh} the borehole diameter.

The factor α is commonly given the value 2 in the calculations, which is the theoretical value for a homogeneous porous media. Since the rock mostly is heterogeneous and the angles in the sections not always 90° the calculation of the hydraulic gradient is a rough estimation.

4.5 Nonconformities

- The mobile electric power stations run by diesel affected the frequency of the sampler. When the sampler was set up to change tubes every 120 minutes it changed tubes after approximately 108, 115 and 119 minutes depending on the power station. This was compensated for in the evaluation.
- Power failure caused interrupted sampling in HLX39:1 after 70 hours and in KLX20A:2 after 54 hours. In these sections the minimum requirement of four days in measurement time was not obtained. However, the shorter measurement time are judged to have insignificant effects on the evaluation.
- Section HLX14:1, originally listed to be measured according to the Activity Plan, was not measured due to time constraints. The section will be measured in the next monitoring campaign, autumn 2008, instead.

5 Results

Original data from the reported activity are stored in the primary database Sicada. Data are traceable in Sicada by the Activity Plan number (AP PS 400-07-062). Only data in databases are accepted for further interpretation and modelling. The data presented in this report are regarded as copies of the original data. Data in the databases may be revised if needed. However such revision of the database will not necessarily result in a revision of this report although the normal procedure is that major data revisions entail a revision of P-reports. Minor data revisions are normally presented as supplements available at www.skb.se.

The results obtained within this activity are groundwater flow rates in 37 borehole sections during natural conditions. The groundwater flow rates calculated together with transmissivities and volumes used gives Darcy velocities and hydraulic gradients as additional results, see Table 5-1.

A comparison between test campaign no. 1, 2005 /2/, test campaign no. 2, 2006 /3/ and test campaign no. 3, 2007 is shown in Table 5-2. A general impression is that flow rates are decreasing over time since 2005 and 2006. This occurs in 11 out of 19 sections whereas 7 of the remaining 8 have approximately unchanged flow. Only in one section, KSH01A:7, a significant increase can be found.

In Figure 5-1 an example of a typical tracer dilution curve is shown. The flow rate is calculated from the slope of the straight-line fit. The results show that the groundwater flow during natural undisturbed conditions varies from 6 to 4,972 ml/h in the measured sections with Darcy velocities ranging from 6.9 E–10 to 4.5 E–7 m/s. Hydraulic gradients are calculated according to the Darcy concept and ranging from 0.0037 to 45.

Tracer dilution graphs together with straight line fits for each borehole section are presented in Appendix 1. The appendix also shows graphs from earlier performed measurements for each section. The straight line fits to the experimental data are generally good with regression coefficients between 0.848 and 0.999 for 26 of 37 borehole sections. For nine borehole section it varies between 0.358 and 0.813. Scattered data in KSH02:1 and KLX03:1 gives low regression coefficients. This may be explained by low ground water flow in deep sections implying that mixing takes quite a long time. These values are therefore considered as uncertain.

Groundwater level during the entire test period is shown for the selected boreholes in Appendix 2. The groundwater levels are generally stable during the measurement period. In borehole section HLX39:1 a interruption in data transfer during the test was caused by poorly sunlit solar cell.

Table 5-1. Results from groundwater flow measurements in permanent installed boreholes test campaign no. 3, 2007. Values within brackets are considered as uncertain.

Borehole/section	Borehole length (m)	Transmissivity (m^2/s)	Volume (ml)	Measured flow (ml/h)	Darcy velocity (m/s)	Hydraulic gradient
HLX20:2	71–80	9.0E–06*	29.530	34	3.8E–09	0.0038
HLX27:1	153–165	2.0E–06*	56.470	156	1.3E–08	0.080
HLX28:2	70–90	2.0E–05*	46.060	672	3.4E–08	0.034
HLX32:2	20–30	1.0E–06*	33.420	882	8.7E–08	0.87
HLX35:2	120–130	1.0E–05*	38.460	4,386	4.4E–07	0.44
HLX37:3	95–110	3.0E–07*	50.430	73	4.8E–09	0.24
HLX39:1	187–199	1.0E–05*	66.980	84	7.1E–09	0.0085
HLX43:1	135–146	4.0E–06*	42.820	4,972	4.5E–07	1.2
KAV01:3	391–434	1.8E–05**	47.760	4,071	1.7E–07	0.41
KLX01:3	171–190	1.1E–05**	34.930	290	2.8E–08	0.048
KLX02:2	1,145–1,164	3.2E–07**	90.590	43	4.1E–09	0.24
KLX02:5	452–494	1.0E–07**	70.200	96	4.2E–09	1.8
KLX03:1	965–971	1.5E–09**	65.600	(12)	(3.7E–09)	(15)
KLX03:4	729–751	5.9E–06**	66.610	24	2.0E–09	0.0074
KLX04:2	870–897	3.5E–08***	83.340	34	2.3E–09	1.8
KLX04:5	507–530	2.7E–06**	54.120	42	3.4E–09	0.029
KLX05:7	241–55	6.2E–07**	30.040	13	1.7E–09	0.038
KLX06:3	554–570	1.0E–05**	52.880	49	5.6E–09	0.0090
KLX06:6	256–275	5.0E–05**	35.860	101	9.7E–09	0.0037
KLX07A:2	753–780	3.5E–05**	77.030	1,158	7.9E–08	0.061
KLX08:3	626–683	2.9E–06**	103.490	1,555	5.0E–08	0.98
KLX08:4	594–625	2.5E–06**	68.440	45	2.7E–09	0.033
KLX10A:2	689–710	1.0E–07**	66.620	36	3.1E–09	0.65
KLX10A:5	351–368	1.0E–06**	39.880	1,155	1.2E–07	2.1
KLX11A:3	573–586	2.0E–05**	50.230	189	2.7E–08	0.017
KLX11A:7	256–272	2.0E–05**	32.210	40	4.6E–09	0.0037
KLX12A:2	535–545	2.0E–07**	45.670	10	1.8E–09	0.088
KLX15A:3	623–640	7.0E–07**	57.610	1,090	1.2E–07	2.9
KLX15A:6	260–272	5.0E–06***	29.380	179	2.7E–08	0.066
KLX18A:3	472–489	2.7E–07**	49.340	17	1.9E–09	0.12
KLX19A:3	509–517	1.0E–06***	41.510	71	1.6E–08	0.13
KLX20A:2	260–272	2.0E–06***	59.020	42	2.1E–09	0.038
KLX20A:5	103–144	5.0E–05**	48.250	254	1.1E–08	0.0093
KSH01A:4	532–572	8.4E–07**	76.980	273	1.2E–08	0.60
KSH01A:7	238–277	7.4E–06**	52.090	93	4.4E–09	0.023
KSH02:1	955–963	6.8E–08**	67.330	(6)	(1.3E–09)	(0.16)
KSH02:4	411–439	9.7E–08**	54.140	11	6.9E–10	0.20

* From HTHB measurements

** From PSS measurements

*** From PFL measurements

Table 5-2. Results from groundwater flow measurements in permanent installed boreholes. Comparison between test campaign no. 1, 2005, test campaign no. 2, 2006 and test campaign no. 3. Values within brackets are considered as uncertain.

Borehole/ section	Measured flow (ml/h)			Darcy velocity (m/s)			Hydraulic gradient		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
HLX20:2			34			3.8E–9			0.004
HLX27:1			156			1.3E–8			0.080
HLX28:2			672			3.4E–8			0.034
HLX32:2			882			8.7E–8			0.87
HLX35:2			4,386			4.4E–7			0.44
HLX37:3			73			4.8E–9			0.24
HLX39:1			84			7.1E–9			0.008
HLX43:1			4,972			4.5E–7			1.2
KAV01:3	3,657	2,512	4,071	2.1E–7	1.4E–7	1.7E–7	0.22	0.15	0.41
KLX01:3	353	246	290	3.4E–8	2.4E–8	2.8E–8	0.018	0.012	0.048
KLX02:2	128	46	43	1.2E–8	4.4E–9	4.1E–9	0.73	0.26	0.24
KLX02:5	184	152	96	8.0E–9	6.6E–9	4.2E–9	1.1	0.90	1.8
KLX03:1		56	(12)		1.7E–8	(3.7E–9)		0.22	(15)
KLX03:4		39	24		3.2E–9	2.0E–9		0.012	0.007
KLX04:2	44	42	34	3.0E–9	2.8E–9	2.3E–9	1.6	1.6	1.8
KLX04:5	40	33	42	3.2E–9	2.6E–9	3.4E–9	0.027	0.022	0.029
KLX05:3		15			3.4E–9			2.3	
KLX05:7		35	13		4.6E–9	1.7E–9		0.029	0.038
KLX06:3	53	47	49	6.1E–9	5.4E–9	5.6E–9	0.009	0.008	0.009
KLX06:6	131	121	101	1.3E–8	1.2E–8	9.7E–9	0.002	0.002	0.004
KLX07A:2		1,066	1,158		7.2E–8	7.9E–8		0.056	0.061
KLX08:3			1,555			5.0E–8			0.98
KLX08:4			45			2.7E–9			0.033
KLX10A:2		135	36		1.2E–8	3.1E–9		0.88	0.65
KLX10A:5		1,104	1,155		1.2E–7	1.2E–7		0.96	2.1
KLX11A:3			189			2.7E–8			0.017
KLX11A:7			40			4.6E–9			0.004
KLX12A:2			10			1.8E–9			0.088
KLX15A:3			1,090			1.2E–7			2.9
KLX15A:6			179			2.7E–8			0.066
KLX18A:3			17			1.9E–9			0.12
KLX19A:3			71			1.6E–8			0.13
KLX20A:2			42			2.1E–9			0.038
KLX20A:5			254			1.1E–8			0.009
KSH01A:4	541	441	273	2.5E–8	2.0E–8	1.2E–8	1.2	0.96	0.60
KSH01A:7	112	119	93	5.3E–9	5.6E–9	4.4E–9	0.028	0.030	0.023
KSH02:1	49	33	(6)	1.1E–8	7.6E–9	(1.3E–9)	1.3	0.89	(0.16)
KSH02:4	39	20	11	2.6E–9	1.3E–9	6.9E–10	0.23	0.12	0.20

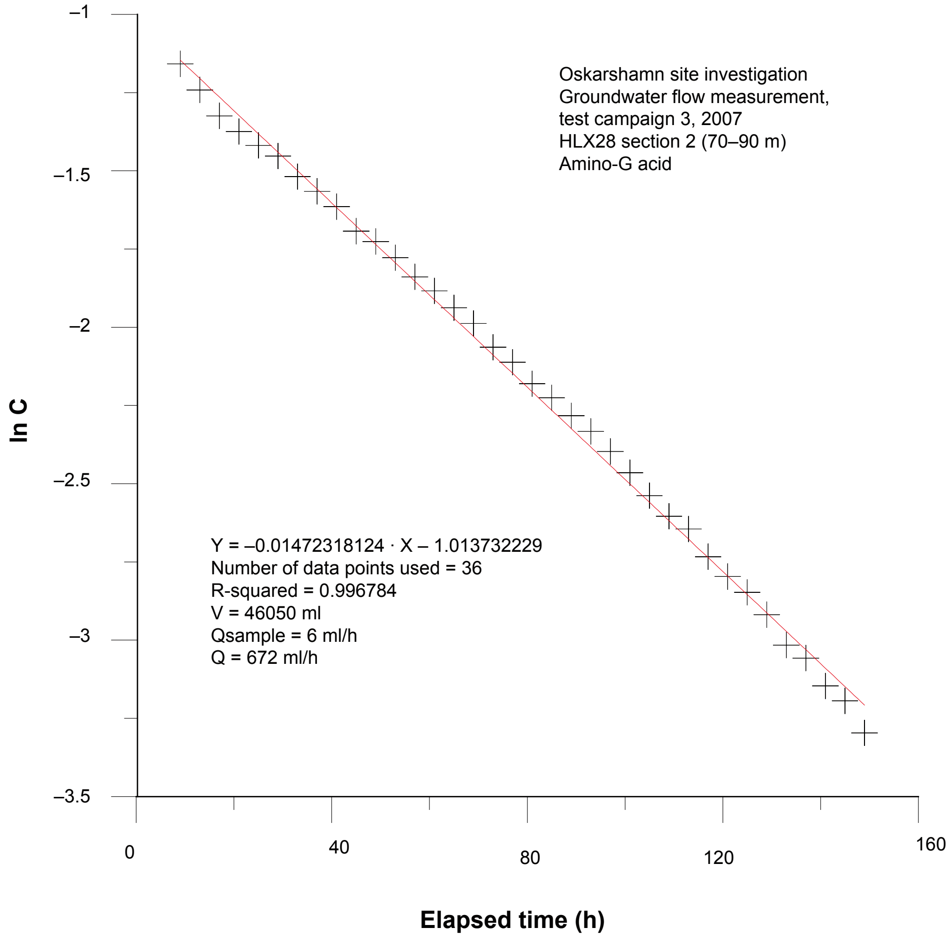

Figure 5-1. *Example of a tracer dilution graph for borehole HLX28:2, including straight-line fit.*

6 References

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/2/ **Askling P, Andersson P, 2006**. Groundwater flow measurements in permanent installed boreholes. Test campaign no. 1. 2005. Oskarshamn site investigation. SKB P-06-61. Svensk Kärnbränslehantering AB.

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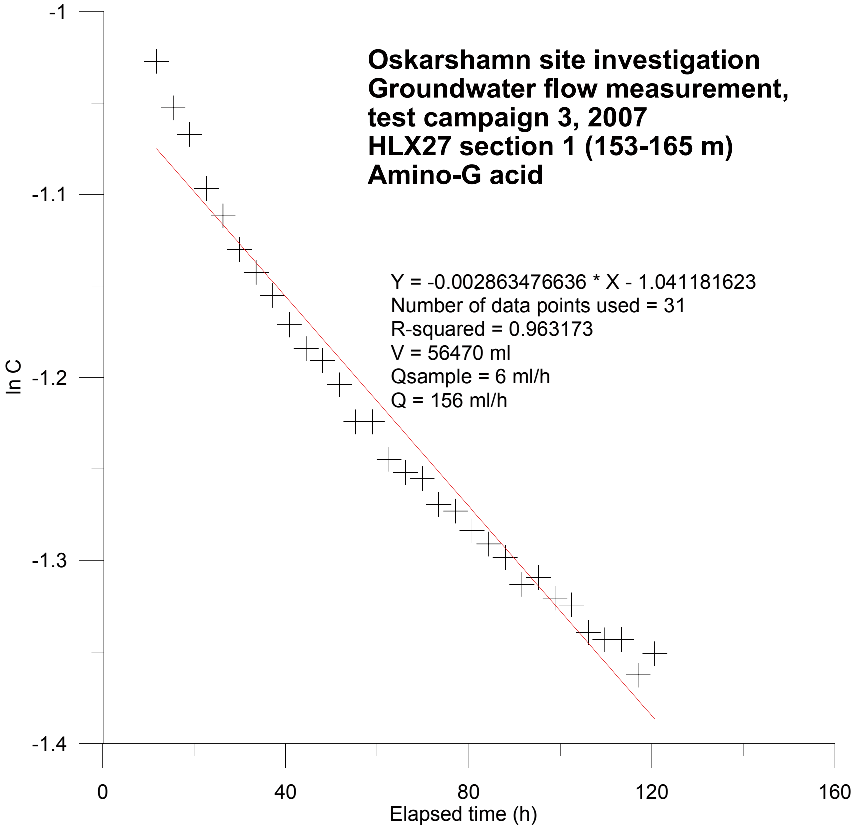
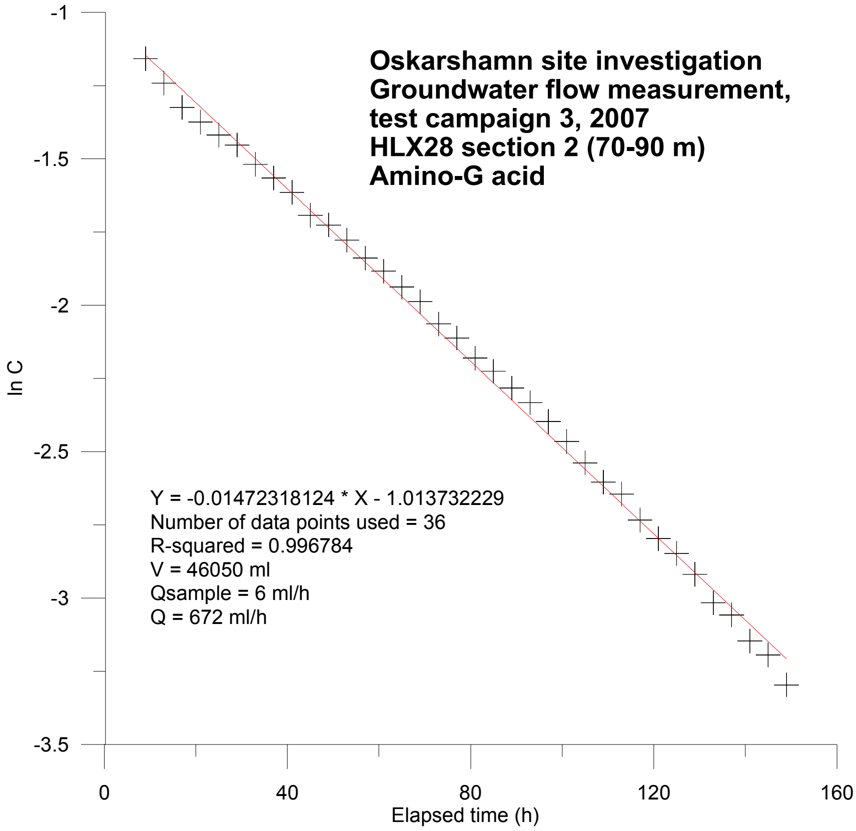
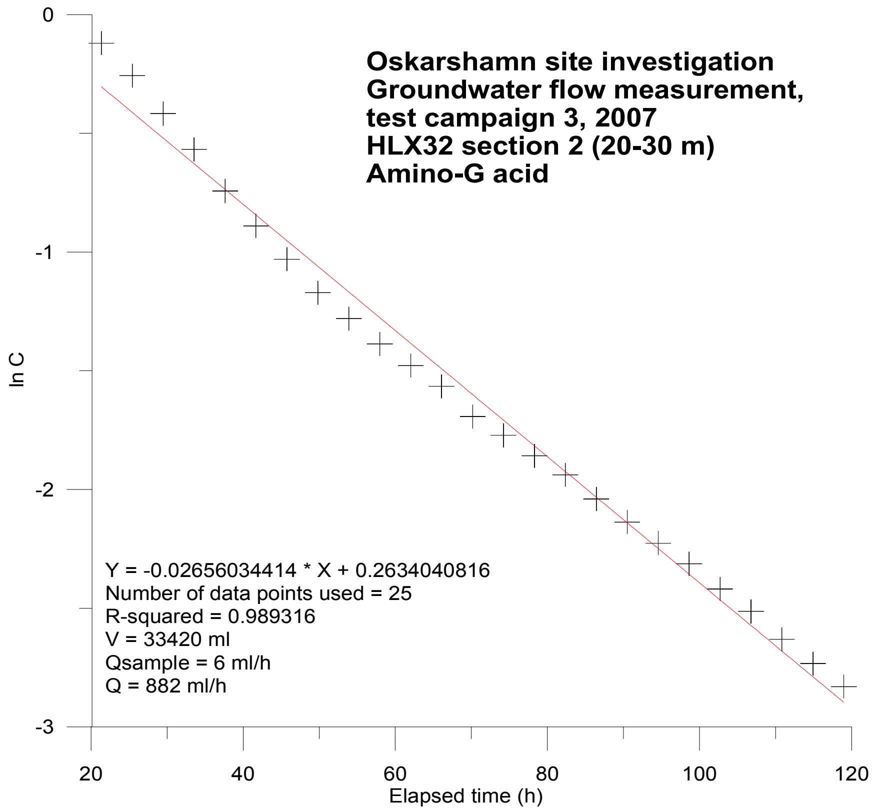
Appendix 1

Tracer dilution graphs







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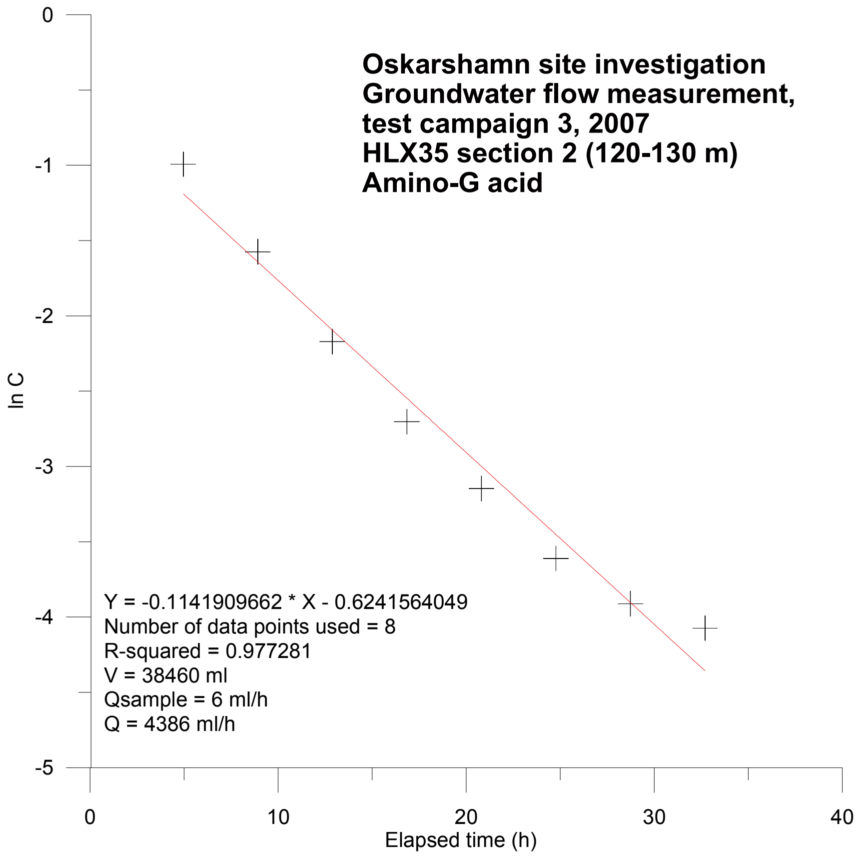
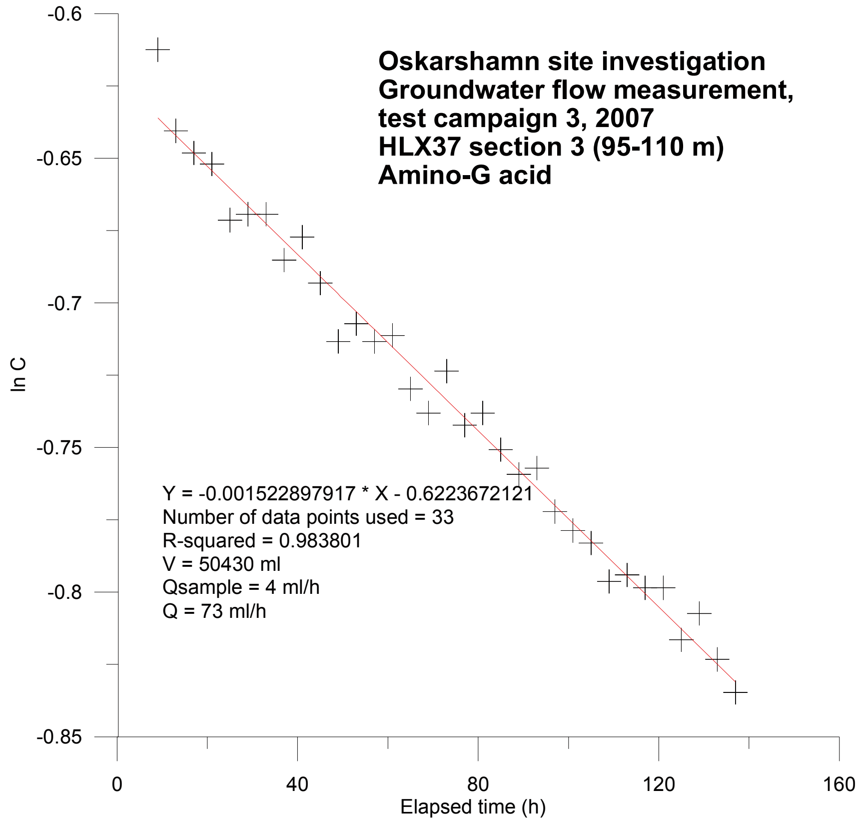
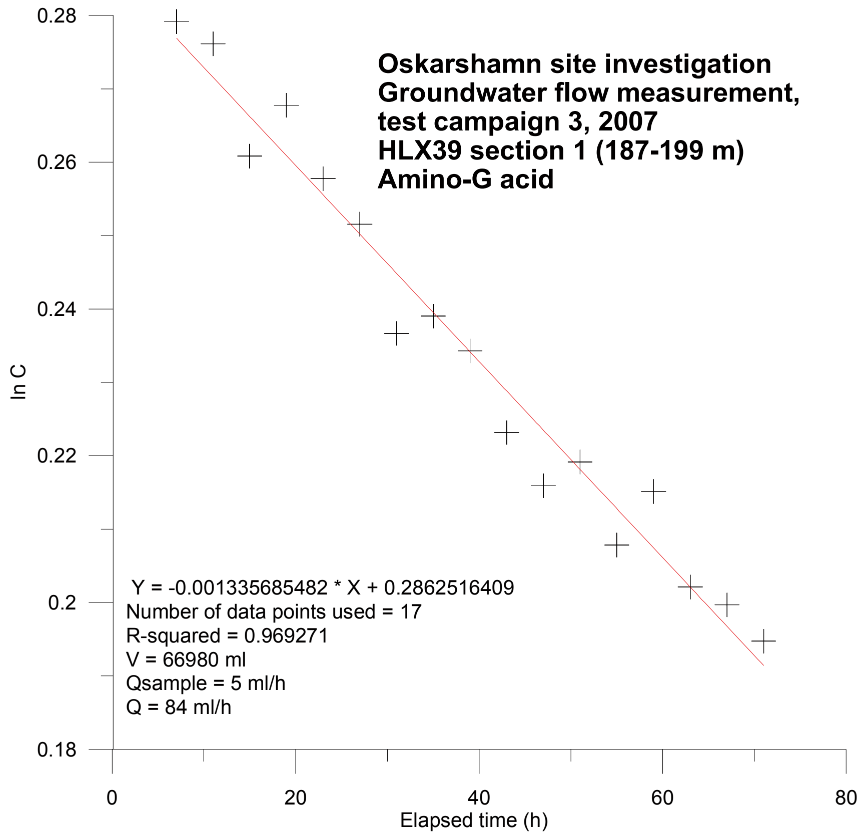
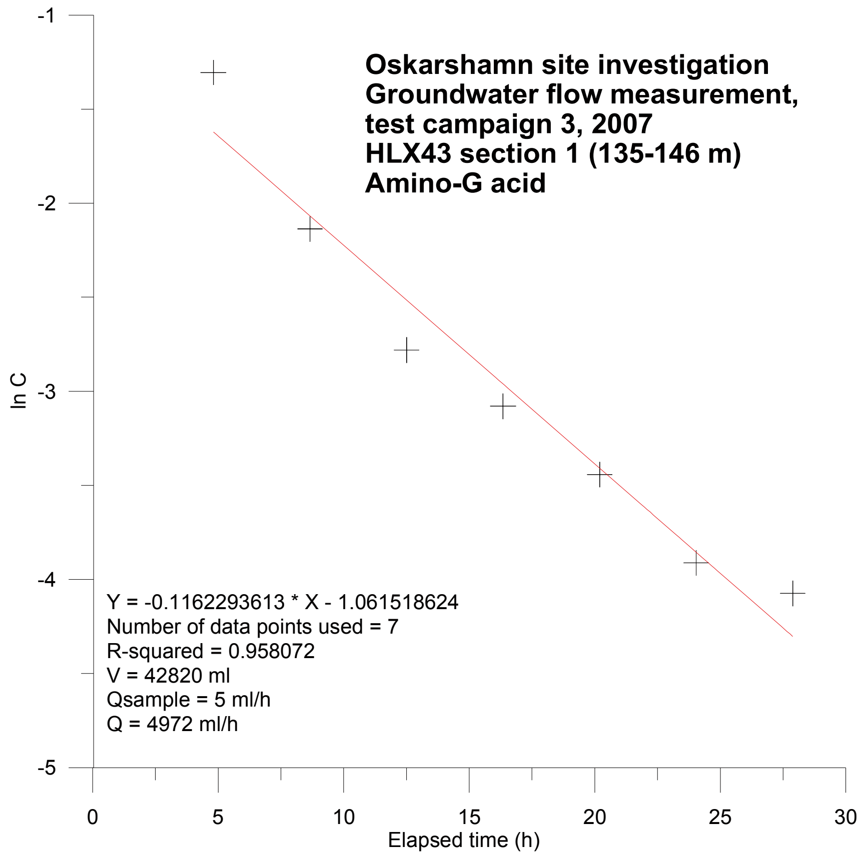
Groundwater flow measurement,
test campaign 3, 2007
HLX32 section 2 (20-30 m)
Amino-G acid
Y = -0.02656034414 * X + 0.2634040816
Number of data points used = 25
R-squared = 0.989316
V = 33420 ml
Qsample = 6 ml/h
Q = 882 ml/h
ln C
Elapsed time (h)
0
-1
-2
-3
20
40
60
80
100
120

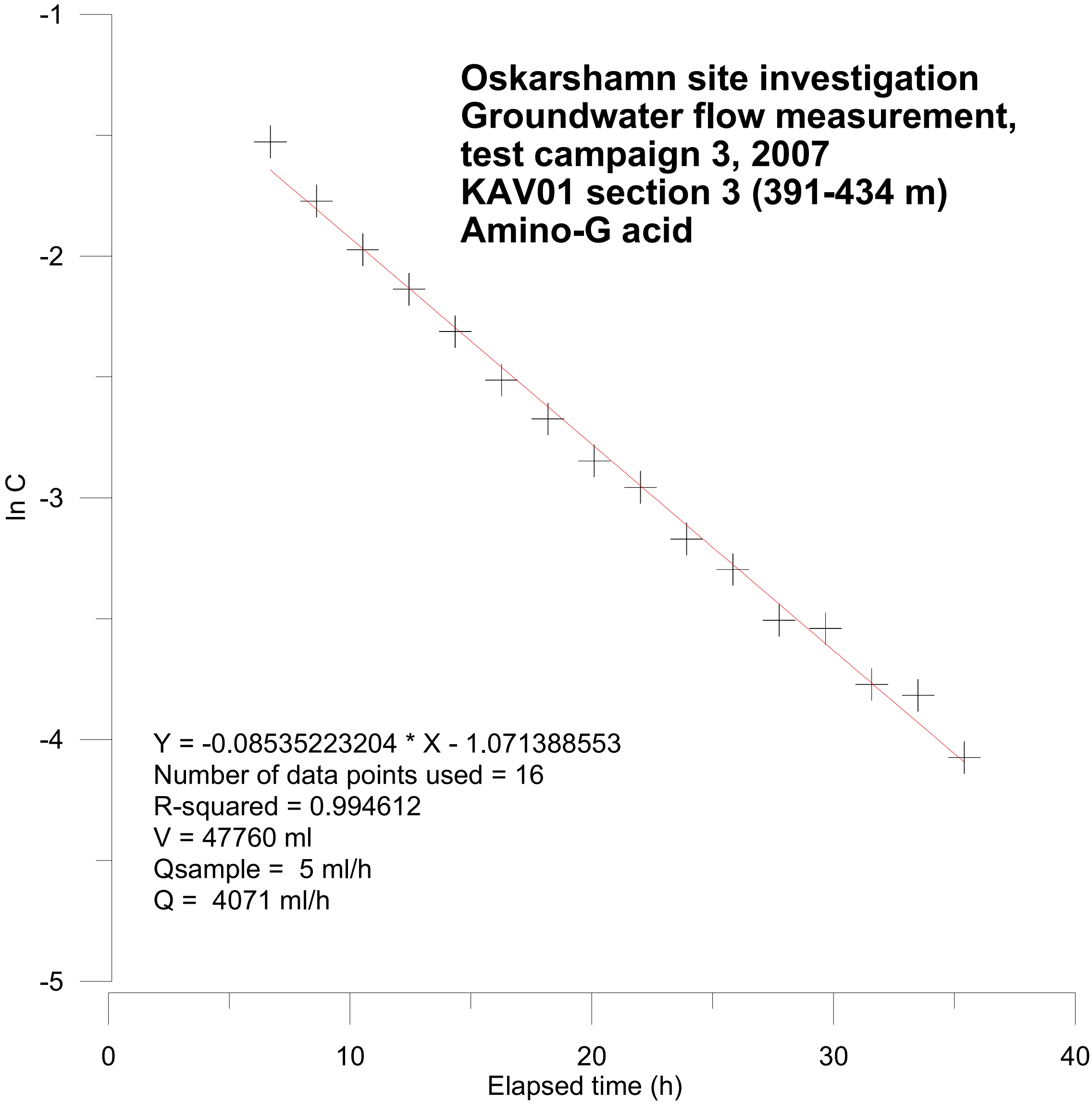


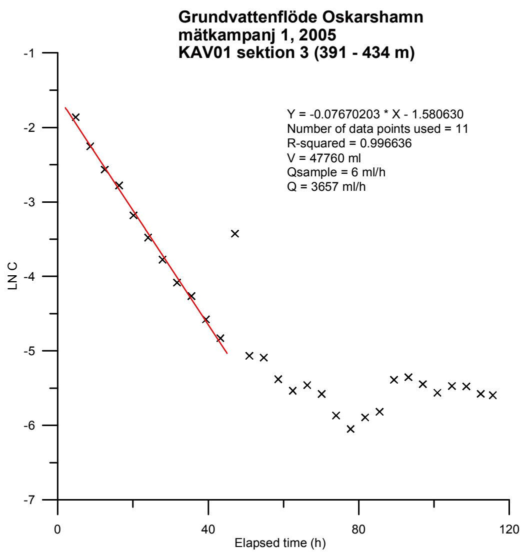
Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
HLX35 section 2 (120-130 m)
Amino-G acid
Y = -0.1141909662 * X - 0.6241564049
Number of data points used = 8
R-squared = 0.977281
V = 38460 ml
Qsample = 6 ml/h
Q = 4386 ml/h
ln C
Elapsed time (h)
0
-1
-2
-3
-4
-5
0
10
20
30
40

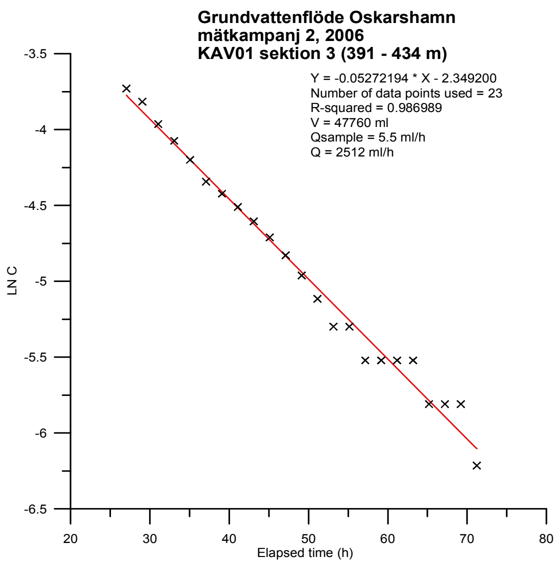

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
HLX37 section 3 (95-110 m)
Amino-G acid
Y = -0.001522897917 * X - 0.6223672121
Number of data points used = 33
R-squared = 0.983801
V = 50430 ml
Qsample = 4 ml/h
Q = 73 ml/h
ln C
Elapsed time (h)
-0.6
-0.65
-0.7
-0.75
-0.8
-0.85
0
40
80
120
160

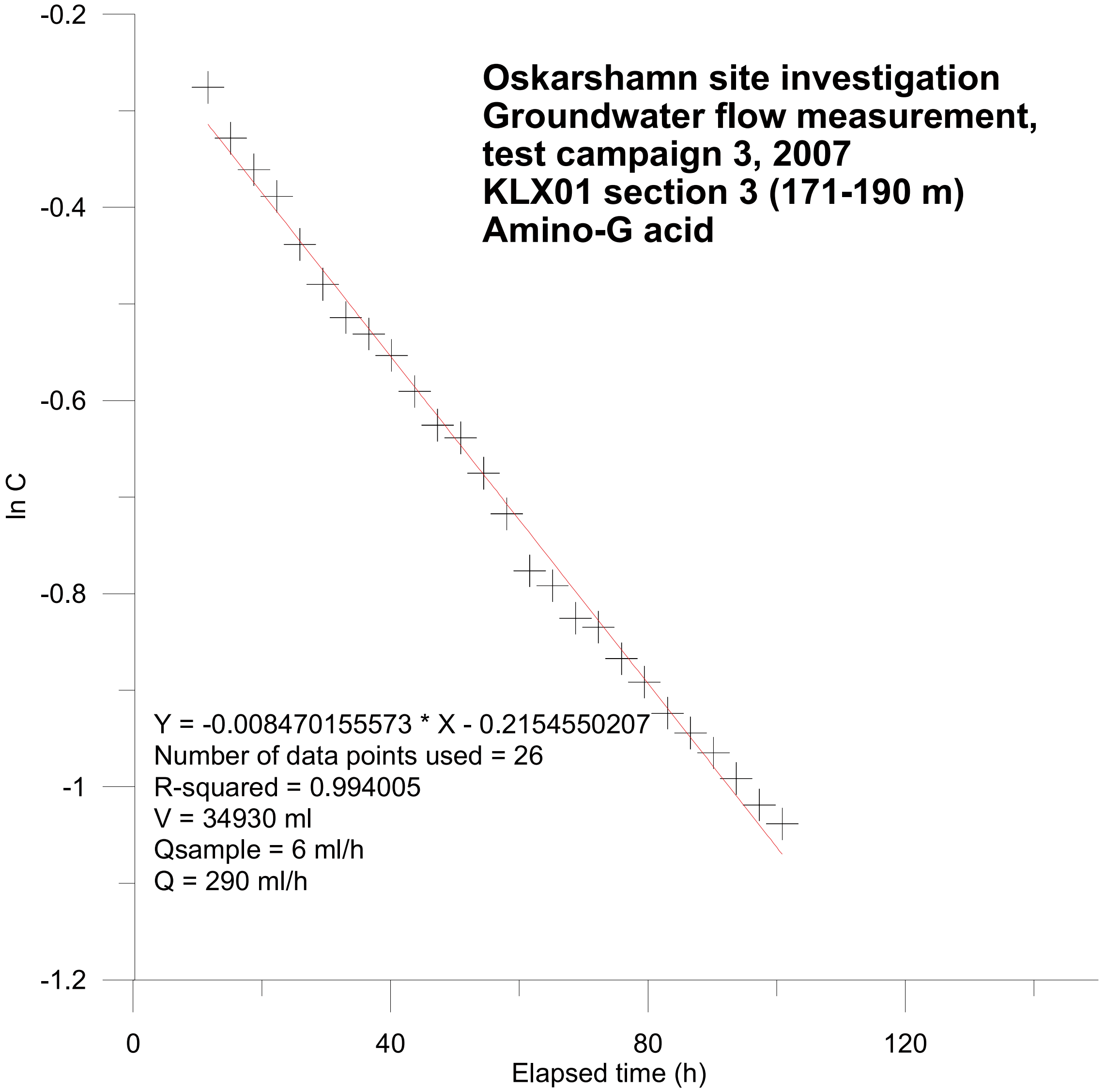

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
HLX39 section 1 (187-199 m)
Amino-G acid
Y = -0.001335685482 * X + 0.2862516409
Number of data points used = 17
R-squared = 0.969271
V = 66980 ml
Qsample = 5 ml/h
Q = 84 ml/h
ln C
Elapsed time (h)
0.28
0.26
0.24
0.22
0.2
0.18
0
20
40
60
80

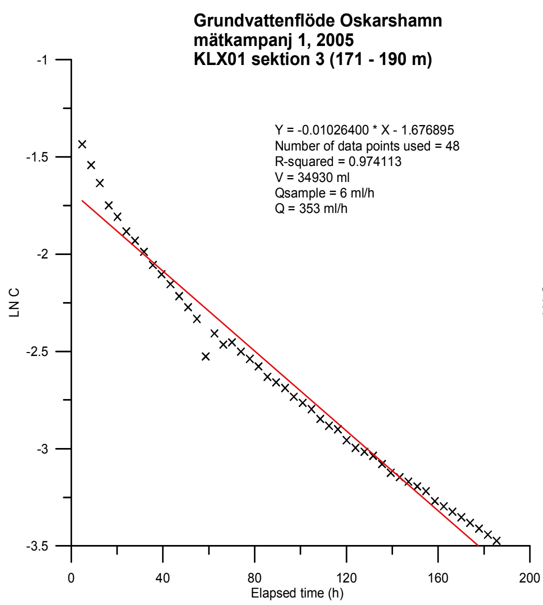

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
HLX43 section 1 (135-146 m)
Amino-G acid
Y = -0.1162293613 * X - 1.061518624
Number of data points used = 7
R-squared = 0.958072
V = 42820 ml
Qsample = 5 ml/h
Q = 4972 ml/h
ln C
Elapsed time (h)
-1
-2
-3
-4
-5
0
5
10
15
20
25
30

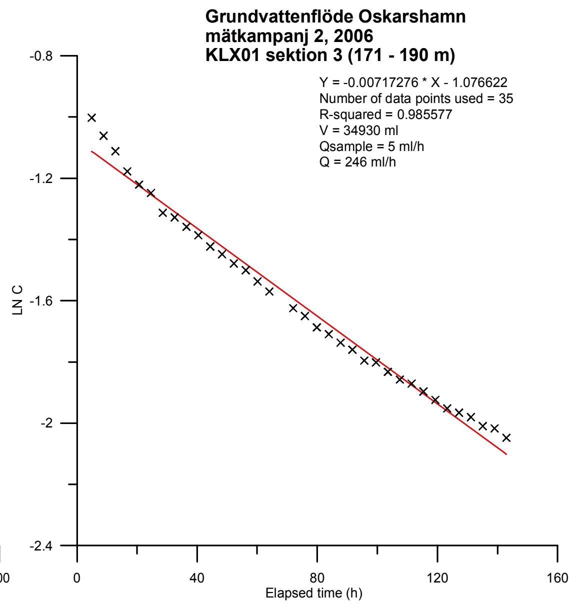

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KAV01 section 3 (391-434 m)
Amino-G acid
Y = -0.08535223204 * X - 1.071388553
Number of data points used = 16
R-squared = 0.994612
V = 47760 ml
Qsample = 5 ml/h
Q = 4071 ml/h
ln C
-1
-2
-3
-4
-5
0
10
20
30
40
Elapsed time (h)

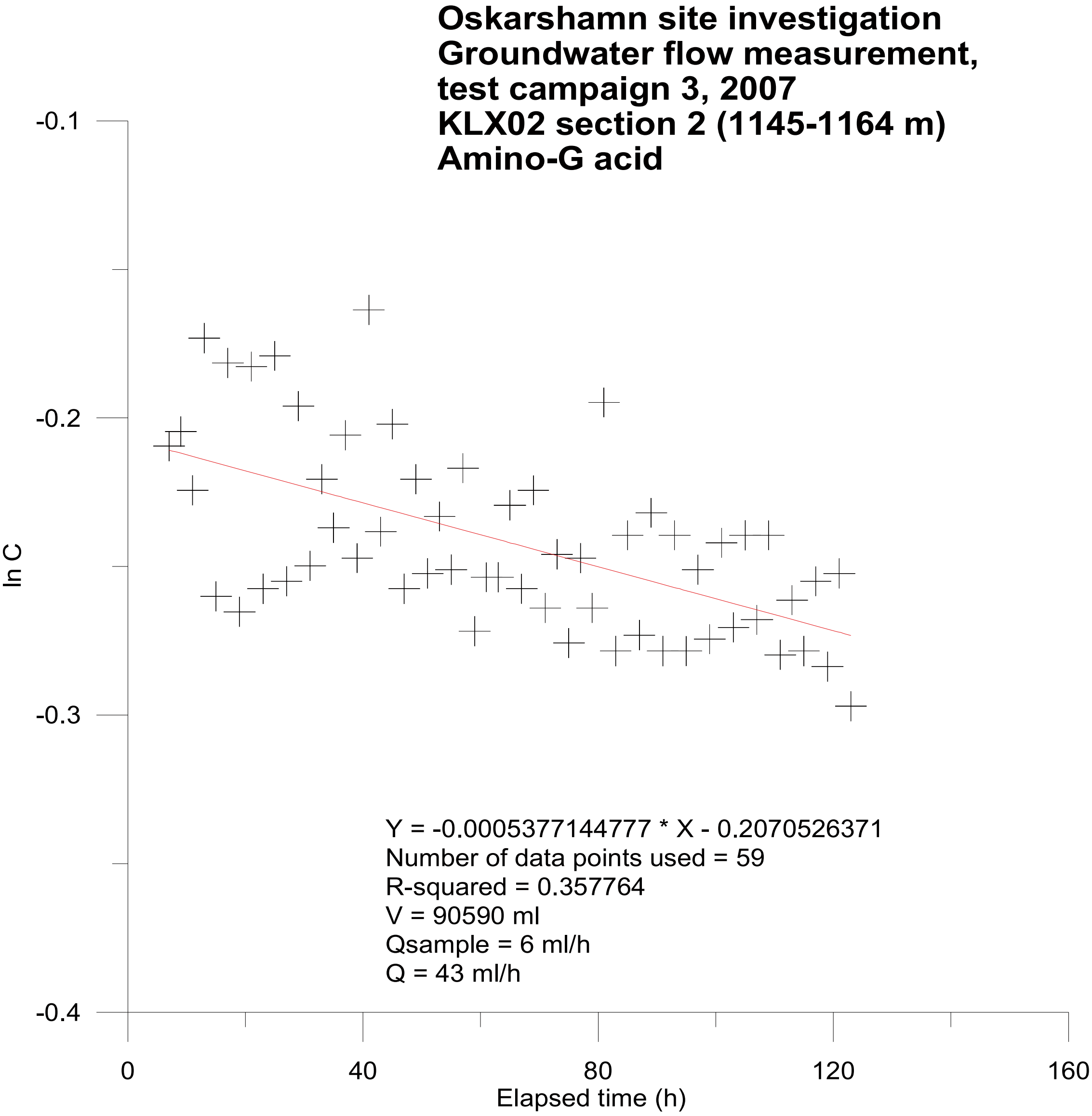

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KAV01 sektion 3 (391 - 434 m)
Y = -0.07670203 * X - 1.580630
Number of data points used = 11
R-squared = 0.996636
V = 47760 ml
Qsample = 6 ml/h
Q = 3657 ml/h
LN C
-1
-2
-3
-4
-5
-6
-7
0
40
80
120
Elapsed time (h)

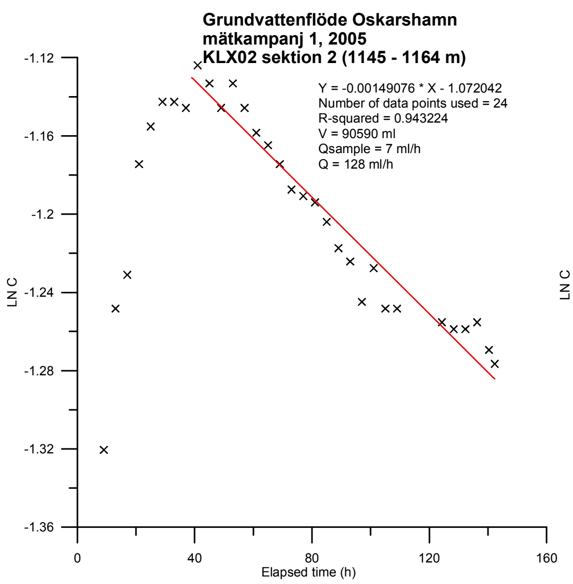

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KAV01 sektion 3 (391 - 434 m)
Y = -0.05272194 * X - 2.349200
Number of data points used = 23
R-squared = 0.986989
V = 47760 ml
Qsample = 5.5 ml/h
Q = 2512 ml/h
LN C
-3.5
-4
-4.5
-5
-5.5
-6
-6.5
20
30
40
50
60
70
80
Elapsed time (h)

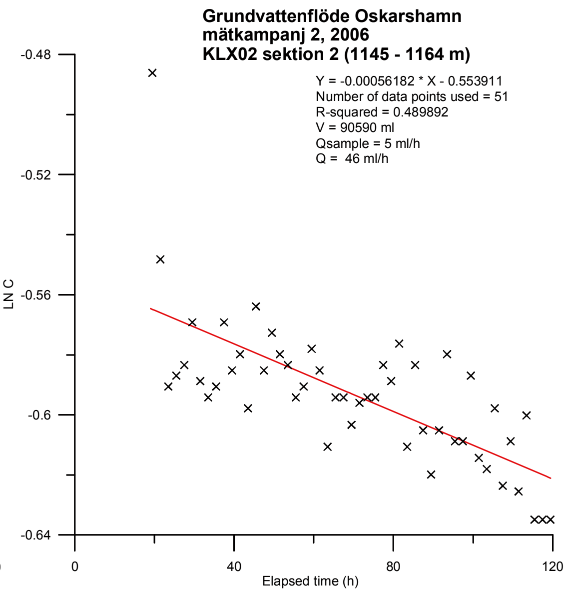

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX01 section 3 (171-190 m)
Amino-G acid
Y = -0.008470155573 * X - 0.2154550207
Number of data points used = 26
R-squared = 0.994005
V = 34930 ml
Qsample = 6 ml/h
Q = 290 ml/h
ln C
Elapsed time (h)
-0.2
-0.4
-0.6
-0.8
-1
-1.2
0
40
80
120

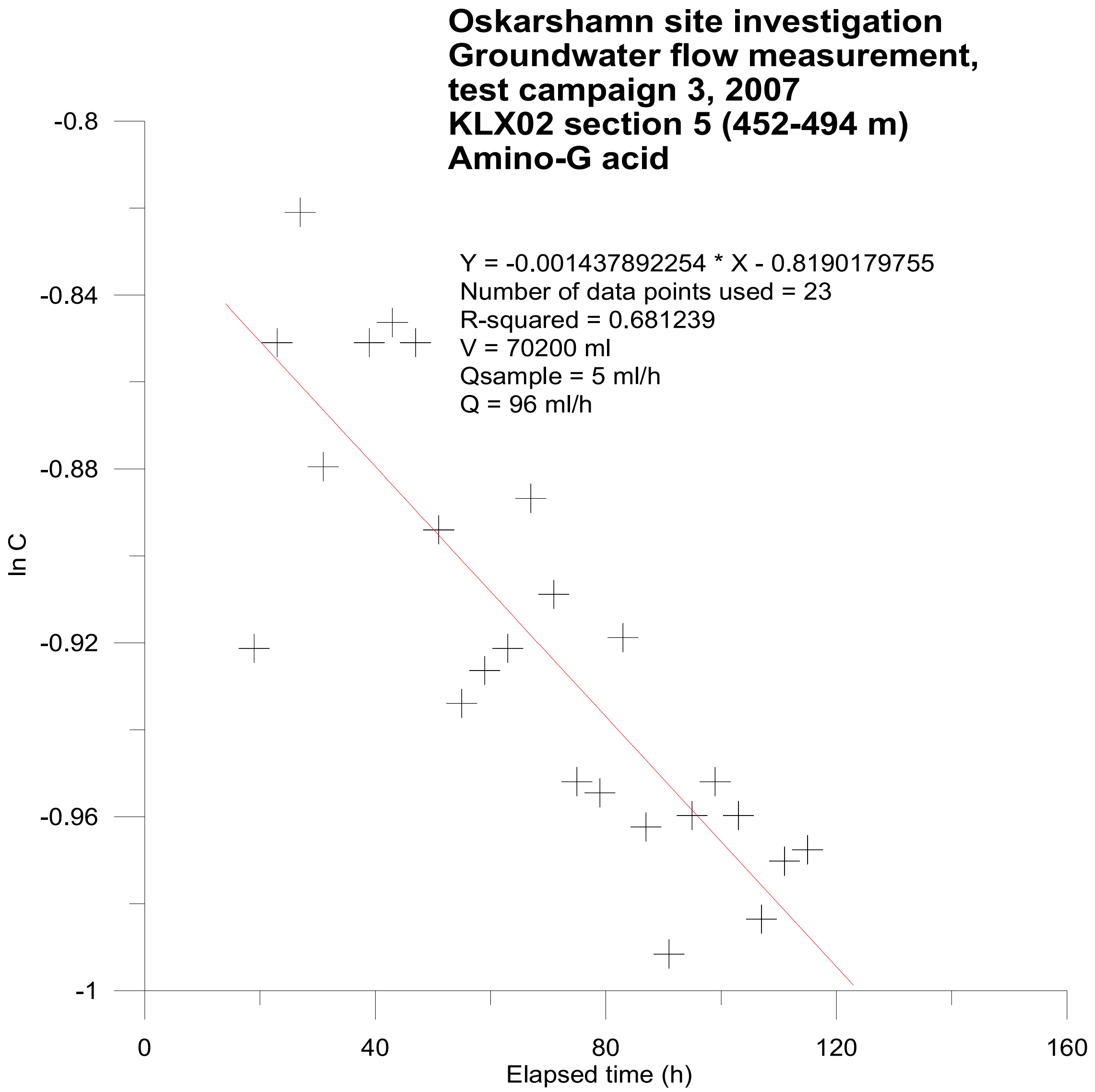

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX01 sektion 3 (171 - 190 m)
Y = -0.01026400 * X - 1.676895
Number of data points used = 48
R-squared = 0.974113
V = 34930 ml
Qsample = 6 ml/h
Q = 353 ml/h
LN C
Elapsed time (h)
-1
-1.5
-2
-2.5
-3
-3.5
0
40
80
120
160
200

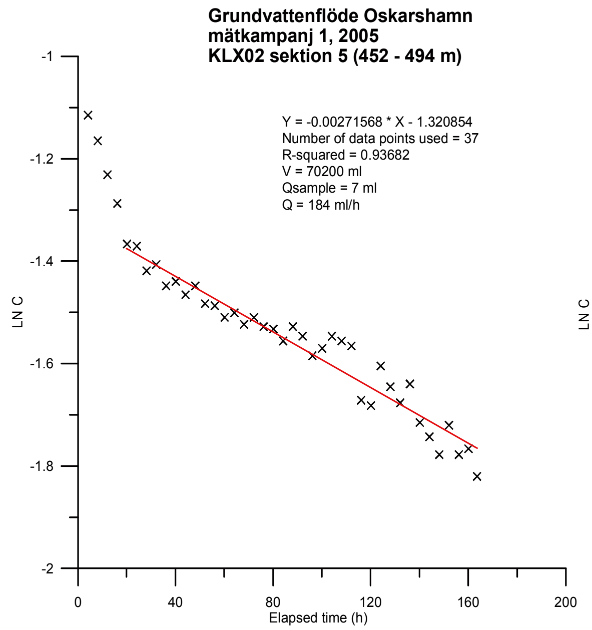

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX01 sektion 3 (171 - 190 m)
Y = -0.00717276 * X - 1.076622
Number of data points used = 35
R-squared = 0.985577
V = 34930 ml
Qsample = 5 ml/h
Q = 246 ml/h
LN C
Elapsed time (h)
-0.8
-1.2
-1.6
-2
-2.4
0
40
80
120
160

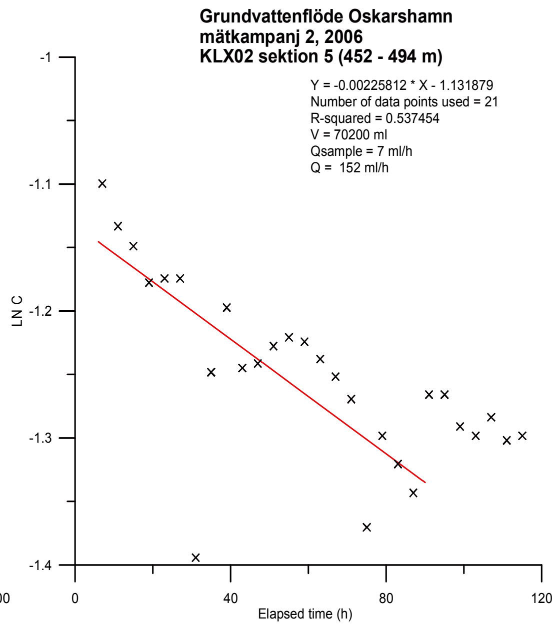

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX02 section 2 (1145-1164 m)
Amino-G acid
Y = -0.0005377144777 * X - 0.2070526371
Number of data points used = 59
R-squared = 0.357764
V = 90590 ml
Qsample = 6 ml/h
Q = 43 ml/h
ln C
-0.1
-0.2
-0.3
-0.4
0
40
80
120
160
Elapsed time (h)

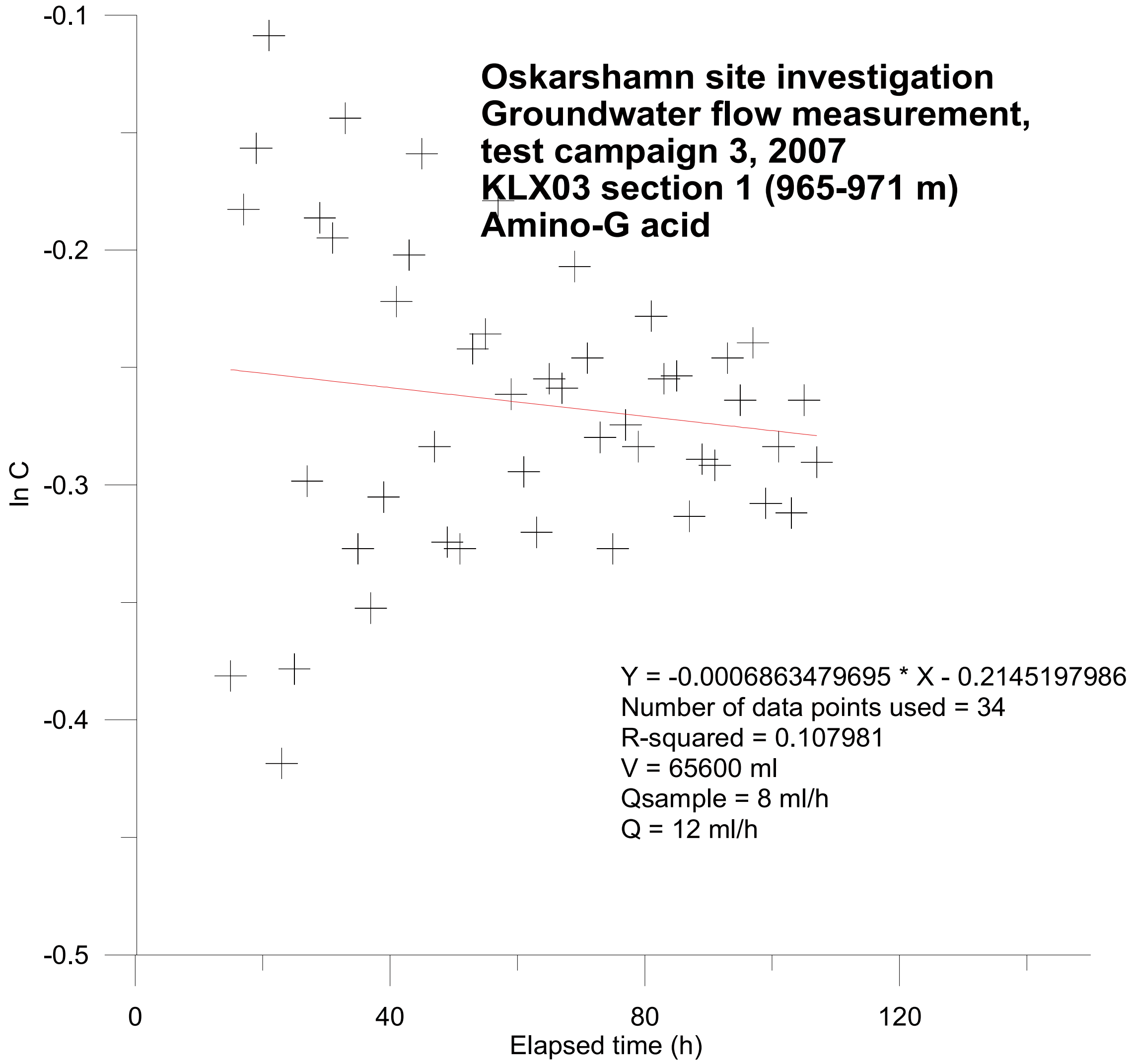

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX02 sektion 2 (1145 - 1164 m)
Y = -0.00149076 * X - 1.072042
Number of data points used = 24
R-squared = 0.943224
V = 90590 ml
Qsample = 7 ml/h
Q = 128 ml/h
LN C
-1.12
-1.16
-1.2
-1.24
-1.28
-1.32
-1.36
0
40
80
120
160
Elapsed time (h)

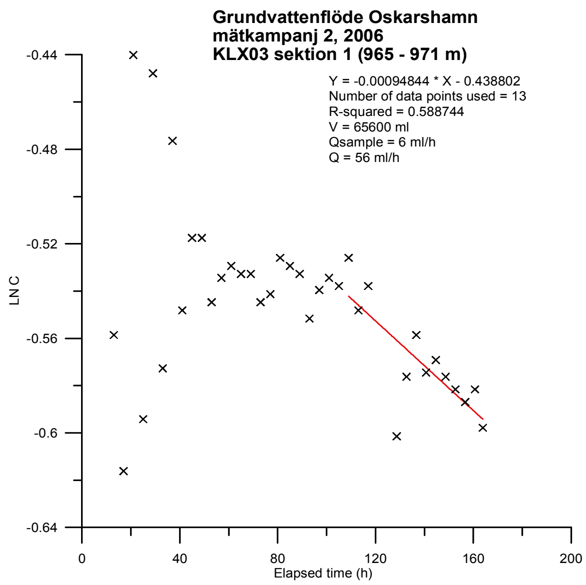

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX02 sektion 2 (1145 - 1164 m)
Y = -0.00056182 * X - 0.553911
Number of data points used = 51
R-squared = 0.489892
V = 90590 ml
Qsample = 5 ml/h
Q = 46 ml/h
LN C
-0.48
-0.52
-0.56
-0.6
-0.64
0
40
80
120
Elapsed time (h)

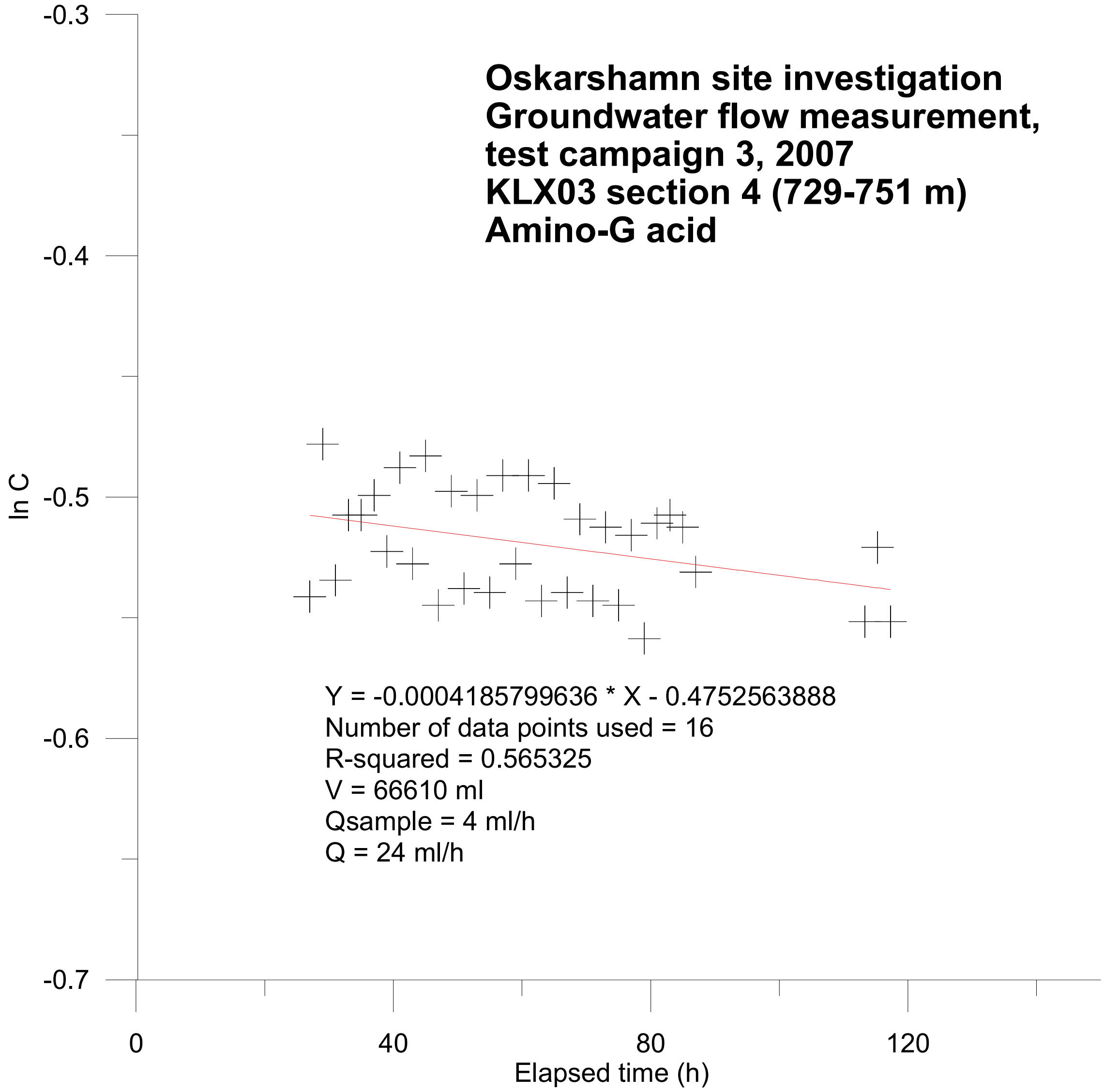

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX02 section 5 (452-494 m)
Amino-G acid
Y = -0.001437892254 * X - 0.8190179755
Number of data points used = 23
R-squared = 0.681239
V = 70200 ml
Qsample = 5 ml/h
Q = 96 ml/h
-0.8
-0.84
-0.88
-0.92
-0.96
-1
ln C
0
40
80
120
160
Elapsed time (h)

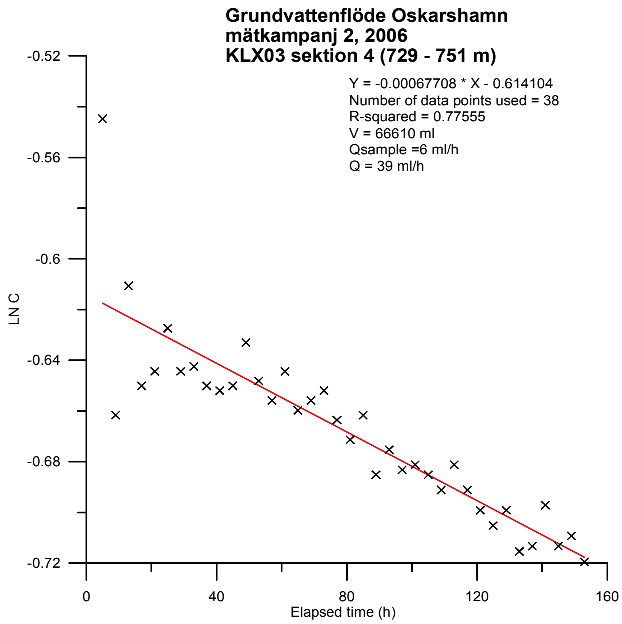

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX02 sektion 5 (452 - 494 m)
Y = -0.00271568 * X - 1.320854
Number of data points used = 37
R-squared = 0.93682
V = 70200 ml
Qsample = 7 ml
Q = 184 ml/h
-1
-1.2
-1.4
-1.6
-1.8
-2
LN C
0
40
80
120
160
200
Elapsed time (h)

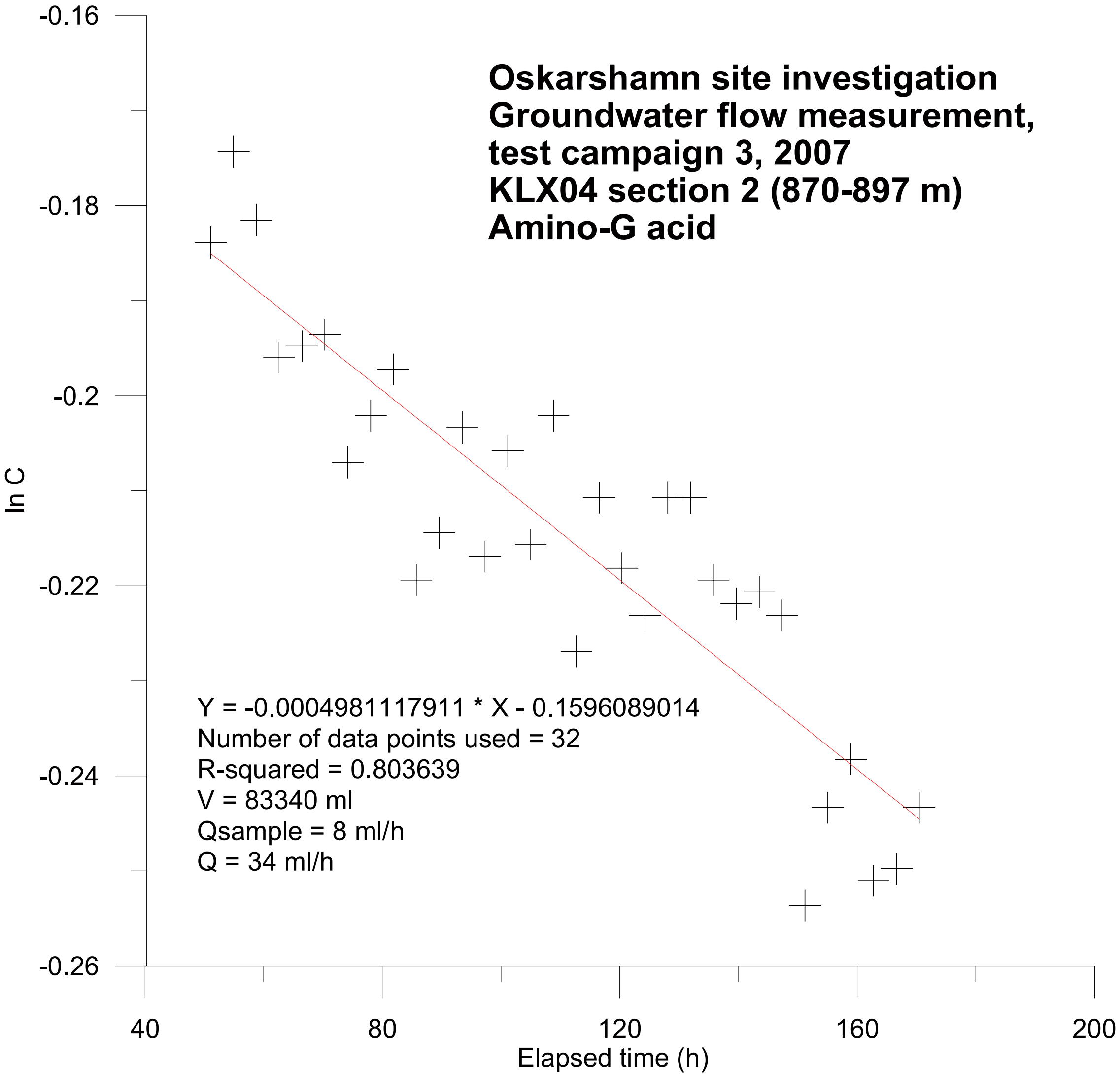

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX02 sektion 5 (452 - 494 m)
Y = -0.00225812 * X - 1.131879
Number of data points used = 21
R-squared = 0.537454
V = 70200 ml
Qsample = 7 ml/h
Q = 152 ml/h
-1
-1.1
-1.2
-1.3
-1.4
LN C
0
40
80
120
Elapsed time (h)

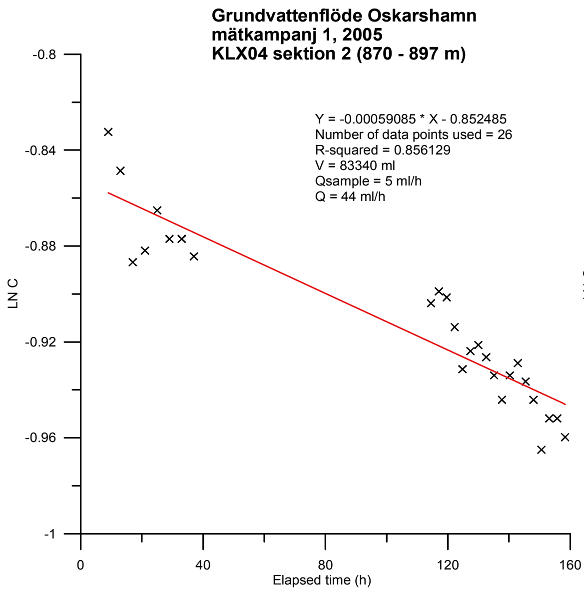

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX03 section 1 (965-971 m)
Amino-G acid
Y = -0.0006863479695 * X - 0.2145197986
Number of data points used = 34
R-squared = 0.107981
V = 65600 ml
Qsample = 8 ml/h
Q = 12 ml/h
ln C
-0.1
-0.2
-0.3
-0.4
-0.5
0
40
80
120
Elapsed time (h)

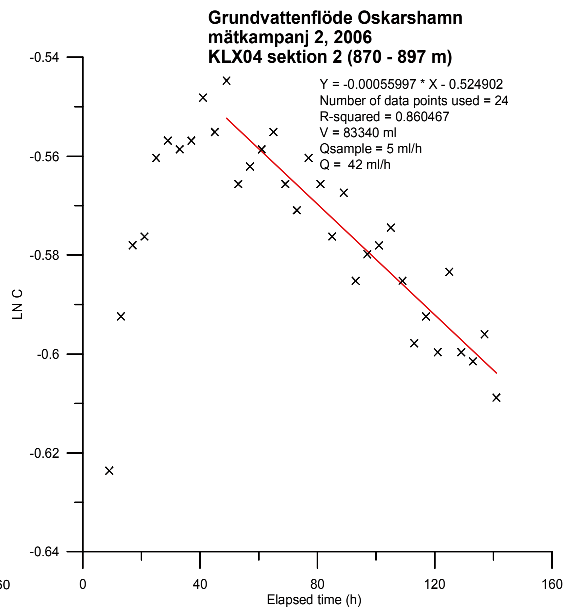

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX03 sektion 1 (965 - 971 m)
Y = -0.00094844 * X - 0.438802
Number of data points used = 13
R-squared = 0.588744
V = 65600 ml
Qsample = 6 ml/h
Q = 56 ml/h
LN C
-0.44
-0.48
-0.52
-0.56
-0.6
-0.64
0
40
80
120
160
200
Elapsed time (h)

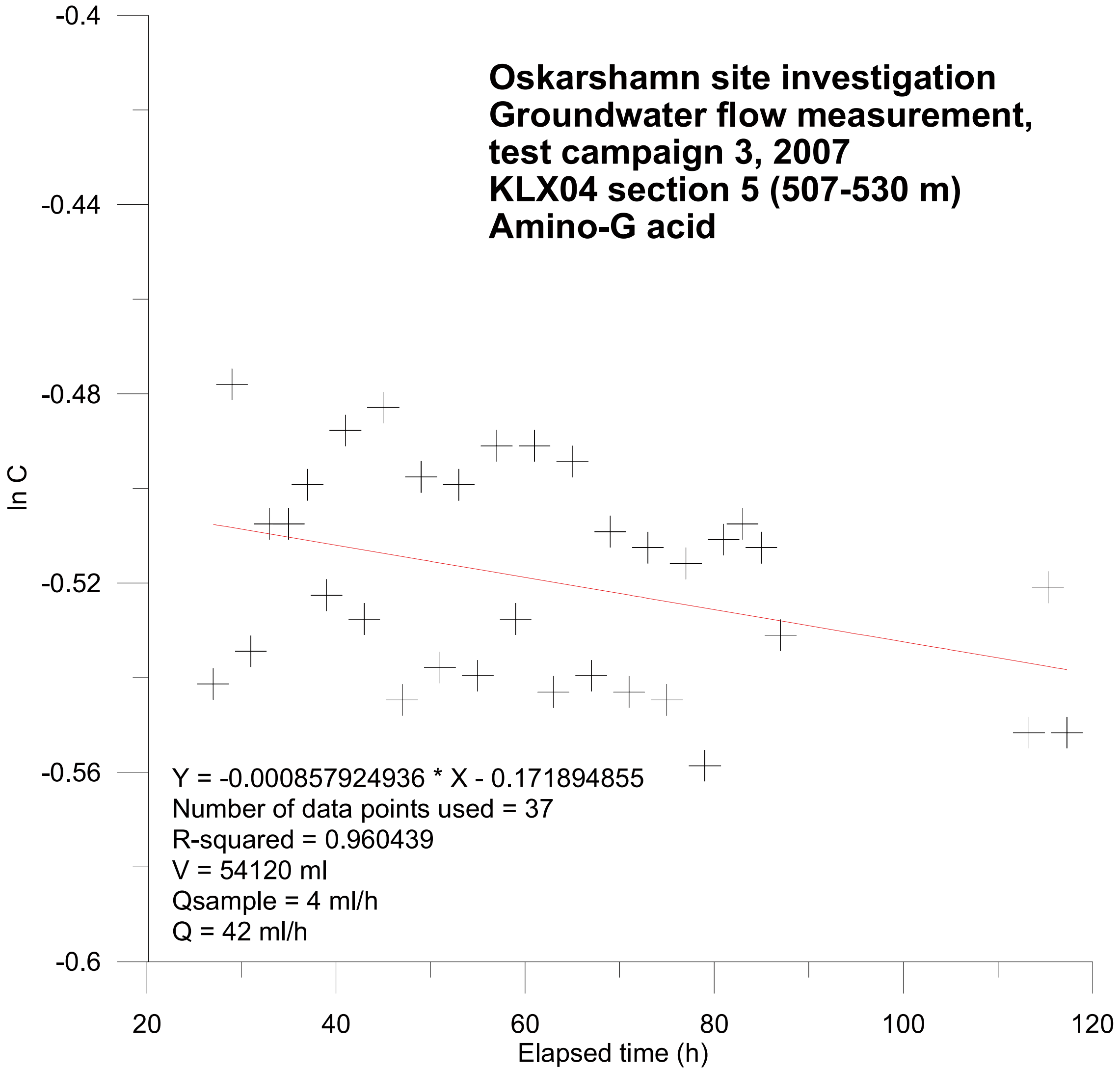

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX03 section 4 (729-751 m)
Amino-G acid
Y = -0.0004185799636 * X - 0.4752563888
Number of data points used = 16
R-squared = 0.565325
V = 66610 ml
Qsample = 4 ml/h
Q = 24 ml/h
ln C
-0.3
-0.4
-0.5
-0.6
-0.7
0
40
80
120
Elapsed time (h)

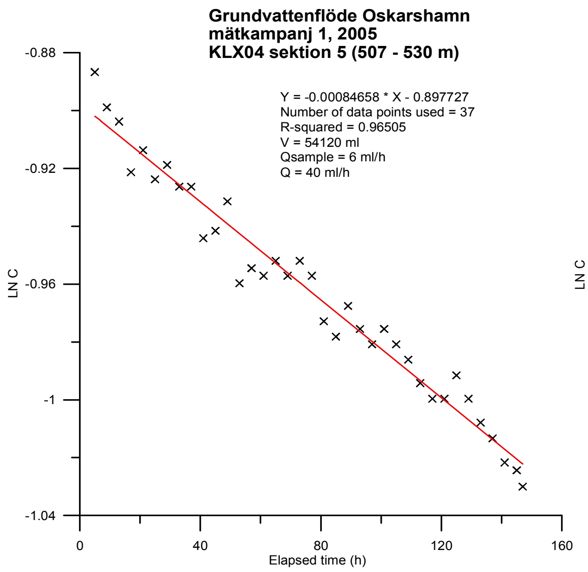

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX03 sektion 4 (729 - 751 m)
Y = -0.00067708 * X - 0.614104
Number of data points used = 38
R-squared = 0.77555
V = 66610 ml
Qsample =6 ml/h
Q = 39 ml/h
LN C
-0.52
-0.56
-0.6
-0.64
-0.68
-0.72
0
40
80
120
160
Elapsed time (h)

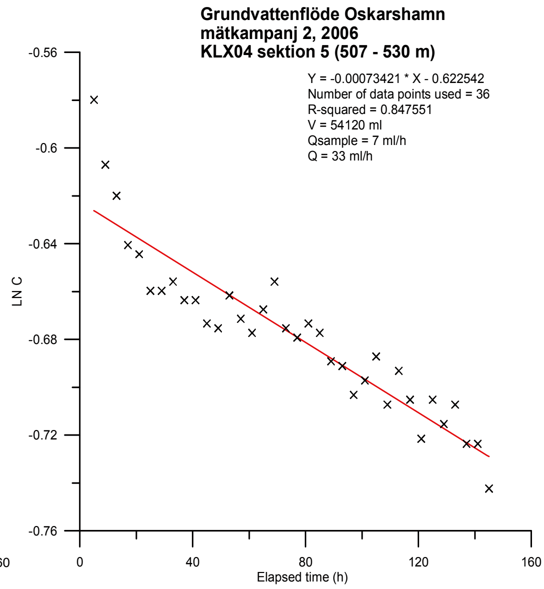

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX04 section 2 (870-897 m)
Amino-G acid
Y = -0.0004981117911 * X - 0.1596089014
Number of data points used = 32
R-squared = 0.803639
V = 83340 ml
Qsample = 8 ml/h
Q = 34 ml/h
ln C
Elapsed time (h)
-0.16
-0.18
-0.2
-0.22
-0.24
-0.26
40
80
120
160
200

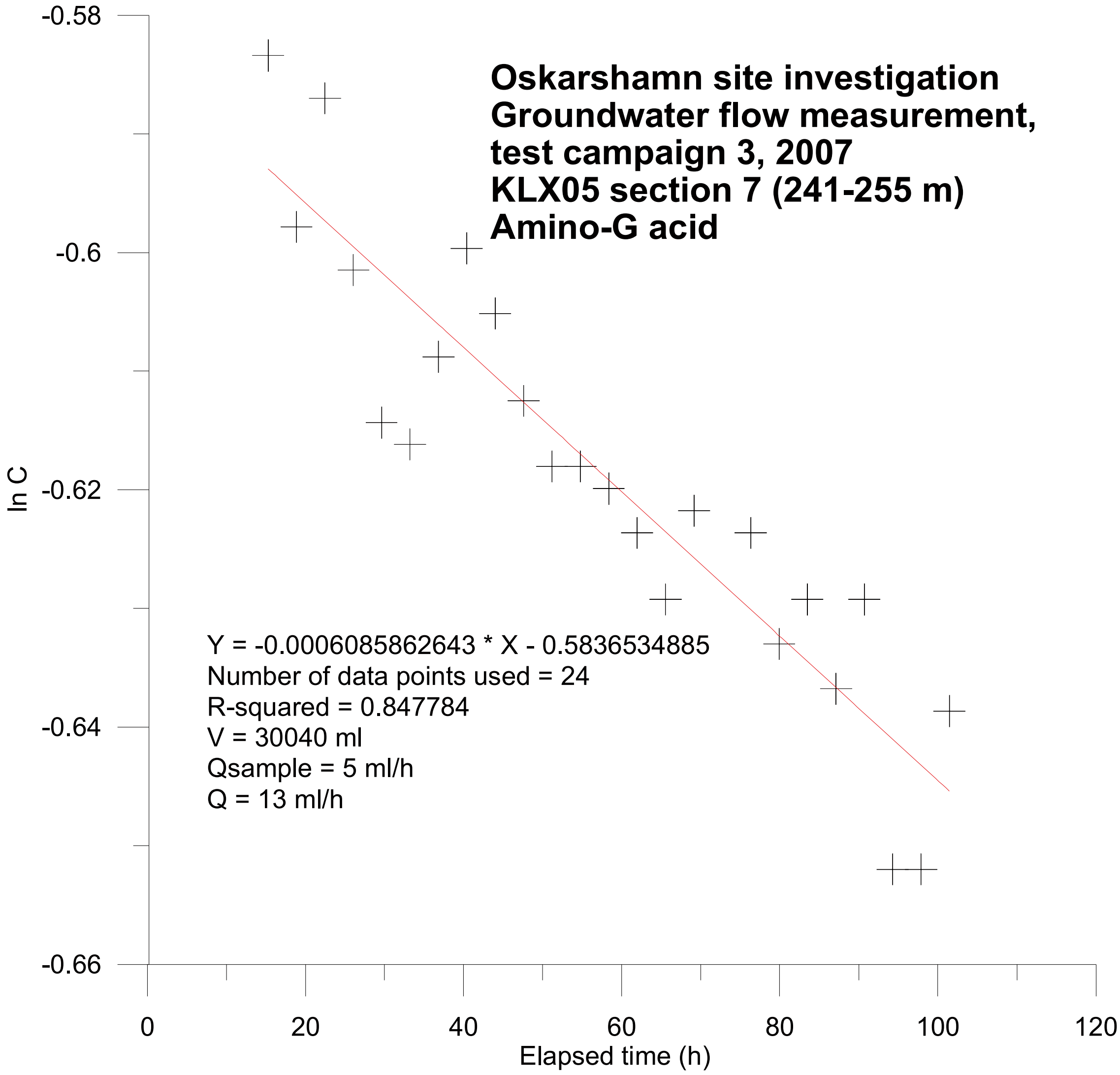

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX04 sektion 2 (870 - 897 m)
Y = -0.00059085 * X - 0.852485
Number of data points used = 26
R-squared = 0.856129
V = 83340 ml
Qsample = 5 ml/h
Q = 44 ml/h
LN C
Elapsed time (h)
-0.8
-0.84
-0.88
-0.92
-0.96
-1
0
40
80
120
160

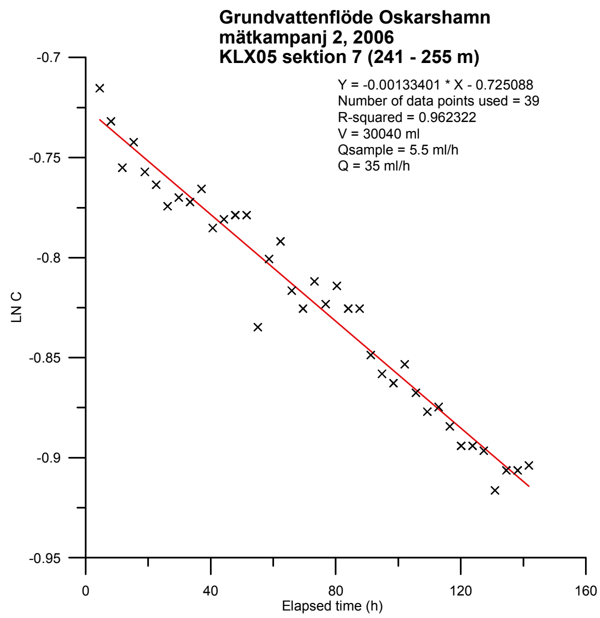

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX04 sektion 2 (870 - 897 m)
Y = -0.00055997 * X - 0.524902
Number of data points used = 24
R-squared = 0.860467
V = 83340 ml
Qsample = 5 ml/h
Q = 42 ml/h
LN C
Elapsed time (h)
-0.54
-0.56
-0.58
-0.6
-0.62
-0.64
0
40
80
120
160

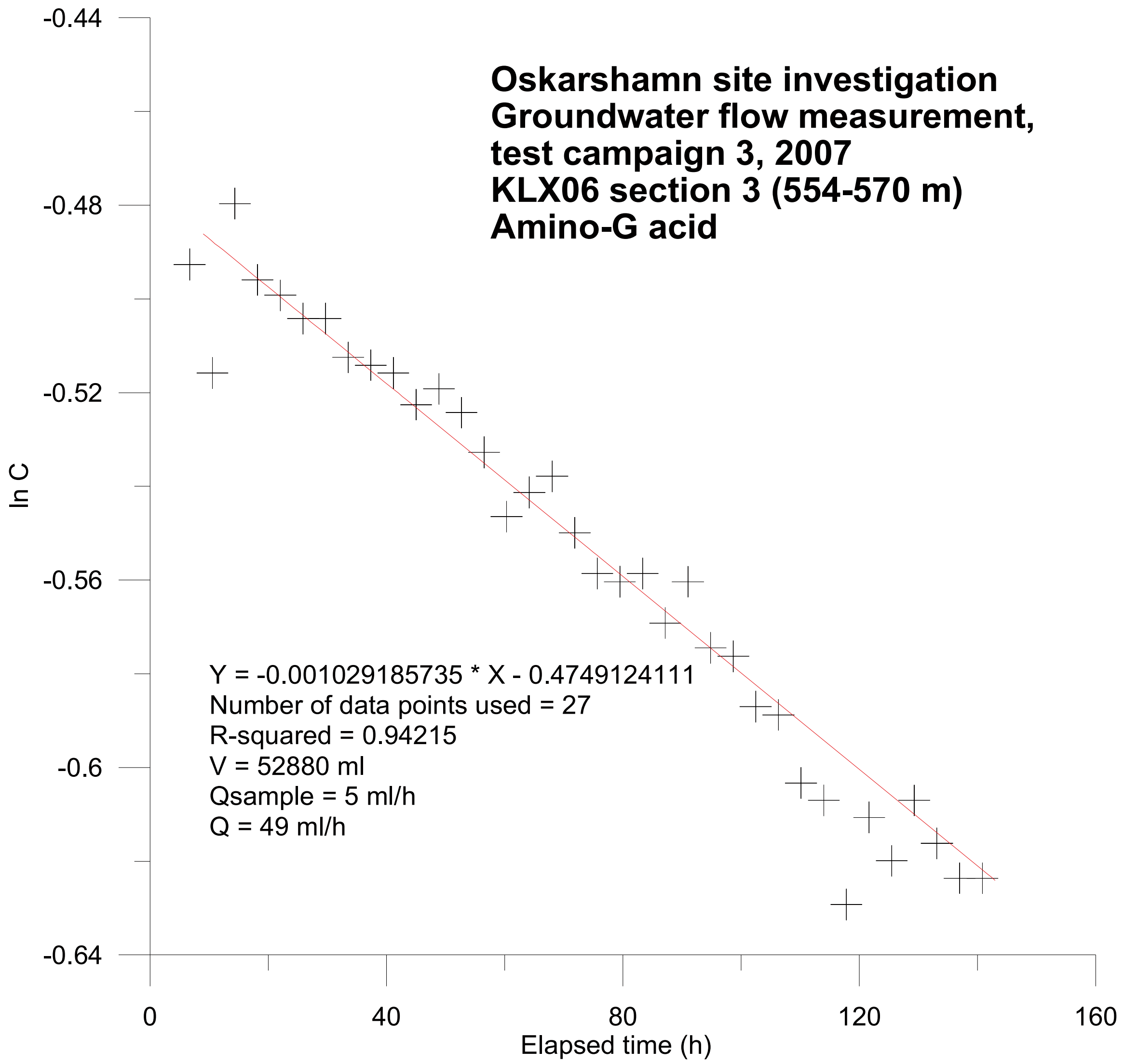

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX04 section 5 (507-530 m)
Amino-G acid
Y = -0.000857924936 * X - 0.171894855
Number of data points used = 37
R-squared = 0.960439
V = 54120 ml
Qsample = 4 ml/h
Q = 42 ml/h
ln C
Elapsed time (h)
-0.4
-0.44
-0.48
-0.52
-0.56
-0.6
20
40
60
80
100
120

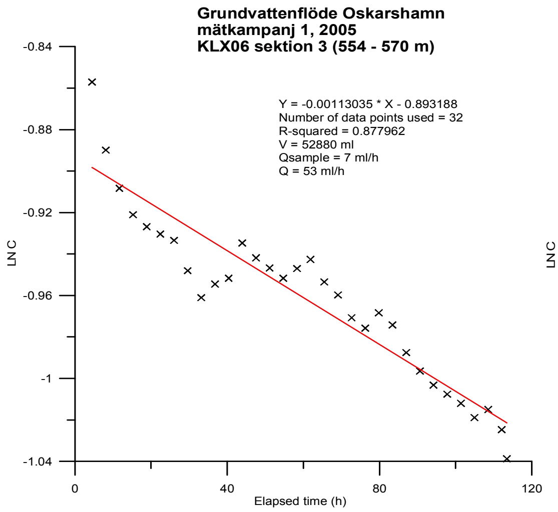

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX04 sektion 5 (507 - 530 m)
Y = -0.00084658 * X - 0.897727
Number of data points used = 37
R-squared = 0.96505
V = 54120 ml
Qsample = 6 ml/h
Q = 40 ml/h
LN C
Elapsed time (h)
-0.88
-0.92
-0.96
-1
-1.04
0
40
80
120
160

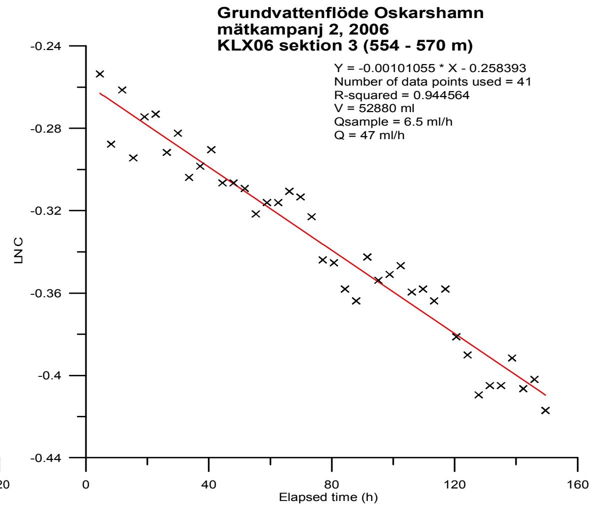

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX04 sektion 5 (507 - 530 m)
Y = -0.00073421 * X - 0.622542
Number of data points used = 36
R-squared = 0.847551
V = 54120 ml
Qsample = 7 ml/h
Q = 33 ml/h
LN C
Elapsed time (h)
-0.56
-0.6
-0.64
-0.68
-0.72
-0.76
0
40
80
120
160

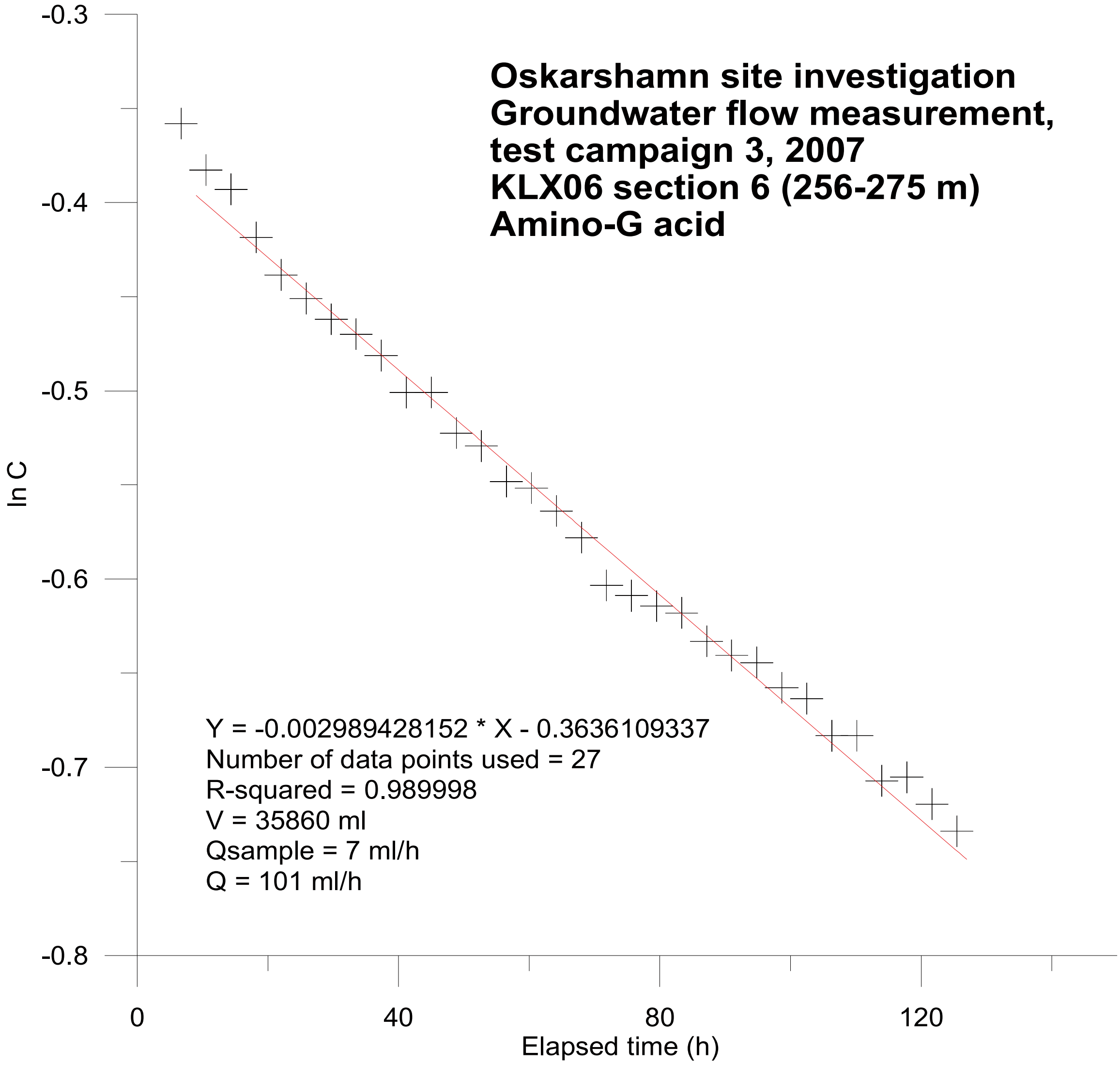

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX05 section 7 (241-255 m)
Amino-G acid
Y = -0.0006085862643 * X - 0.5836534885
Number of data points used = 24
R-squared = 0.847784
V = 30040 ml
Qsample = 5 ml/h
Q = 13 ml/h
ln C
Elapsed time (h)
-0.58
-0.6
-0.62
-0.64
-0.66
0
20
40
60
80
100
120

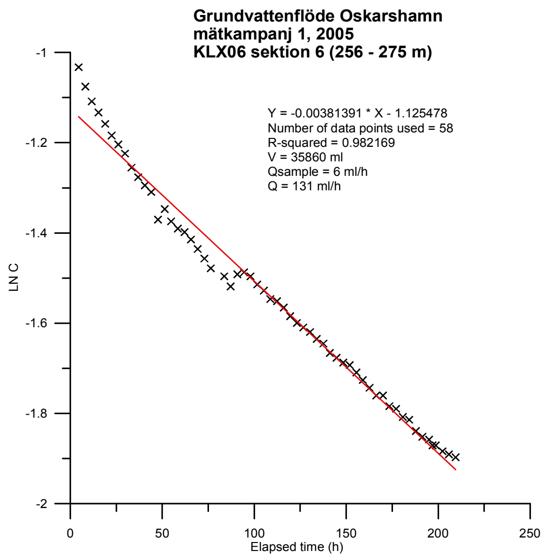

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX05 sektion 7 (241 - 255 m)
Y = -0.00133401 * X - 0.725088
Number of data points used = 39
R-squared = 0.962322
V = 30040 ml
Qsample = 5.5 ml/h
Q = 35 ml/h
LN C
Elapsed time (h)
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
0
40
80
120
160

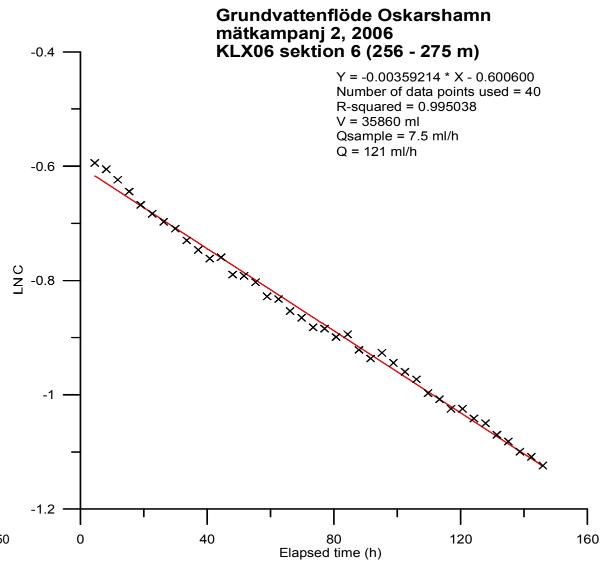

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX06 section 3 (554-570 m)
Amino-G acid
Y = -0.001029185735 * X - 0.4749124111
Number of data points used = 27
R-squared = 0.94215
V = 52880 ml
Qsample = 5 ml/h
Q = 49 ml/h
-0.44
-0.48
-0.52
-0.56
-0.6
-0.64
ln C
0
40
80
120
160
Elapsed time (h)

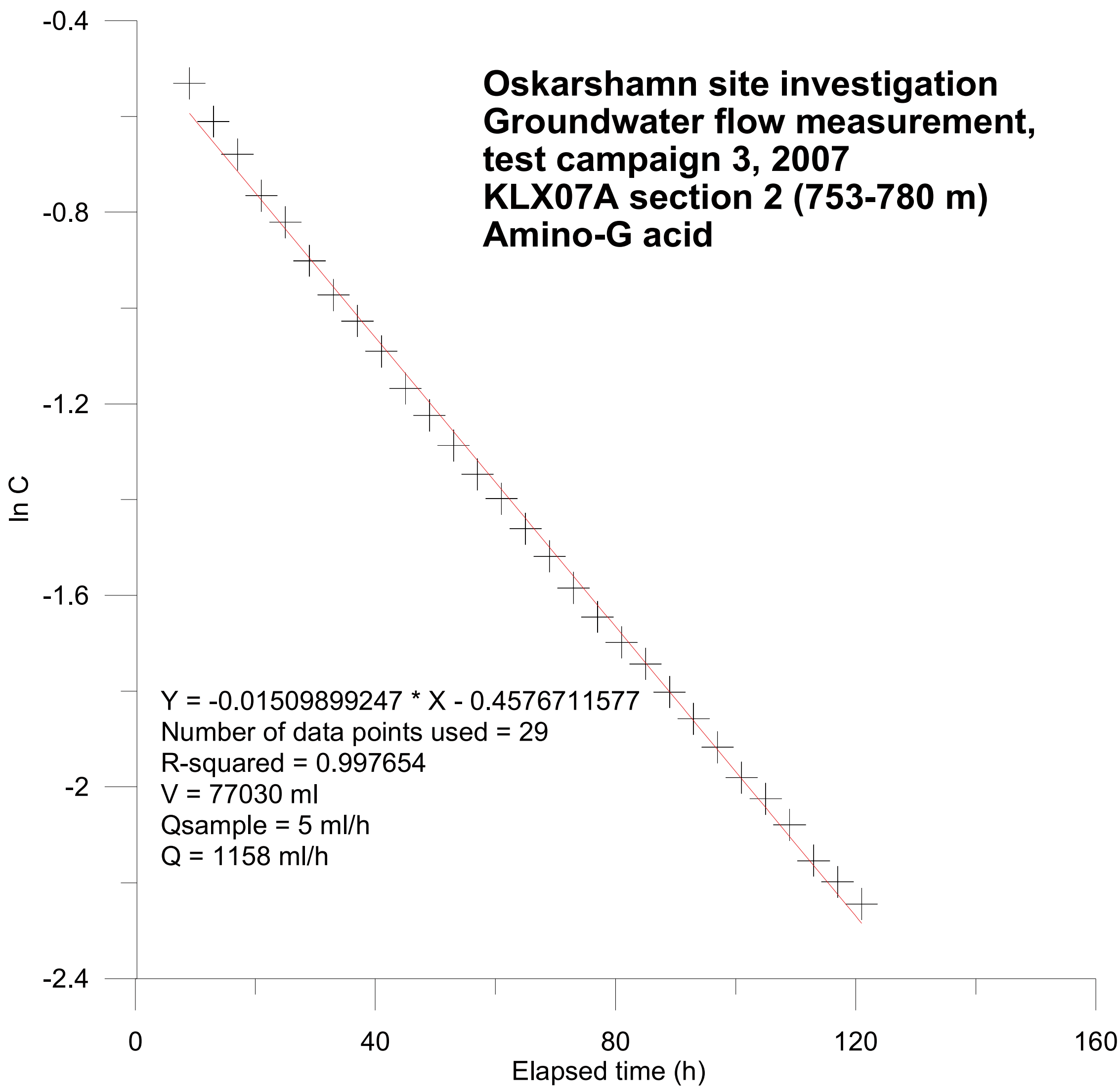

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX06 sektion 3 (554 - 570 m)
Y = -0.00113035 * X - 0.893188
Number of data points used = 32
R-squared = 0.877962
V = 52880 ml
Qsample = 7 ml/h
Q = 53 ml/h
-0.84
-0.88
-0.92
-0.96
-1
-1.04
LN C
0
40
80
120
Elapsed time (h)

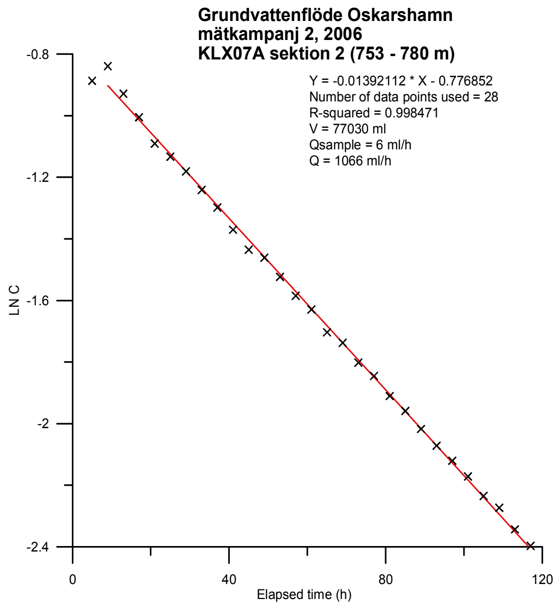

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX06 sektion 3 (554 - 570 m)
Y = -0.00101055 * X - 0.258393
Number of data points used = 41
R-squared = 0.944564
V = 52880 ml
Qsample = 6.5 ml/h
Q = 47 ml/h
-0.24
-0.28
-0.32
-0.36
-0.4
-0.44
LN C
0
40
80
120
160
Elapsed time (h)

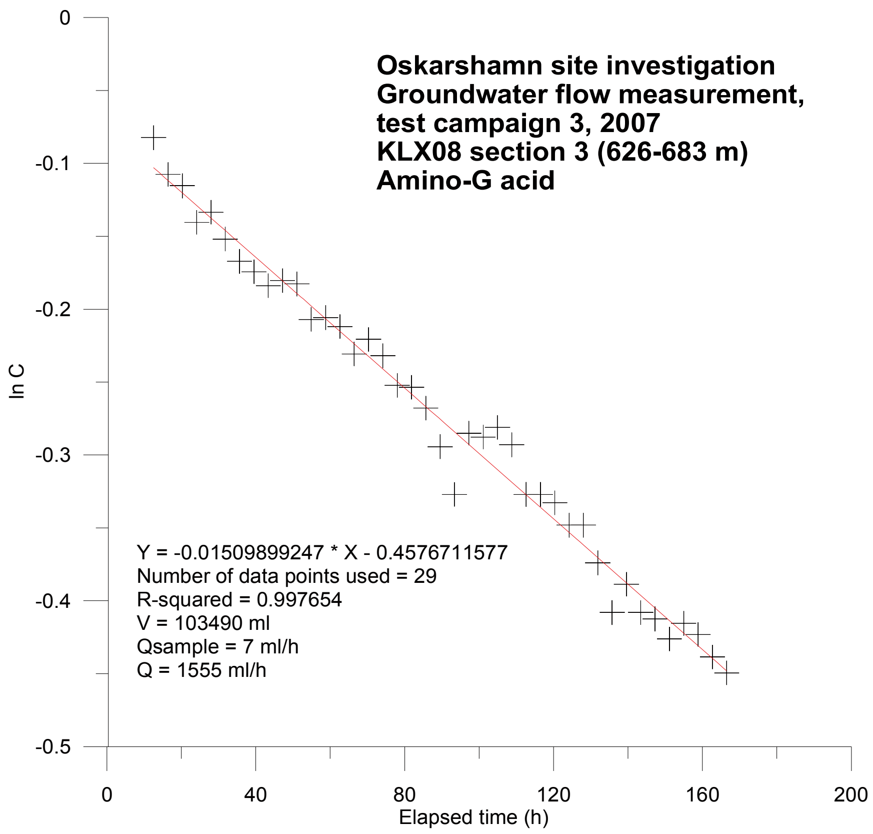

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX06 section 6 (256-275 m)
Amino-G acid
Y = -0.002989428152 * X - 0.3636109337
Number of data points used = 27
R-squared = 0.989998
V = 35860 ml
Qsample = 7 ml/h
Q = 101 ml/h
ln C
Elapsed time (h)
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
0
40
80
120

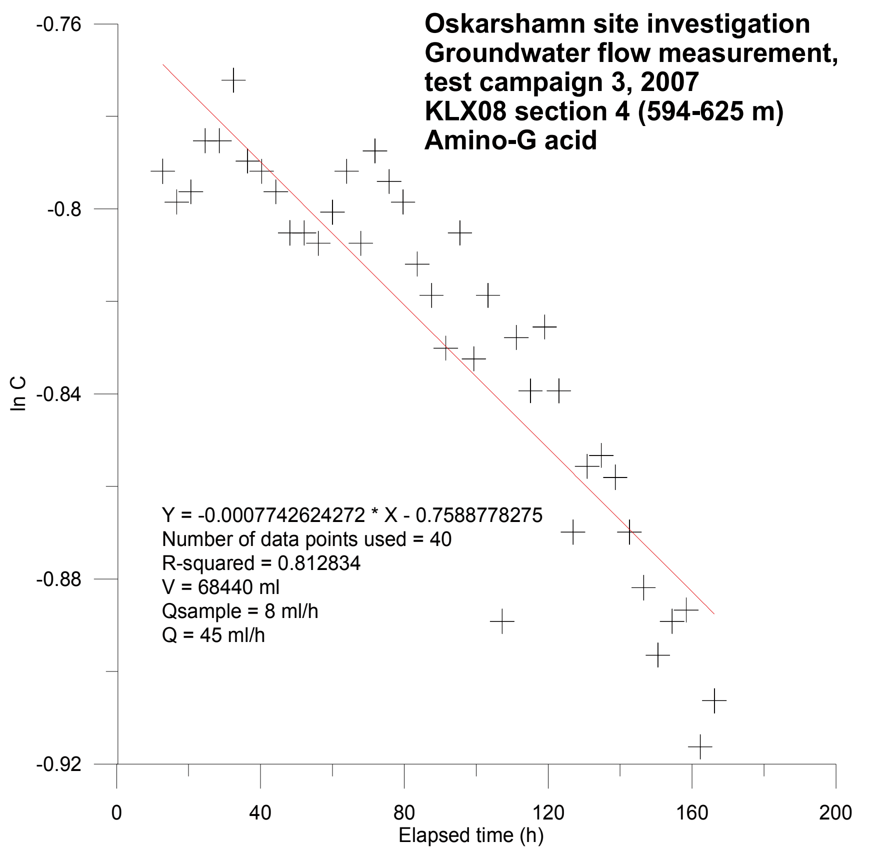

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KLX06 sektion 6 (256 - 275 m)
Y = -0.00381391 * X - 1.125478
Number of data points used = 58
R-squared = 0.982169
V = 35860 ml
Qsample = 6 ml/h
Q = 131 ml/h
LN C
Elapsed time (h)
-1
-1.2
-1.4
-1.6
-1.8
-2
0
50
100
150
200
250

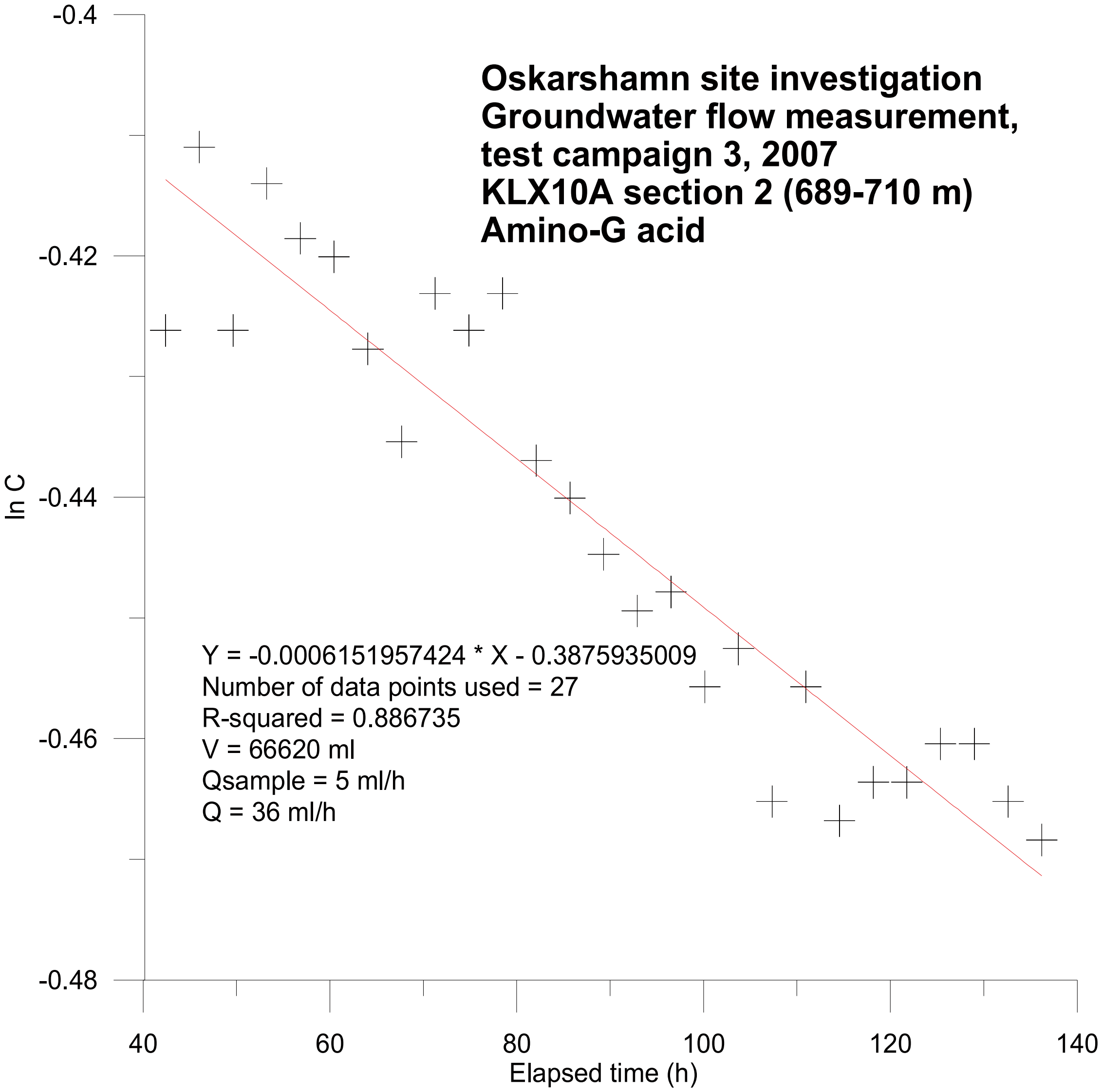

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX06 sektion 6 (256 - 275 m)
Y = -0.00359214 * X - 0.600600
Number of data points used = 40
R-squared = 0.995038
V = 35860 ml
Qsample = 7.5 ml/h
Q = 121 ml/h
LN C
Elapsed time (h)
-0.4
-0.6
-0.8
-1
-1.2
0
40
80
120
160

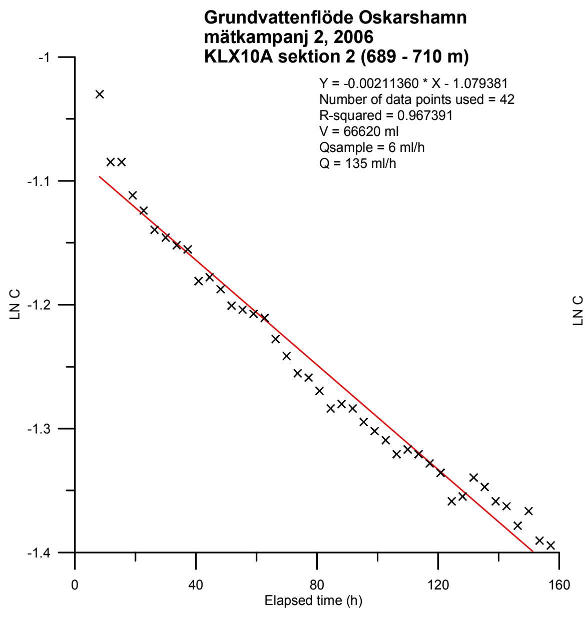

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX07A section 2 (753-780 m)
Amino-G acid
Y = -0.01509899247 * X - 0.4576711577
Number of data points used = 29
R-squared = 0.997654
V = 77030 ml
Qsample = 5 ml/h
Q = 1158 ml/h
ln C
Elapsed time (h)

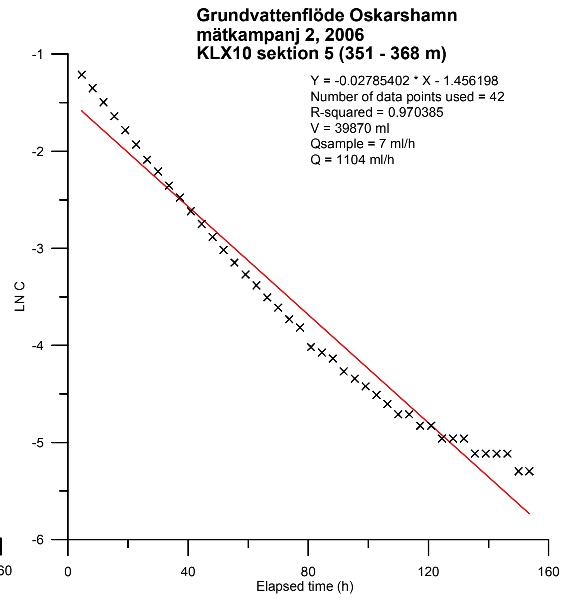

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX07A sektion 2 (753 - 780 m)
Y = -0.01392112 * X - 0.776852
Number of data points used = 28
R-squared = 0.998471
V = 77030 ml
Qsample = 6 ml/h
Q = 1066 ml/h
LN C
Elapsed time (h)

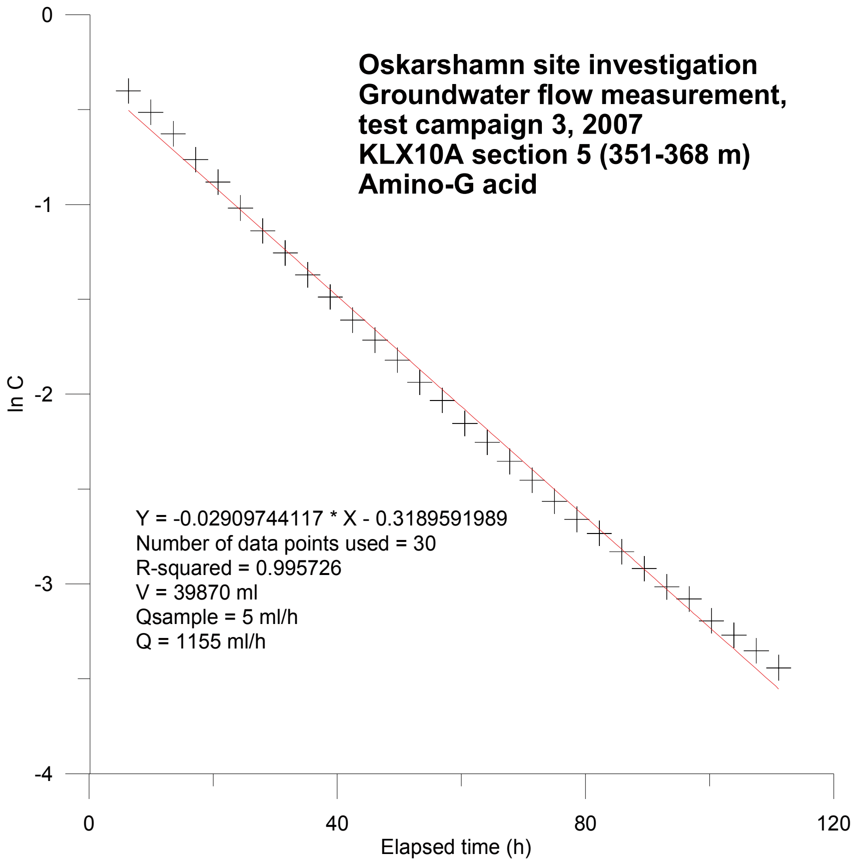

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX08 section 3 (626-683 m)
Amino-G acid
Y = -0.01509899247 * X - 0.4576711577
Number of data points used = 29
R-squared = 0.997654
V = 103490 ml
Qsample = 7 ml/h
Q = 1555 ml/h
ln C
0
-0.1
-0.2
-0.3
-0.4
-0.5
0
40
80
120
160
200
Elapsed time (h)

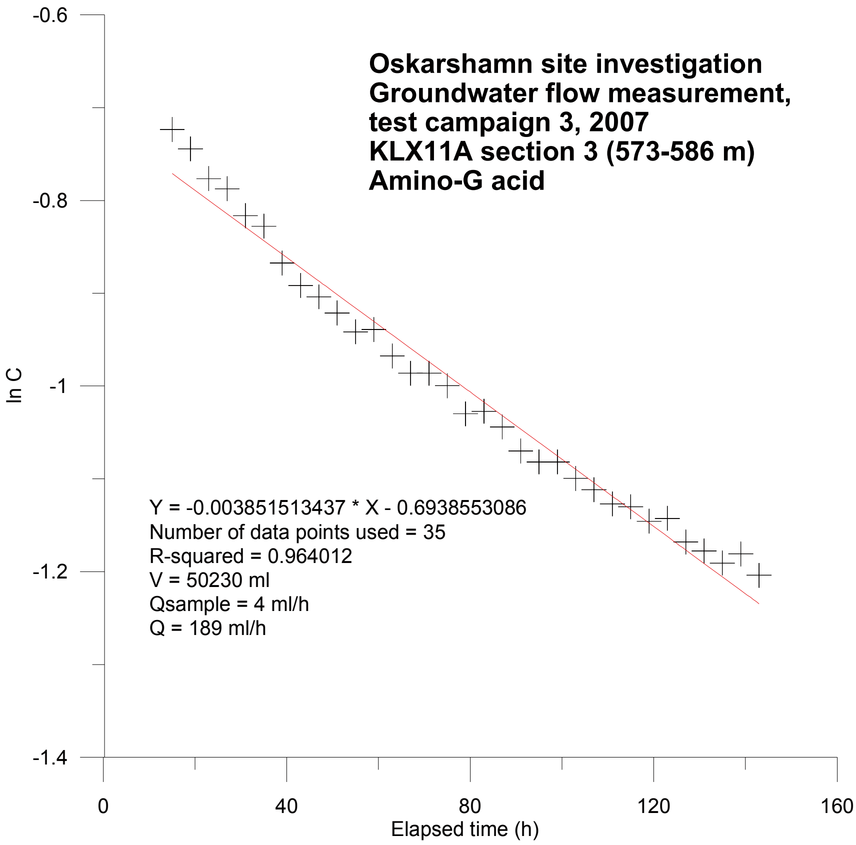

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX08 section 4 (594-625 m)
Amino-G acid
Y = -0.0007742624272 * X - 0.7588778275
Number of data points used = 40
R-squared = 0.812834
V = 68440 ml
Qsample = 8 ml/h
Q = 45 ml/h
ln C
-0.76
-0.8
-0.84
-0.88
-0.92
0
40
80
120
160
200
Elapsed time (h)

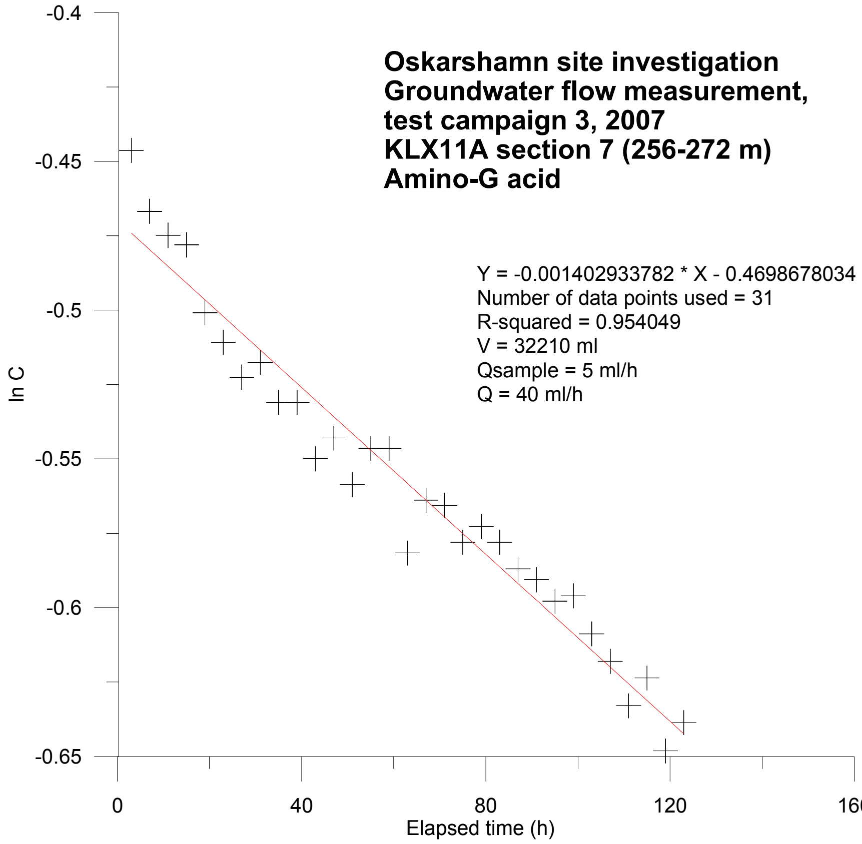

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX10A section 2 (689-710 m)
Amino-G acid
Y = -0.0006151957424 * X - 0.3875935009
Number of data points used = 27
R-squared = 0.886735
V = 66620 ml
Qsample = 5 ml/h
Q = 36 ml/h
ln C
Elapsed time (h)

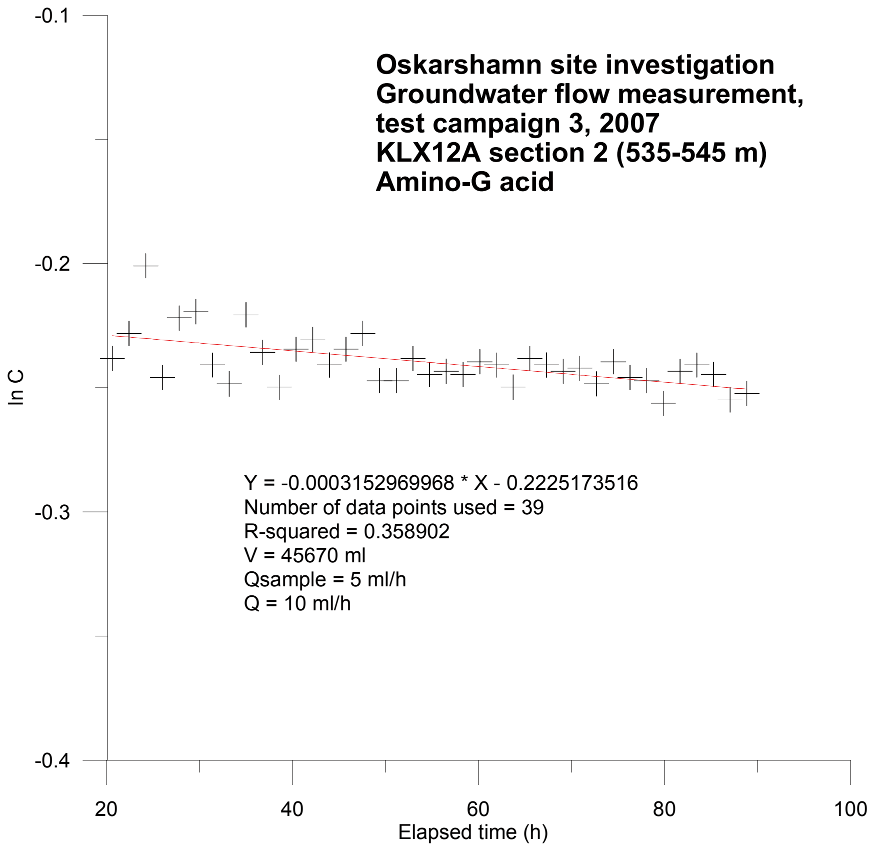

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX10A sektion 2 (689 - 710 m)
Y = -0.00211360 * X - 1.079381
Number of data points used = 42
R-squared = 0.967391
V = 66620 ml
Qsample = 6 ml/h
Q = 135 ml/h
LN C
Elapsed time (h)

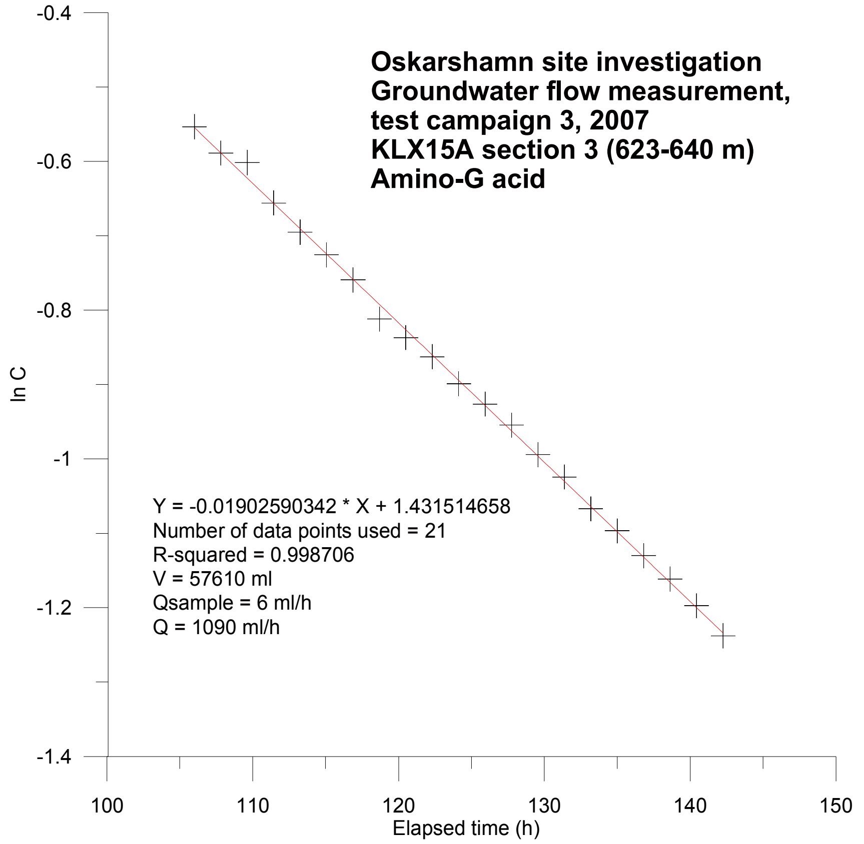

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KLX10 sektion 5 (351 - 368 m)
Y = -0.02785402 * X - 1.456198
Number of data points used = 42
R-squared = 0.970385
V = 39870 ml
Qsample = 7 ml/h
Q = 1104 ml/h
LN C
Elapsed time (h)

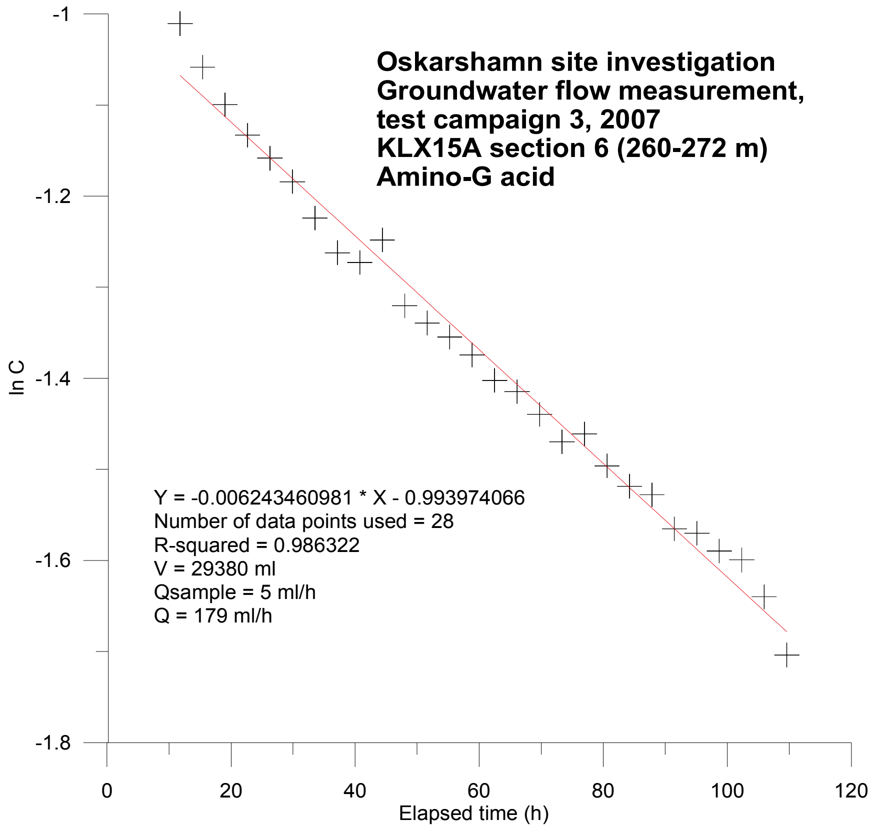

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX10A section 5 (351-368 m)
Amino-G acid
Y = -0.02909744117 * X - 0.3189591989
Number of data points used = 30
R-squared = 0.995726
V = 39870 ml
Qsample = 5 ml/h
Q = 1155 ml/h
ln C
0
-1
-2
-3
-4
0
40
80
120
Elapsed time (h)

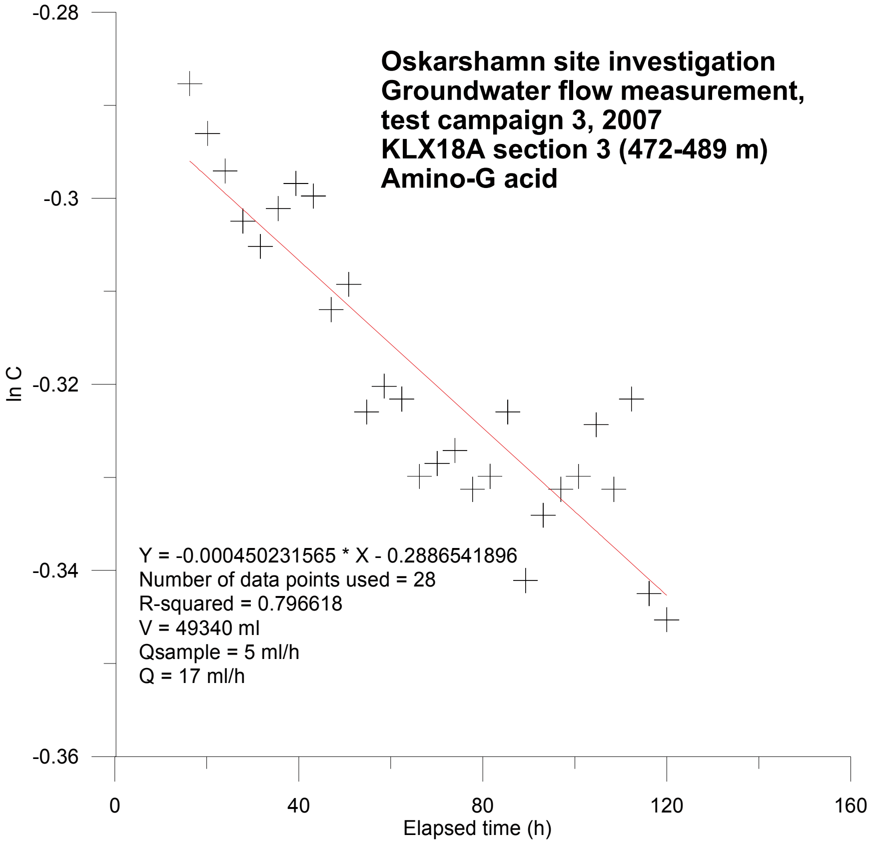

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX11A section 3 (573-586 m)
Amino-G acid
Y = -0.003851513437 * X - 0.6938553086
Number of data points used = 35
R-squared = 0.964012
V = 50230 ml
Qsample = 4 ml/h
Q = 189 ml/h
ln C
-0.6
-0.8
-1
-1.2
-1.4
0
40
80
120
160
Elapsed time (h)

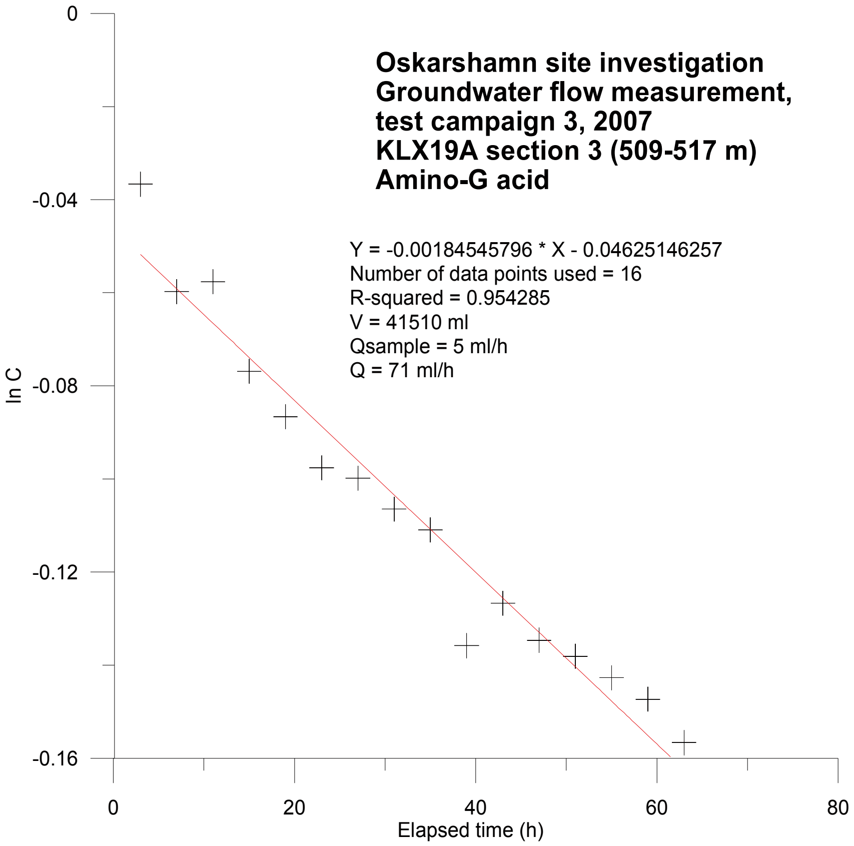

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX11A section 7 (256-272 m)
Amino-G acid
Y = -0.001402933782 * X - 0.4698678034
Number of data points used = 31
R-squared = 0.954049
V = 32210 ml
Qsample = 5 ml/h
Q = 40 ml/h
-0.4
-0.45
-0.5
-0.55
-0.6
-0.65
ln C
0
40
80
120
160
Elapsed time (h)

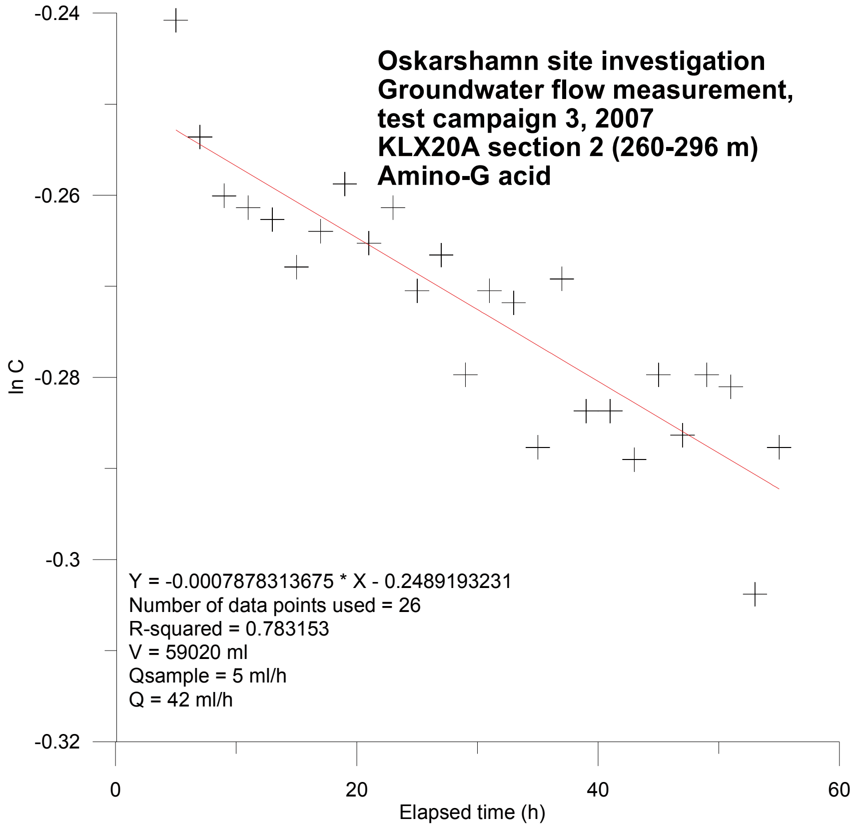

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX12A section 2 (535-545 m)
Amino-G acid
Y = -0.0003152969968 * X - 0.2225173516
Number of data points used = 39
R-squared = 0.358902
V = 45670 ml
Qsample = 5 ml/h
Q = 10 ml/h
-0.1
-0.2
-0.3
-0.4
ln C
20
40
60
80
100
Elapsed time (h)

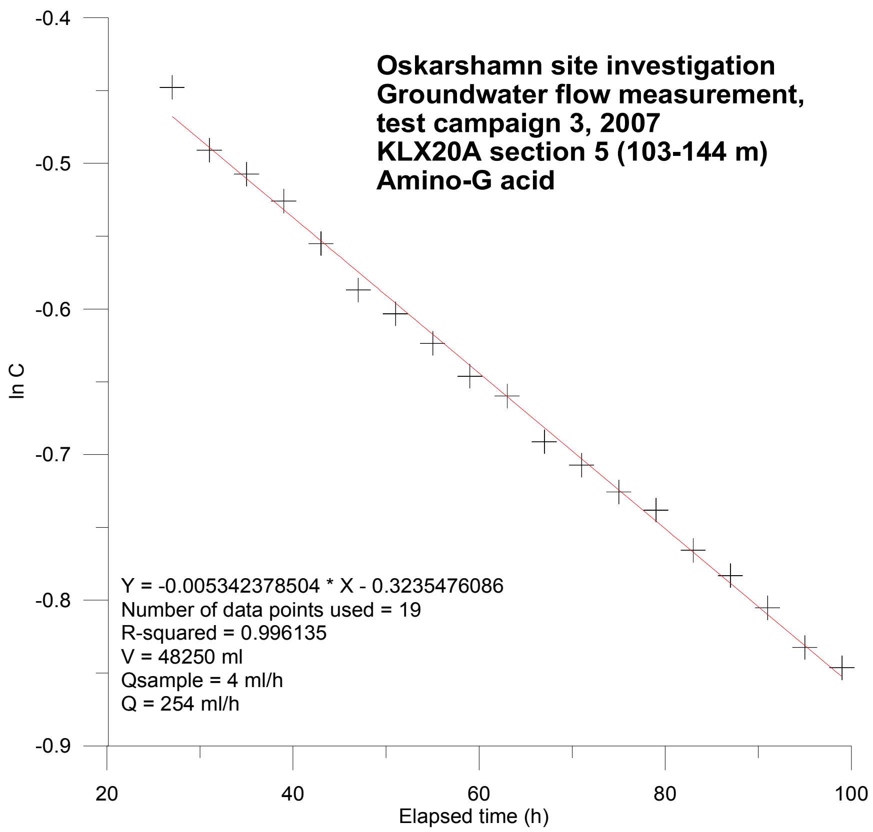

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX15A section 3 (623-640 m)
Amino-G acid
Y = -0.01902590342 * X + 1.431514658
Number of data points used = 21
R-squared = 0.998706
V = 57610 ml
Qsample = 6 ml/h
Q = 1090 ml/h
ln C
Elapsed time (h)
-0.4
-0.6
-0.8
-1
-1.2
-1.4
100
110
120
130
140
150

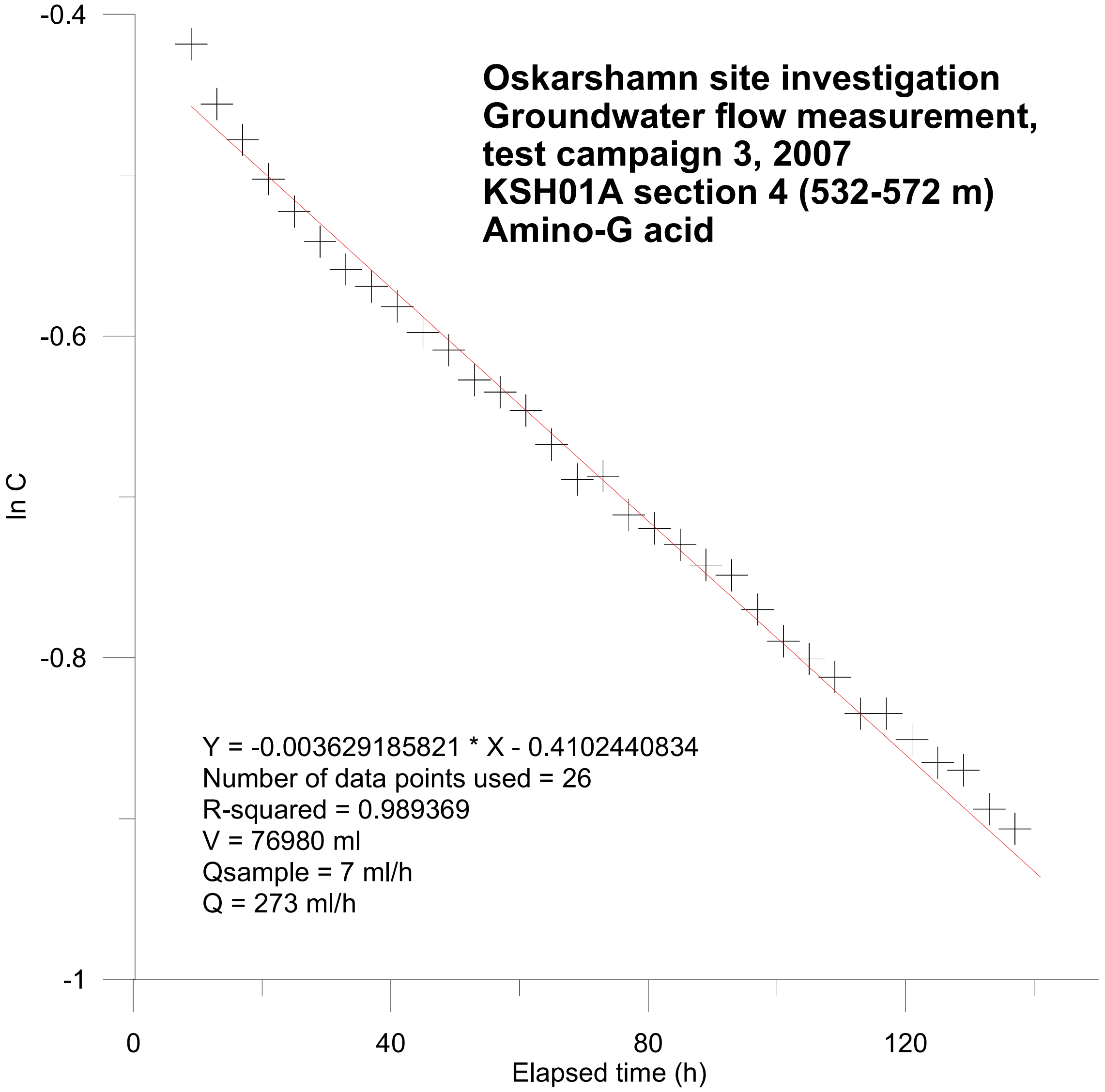

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX15A section 6 (260-272 m)
Amino-G acid
Y = -0.006243460981 * X - 0.993974066
Number of data points used = 28
R-squared = 0.986322
V = 29380 ml
Qsample = 5 ml/h
Q = 179 ml/h
ln C
Elapsed time (h)
-1
-1.2
-1.4
-1.6
-1.8
0
20
40
60
80
100
120

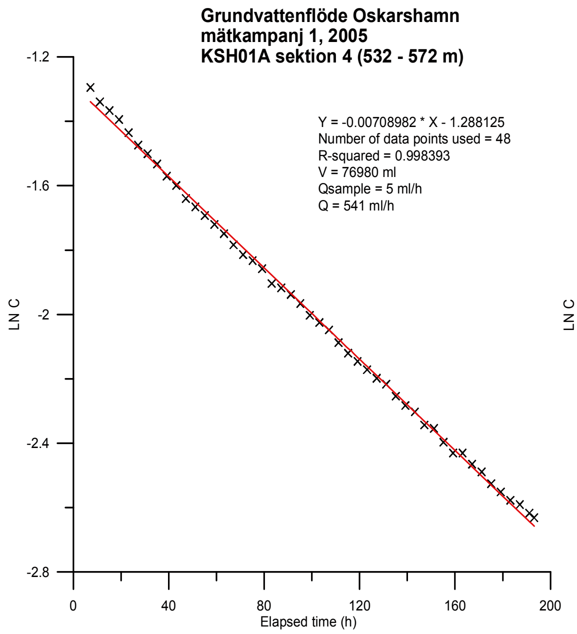

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX18A section 3 (472-489 m)
Amino-G acid
Y = -0.000450231565 * X - 0.2886541896
Number of data points used = 28
R-squared = 0.796618
V = 49340 ml
Qsample = 5 ml/h
Q = 17 ml/h
ln C
Elapsed time (h)
-0.28
-0.3
-0.32
-0.34
-0.36
0
40
80
120
160

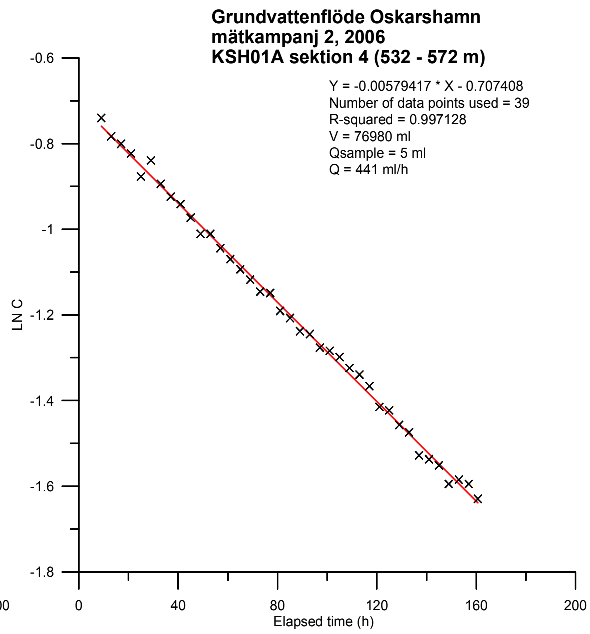

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX19A section 3 (509-517 m)
Amino-G acid
Y = -0.00184545796 * X - 0.04625146257
Number of data points used = 16
R-squared = 0.954285
V = 41510 ml
Qsample = 5 ml/h
Q = 71 ml/h
ln C
Elapsed time (h)
0
-0.04
-0.08
-0.12
-0.16
0
20
40
60
80

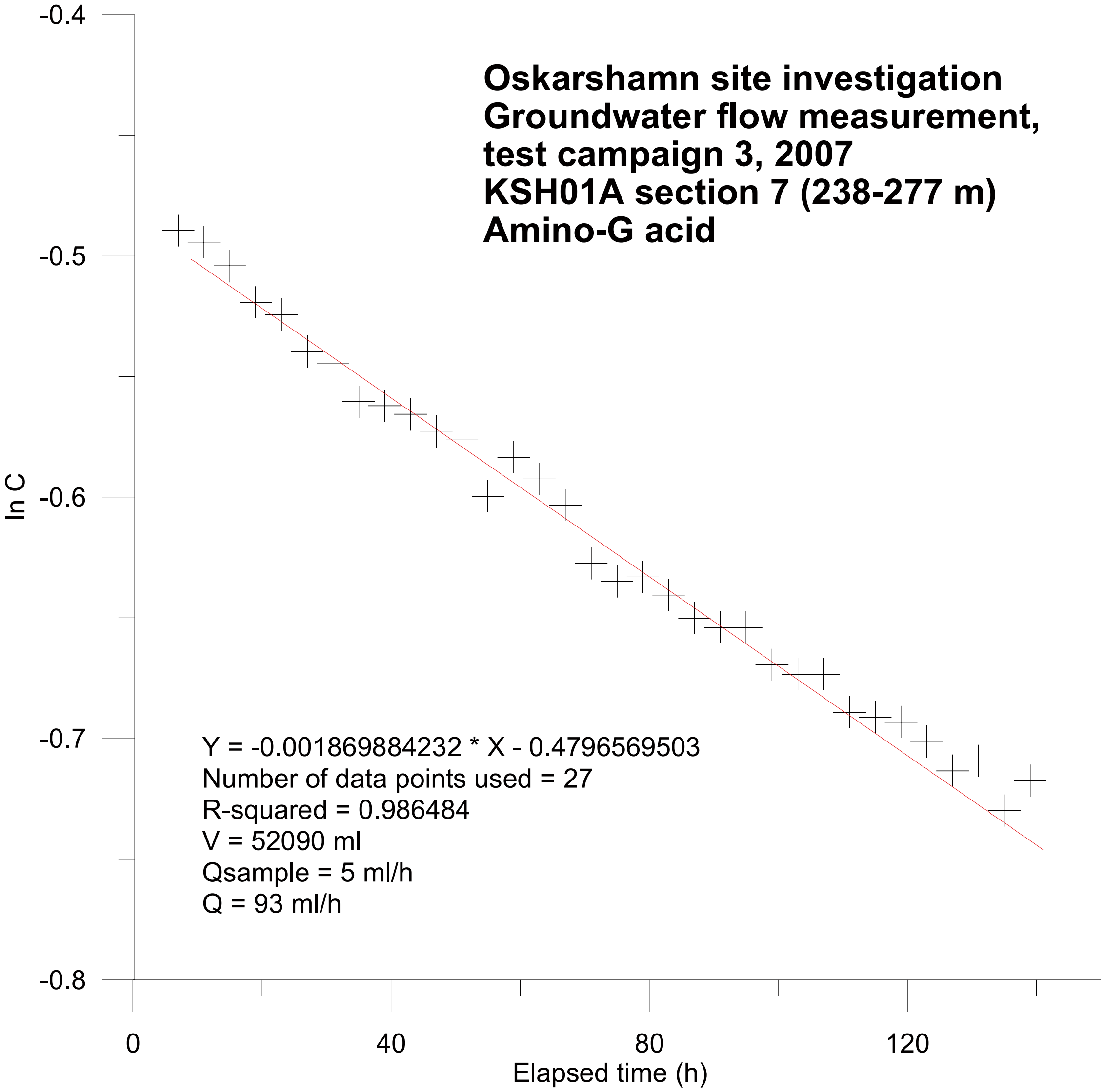

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX20A section 2 (260-296 m)
Amino-G acid
Y = -0.0007878313675 * X - 0.2489193231
Number of data points used = 26
R-squared = 0.783153
V = 59020 ml
Qsample = 5 ml/h
Q = 42 ml/h
ln C
Elapsed time (h)

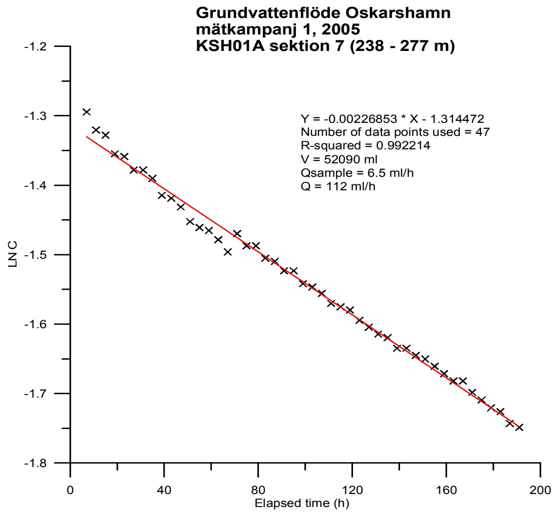

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KLX20A section 5 (103-144 m)
Amino-G acid
Y = -0.005342378504 * X - 0.3235476086
Number of data points used = 19
R-squared = 0.996135
V = 48250 ml
Qsample = 4 ml/h
Q = 254 ml/h
ln C
Elapsed time (h)

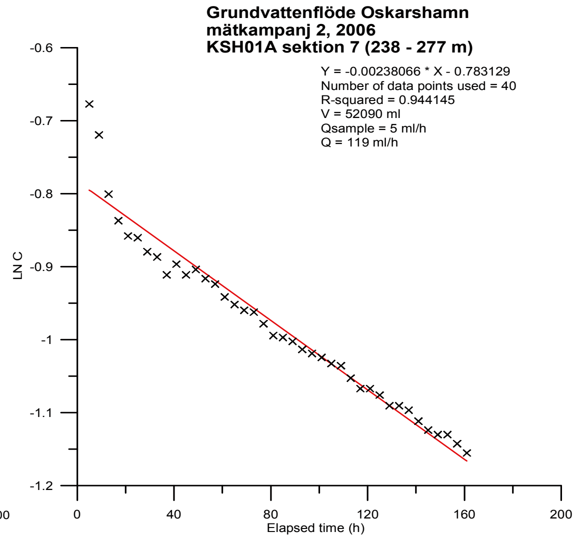

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KSH01A section 4 (532-572 m)
Amino-G acid
Y = -0.003629185821 * X - 0.4102440834
Number of data points used = 26
R-squared = 0.989369
V = 76980 ml
Qsample = 7 ml/h
Q = 273 ml/h
-0.4
-0.6
-0.8
-1
ln C
0
40
80
120
Elapsed time (h)

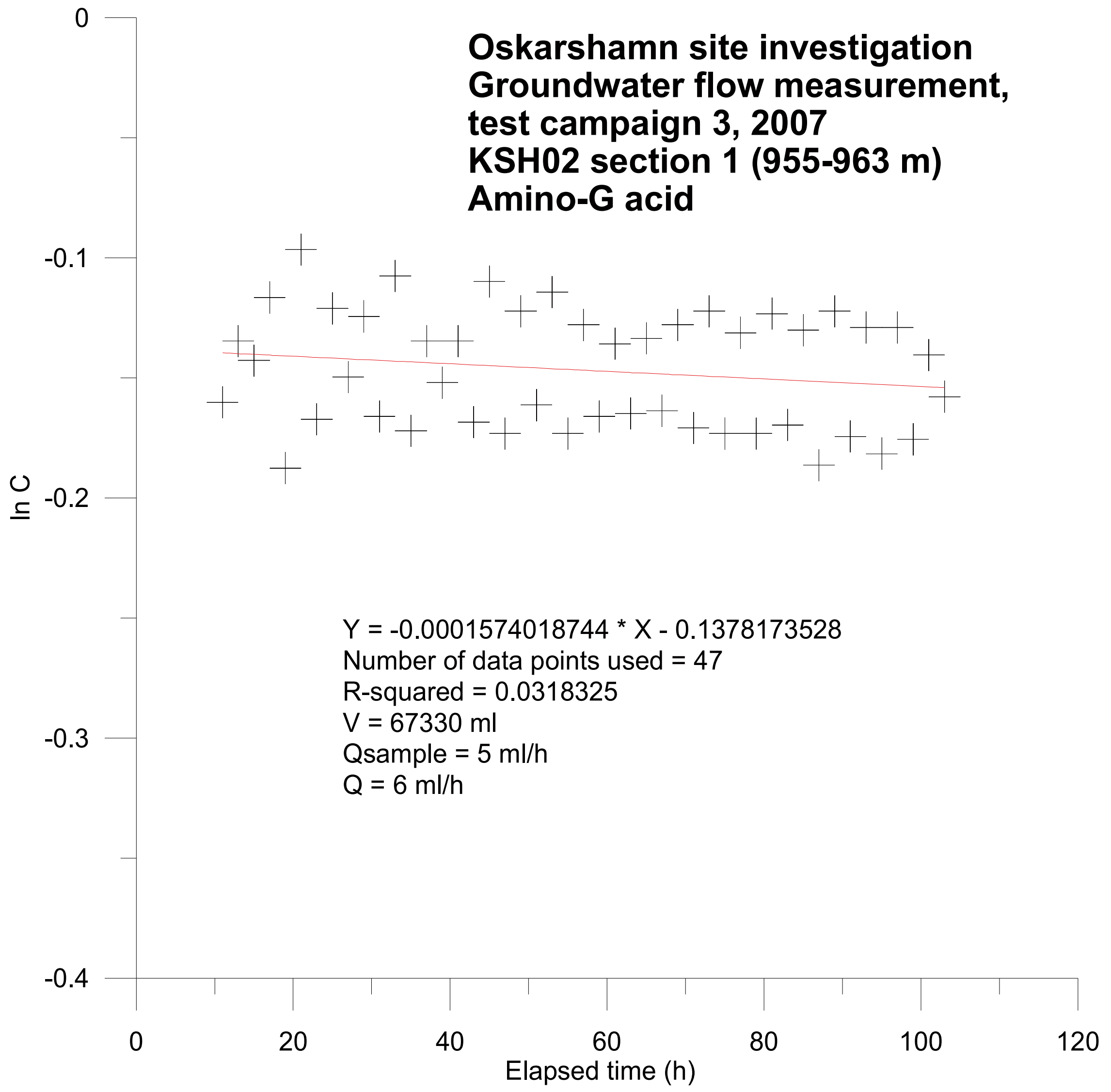

Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KSH01A sektion 4 (532 - 572 m)
Y = -0.00708982 * X - 1.288125
Number of data points used = 48
R-squared = 0.998393
V = 76980 ml
Qsample = 5 ml/h
Q = 541 ml/h
-1.2
-1.6
-2
-2.4
-2.8
LN C
0
40
80
120
160
200
Elapsed time (h)


Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KSH01A sektion 4 (532 - 572 m)
Y = -0.00579417 * X - 0.707408
Number of data points used = 39
R-squared = 0.997128
V = 76980 ml
Qsample = 5 ml
Q = 441 ml/h
-0.6
-0.8
-1
-1.2
-1.4
-1.6
-1.8
LN C
0
40
80
120
160
200
Elapsed time (h)

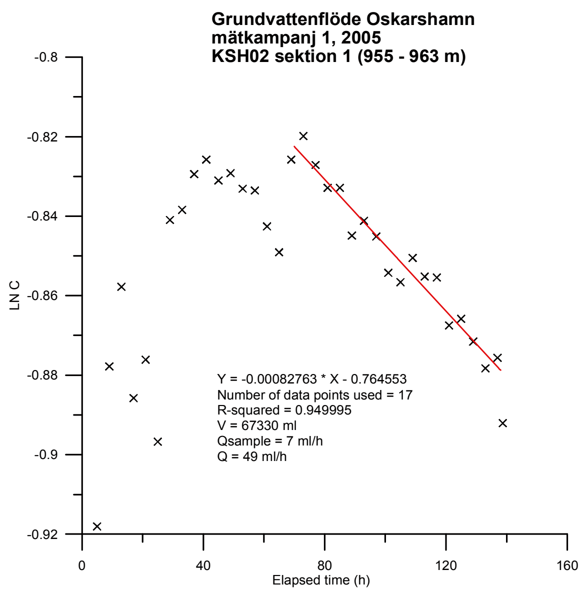

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KSH01A section 7 (238-277 m)
Amino-G acid
Y = -0.001869884232 * X - 0.4796569503
Number of data points used = 27
R-squared = 0.986484
V = 52090 ml
Qsample = 5 ml/h
Q = 93 ml/h
ln C
-0.4
-0.5
-0.6
-0.7
-0.8
0
40
80
120
Elapsed time (h)


Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KSH01A sektion 7 (238 - 277 m)
Y = -0.00226853 * X - 1.314472
Number of data points used = 47
R-squared = 0.992214
V = 52090 ml
Qsample = 6.5 ml/h
Q = 112 ml/h
LN C
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
0
40
80
120
160
200
Elapsed time (h)

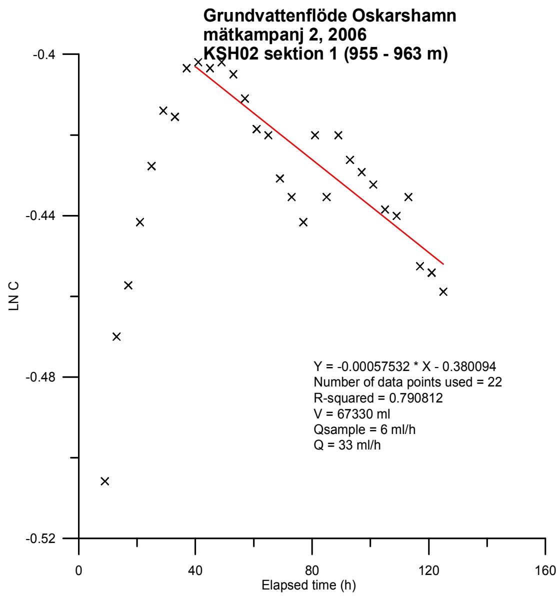

Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KSH01A sektion 7 (238 - 277 m)
Y = -0.00238066 * X - 0.783129
Number of data points used = 40
R-squared = 0.944145
V = 52090 ml
Qsample = 5 ml/h
Q = 119 ml/h
LN C
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
0
40
80
120
160
200
Elapsed time (h)



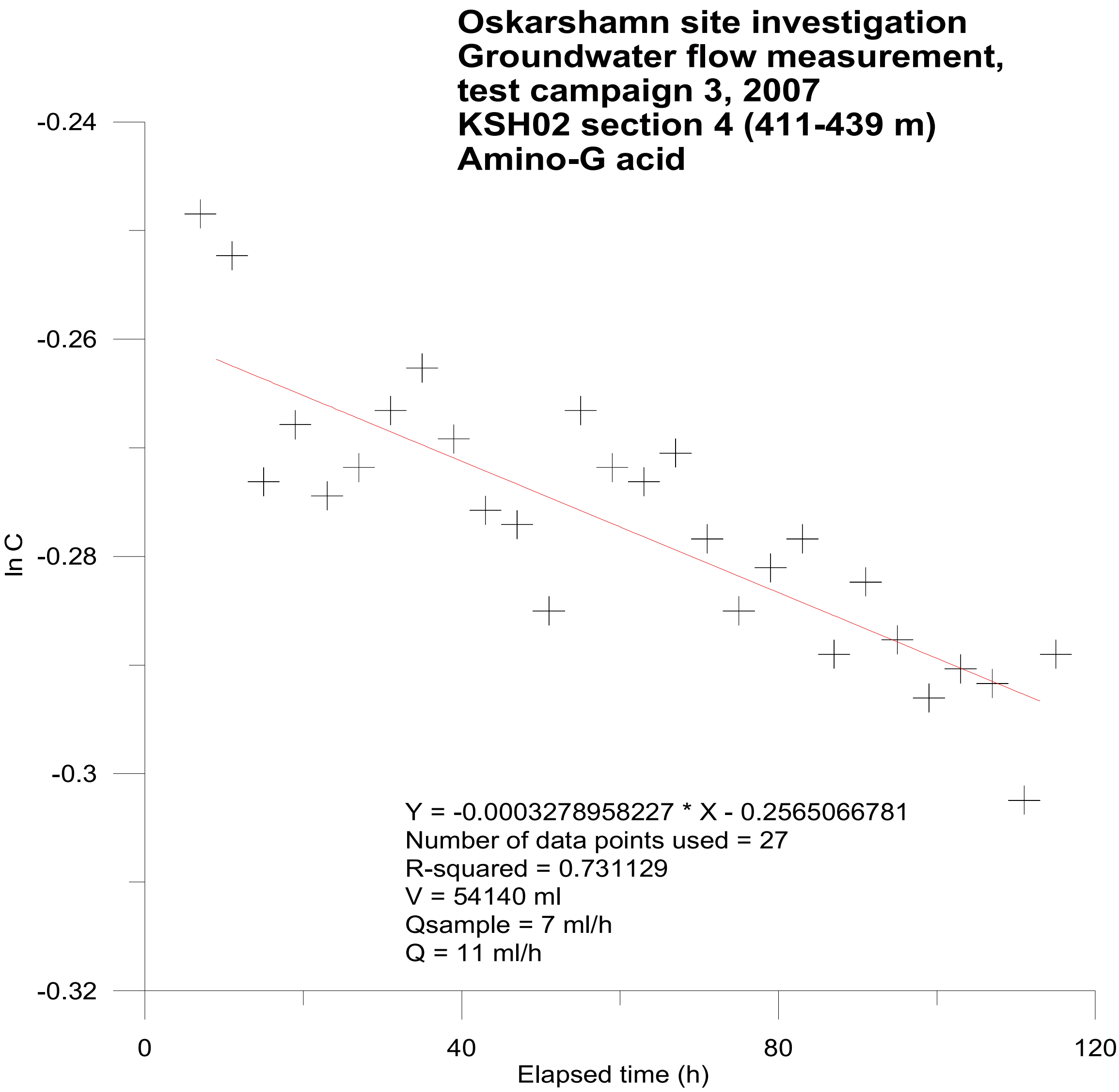
Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KSH02 section 1 (955-963 m)
Amino-G acid
Y = -0.0001574018744 * X - 0.1378173528
Number of data points used = 47
R-squared = 0.0318325
V = 67330 ml
Qsample = 5 ml/h
Q = 6 ml/h
ln C
Elapsed time (h)

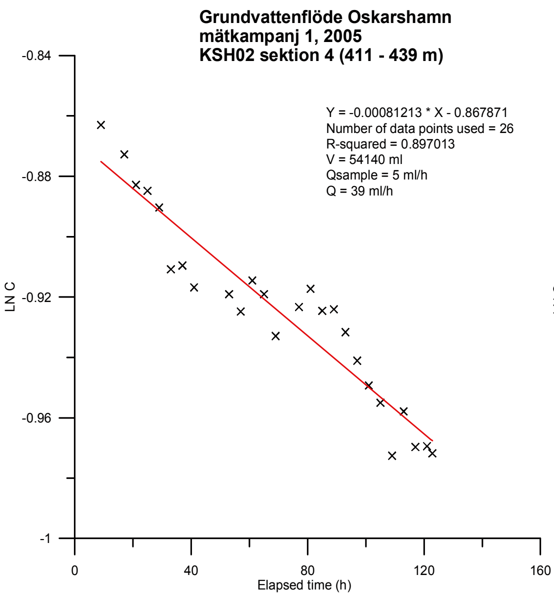


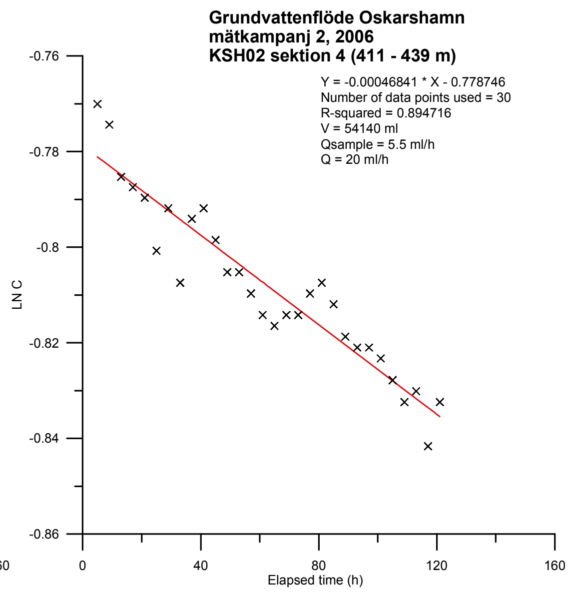
Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KSH02 sektion 1 (955 - 963 m)
Y = -0.00082763 * X - 0.764553
Number of data points used = 17
R-squared = 0.949995
V = 67330 ml
Qsample = 7 ml/h
Q = 49 ml/h
LN C
Elapsed time (h)



Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KSH02 sektion 1 (955 - 963 m)
Y = -0.00057532 * X - 0.380094
Number of data points used = 22
R-squared = 0.790812
V = 67330 ml
Qsample = 6 ml/h
Q = 33 ml/h
LN C
Elapsed time (h)

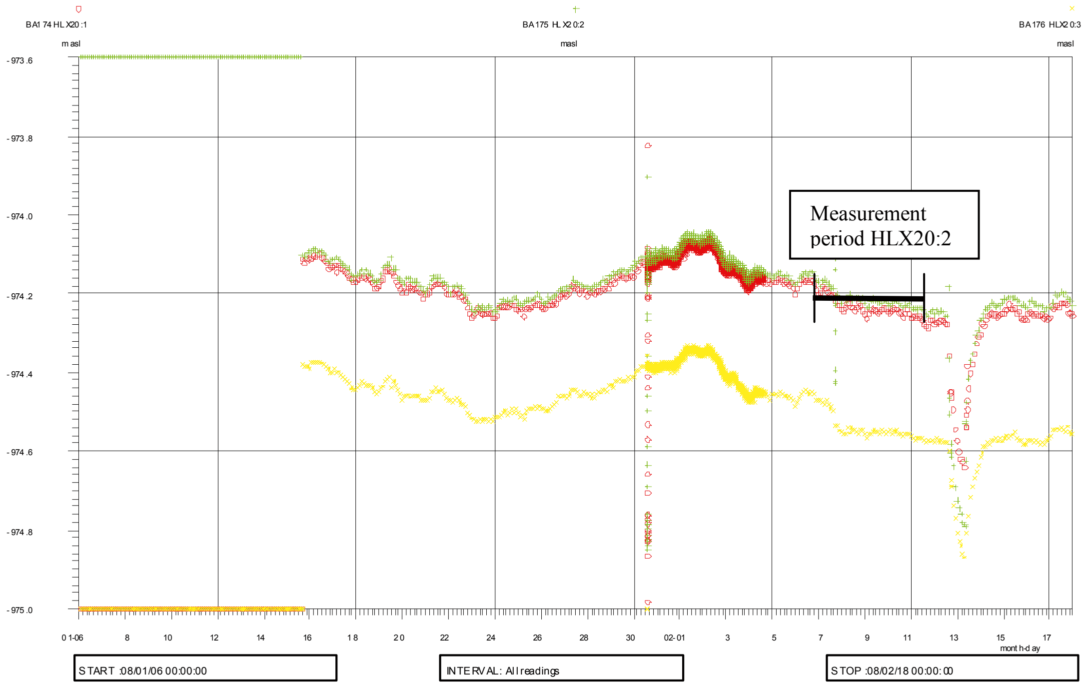

Oskarshamn site investigation
Groundwater flow measurement,
test campaign 3, 2007
KSH02 section 4 (411-439 m)
Amino-G acid
Y = -0.0003278958227 * X - 0.2565066781
Number of data points used = 27
R-squared = 0.731129
V = 54140 ml
Qsample = 7 ml/h
Q = 11 ml/h
ln C
Elapsed time (h)
-0.24
-0.26
-0.28
-0.3
-0.32
0
40
80
120


Grundvattenflöde Oskarshamn
mätkampanj 1, 2005
KSH02 sektion 4 (411 - 439 m)
Y = -0.00081213 * X - 0.867871
Number of data points used = 26
R-squared = 0.897013
V = 54140 ml
Qsample = 5 ml/h
Q = 39 ml/h
LN C
Elapsed time (h)


Grundvattenflöde Oskarshamn
mätkampanj 2, 2006
KSH02 sektion 4 (411 - 439 m)
Y = -0.00046841 * X - 0.778746
Number of data points used = 30
R-squared = 0.894716
V = 54140 ml
Qsample = 5.5 ml/h
Q = 20 ml/h
LN C
Elapsed time (h)

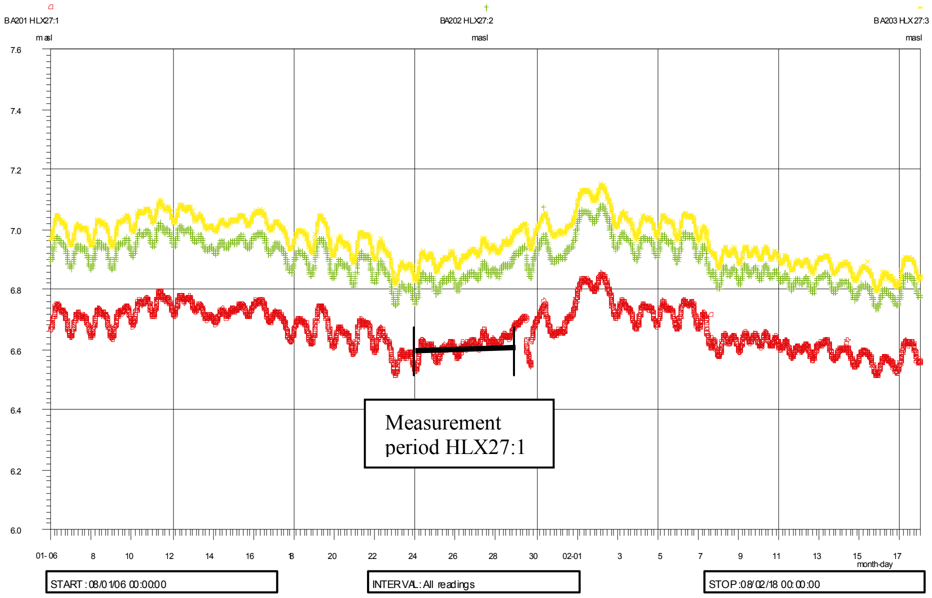
Grundwater levels (m.a.s.l.)

HLX20



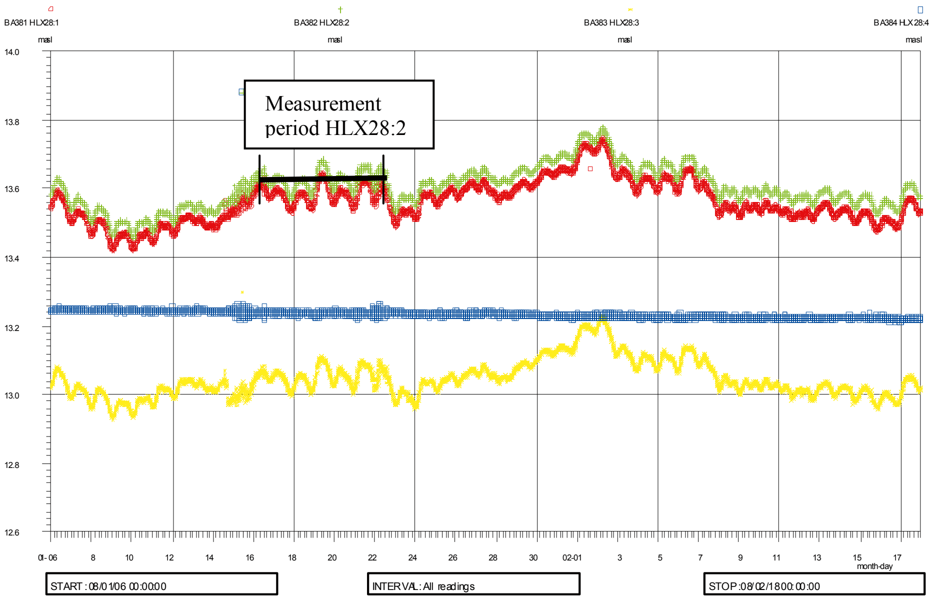
Measured section: HLX20:2 (green)

HLX27



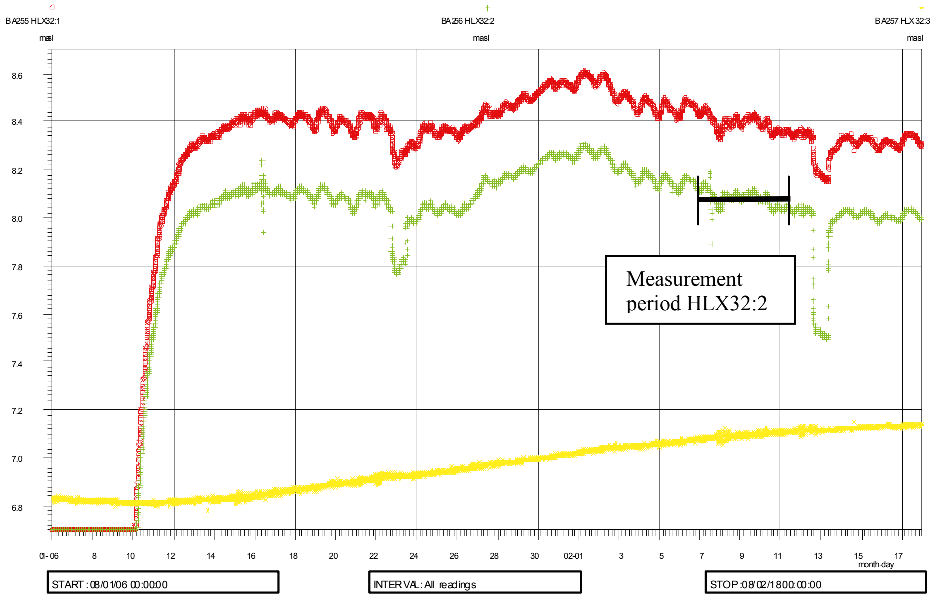
Measured section: HLX27:1 (red)

HLX28



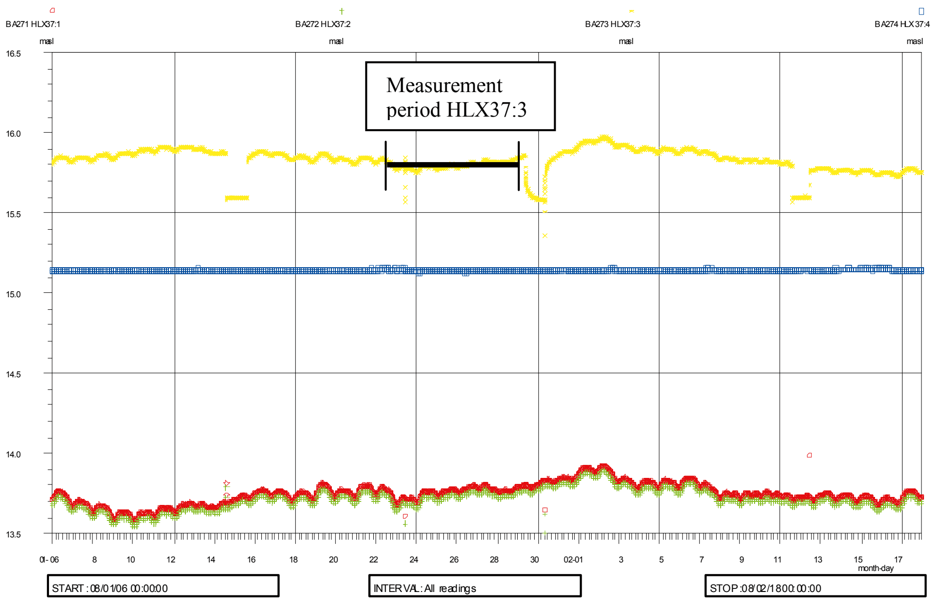
Measured sections: HLX28:2 (green)

HLX32:2



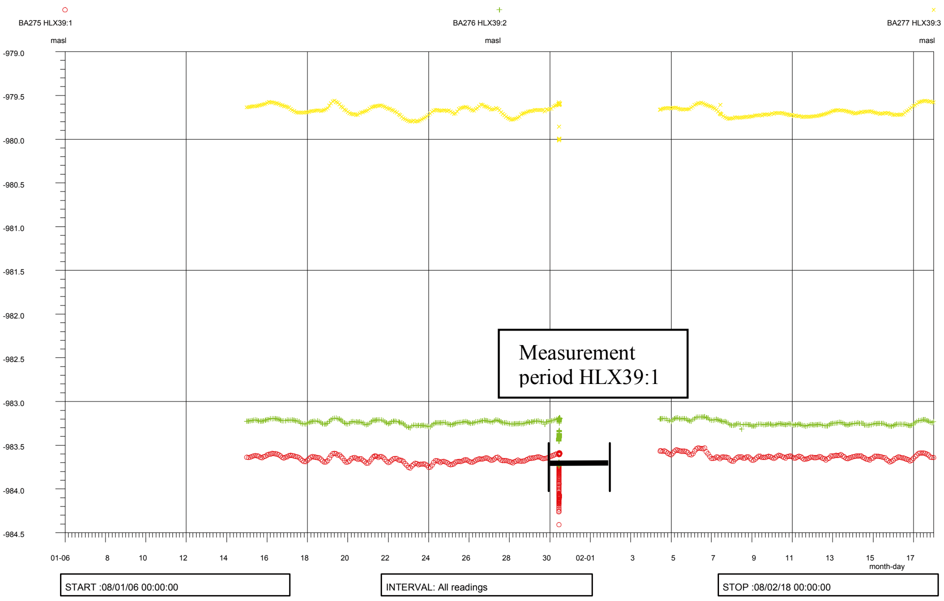
Measured sections: HLX32:2 (green)

HLX37



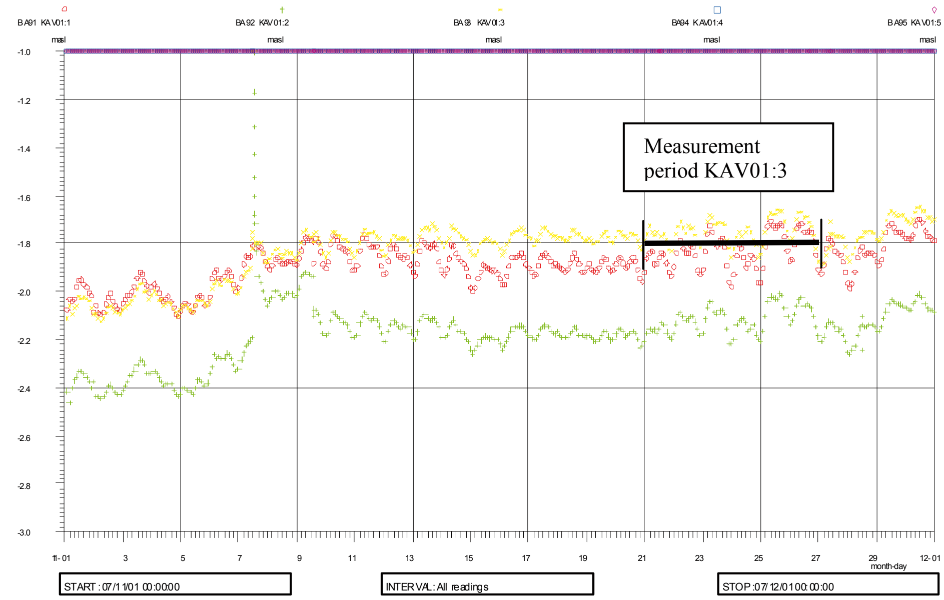
Measured sections: HLX37:3 (yellow)

HLX39



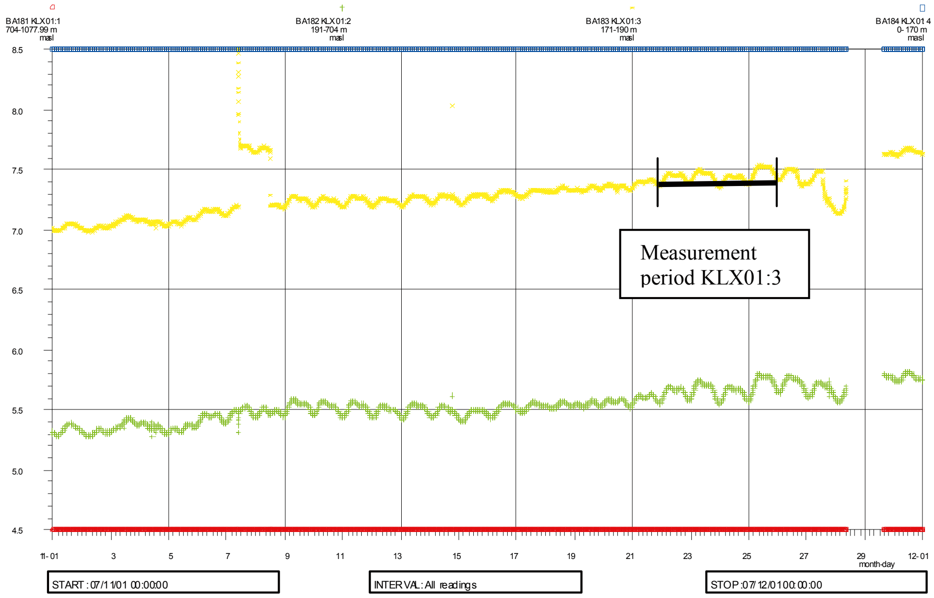
Measured section: HLX39:1 (red)

KAV01



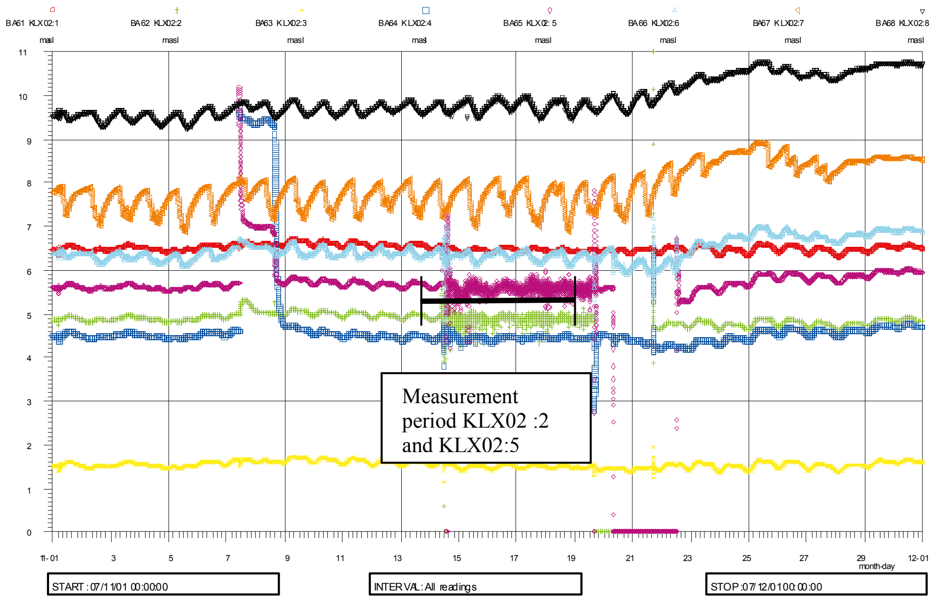
Measured section: KAV01:3 (yellow)

KLX01



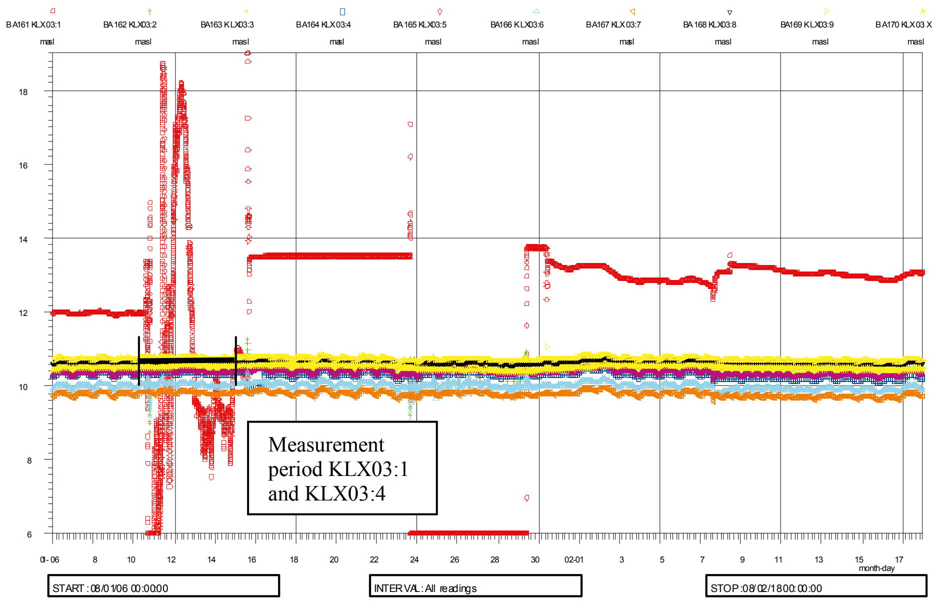
Measured section: KLX01:3 (yellow)

KLX02



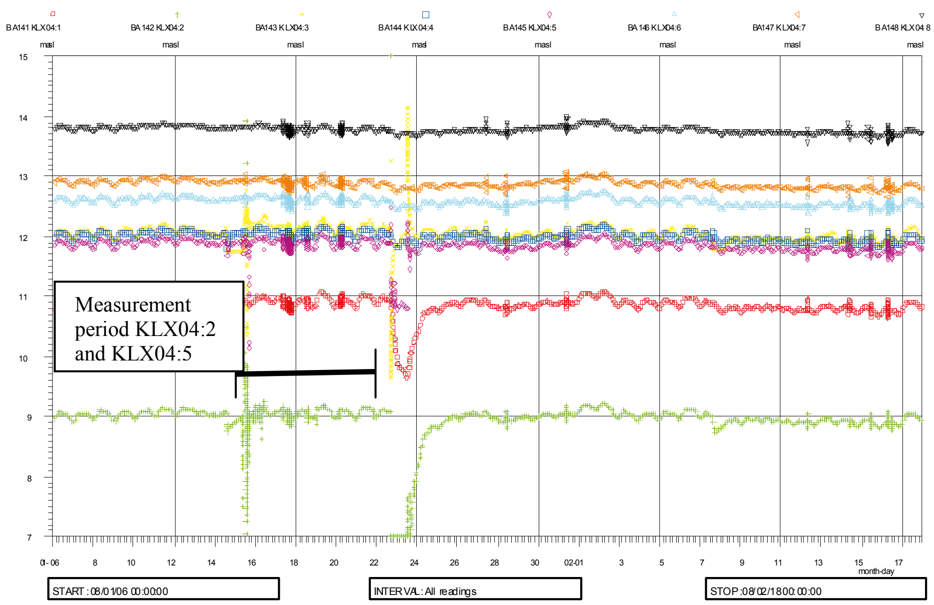
Measured sections: KLX02:2 (green) and KLX02:5 (purple)

KLX03



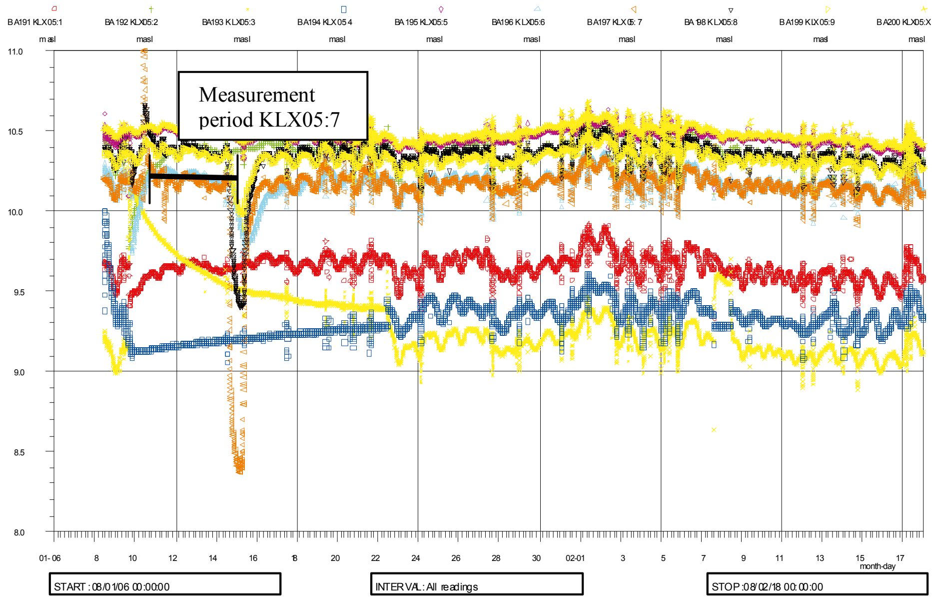
Measured sections: KLX03:1 (red) and KLX03:4 (blue)

KLX04



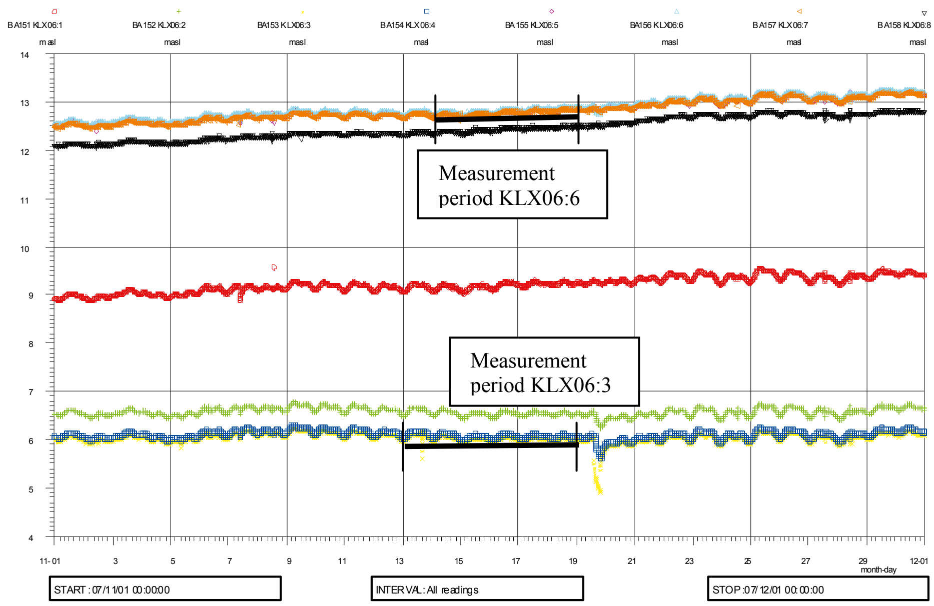
Measured sections: KLX04:2 (green) and KLX04:5 (purple)

KLX05



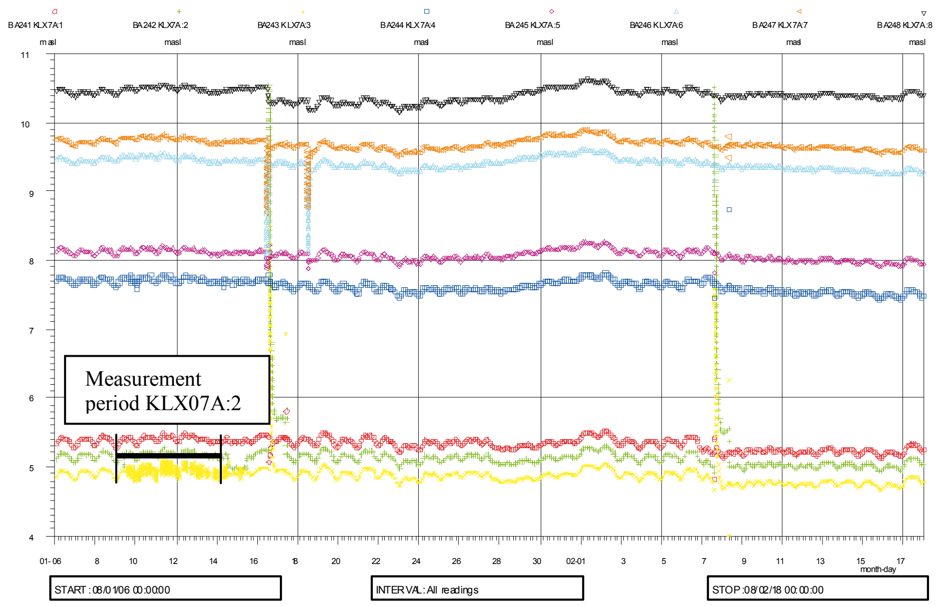
Measured section: KLX05:7 (orange)

KLX06



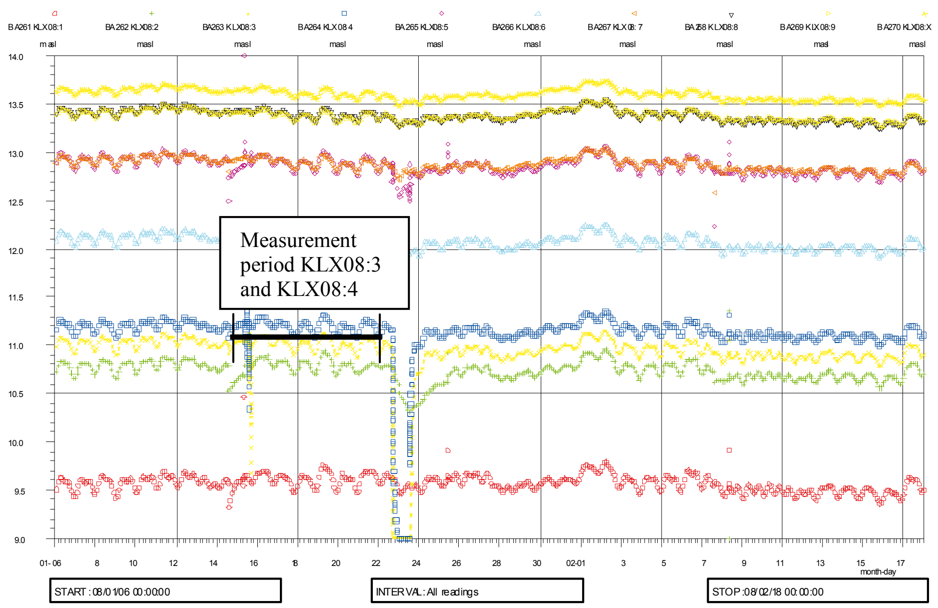
Measured sections: KLX06:3 (yellow) and KLX06:6 (light blue)

KLX07A



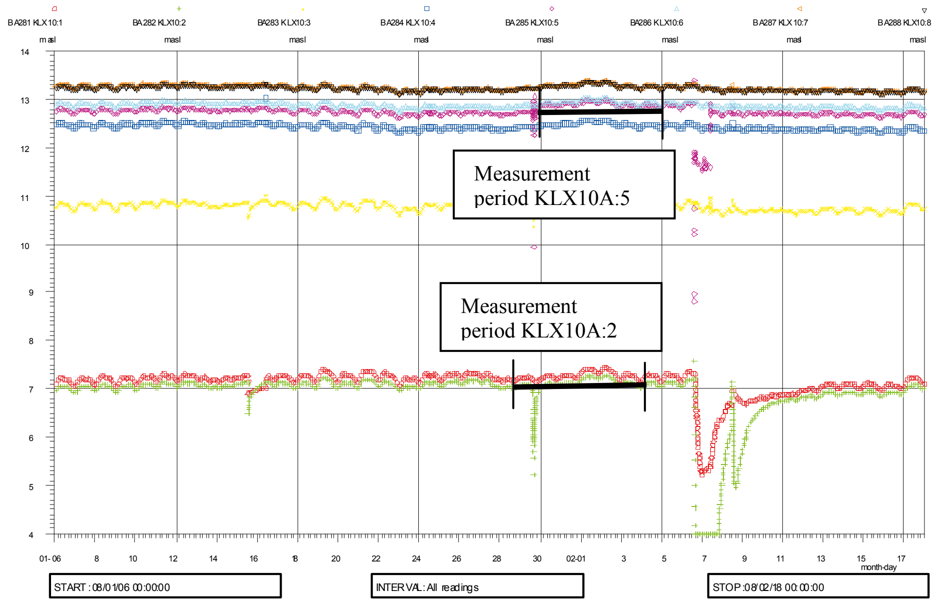
Measured section: KLX07A:2 (green)

KLX08



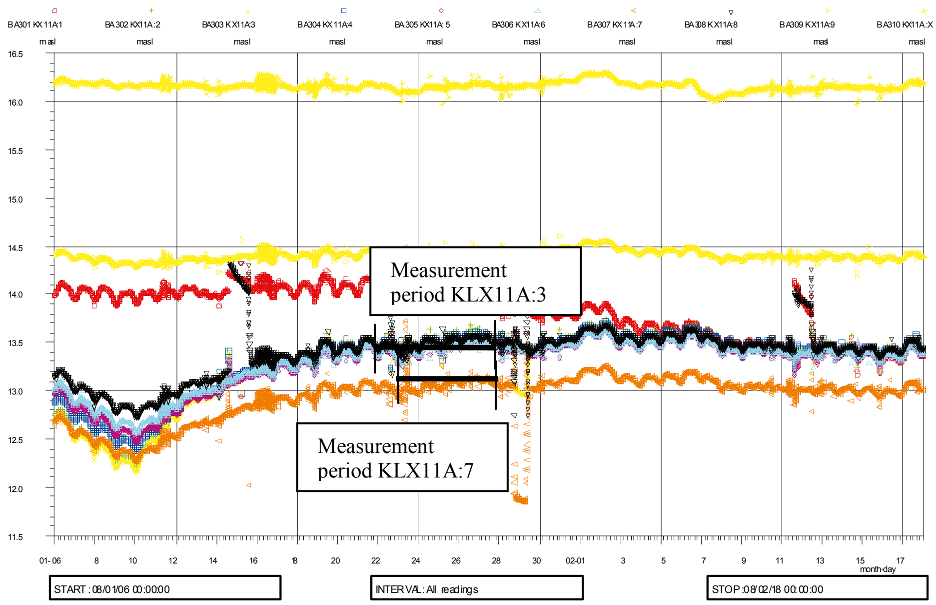
Measured sections: KLX08:3 (yellow) and KLX08:4 (blue)

KLX10A



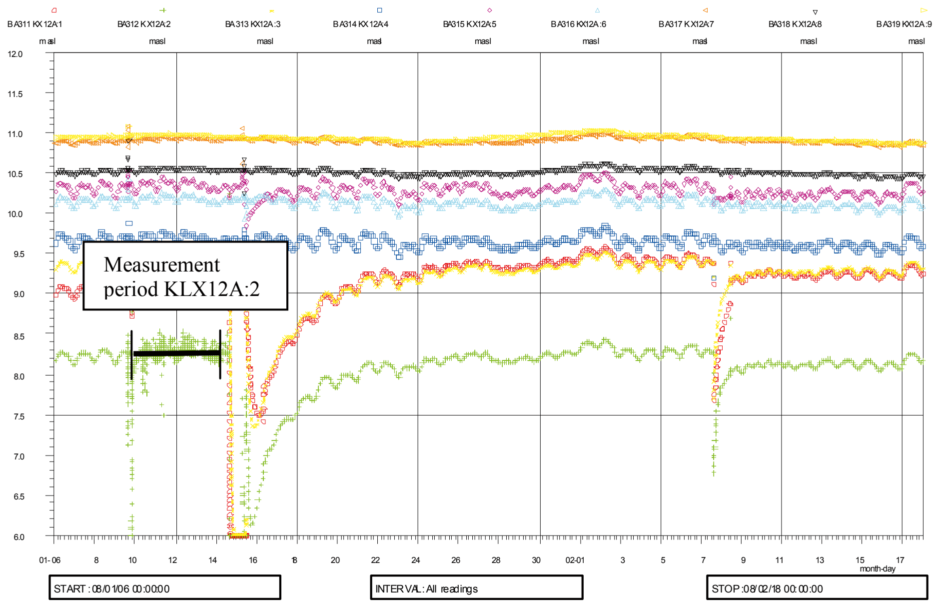
Measured sections: KLX10A:2 (green) and KLX10A:5 (purple)

KLX11A



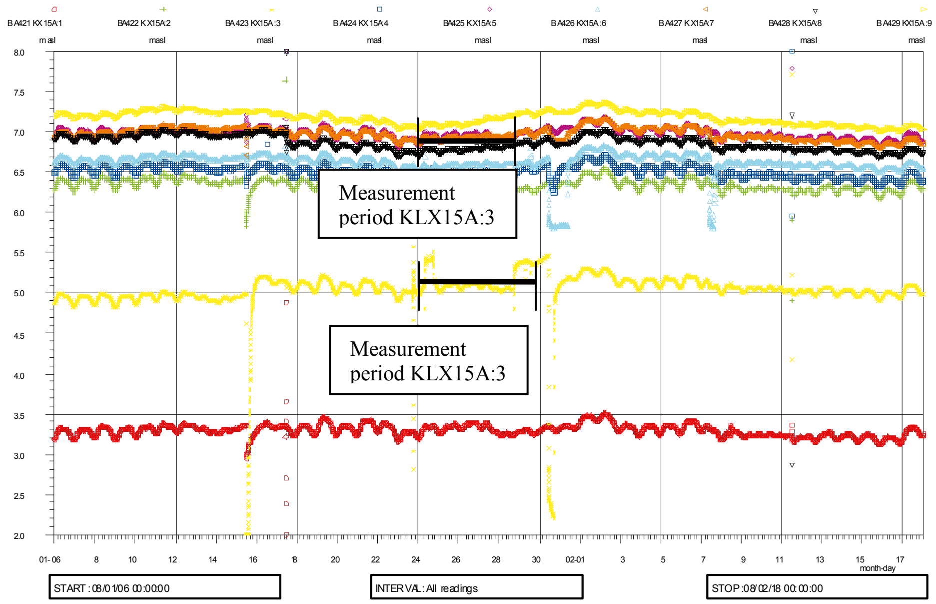
Measured sections: KLX11A:3 (yellow) and KLX11A:7 (orange)

KLX12A



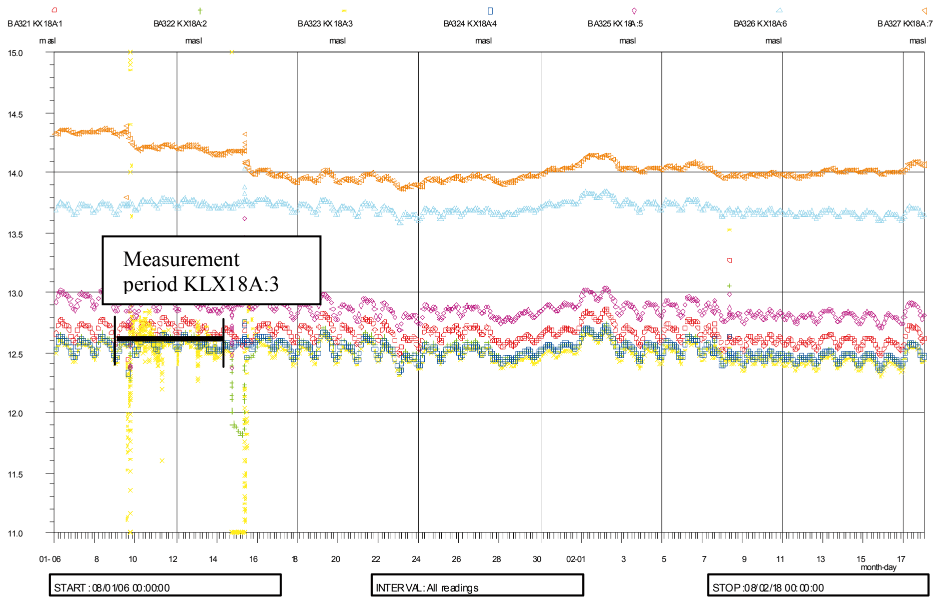
Measured section: KLX12A:2 (green)

KLX15A



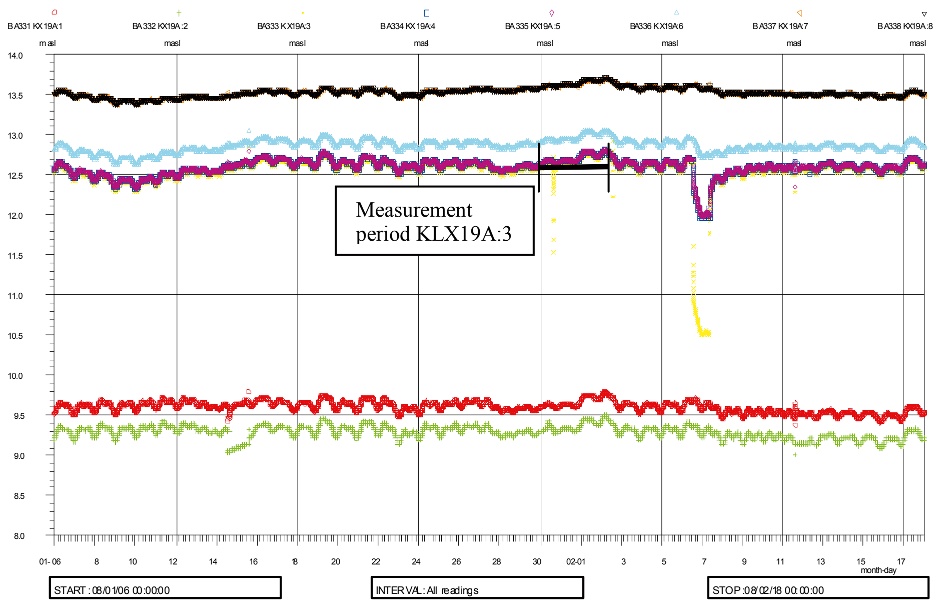
Measured sections: KLX15A:3 (yellow) and KLX15A:6 (purple)

KLX18A



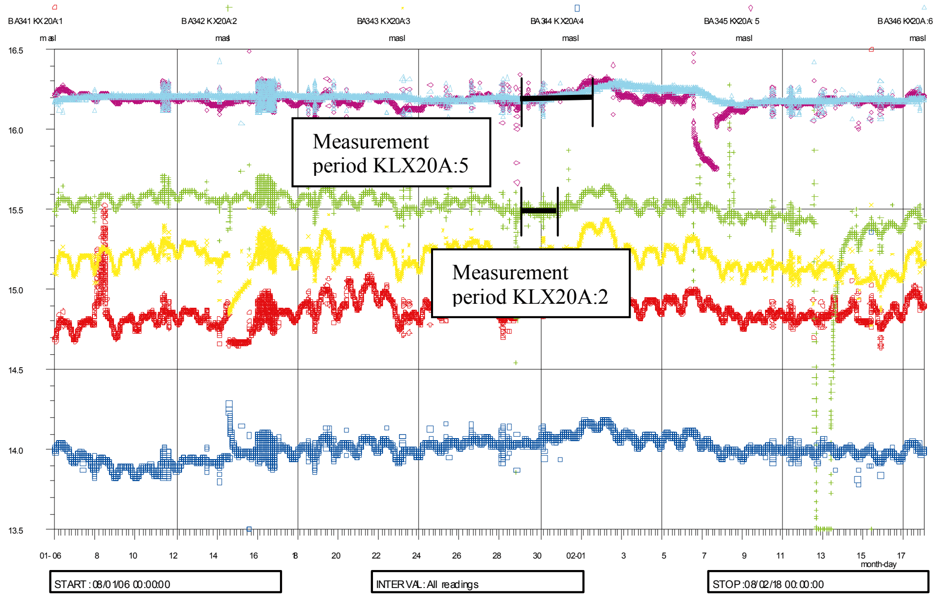
Measured section: KLX18A:3 (yellow)

KLX19A



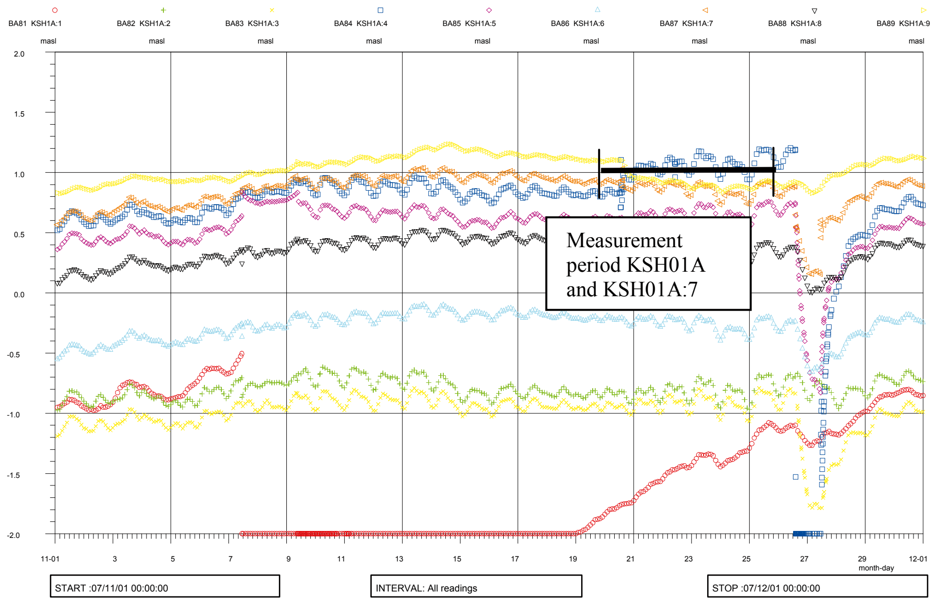
Measured section: KLX19A:3 (yellow)

KLX20A



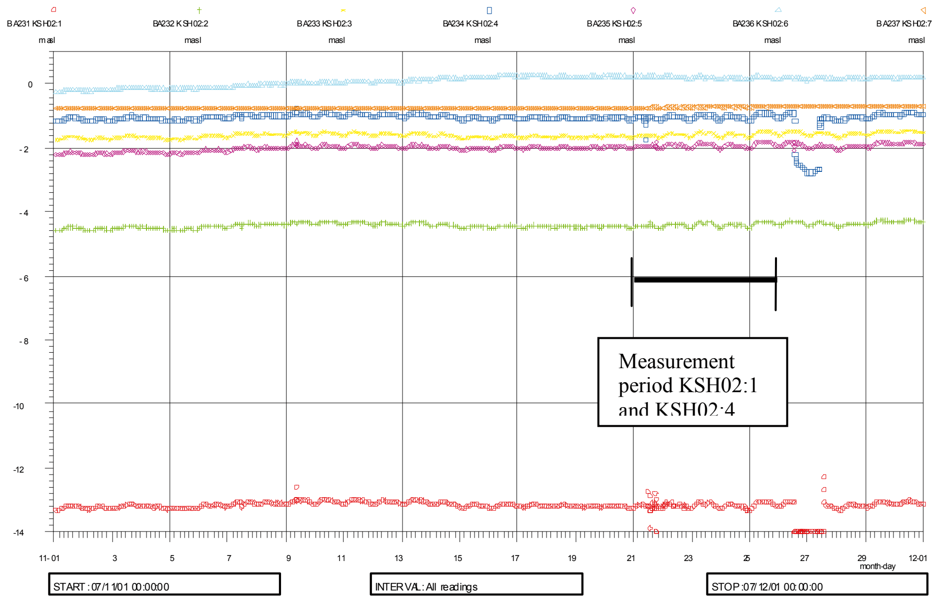
Measured sections: KLX20A:2 (green) and KLX20A:5 (purple)

KSH01A



Measured sections: KSH01A:4 (blue) and KSH01A:7 (orange)

KSH02



Measured sections: KSH02:1 (red) and KSH02:4 (blue)