

Calibration Report for BE2022_08 - 25

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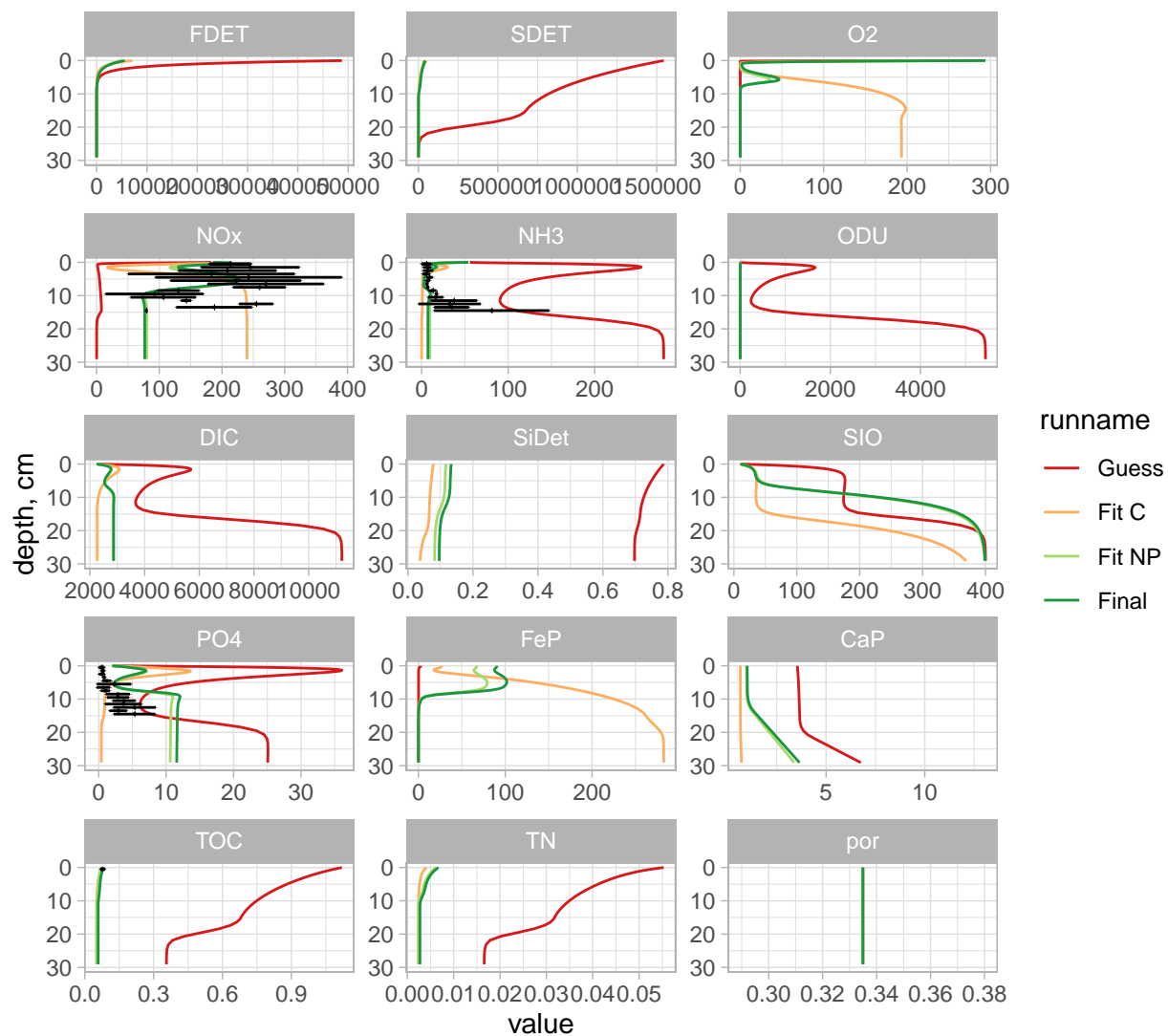
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Steps

Step	Profiles	Fluxes	Microprofiles	Parameters
Fit C	TOC			MeanFlux
				rSlow
Fit NP	NH3			NCrSdet
	NOx			mixL
	PO4			biot
				AlphIrr

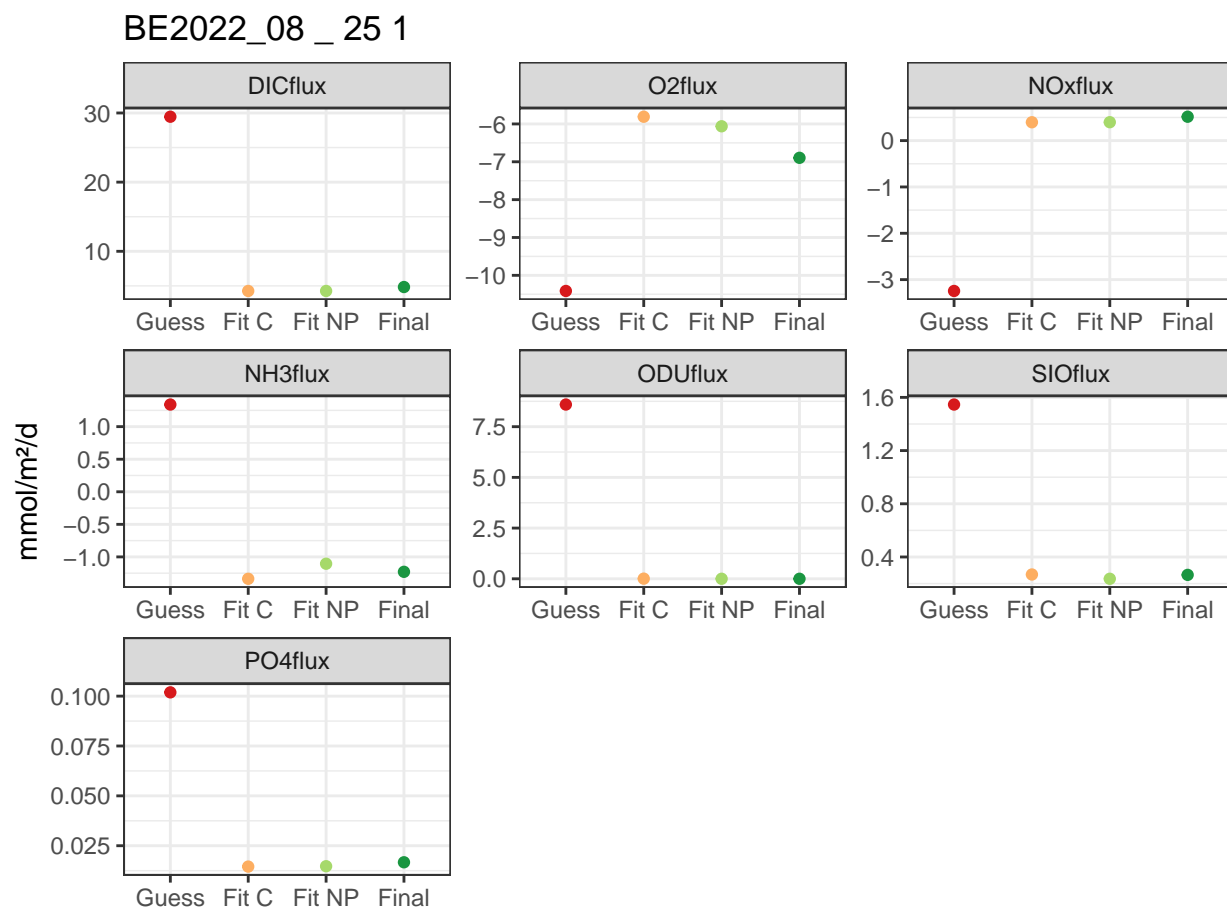
Profiles

BE2022_08_25 1



Fluxes

Fluxes at the sediment-water interface (positive upwards). Available observations are indicate as ranges on the plots.



MicroProfiles

Parameters

Values

“ in the table means that the parameter is same as in the previous column.

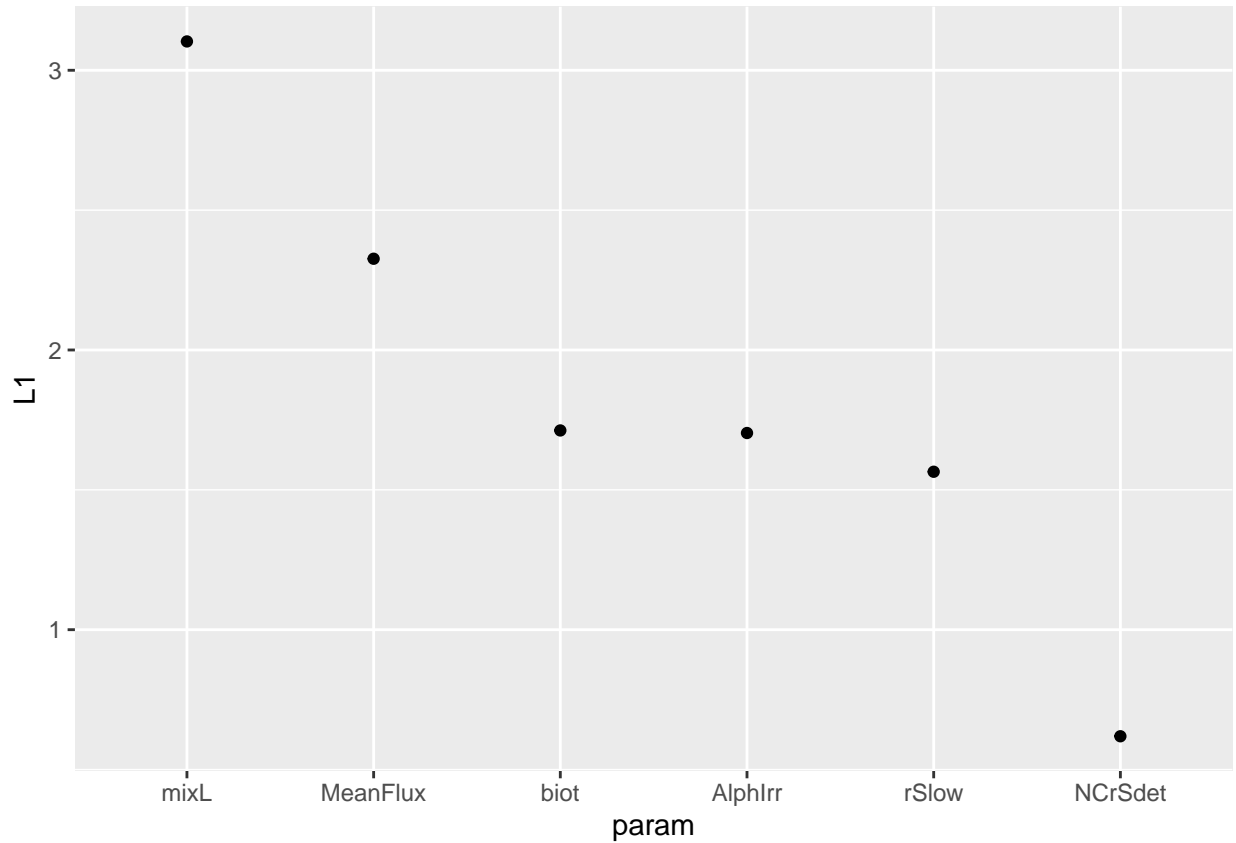
Highlighted in red are parameter values that are close to the minimum/maximum, indicating that the calibration procedure is somehow “blocked” by the ranges imposed on those parameters.

	Guess	Fit C	Fit NP	Final	units	min	max
Temp	14	14	14	14	°C	5	26
Sal	36	36	36	36	psu	36	38
portop	0.65	0.65	0.65	0.65	W. Cont.	0.5	0.95
porbot	0.6	0.6	0.6	0.6	W. Cont.	0.4	0.7
pora	0.5	0.5	0.5	0.5		0.25	0.75
biot	10	10	20.58565	20.58565	cm2/yr	0.01	30
mixL	15	15	6.32484	6.17639	cm	5	30
AlphIrr	0.24932	0.24932	0.39569	0.49315	cm2/d	0	0.493
IrrEnh	1	1	1	1	-	1	18
w	0.04	0.04	0.04	0.04	cm/yr	0.001	2
MeanFlux	30	4.34257	4.34257	4.92166	mmol/m2/d	0.1	80
rFast	12	12	12	12	/yr	2	80
rSlow	0.1	1.64467	1.64467	1.59609	/yr	0.1	2
pFast	0.27	0.27	0.27	0.27	-	0.05	0.95
pRef	0.018	0.018	0.018	0.018	-	0.001	0.25
NCrFdet	0.15094	0.15094	0.15094	0.15094	molN/molC	0.04	0.333
NCrSdet	0.04	0.04	0.16361	0.14675	molN/molC	0.01	0.167
NCrref	0.04	0.04	0.04	0.04	molN/molC	0.02	0.167
rSi	0.02	0.02	0.02	0.02	/yr	0.01	10
SiCdet	0.06667	0.06667	0.06667	0.06667	-	0.01667	0.5
EquilSiO	400	400	400	400	mmol/m3	150	900
PCrFdet	0.00943	0.00943	0.00943	0.00943	molP/molC	0.0025	0.02
PCrSdet	0.00125	0.00125	0.00125	0.00125	molP/molC	0.00125	0.02
rFePdesorp	105	105	105	105	/yr	1	200
rFePadsorp	77	77	77	77	/yr	73	912.5
rCaPprod	0.001	0.001	0.001	0.001	/yr	0.0001	10
rCaPdiss	0	0	0	0	/yr	0.1	50
CPrCaP	104.73913	104.73913	104.73913	104.73913	/yr	79.34783	317.391
PO4ads	2	2	2	2		1	400
Q	2	2	2	2	-	1.5	2.5
pdepo	0.3	0.3	0.3	0.3	-	0.08	0.3
NH3Ads	1.3	1.3	1.3	1.3	-	0	2
rnit	20	20	20	20	/d	1	500
ksO2nitri	10	10	10	10	umolO2/m3	0.5	2
rODUox	50	50	50	50	/d	1	300
ksO2oduox	1	1	1	1	mmolO2/m3	0.5	21
ksO2oxic	3	3	3	3	mmolO2/m3	1	5
ksNOxdenit	30	30	30	30	mmolNOx/m3	10	50
kinO2denit	10	10	10	10	mmolO2/m3	1	20
kinNOxanox	10	10	10	10	mmolNOx/m3	0.5	20
kinO2anox	8	8	8	8	mmolO2/m3	0.5	20

bwO2	300	300	300	300	mmol/m3	0	500
bwNH3	55.52193	55.52193	55.52193	55.52193	mmol/m3	1	10
bwNOx	184.23248	184.23248	184.23248	184.23248	mmol/m3	0	30
bwODU	0	0	0	0	mmol/m3	0	0.2
bwDIC	2240	2240	2240	2240	mmol/m3	2400	3500
bwSIO	10	10	10	10	mmol/m3	1	25
bwPO4	1.97907	1.97907	1.97907	1.97907	mmol/m3	0.01	1
DispO2	1.46948	1.46948	1.46948	1.46948	-	-	-
DispNOx	1.20022	1.20022	1.20022	1.20022	-	-	-
DispNH3	1.36727	1.36727	1.36727	1.36727	-	-	-
DispODU	0.82689	0.82689	0.82689	0.82689	-	-	-
DispDIC	0.81661	0.81661	0.81661	0.81661	-	-	-
DispSIO	0.64123	0.64123	0.64123	0.64123	-	-	-
DispPO4	0.37149	0.37149	0.37149	0.37149	-	-	-

Sensitivity

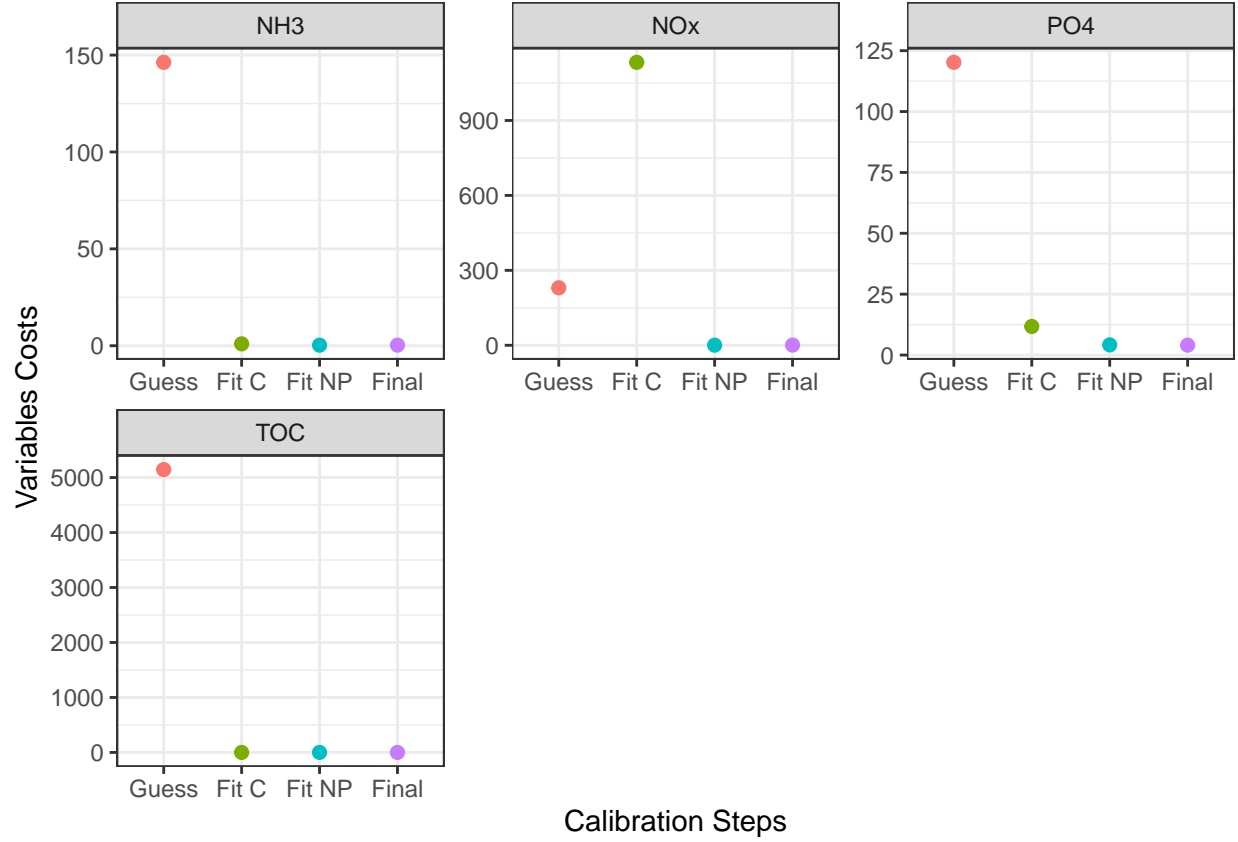
The next figure represents the model cost's sensitivity to perturbation of the parameters around their final calibrated value. In short the higher the metric, the most this parameter is having a high impact on the overall model misfit metric.



Misfits

The variables cost are estimated as the sum of squared weighted residuals for each:

$$\mathcal{C}_j = \sum_{i=1}^{n_{obs,j}} \frac{Model_i - Obs_i}{Err_i}$$



The model cost is the scaled sum of variable costs:

$$\mathcal{C} = \sum_{j=1}^{n_{var}} \frac{\mathcal{C}_j}{n_{obs,j}}$$

Here the total height of each bar indicate the model cost, while colored fraction of the bar indicate the contribution of each type of observations in the model cost.

