

SUPPLEMENTARY MATERIALS S1

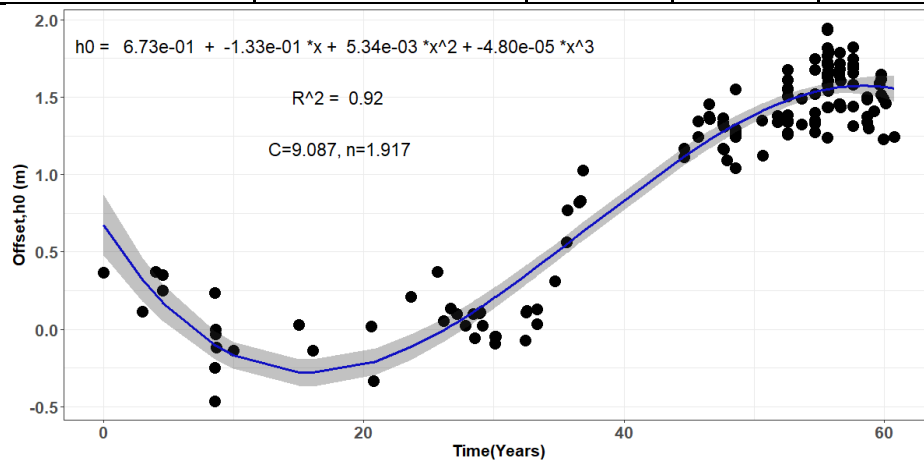
Establishing stage-discharge rating curves in developing countries: Lake Tana basin, Ethiopia

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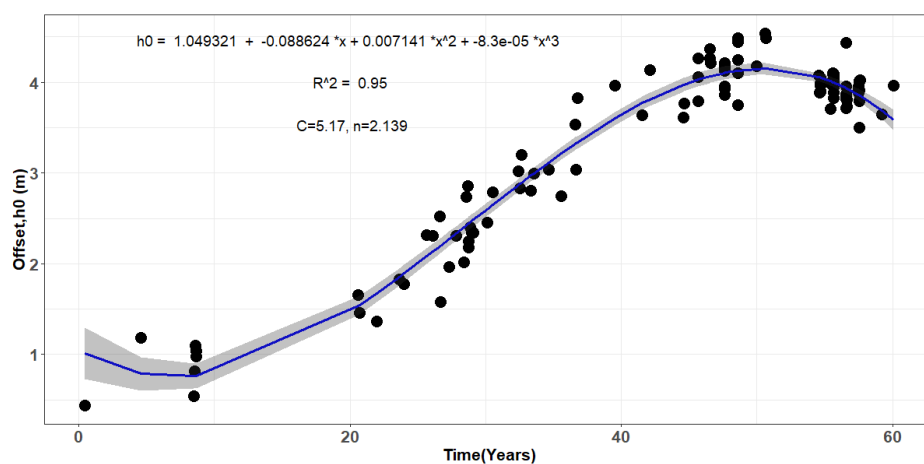
S.1 Fitted polynomials of the offset as a function of time, constants and exponent of modified rating curves

Presented are the best-fit polynomials of the offsets with the 95% confidence intervals and the best fit coefficients for the modified rating curves (Eqs 3 and 4) for the 21 stations listed in Table 1 in the Lake Tana Basin. For completeness, the Gumara, Ribb, Gilgel Abbay and Megech are included. For all polynomials, time $t=0$ is the year of the first measurement listed in Table 2.

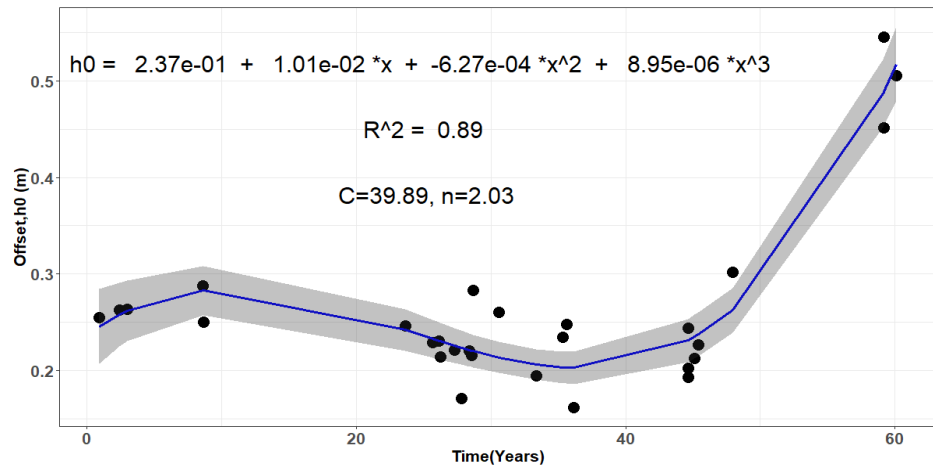
(a) Gumara at Woreta	n =		Confidence @95%		
	C=9.087	1.917			
	coefficients		2.50%	97.50%	standard error
Intercept	6.73E-01		4.80E-01	8.66E-01	9.76E-02
X1	-1.33E-01		-1.58E-01	-1.07E-01	1.28E-02
X2	5.34E-03		4.45E-03	6.23E-03	4.50E-04
X3	-4.80E-05		-5.70E-05	-3.91E-05	4.53E-06



(b) Ribb at Addis Zemen		C = 5.17, n = 2.139			Confidence @95%	
		coefficients	2.50%	97.50%	standard error	
Intercept		1.05E+00	7.55E-01	1.34E+00	1.49E-01	
X1		-8.86E-02	-1.24E-01	-5.33E-02	1.78E-02	
X2		7.14E-03	5.90E-03	8.38E-03	6.27E-04	
X3		-8.26E-05	-9.52E-05	-7.00E-05	6.38E-06	



(c) Gilgel Abbay at Bikolo		C = 39.89, n = 2.03		Confidence @95%	
		coefficients	2.50%	97.50%	standard error
Intercept		2.37E-01	1.93E-01	2.82E-01	2.16E-02
X1		1.01E-02	3.11E-03	1.70E-02	3.36E-03
X2		-6.27E-04	-9.03E-04	-3.52E-04	1.33E-04
X3		8.95E-06	6.00E-06	1.19E-05	1.43E-06

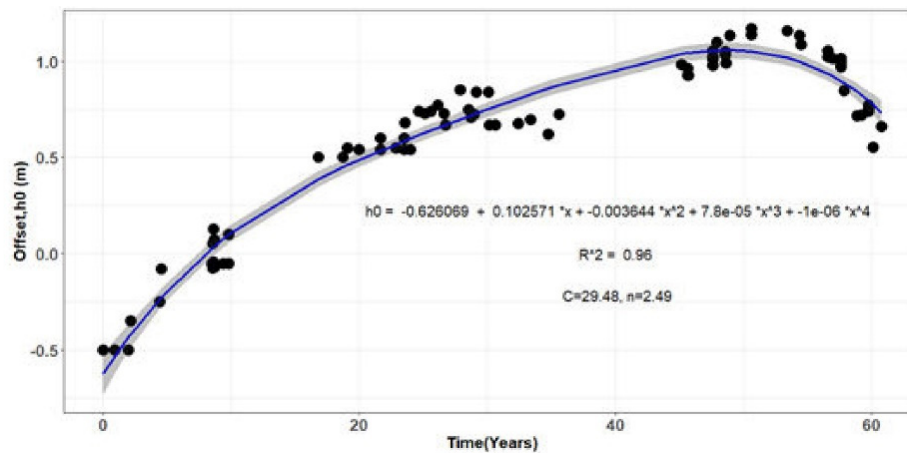


(d) Megech at G. Azezo

C = 29.48, n =
2.49

Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	-6.26E-01	7.31E-01	5.21E-01	5.29E-02
X1	1.03E-01	7.87E-02	1.26E-01	1.20E-02
X2	-3.64E-03	-5.16E-03	2.13E-03	7.63E-04
X3	7.80E-05	4.25E-05	1.14E-04	1.79E-05
X4	-1.00E-06	-9.32E-07	-3.78E-07	1.39E-07

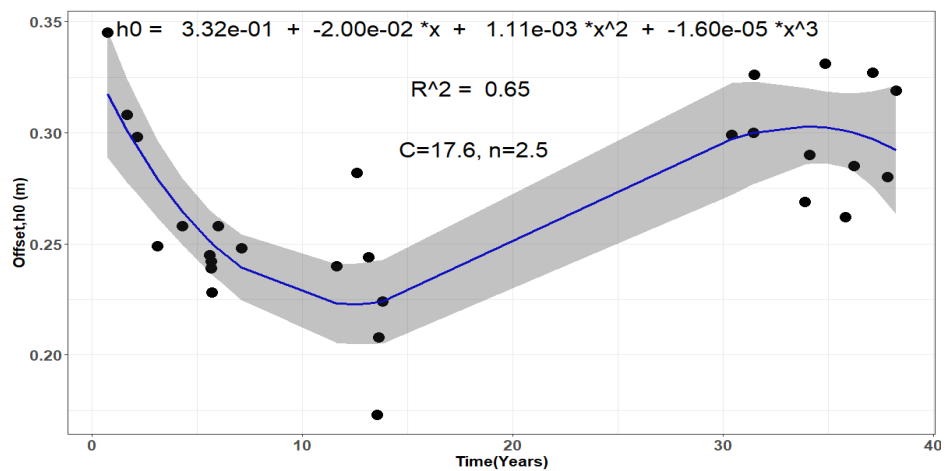


(e) Gelda at Ambessame

C = 17.60, n =
2.50

Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	3.32E-01	2.97E-01	3.67E-01	1.69E-02
X1	-2.00E-02	-2.87E-02	-1.14E-02	4.17E-03
X2	1.11E-03	5.50E-04	1.66E-03	2.70E-04
X3	-1.60E-05	-2.59E-05	-6.02E-06	4.81E-06

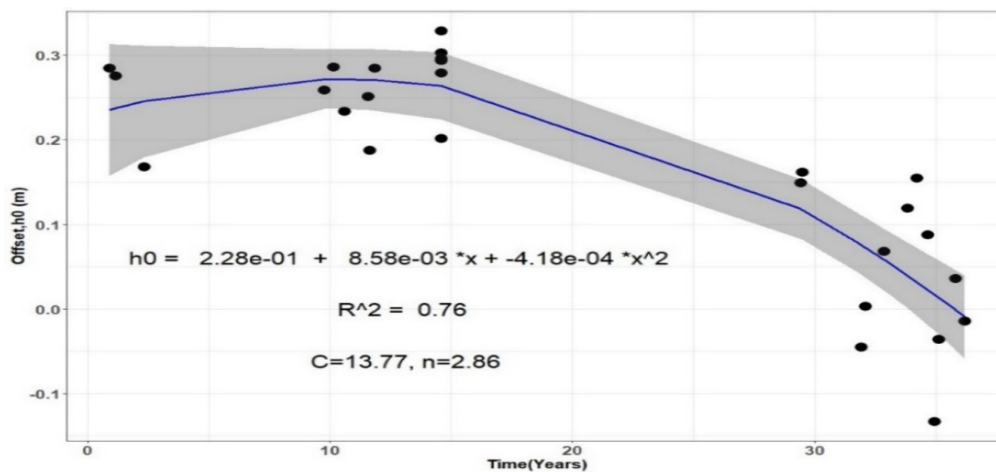


(f) Fogeda at Arb-Gebeya

C=13.77, n =
2.86

Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	2.28E-01	1.39E-01	3.16E-01	4.29E-02
X1	8.58E-03	-2.29E-03	1.94E-02	5.26E-03
X2	-4.18E-04	-6.78E-04	-1.58E-04	1.26E-04

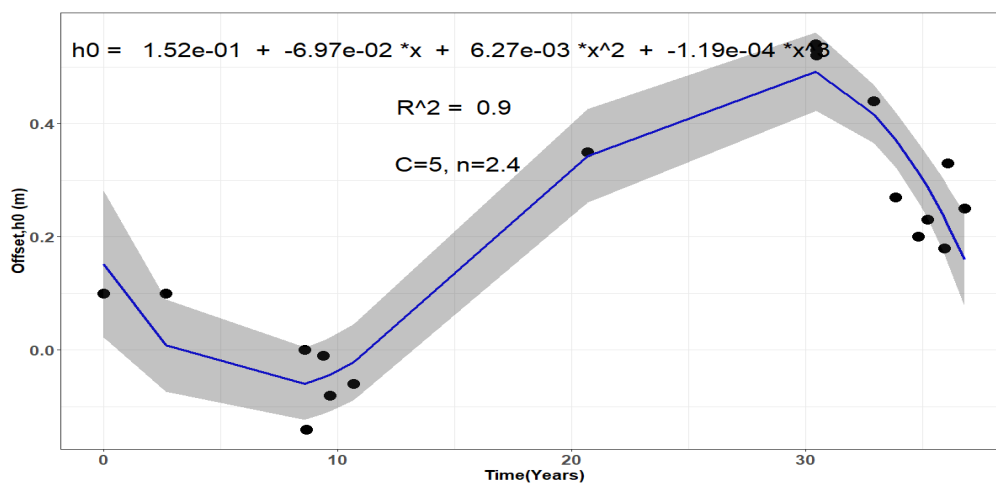


(g) Ribb at Gassay

C = 7.7, n = 2.20

Confidence @95%

	Coefficients	2.50%	97.50%	standard error
Intercept	1.51E-01	1.30E-02	2.91E-01	6.49E-02
X1	-6.96E-02	-1.00E-02	-3.90E-02	1.43E-02
X2	6.27E-03	4.36E-03	8.18E-03	8.92E-04
X3	-1.19E-04	-1.53E-04	-8.46E-05	1.60E-05

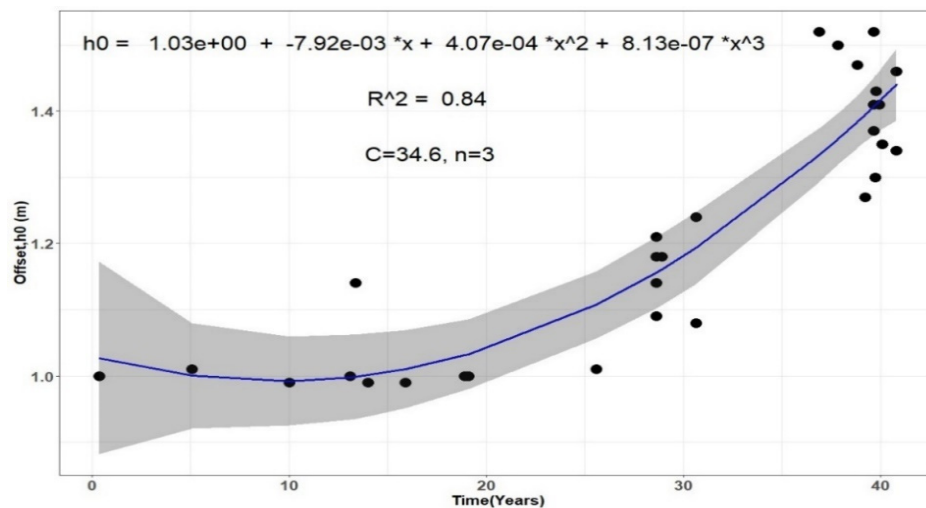


(h) Upper Ribb nr Ibnat

C = 34.60, n = 3.0

Confidence @95%

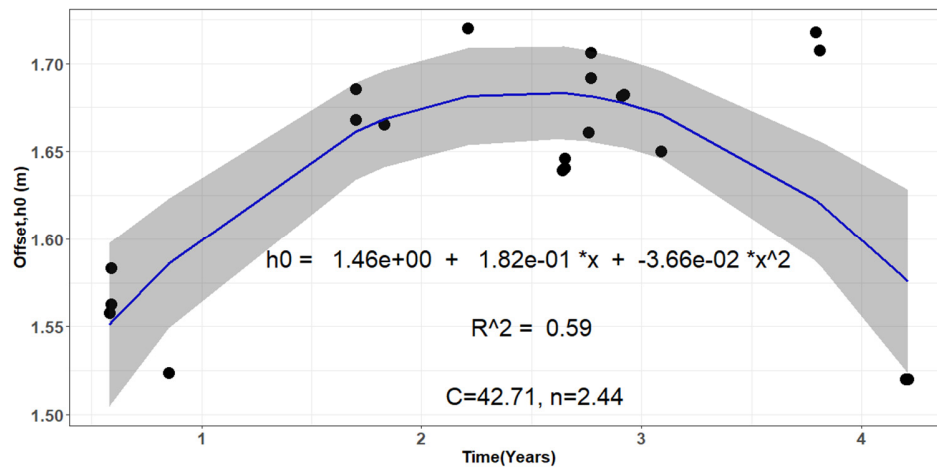
	coefficients	2.50%	97.50%	standard error
Intercept	1.03E+00	8.72E-01	1.19E+00	7.68E-02
X1	-7.92E-03	-3.60E-02	2.01E-02	1.37E-02
X2	4.07E-04	-1.04E-03	1.86E-03	7.08E-04
X3	8.13E-07	-2.07E-05	2.24E-05	1.05E-05

**(i) Kirari nr Addis Zemen**

C = 42.71, n = 2.44

Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	1.46E+00	1.38E+00	1.54E+00	3.88E-02
X1	1.82E-01	1.06E-01	2.57E-01	3.59E-02
X2	-3.66E-02	-5.25E-02	-2.06E-02	7.58E-03

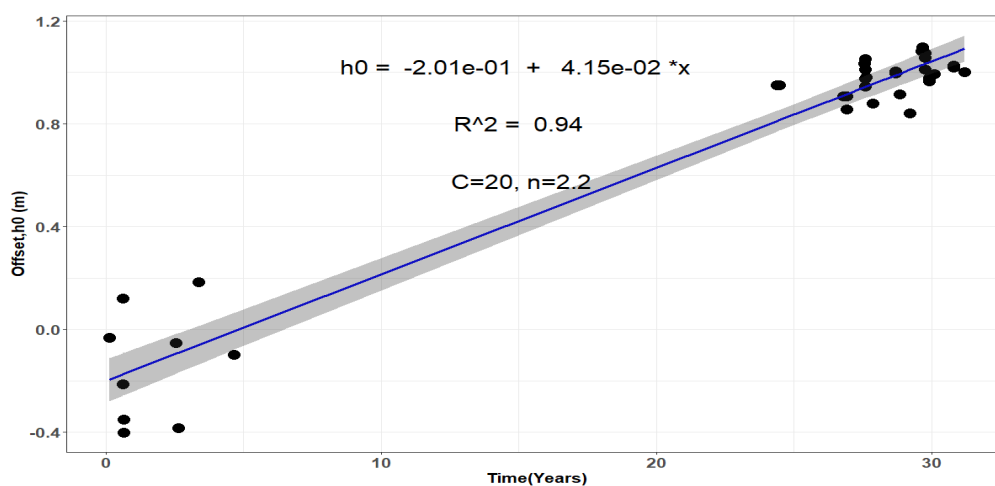


(j) Sheni nr Addis Zemen

C = 20, n = 2.2

Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	-2.000E-01	-2.86E-01	-1.15E-02	4.42E-02
X1	4.14E-02	3.80E-02	4.49E-02	1.70E-03

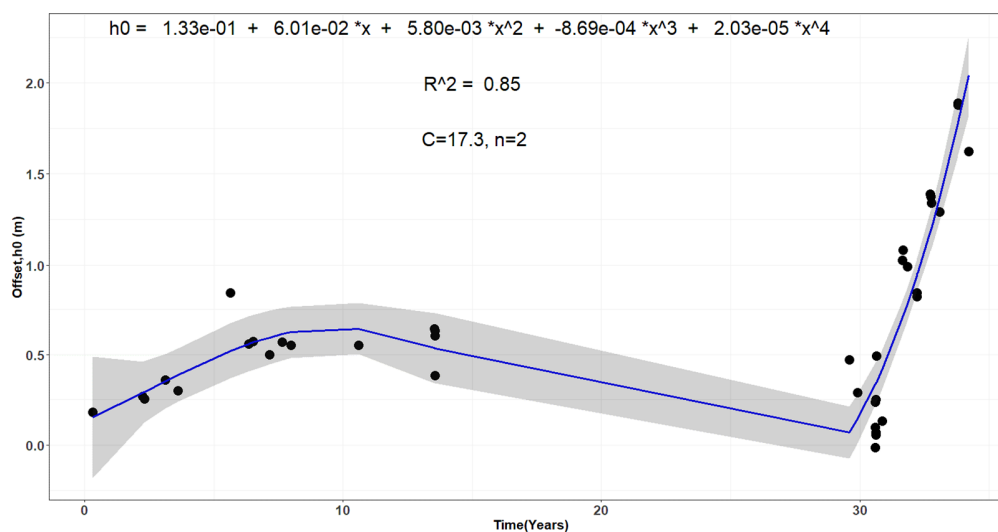


(k) Garno at Enfranz

C = 17.35, n = 2.0

Confidence @95%

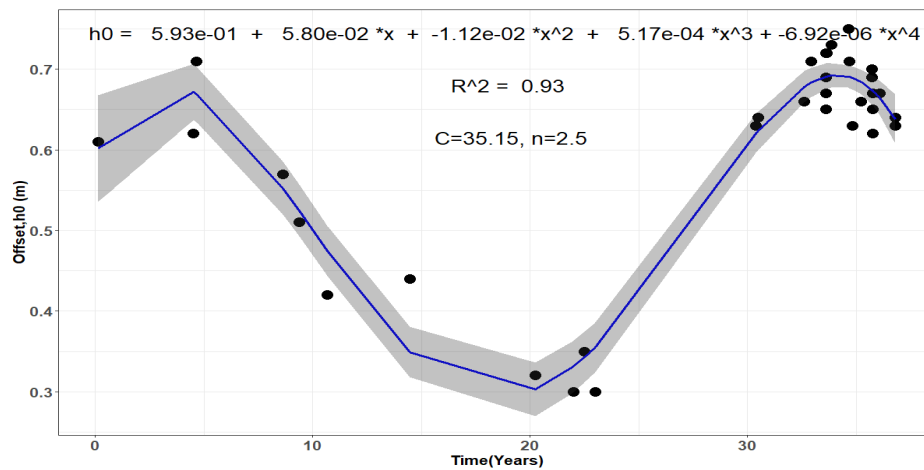
	coefficients	2.50%	97.50%	standard error
Intercept	-1.33E-01	-4.22E-01	3.16E-01	1.81E-01
X1	6.01E-02	-7.36E-02	2.41E-01	7.74E-02
X2	5.79E-03	-1.57E-02	2.25E-02	9.38E-03
X3	-8.66E-04	-1.59E-03	9.88E-06	3.93E-04



X4	2.03E-05	8.60E-06	3.03E-05	5.34E-06
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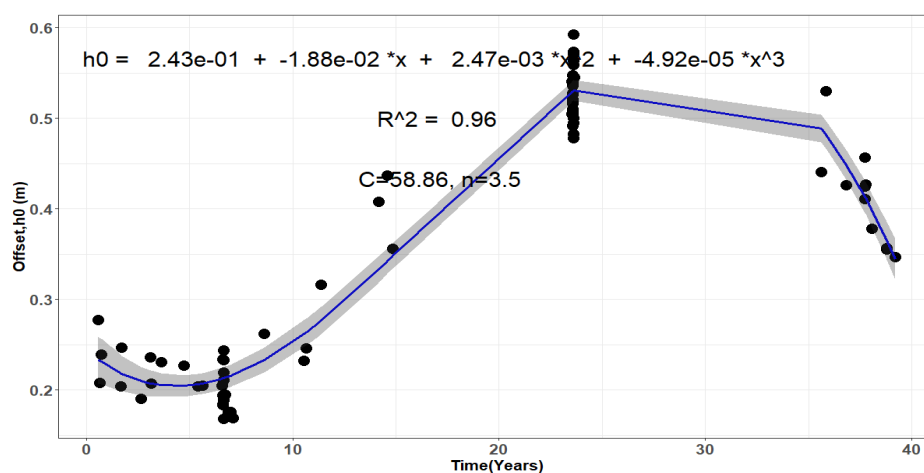
(l) Gumero at Maksegnit C = 35.15, n = 2.50 Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	5.93E-01	5.23E-01	6.64E-01	3.45E-02
X1	5.80E-02	3.41E-02	8.18E-02	1.17E-02
X2	-1.12E-02	-1.37E-02	-8.68E-03	1.24E-03
X3	5.17E-04	4.18E-04	6.17E-04	4.88E-05
X4	-6.92E-06	-8.21E-06	-5.64E-06	6.32E-07

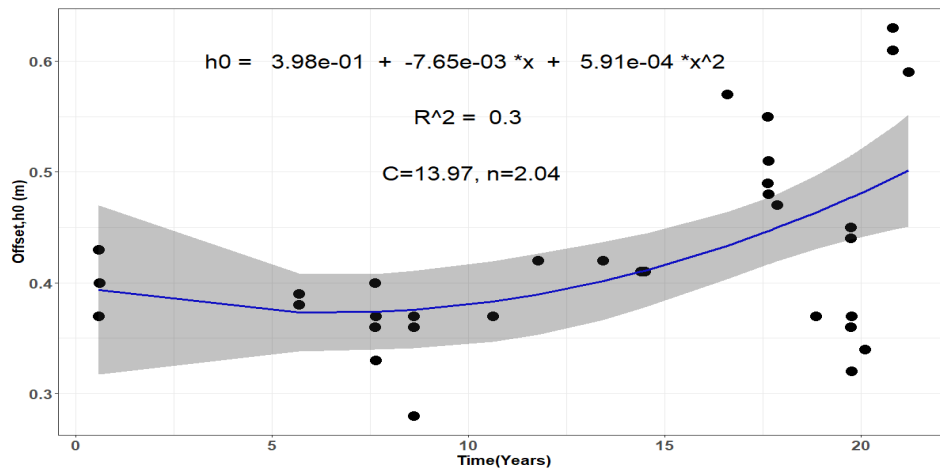


(m) Angereb at Gondar C = 58.86, n = 3.50 Confidence @95%

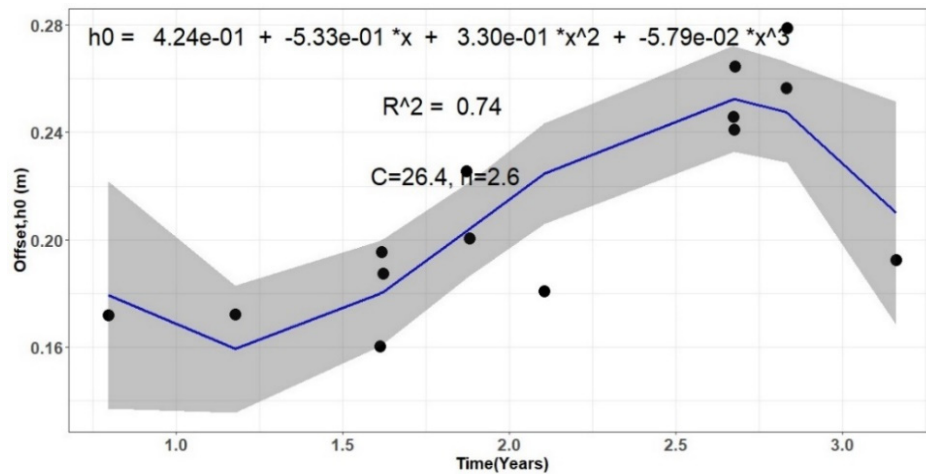
	coefficients	2.50%	97.50%	standard error
Intercept	2.43E-01	2.14E-01	2.73E-01	1.48E-02
X1	-1.88E-02	-2.62E-02	-1.15E-02	3.69E-03
X2	2.47E-03	2.05E-03	2.90E-03	2.13E-04
X3	-4.92E-05	-5.59E-05	-4.24E-05	3.37E-06



(n) Dirma at Koladeba C=13.97, n = 2.04 Confidence @95%				
	coefficients	2.50%	97.50%	standard error
Intercept	3.98E-01	3.12E-01	4.83E-01	4.21E-02
X1	-7.65E-03	-2.42E-02	8.85E-03	8.12E-03
X2	5.91E-04	-9.00E-05	1.27E-03	3.35E-04



(o) Jemma nr Bikolo C = 26.40, n = 2.60 Confidence @95%				
	coefficients	2.50%	97.50%	standard error
Intercept	4.24E-01	1.51E-01	6.96E-01	1.22E-01
X1	-5.33E-01	-1.01E+00	-5.36E-02	2.15E-01
X2	3.30E-01	6.72E-02	5.93E-01	1.18E-01
X3	-5.79E-02	-1.03E-01	-1.28E-02	2.02E-02

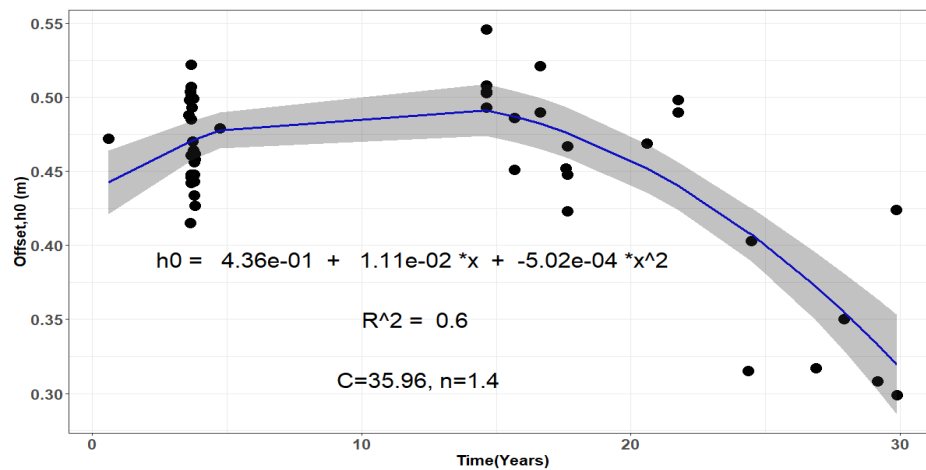


(p) Koga at Bikolo

C=35.96, n = 1.40

Confidence @95%

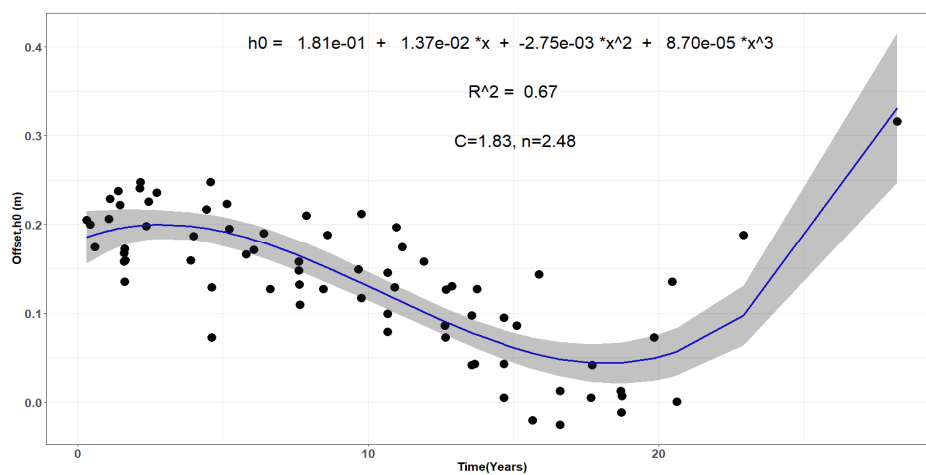
	coefficients	2.50%	97.50%	standard error
Intercept	4.36E-01	4.13E-01	4.60E-01	1.18E-02
X1	1.11E-02	6.53E-03	1.57E-02	2.28E-03
X2	-5.02E-04	-6.59E-04	-3.46E-04	7.79E-05

**(q) Amen at Dangila**

C = 1.63, n = 3.20

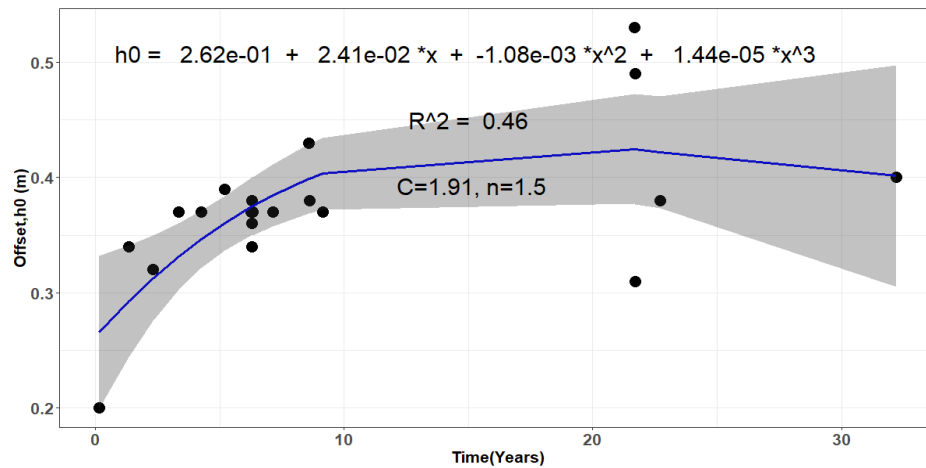
Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	1.81E-01	1.49E-01	2.14E-01	1.63E-02
X1	1.37E-02	1.84E-03	2.56E-02	5.95E-03
X2	-2.75E-03	-3.84E-03	-1.66E-03	5.46E-04
X3	8.70E-05	5.93E-05	1.14E-04	1.39E-05



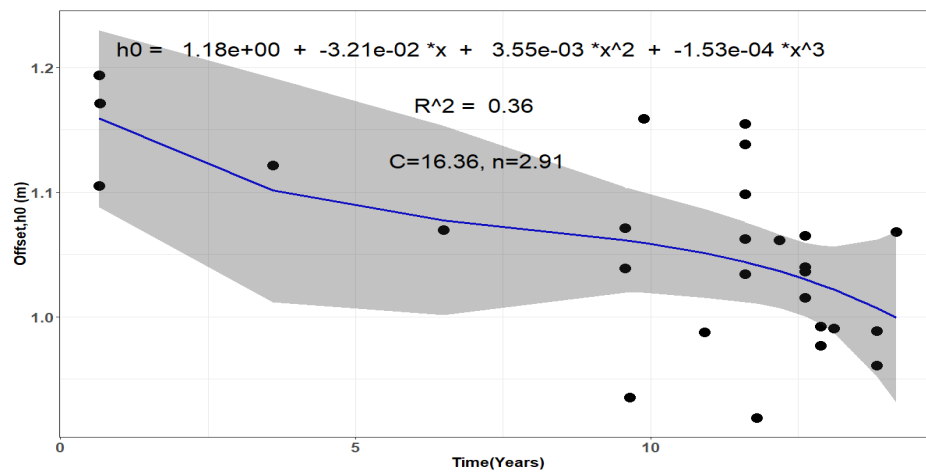
(r) Quashini nr Addis Kidane C = 1.91, n = 1.50 Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	2.62E-01	1.90E-01	3.34E-01	3.44E-02
X1	2.41E-02	4.43E-03	4.37E-02	9.38E-03
X2	-1.08E-03	-2.46E-03	3.09E-04	6.62E-04
X3	1.44E-05	-1.40E-05	4.28E-05	1.36E-05



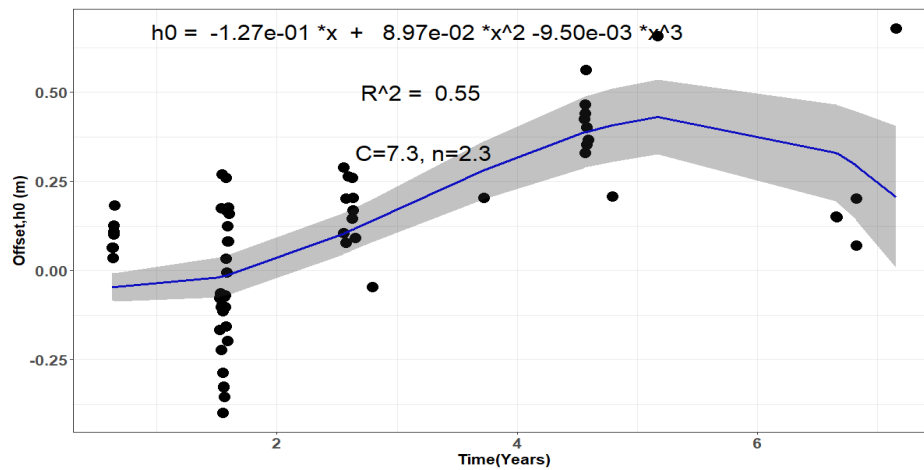
(s) Killitti nr Durebetie C = 16.36, n = 2.91 Confidence @95%

	coefficients	2.50%	97.50%	standard error
Intercept	1.18E+00	1.07E+00	1.28E+00	5.11E-02
X1	-3.21E-02	-1.15E-01	5.11E-02	4.03E-02
X2	3.55E-03	-9.45E-03	1.66E-02	6.29E-03
X3	-1.53E-04	-7.08E-04	4.02E-04	2.68E-04



(t) Gilgel Abbay at Chinba **C = 7.30, n = 2.30** **Confidence@95%**

	coefficients	2.50%	97.50%	standard error
Intercept	-1.27E-01	-2.11E-01	-4.27E-02	4.19E-02
X1	8.97E-02	4.84E-02	1.31E-01	2.06E-02
X2	-9.50E-03	-1.40E-02	-4.95E-03	2.27E-03



(u) Abbay at Bahir Dar Peda **C = 120.96, n = 2.26** **Confidence @95%**

	coefficients	2.50%	97.50%	standard error
Intercept	8.77E-01	7.89E-01	9.66E-01	4.26E-02
X1	2.47E-02	-2.08E-03	5.15E-02	1.29E-02
X2	-1.80E-03	-3.91E-03	3.15E-04	1.02E-03
X3	3.19E-05	-1.24E-05	7.63E-05	2.13E-05

