

Calibration ALEC JFE fluorescence and turbidity sensors.

The units of the data generated by the sensors are expressed as formazine units. From a lab calibration constants have been determined to transfer these units to suspended matter concentrations of local suspended material and in case of fluorescence to chlorophyll-a concentrations using *isochrysis galbana* as reference algal species.

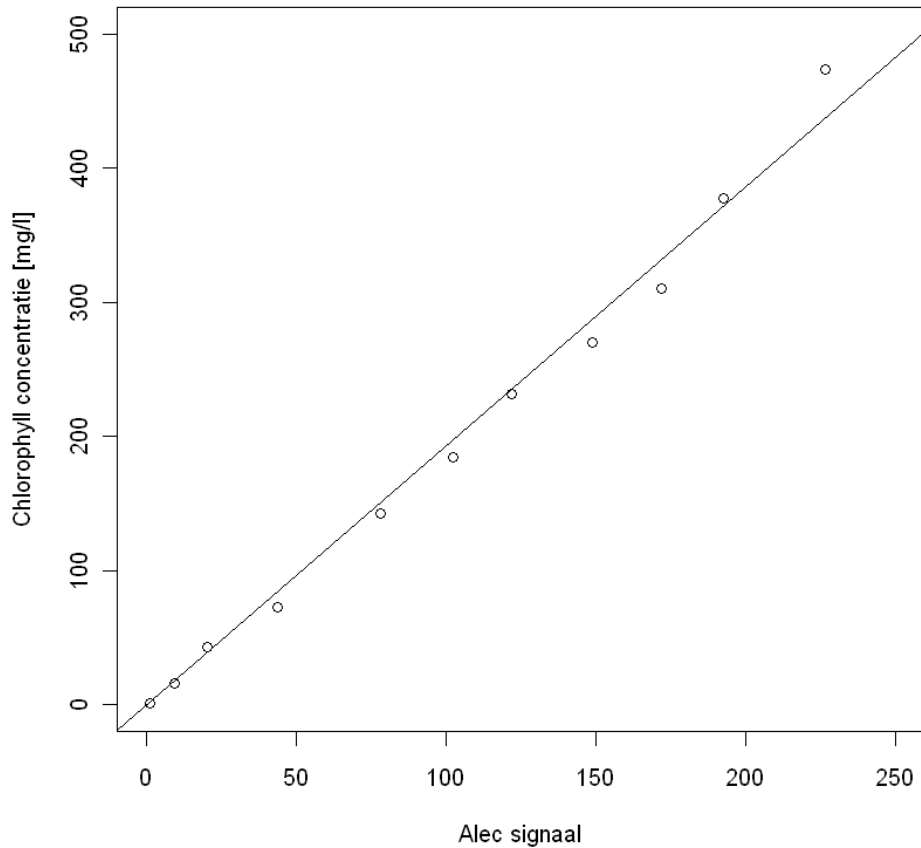
Suspended matter calibration;

Local fine material was collected. A dilution series of this material was made ranging from 6 to 2100 mg/L. Every ALEC sensor measured two bursts of each 10 measurements in each of the concentrations while the solutions were stirred. Afterwards three water samples ranging from 100 ml to 2000 ml from the solution were filtered over pre weighted cellulose acetate filters. After drying for a day at 60°C each filter was weighed again. From the weight difference between the absolute amount of suspended material could be determined. This was back calculated to a concentration using the filtered volume of the sample taken.

Chl-a

A dilution series of the algal culture was made ranging from 0.6 to 444 µ/L. Every ALEC sensor measured two bursts of each 10 measurements in each of the concentrations while the solution was stirred. Afterwards three water samples ranging from 20 ml to 300 ml from the solution were filtered over whatman gff filters. After freeze drying the amount of chlorophyll was determined by the acetone extraction method. The amount of chlorophyll was back calculated to a chlorophyll concentration using the filtered volume of the sample taken.

Chlorophyll-a



$$\text{Chlorophyll } [\mu\text{g/L}] = 1.92950 \cdot \text{Alecsignaal} + 0$$

Residuals:

Min	1Q	Median	3Q	Max
-21.581	-12.600	-3.999	1.426	35.990

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
Average[Type == "Chloro"]	1.92950	0.03797	50.81	2.11e-13 ***

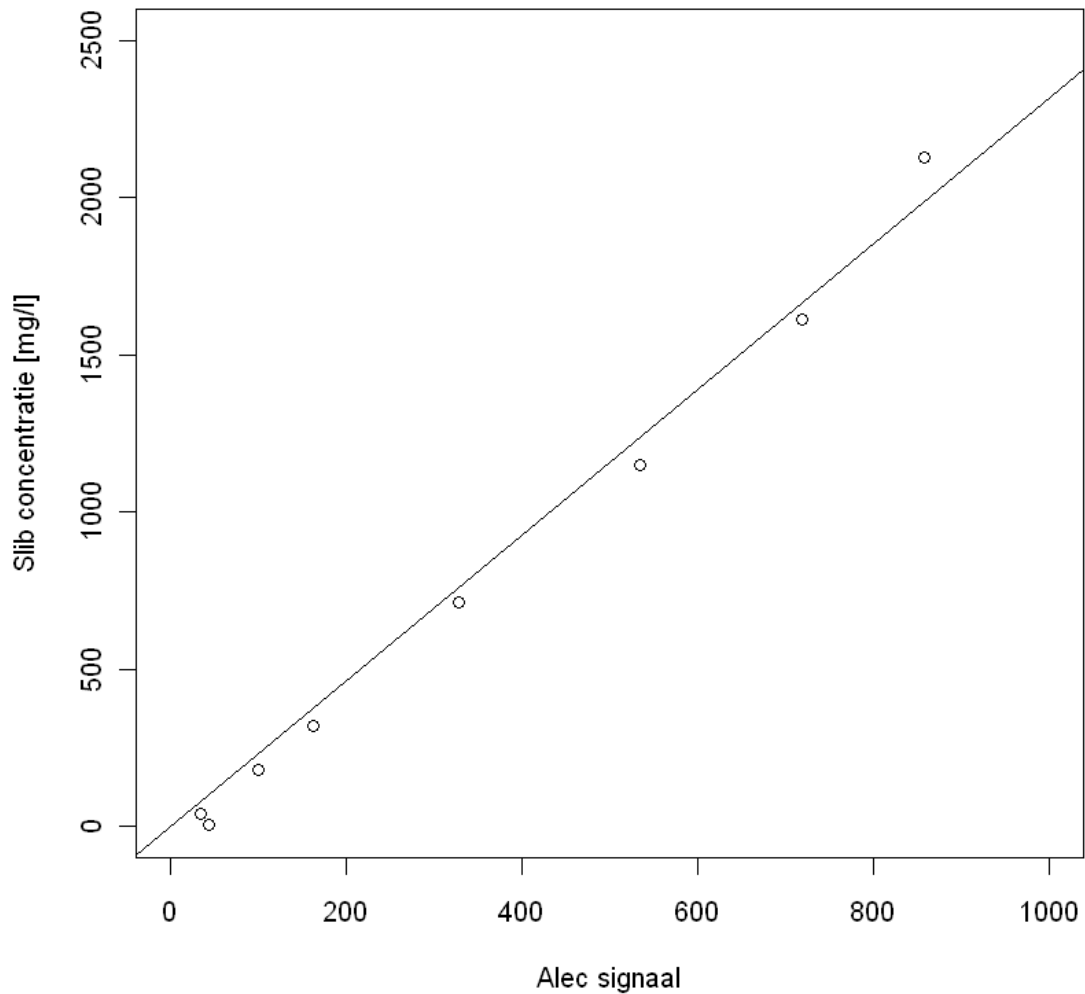
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

Residual standard error: 15.84 on 10 degrees of freedom

Multiple R-squared: 0.9961, Adjusted R-squared: 0.9958

F-statistic: 2582 on 1 and 10 DF, p-value: 2.106e-13

Slib ijking.



Slib concentratie[mg/L]= 2.3151*Alecuitlezing+0

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
Average[Type == "Slib"]	2.3151	0.0629	36.8	2.84e-09 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 81.68 on 7 degrees of freedom

Multiple R-squared: 0.9949, Adjusted R-squared: 0.9941

F-statistic: 1355 on 1 and 7 DF, p-value: 2.841e-09

