Werkdocument

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11 juni 1999
Bijlage(n)
- 27
Nummer
RIKZ/AB-99.824X
Product
- Zeetunnel
Onderwerp
Troebelheidsmetingen Westerschelde: ijkpunt DOW-steiger 1-12-98 t/m 28-4-99

In de periode tot 16 februari zijn drie ijkmetingen uitgevoerd; op 1-12-98, 7-1-99 en 29-1-99. In de meetopstelling zijn op 3 diepten MEX-trobelheidsmeters gemonteerd op NAP-17, NAP-11 en NAP-4meter. Van deze drie meters zijn aparte ijklijnen gemaakt, omdat ze onderling kunnen afwijking (verschillende machines) en ook omdat het slib dat gemeten wordt van andere samenstelling kan zijn. Aan de ijkpunten is de MEX-uitlezing van demiwater toegevoegd als nulpunt.

Troebelheidsmeter op NAP-17m.

IJKlijn	1-12-98:	$r^2 = 0,721$	y = 2,662X - 4 ,610	(zie bijlage 1)
IJKlijn	7- 1-99:	$r^2 = 0,649$	y = 1,392X - 20,668	(zie bijlage 2)
IJKlijn	29-1-99:	$r^2 = 0,737$	y = 2,970X - 11,096	(zie bijlage 3)

Alle metingen samengevoegd:

IJKlijn	$r^2 = 0,541$	y = 1,315X + 28,426	(zie bijlage 4)

Troebelheidsmeter op NAP-11m.

IJKlijn	1-12-98:*	$r^2 = 0,871$	y = 2,620X - 34,570	(zie bijlage 5)
IJKlijn	7- 1-99:	$r^2 = 0,429$	y = 1,158X + 13,187	(zie bijlage 6)
IJKlijn	29-1-99:	$r^2 = 0,677$	y = 2,134X - 31,504	(zie bijlage 7)

Alle metingen samengevoegd:*

IJKlijn	$r^2 = 0,454$	y = 1,267X + 10,667	(zie bijlage 8)

* 2 meetpunten weggelaten!

Troebelheidsmeter op NAP-4m.

IJKlijn	1-12-98:	$r^2 = 0,979$	y = 1,671X - 31,078	(zie bijlage 9)
IJKlijn	7- 1-99:	$r^2 = 0,299$	y = 1,001X + 13,533	(zie bijlage 10)
IJKlijn	29-1-99:	$r^2 = 0,406$	y = 1,209X - 9,258	(zie bijlage 11)

Alle metingen samengevoegd:

IJKlijn	$r^2 = 0,319$	y = 1,126X - 0,870	(zie bijlage 12)

Tijdens de Zeetunnel-vergadering van 16 februari 1999 is opgemerkt dat de slechte relaties misschien te wijten zijn aan het lozingspunt van DOW daar ter plaatse, door het inbrengen van luchtbellen. Om de invloed van het lozingspunt uit te schakelen zouden alleen waarden genomen moeten worden van tijdens de eb-periode. Dit blijken over de hele meetperiode slechts 4 waarden te zijn. Met dit aantal is het niet mogelijk de invloed van het lozingspunt vast te stellen.

Op dit moment (16 februari) kan slechts een conclusie worden getrokken, namelijk dat de nauwkeurigheid, waarmee het zwevendstofgehalte (Fractie <53µm), uit de troebelheidsmetingen kan worden bepaald, voor dit meetpunt onvoldoende is.

Getriggerd door deze informatie is daarna nog een ijkmeting uitgevoerd, waarbij alle procedures en handelingen met extra aandacht zijn uitgevoerd. Deze meting is uitgevoerd op 4 maart en laat goede resultaten zien.

IJklijn	NAP-17m:	$r^2 = 0,787$	y = 1,877X + 17,442	(zie bijlage 13)
IJKlijn	NAP-11m:	$r^2 = 0,974$	y = 2,264X + 8,019	(zie bijlage 14)
IJklijn	NAP- 4m:	$r^2 = 0,985$	y = 2,198X - 4,769	(zie bijlage 15)

Ook volgende ijklijnen (24/3, 15/4 en 28/4) geven goede resultaten te zien m.u.v. NAP-17, waarvan één ijkmeting niet voldoet. Het MEX-signaal is dan veel te laag (ongeveer factor 5).

IJklijn NAP-17m:

$r^2 = 0,696$	24-3-99	y = 2,112X + 10,072	(zie bijlage 16)
$r^2 = 0,053$	15-4-99	y = -5,118X + 106,608	(zie bijlage 17)
$r^2 = 0,716$	28-4-99	y = 2,371X + 0,311	(zie bijlage 18)

Gemiddelde ijklijn NAP-17m over de periode: 4-3-99 t/m 28-4-99: (15-4-99 niet meegenomen in berekening)

Y= 2,096 X + 9,646 (zie bijlage 19)

IJKlijn NAP-11m:

$r^2 = 0,894$	24-3-99	y = 2,090X + 7,452	(zie bijlage 20)
$r^2 = 0,978$	15-4-99	y = 2,223X + 4,533	(zie bijlage 21 - 1punt weggelaten)
$r^2 = 0,971$	28-4-99	y = 2,601X + 0,655	(zie bijlage 22)

Gemiddelde ijklijn NAP-11m over de periode: 4-3-99 t/m 28-4-99:

Y= 2,273 X + 5,008 (zie bijlage 23 -1punt weggelaten)

IJKlijn	NAP-4m:		
r^2 = 0,989	24-3-99	y = 1,834X + 1,306	(zie bijlage 24)
r^2 = 0,983	15-4-99	y = 1,960X + -0,273	(zie bijlage 25)
r^2 = 0,985	28-4-99	y = 2,656X + -9,132	(zie bijlage 26)

Gemiddelde ijklijn NAP-4m over de periode: 4-3-99 t/m 28-4-99:
Y= 2.046 X - 1,398 (zie bijlage 27)

Discussie:
Waar de oorzaak van de slechte resultaten gelegen heeft is niet duidelijk geworden. Misschien is het van alles wat geweest. Duidelijk moge zijn dat alle deelnemers aan het meetproces zeer geconcentreerd moeten werken.

Een zwaluw maakt nog geen zomer. Dat de resultaten van deze ijkmeting goed zijn betekent niet per definitie dat ook in de toekomst alle ijkmetingen goede resultaten zullen opleveren. Om te onderzoeken of de oude gegevens bruikbaar zijn is gekeken of er verband is tussen het troebelheidsignaal en de getij-amplitude. Dit lijkt inderdaad het geval te zijn (zie van Maldegem: datarapportage 4e kwartaal 1998). Op basis hiervan is besloten de troebelheidssignalen om te rekenen naar zwevendstofgehalten en op te slaan in Donar. De totale validatie van de gegevens voor het beschrijven van de T0-situatie wordt later uitgevoerd.

De ijklijnen, die na 4 maart zijn gemaakt, leveren met een kleine spreiding dezelfde resultaten op bij omrekenen van troebelheid naar zwevendstof. In de vergadering van 10 juni is daarom besloten voor de hele periode (dwz 4-3-99 t/m 28-4-99) per diepte één ijklijn te gebruiken.

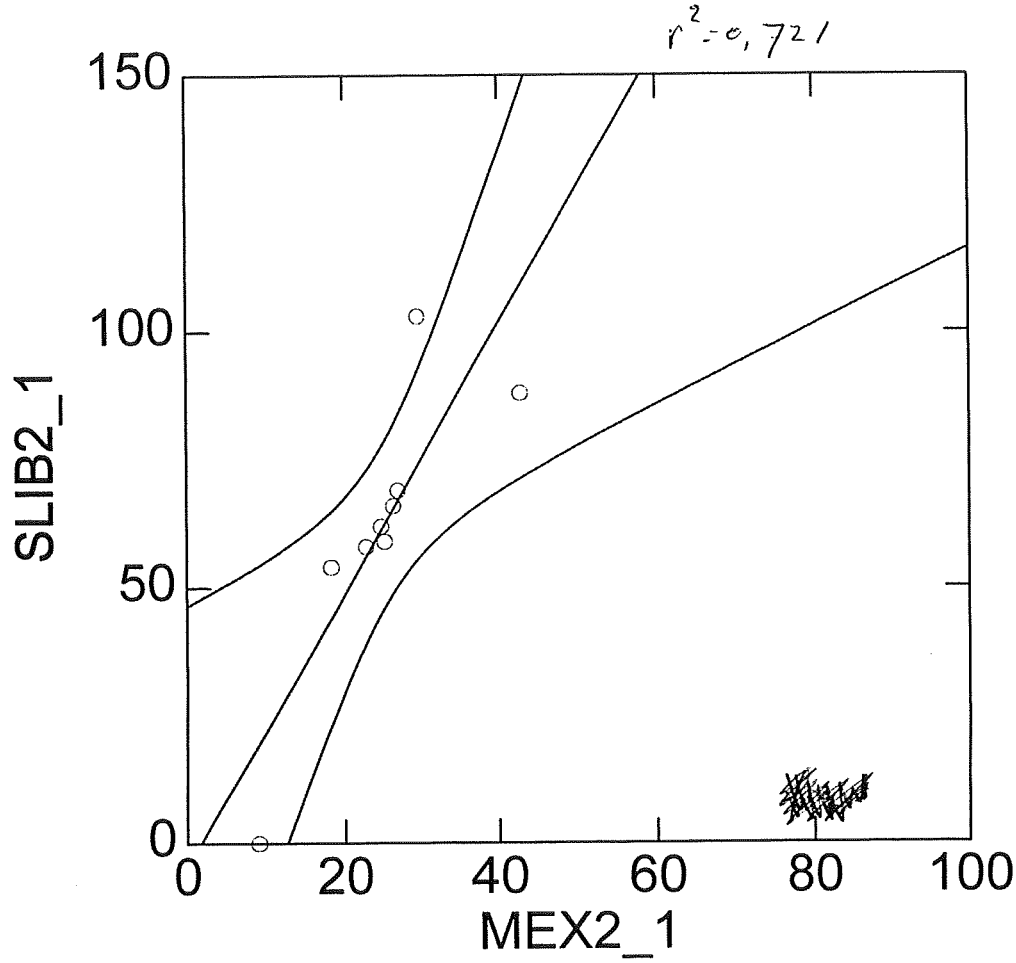
Gemiddelde ijklijn NAP-17m: Y= 2,096 X + 9,646
Gemiddelde ijklijn NAP-11m: Y= 2,273 X + 5,008
Gemiddelde ijklijn NAP- 4m: Y= 2.046 X - 1,398

(X-as = MEX uitlezing)
(Y-as = zwevendstoffractie<53µm).

Voor de periode 4/3 - 28/4 is extra controle van het troebelheidsignaal van de -17 meter -NAP sensor nodig, omdat deze sensor op 15/4 vreemde lage waarden te zien geeft.

NAP - 17
1/12/98
Nulpunt toegevoegd.

Bijlage 1



Dep Var: SLIB2_1 N: 9 Multiple R: 0.849 Squared multiple R: 0.721

Adjusted squared multiple R: 0.681 Standard error of estimate: 15.919

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-4.610	16.566	0.0	.	-0.278	0.789
MEX2_1	2.662	0.626	0.849	1.000	4.252	0.004

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	4580.949	1	4580.949	18.077	0.004
Residual	1773.939	7	253.420		

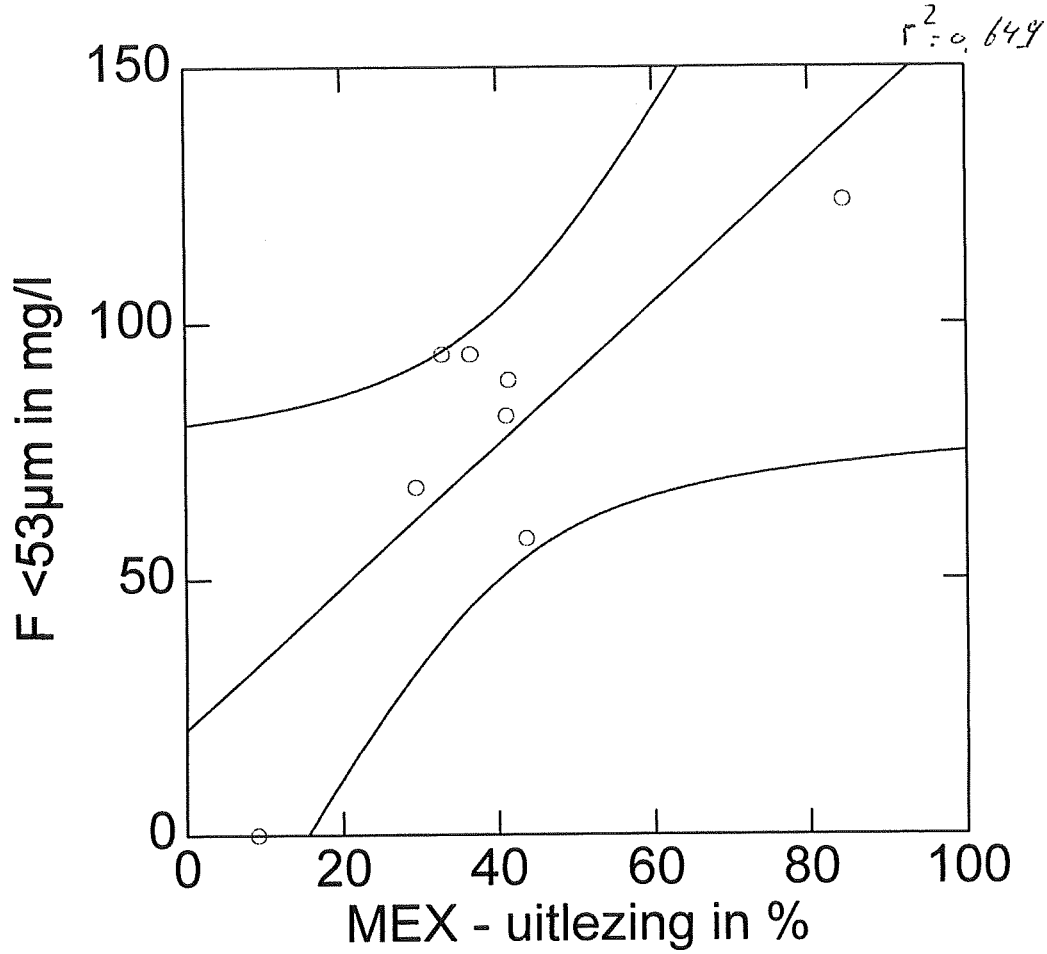
*** WARNING ***
Case 6 has large leverage (Leverage = 0.593)
Case 6 is an outlier (Studentized Residual = -3.110)
Case 8 is an outlier (Studentized Residual = 2.699)

Durbin-Watson D Statistic 2.389
First Order Autocorrelation -0.328

Bijlage 2

Dow NAP-17

7-1-99 (+ midpunt)



Dep Var: SLIB2_2 N: 8 Multiple R: 0.806 Squared multiple R: 0.649

Adjusted squared multiple R: 0.590 Standard error of estimate: 23.355

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	20.668	18.589	0.0	.	1.112	0.309
MEX2_2	1.392	0.418	0.806	1.000	3.330	0.016

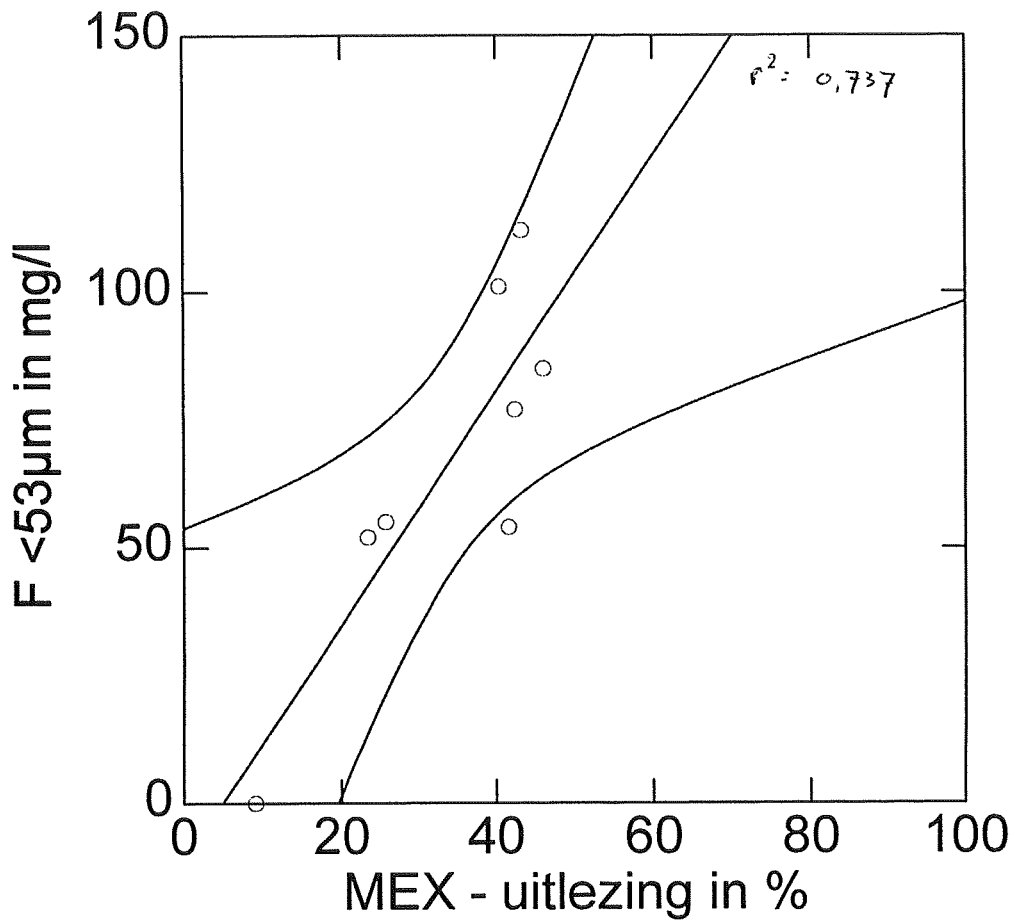
Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	6048.167	1	6048.167	11.088	0.016
Residual	3272.708	6	545.451		

*** WARNING ***
Case 6 has large leverage (Leverage = 0.763)
Case 8 is an outlier (Studentized Residual = -2.684)

Bijlage 3

DOW-steiger NAP-17 (29/1/1999)



Multiple R: 0.859 Squared multiple R: 0.737

Adjusted squared multiple R: 0.693 Standard error of estimate: 19.444

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-11.096	20.239	0.0	.	-0.548	0.603
MEX2_3	2.297	0.560	0.859	1.000	4.103	0.006

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	6363.558	1	6363.558	16.832	0.006
Residual	2268.442	6	378.074		

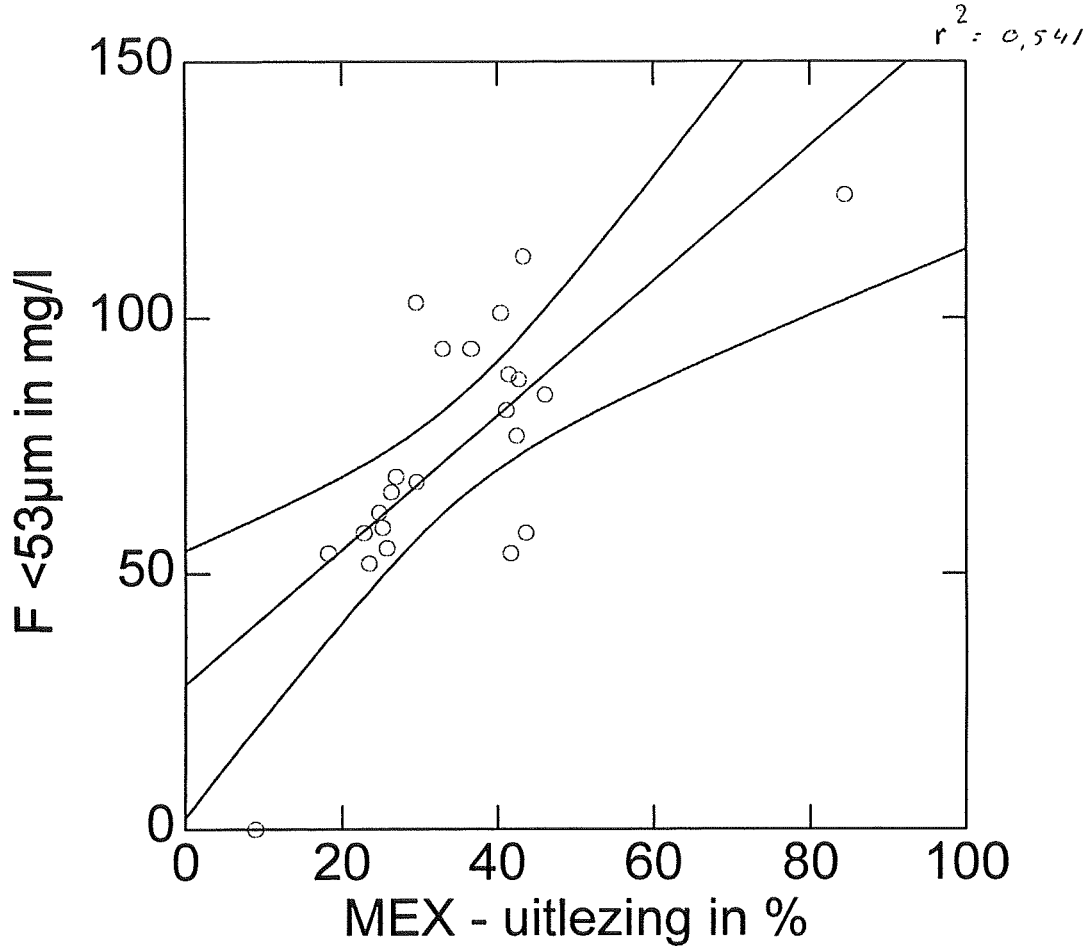
*** WARNING ***
Case 1 has large leverage (Leverage = 0.643)
Case 4 is an outlier (Studentized Residual = -2.214)

Durbin-Watson D Statistic 2.317
First Order Autocorrelation -0.261

Alle meetpunten incl nulpunt

Bylage 4

DOW-steiger NAP-17(1/12, 7/1, 29/1/999)



Multiple R: 0.736 Squared multiple R: 0.541

Adjusted squared multiple R: 0.519 Standard error of estimate: 18.141

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	28.426	9.927	0.0	.	2.864	0.009
MEX2	1.315	0.264	0.736	1.000	4.975	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	8144.921	1	8144.921	24.750	0.000
Residual	6910.905	21	329.091		

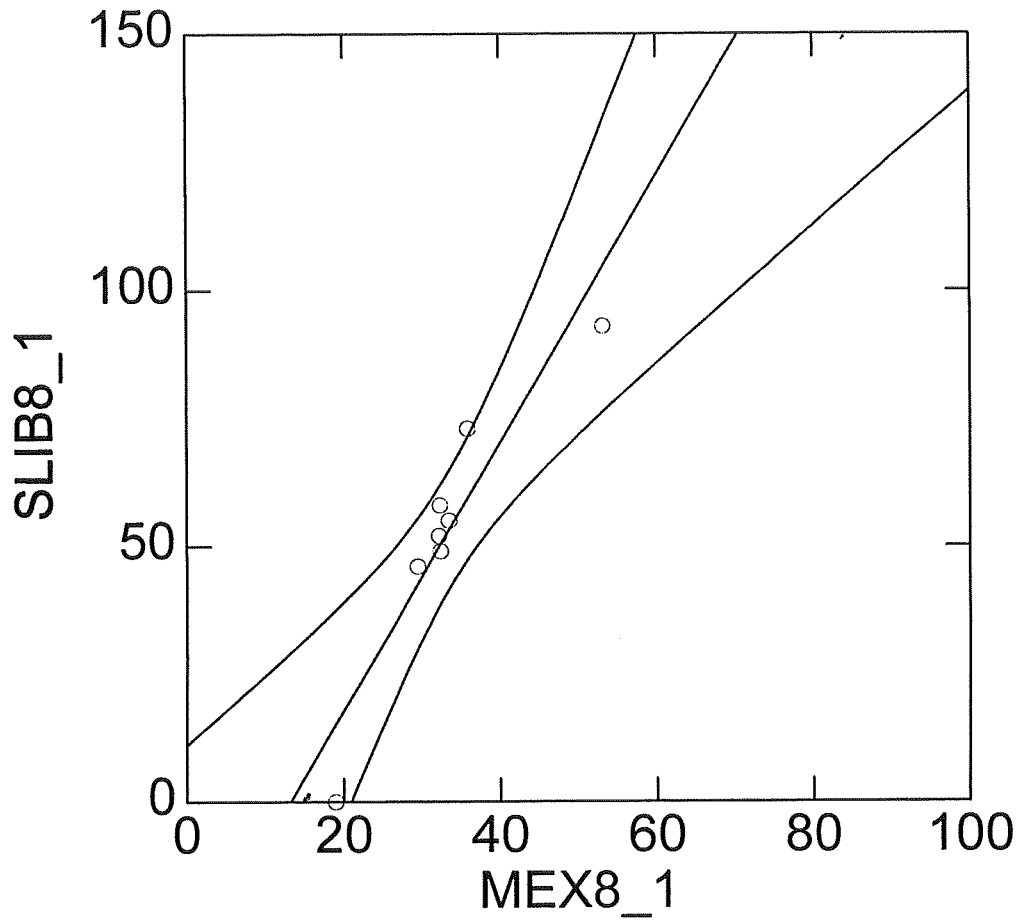
*** WARNING ***
Case 9 is an outlier (Studentized Residual = -2.841)
Case 22 has large leverage (Leverage = 0.570)

Durbin-Watson D Statistic 2.656
First Order Autocorrelation -0.328

Bylage 5

NAP-11.

1/12 -98 (punt 2 meggelatin)



Dep Var: SLIB8_1 N: 8 Multiple R: 0.933 Squared multiple R: 0.871

Adjusted squared multiple R: 0.850 Standard error of estimate: 10.256

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-34.574	14.249	0.0	.	-2.426	0.051
MEX8_1	2.620	0.411	0.933	1.000	6.373	0.001

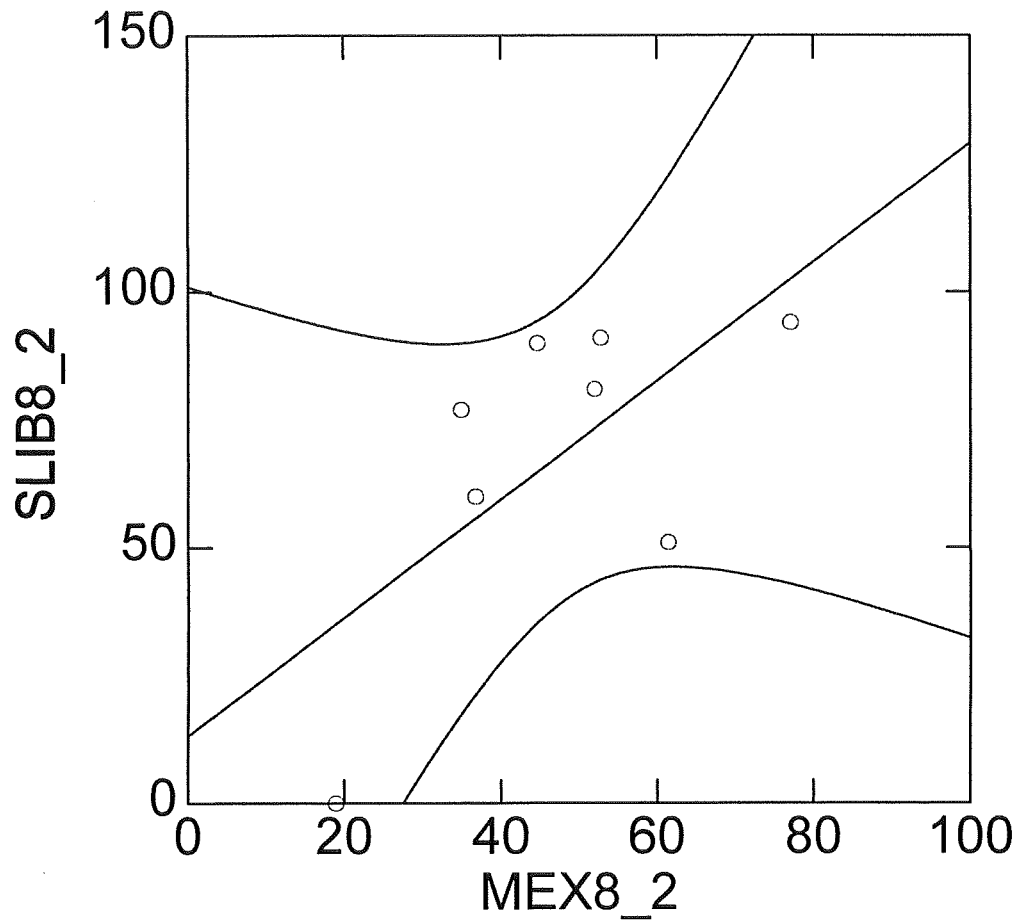
Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	4272.379	1	4272.379	40.617	0.001
Residual	631.121	6	105.187		

*** WARNING ***

Case	6 has large leverage	(Leverage = 0.744)
Case	6 is an outlier	(Studentized Residual = -5.245)
Case	6 has large influence	(Cook distance = 7.388)
Case	9 is an outlier	(Studentized Residual = -3.285)

Bylage 6



Dep Var: SLIB8_2 N: 8 Multiple R: 0.655 Squared multiple R: 0.429

Adjusted squared multiple R: 0.333 Standard error of estimate: 25.664

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	13.187	27.384	0.0	.	0.482	0.647
MEX8_2	1.158	0.546	0.655	1.000	2.122	0.078

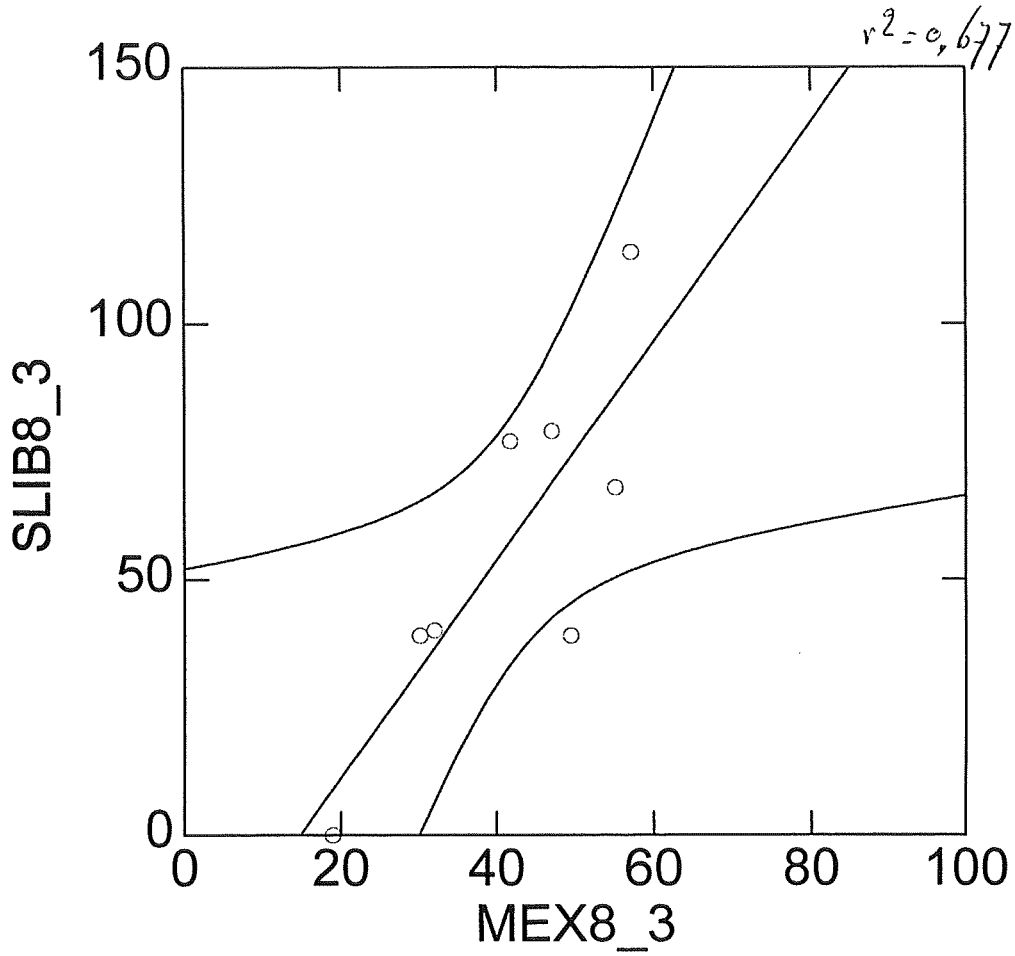
Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	2964.306	1	2964.306	4.501	0.078
Residual	3951.694	6	658.616		

*** WARNING ***
Case 8 is an outlier (Studentized Residual = -2.810)

Durbin-Watson D Statistic 0.389
First Order Autocorrelation 0.613

Bylage 7



Dep Var: SLIB8_3 N: 8 Multiple R: 0.823 Squared multiple R: 0.677

Adjusted squared multiple R: 0.623 Standard error of estimate: 21.313

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-31.503	26.065	0.0	.	-1.209	0.272
MEX8_3	2.134	0.602	0.823	1.000	3.547	0.012

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	5714.613	1	5714.613	12.581	0.012
Residual	2725.387	6	454.231		

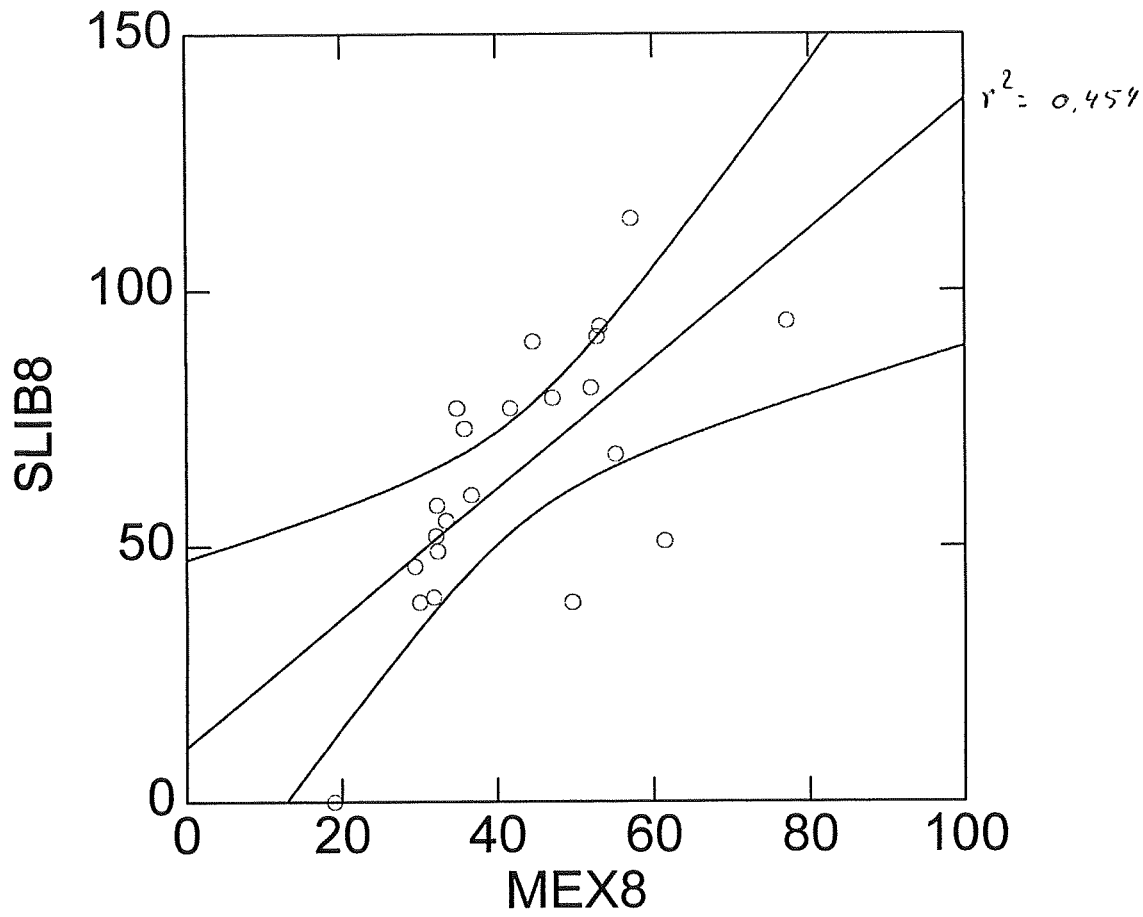
*** WARNING ***
Case 4 is an outlier (Studentized Residual = -2.478)

Durbin-Watson D Statistic 1.473
First Order Autocorrelation 0.179

Bijlage 8

NIAP-11

Alle metingen (punt 2 weggelaten)



Durbin-Watson D Statistic 1.444
First Order Autocorrelation 0.255

1 case(s) deleted due to missing data.

Dep Var: SLIB8 N: 22 Multiple R: 0.674 Squared multiple R: 0.454

Adjusted squared multiple R: 0.427 Standard error of estimate: 19.192

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	10.667	13.890	0.0	.	0.768	0.451
MEX8	1.267	0.311	0.674	1.000	4.080	0.001

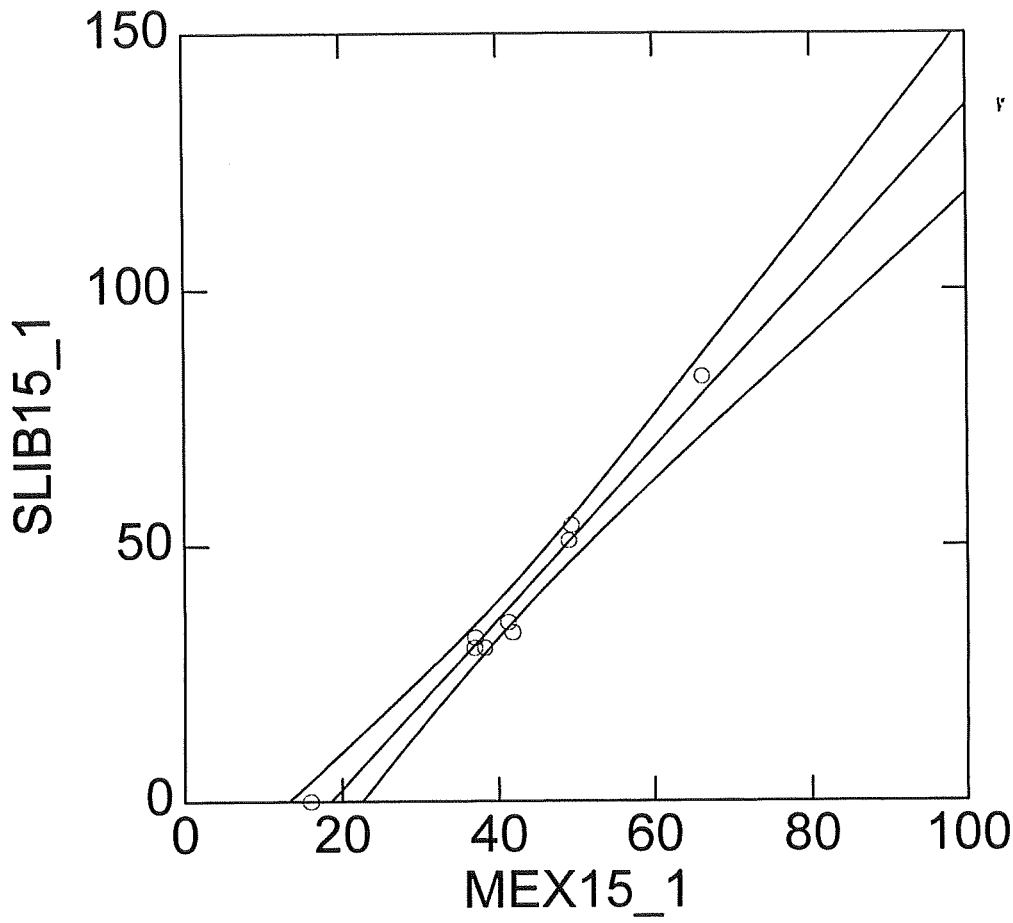
Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	6130.379	1	6130.379	16.643	0.001
Residual	7366.894	20	368.345		

*** WARNING ***
Case 22 has large leverage (Leverage = 0.354)

Bylage 9

Dow-steiger
NHP-4 1/12-98



$r^2 = 0,979$

Dep Var: SLIB15_1 N: 9 Multiple R: 0.989 Squared multiple R: 0.979

Adjusted squared multiple R: 0.976 Standard error of estimate: 3.536

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-31.078	4.074	0.0	.	-7.629	0.000
MEX15_1	1.671	0.093	0.989	1.000	17.886	0.000

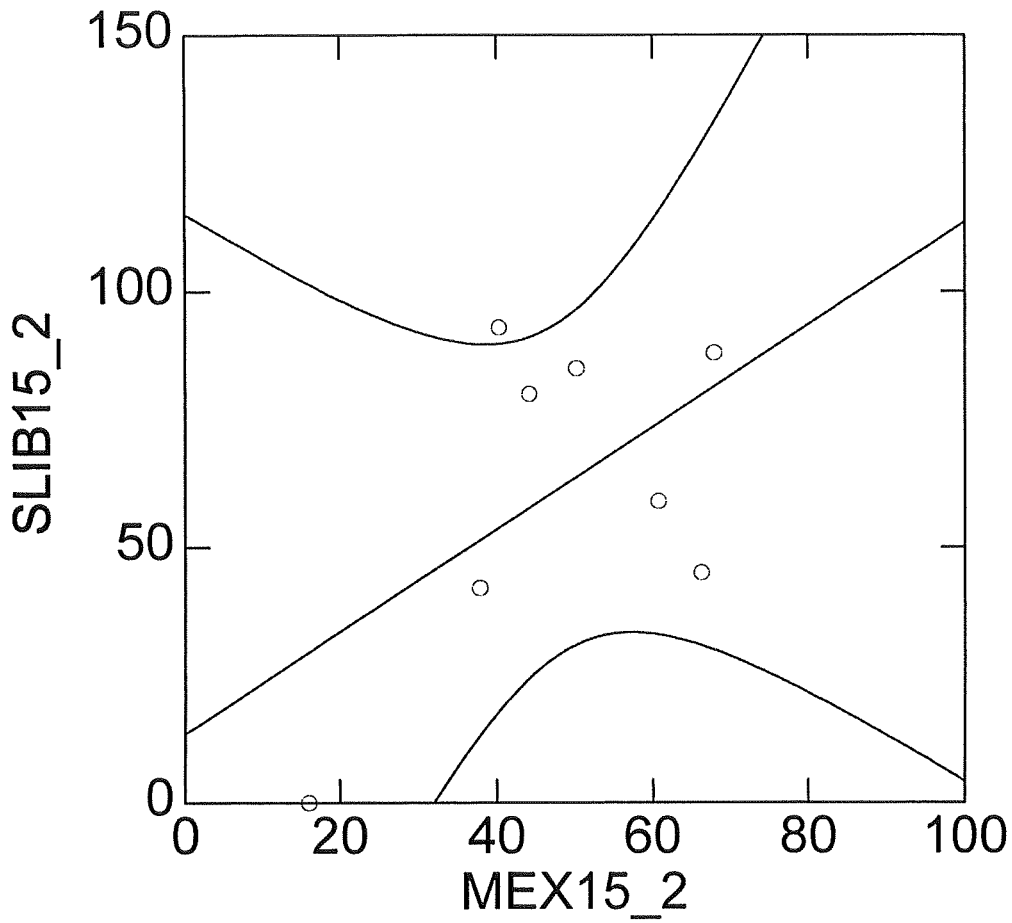
Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	4000.470	1	4000.470	319.926	0.000
Residual	87.530	7	12.504		

*** WARNING ***
Case 9 has large leverage (Leverage = 0.574)
Case 9 is an outlier (Studentized Residual = 2.478)

Durbin-Watson D Statistic 1.235
First Order Autocorrelation 0.087

NAP -4 7/1-99 Bylage 10



Dep Var: SLIB15_2 N: 8 Multiple R: 0.547 Squared multiple R: 0.299

Adjusted squared multiple R: 0.182 Standard error of estimate: 28.660

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	13.533	31.654	0.0	.	0.428	0.684
MEX15_2	1.001	0.626	0.547	1.000	1.600	0.161

Analysis of Variance

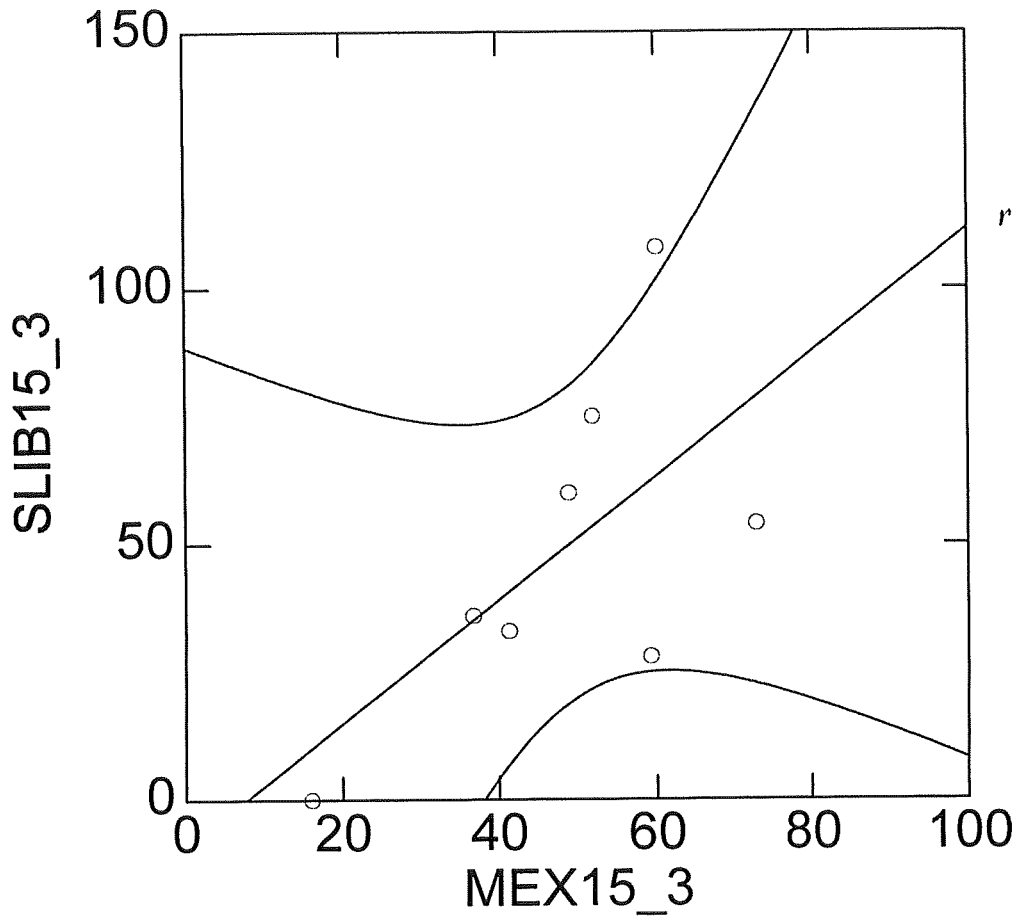
Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	2101.567	1	2101.567	2.559	0.161
Residual	4928.433	6	821.405		

*** WARNING ***
Case 8 has large leverage (Leverage = 0.611)

Durbin-Watson D Statistic 1.979
First Order Autocorrelation -0.082

NAP-4.
29/1-99

Bijlage 11



$r^2 = 0,406$

Dep Var: SLIB15_3 N: 8 Multiple R: 0.637 Squared multiple R: 0.406

Adjusted squared multiple R: 0.306 Standard error of estimate: 27.386

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-9.258	30.497	0.0	.	-0.304	0.772
MEX15_3	1.209	0.598	0.637	1.000	2.023	0.090

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	3069.701	1	3069.701	4.093	0.090
Residual	4499.799	6	749.966		

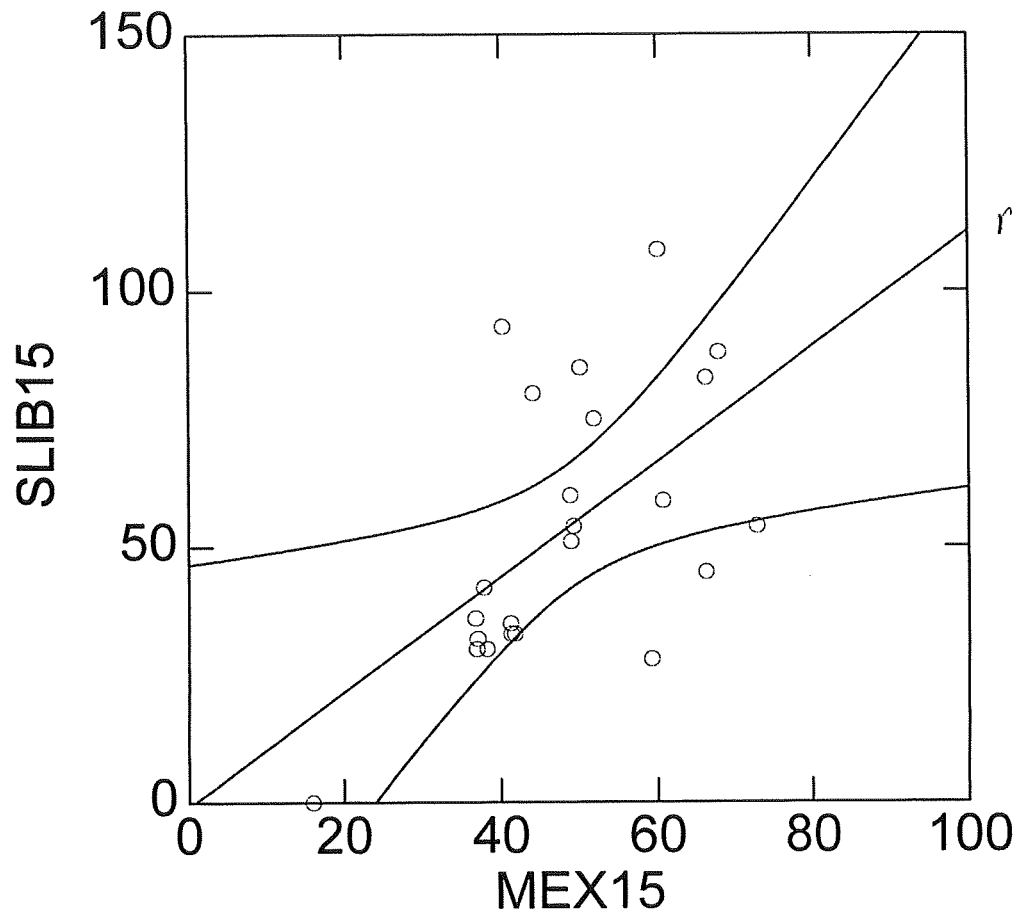
*** WARNING ***
Case 1 has large leverage (Leverage = 0.625)
Case 6 is an outlier (Studentized Residual = 2.446)

Durbin-Watson D Statistic 1.436
First Order Autocorrelation 0.259

Bijlage 12

NAP-4

Alle metingen



$r^2 = 0,319$

Dep Var: SLIB15 N: 23 Multiple R: 0.565 Squared multiple R: 0.319

Adjusted squared multiple R: 0.287 Standard error of estimate: 22.487

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-0.870	17.995	0.0	.	-0.048	0.962
MEX15	1.126	0.359	0.565	1.000	3.138	0.005

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	4980.112	1	4980.112	9.849	0.005
Residual	10619.105	21	505.672		

Durbin-Watson D Statistic 1.357

First Order Autocorrelation 0.273

Bijlage 13

Dep Var: O2 N: 7 Multiple R: 0.887 Squared multiple R: 0.787

Adjusted squared multiple R: 0.745 Standard error of estimate: 9.597

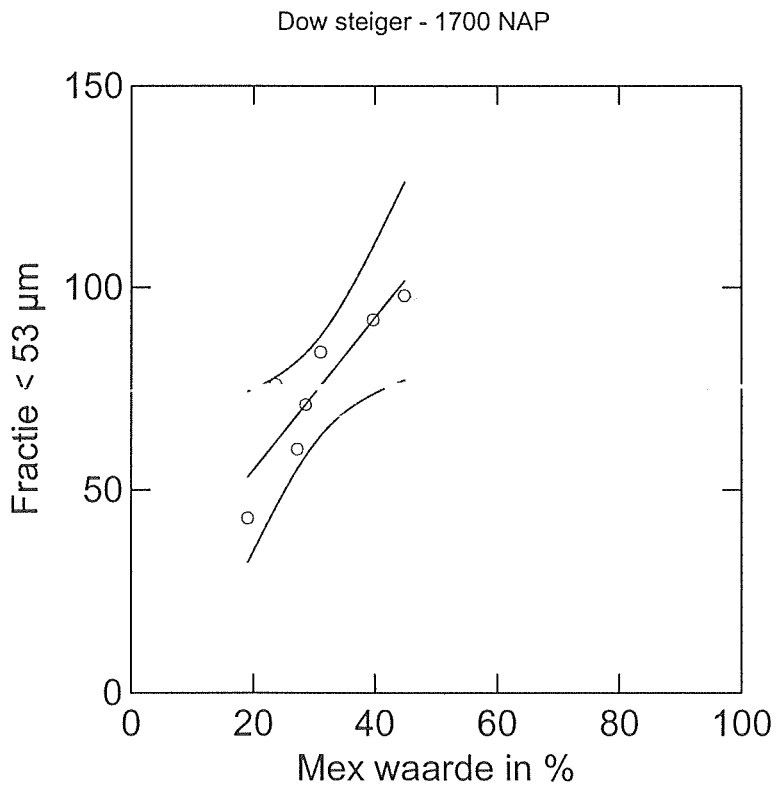
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	17.442	13.832	0.0	.	1.261	0.263
O1	1.877	0.436	0.887	1.000	4.302	0.008

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	1704.325	1	1704.325	18.504	0.008
Residual	460.533	5	92.107		

*** WARNING ***
Case 2 is an outlier (Studentized Residual = 2.347)

Durbin-Watson D Statistic 1.351
First Order Autocorrelation 0.324



Dep Var: N2 N: 7 Multiple R: 0.987 Squared multiple R: 0.974

Adjusted squared multiple R: 0.969 Standard error of estimate: 4.052

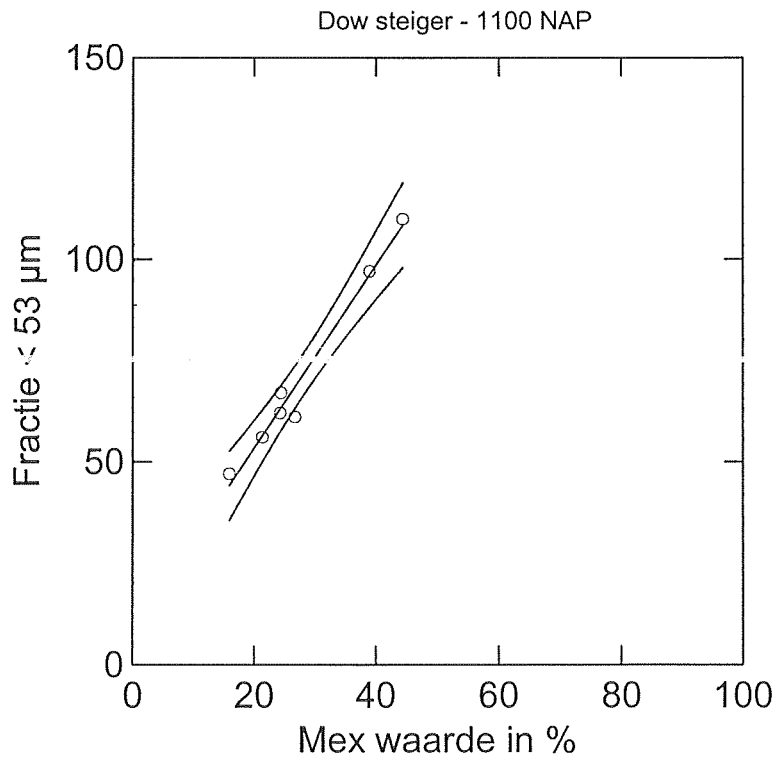
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	8.019	4.853	0.0	.	1.652	0.159
N1	2.264	0.164	0.987	1.000	13.768	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	3111.639	1	3111.639	189.559	0.000
Residual	82.076	5	16.415		

*** WARNING ***
Case 1 is an outlier (Studentized Residual = -3.946)

Durbin-Watson D Statistic 2.132
First Order Autocorrelation -0.409



Bijlage 15

Dep Var: M2 N: 7 Multiple R: 0.993 Squared multiple R: 0.985

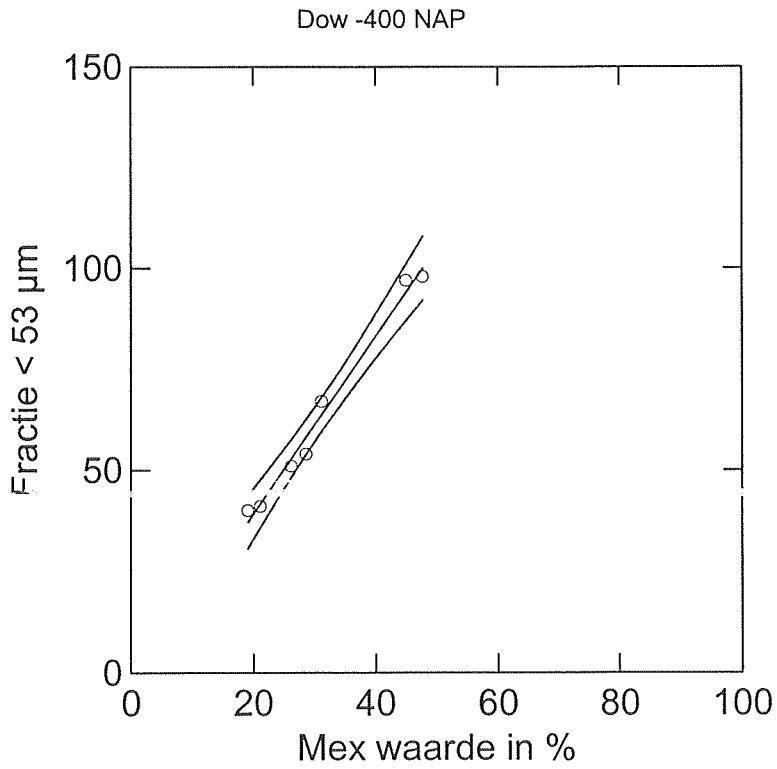
Adjusted squared multiple R: 0.982 Standard error of estimate: 3.274

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-4.769	3.965	0.0	.	-1.203	0.283
M1	2.198	0.120	0.993	1.000	18.258	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	3574.390	1	3574.390	333.368	0.000
Residual	53.610	5	10.722		

Durbin-Watson D Statistic 2.257
First Order Autocorrelation -0.305



Bijlage 16

Dep Var: D3 N: 7 Multiple R: 0.834 Squared multiple R: 0.696

Adjusted squared multiple R: 0.636 Standard error of estimate: 11.065

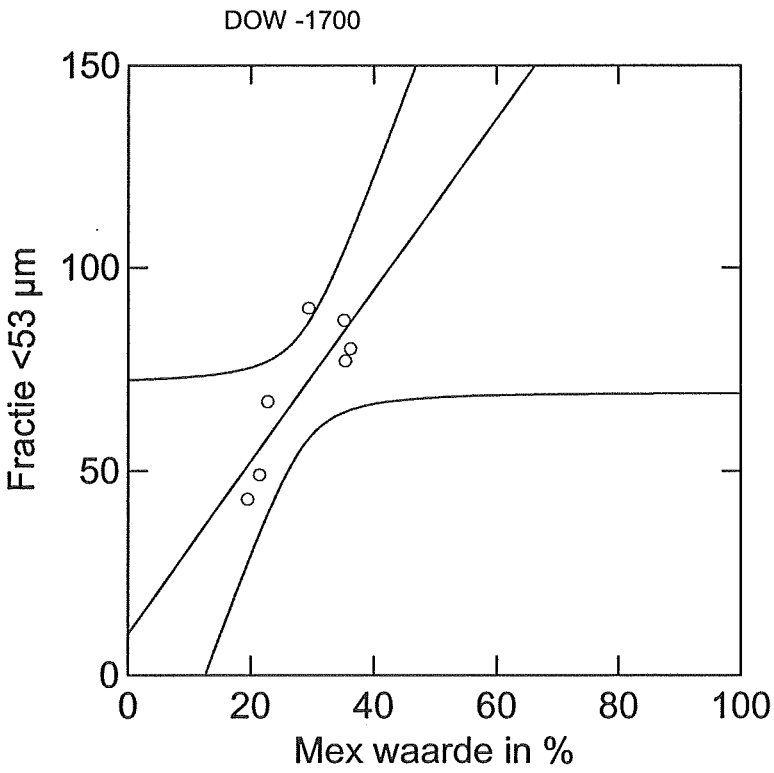
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	10.072	18.310	0.0	.	0.550	0.606
M3	2.112	0.624	0.834	1.000	3.386	0.020

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	1403.541	1	1403.541	11.464	0.020
Residual	612.173	5	122.435		

*** WARNING ***
Case 4 is an outlier (Studentized Residual = 2.451)

Durbin-Watson D Statistic 1.124
First Order Autocorrelation
0.354



Bylage 17

ep Var: D3 N: 7 Multiple R: 0.229 Squared multiple R: 0.053

Adjusted squared multiple R: 0.0 Standard error of estimate: 26.217

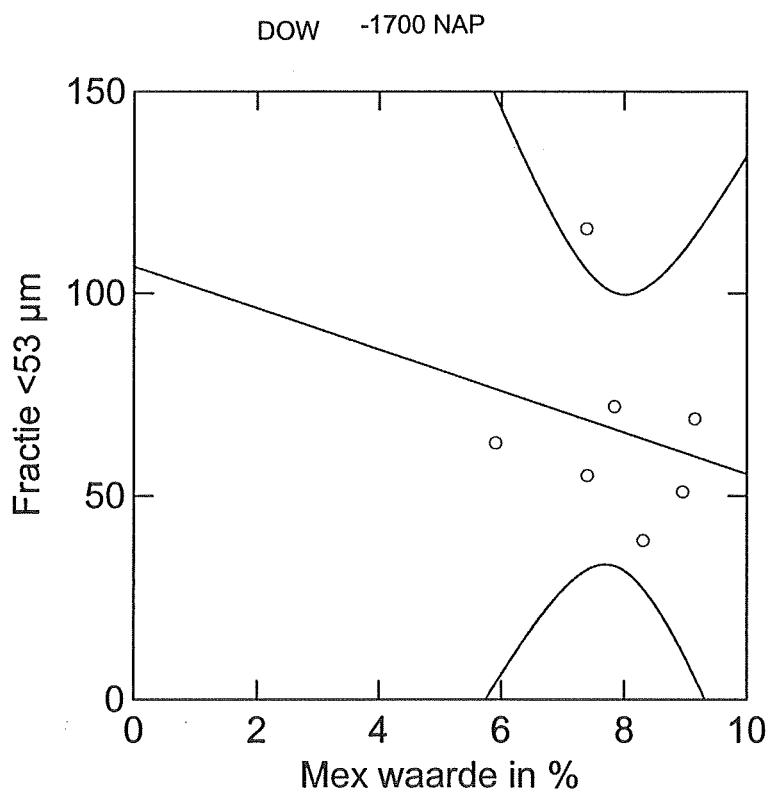
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	106.608	76.869	0.0	.	1.387	0.224
M3	-5.118	9.711	-0.229	1.000	-0.527	0.621

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	190.967	1	190.967	0.278	0.621
Residual	3436.747	5	687.349		

*** WARNING ***
Case 2 has large leverage (Leverage = 0.659)
Case 3 is an outlier (Studentized Residual = 3.803)

Durbin-Watson D Statistic 2.471
First Order Autocorrelation -0.252



Opm : MEX waarde zijn laag onder de tien !

Bijlage 18

Dep Var: D3 N: 7 Multiple R: 0.846 Squared multiple R: 0.716

Adjusted squared multiple R: 0.659 Standard error of estimate: 8.279

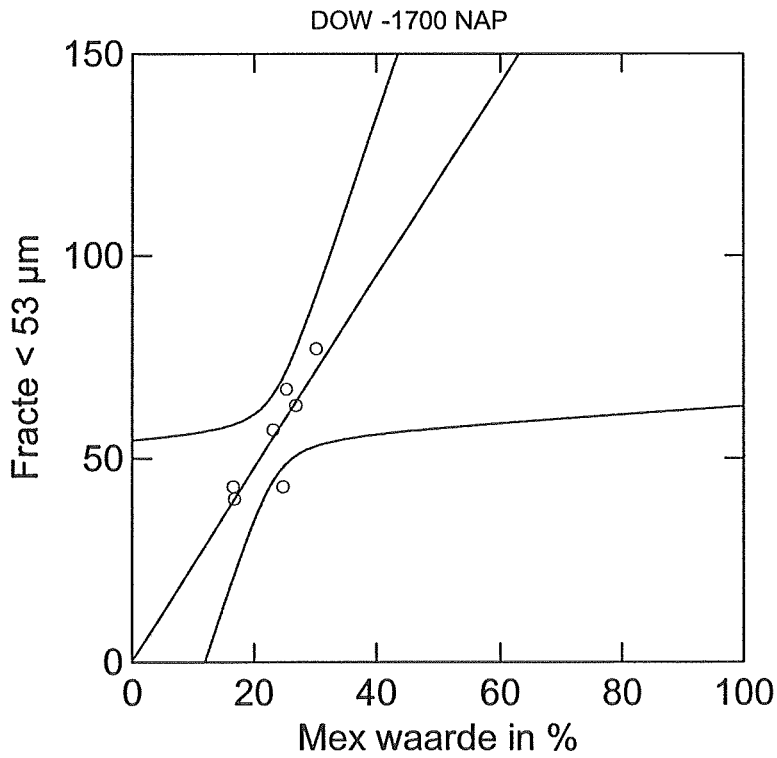
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	0.311	15.928	0.0	.	0.020	0.985
M3	2.371	0.668	0.846	1.000	3.547	0.016

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	862.679	1	862.679	12.585	0.016
Residual	342.749	5	68.550		

*** WARNING ***
Case 3 is an outlier (Studentized Residual = -5.484)

Durbin-Watson D Statistic 2.344
First Order Autocorrelation -0.241



Bijlage 19

8 case(s) deleted due to missing data.

Dep Var: DOWZS17 N: 20 Multiple R: 0.872 Squared multiple R: 0.761

Adjusted squared multiple R: 0.748 Standard error of estimate: 9.067

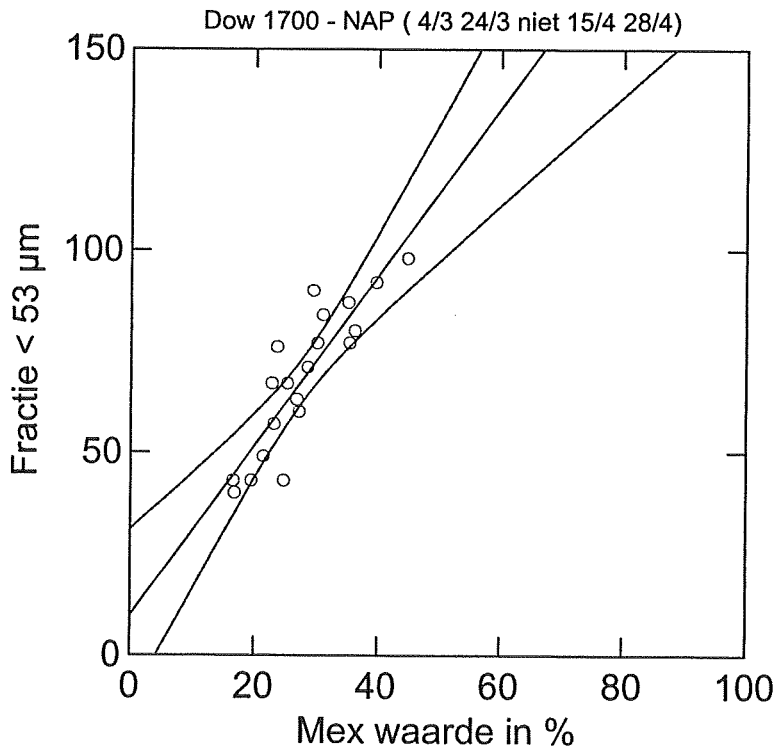
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	9.646	8.000	0.0	.	1.206	0.243
DOWMEX17	2.096	0.277	0.872	1.000	7.567	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	4707.250	1	4707.250	57.252	0.000
Residual	1479.950	18	82.219		

Durbin-Watson D Statistic 1.428
First Order Autocorrelation 0.279

1700 -NAP



Bijlage 20

Dep Var: D2 N: 7 Multiple R: 0.945 Squared multiple R: 0.894

Adjusted squared multiple R: 0.872 Standard error of estimate: 7.117

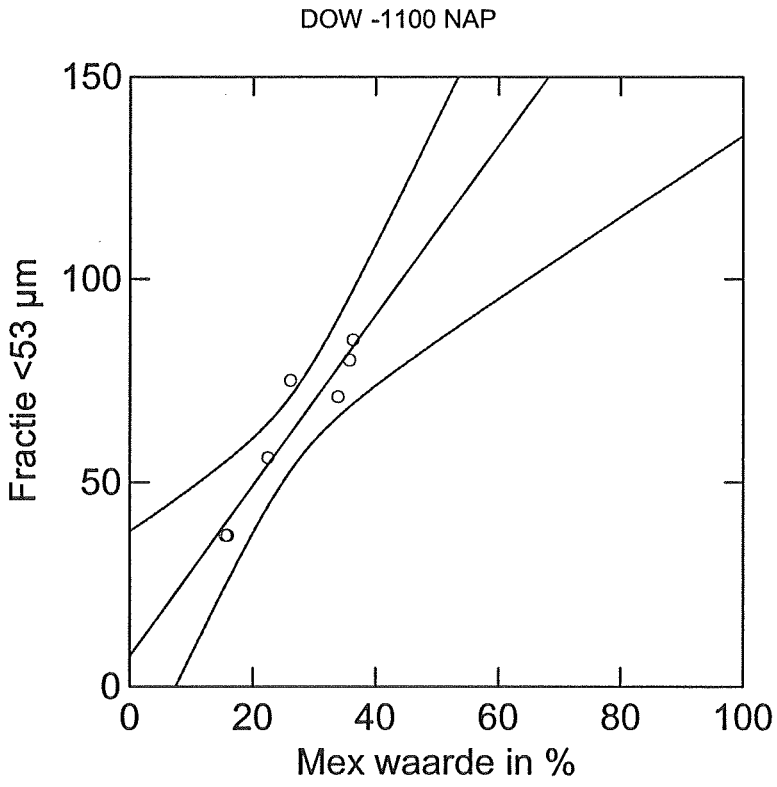
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	7.452	8.981	0.0	.	0.830	0.445
M2	2.090	0.322	0.945	1.000	6.483	0.001

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	2128.730	1	2128.730	42.025	0.001
Residual	253.270	5	50.654		

*** WARNING ***
Case 4 is an outlier (Studentized Residual = 3.716)

Durbin-Watson D Statistic 2.394
First Order Autocorrelation -0.219



Bijlage 21

1 case(s) deleted due to missing data.

Dep Var: D2 N: 6 Multiple R: 0.989 Squared multiple R: 0.978

Adjusted squared multiple R: 0.972 Standard error of estimate: 2.266

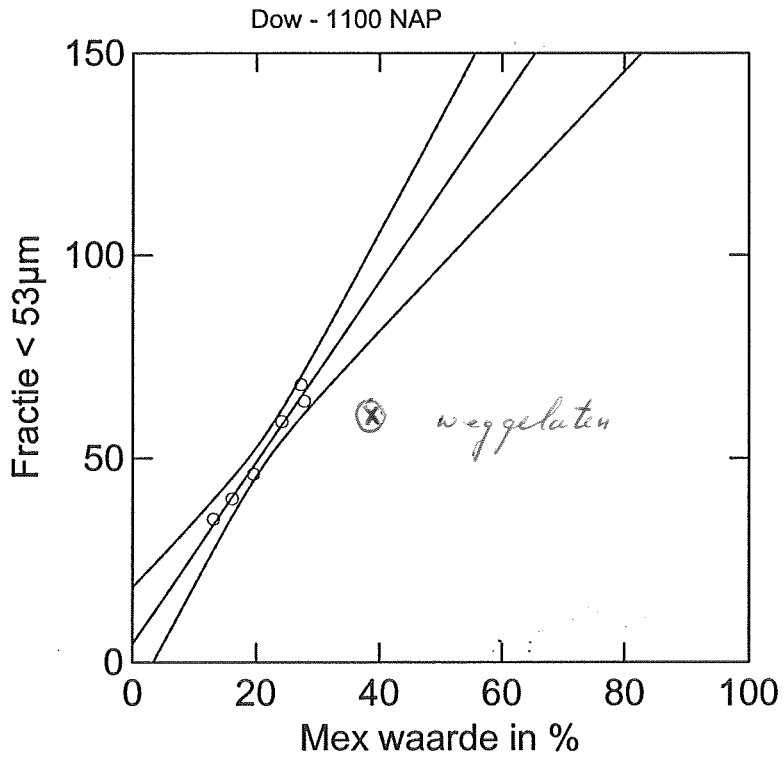
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	4.533	3.708	0.0	.	1.223	0.289
M2	2.223	0.168	0.989	1.000	13.221	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	897.462	1	897.462	174.790	0.000
Residual	20.538	4	5.135		

*** WARNING ***
Case 3 is an outlier (Studentized Residual = 2.308)

Durbin-Watson D Statistic 1.079
First Order Autocorrelation 0.224



Bylage 22

Dep Var: D2 N: 7 Multiple R: 0.985 Squared multiple R: 0.971

Adjusted squared multiple R: 0.965 Standard error of estimate: 3.442

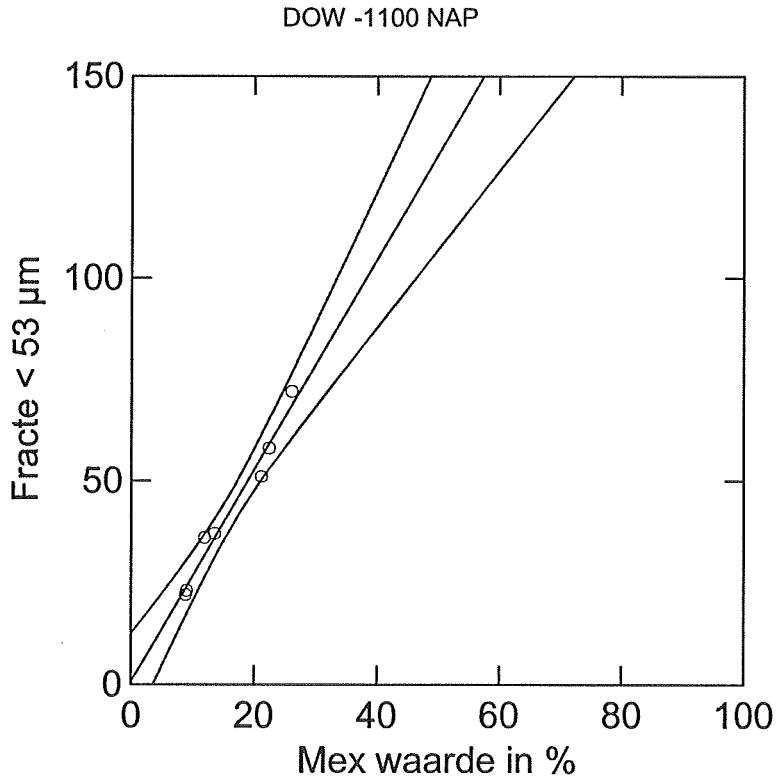
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	0.655	3.492	0.0	.	0.188	0.859
M2	2.601	0.200	0.985	1.000	12.981	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	1996.194	1	1996.194	168.499	0.000
Residual	59.235	5	11.847		

*** WARNING ***
Case 1 is an outlier (Studentized Residual = -2.057)

Durbin-Watson D Statistic 2.025
First Order Autocorrelation -0.305



Bijlage 23

1 case(s) deleted due to missing data.

Dep Var: DOWZS11 N: 27 Multiple R: 0.975 Squared multiple R: 0.951

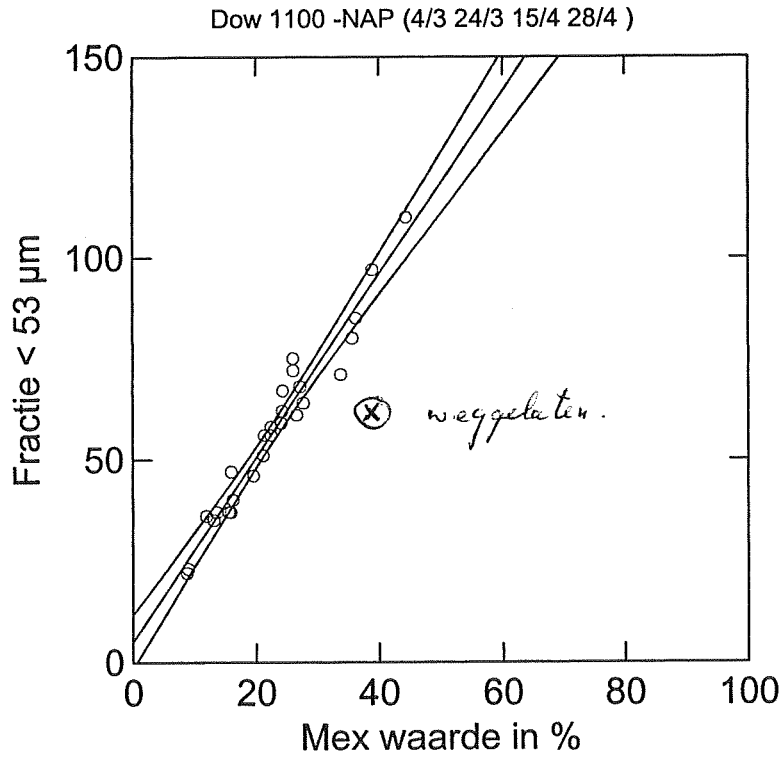
Adjusted squared multiple R: 0.949 Standard error of estimate: 4.809

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	5.008	2.552	0.0	.	1.962	0.061
DOWMEX11	2.273	0.103	0.975	1.000	22.060	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	11252.645	1	11252.645	486.626	0.000
Residual	578.095	25	23.124		

Durbin-Watson D Statistic 1.690
First Order Autocorrelation 0.086



Bijlage 24

Dep Var: D1 N: 7 Multiple R: 0.995 Squared multiple R: 0.989

Adjusted squared multiple R: 0.987 Standard error of estimate: 2.247

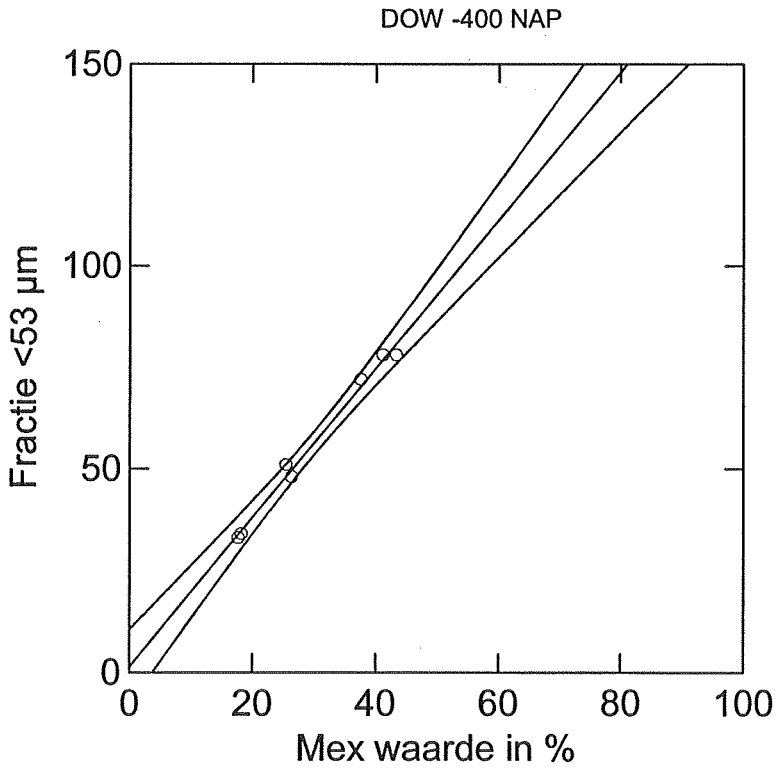
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	1.306	2.712	0.0	.	0.482	0.650
M1	1.834	0.086	0.995	1.000	21.348	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	2300.193	1	2300.193	455.744	0.000
Residual	25.236	5	5.047		

*** WARNING ***
Case 1 is an outlier (Studentized Residual = -2.048)

Durbin-Watson D Statistic 2.544
First Order Autocorrelation -0.435



Bijlage 25

Dep Var: D1 N: 7 Multiple R: 0.991 Squared multiple R: 0.983

Adjusted squared multiple R: 0.979 Standard error of estimate: 1.793

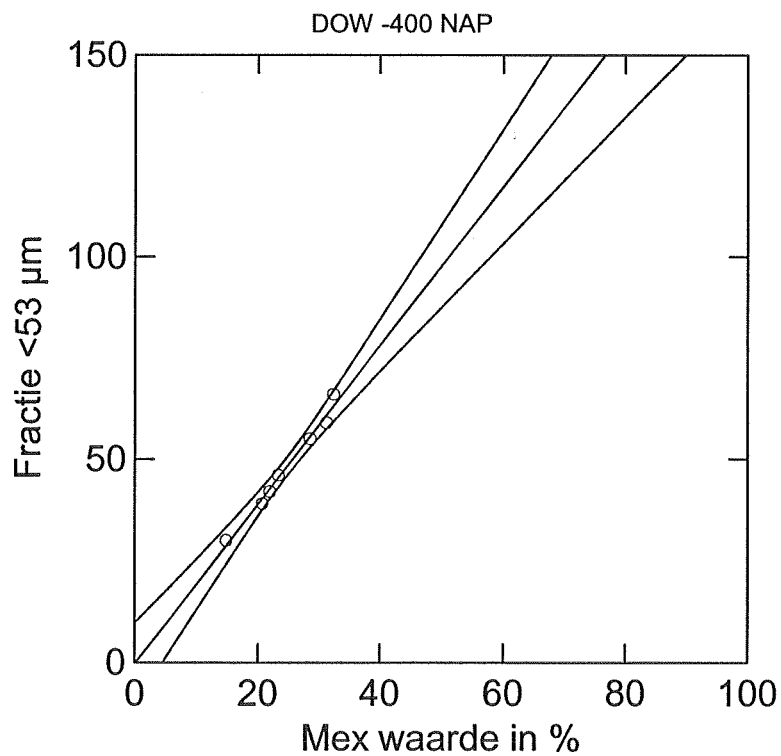
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-0.273	2.937	0.0	.	-0.093	0.929
M1	1.960	0.116	0.991	1.000	16.940	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	922.779	1	922.779	286.974	0.000
Residual	16.078	5	3.216		

*** WARNING ***
Case 1 is an outlier (Studentized Residual = 3.813)

Durbin-Watson D Statistic 1.373
First Order Autocorrelation -0.040



Bijlage 26

Dep Var: D1 N: 7 Multiple R: 0.992 Squared multiple R: 0.985

Adjusted squared multiple R: 0.981 Standard error of estimate: 3.167

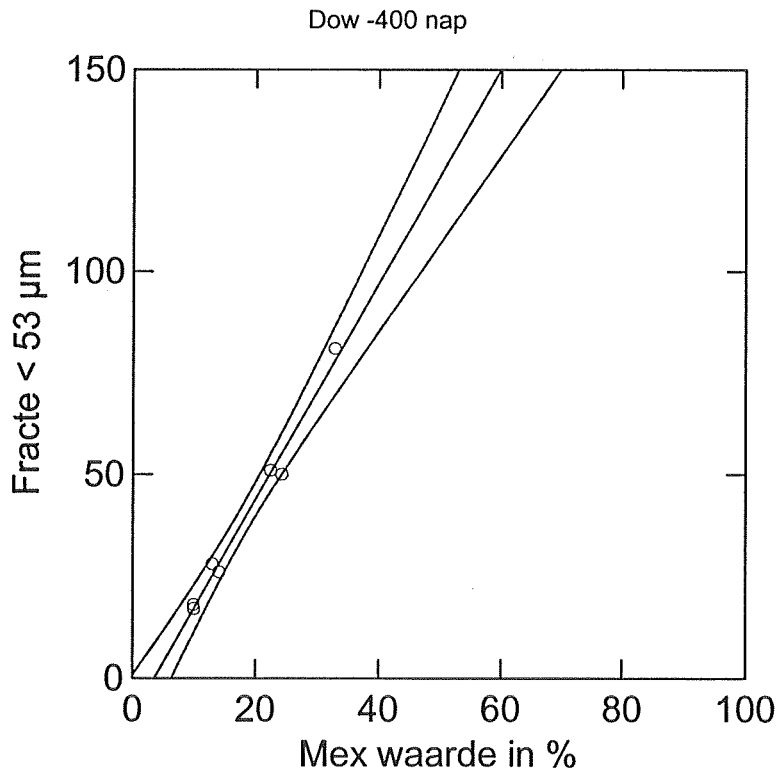
Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-9.132	2.936	0.0	.	-3.110	0.027
M1	2.656	0.149	0.992	1.000	17.846	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	3193.294	1	3193.294	318.473	0.000
Residual	50.134	5	10.027		

*** WARNING ***
Case 6 is an outlier (Studentized Residual = -3.103)
Case 7 has large leverage (Leverage = 0.627)

Durbin-Watson D Statistic 3.197
First Order Autocorrelation -0.689



Bijlage 27.

Dep Var: DOWZS4 N: 28 Multiple R: 0.978 Squared multiple R: 0.956

Adjusted squared multiple R: 0.955 Standard error of estimate: 4.605

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	-1.398	2.394	0.0	.	-0.584	0.564
DOWMEX4	2.046	0.086	0.978	1.000	23.849	0.000

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	12059.442	1	12059.442	568.767	0.000
Residual	551.272	26	21.203		

*** WARNING ***
Case 28 is an outlier (Studentized Residual = 4.477)

Durbin-Watson D Statistic 1.498
First Order Autocorrelation 0.021

- 400 NAP