Validation process forVILLAVIEJA

The epidemiology research group, EAFIT

06-Apr-2022

Table of Contents

Chapter 1. Extension number1 1
1.1. Basic information 1
1.2. Estimated parameters with their intervals 1
1.3. Identifiability analisys 2
1.4. Uncertainty analisys 5
Chapter 2. Extension number2 6
2.1. Basic information 6
2.2. Estimated parameters with their intervals 6
2.3. Identifiability analisys 7
2.4. Uncertainty analisys 10
Chapter 3. Extension number3 11
3.1. Basic information 11
3.2. Estimated parameters with their intervals 11
3.3. Identifiability analisys 12
3.4. Uncertainty analisys 15
Chapter 4. Extension number4 16
4.1. Basic information 16
4.2. Estimated parameters with their intervals 16
4.3. Identifiability analisys 17
4.4. Uncertainty analisys 20
Chapter 5. Extension number5 21
5.1. Basic information 21
5.2. Estimated parameters with their intervals 21
5.3. Identifiability analisys 22
5.4. Uncertainty analisys 25
Chapter 6. Extension number6 26
6.1. Basic information 26
6.2. Estimated parameters with their intervals 26
6.3. Identifiability analisys 27
6.4. Uncertainty analisys 30
Chapter 7. Extension number7 31
7.1. Basic information 31
7.2. Estimated parameters with their intervals 31
7.3. Identifiability analisys 32
7.4. Uncertainty analisys 35
Chapter 8. Extension number8 36
8.1. Basic information 36
8.2. Estimated parameters with their intervals 36
8.3. Identifiability analisys 37
8.4. Uncertainty analisys 40
Chapter 9. Extension number9 41
9.1. Basic information 41
9.2. Estimated parameters with their intervals 41

9.3. Identifiability analisys 42
9.4. Uncertainty analisys 45
Chapter 10. Extension number10 46
10.1. Basic information 46
10.2. Estimated parameters with their intervals 46
10.3. Identifiability analisys 47
10.4. Uncertainty analisys 50
Chapter 11. Extension number11 51
11.1. Basic information 51
11.2. Estimated parameters with their intervals 51
11.3. Identifiability analisys 52
11.4. Uncertainty analisys 55
Chapter 12. Extension number12 56
12.1. Basic information 56
12.2. Estimated parameters with their intervals 56
12.3. Identifiability analisys 57
12.4. Uncertainty analisys 60
Chapter 13. Extension number13 61
13.1. Basic information 61
13.2. Estimated parameters with their intervals 61
13.3. Identifiability analisys 62
13.4. Uncertainty analisys 65
Chapter 14. Extension number14 66
14.1. Basic information 66
14.2. Estimated parameters with their intervals 66
14.3. Identifiability analisys 67
14.4. Uncertainty analisys 70
Chapter 15. Extension number15 71
15.1. Basic information 71
15.2. Estimated parameters with their intervals 71
15.3. Identifiability analisys 72
15.4. Uncertainty analisys 75
Chapter 16. Extension number16 76
16.1. Basic information 76
16.2. Estimated parameters with their intervals 76
16.3. Identifiability analisys 77
16.4. Uncertainty analisys 80
Chapter 17. Extension number17 81
17.1. Basic information 81
17.2. Estimated parameters with their intervals 81
17.3. Identifiability analisys 82
17.4. Uncertainty analisys 85
Chapter 18. Extension number18 86
18.1. Basic information 86
18.2. Estimated parameters with their intervals 86
18.3. Identifiability analisys 87

18.4. Uncertainty analisys 90
Chapter 19. Extension number19 91
19.1. Basic information 91
19.2. Estimated parameters with their intervals 91
19.3. Identifiability analisys 92
19.4. Uncertainty analisys 95
Chapter 20. Extension number20 96
20.1. Basic information 96
20.2. Estimated parameters with their intervals 96
20.3. Identifiability analisys 97
20.4. Uncertainty analisys 100
Chapter 21. Extension number21 101
21.1. Basic information 101
21.2. Estimated parameters with their intervals 101
21.3. Identifiability analisys 102
21.4. Uncertainty analisys 105
Chapter 22. Extension number22 106
22.1. Basic information 106
22.2. Estimated parameters with their intervals 106
22.3. Identifiability analisys 107
22.4. Uncertainty analisys 110
Chapter 23. Extension number23 111
23.1. Basic information 111
23.2. Estimated parameters with their intervals 111
23.3. Identifiability analisys 112
23.4. Uncertainty analisys 115
Chapter 24. Extension number24 116
24.1. Basic information 116
24.2. Estimated parameters with their intervals 116
24.3. Identifiability analisys 117
24.4. Uncertainty analisys 120
Chapter 25. Extension number25 121
25.1. Basic information 121
25.2. Estimated parameters with their intervals 121
25.3. Identifiability analisys 122
25.4. Uncertainty analisys 125
Chapter 26. Extension number26 126
26.1. Basic information 126
26.2. Estimated parameters with their intervals 126
26.3. Identifiability analisys 127
26.4. Uncertainty analisys 130
Chapter 27. Extension number27 131
27.1. Basic information 131
27.2. Estimated parameters with their intervals 131
27.3. Identifiability analisys 132
27.4. Uncertainty analisys 135

Chapter 28. Extension number28 136
28.1. Basic information 136
28.2. Estimated parameters with their intervals 136
28.3. Identifiability analisys 137
28.4. Uncertainty analisys 140

Chapter 1. Extension number1

1.1. Basic information

The extension to be validated consists of the time series from the data1 to the 30. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

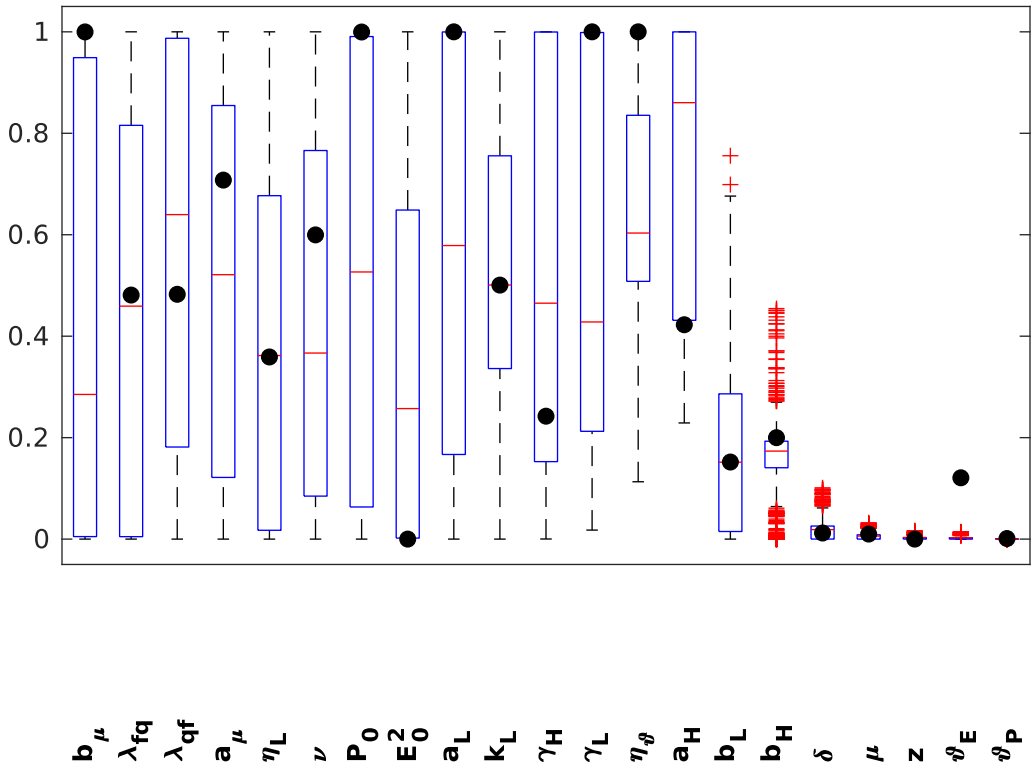
1.2. Estimated parameters with their intervals

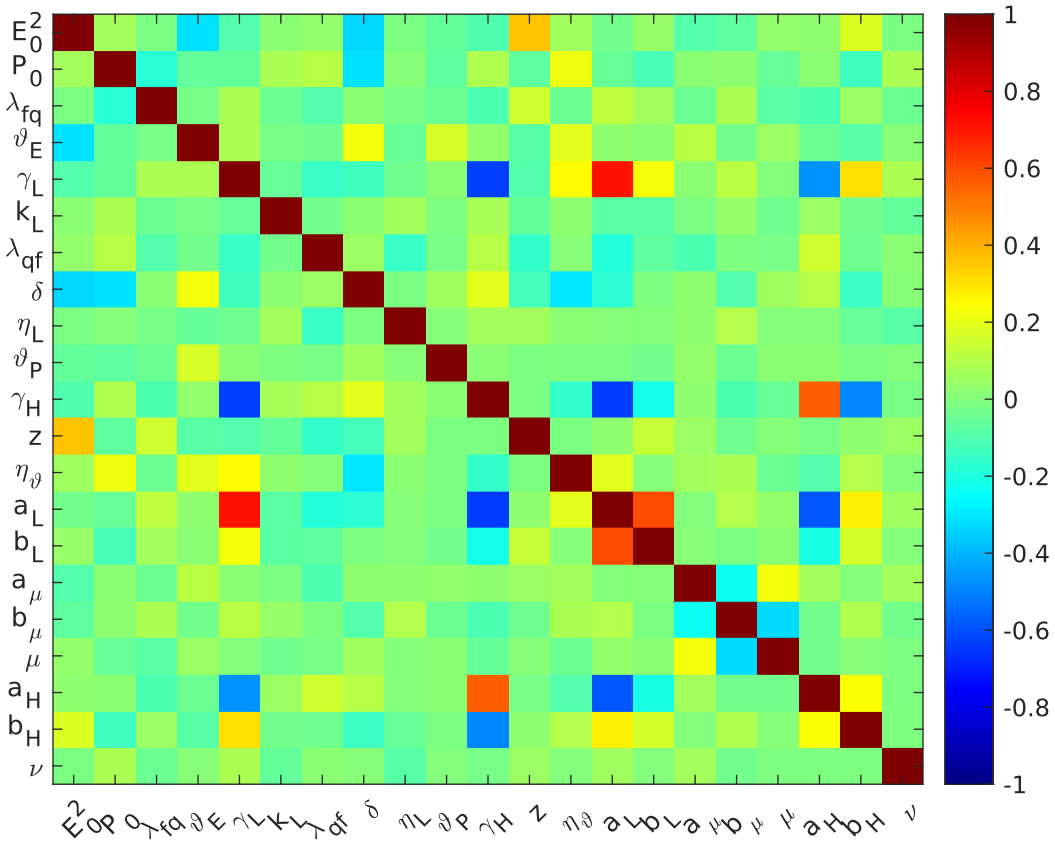
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

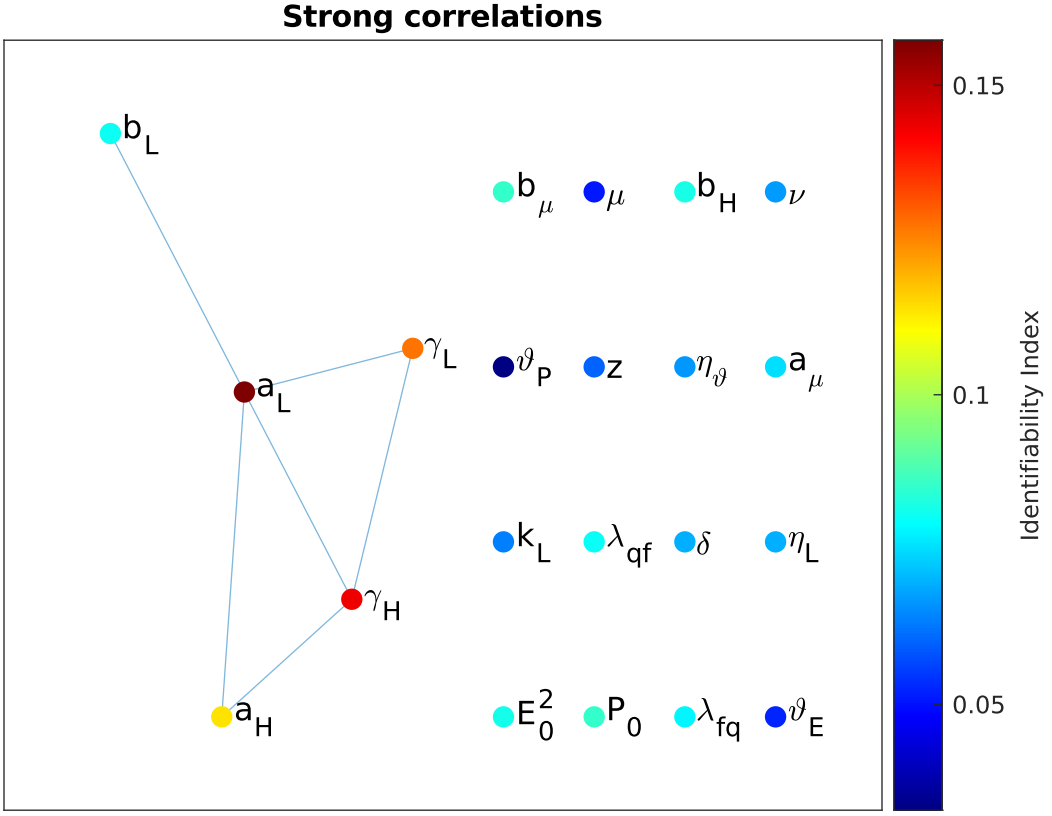
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
E^2_0	'0'	'0.0006'	'514.578'	'0.0003'	'0.0818'
P_0	'310.7663'	'400'	'210.6506'	'399.8559'	'0.0858'
\lambda_{fq}	'0.025'	'1'	'0.4592'	'0.4811'	'0.0786'
\vartheta_E	'0.0068'	'0.2587'	'0.0026'	'0.1209'	'0.0523'
\gamma_L	'0.6549'	'1'	'0.4281'	'1'	'0.1274'
k_L	'1.4444'	'10'	'5.5085'	'5.5064'	'0.064'
\lambda_{qf}	'0'	'1'	'0.6397'	'0.4826'	'0.0801'
\delta	'0.0003'	'0.0024'	'0.0028'	'0.0018'	'0.0694'
\eta_L	'0.0173'	'0.6907'	'0.3619'	'0.359'	'0.0696'
\vartheta_P	'0.0009'	'0.0012'	'0'	'0.0011'	'0.0329'
\gamma_H	'0.1883'	'0.8535'	'0.4651'	'0.2423'	'0.1436'
z	'0'	'0'	'0.0919'	'0'	'0.0606'
\eta_\vartheta	'0.9491'	'1'	'0.6033'	'1'	'0.0668'
a_L	'13.4704'	'15'	'9.1012'	'15'	'0.1573'
b_L	'2.9265'	'3.5758'	'3.1225'	'3.1267'	'0.0806'
a_\mu	'8.5047'	'11.0463'	'8.2977'	'10.9077'	'0.0756'
b_\mu	'10.916'	'15'	'4.9926'	'14.9974'	'0.0854'
\mu	'0.0078'	'0.0111'	'0.006'	'0.0099'	'0.0512'
a_H	'6.9108'	'9.6774'	'13.0133'	'6.9158'	'0.1138'
b_H	'2.4093'	'4.1155'	'3.4303'	'3.7994'	'0.0823'
\nu	'0'	'475'	'183.3823'	'299.8476'	'0.0672'

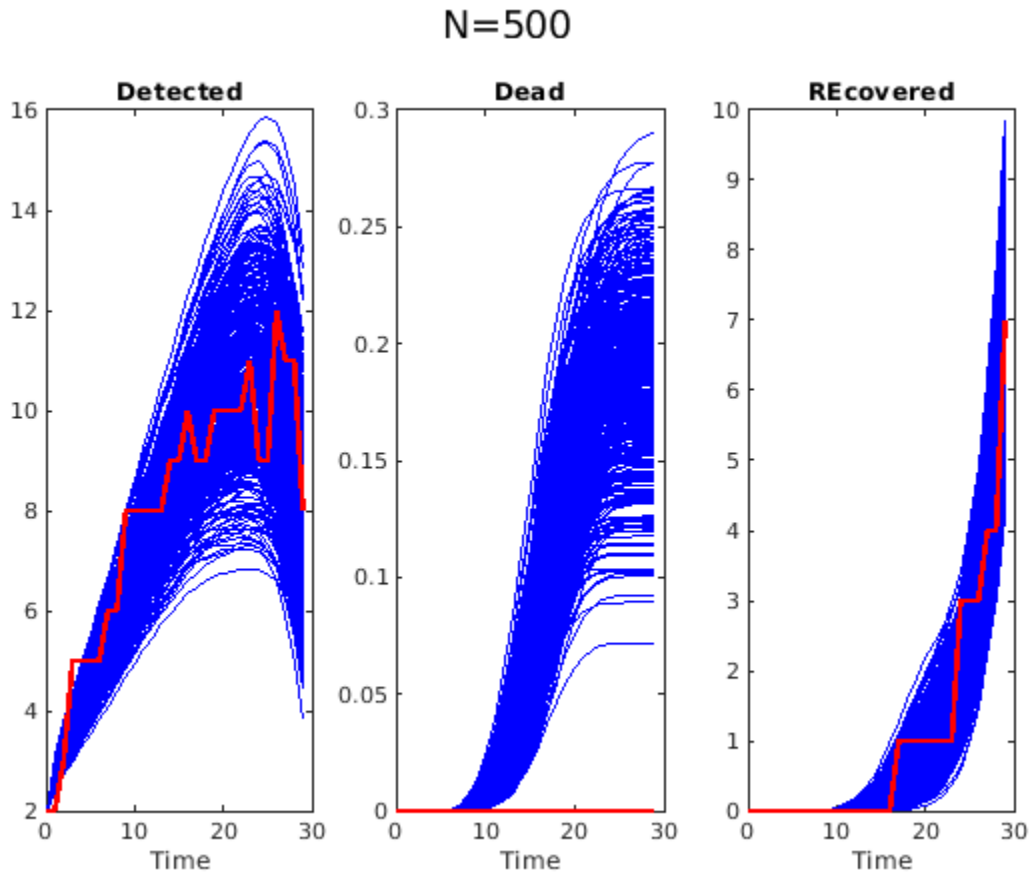
1.3. Identifiability analisys




E_0^2
P_0
λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
b_L
γ_L
a_L
γ_H
a_H
b_μ
μ
b_H
ν
ϑ_P
z
η_ϑ
a_μ
k_L
λ_qf
δ
η_L
E_0^2
P_0
λ_fq
ϑ_E
0.15
0.1
0.05
Identifiability Index

1.4. Uncertainty analisys



Chapter 2. Extension number2

2.1. Basic information

The extension to be validated consists of the time series from the data30 to the 72. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was6000.

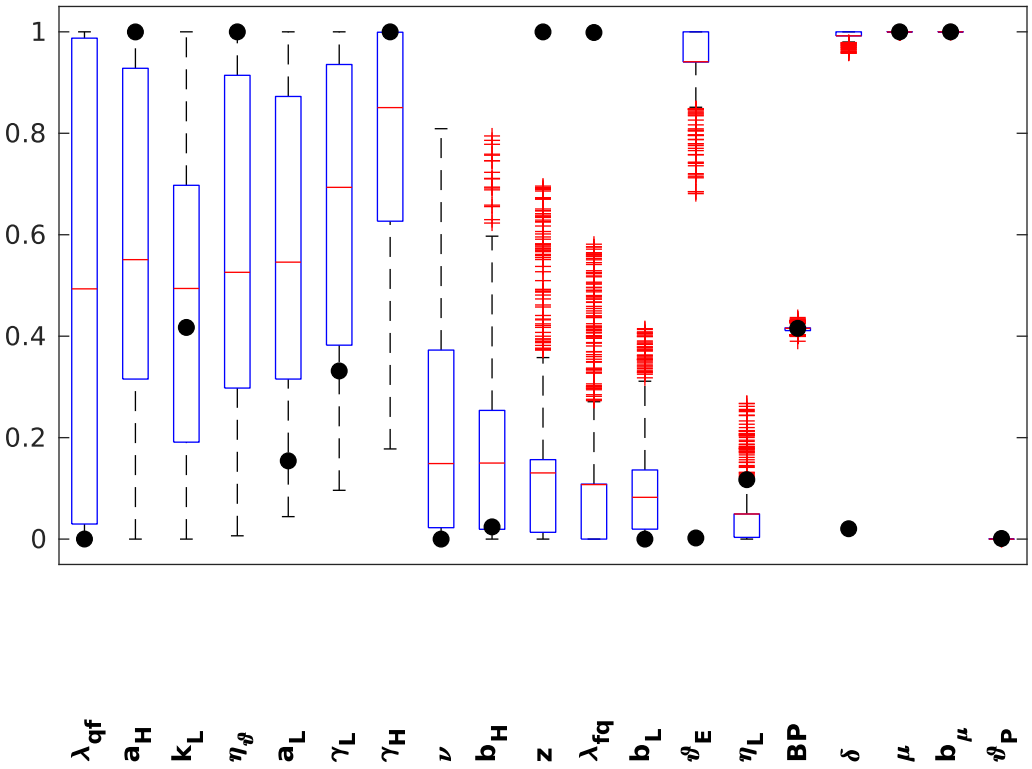
2.2. Estimated parameters with their intervals

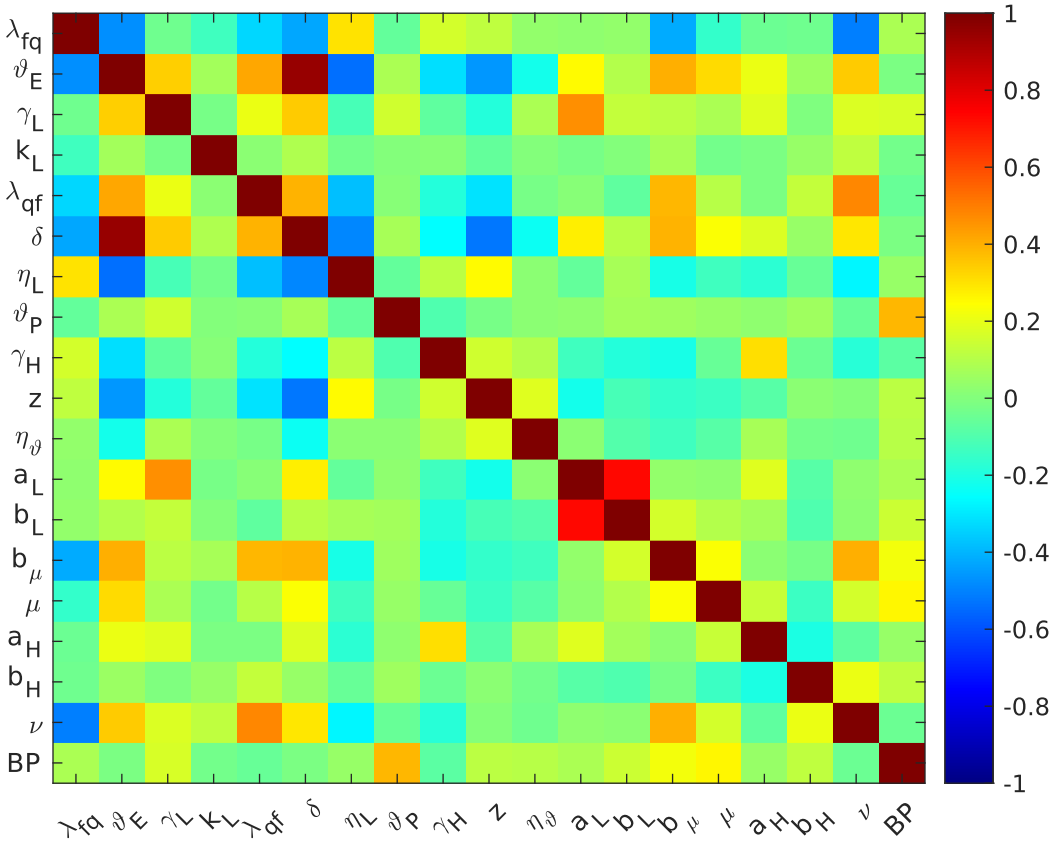
It was necessary to fix 1 parameters of 10 that could be fixed to complete validation.

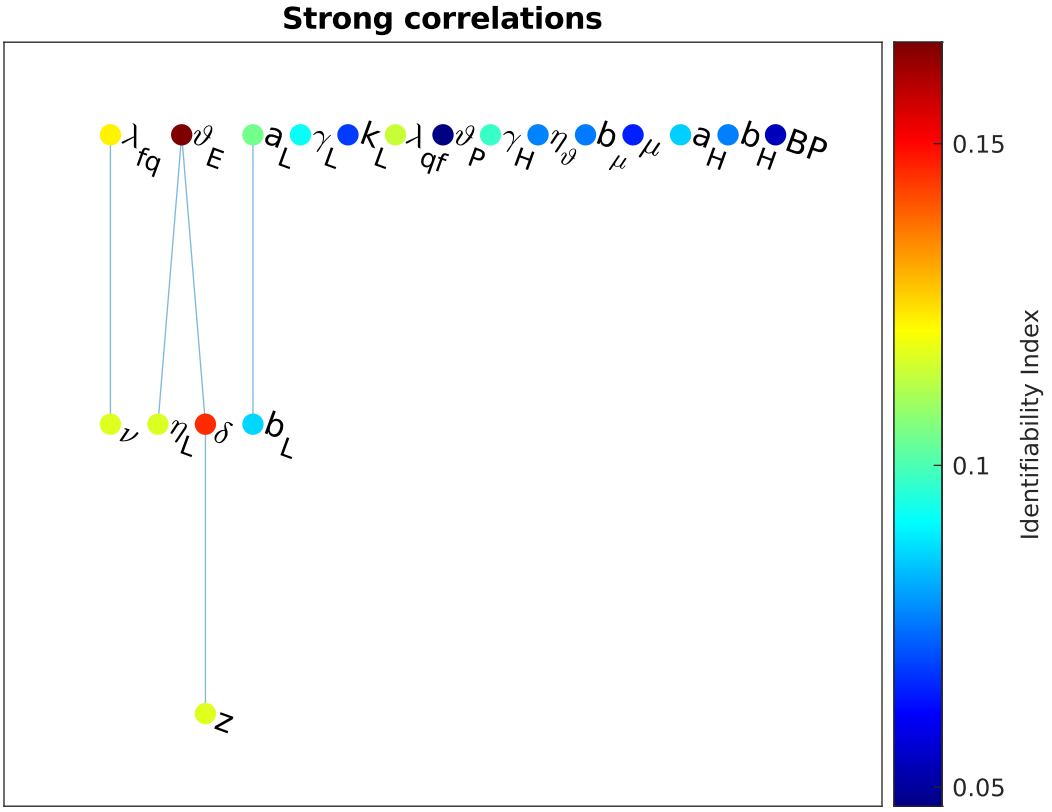
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.426'	'1'	'0.1084'	'0.9987'	'0.1226'
\vartheta_E	'0'	'0.0042'	'0.9404'	'0.0022'	'0.1658'
\gamma_L	'0.2348'	'0.4184'	'0.6934'	'0.3315'	'0.0924'
k_L	'1'	'10'	'5.4467'	'4.7554'	'0.0686'
\lambda_{qf}	'0'	'0.0003'	'0.4933'	'0.0001'	'0.1144'
\delta	'0.0023'	'0.0037'	'0.1488'	'0.0031'	'0.1455'
\eta_L	'0'	'0.2636'	'0.0495'	'0.1172'	'0.117'
\vartheta_P	'0.0009'	'0.0012'	'0'	'0.0012'	'0.047'
\gamma_H	'0.19'	'1'	'0.8487'	'0.9999'	'0.098'
z	'25.2918'	'30'	'3.9201'	'29.9955'	'0.1172'
\eta_\vartheta	'0.9552'	'1'	'0.5259'	'1'	'0.0771'
a_L	'3.1413'	'4.0104'	'8.6436'	'3.1594'	'0.1048'
b_L	'1'	'1.2383'	'2.1608'	'1'	'0.0865'
a_\mu	'8.6202'	'8.6202'	'8.6202'	'8.6202'	'0'
b_\mu	'8.4766'	'15'	'14.9986'	'15'	'0.0762'
\mu	'0.3305'	'1'	'0.9998'	'1'	'0.0652'
a_H	'7.7139'	'15'	'8.7127'	'14.9973'	'0.0858'
b_H	'1'	'12.97'	'3.1038'	'1.3376'	'0.0764'
\nu	'0'	'0.0087'	'74.5163'	'0.0039'	'0.1174'
BP	'29.824'	'31.432'	'30.5'	'30.5002'	'0.0538'

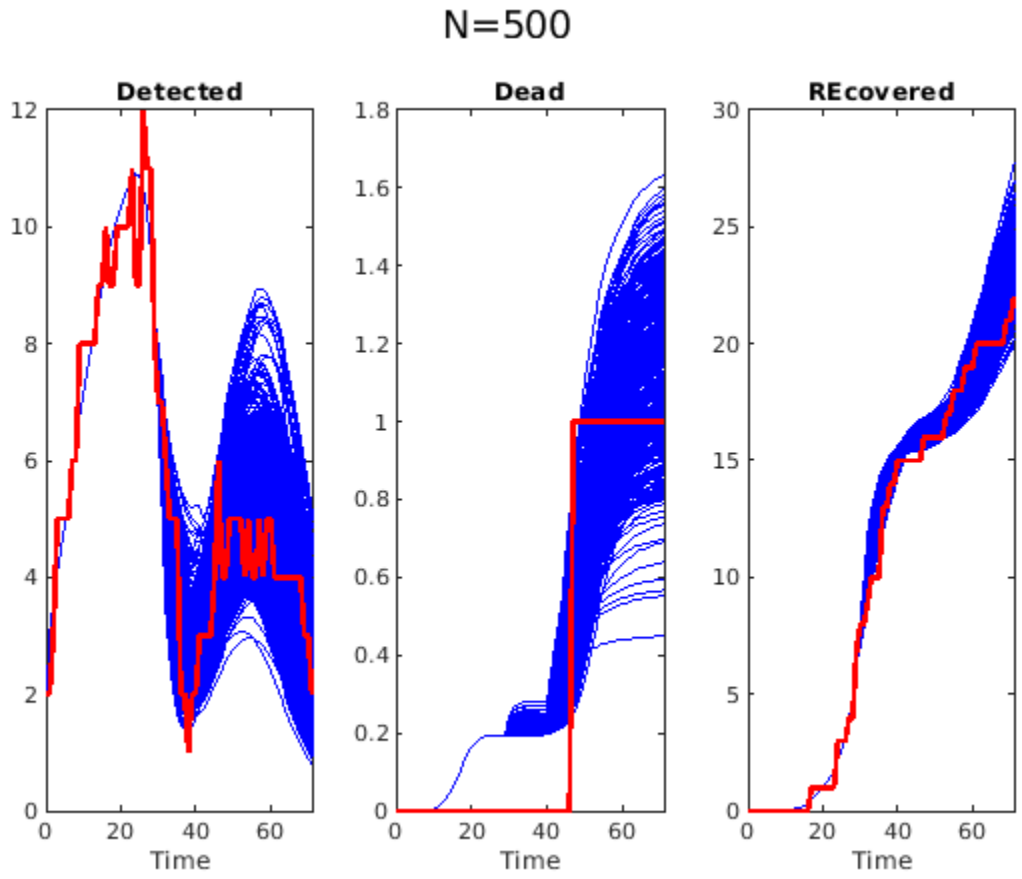
2.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
λ_{fq}
ϑ_E
a_L
γ_L
k_L
λ_{qf}
ϑ_P
γ_H
η_ϑ
b_μ
μ
a_H
b_H
BP
ν
η_L
δ
b_L
z
0.15
0.1
0.05
Identifiability Index

2.4. Uncertainty analisys



Chapter 3. Extension number3

3.1. Basic information

The extension to be validated consists of the time series from the data72 to the 99. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

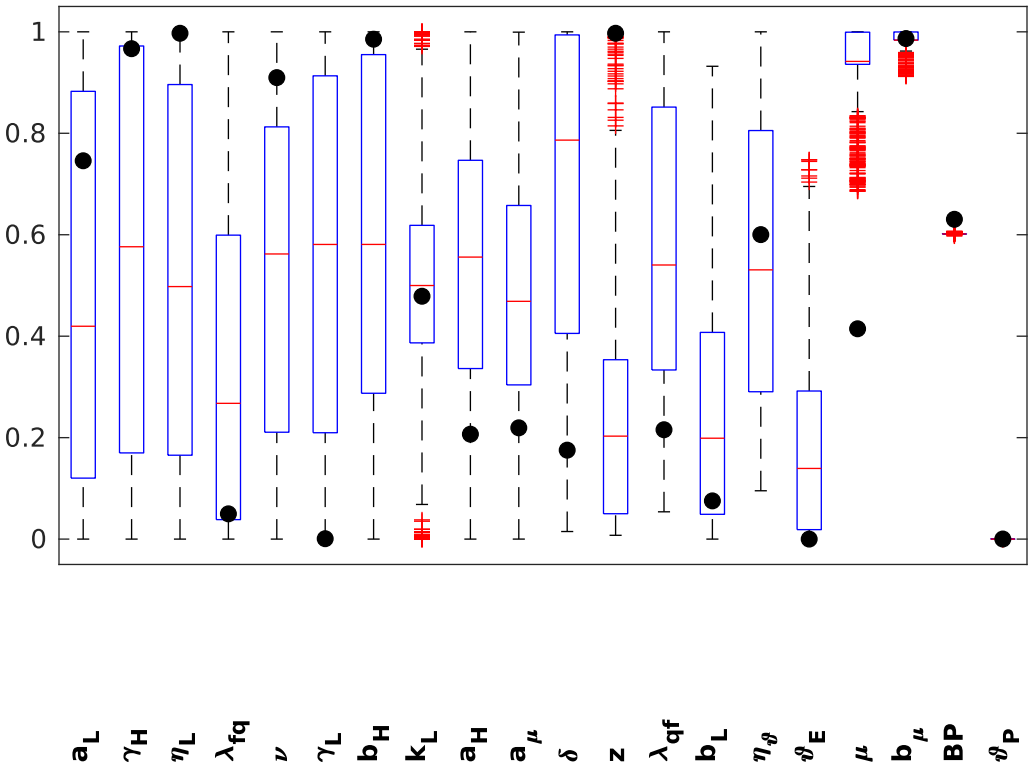
3.2. Estimated parameters with their intervals

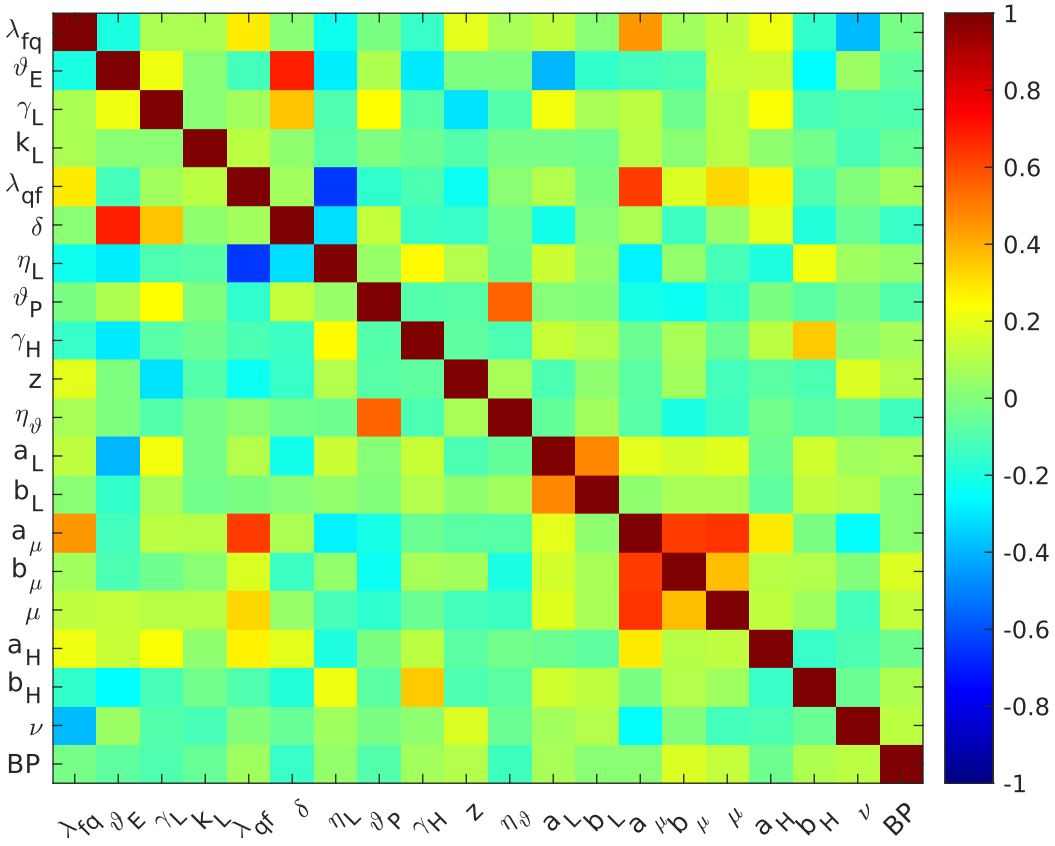
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

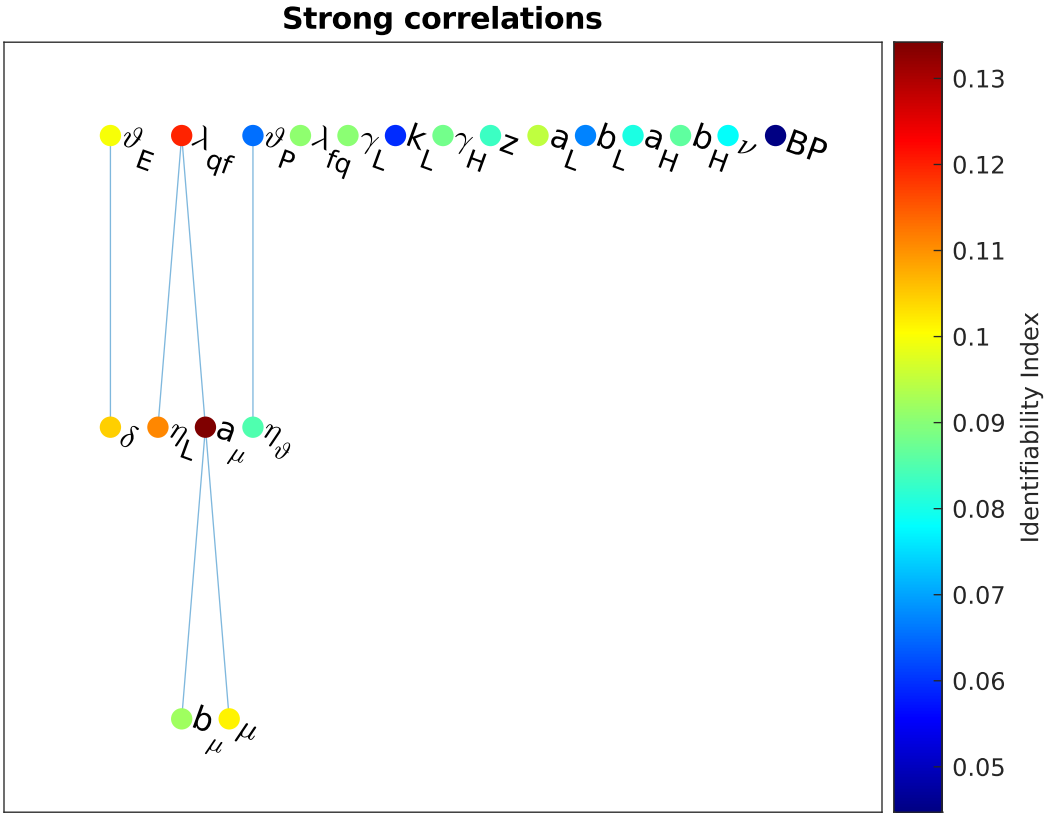
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.0479'	'0.0668'	'0.2676'	'0.0498'	'0.0907'
\vartheta_E	'0'	'0.0001'	'0.1393'	'0'	'0.0997'
\gamma_L	'0'	'0.0017'	'0.5809'	'0.0008'	'0.0905'
k_L	'1.2081'	'9.325'	'5.4989'	'5.3088'	'0.0595'
\lambda_{qf}	'0.1977'	'0.2353'	'0.5404'	'0.2156'	'0.1198'
\delta	'0.0152'	'0.0278'	'0.118'	'0.0263'	'0.1048'
\eta_L	'0.6974'	'1'	'0.4978'	'0.9972'	'0.1109'
\vartheta_P	'0.0002'	'0.0003'	'0'	'0.0002'	'0.0656'
\gamma_H	'0.4789'	'1'	'0.5763'	'0.9668'	'0.0881'
z	'19.0694'	'30'	'6.089'	'29.9145'	'0.0833'
\eta_\vartheta	'0.5743'	'0.6145'	'0.5308'	'0.6002'	'0.0849'
a_L	'1'	'12.8104'	'6.8745'	'11.4414'	'0.095'
b_L	'1.35'	'13.4057'	'3.7845'	'2.0548'	'0.0673'
a_\mu	'3.6755'	'4.5377'	'7.5623'	'4.0712'	'0.1342'
b_\mu	'10.3463'	'15'	'14.7713'	'14.8145'	'0.092'
\mu	'0.2906'	'0.6473'	'0.9417'	'0.4146'	'0.1014'
a_H	'3.5792'	'4.996'	'8.7831'	'3.8953'	'0.0806'
b_H	'9.4488'	'15'	'9.1327'	'14.7965'	'0.0864'
\nu	'355.408'	'460.2109'	'281.0469'	'454.8635'	'0.0785'
BP	'71.5538'	'75.3065'	'71.5067'	'73.5'	'0.0447'

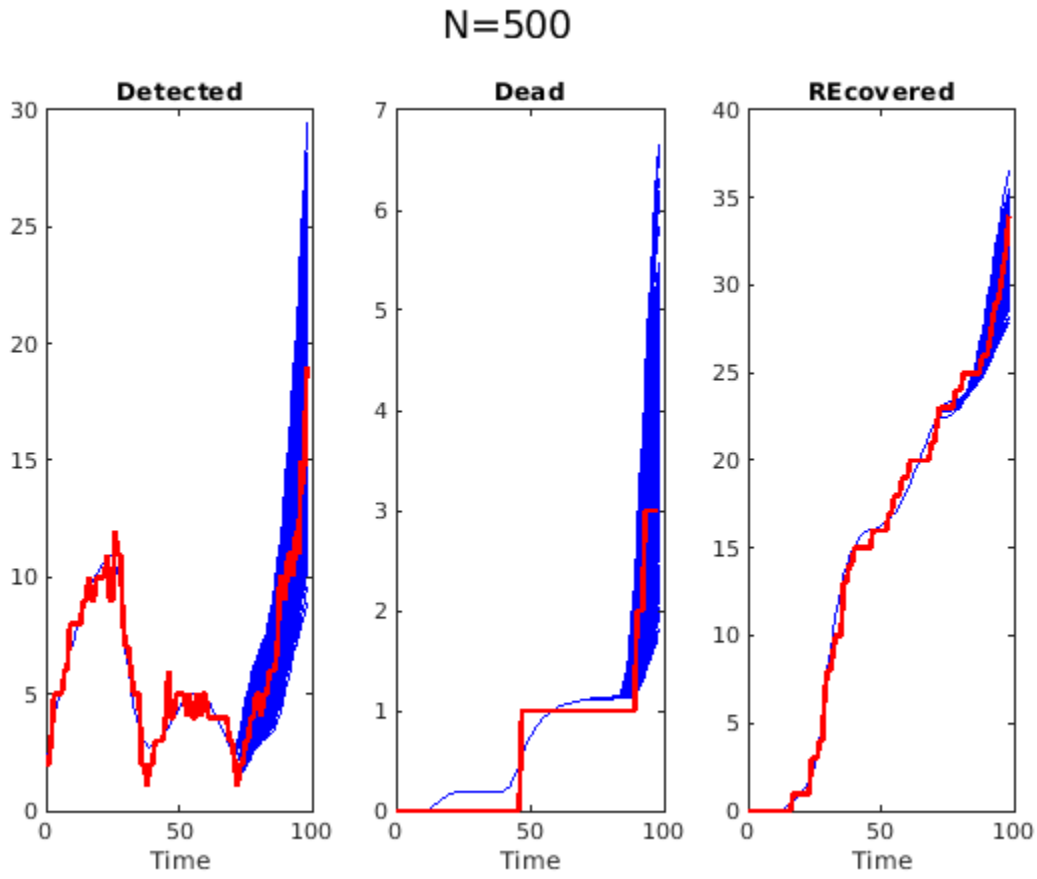
3.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
ϑ_E
λ_{qf}
ϑ_P
λ_{fq}
γ_L
k_L
γ_H
z
a_L
b_L
a_H
b_H
ν
BP
δ
η_L
a_μ
η_ϑ
b_μ
μ
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

3.4. Uncertainty analisys



Chapter 4. Extension number4

4.1. Basic information

The extension to be validated consists of the time series from the data99 to the 131. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

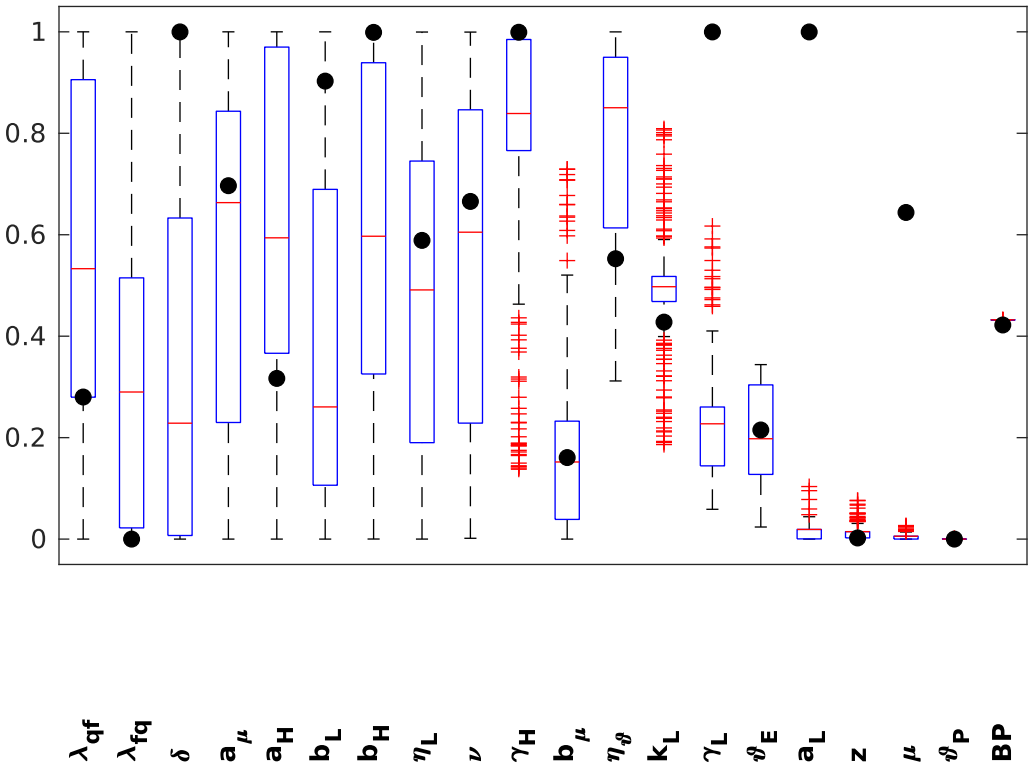
4.2. Estimated parameters with their intervals

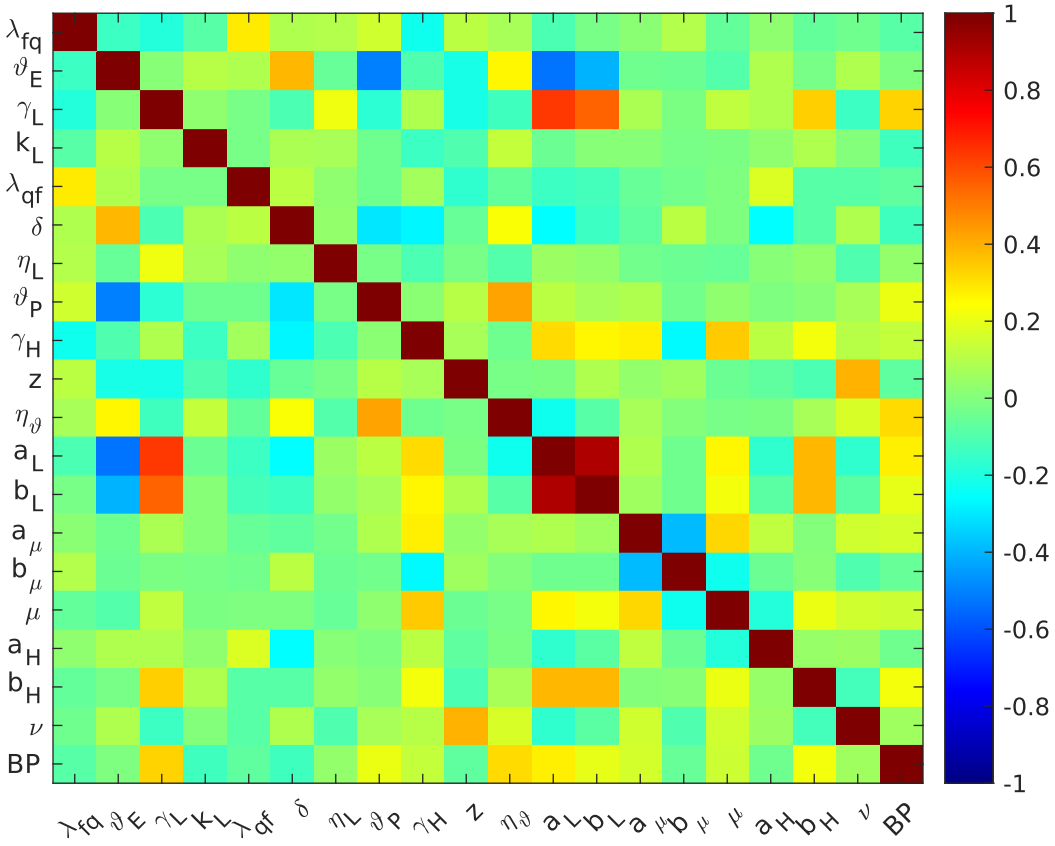
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

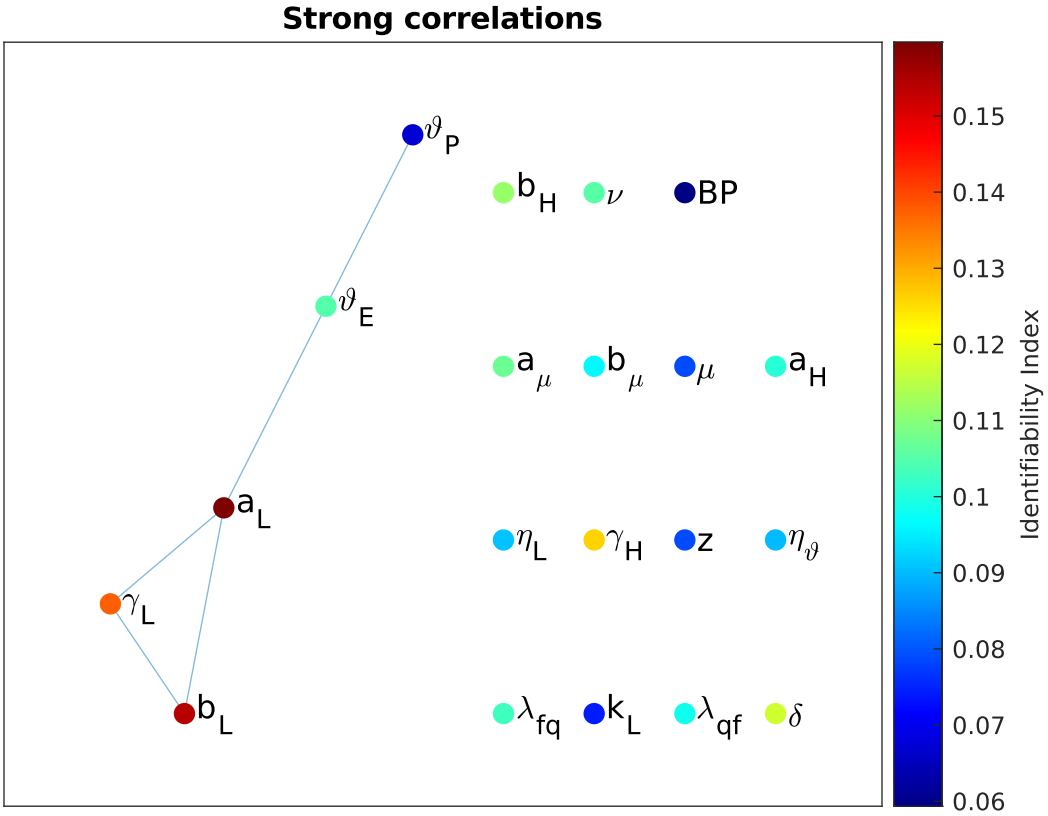
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0'	'0.29'	'0'	'0.103'
\vartheta_E	'0.1635'	'0.2959'	'0.1978'	'0.2151'	'0.1049'
\gamma_L	'0.4858'	'1'	'0.2273'	'0.9998'	'0.1375'
k_L	'1'	'10'	'5.4778'	'4.8497'	'0.0743'
\lambda_{qf}	'0'	'0.5445'	'0.5331'	'0.2801'	'0.0983'
\delta	'0.0177'	'0.15'	'0.0343'	'0.15'	'0.1173'
\eta_L	'0.02'	'1'	'0.4912'	'0.5889'	'0.091'
\vartheta_P	'0'	'0'	'0.0001'	'0'	'0.0674'
\gamma_H	'0.2631'	'1'	'0.839'	'0.9991'	'0.1263'
z	'0'	'0.1092'	'0.4412'	'0.0664'	'0.0791'
\eta_\vartheta	'0.3073'	'1'	'0.8504'	'0.5527'	'0.0901'
a_L	'8.9141'	'15'	'1.2668'	'14.9966'	'0.1597'
b_L	'5.7541'	'14.0448'	'4.648'	'13.6399'	'0.1541'
a_\mu	'7.3087'	'15'	'10.2863'	'10.7535'	'0.1074'
b_\mu	'1'	'8.168'	'3.1286'	'3.2502'	'0.0965'
\mu	'0'	'0.8208'	'0.0057'	'0.6439'	'0.0792'
a_H	'1.448'	'8.116'	'9.3148'	'5.4346'	'0.1007'
b_H	'5.9552'	'15'	'9.3586'	'14.985'	'0.1118'
\nu	'186.7914'	'500'	'302.5037'	'332.8311'	'0.1056'
BP	'95.7118'	'100.3294'	'97.5'	'96.9037'	'0.0593'

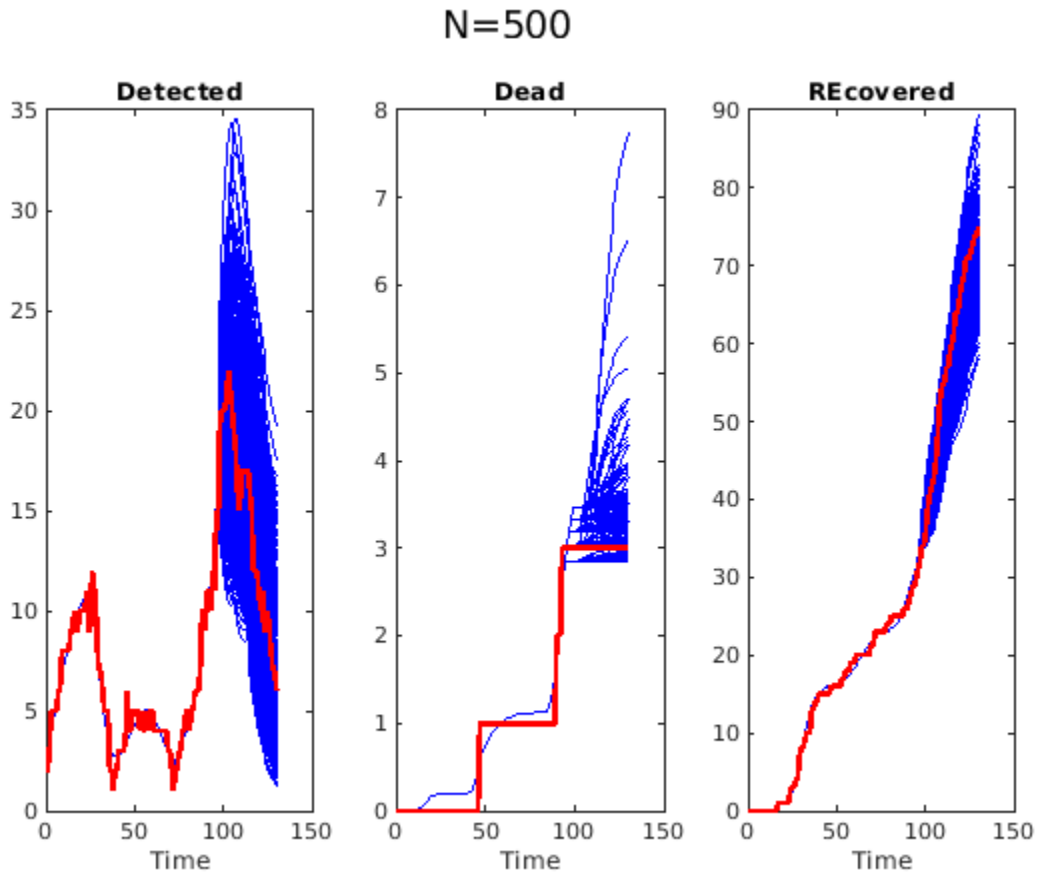
4.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
ϑ_P
ϑ_E
a_L
γ_L
b_L
b_H
ν
BP
a_μ
b_μ
μ
a_H
η_L
γ_H
z
η_ϑ
λ_{fq}
k_L
λ_{qf}
δ
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
Identifiability Index

4.4. Uncertainty analisys



Chapter 5. Extension number5

5.1. Basic information

The extension to be validated consists of the time series from the data131 to the 188. The status of the validation is: COMPLETED.

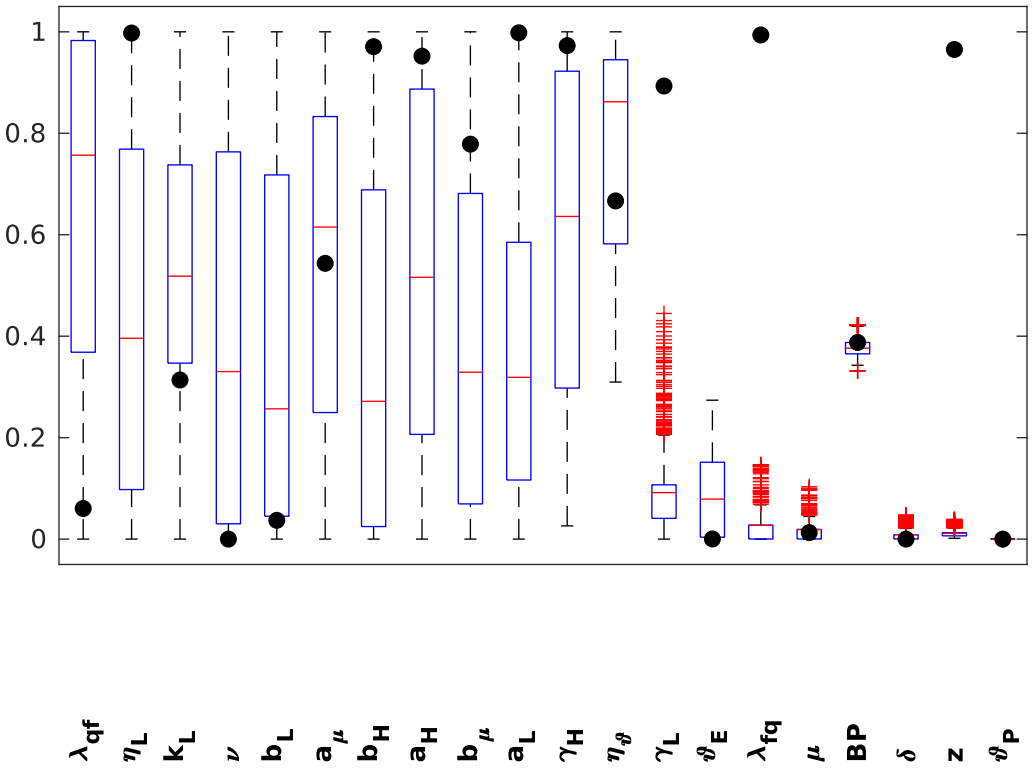
The number of estimations needed to perform the validation was1000.

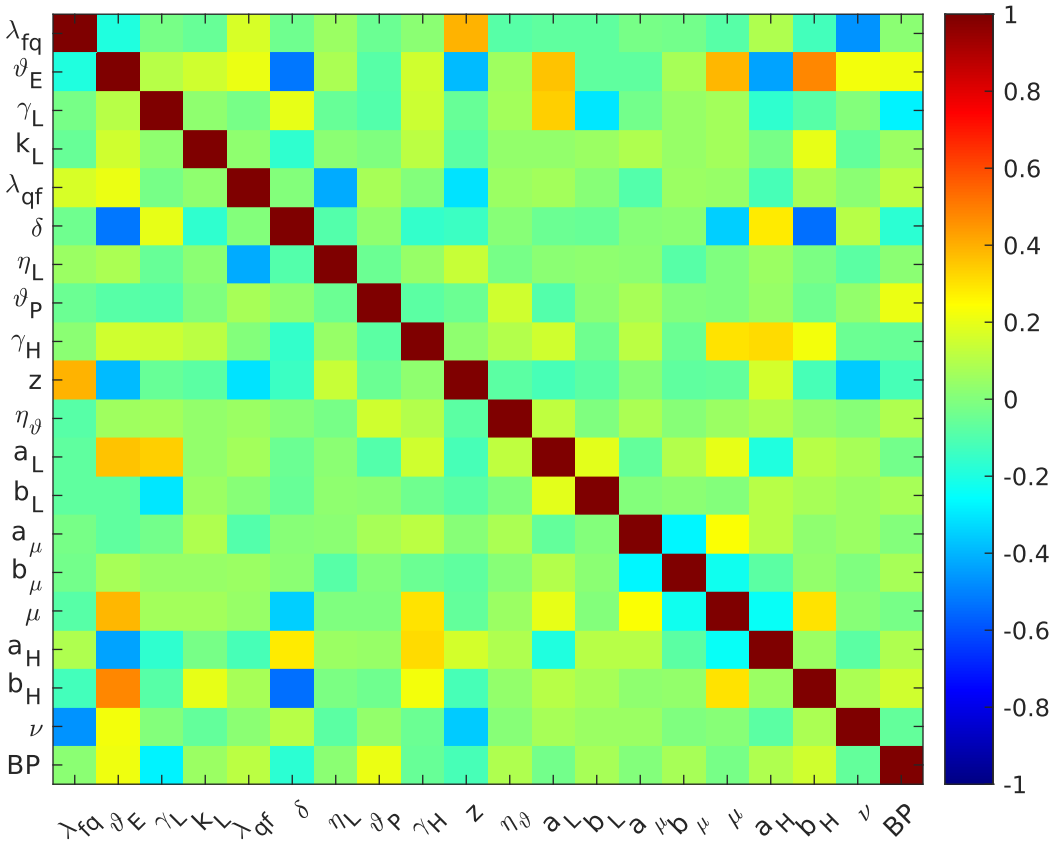
5.2. Estimated parameters with their intervals

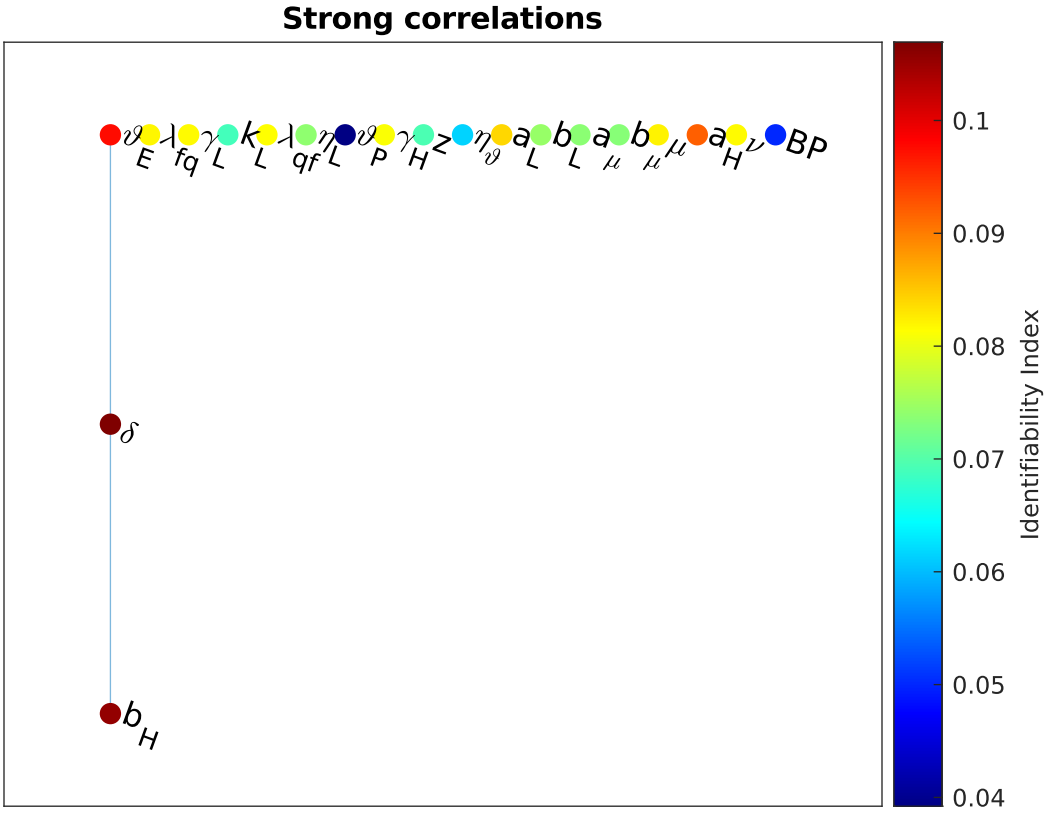
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0636'	'0.0275'	'0.9938'	'0.0819'
\vartheta_E	'0.072'	'0.0857'	'0.0788'	'0.0003'	'0.0975'
\gamma_L	'0.0609'	'0.1223'	'0.0916'	'0.8932'	'0.0817'
k_L	'5.4153'	'5.9146'	'5.665'	'3.8225'	'0.069'
\lambda_{qf}	'0.7239'	'0.7897'	'0.7568'	'0.0603'	'0.0814'
\delta	'0'	'0.0062'	'0.0013'	'0'	'0.1069'
\eta_L	'0.3626'	'0.4293'	'0.3959'	'0.9976'	'0.074'
\vartheta_P	'0'	'0.0001'	'0'	'0'	'0.0392'
\gamma_H	'0.6063'	'0.6659'	'0.6361'	'0.9729'	'0.0812'
z	'0.0262'	'0.6543'	'0.3402'	'28.955'	'0.0694'
\eta_\vartheta	'0.8399'	'0.8844'	'0.8622'	'0.6667'	'0.0615'
a_L	'5.0504'	'5.8791'	'5.4647'	'14.9733'	'0.0839'
b_L	'4.1147'	'5.0751'	'4.5949'	'1.5179'	'0.0746'
a_\mu	'9.1682'	'10.0558'	'9.612'	'8.611'	'0.0737'
b_\mu	'5.1484'	'6.0627'	'5.6056'	'11.9003'	'0.0734'
\mu	'0'	'0.0482'	'0.019'	'0.0128'	'0.0821'
a_H	'7.7581'	'8.692'	'8.225'	'14.3283'	'0.092'
b_H	'4.3317'	'5.2745'	'4.8031'	'14.5897'	'0.1055'
\nu	'148.0013'	'182.1634'	'165.0823'	'0.0005'	'0.0816'
BP	'132.2761'	'132.7239'	'132.5'	'133.5'	'0.0503'

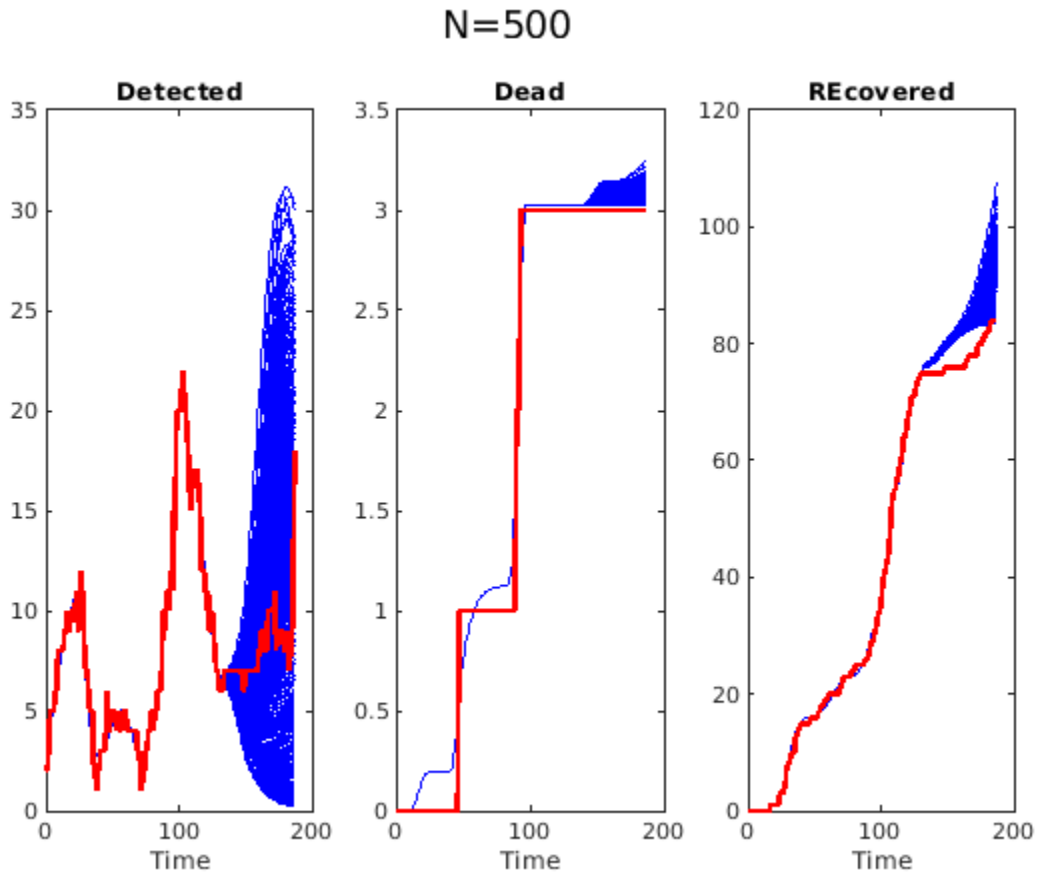
5.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
ϑ_E λ_{fq} γ_L k_L λ_{qf} η_L ϑ_P γ_H z η_ϑ a_L b_L a_μ b_μ a_H ν BP
δ
b_H
0.1
0.09
0.08
0.07
0.06
0.05
0.04
Identifiability Index

5.4. Uncertainty analisys



Chapter 6. Extension number6

6.1. Basic information

The extension to be validated consists of the time series from the data188 to the 217. The status of the validation is: COMPLETED.

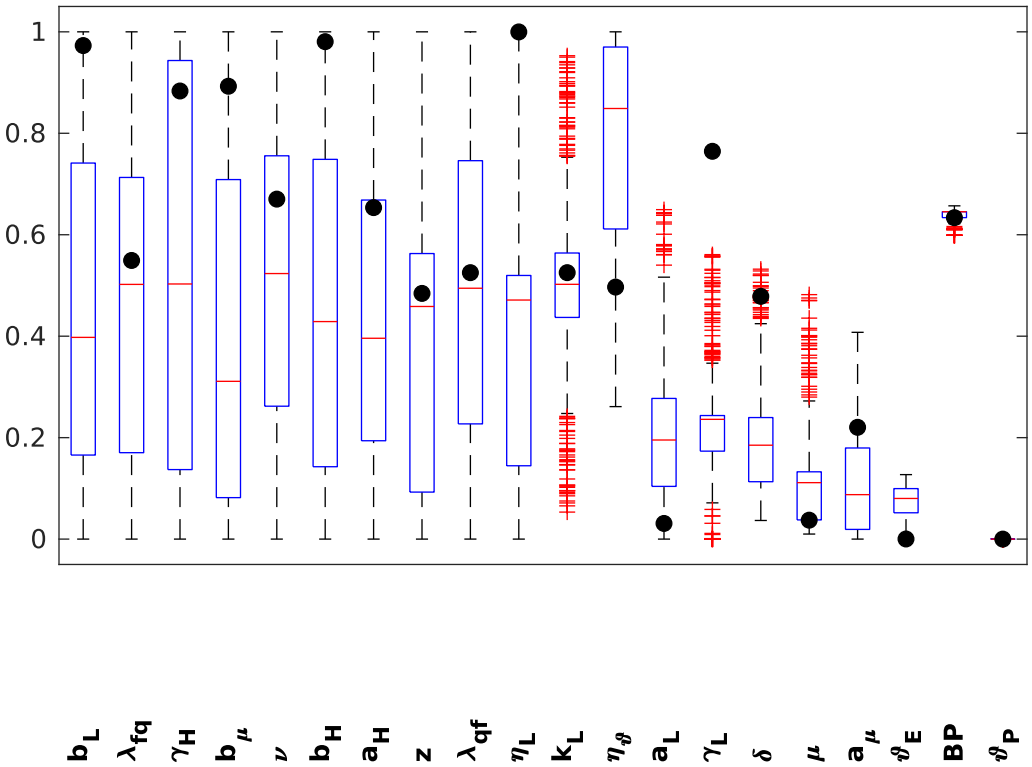
The number of estimations needed to perform the validation was1000.

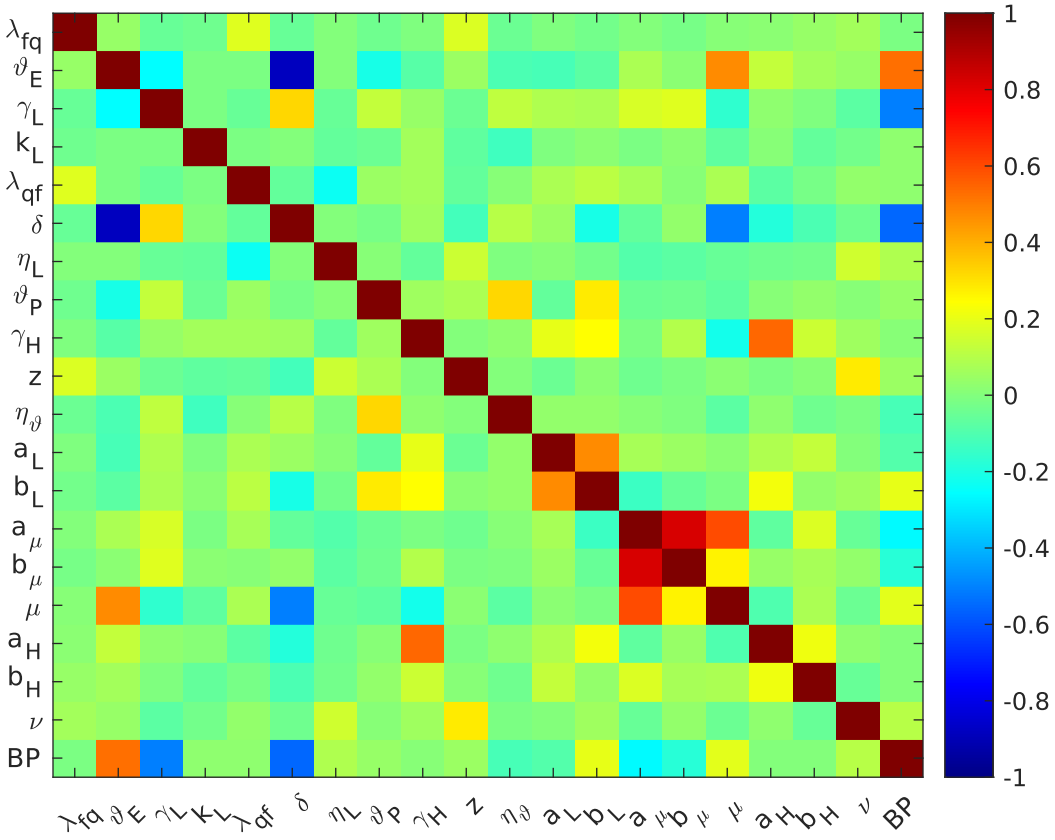
6.2. Estimated parameters with their intervals

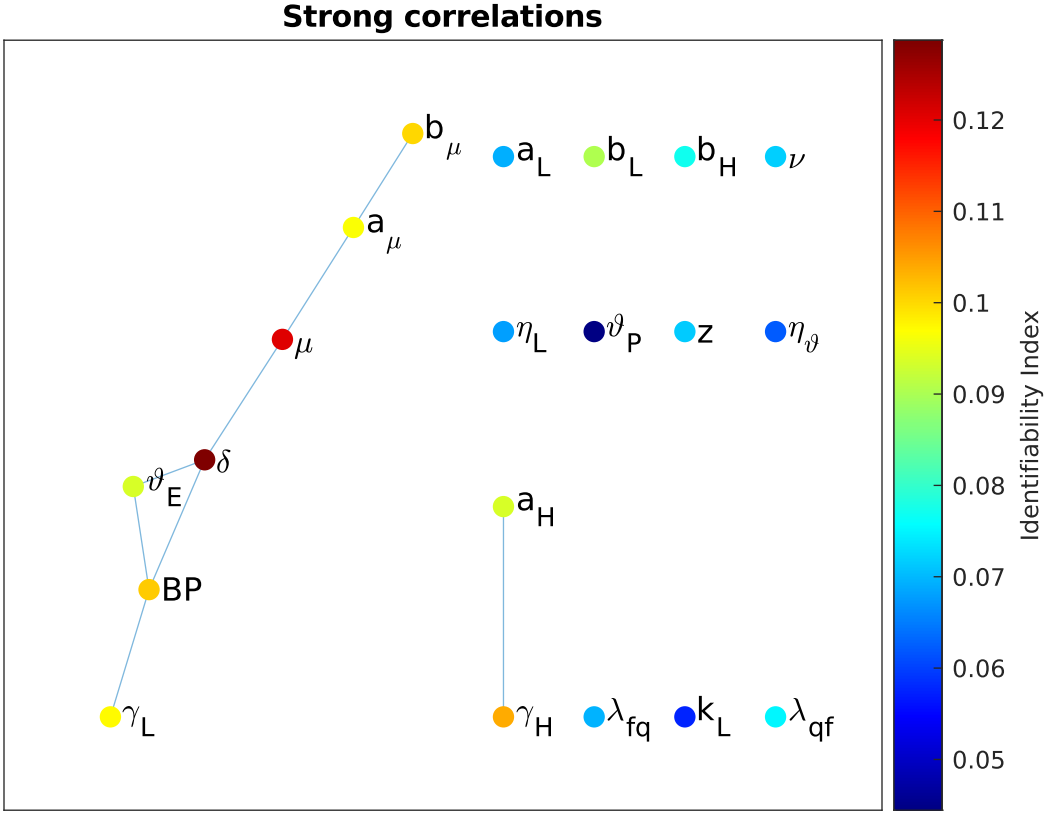
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.4677'	'0.5365'	'0.5021'	'0.5493'	'0.0698'
\vartheta_E	'0.0763'	'0.084'	'0.0801'	'0.0002'	'0.0935'
\gamma_L	'0.2059'	'0.2663'	'0.2361'	'0.7645'	'0.0972'
k_L	'5.3029'	'5.7375'	'5.5202'	'5.7272'	'0.0577'
\lambda_{qf}	'0.4601'	'0.5289'	'0.4945'	'0.5252'	'0.0752'
\delta	'0.0241'	'0.0314'	'0.0278'	'0.0718'	'0.1287'
\eta_L	'0.4423'	'0.5002'	'0.4713'	'0.9998'	'0.068'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0444'
\gamma_H	'0.4617'	'0.5442'	'0.5029'	'0.8834'	'0.1038'
z	'12.8252'	'14.6892'	'13.7572'	'14.5306'	'0.0715'
\eta_\vartheta	'0.8269'	'0.8708'	'0.8489'	'0.4968'	'0.0622'
a_L	'3.3953'	'4.0743'	'3.7348'	'1.4321'	'0.0693'
b_L	'6.0606'	'7.0739'	'6.5672'	'14.6212'	'0.0903'
a_\mu	'2.0611'	'2.3928'	'2.2269'	'4.0853'	'0.0966'
b_\mu	'4.8294'	'5.8793'	'5.3543'	'13.4982'	'0.1004'
\mu	'0.0786'	'0.144'	'0.1113'	'0.0373'	'0.1206'
a_H	'6.0808'	'7.0047'	'6.5428'	'10.1487'	'0.0937'
b_H	'6.5019'	'7.5048'	'7.0033'	'14.7286'	'0.0773'
\nu	'245.653'	'277.8194'	'261.7362'	'335.1104'	'0.0719'
BP	'186.3753'	'186.6247'	'186.5'	'185.4909'	'0.1014'

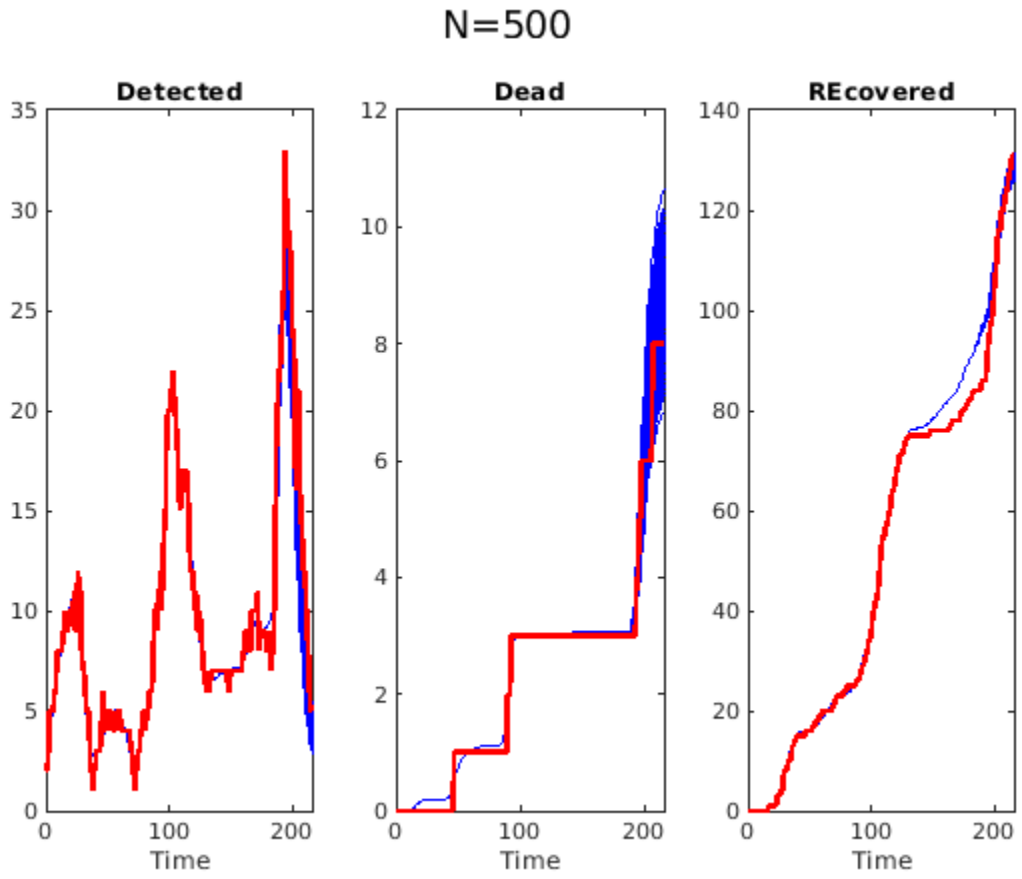
6.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
b μ
a L
b L
b H
ν
a μ
μ
η L
ϑ P
z
η ϑ
δ
ϑ E
a H
BP
γ L
γ H
λ fq
k L
λ qf
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

6.4. Uncertainty analisys



Chapter 7. Extension number7

7.1. Basic information

The extension to be validated consists of the time series from the data217 to the 282. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

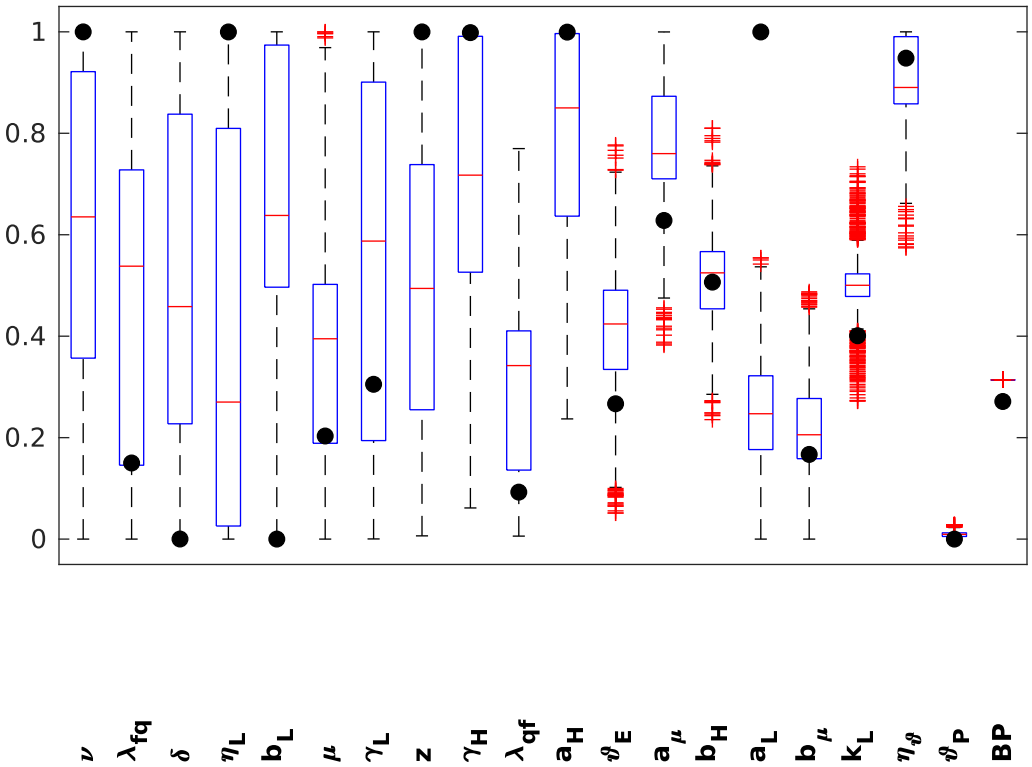
7.2. Estimated parameters with their intervals

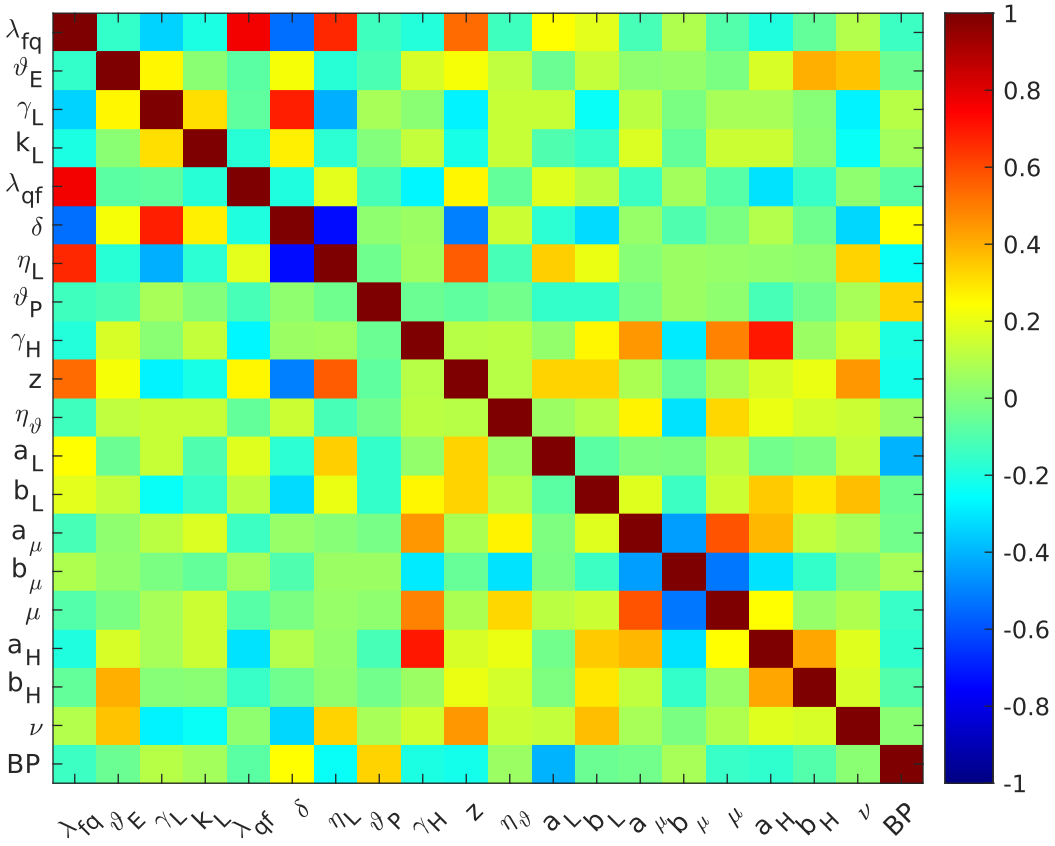
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

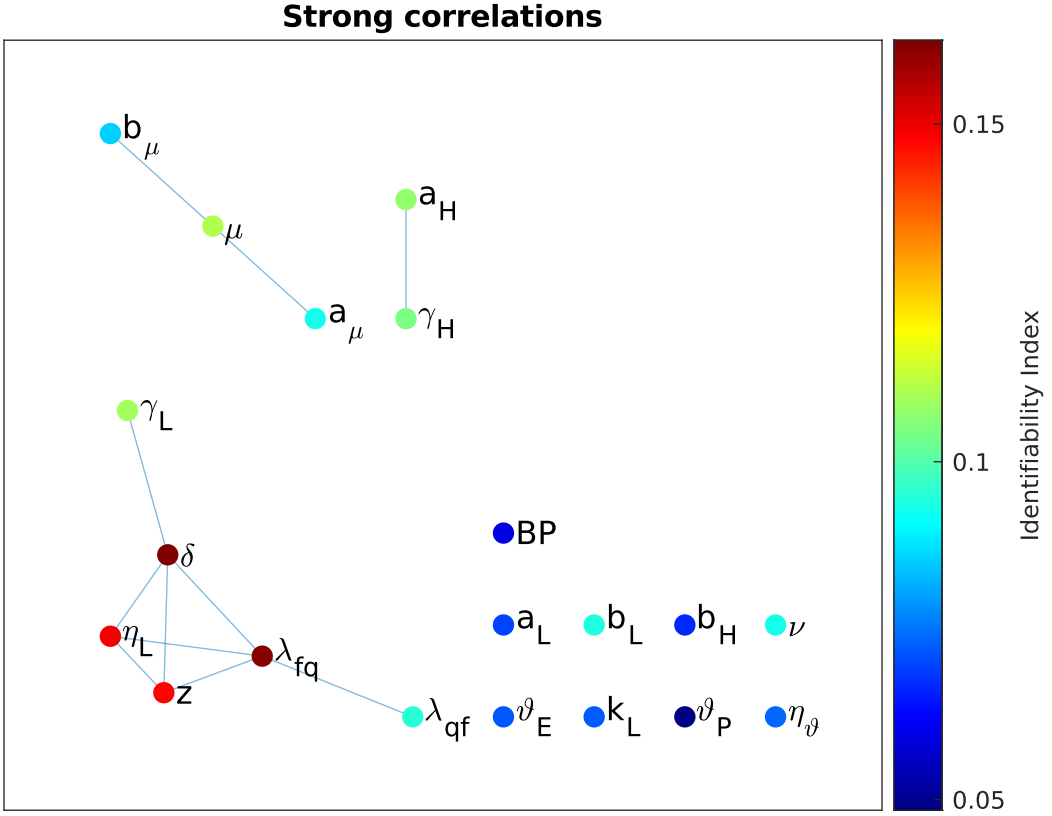
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.1392'	'0.1614'	'0.538'	'0.15'	'0.1611'
\vartheta_E	'0.2473'	'0.2691'	'0.4241'	'0.2668'	'0.0721'
\gamma_L	'0.2149'	'0.3074'	'0.5875'	'0.3052'	'0.1091'
k_L	'2.8484'	'4.9739'	'5.5032'	'4.6079'	'0.0728'
\lambda_{qf}	'0.0828'	'0.0929'	'0.3421'	'0.0926'	'0.0953'
\delta	'0'	'0'	'0.0687'	'0'	'0.1624'
\eta_L	'0.8836'	'1'	'0.2701'	'0.9998'	'0.1494'
\vartheta_P	'0'	'0'	'0.0094'	'0'	'0.0484'
\gamma_H	'0.8803'	'1'	'0.7175'	'0.9984'	'0.1049'
z	'27.9842'	'30'	'14.8247'	'29.9952'	'0.1473'
\eta_\vartheta	'0.6702'	'0.9792'	'0.8902'	'0.9481'	'0.0739'
a_L	'13.3483'	'15'	'4.4604'	'14.9963'	'0.0702'
b_L	'1'	'2.2962'	'9.9322'	'1.0005'	'0.0947'
a_\mu	'4.8247'	'10.1469'	'11.6364'	'9.7939'	'0.093'
b_\mu	'3.0477'	'5.9029'	'3.8807'	'3.3372'	'0.0855'
\mu	'0.1351'	'0.2233'	'0.3949'	'0.2032'	'0.1105'
a_H	'13.8512'	'15'	'12.8996'	'14.9916'	'0.1072'
b_H	'4.8006'	'11.9311'	'8.348'	'8.0921'	'0.0671'
\nu	'474.9468'	'500'	'317.5997'	'499.9365'	'0.0932'
BP	'208.5'	'282'	'217.5'	'213.5'	'0.0592'

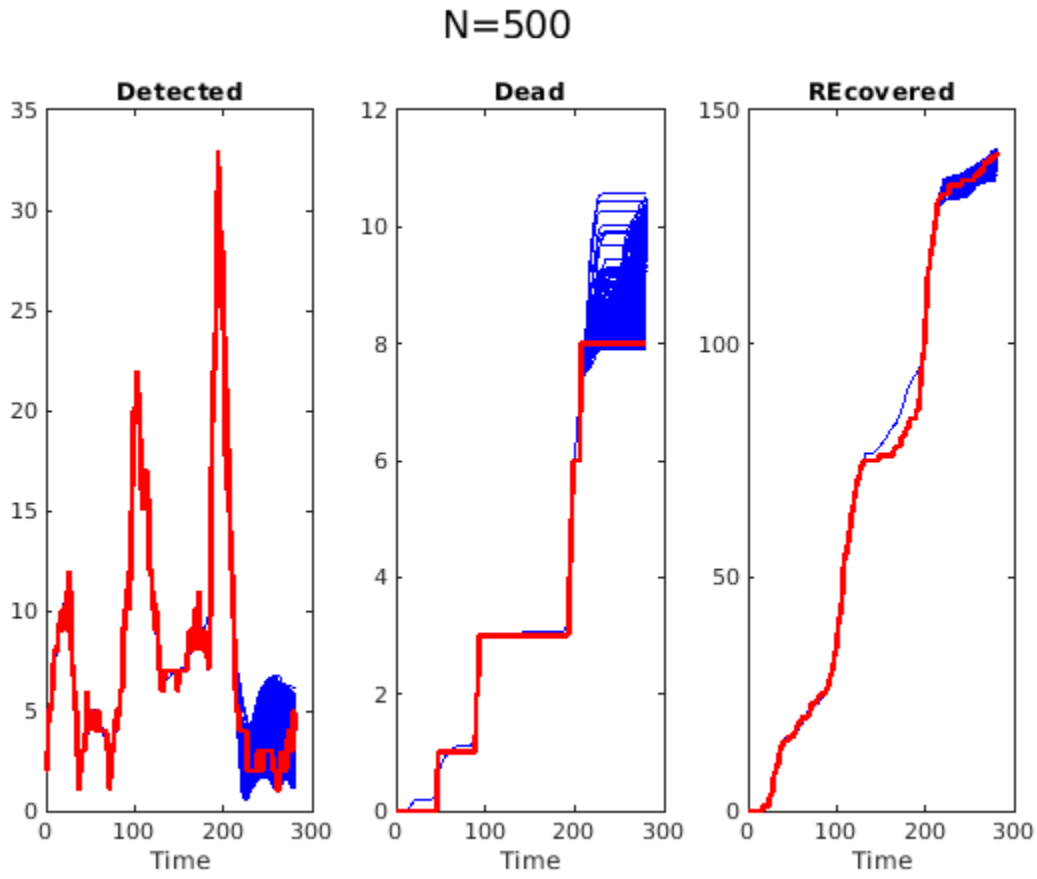
7.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
b μ
μ
a μ
a H
γ H
γ L
δ
η L
z
λ fq
λ qf
BP
a L
b L
b H
ν
ϑ E
k L
ϑ P
η ϑ
0.15
0.1
0.05
Identifiability Index

7.4. Uncertainty analisys



Chapter 8. Extension number8

8.1. Basic information

The extension to be validated consists of the time series from the data282 to the 313. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

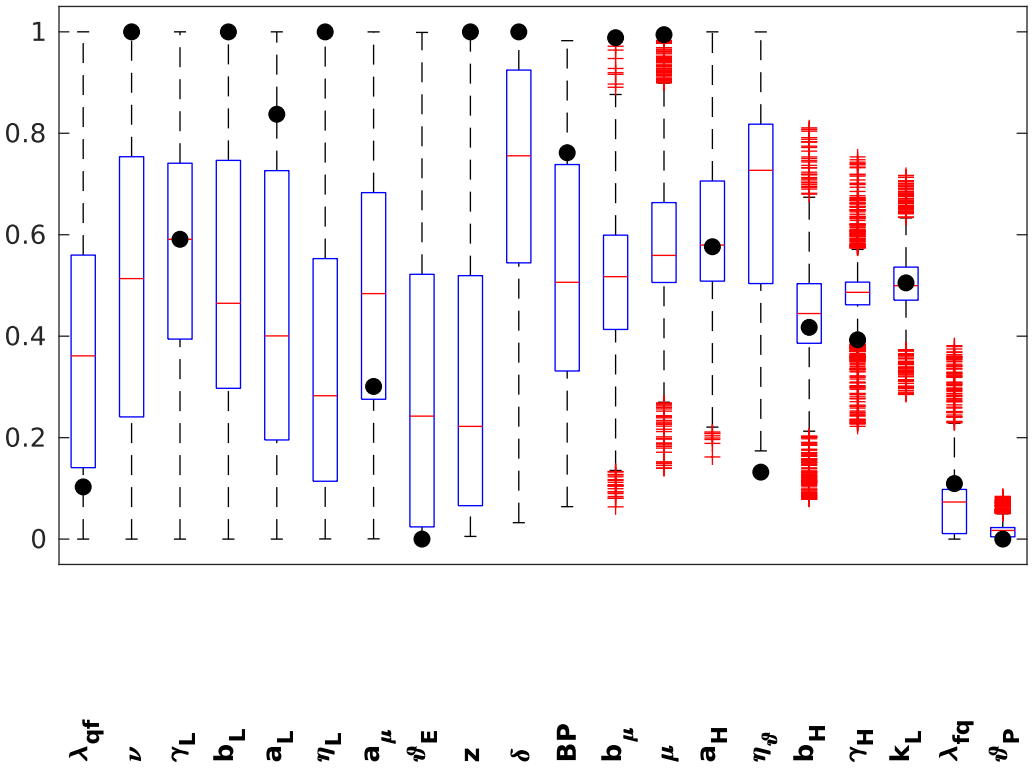
8.2. Estimated parameters with their intervals

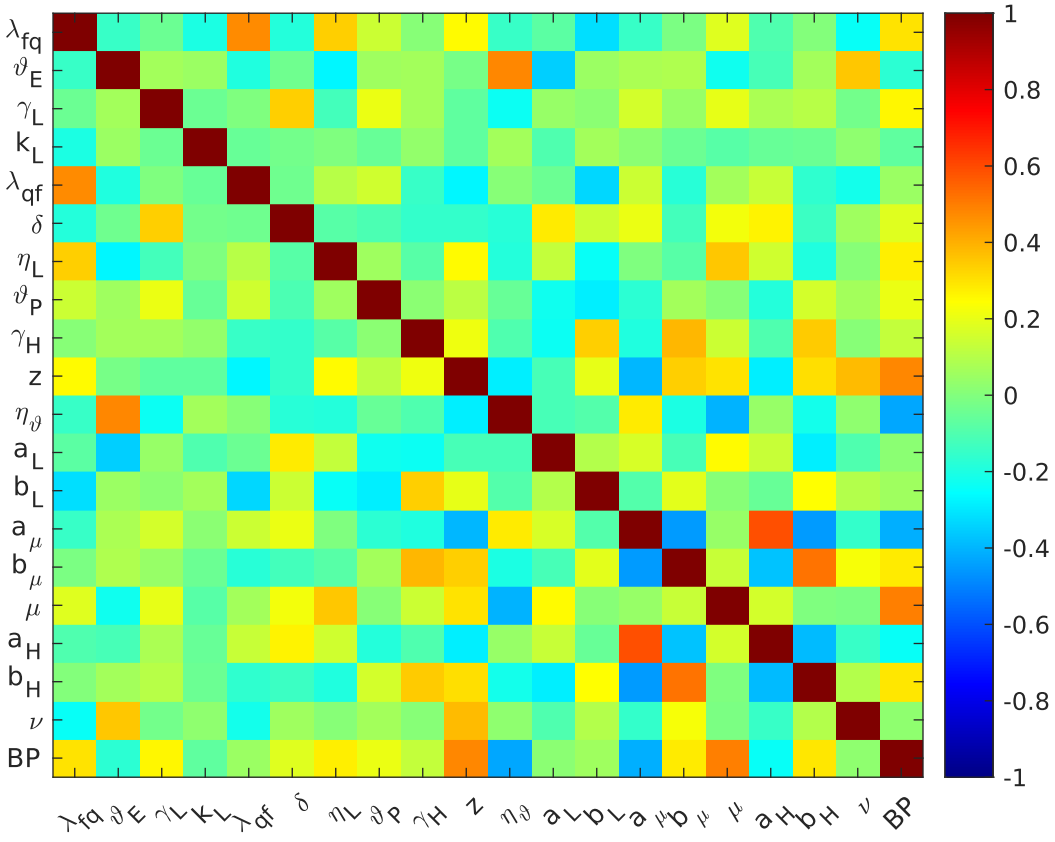
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

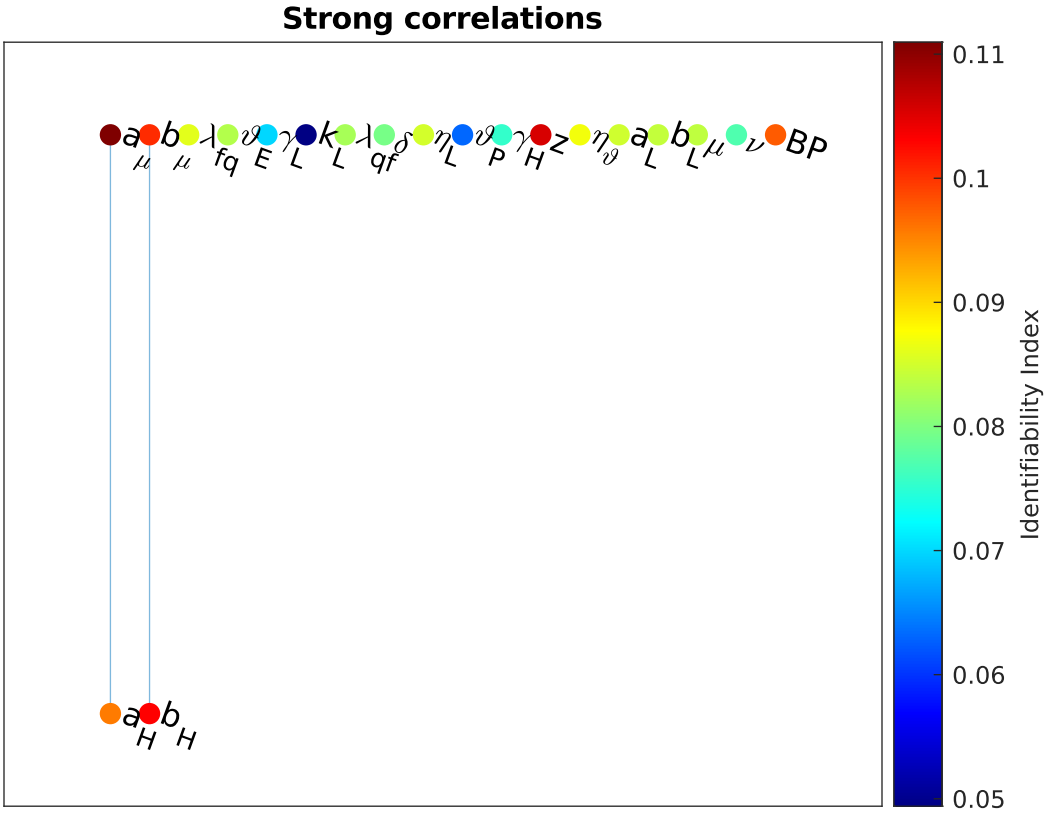
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.0973'	'0.116'	'0.0731'	'0.1094'	'0.0861'
\vartheta_E	'0'	'0.0001'	'0.2424'	'0'	'0.0831'
\gamma_L	'0.5121'	'1'	'0.591'	'0.591'	'0.07'
k_L	'1.1823'	'8.29'	'5.4964'	'5.5463'	'0.0494'
\lambda_{qf}	'0.0979'	'0.1139'	'0.3612'	'0.1029'	'0.0825'
\delta	'0.0146'	'0.15'	'0.1133'	'0.15'	'0.0796'
\eta_L	'0.5053'	'1'	'0.2826'	'0.9999'	'0.085'
\vartheta_P	'0'	'0.0172'	'0.0171'	'0'	'0.0632'
\gamma_H	'0'	'0.8841'	'0.4865'	'0.3929'	'0.0754'
z	'22.1628'	'30'	'6.6663'	'29.9978'	'0.1054'
\eta_\vartheta	'0.0691'	'0.2909'	'0.727'	'0.132'	'0.087'
a_L	'10.4439'	'12.9861'	'6.6077'	'12.7254'	'0.0848'
b_L	'10.33'	'15'	'7.5081'	'14.9981'	'0.0843'
a_\mu	'1'	'15'	'7.7747'	'5.2131'	'0.111'
b_\mu	'1.966'	'15'	'8.2425'	'14.8375'	'0.1004'
\mu	'0'	'1'	'0.5593'	'0.9944'	'0.0839'
a_H	'1.28'	'13.6623'	'9.1148'	'9.0687'	'0.0957'
b_H	'1'	'15'	'7.2255'	'6.8439'	'0.1032'
\nu	'428.6272'	'500'	'256.7752'	'499.9892'	'0.0771'
BP	'274.5372'	'284.1289'	'260.5414'	'282.5'	'0.0975'

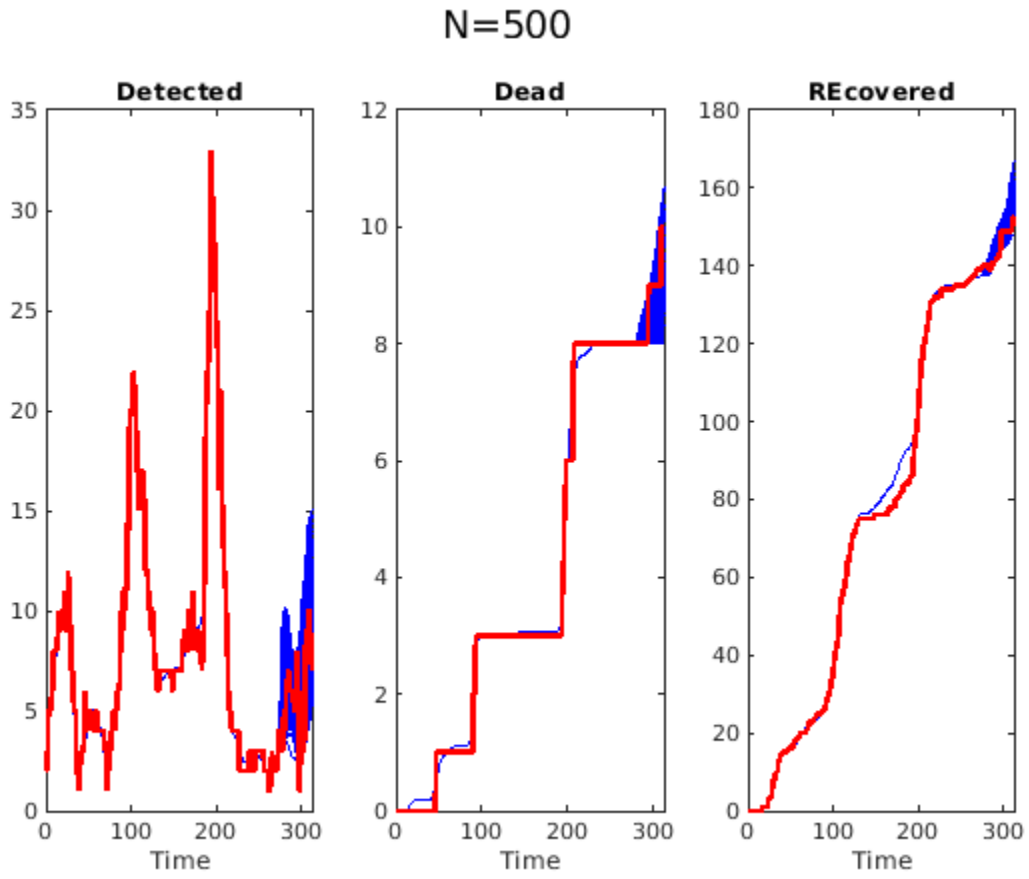
8.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.11
0.1
0.09
0.08
0.07
0.06
0.05

8.4. Uncertainty analisys



Chapter 9. Extension number9

9.1. Basic information

The extension to be validated consists of the time series from the data313 to the 334. The status of the validation is: COMPLETED.

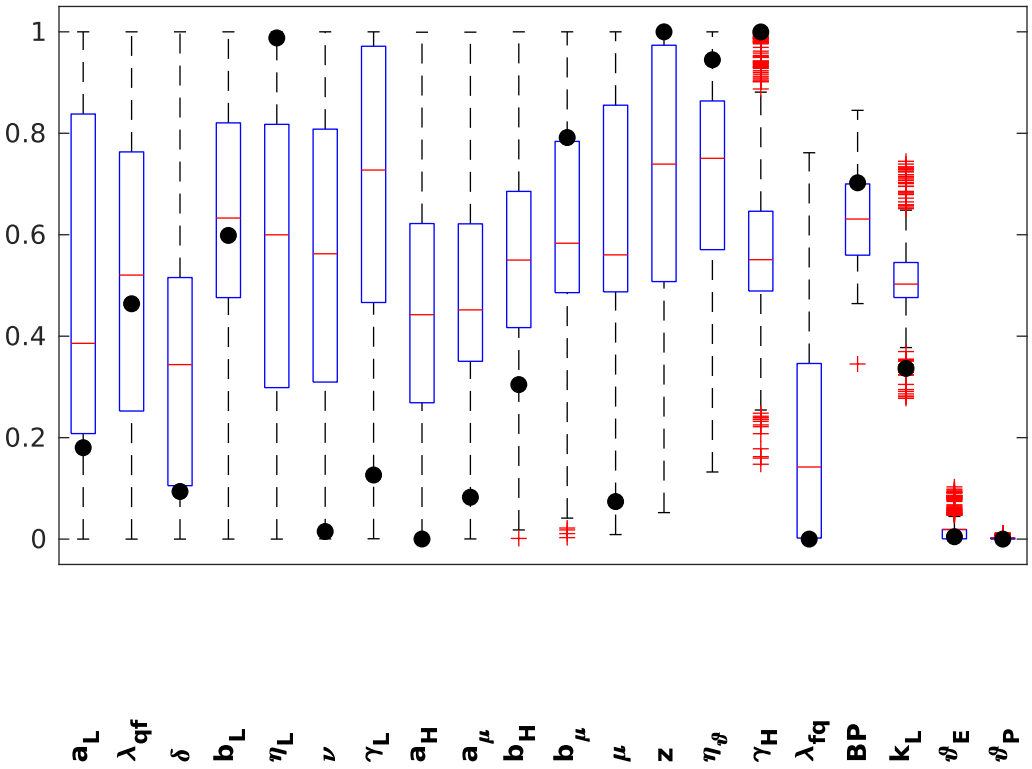
The number of estimations needed to perform the validation was1000.

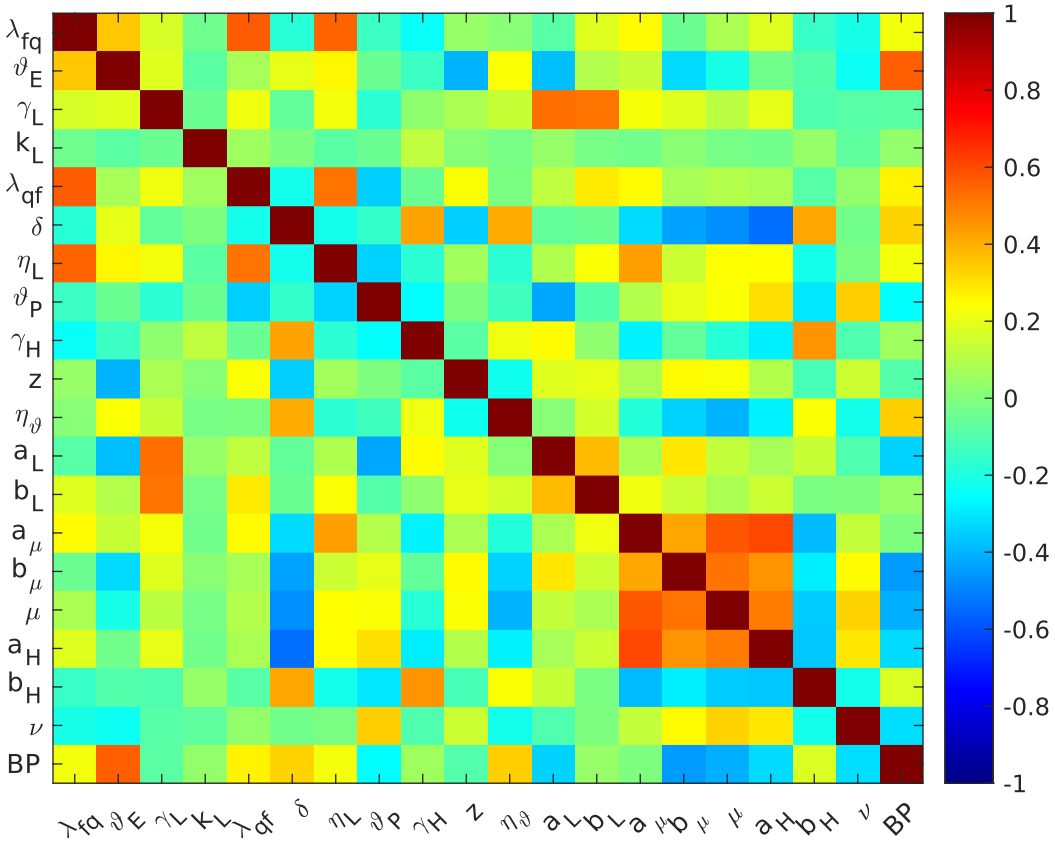
9.2. Estimated parameters with their intervals

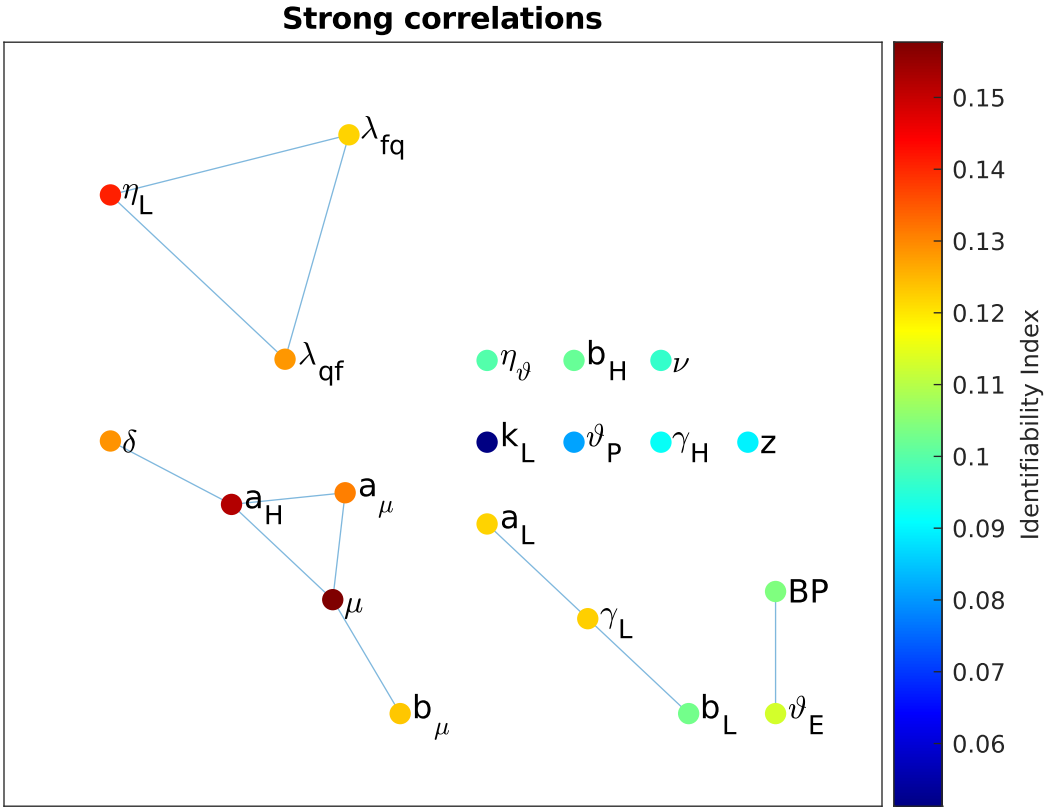
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.1162'	'0.1681'	'0.1421'	'0'	'0.122'
\vartheta_E	'0'	'0.0504'	'0.0189'	'0.0047'	'0.1129'
\gamma_L	'0.6965'	'0.7585'	'0.7275'	'0.1264'	'0.1226'
k_L	'5.3754'	'5.6733'	'5.5244'	'4.0281'	'0.0513'
\lambda_{qf}	'0.4869'	'0.554'	'0.5205'	'0.4639'	'0.1283'
\delta	'0.047'	'0.0562'	'0.0516'	'0.0141'	'0.1286'
\eta_L	'0.5643'	'0.6354'	'0.5999'	'0.988'	'0.1409'
\vartheta_P	'0'	'0.0164'	'0.0023'	'0'	'0.0814'
\gamma_H	'0.526'	'0.5756'	'0.5508'	'0.9998'	'0.092'
z	'21.3198'	'23.0338'	'22.1768'	'29.9984'	'0.0899'
\eta_\vartheta	'0.7225'	'0.7788'	'0.7507'	'0.9449'	'0.0997'
a_L	'5.8651'	'6.9402'	'6.4027'	'3.5226'	'0.1223'
b_L	'9.4485'	'10.2738'	'9.8612'	'9.3813'	'0.103'
a_\mu	'7.018'	'7.6332'	'7.3256'	'2.1557'	'0.1308'
b_\mu	'8.8175'	'9.5138'	'9.1656'	'12.0822'	'0.1236'
\mu	'0.53'	'0.5906'	'0.5603'	'0.074'	'0.1577'
a_H	'6.8206'	'7.5654'	'7.193'	'1.0023'	'0.1521'
b_H	'8.3476'	'9.0542'	'8.7009'	'5.2639'	'0.1017'
\nu	'264.9295'	'297.5125'	'281.221'	'7.5062'	'0.0964'
BP	'308.0631'	'308.9369'	'308.5'	'311.4995'	'0.1045'

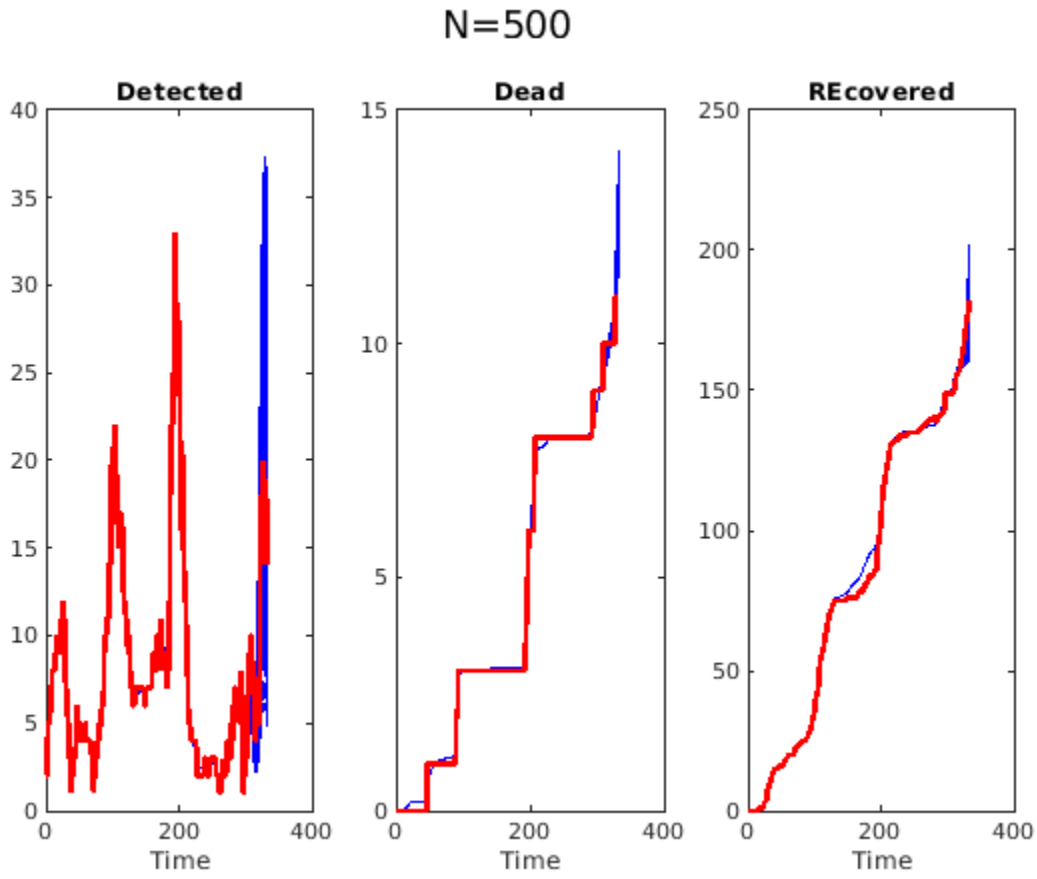
9.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
λ_{fq}
η_L
λ_{qf}
η_ϑ
b_H
ν
k_L
ϑ_P
γ_H
z
δ
a_H
a_μ
a_L
μ
BP
γ_L
b_L
b_μ
ϑ_E
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
Identifiability Index

9.4. Uncertainty analisys



Chapter 10. Extension number10

10.1. Basic information

The extension to be validated consists of the time series from the data334 to the 346. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

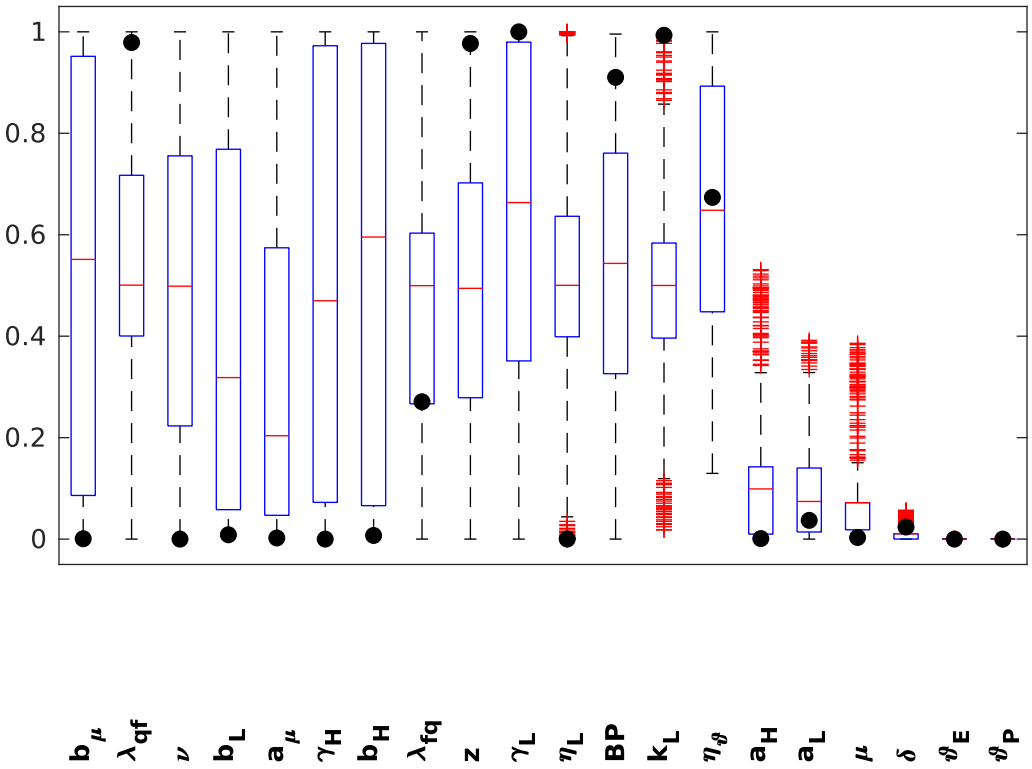
10.2. Estimated parameters with their intervals

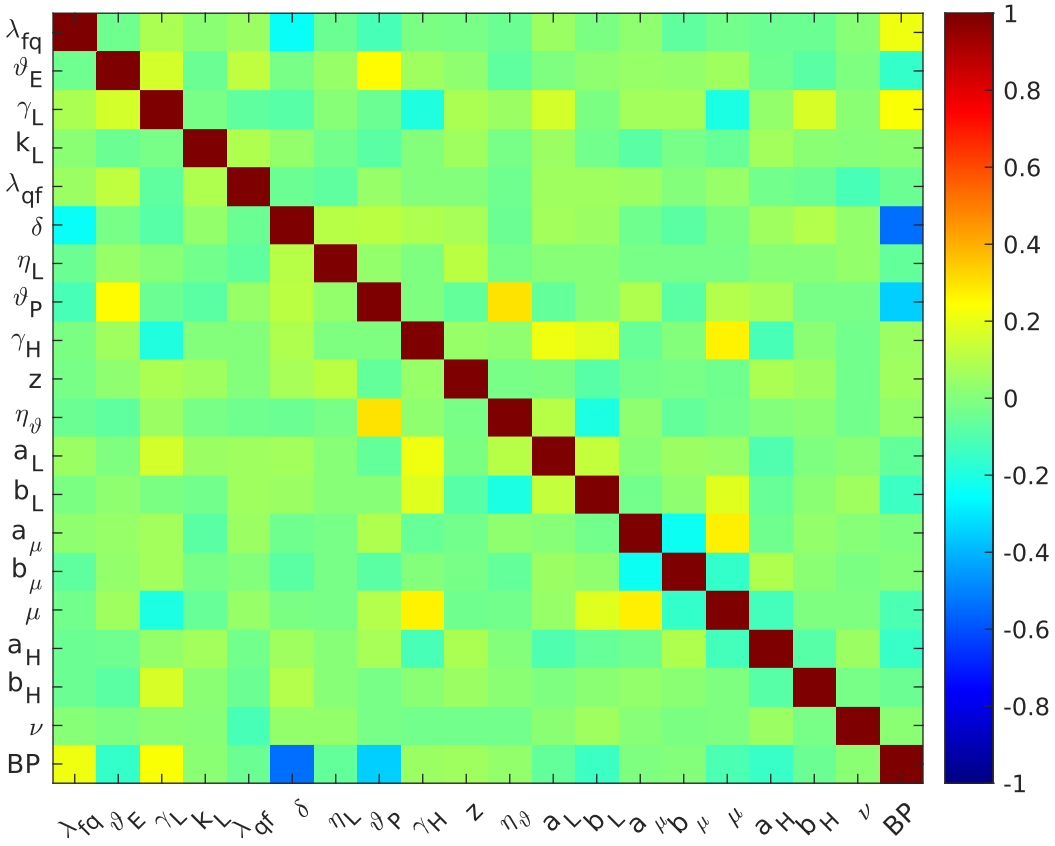
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

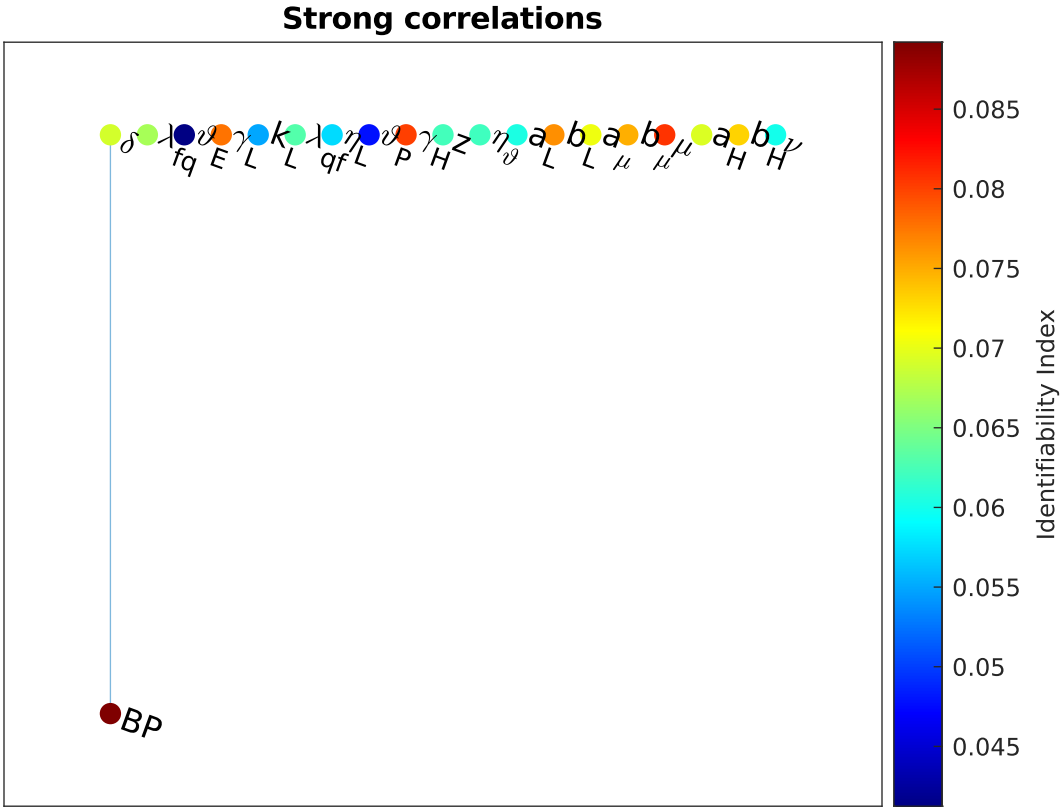
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.6092'	'0.4996'	'0.2707'	'0.0671'
\vartheta_E	'0'	'0'	'0.0001'	'0'	'0.0412'
\gamma_L	'0.5448'	'1'	'0.6635'	'1'	'0.0776'
k_L	'1'	'10'	'5.5'	'9.9388'	'0.055'
\lambda_{qf}	'0'	'1'	'0.5006'	'0.9789'	'0.0631'
\delta	'0.0008'	'0.0047'	'0.0016'	'0.0036'	'0.069'
\eta_L	'0'	'0.0002'	'0.5003'	'0.0001'	'0.0574'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0478'
\gamma_H	'0'	'0'	'0.4699'	'0'	'0.0802'
z	'0'	'30'	'14.831'	'29.312'	'0.0624'
\eta_\vartheta	'0.3354'	'1'	'0.6483'	'0.6737'	'0.062'
a_L	'1.1237'	'2.237'	'2.0391'	'1.5174'	'0.0605'
b_L	'1'	'6.8203'	'5.4578'	'1.1193'	'0.0764'
a_\mu	'1'	'15'	'3.8529'	'1.0315'	'0.0703'
b_\mu	'1'	'15'	'8.7192'	'1.0094'	'0.0749'
\mu	'0'	'0.0072'	'0.0719'	'0.0032'	'0.0806'
a_H	'1'	'15'	'2.3869'	'1.0141'	'0.0695'
b_H	'1'	'15'	'9.3367'	'1.1006'	'0.0732'
\nu	'0'	'0.0037'	'249.2985'	'0.0016'	'0.06'
BP	'331.95'	'334.6432'	'325.5002'	'333.9363'	'0.0892'

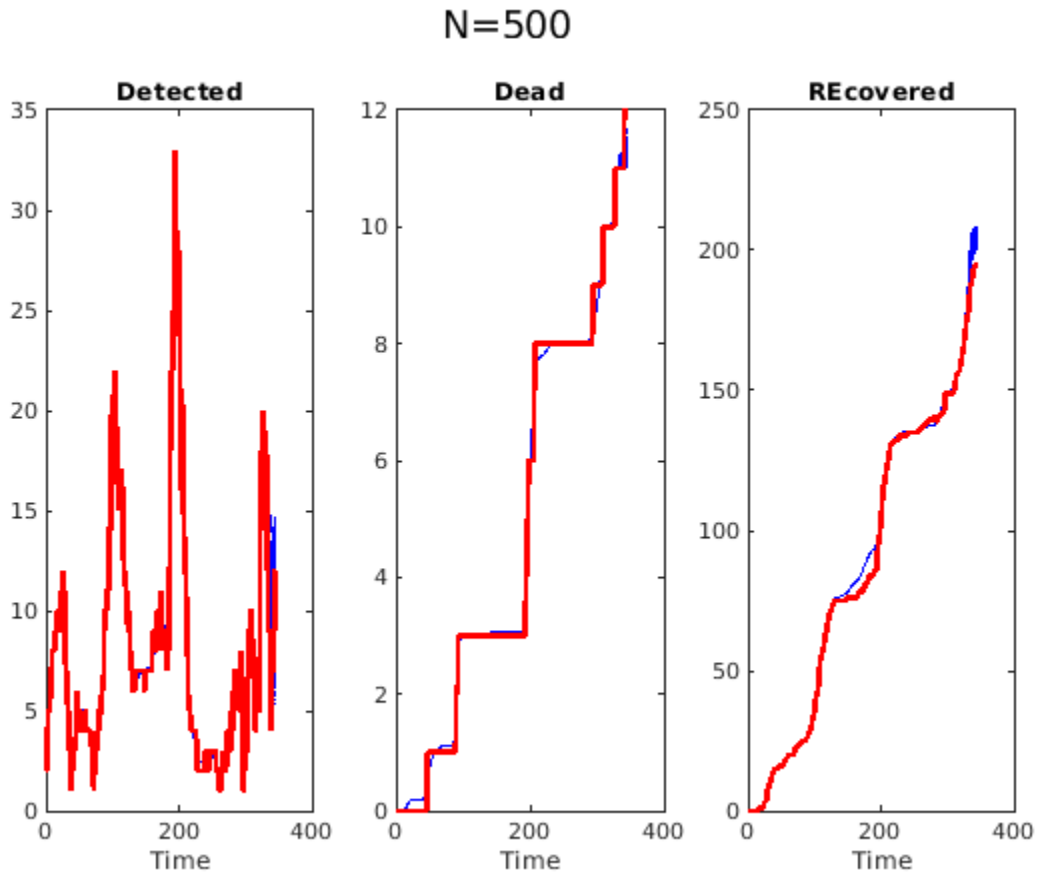
10.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
BP
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
Identifiability Index

10.4. Uncertainty analisys



Chapter 11. Extension number11

11.1. Basic information

The extension to be validated consists of the time series from the data346 to the 355. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

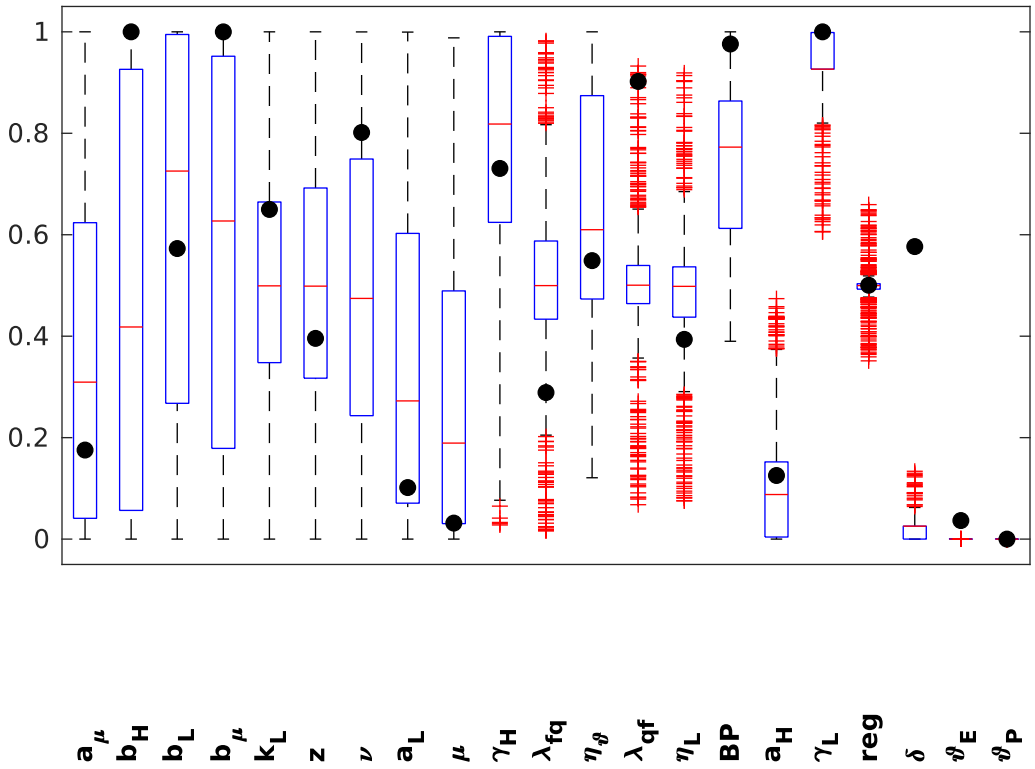
11.2. Estimated parameters with their intervals

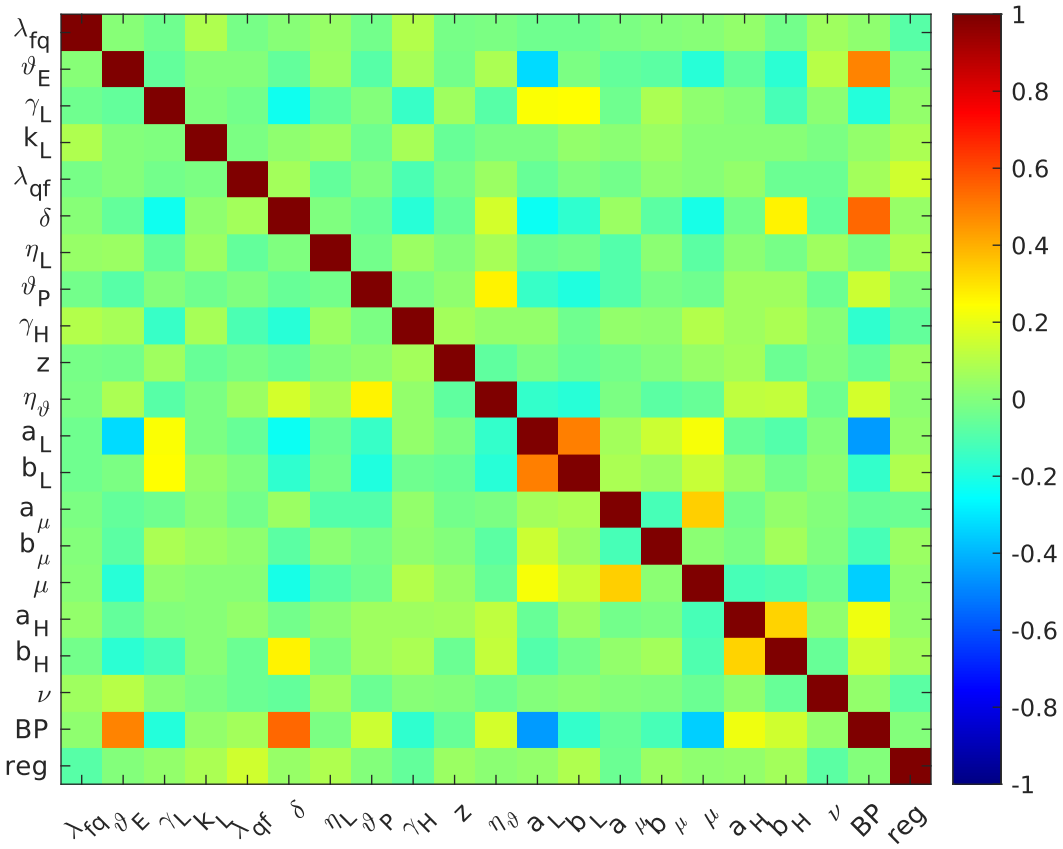
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

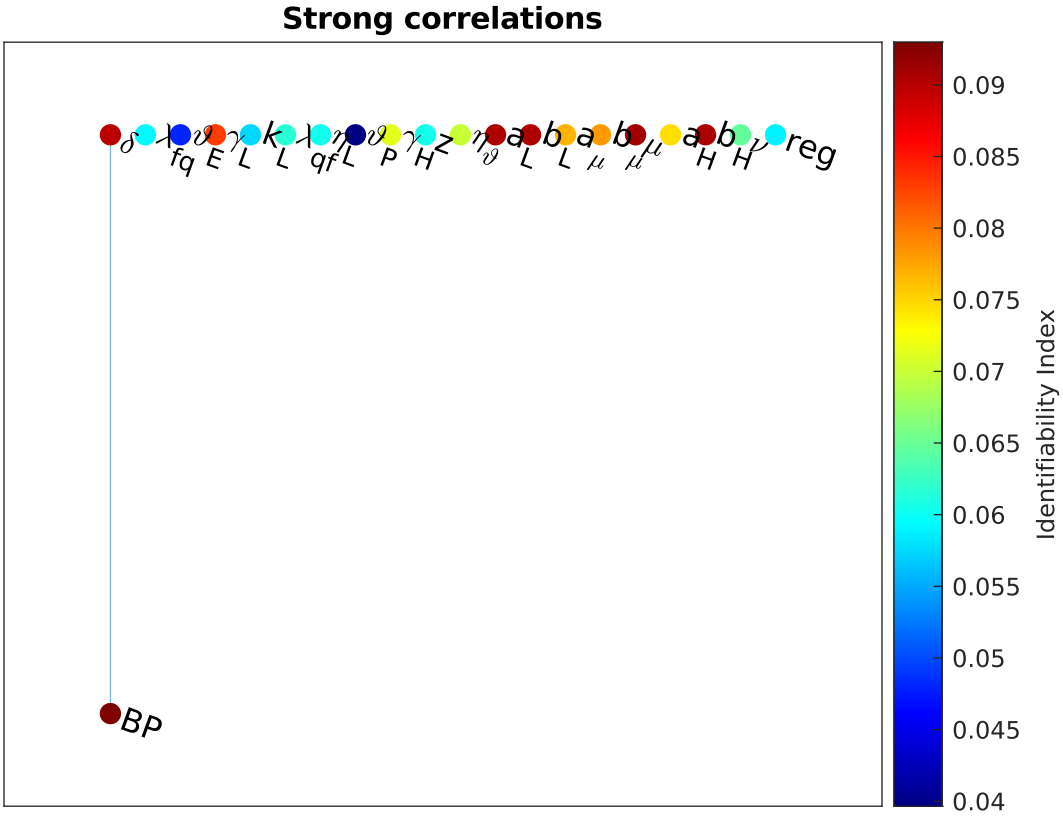
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.6501'	'0.4997'	'0.2889'	'0.0594'
\vartheta_E	'0.0172'	'0.0377'	'0.0001'	'0.0366'	'0.0481'
\gamma_L	'0'	'1'	'0.9264'	'1'	'0.0832'
k_L	'1'	'10'	'5.4932'	'6.8489'	'0.0575'
\lambda_{qf}	'0'	'1'	'0.5005'	'0.9022'	'0.0616'
\delta	'0.0476'	'0.0954'	'0.0038'	'0.0865'	'0.0897'
\eta_L	'0'	'0.8859'	'0.4982'	'0.3937'	'0.0603'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0397'
\gamma_H	'0.3829'	'1'	'0.8182'	'0.7307'	'0.0715'
z	'0'	'26.7086'	'14.9598'	'11.8705'	'0.0607'
\eta_\vartheta	'0.3025'	'1'	'0.6099'	'0.549'	'0.0699'
a_L	'1'	'15'	'4.8139'	'2.4223'	'0.0904'
b_L	'1'	'15'	'11.1573'	'9.0191'	'0.0903'
a_\mu	'1'	'15'	'5.332'	'3.4576'	'0.0768'
b_\mu	'1'	'15'	'9.7794'	'14.999'	'0.078'
\mu	'0'	'0.071'	'0.1893'	'0.0315'	'0.091'
a_H	'1.0526'	'3.0022'	'2.2302'	'2.7554'	'0.0745'
b_H	'4.7645'	'15'	'6.8541'	'15'	'0.0906'
\nu	'0.8583'	'500'	'237.2378'	'400.7899'	'0.0648'
BP	'343.5'	'345'	'342.4999'	'344.7362'	'0.093'
reg	'0'	'0.25'	'0.1249'	'0.1251'	'0.0589'

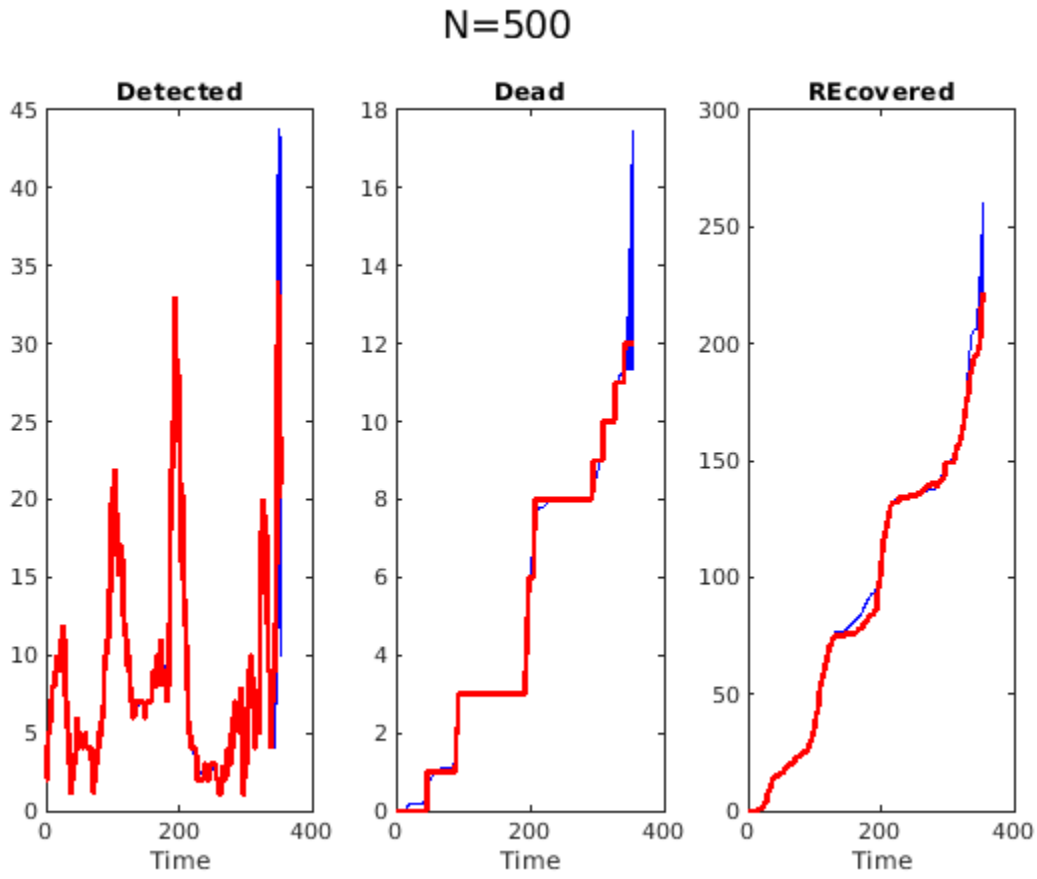
11.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
reg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
reg
BP
Identifiability Index
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04

11.4. Uncertainty analisys



Chapter 12. Extension number12

12.1. Basic information

The extension to be validated consists of the time series from the data355 to the 362. The status of the validation is: COMPLETED.

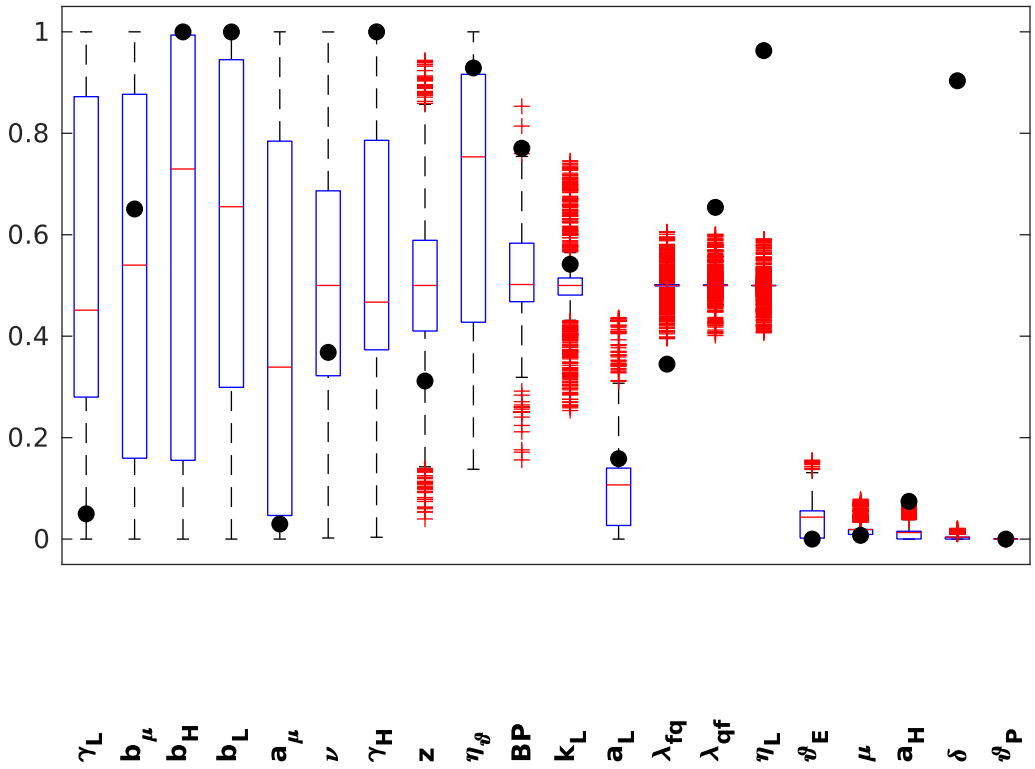
The number of estimations needed to perform the validation was1000.

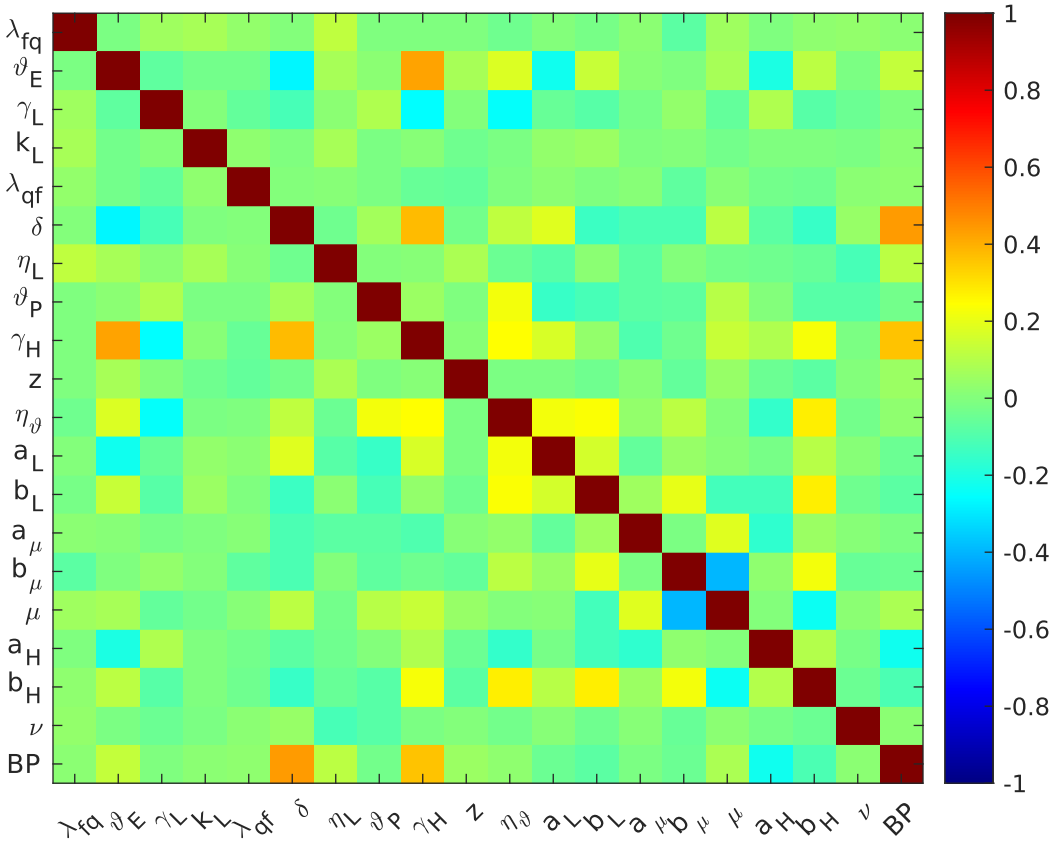
12.2. Estimated parameters with their intervals

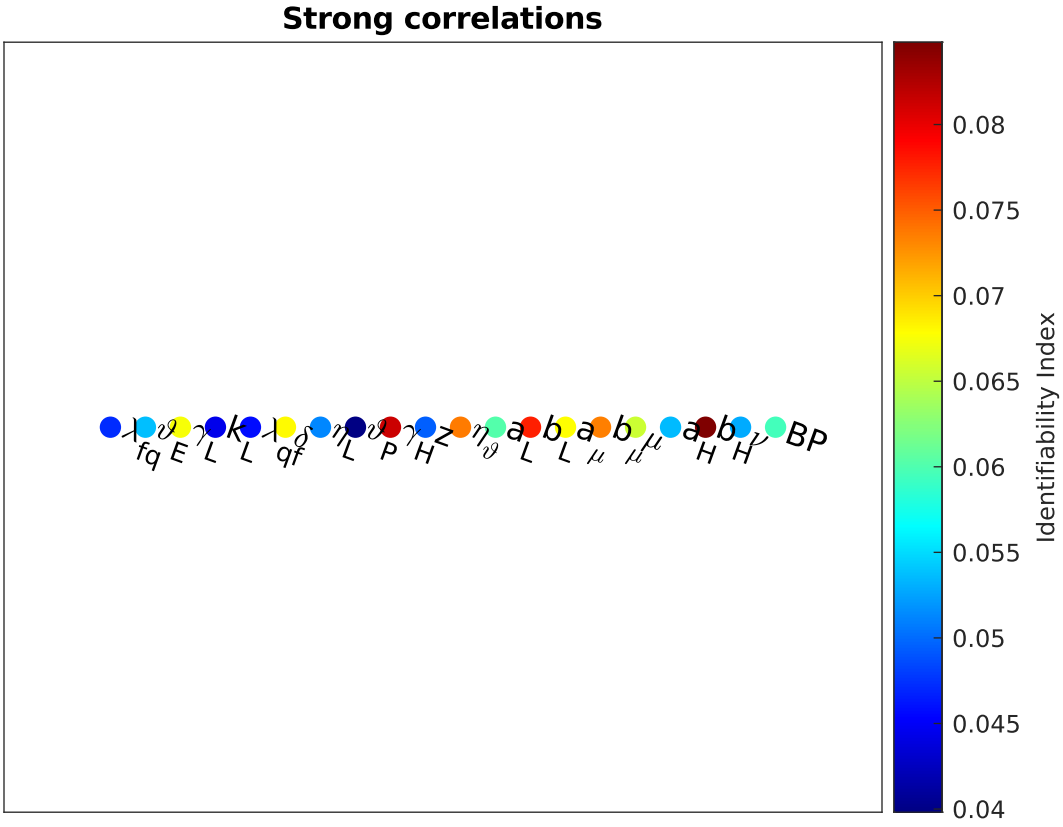
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.4853'	'0.5147'	'0.5'	'0.3449'	'0.0474'
\vartheta_E	'0.0404'	'0.0462'	'0.0433'	'0'	'0.0538'
\gamma_L	'0.4261'	'0.4764'	'0.4513'	'0.0498'	'0.0676'
k_L	'5.3736'	'5.6264'	'5.5'	'5.877'	'0.0445'
\lambda_{qf}	'0.4855'	'0.5146'	'0.5'	'0.654'	'0.0459'
\delta	'0'	'0.004'	'0.0006'	'0.1355'	'0.068'
\eta_L	'0.4861'	'0.5139'	'0.5'	'0.9629'	'0.0513'
\vartheta_P	'0'	'0.0002'	'0'	'0'	'0.0398'
\gamma_H	'0.4435'	'0.4908'	'0.4672'	'1'	'0.0814'
z	'14.506'	'15.4941'	'15'	'9.3499'	'0.0495'
\eta_\vartheta	'0.7324'	'0.7747'	'0.7535'	'0.9287'	'0.0737'
a_L	'2.2856'	'2.7106'	'2.4981'	'3.219'	'0.0603'
b_L	'9.7713'	'10.5744'	'10.1729'	'14.9966'	'0.0777'
a_\mu	'5.3243'	'6.1679'	'5.7461'	'1.4173'	'0.0679'
b_\mu	'8.1569'	'8.9655'	'8.5612'	'10.1104'	'0.0734'
\mu	'0'	'0.0383'	'0.0189'	'0.0074'	'0.0656'
a_H	'1.0231'	'1.3415'	'1.1823'	'2.0415'	'0.0537'
b_H	'10.7716'	'11.6568'	'11.2142'	'14.9978'	'0.0848'
\nu	'239.8951'	'260.107'	'250.001'	'184.0666'	'0.0529'
BP	'348.9389'	'349.0837'	'349.0113'	'350.6234'	'0.0596'

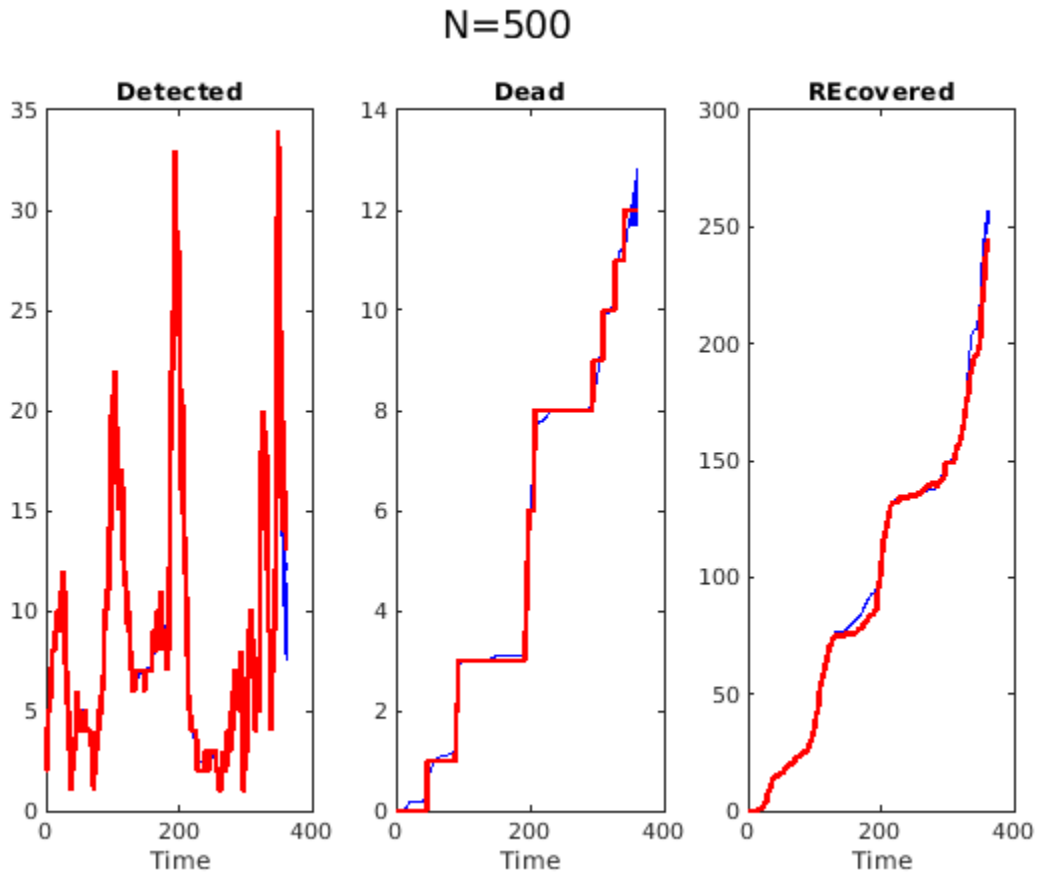
12.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
Identifiability Index

12.4. Uncertainty analisys



Chapter 13. Extension number13

13.1. Basic information

The extension to be validated consists of the time series from the data362 to the 370. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

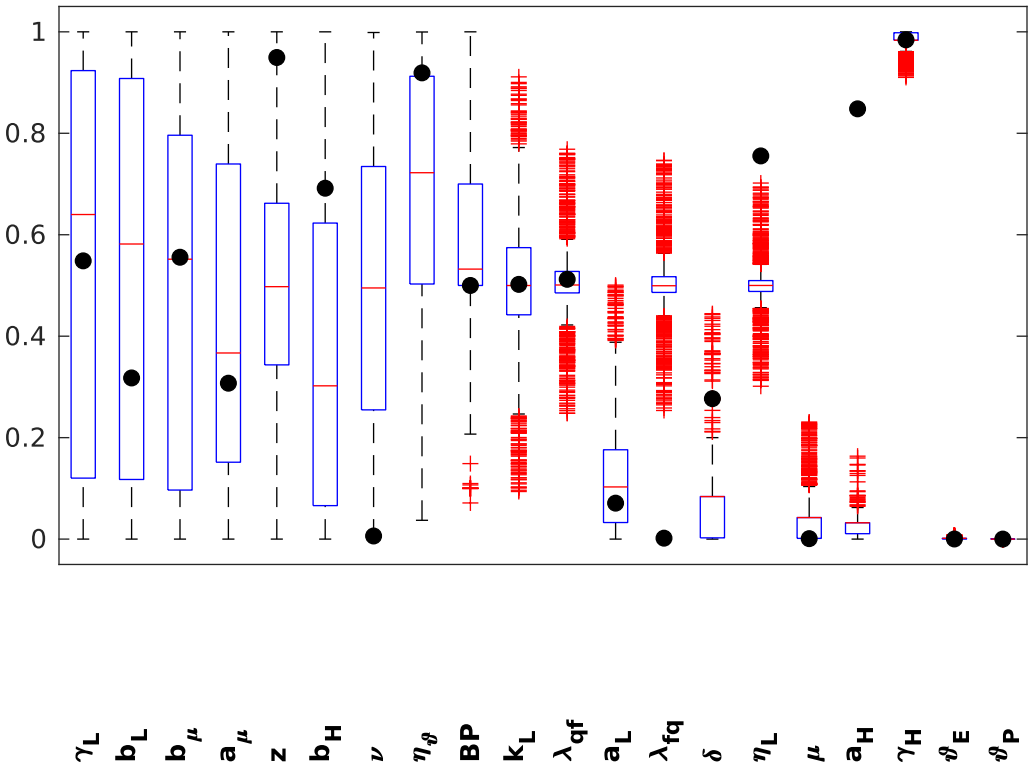
13.2. Estimated parameters with their intervals

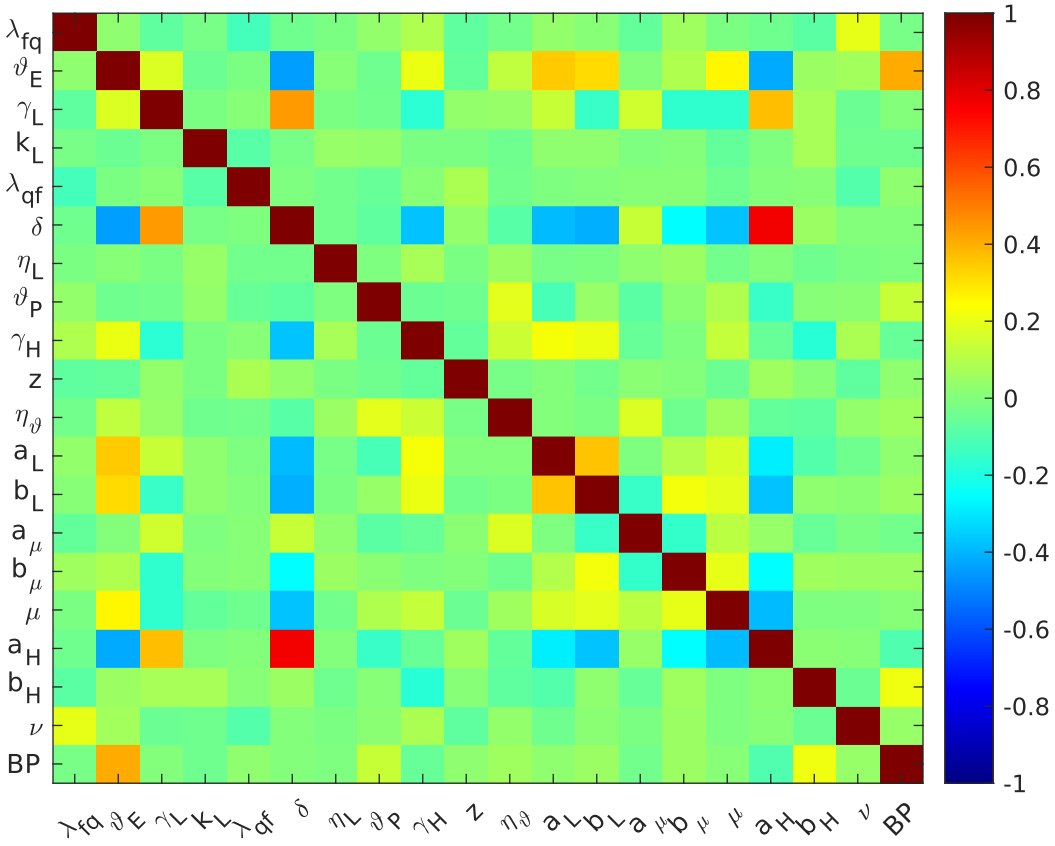
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

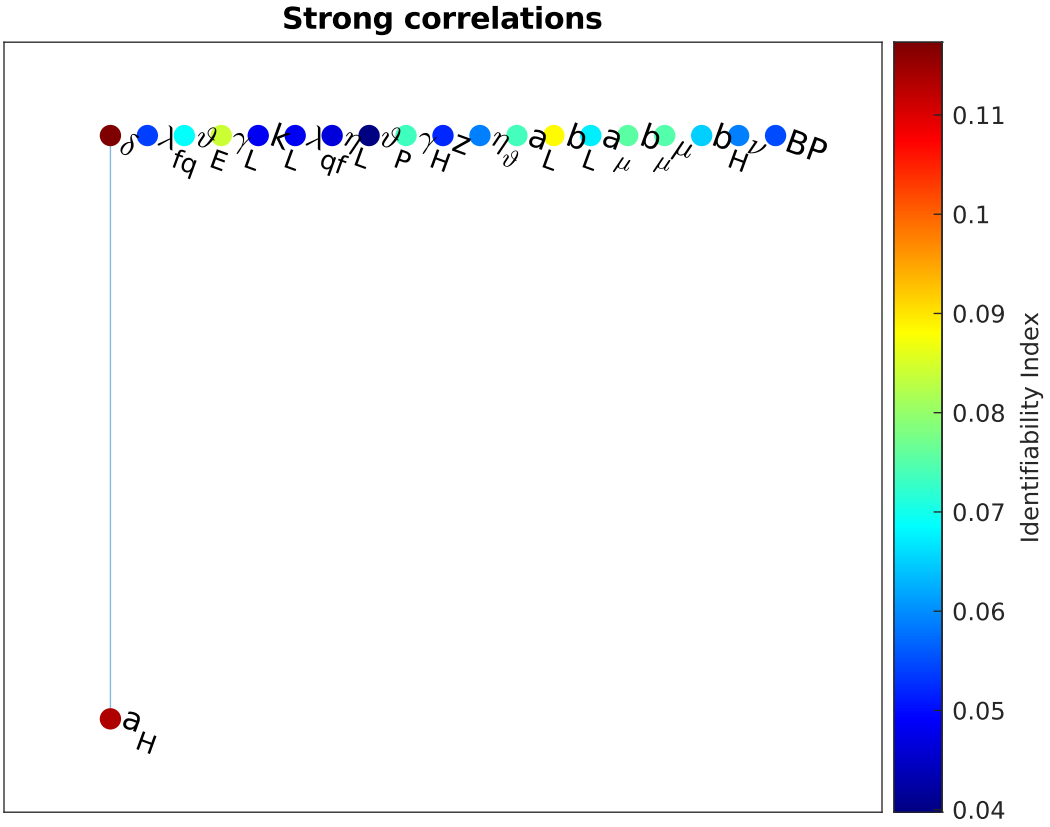
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0041'	'0.4995'	'0.0018'	'0.0541'
\vartheta_E	'0'	'0.0005'	'0.0016'	'0.0002'	'0.0691'
\gamma_L	'0.1548'	'0.5549'	'0.6399'	'0.5485'	'0.0843'
k_L	'1'	'9.64'	'5.4992'	'5.5194'	'0.0483'
\lambda_{qf}	'0'	'1'	'0.5009'	'0.5121'	'0.0485'
\delta	'0.0399'	'0.0769'	'0.0126'	'0.0415'	'0.1173'
\eta_L	'0'	'0.96'	'0.5'	'0.7554'	'0.0464'
\vartheta_P	'0'	'0.0001'	'0'	'0'	'0.0397'
\gamma_H	'0'	'1'	'0.9833'	'0.9842'	'0.0736'
z	'1.163'	'30'	'14.9287'	'28.482'	'0.0523'
\eta_\vartheta	'0.6523'	'0.9792'	'0.7223'	'0.9191'	'0.0589'
a_L	'1'	'15'	'2.4403'	'1.9921'	'0.0739'
b_L	'1'	'7.2308'	'9.1442'	'5.4474'	'0.0885'
a_\mu	'1'	'13.768'	'6.1366'	'5.3025'	'0.0676'
b_\mu	'1.28'	'15'	'8.7249'	'8.7787'	'0.0758'
\mu	'0'	'0.0019'	'0.0425'	'0.0009'	'0.0751'
a_H	'9.4199'	'14.721'	'1.4515'	'12.8748'	'0.1134'
b_H	'3.0955'	'11.4046'	'5.2301'	'10.6838'	'0.0651'
\nu	'2.1531'	'19.9247'	'247.5473'	'3.0718'	'0.059'
BP	'357.4918'	'359.258'	'357.6612'	'357.5'	'0.055'

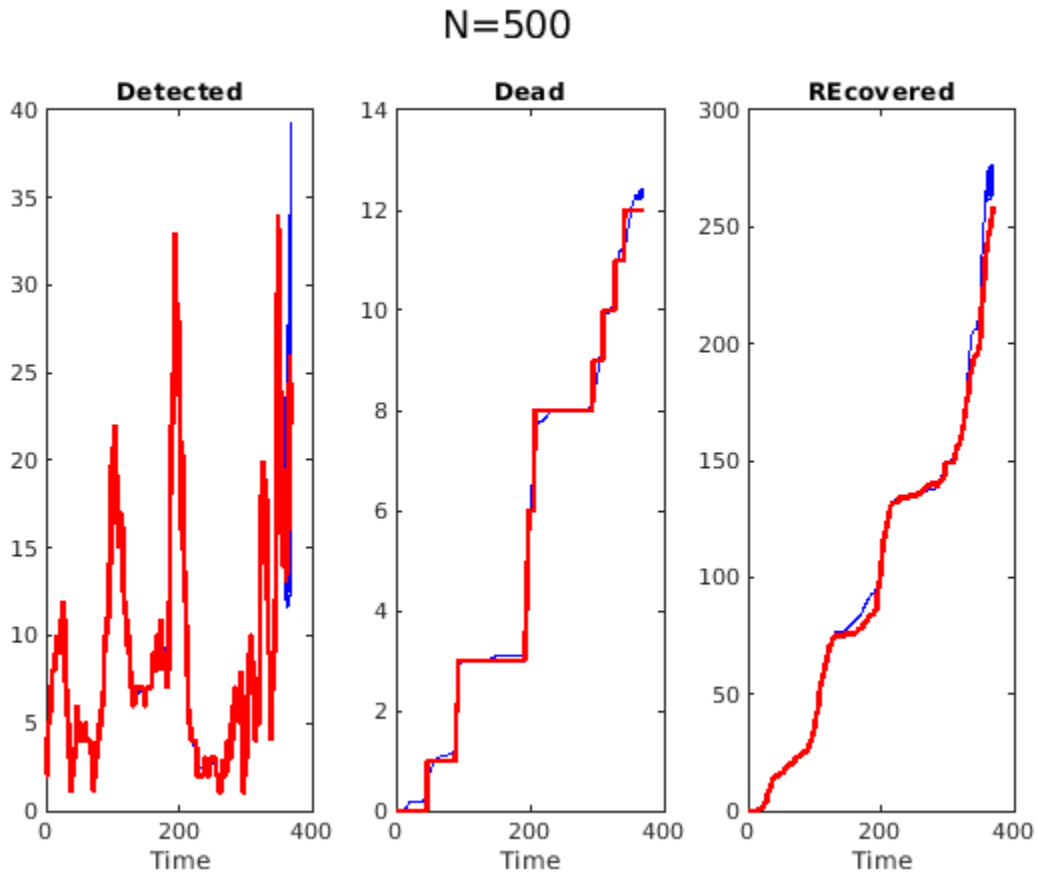
13.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04

13.4. Uncertainty analisys



Chapter 14. Extension number14

14.1. Basic information

The extension to be validated consists of the time series from the data370 to the 377. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

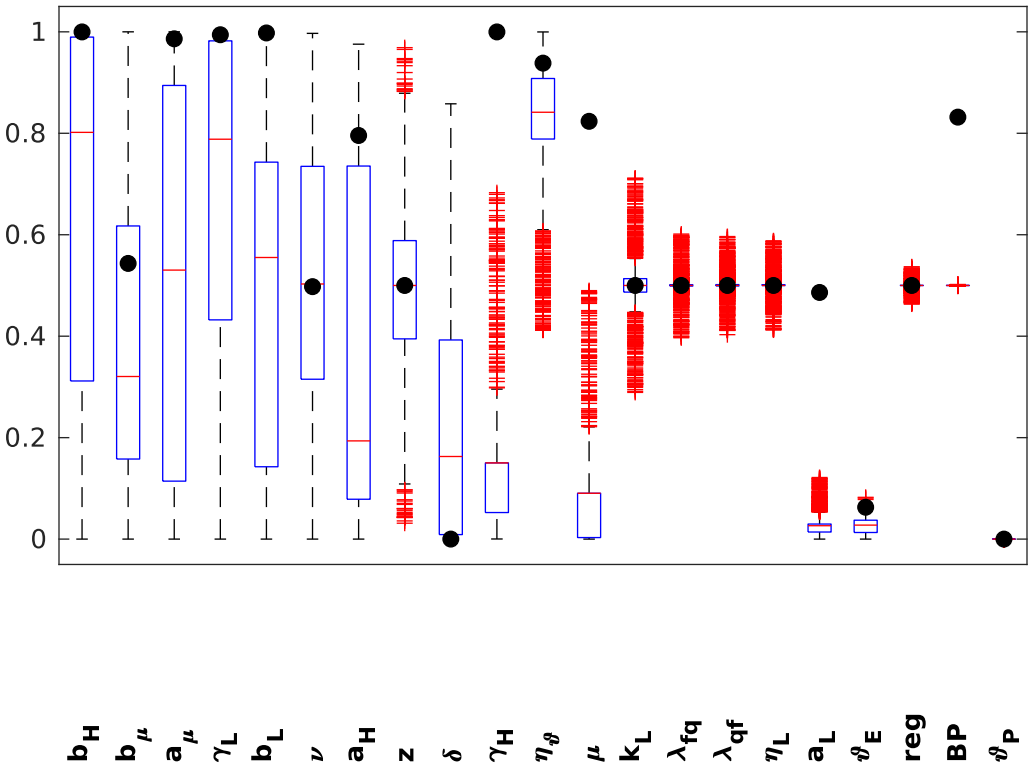
14.2. Estimated parameters with their intervals

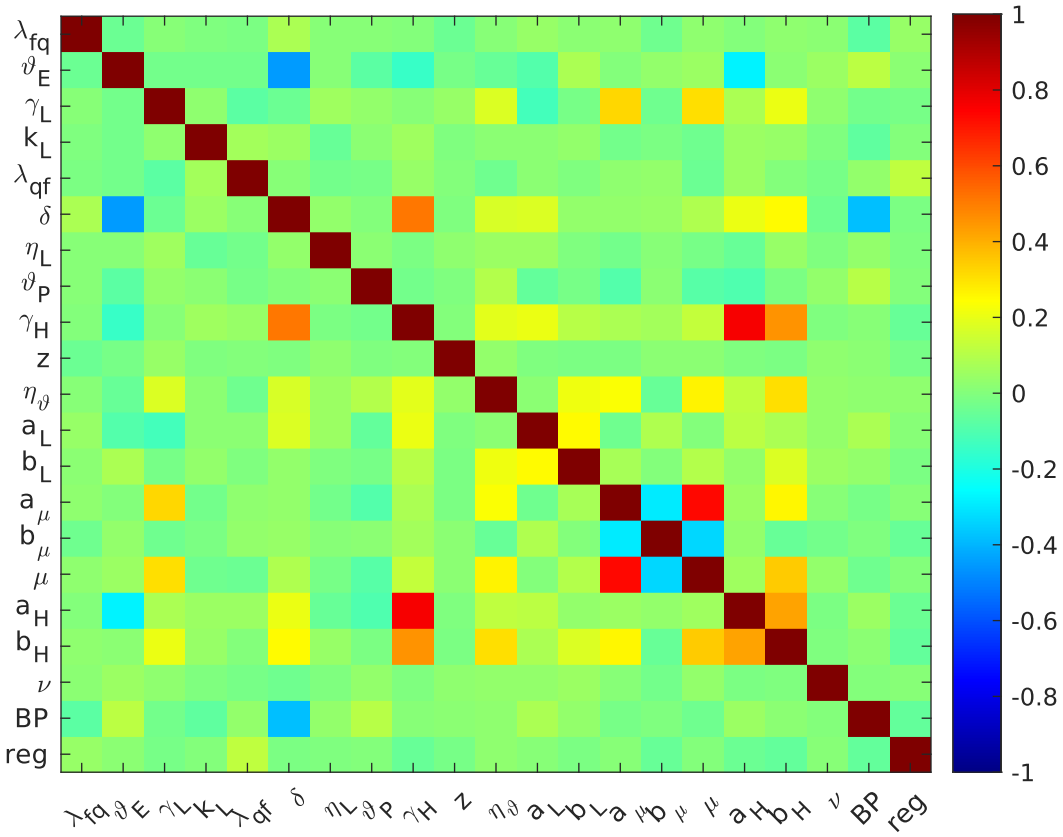
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

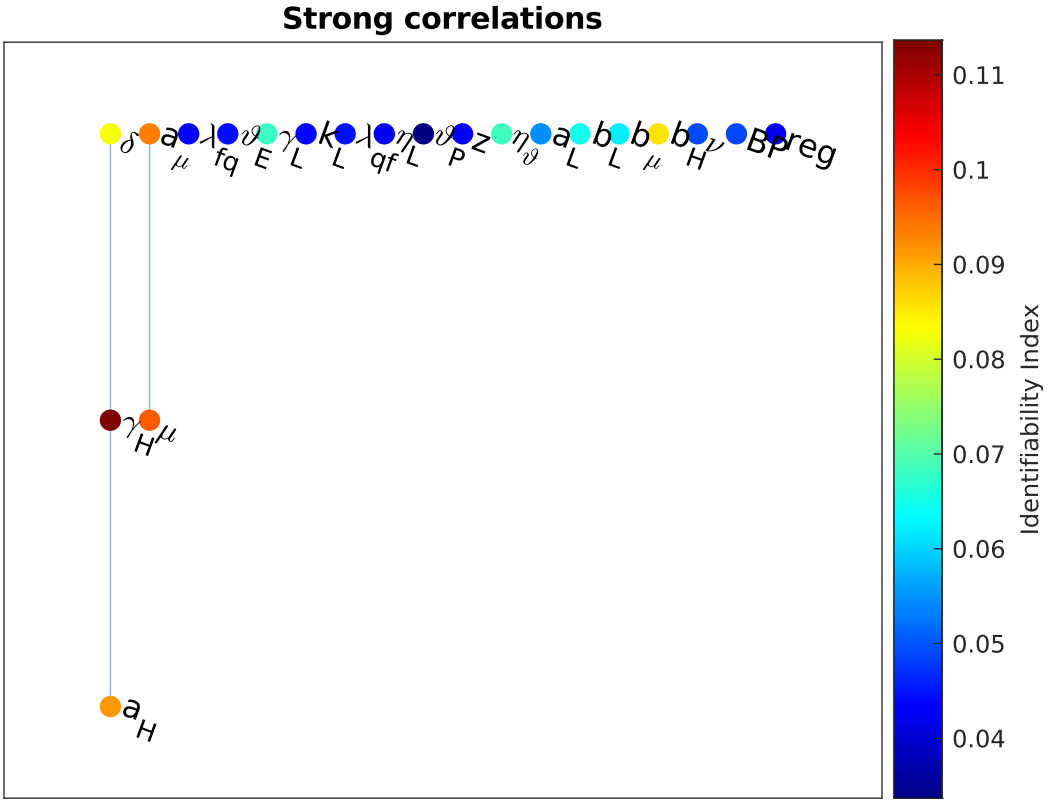
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'1'	'0.5'	'0.5'	'0.0431'
\vartheta_E	'0.0352'	'0.0689'	'0.0276'	'0.0628'	'0.0445'
\gamma_L	'0'	'1'	'0.7883'	'0.9943'	'0.0683'
k_L	'1'	'10'	'5.4999'	'5.5001'	'0.044'
\lambda_{qf}	'0'	'0.95'	'0.5'	'0.5'	'0.0447'
\delta	'0'	'0'	'0.0244'	'0'	'0.0827'
\eta_L	'0'	'0.92'	'0.5'	'0.5'	'0.0433'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0337'
\gamma_H	'0.1759'	'1'	'0.1502'	'0.9998'	'0.1137'
z	'0'	'30'	'15'	'15.0001'	'0.0432'
\eta_\vartheta	'0.4498'	'1'	'0.8415'	'0.9383'	'0.0686'
a_L	'3.3216'	'15'	'1.3693'	'7.807'	'0.0549'
b_L	'1'	'15'	'8.7719'	'14.9689'	'0.065'
a_\mu	'9.442'	'15'	'8.4241'	'14.8073'	'0.0934'
b_\mu	'1'	'9.512'	'5.4874'	'8.6084'	'0.0624'
\mu	'0'	'0.92'	'0.0904'	'0.8236'	'0.0962'
a_H	'7.187'	'12.3706'	'3.7105'	'12.1392'	'0.0918'
b_H	'8.1139'	'15'	'12.2252'	'14.9975'	'0.0856'
\nu	'15.4406'	'500'	'251.449'	'248.8311'	'0.0495'
BP	'362.125'	'367'	'364.5'	'366.1592'	'0.0492'
reg	'0'	'0.25'	'0.125'	'0.125'	'0.0428'

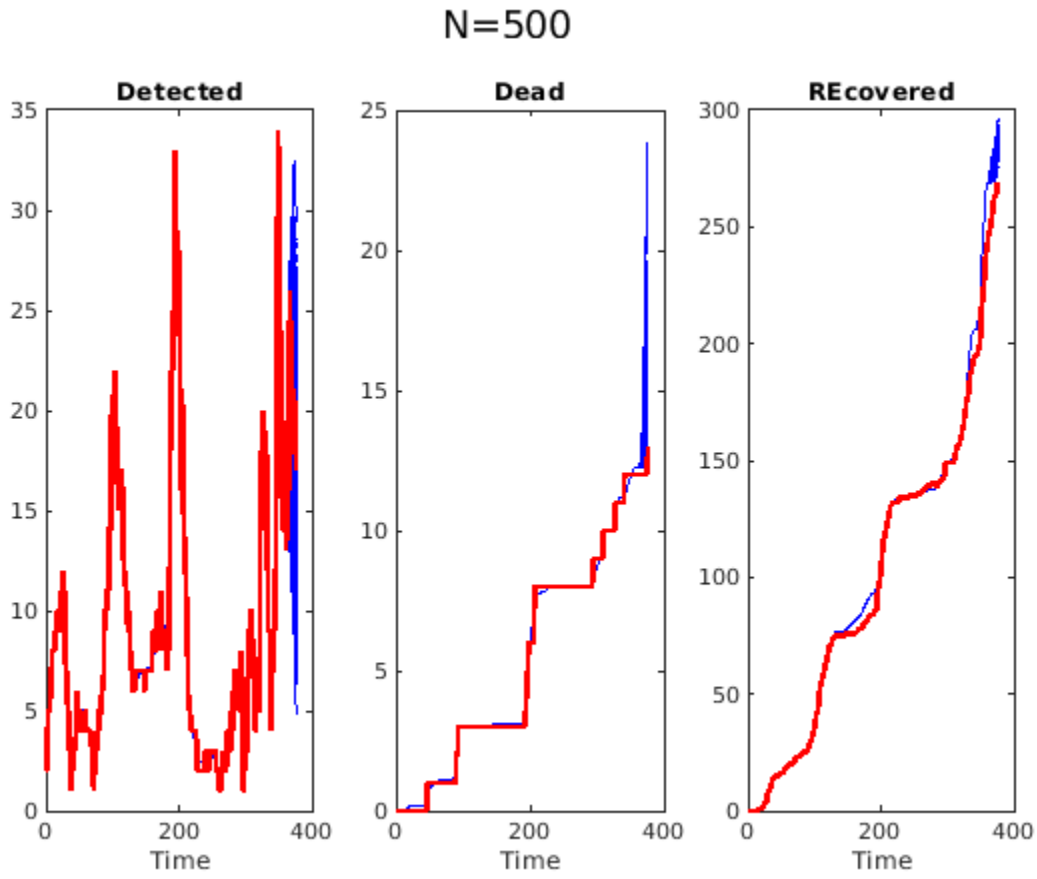
14.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
reg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04

14.4. Uncertainty analisys



Chapter 15. Extension number15

15.1. Basic information

The extension to be validated consists of the time series from the data377 to the 391. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

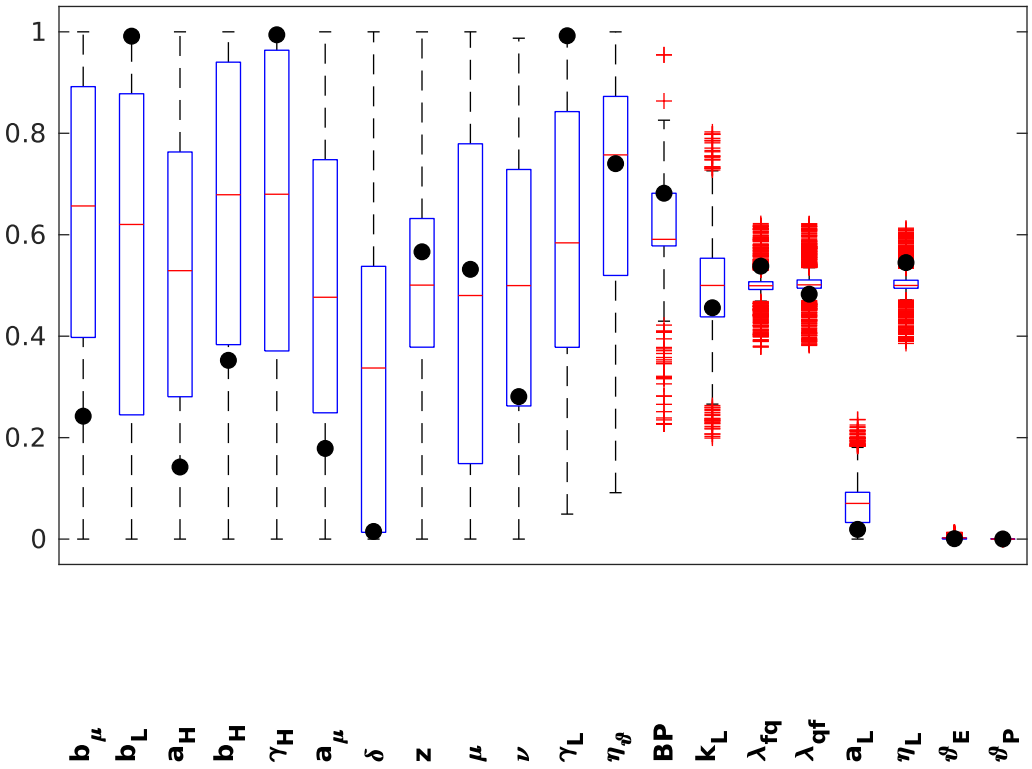
15.2. Estimated parameters with their intervals

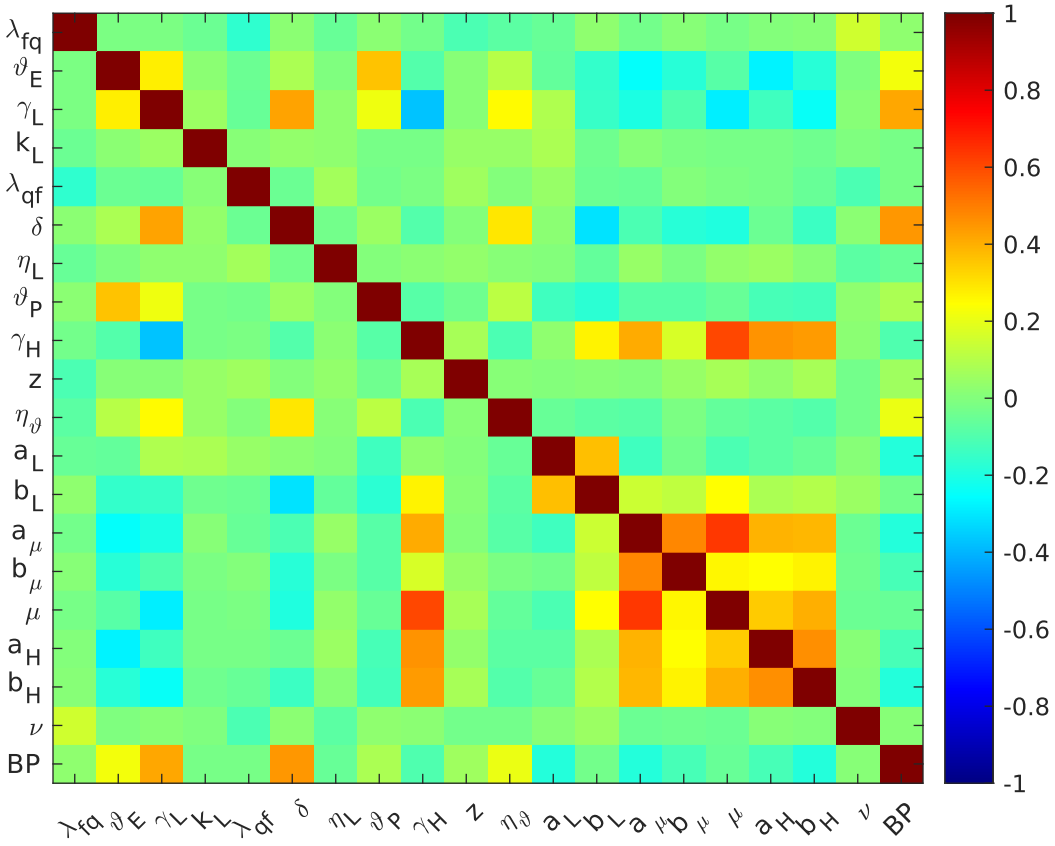
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

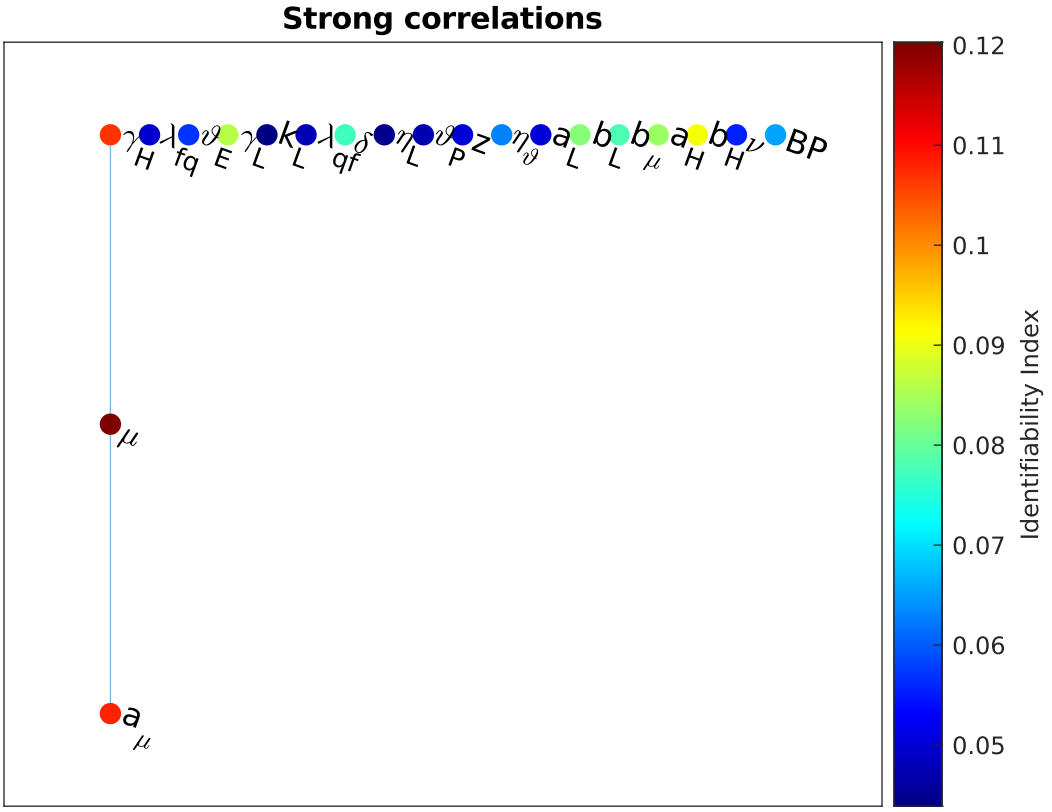
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.025'	'1'	'0.4994'	'0.5381'	'0.0496'
\vartheta_E	'0'	'0.0018'	'0.0024'	'0.0008'	'0.0573'
\gamma_L	'0.6395'	'1'	'0.584'	'0.9923'	'0.086'
k_L	'1'	'10'	'5.5003'	'5.1044'	'0.0439'
\lambda_{qf}	'0.02'	'1'	'0.5012'	'0.4829'	'0.0479'
\delta	'0'	'0.0051'	'0.0506'	'0.0023'	'0.0773'
\eta_L	'0'	'1'	'0.5'	'0.5451'	'0.0447'
\vartheta_P	'0'	'0.0005'	'0'	'0.0002'	'0.0476'
\gamma_H	'0.069'	'1'	'0.6798'	'0.9942'	'0.1066'
z	'0'	'28.5'	'15.0206'	'16.991'	'0.0503'
\eta_\vartheta	'0.6708'	'0.982'	'0.7574'	'0.7401'	'0.0632'
a_L	'1.0838'	'1.486'	'1.9849'	'1.2682'	'0.0502'
b_L	'11.6102'	'15'	'9.6835'	'14.8803'	'0.0827'
a_\mu	'1'	'12.97'	'7.6745'	'3.5023'	'0.1079'
b_\mu	'1.28'	'15'	'10.1942'	'4.3928'	'0.0779'
\mu	'0.04'	'1'	'0.4802'	'0.5318'	'0.1203'
a_H	'1.35'	'14.454'	'8.4083'	'2.9898'	'0.0839'
b_H	'1.6913'	'15'	'10.5036'	'5.934'	'0.0909'
\nu	'0'	'316.0286'	'249.876'	'140.4571'	'0.0556'
BP	'376.7864'	'378.4295'	'376.5'	'377.5'	'0.0655'

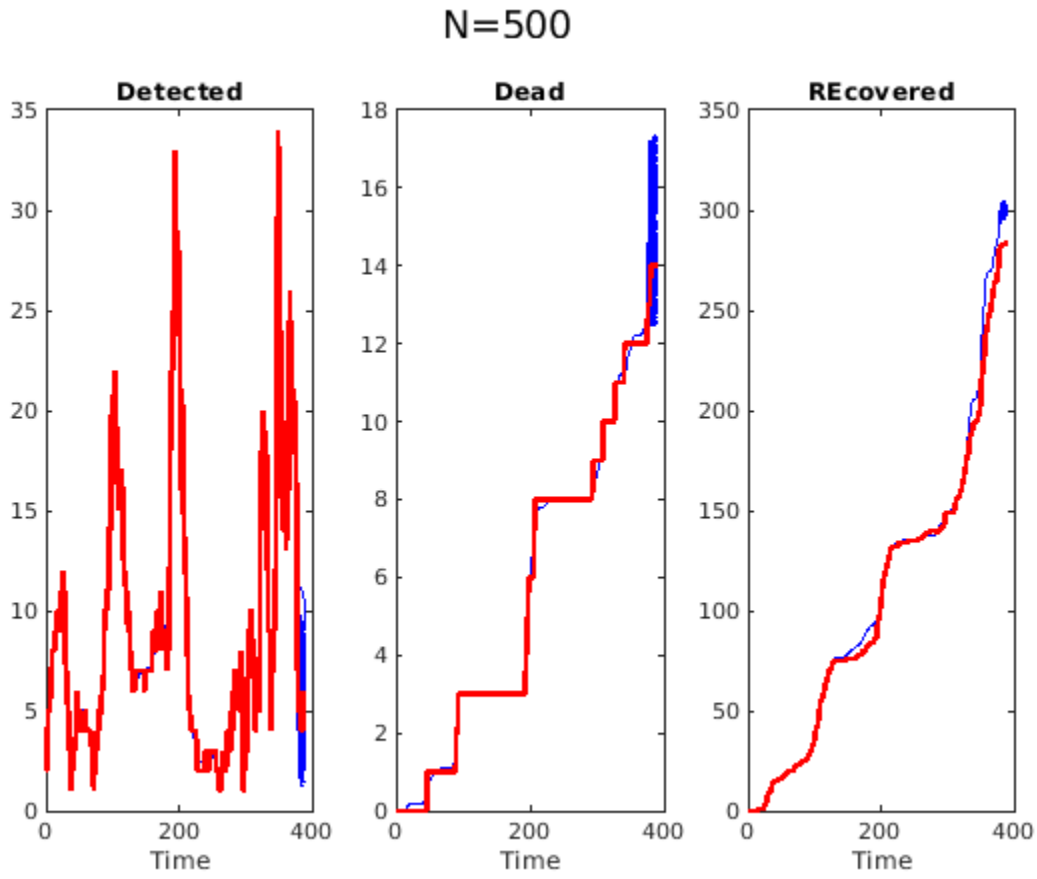
15.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
γ_{H}
λ_{fq}
ϑ_{E}
γ_{L}
k_{L}
λ_{qf}
η_{L}
ϑ_{P}
z
η_{ϑ}
a_{L}
b_{L}
b_{μ}
a_{H}
b_{H}
ν
BP
μ
a_{μ}
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

15.4. Uncertainty analisys



Chapter 16. Extension number16

16.1. Basic information

The extension to be validated consists of the time series from the data391 to the 402. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

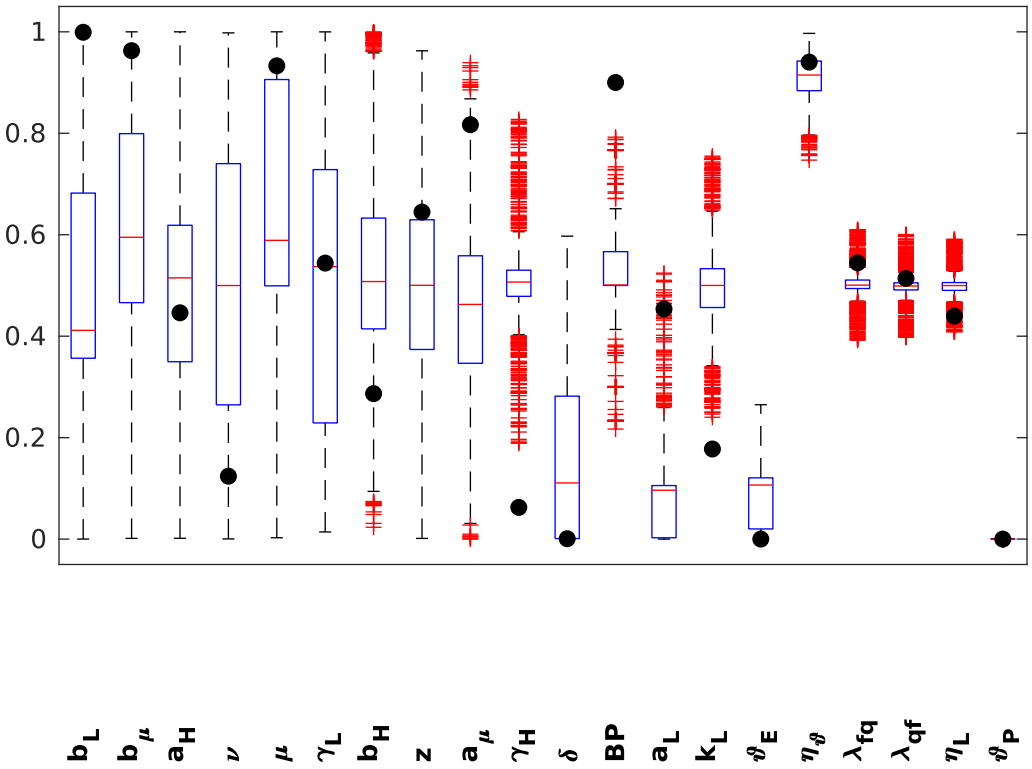
16.2. Estimated parameters with their intervals

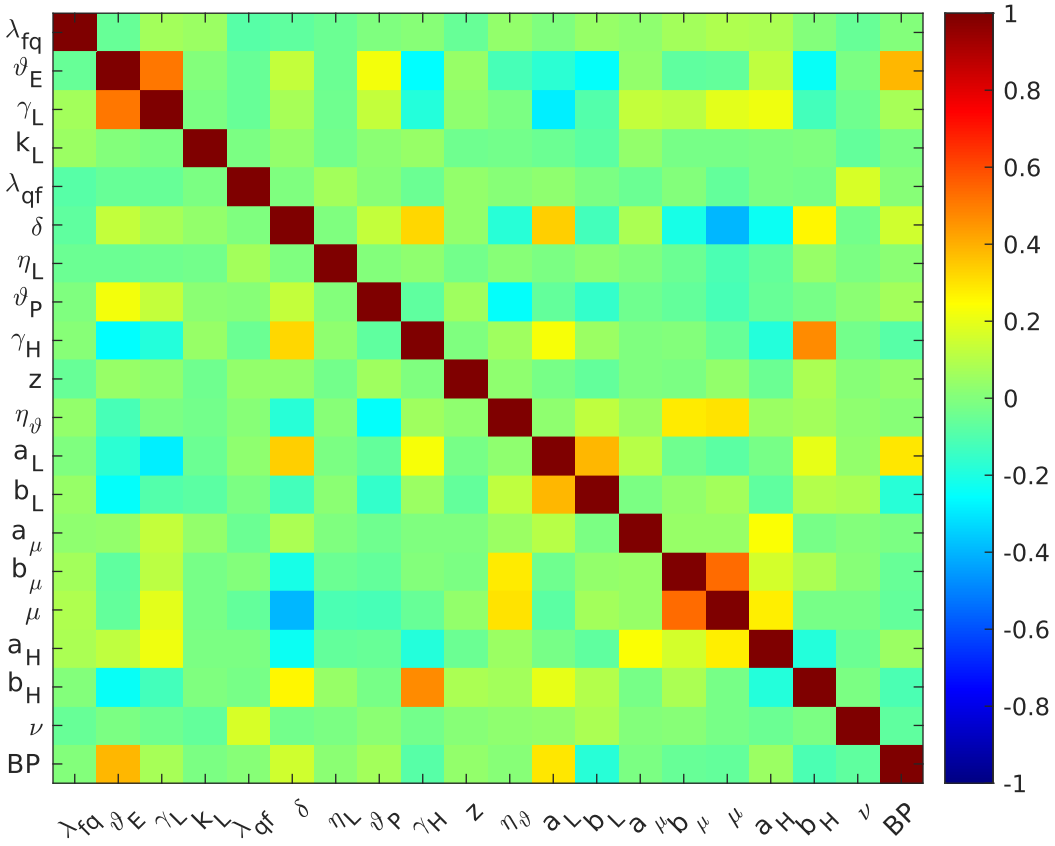
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

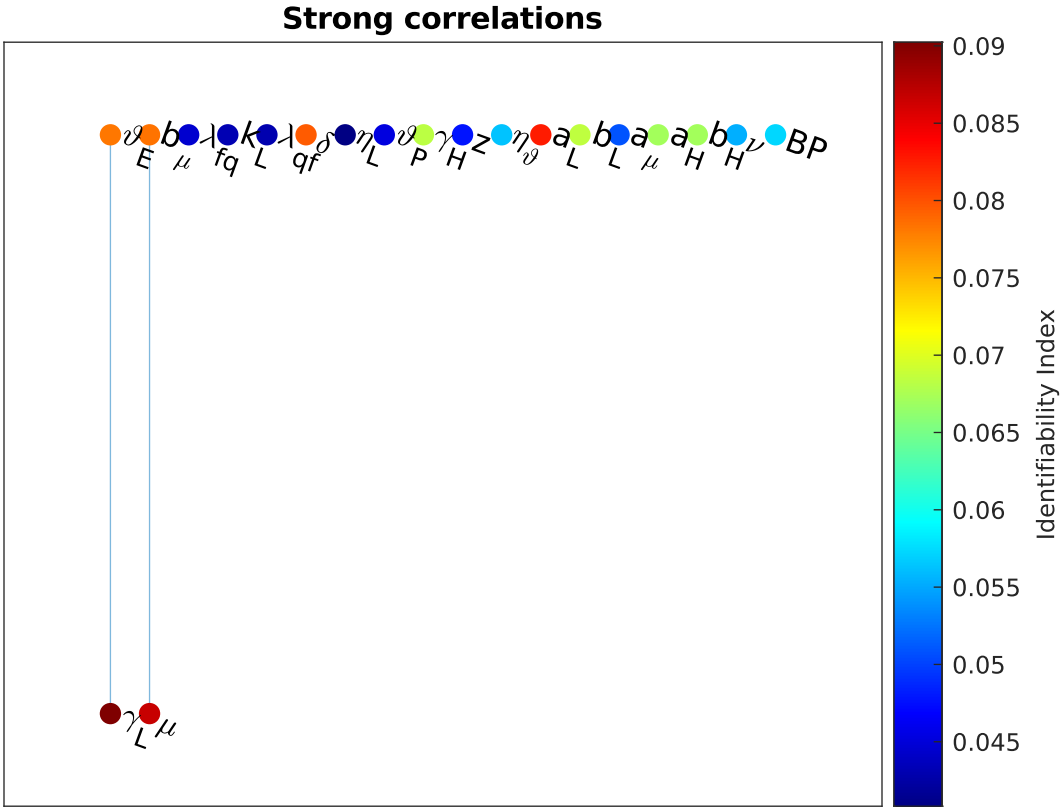
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.95'	'0.5006'	'0.5445'	'0.0446'
\vartheta_E	'0'	'0.0002'	'0.1066'	'0.0001'	'0.0782'
\gamma_L	'0.1344'	'0.8726'	'0.5371'	'0.5441'	'0.0902'
k_L	'1.0969'	'5.8465'	'5.5005'	'2.5984'	'0.0431'
\lambda_{qf}	'0'	'1'	'0.4989'	'0.5139'	'0.0431'
\delta	'0'	'0.0002'	'0.0166'	'0.0001'	'0.0795'
\eta_L	'0'	'0.989'	'0.4998'	'0.4396'	'0.0408'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0454'
\gamma_H	'0'	'0.1337'	'0.5067'	'0.0625'	'0.0683'
z	'0'	'30'	'15.0093'	'19.3408'	'0.0479'
\eta_\vartheta	'0.5305'	'1'	'0.9147'	'0.9403'	'0.0564'
a_L	'3.5892'	'7.4143'	'2.3495'	'7.354'	'0.0826'
b_L	'12.3248'	'15'	'6.7616'	'14.9876'	'0.0685'
a_\mu	'1'	'15'	'7.4778'	'12.4368'	'0.0509'
b_\mu	'1'	'15'	'9.3304'	'14.48'	'0.0784'
\mu	'0'	'1'	'0.589'	'0.933'	'0.0868'
a_H	'1'	'15'	'8.21'	'7.2452'	'0.0672'
b_H	'1'	'15'	'8.1066'	'5.0144'	'0.0672'
\nu	'0'	'133.9052'	'249.9392'	'61.9932'	'0.0555'
BP	'388.5'	'391.335'	'384.5135'	'390.5018'	'0.0573'

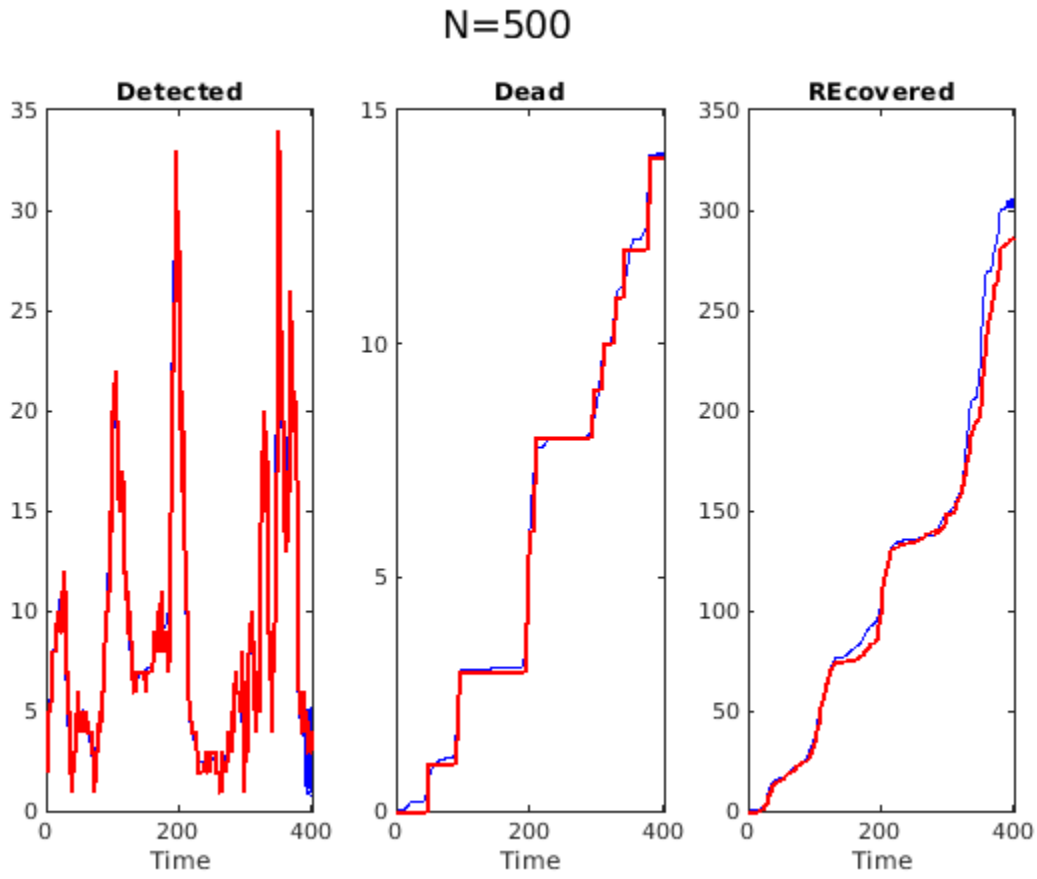
16.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045

16.4. Uncertainty analisys



Chapter 17. Extension number17

17.1. Basic information

The extension to be validated consists of the time series from the data402 to the 415. The status of the validation is: COMPLETED.

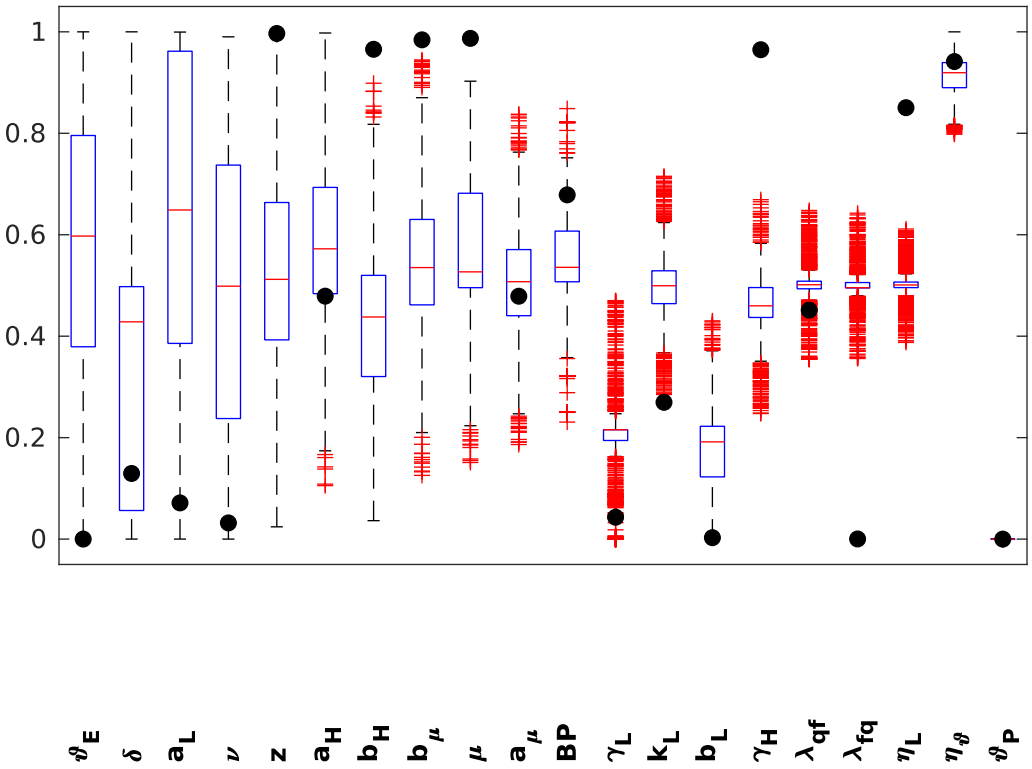
The number of estimations needed to perform the validation was1000.

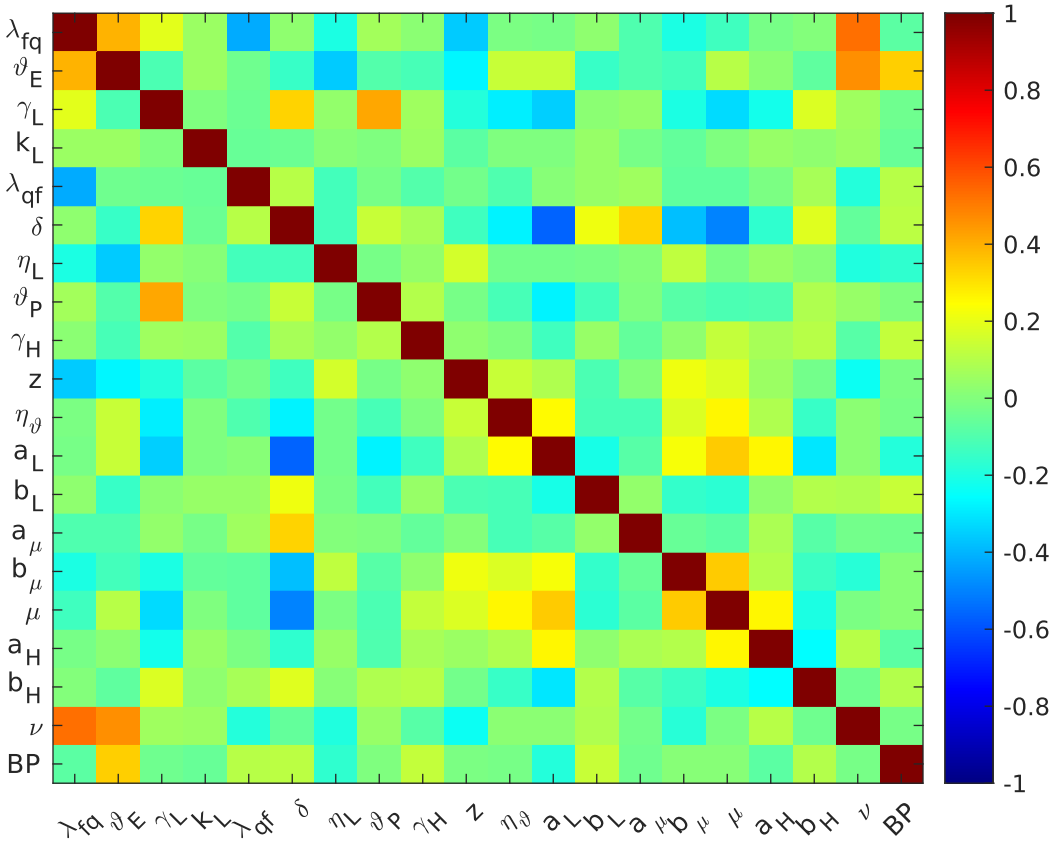
17.2. Estimated parameters with their intervals

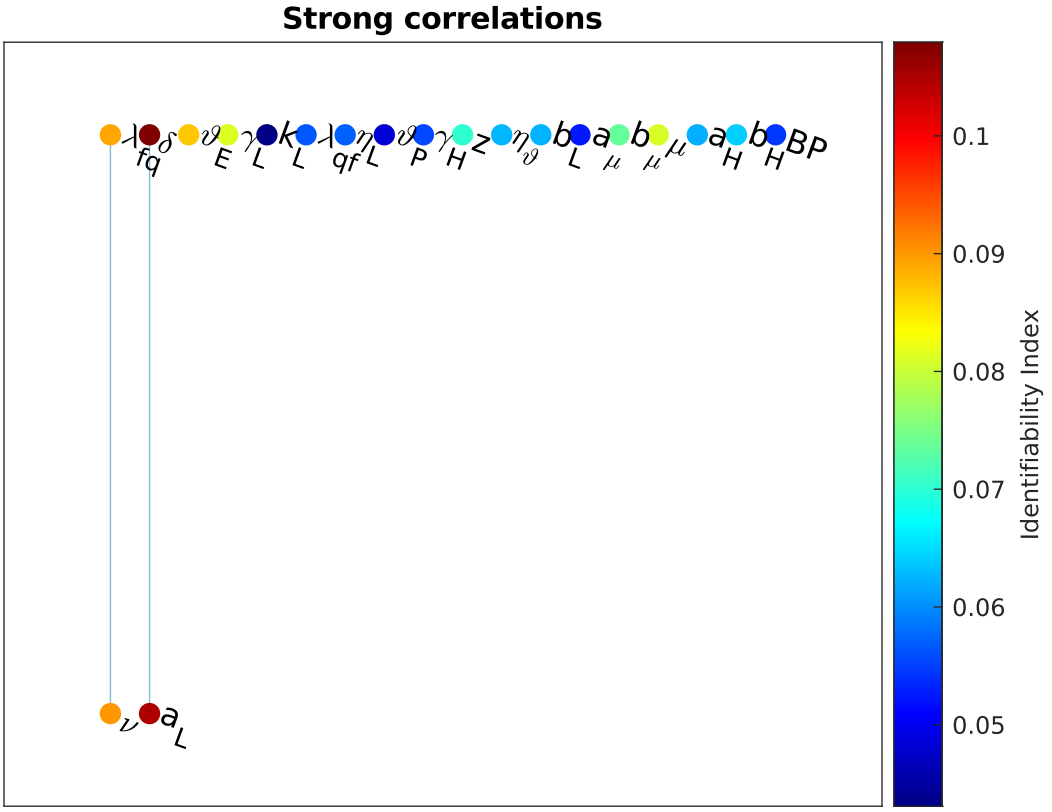
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.4794'	'0.5118'	'0.4956'	'0.0003'	'0.0891'
\vartheta_E	'0.5753'	'0.6195'	'0.5974'	'0'	'0.0869'
\gamma_L	'0.1975'	'0.2337'	'0.2156'	'0.0431'	'0.0813'
k_L	'5.4041'	'5.5862'	'5.4952'	'3.4266'	'0.0431'
\lambda_{qf}	'0.4902'	'0.5127'	'0.5014'	'0.4513'	'0.0566'
\delta	'0.061'	'0.0675'	'0.0642'	'0.0194'	'0.108'
\eta_L	'0.4896'	'0.5123'	'0.501'	'0.8504'	'0.0571'
\vartheta_P	'0'	'0.0011'	'0'	'0'	'0.0482'
\gamma_H	'0.4461'	'0.4736'	'0.4599'	'0.9647'	'0.0556'
z	'14.8639'	'15.8581'	'15.361'	'29.901'	'0.0703'
\eta_\vartheta	'0.9103'	'0.9284'	'0.9193'	'0.9414'	'0.0627'
a_L	'9.7525'	'10.4134'	'10.083'	'1.999'	'0.1047'
b_L	'3.4763'	'3.8899'	'3.6831'	'1.039'	'0.0624'
a_\mu	'7.9472'	'8.2602'	'8.1037'	'7.7031'	'0.0525'
b_\mu	'8.3082'	'8.6784'	'8.4933'	'14.7791'	'0.0736'
\mu	'0.5113'	'0.5424'	'0.5268'	'0.9871'	'0.081'
a_H	'8.8315'	'9.1786'	'9.0051'	'7.7048'	'0.0623'
b_H	'6.9549'	'7.3102'	'7.1326'	'14.5183'	'0.0641'
\nu	'238.0146'	'260.5609'	'249.2877'	'15.9649'	'0.09'
BP	'398.369'	'398.631'	'398.5'	'400.5'	'0.0546'

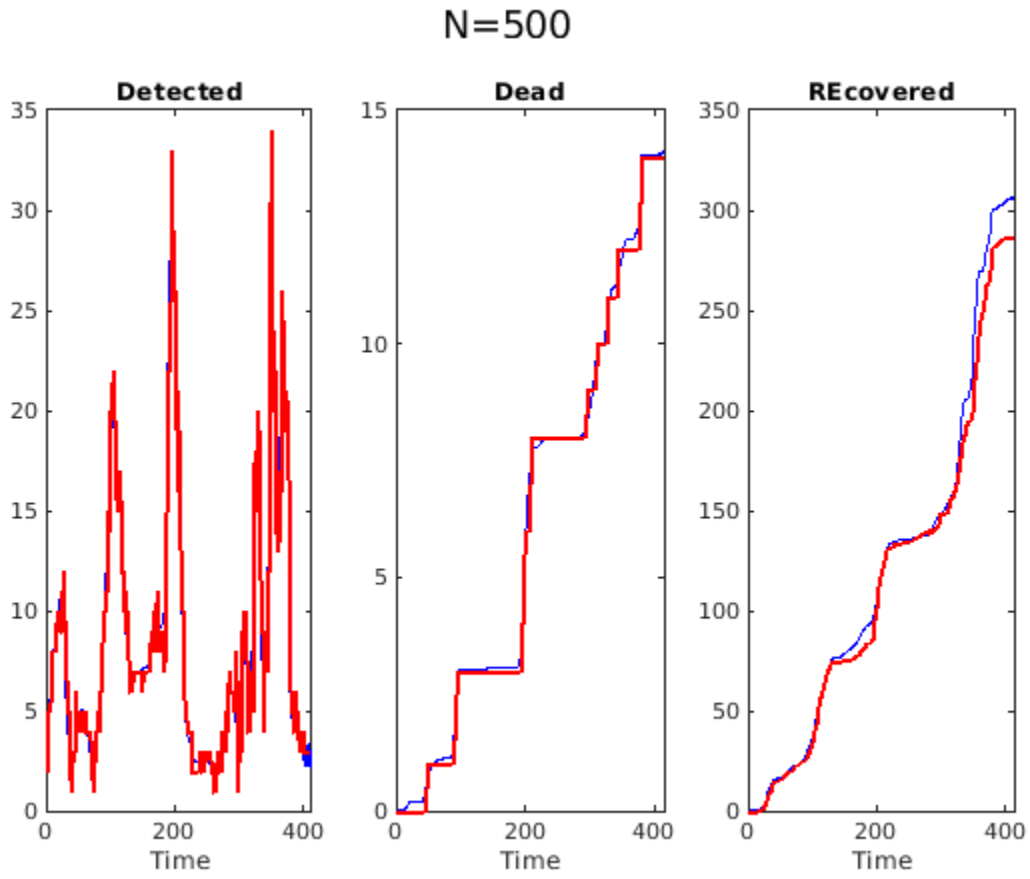
17.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.1
0.09
0.08
0.07
0.06
0.05

17.4. Uncertainty analisys



Chapter 18. Extension number18

18.1. Basic information

The extension to be validated consists of the time series from the data415 to the 415. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

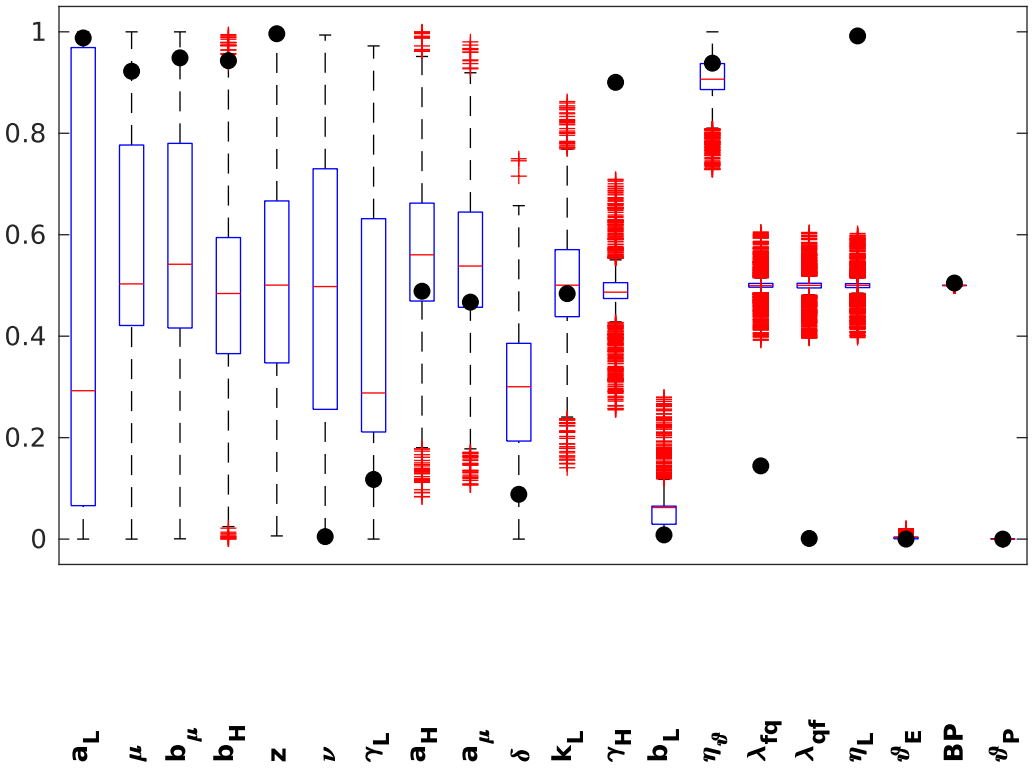
18.2. Estimated parameters with their intervals

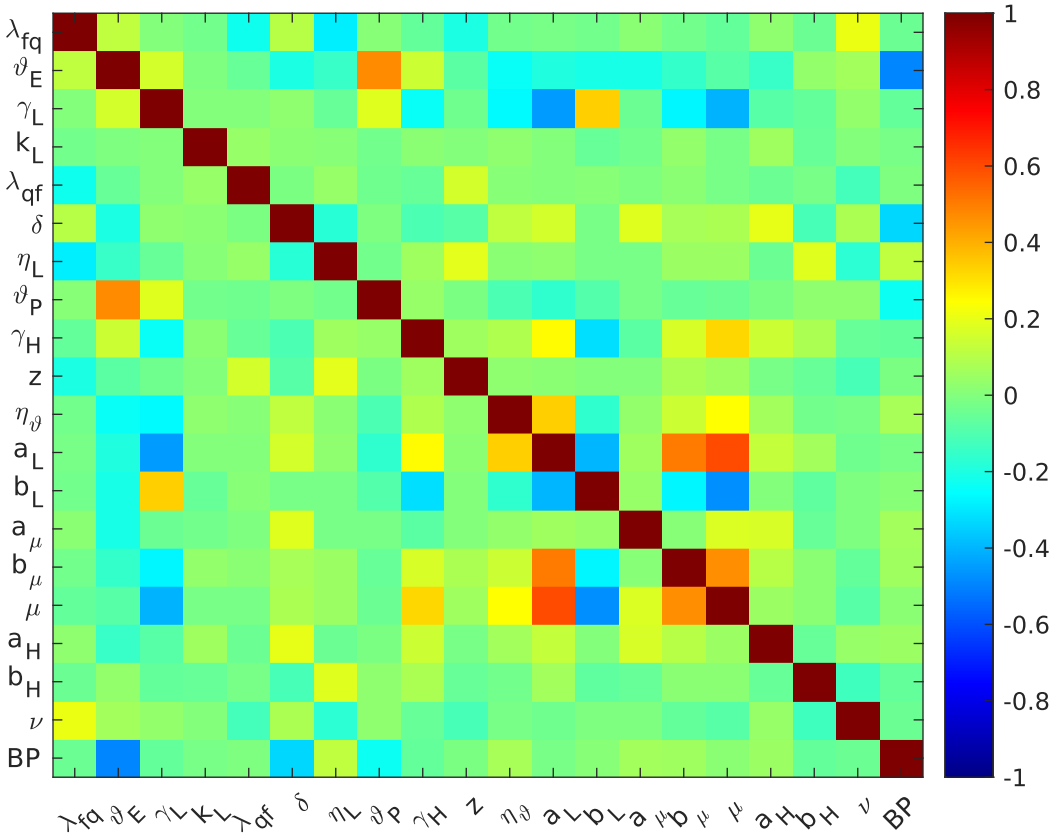
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

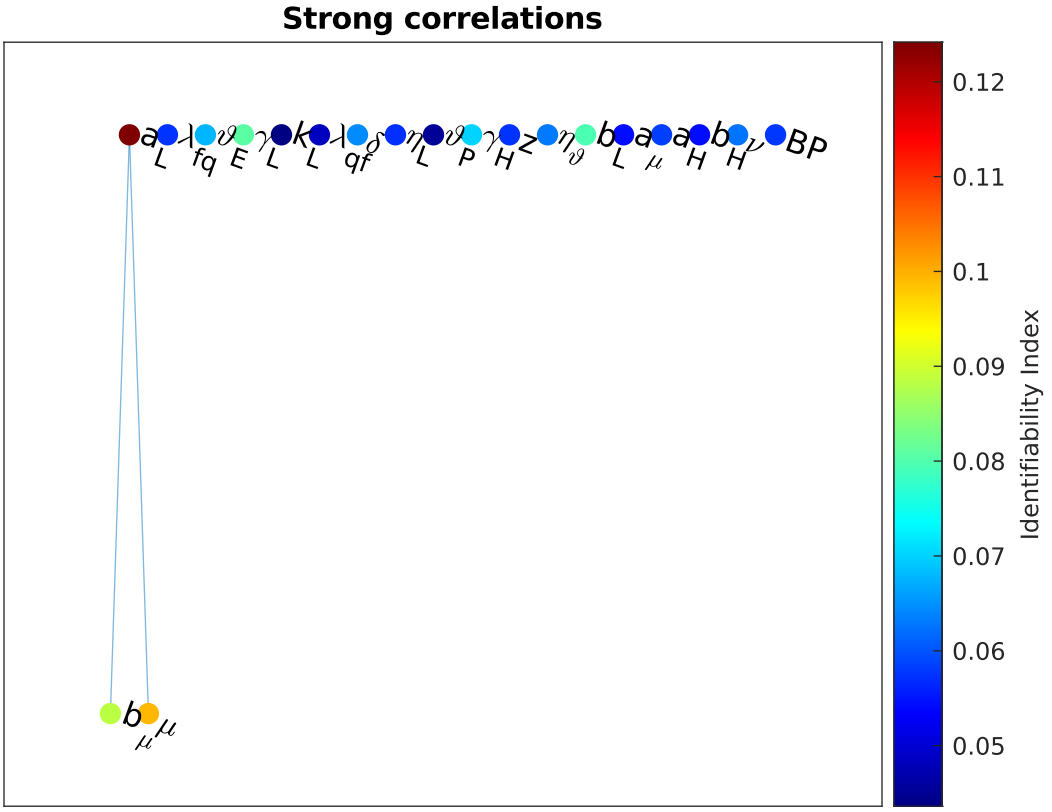
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.1443'	'0.1443'	'0.4995'	'0.1443'	'0.0575'
\vartheta_E	'0'	'0'	'0.0038'	'0'	'0.068'
\gamma_L	'0.0823'	'0.1764'	'0.2881'	'0.1176'	'0.0808'
k_L	'3.7485'	'8.0325'	'5.5049'	'5.355'	'0.0436'
\lambda_{qf}	'0.0009'	'0.0019'	'0.5002'	'0.0013'	'0.0484'
\delta	'0.0093'	'0.0199'	'0.045'	'0.0132'	'0.0645'
\eta_L	'0.6943'	'1'	'0.5001'	'0.9919'	'0.0573'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0453'
\gamma_H	'0.6303'	'1'	'0.4868'	'0.9004'	'0.0701'
z	'20.9205'	'30'	'15.021'	'29.8865'	'0.0575'
\eta_\vartheta	'0.6567'	'1'	'0.9066'	'0.9382'	'0.0632'
a_L	'10.3812'	'15'	'5.0948'	'14.8302'	'0.1242'
b_L	'1'	'1.6741'	'1.8719'	'1.1161'	'0.0795'
a_\mu	'5.278'	'11.31'	'8.5358'	'7.54'	'0.0545'
b_\mu	'9.997'	'15'	'8.5853'	'14.2815'	'0.0886'
\mu	'0.6456'	'1'	'0.5031'	'0.9223'	'0.0994'
a_H	'5.4886'	'11.7613'	'8.8454'	'7.8409'	'0.0584'
b_H	'9.9423'	'15'	'7.7781'	'14.2033'	'0.0544'
\nu	'1.7067'	'3.6573'	'248.9137'	'2.4382'	'0.0628'
BP	'402'	'405'	'403.5'	'403.5143'	'0.058'

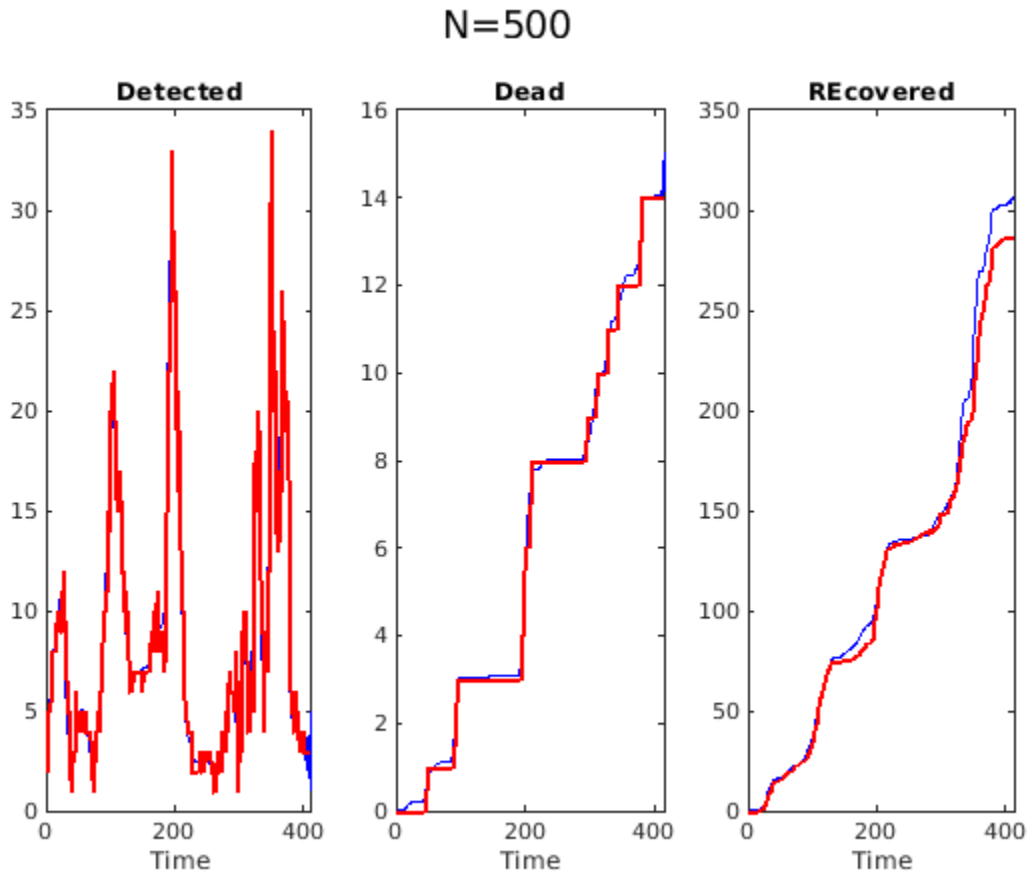
18.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05

18.4. Uncertainty analisys



Chapter 19. Extension number19

19.1. Basic information

The extension to be validated consists of the time series from the data415 to the 435. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

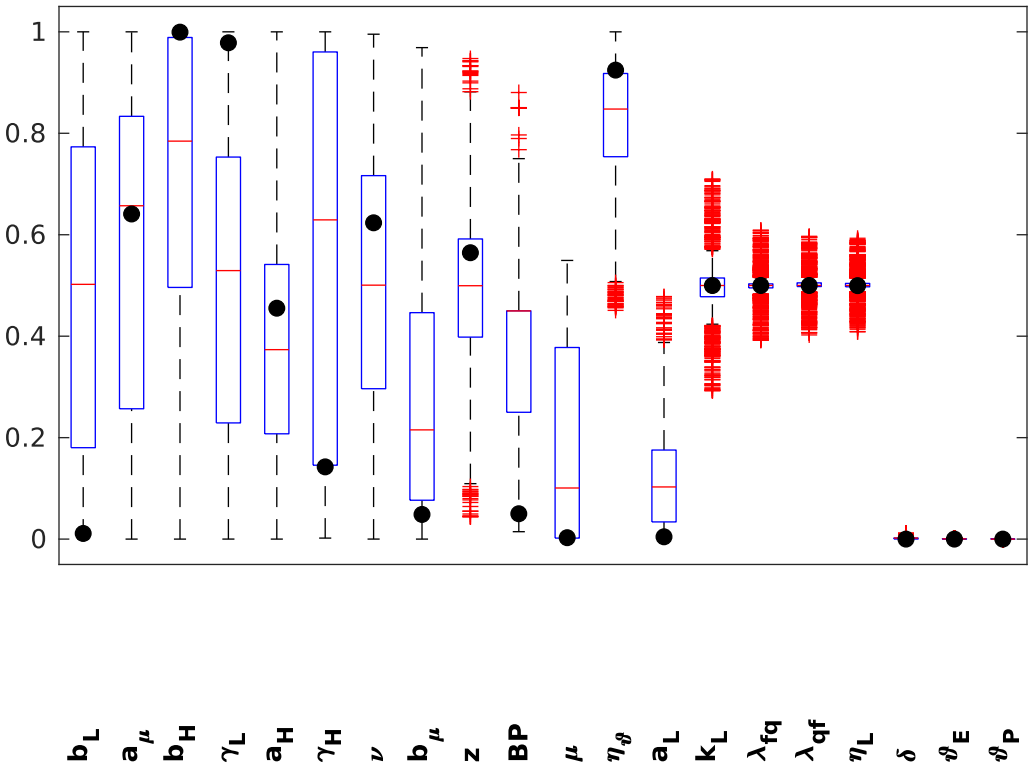
19.2. Estimated parameters with their intervals

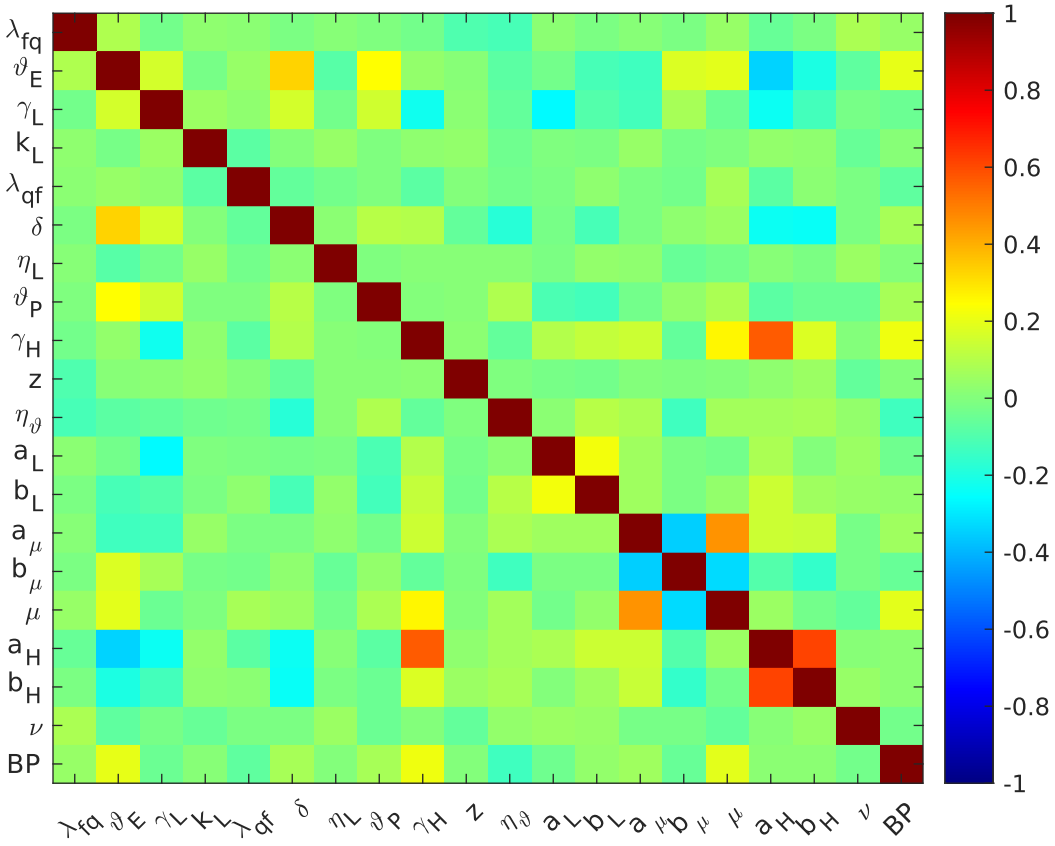
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

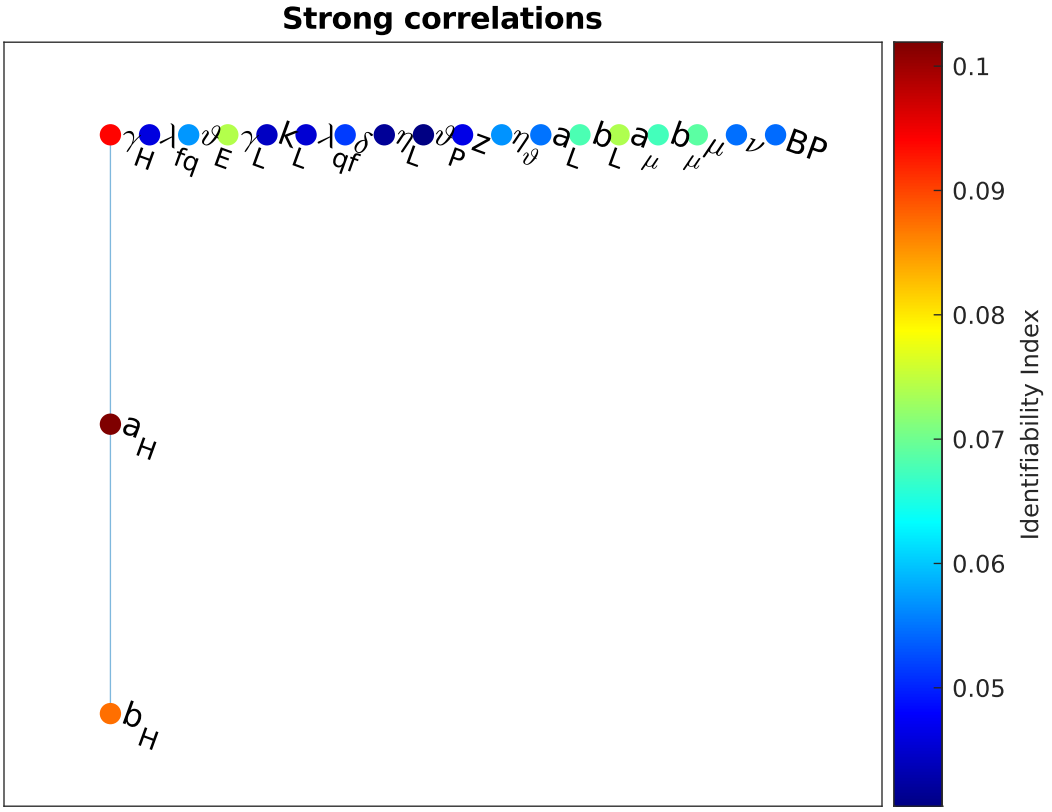
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'1'	'0.5'	'0.5'	'0.0462'
\vartheta_E	'0'	'0'	'0.0004'	'0'	'0.0571'
\gamma_L	'0'	'1'	'0.5293'	'0.9784'	'0.0743'
k_L	'1'	'10'	'5.4994'	'5.4987'	'0.0444'
\lambda_{qf}	'0'	'1'	'0.5'	'0.4999'	'0.0455'
\delta	'0'	'0'	'0.0003'	'0'	'0.0515'
\eta_L	'0'	'1'	'0.5'	'0.4996'	'0.0417'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0405'
\gamma_H	'0.0797'	'0.3688'	'0.6293'	'0.1424'	'0.0939'
z	'0'	'30'	'14.9849'	'16.936'	'0.0465'
\eta_\vartheta	'0.5345'	'1'	'0.8476'	'0.9245'	'0.0568'
a_L	'1'	'15'	'2.4394'	'1.0636'	'0.055'
b_L	'1'	'15'	'8.0308'	'1.1559'	'0.068'
a_\mu	'1'	'15'	'10.1998'	'9.9726'	'0.074'
b_\mu	'1'	'15'	'4.0148'	'1.6805'	'0.0675'
\mu	'0'	'0.0062'	'0.1009'	'0.0028'	'0.0688'
a_H	'1.2296'	'9.1526'	'6.2287'	'7.3725'	'0.1019'
b_H	'6.6479'	'15'	'11.9834'	'14.9911'	'0.0873'
\nu	'0'	'500'	'250.2959'	'311.7658'	'0.0547'
BP	'415.4673'	'422.3463'	'419.4981'	'415.5'	'0.0545'

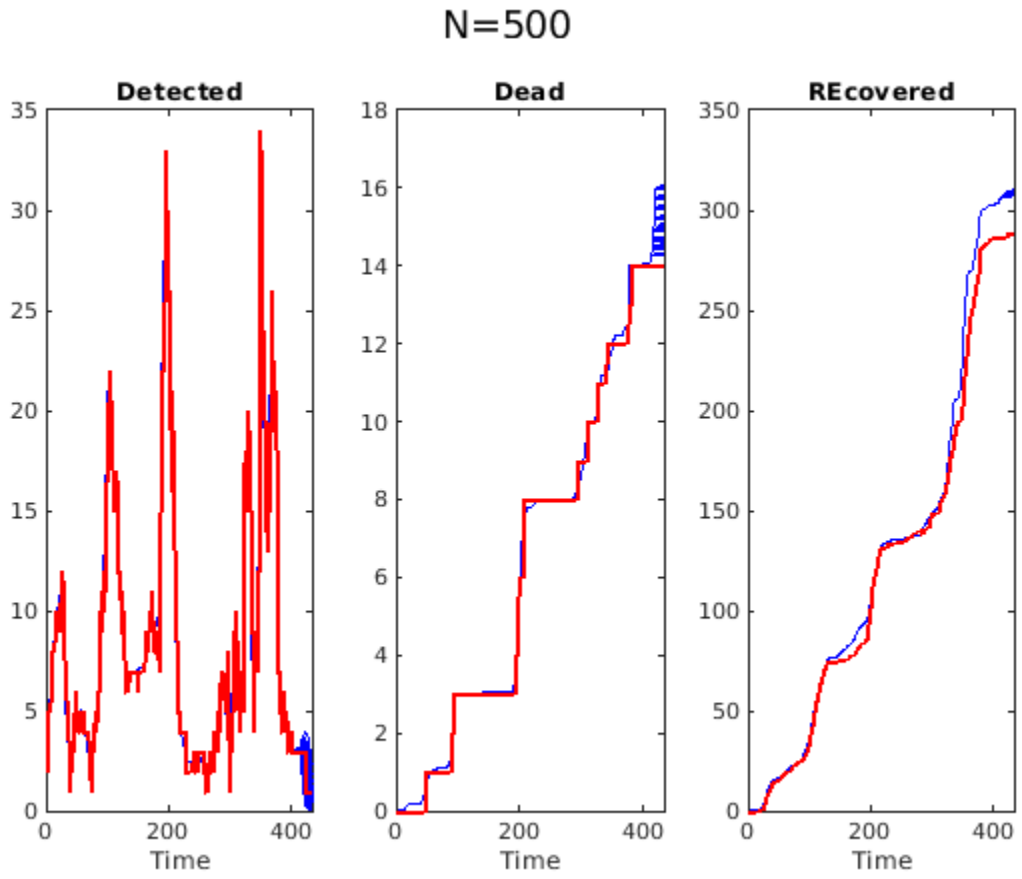
19.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
γ_H λ_{fq} ϑ_E γ_L k_L λ_{qf} η_L ϑ_P z η_ϑ a_L b_L a_μ b_μ μ ν BP
a_H
b_H
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

19.4. Uncertainty analisys



Chapter 20. Extension number20

20.1. Basic information

The extension to be validated consists of the time series from the data435 to the 437. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

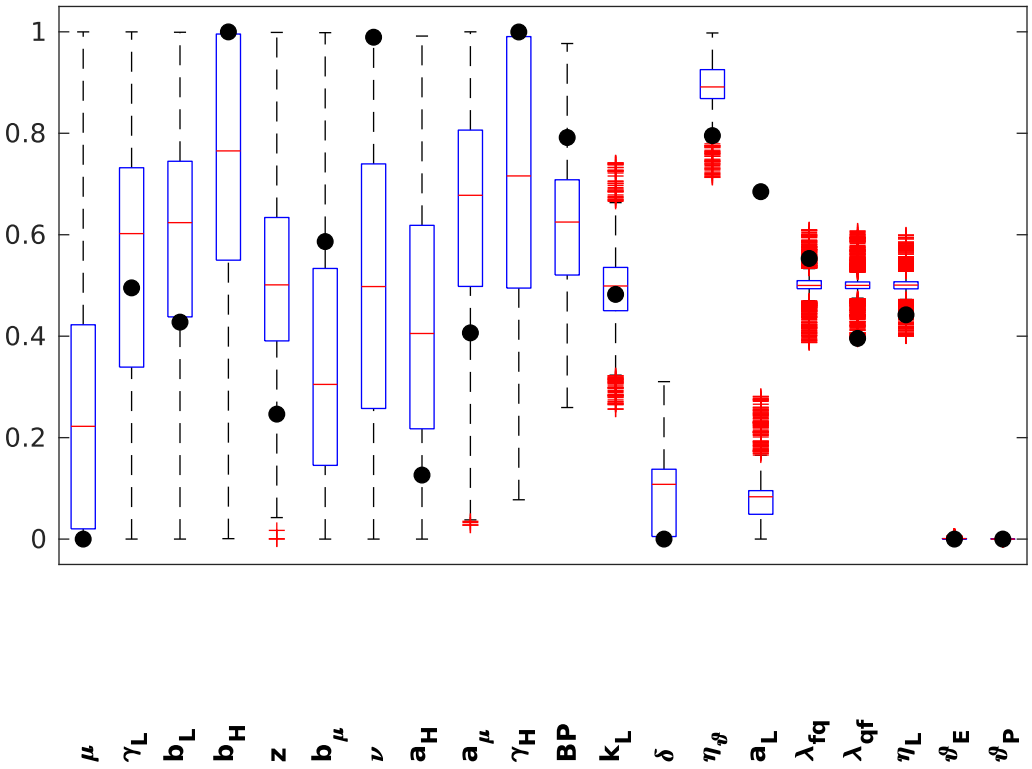
20.2. Estimated parameters with their intervals

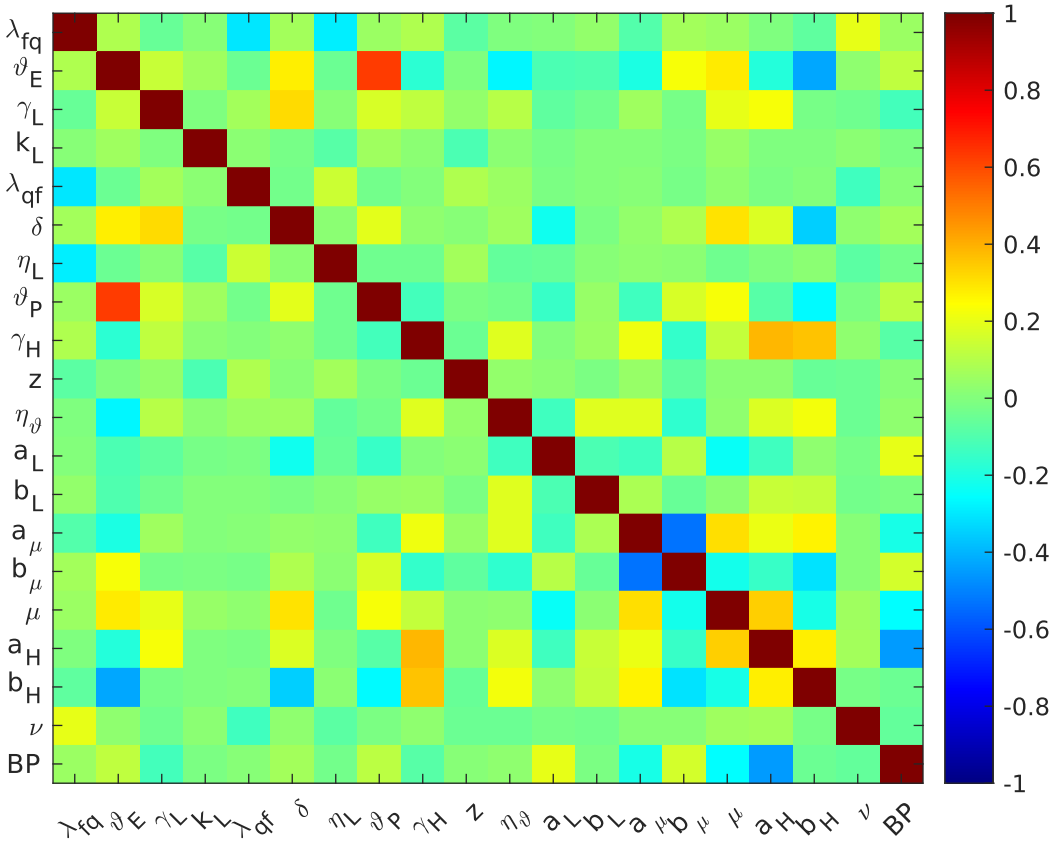
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

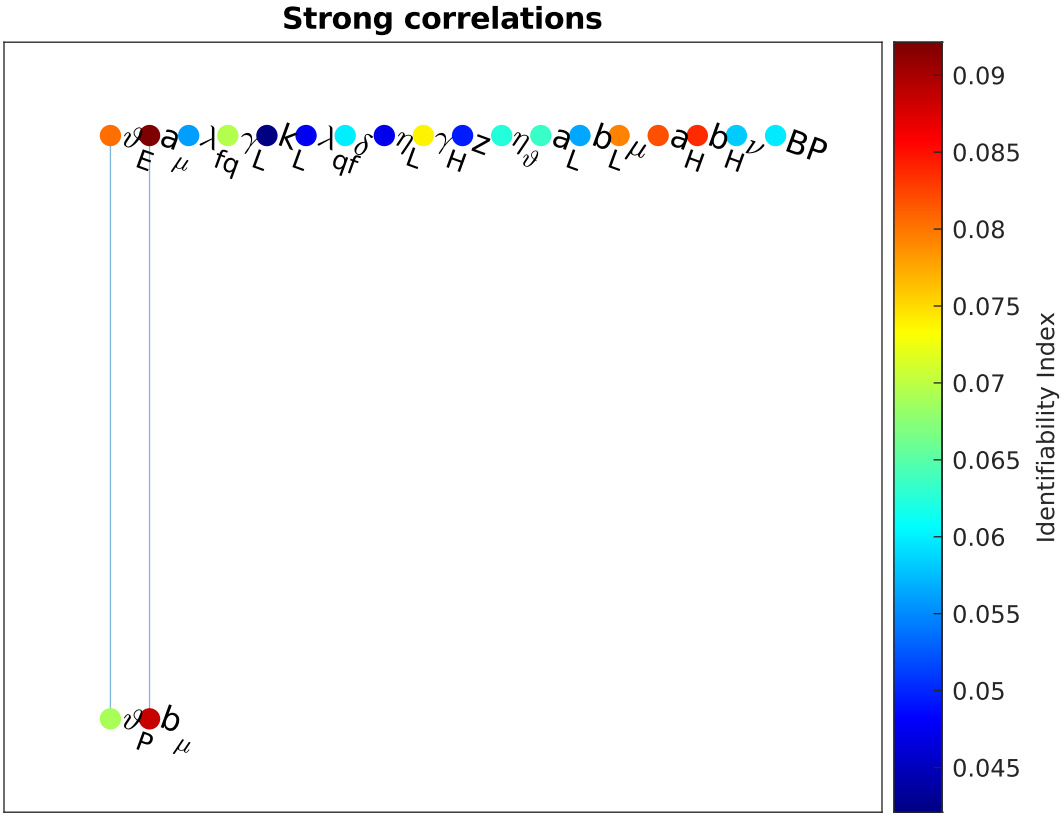
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'1'	'0.5'	'0.5532'	'0.056'
\vartheta_E	'0'	'0.0001'	'0.001'	'0'	'0.0804'
\gamma_L	'0'	'1'	'0.6022'	'0.4953'	'0.0696'
k_L	'1.18'	'10'	'5.4907'	'5.3417'	'0.0421'
\lambda_{qf}	'0.0223'	'0.8902'	'0.5002'	'0.3957'	'0.0476'
\delta	'0'	'0'	'0.0162'	'0'	'0.0601'
\eta_L	'0'	'0.9947'	'0.5007'	'0.4421'	'0.0474'
\vartheta_P	'0'	'0.0001'	'0'	'0'	'0.069'
\gamma_H	'0.5511'	'1'	'0.7159'	'0.9997'	'0.074'
z	'0'	'15.7976'	'15.0352'	'7.3907'	'0.0497'
\eta_\vartheta	'0.7388'	'1'	'0.8914'	'0.7954'	'0.0625'
a_L	'1'	'15'	'2.1682'	'10.5881'	'0.0636'
b_L	'1'	'14.3'	'9.7338'	'6.9881'	'0.0565'
a_\mu	'1'	'15'	'10.4882'	'6.692'	'0.0921'
b_\mu	'1'	'15'	'5.2691'	'9.2113'	'0.0885'
\mu	'0'	'0'	'0.2223'	'0'	'0.0793'
a_H	'2.2687'	'2.9637'	'6.6745'	'2.7672'	'0.0818'
b_H	'12.9536'	'15'	'11.7136'	'14.9978'	'0.0836'
\nu	'0'	'500'	'248.9191'	'494.6708'	'0.0582'
BP	'422.7546'	'427'	'422.5'	'424.5'	'0.0599'

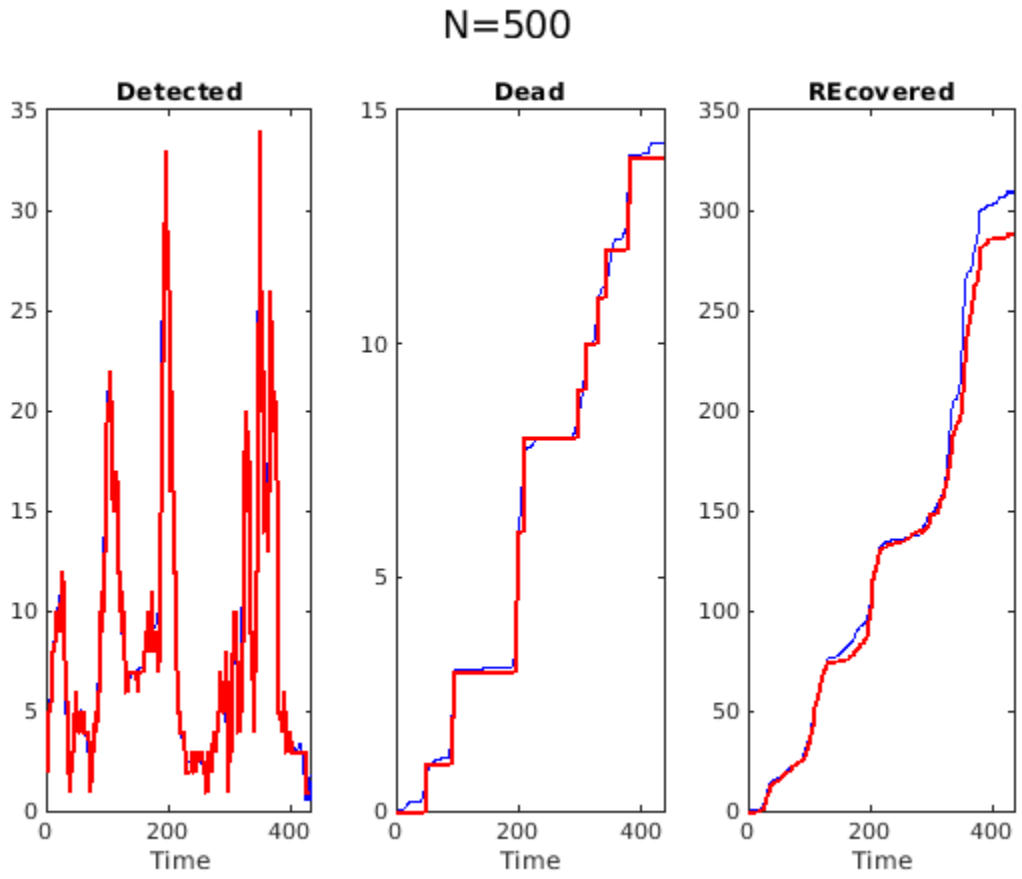
20.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045

20.4. Uncertainty analisys



Chapter 21. Extension number21

21.1. Basic information

The extension to be validated consists of the time series from the data437 to the 451. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

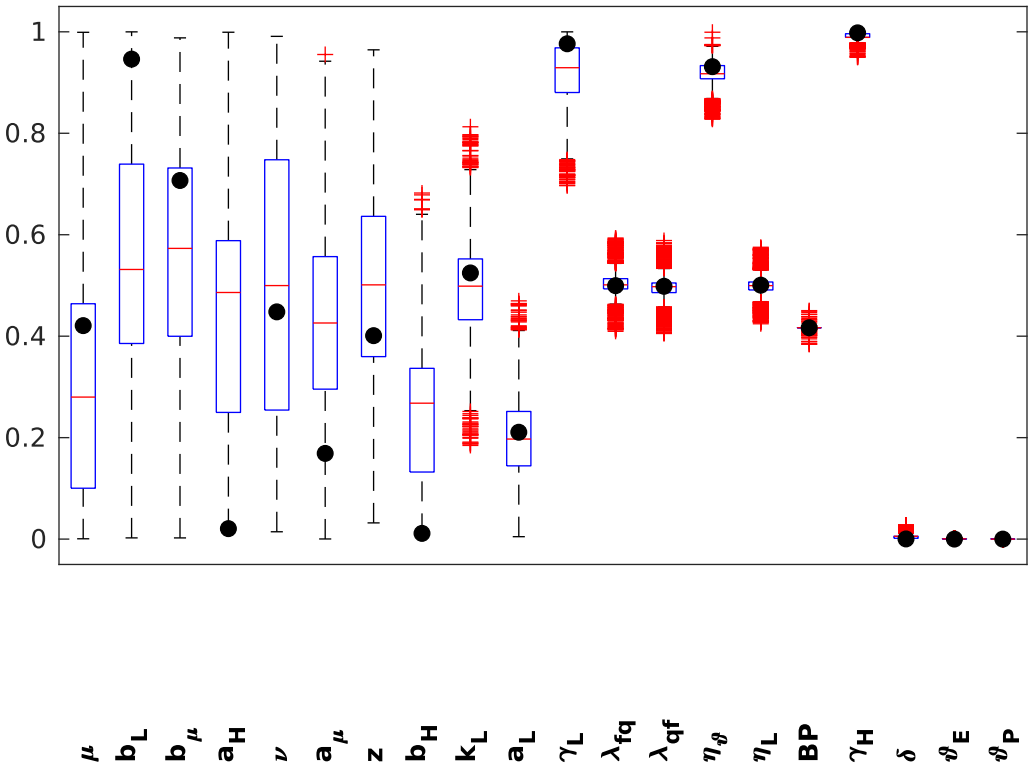
21.2. Estimated parameters with their intervals

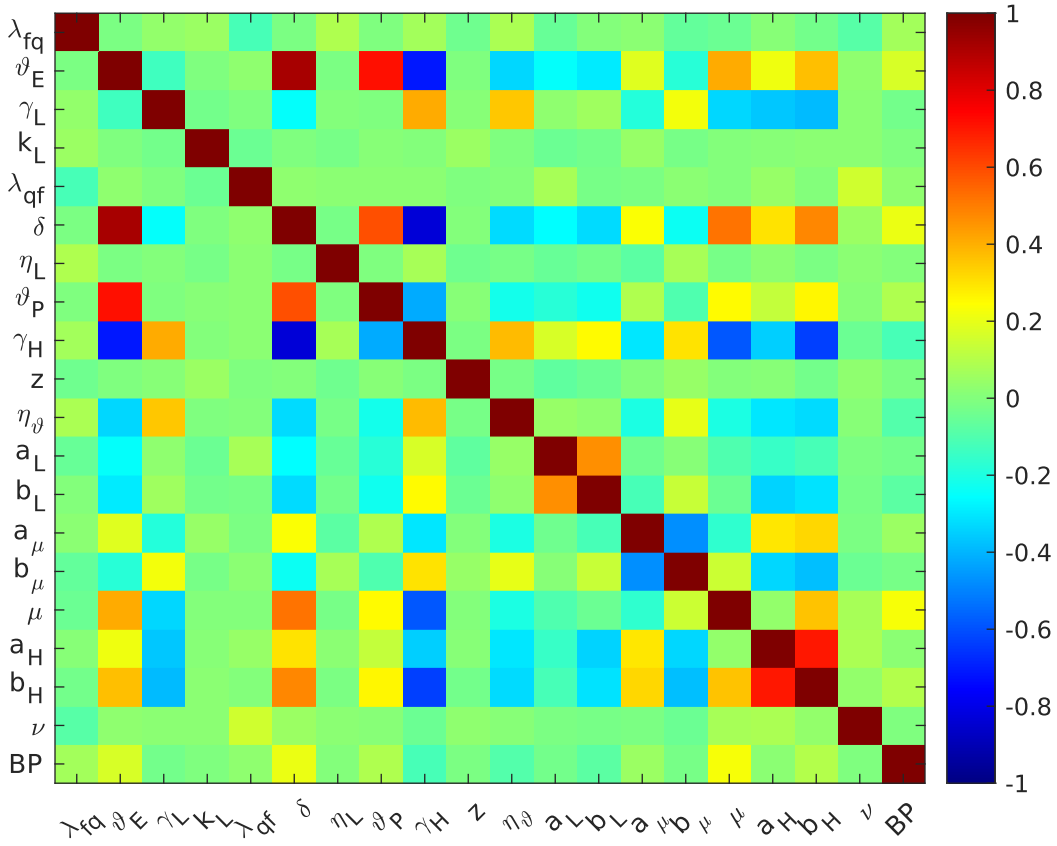
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

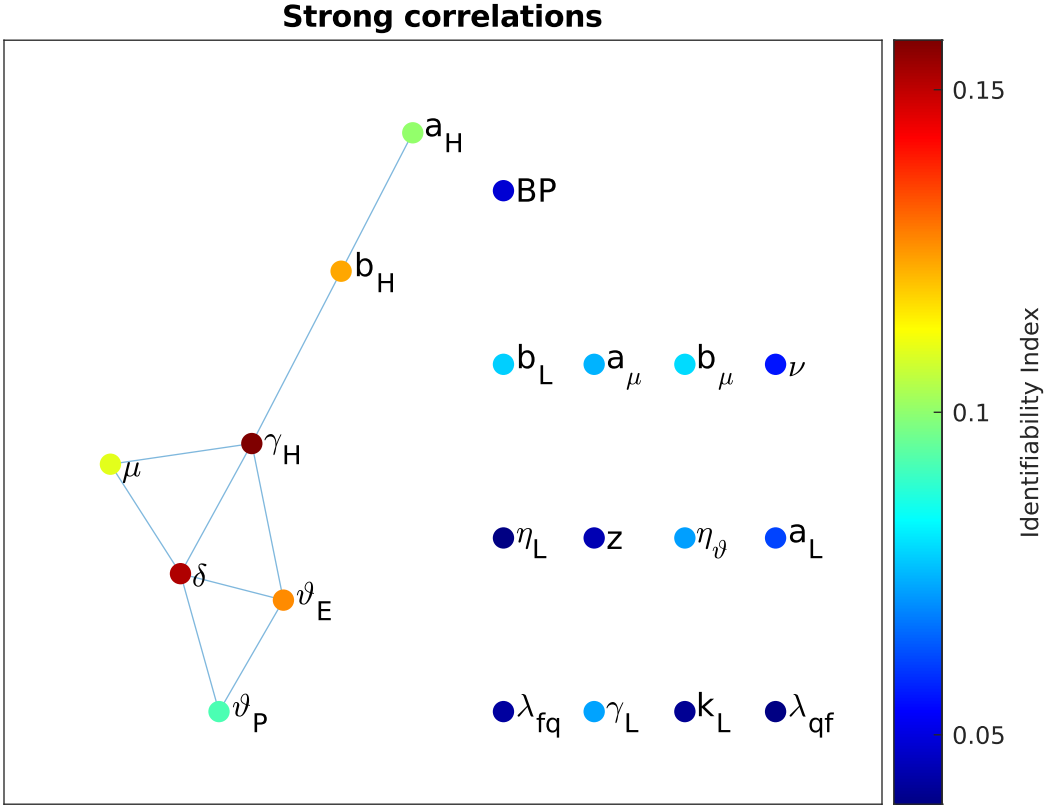
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'1'	'0.5012'	'0.4996'	'0.0427'
\vartheta_E	'0'	'0.0001'	'0.0004'	'0'	'0.1266'
\gamma_L	'0.8116'	'1'	'0.9292'	'0.9764'	'0.073'
k_L	'1'	'10'	'5.4876'	'5.722'	'0.0412'
\lambda_{qf}	'0'	'1'	'0.4976'	'0.4983'	'0.0397'
\delta	'0'	'0.0001'	'0.0008'	'0'	'0.152'
\eta_L	'0'	'1'	'0.4996'	'0.5006'	'0.0392'
\vartheta_P	'0'	'0'	'0'	'0'	'0.092'
\gamma_H	'0.971'	'1'	'0.9891'	'0.998'	'0.1577'
z	'0'	'27.0702'	'15.0351'	'12.0312'	'0.0448'
\eta_\vartheta	'0.6178'	'1'	'0.9173'	'0.9313'	'0.0721'
a_L	'3.8124'	'4.3689'	'3.7617'	'3.9489'	'0.0619'
b_L	'13.1055'	'14.4953'	'8.4413'	'14.2465'	'0.0779'
a_\mu	'1'	'15'	'6.9641'	'3.3652'	'0.0746'
b_\mu	'1'	'15'	'9.0229'	'10.8969'	'0.0794'
\mu	'0'	'0.9469'	'0.28'	'0.4208'	'0.11'
a_H	'1.2711'	'1.6697'	'7.8059'	'1.2886'	'0.1005'
b_H	'1.1518'	'1.3706'	'4.752'	'1.158'	'0.1231'
\nu	'0'	'500'	'249.8814'	'223.977'	'0.0561'
BP	'437.4955'	'437.4997'	'437.5'	'437.4997'	'0.0489'

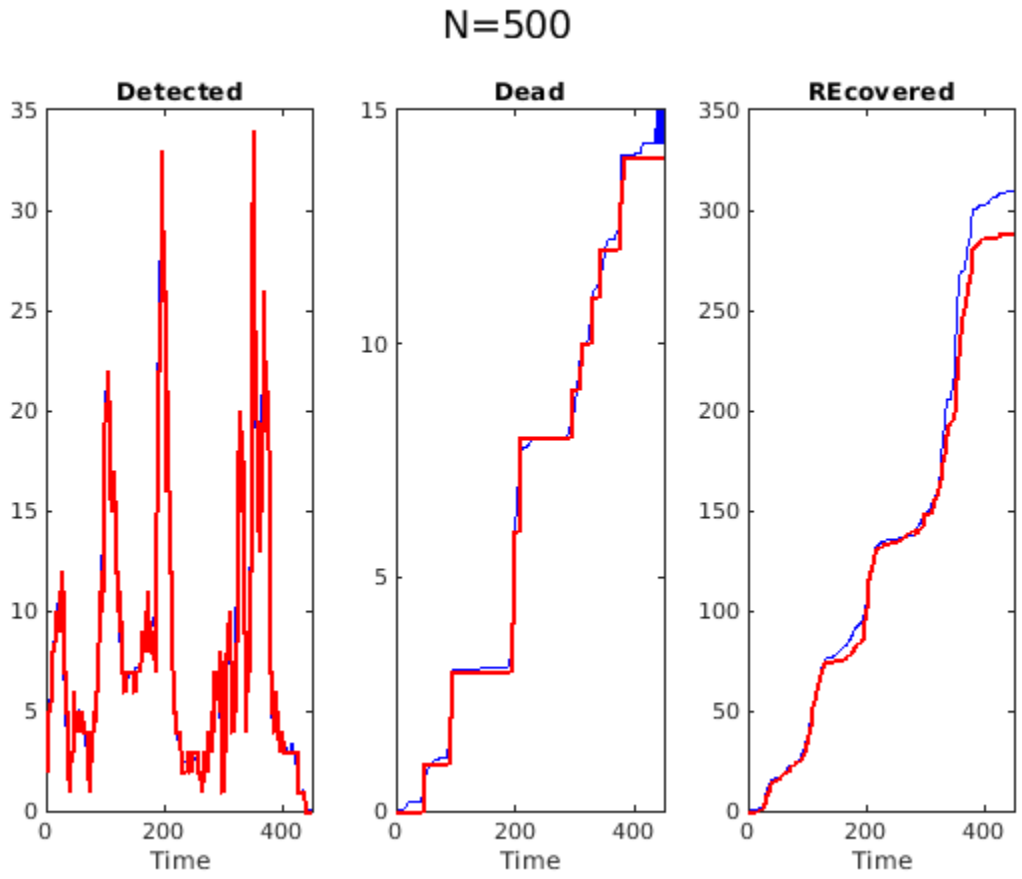
21.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
a H
BP
b H
b L
a μ
b μ
ν
γ H
μ
η L
z
η ϑ
a L
δ
ϑ E
ϑ P
λ fq
γ L
k L
λ qf
0.15
0.1
0.05
Identifiability Index

21.4. Uncertainty analisys



Chapter 22. Extension number22

22.1. Basic information

The extension to be validated consists of the time series from the data451 to the 451. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

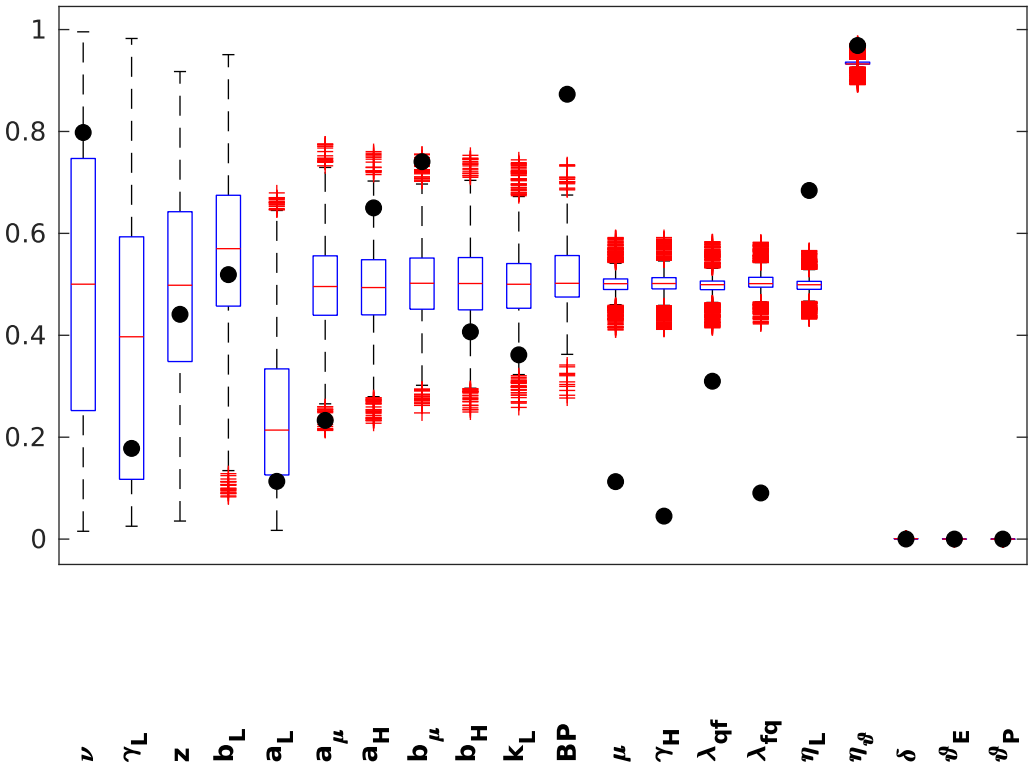
22.2. Estimated parameters with their intervals

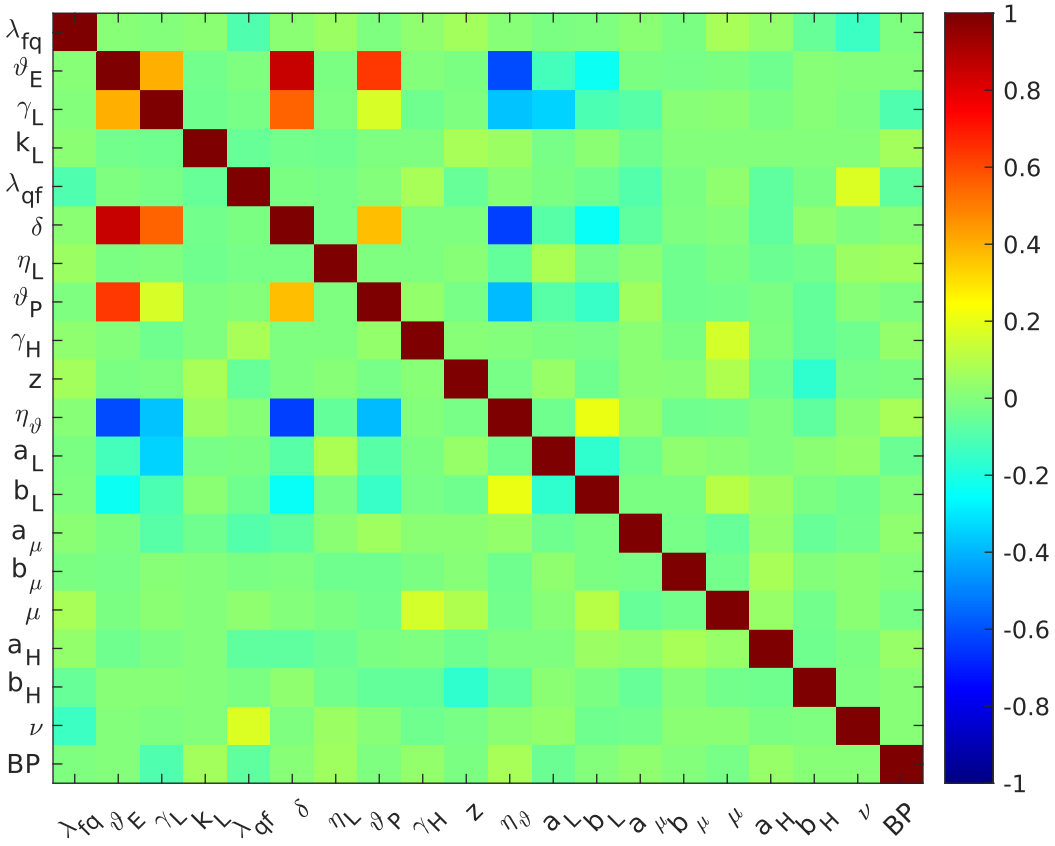
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

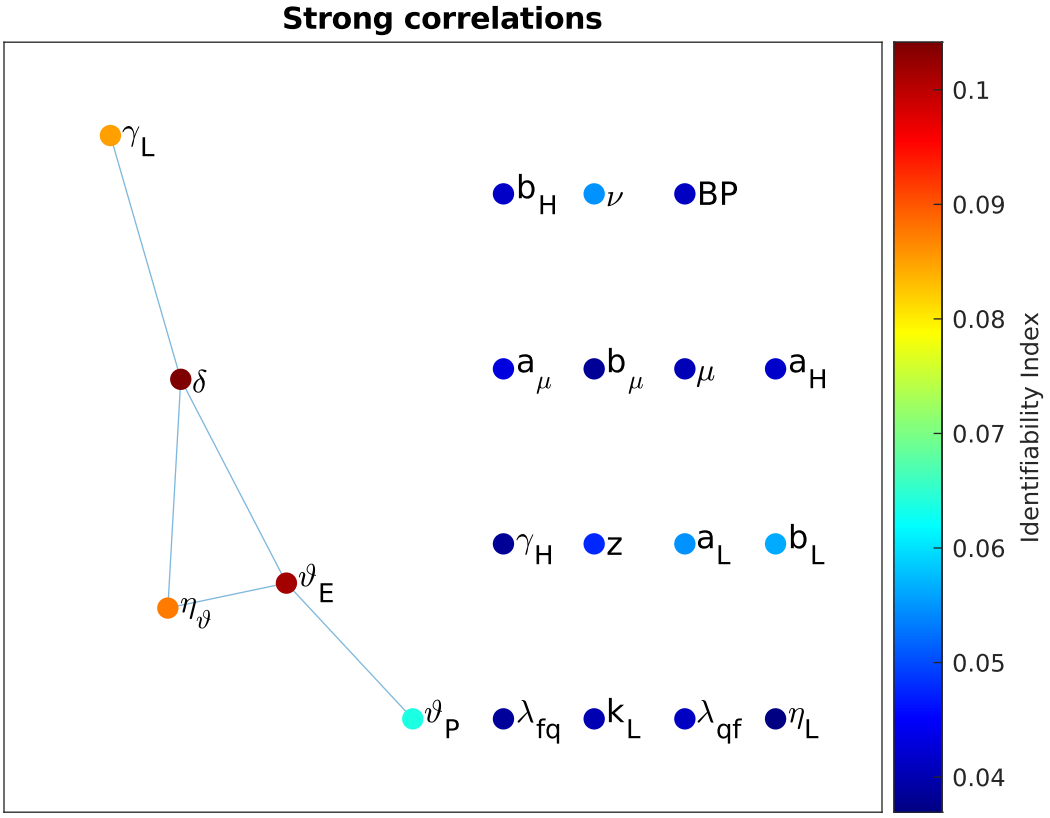
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.0905'	'0.0905'	'0.5013'	'0.0905'	'0.0386'
\vartheta_E	'0'	'0'	'0.0001'	'0'	'0.1017'
\gamma_L	'0.1246'	'0.267'	'0.3971'	'0.178'	'0.0851'
k_L	'2.9784'	'6.3822'	'5.5013'	'4.2548'	'0.0403'
\lambda_{qf}	'0.2169'	'0.4648'	'0.4993'	'0.3099'	'0.0411'
\delta	'0'	'0'	'0.0001'	'0'	'0.1042'
\eta_L	'0.4789'	'1'	'0.4992'	'0.6842'	'0.0369'
\vartheta_P	'0'	'0'	'0'	'0'	'0.064'
\gamma_H	'0.0316'	'0.0677'	'0.5016'	'0.0451'	'0.0383'
z	'9.2641'	'19.8515'	'14.9463'	'13.2344'	'0.0479'
\eta_\vartheta	'0.6781'	'1'	'0.9325'	'0.9687'	'0.0874'
a_L	'1.8107'	'3.88'	'3.997'	'2.5867'	'0.0549'
b_L	'5.7866'	'12.3998'	'8.9769'	'8.2665'	'0.0565'
a_\mu	'2.9828'	'6.3918'	'7.9399'	'4.2612'	'0.0431'
b_\mu	'7.9591'	'15'	'8.029'	'11.3701'	'0.0385'
\mu	'0.0789'	'0.1692'	'0.5013'	'0.1128'	'0.0406'
a_H	'7.0704'	'15'	'7.9116'	'10.1005'	'0.0417'
b_H	'4.6868'	'10.0431'	'8.0224'	'6.6954'	'0.0416'
\nu	'279.2892'	'500'	'250.1411'	'398.9846'	'0.055'
BP	'437'	'441'	'439.008'	'440.4922'	'0.0412'

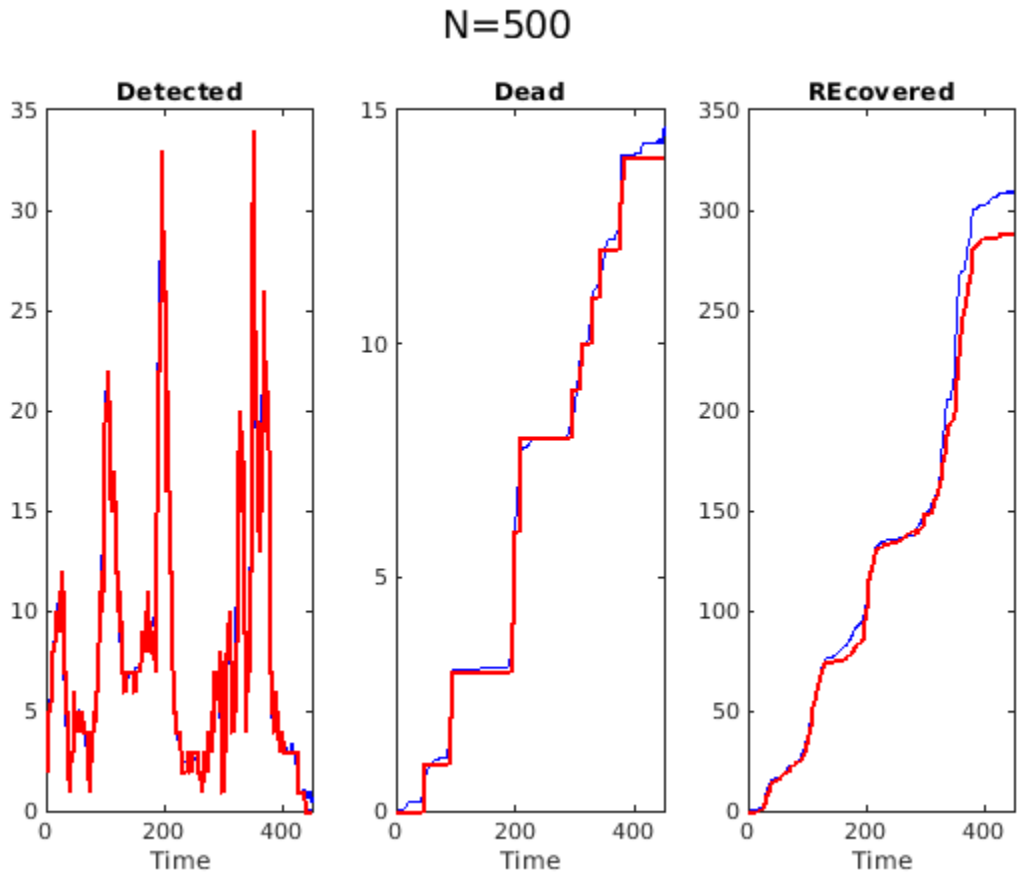
22.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
γ_L
δ
η_ϑ
ϑ_E
ϑ_P
b_H
ν
BP
a_μ
b_μ
μ
a_H
γ_H
z
a_L
b_L
λ_{fq}
k_L
λ_{qf}
η_L
0.1
0.09
0.08
0.07
0.06
0.05
0.04
Identifiability Index

22.4. Uncertainty analisys



Chapter 23. Extension number23

23.1. Basic information

The extension to be validated consists of the time series from the data451 to the 476. The status of the validation is: COMPLETED.

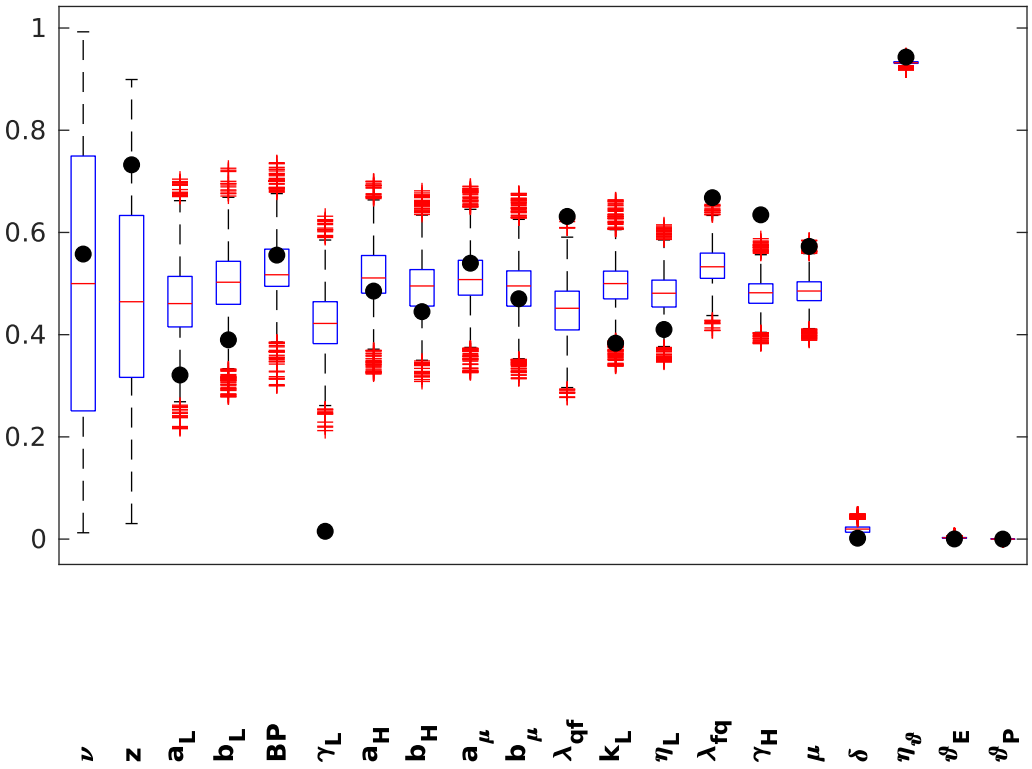
The number of estimations needed to perform the validation was1000.

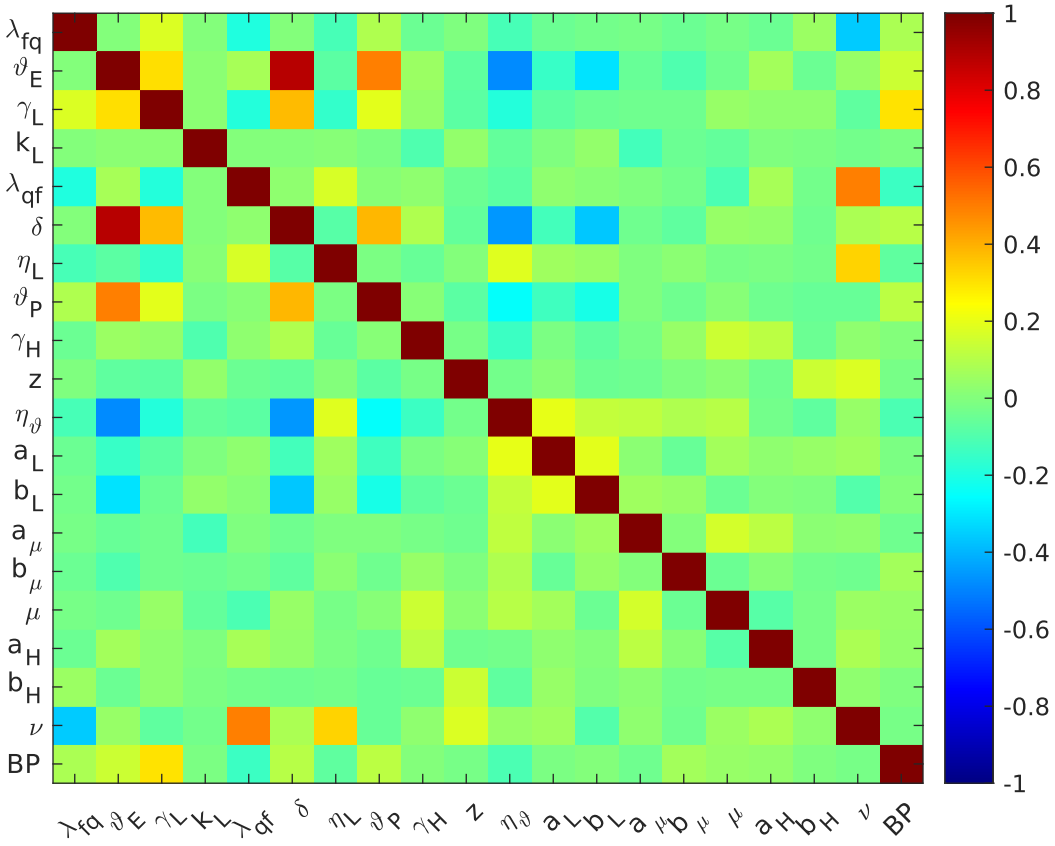
23.2. Estimated parameters with their intervals

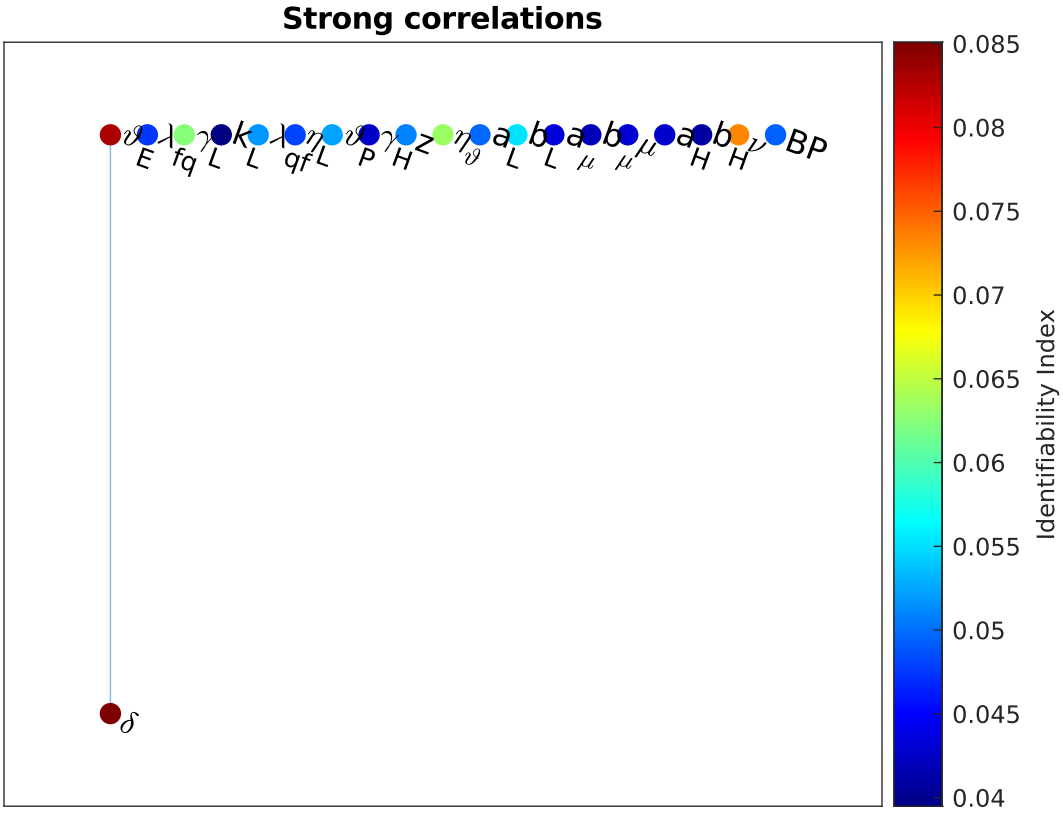
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.5281'	'0.5375'	'0.5328'	'0.668'	'0.0475'
\vartheta_E	'0'	'0.0066'	'0.0025'	'0.0003'	'0.0831'
\gamma_L	'0.4139'	'0.4301'	'0.422'	'0.0153'	'0.0626'
k_L	'5.4348'	'5.5643'	'5.4996'	'4.45'	'0.0395'
\lambda_{qf}	'0.4463'	'0.457'	'0.4517'	'0.6314'	'0.0518'
\delta	'0.0019'	'0.004'	'0.0029'	'0.0003'	'0.0851'
\eta_L	'0.476'	'0.4861'	'0.4811'	'0.4102'	'0.0481'
\vartheta_P	'0'	'0.0008'	'0'	'0'	'0.0524'
\gamma_H	'0.4774'	'0.4866'	'0.482'	'0.6345'	'0.0425'
z	'13.4903'	'14.3757'	'13.933'	'21.9713'	'0.0509'
\eta_\vartheta	'0.9292'	'0.9349'	'0.932'	'0.9432'	'0.0634'
a_L	'7.3292'	'7.5734'	'7.4513'	'5.4955'	'0.0497'
b_L	'7.9147'	'8.1583'	'8.0365'	'6.4587'	'0.0553'
a_\mu	'8.008'	'8.2099'	'8.1089'	'8.5574'	'0.0435'
b_\mu	'7.8343'	'8.0352'	'7.9348'	'7.584'	'0.042'
\mu	'0.4811'	'0.4898'	'0.4854'	'0.5727'	'0.0432'
a_H	'8.0541'	'8.2527'	'8.1534'	'7.7941'	'0.0428'
b_H	'7.832'	'8.036'	'7.934'	'7.2305'	'0.0409'
\nu	'238.8502'	'261.0508'	'249.9505'	'278.8637'	'0.0733'
BP	'458.6366'	'458.88'	'458.7583'	'459.3349'	'0.0494'

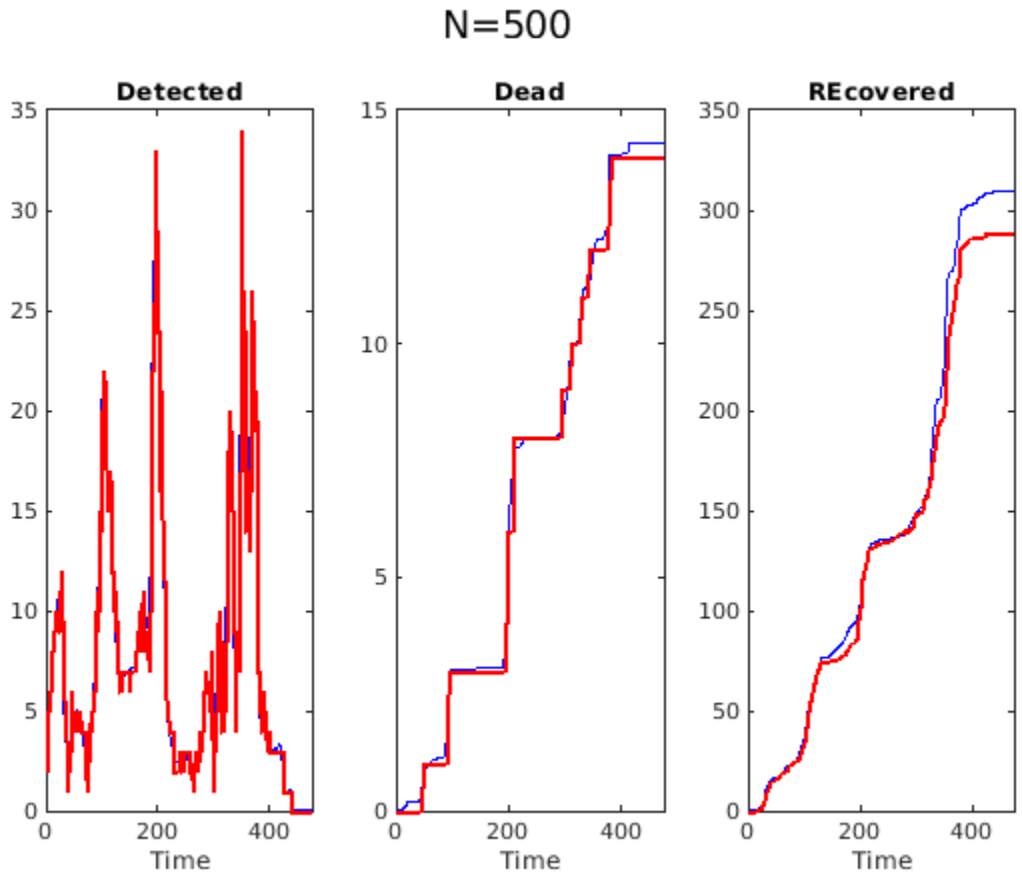
23.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
ϑ λ γ k λ η ϑ γ z η a b a b μ a b ν BP
E fq L L qf L P H ϑ L L μ μ H H
δ
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
Identifiability Index

23.4. Uncertainty analisys



Chapter 24. Extension number24

24.1. Basic information

The extension to be validated consists of the time series from the data476 to the 483. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

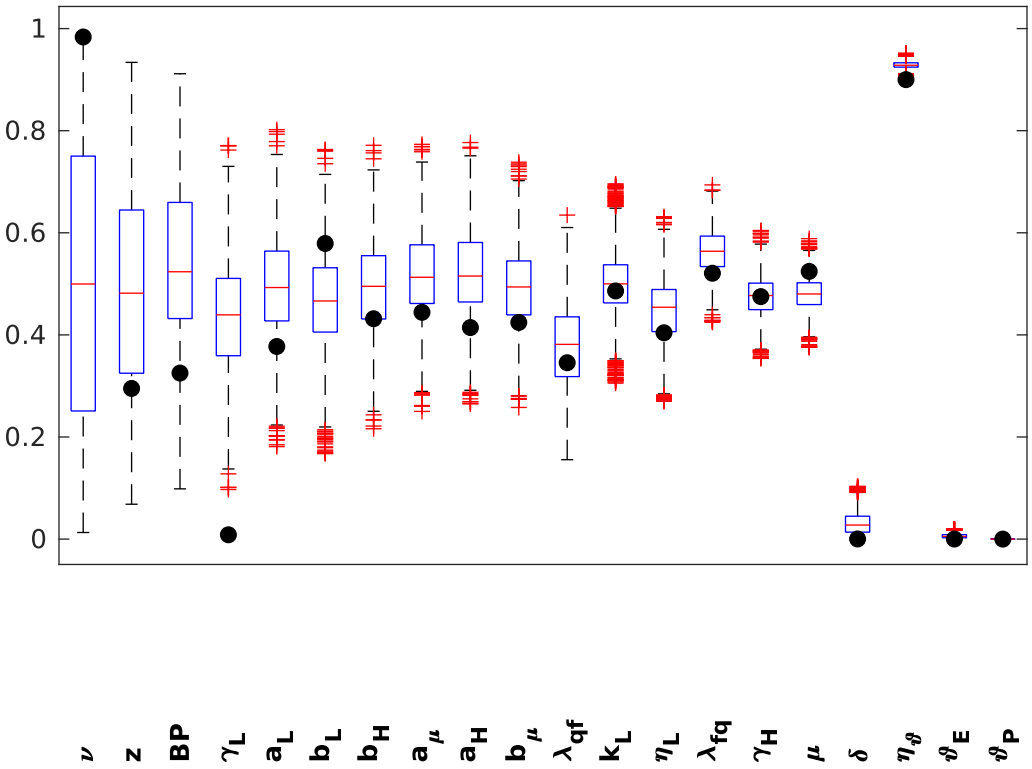
24.2. Estimated parameters with their intervals

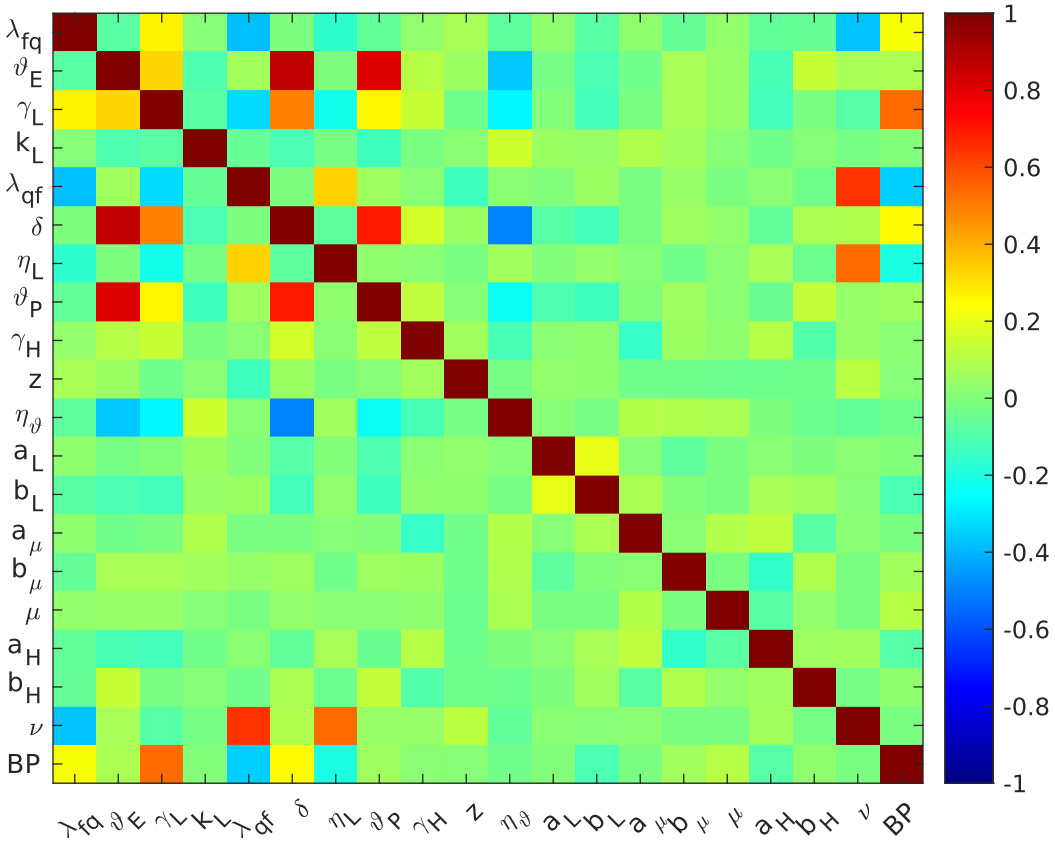
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

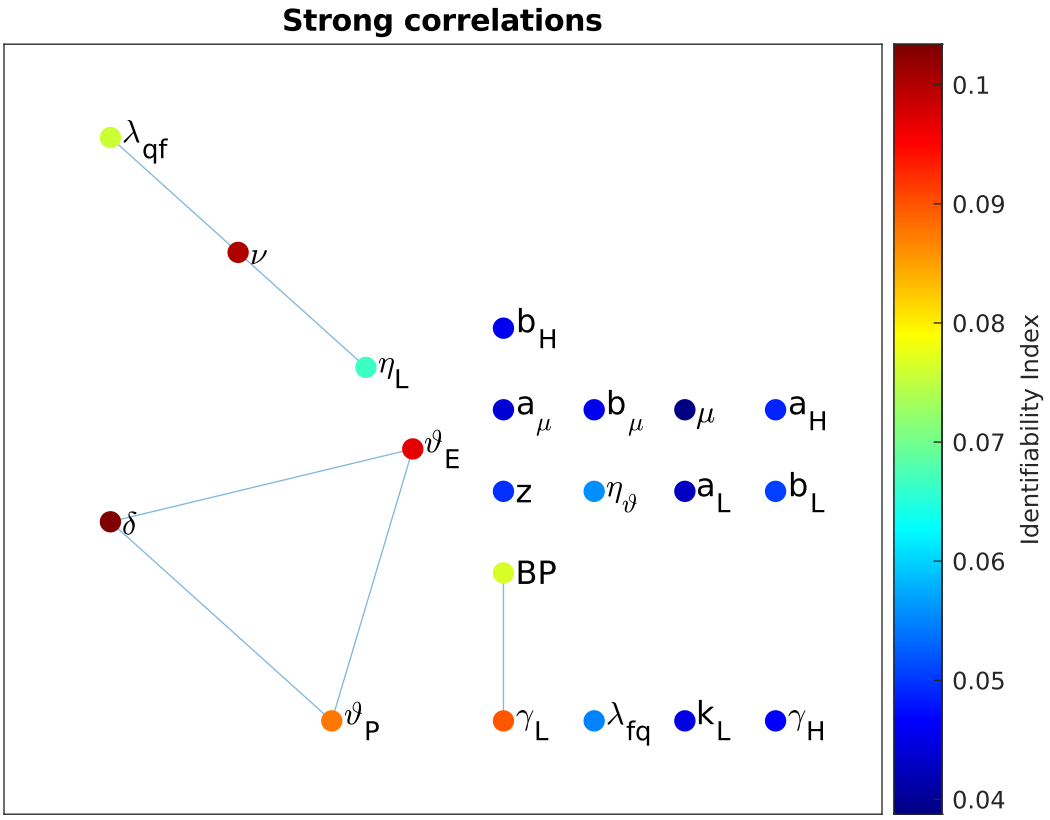
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.139'	'1'	'0.5639'	'0.5207'	'0.0551'
\vartheta_E	'0'	'0.0002'	'0.0052'	'0.0001'	'0.0971'
\gamma_L	'0'	'0.019'	'0.4392'	'0.0085'	'0.0895'
k_L	'1'	'10'	'5.4995'	'5.3746'	'0.0449'
\lambda_{qf}	'0'	'0.7773'	'0.3814'	'0.3455'	'0.0757'
\delta	'0'	'0.0001'	'0.0041'	'0'	'0.1034'
\eta_L	'0'	'0.9094'	'0.4542'	'0.4042'	'0.0667'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0875'
\gamma_H	'0'	'1'	'0.4771'	'0.475'	'0.0464'
z	'0'	'19.9205'	'14.4508'	'8.8535'	'0.0496'
\eta_\vartheta	'0.8057'	'1'	'0.9282'	'0.9'	'0.0557'
a_L	'1'	'15'	'7.8988'	'6.2827'	'0.0428'
b_L	'1'	'15'	'7.5299'	'9.1067'	'0.0508'
a_\mu	'1'	'15'	'8.18'	'7.2192'	'0.0441'
b_\mu	'1'	'15'	'7.9147'	'6.9413'	'0.0458'
\mu	'0'	'1'	'0.4802'	'0.5243'	'0.0388'
a_H	'1'	'15'	'8.2139'	'6.8012'	'0.0491'
b_H	'1'	'15'	'7.9319'	'7.0431'	'0.0456'
\nu	'119.0388'	'500'	'249.8424'	'491.7592'	'0.1002'
BP	'456.35'	'465.6'	'462.5208'	'458.1553'	'0.0764'

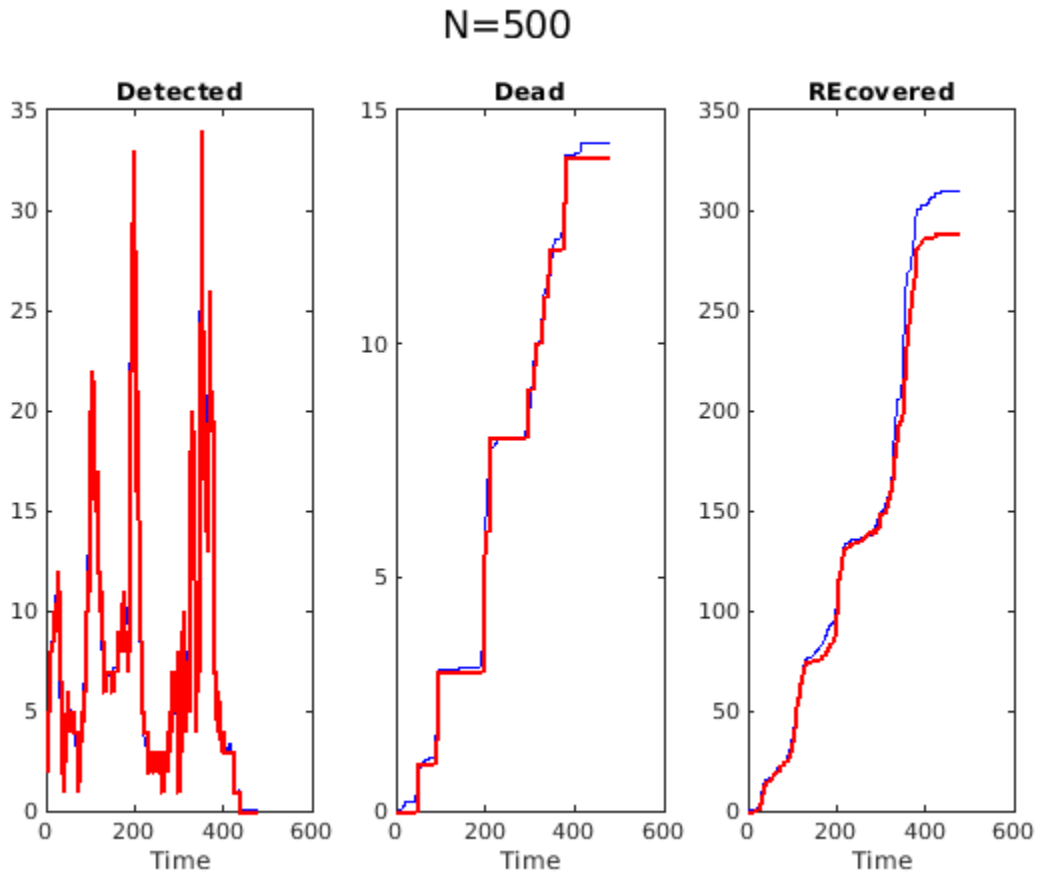
24.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
λ_{qf}
ν
η_L
ϑ_E
δ
ϑ_P
b_H
a_μ
b_μ
μ
a_H
z
η_ϑ
a_L
b_L
BP
γ_L
λ_{fq}
k_L
γ_H
0.1
0.09
0.08
0.07
0.06
0.05
0.04
Identifiability Index

24.4. Uncertainty analisys



Chapter 25. Extension number25

25.1. Basic information

The extension to be validated consists of the time series from the data483 to the 501. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

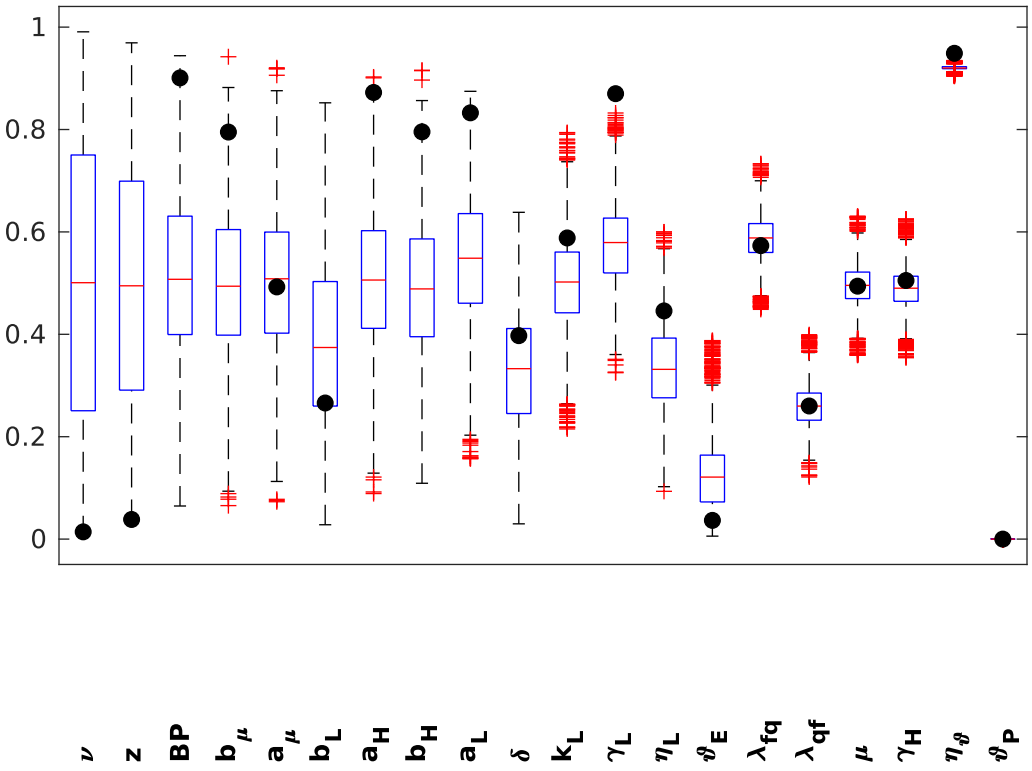
25.2. Estimated parameters with their intervals

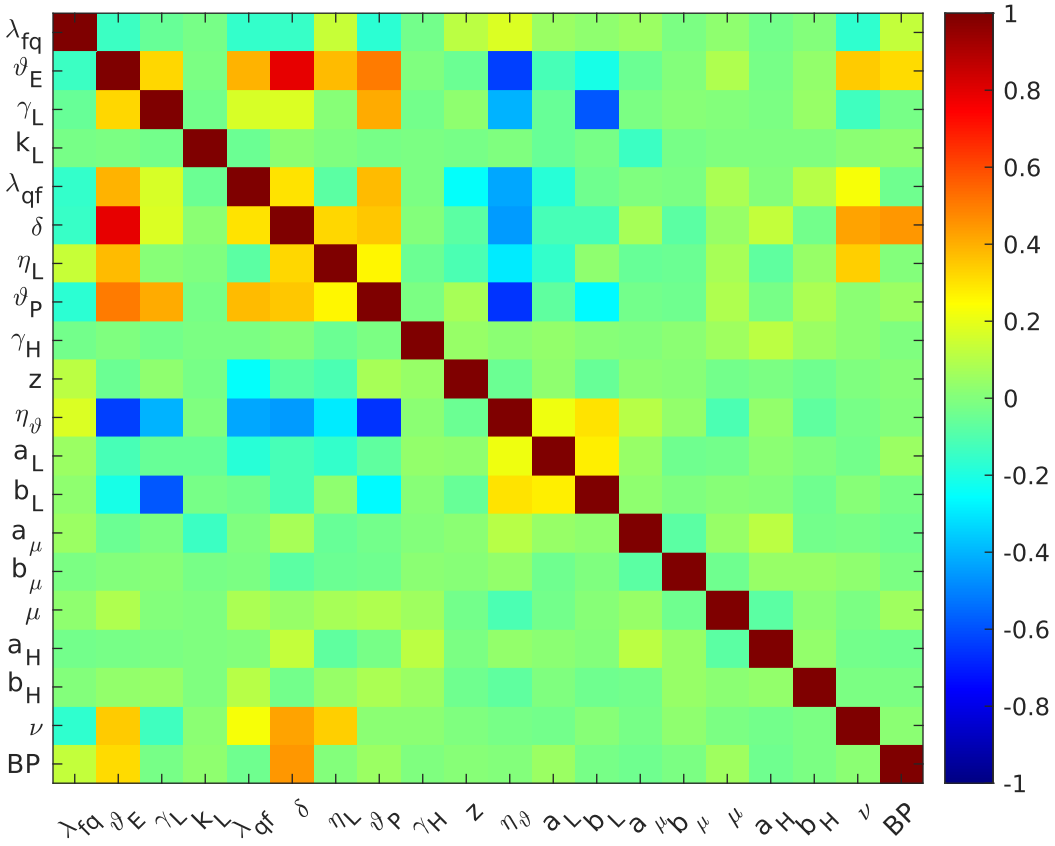
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

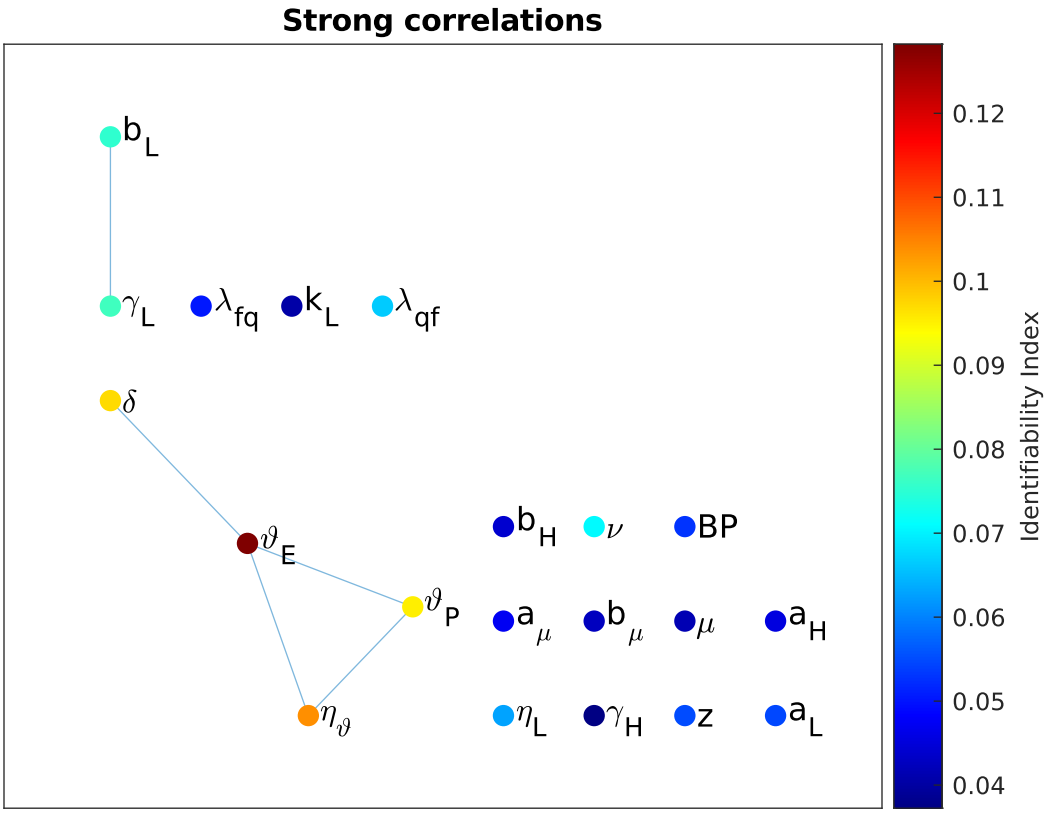
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.1743'	'1'	'0.5882'	'0.5733'	'0.0507'
\vartheta_E	'0.0216'	'0.0632'	'0.1211'	'0.0366'	'0.1282'
\gamma_L	'0'	'0.96'	'0.5792'	'0.87'	'0.0767'
k_L	'1'	'10'	'5.5195'	'6.2939'	'0.0407'
\lambda_{qf}	'0'	'0.2868'	'0.2598'	'0.26'	'0.0667'
\delta	'0.0445'	'0.0926'	'0.0499'	'0.0596'	'0.0973'
\eta_L	'0.0461'	'0.4918'	'0.3317'	'0.4457'	'0.0632'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0955'
\gamma_H	'0.02'	'0.951'	'0.4901'	'0.5051'	'0.0372'
z	'0.4969'	'1.6164'	'14.8426'	'1.1505'	'0.055'
\eta_\vartheta	'0.8284'	'1'	'0.9201'	'0.9489'	'0.1037'
a_L	'3.4721'	'15'	'8.6803'	'12.6564'	'0.055'
b_L	'1.28'	'13.0106'	'6.2394'	'4.7217'	'0.0756'
a_\mu	'4.5287'	'15'	'8.1176'	'7.8962'	'0.0475'
b_\mu	'1'	'15'	'7.9152'	'12.1305'	'0.0429'
\mu	'0'	'1'	'0.4956'	'0.494'	'0.0417'
a_H	'4.4671'	'15'	'8.0846'	'13.2132'	'0.0455'
b_H	'1'	'15'	'7.8438'	'12.1369'	'0.0443'
\nu	'0'	'15.9268'	'250.4'	'7.0786'	'0.0707'
BP	'489.5116'	'490.835'	'483.6117'	'489.5123'	'0.0532'

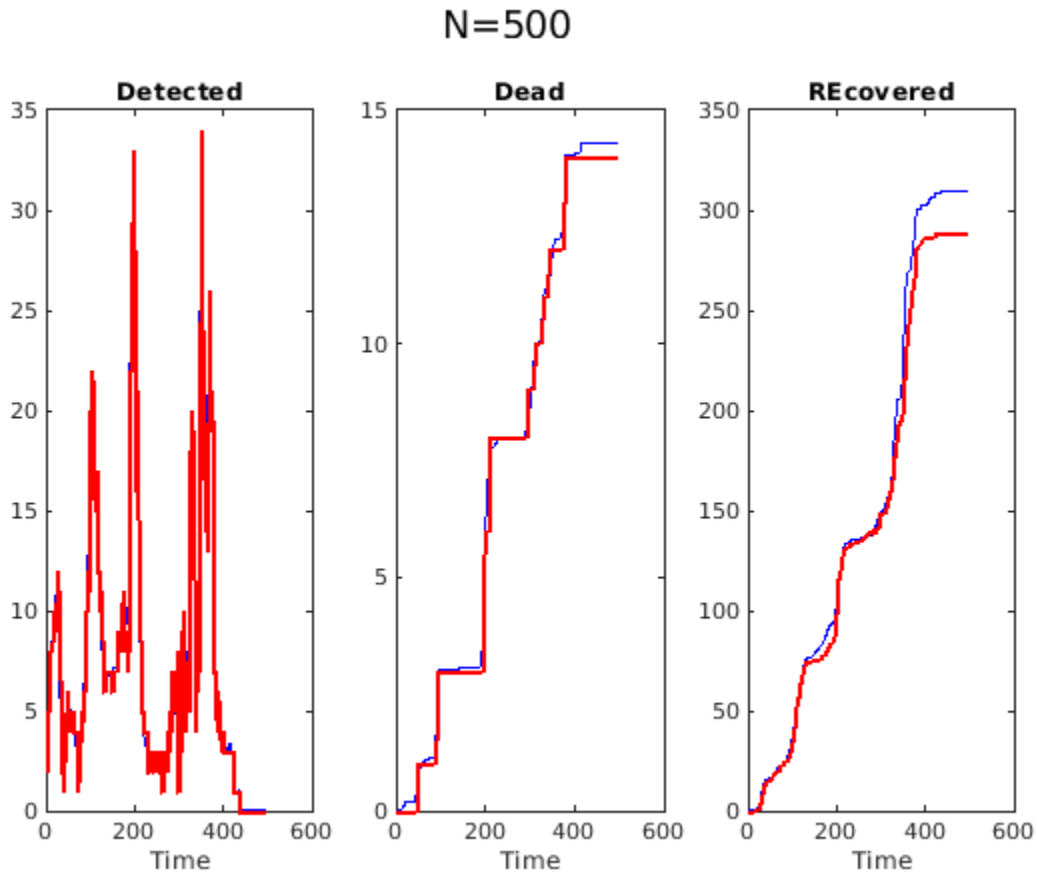
25.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
b_L
γ_L
λ_{fq}
k_L
λ_{qf}
δ
ϑ_E
ϑ_P
η_ϑ
b_H
ν
BP
a_μ
b_μ
μ
a_H
η_L
γ_H
z
a_L
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
Identifiability Index

25.4. Uncertainty analisys



Chapter 26. Extension number26

26.1. Basic information

The extension to be validated consists of the time series from the data501 to the 510. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

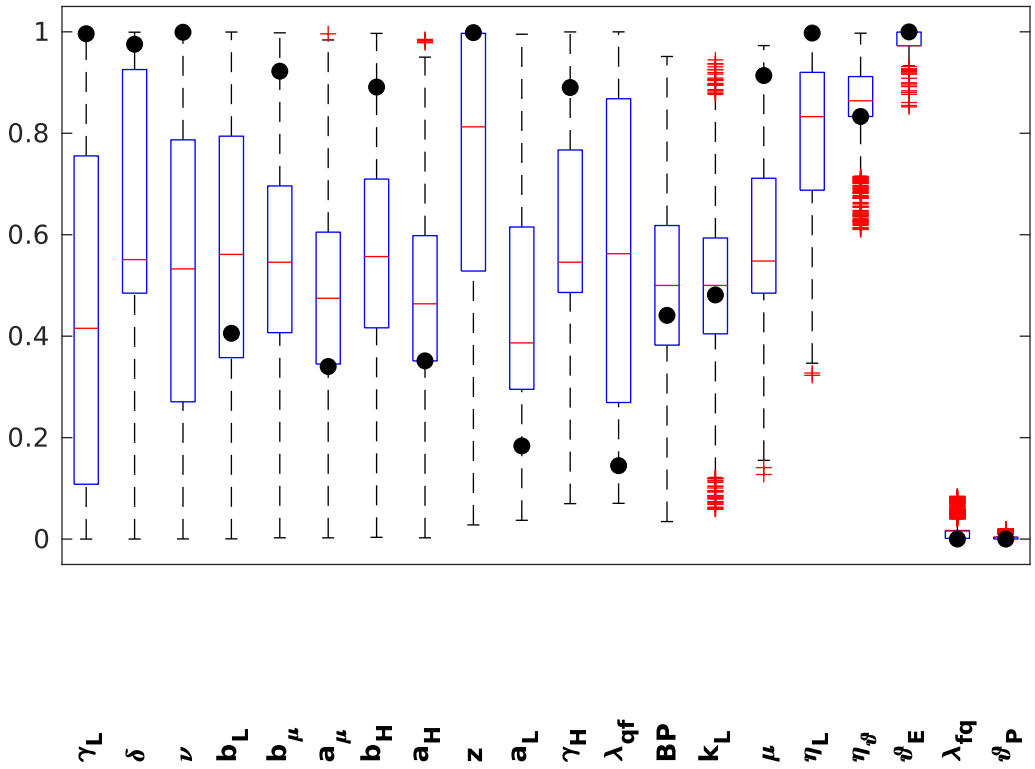
26.2. Estimated parameters with their intervals

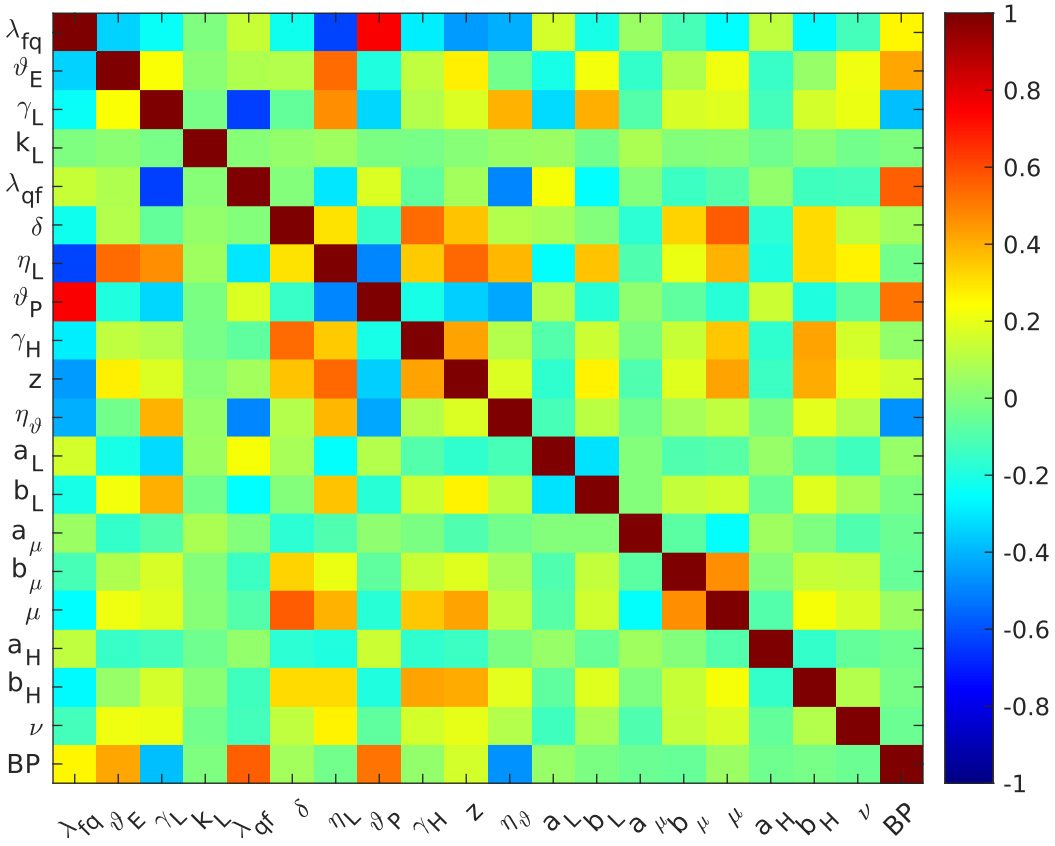
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

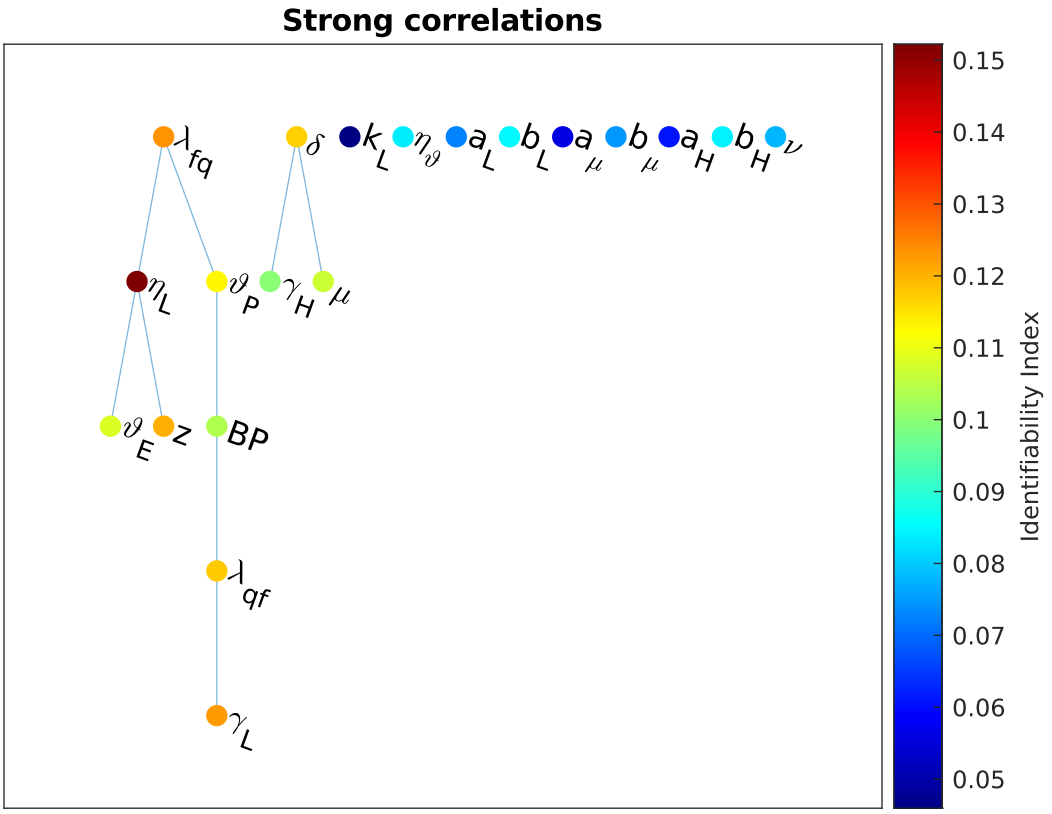
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0004'	'0.016'	'0.0002'	'0.1233'
\vartheta_E	'0.7183'	'1'	'0.9727'	'0.9998'	'0.1086'
\gamma_L	'0.3634'	'1'	'0.4155'	'0.9962'	'0.1226'
k_L	'1'	'9.55'	'5.5005'	'5.332'	'0.046'
\lambda_{qf}	'0.14'	'0.1804'	'0.5626'	'0.1447'	'0.1176'
\delta	'0'	'0.15'	'0.0826'	'0.1463'	'0.1172'
\eta_L	'0.7742'	'1'	'0.8327'	'0.9975'	'0.1522'
\vartheta_P	'0'	'0'	'0.0037'	'0'	'0.1131'
\gamma_H	'0.02'	'1'	'0.5458'	'0.8902'	'0.1002'
z	'24.9771'	'30'	'24.3798'	'29.9515'	'0.1203'
\eta_\vartheta	'0.2348'	'1'	'0.8639'	'0.8331'	'0.0839'
a_L	'1'	'13.768'	'6.4148'	'3.5724'	'0.0728'
b_L	'5.4334'	'9.7596'	'8.857'	'6.6801'	'0.0852'
a_\mu	'1.35'	'15'	'7.6465'	'5.763'	'0.056'
b_\mu	'1'	'15'	'8.6411'	'13.9132'	'0.0749'
\mu	'0.0396'	'1'	'0.5482'	'0.9138'	'0.1067'
a_H	'1'	'13.635'	'7.4937'	'5.9191'	'0.0613'
b_H	'1'	'15'	'8.7974'	'13.476'	'0.0842'
\nu	'367.3387'	'500'	'266.3133'	'499.5738'	'0.0782'
BP	'490.483'	'490.4991'	'491.5'	'490.4991'	'0.104'

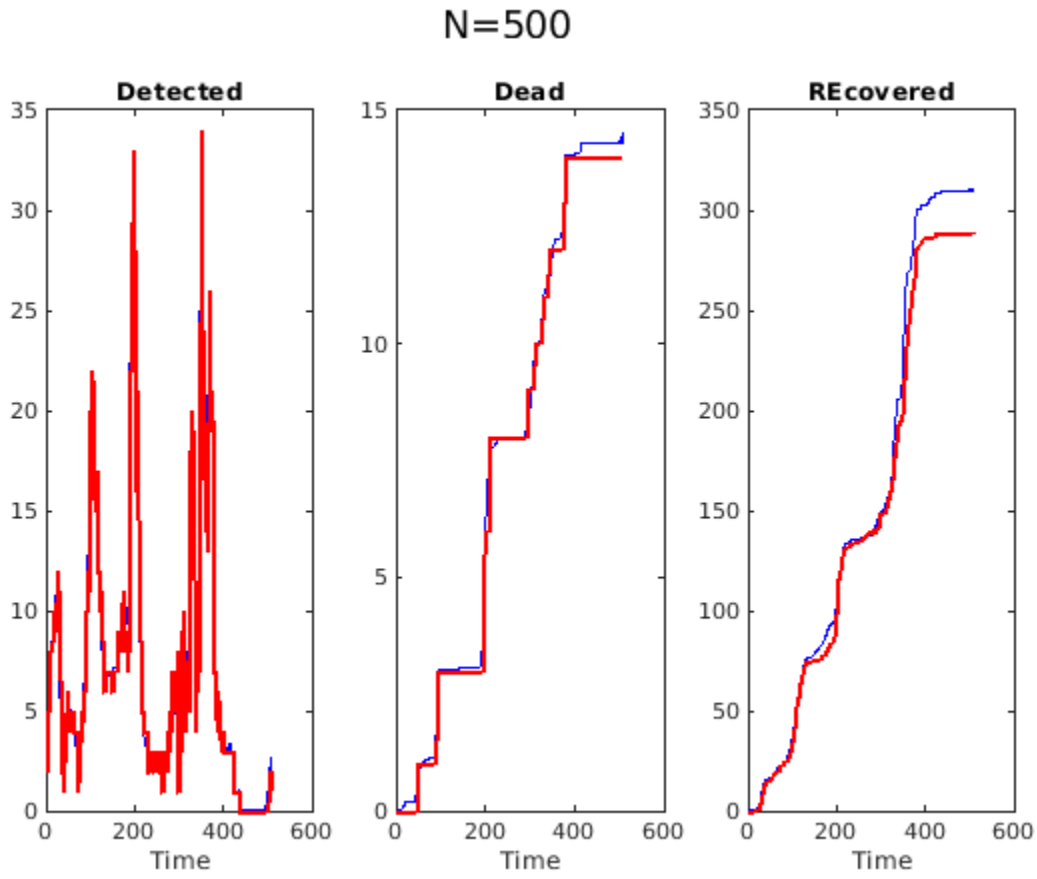
26.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
λ_{fq}
δ
k_L
η_ϑ
a_L
b_L
a_μ
b_μ
a_H
b_H
ν
η_L
ϑ_P
γ_H
μ
ϑ_E
z
BP
λ_{qf}
γ_L
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

26.4. Uncertainty analisys



Chapter 27. Extension number27

27.1. Basic information

The extension to be validated consists of the time series from the data510 to the 597. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

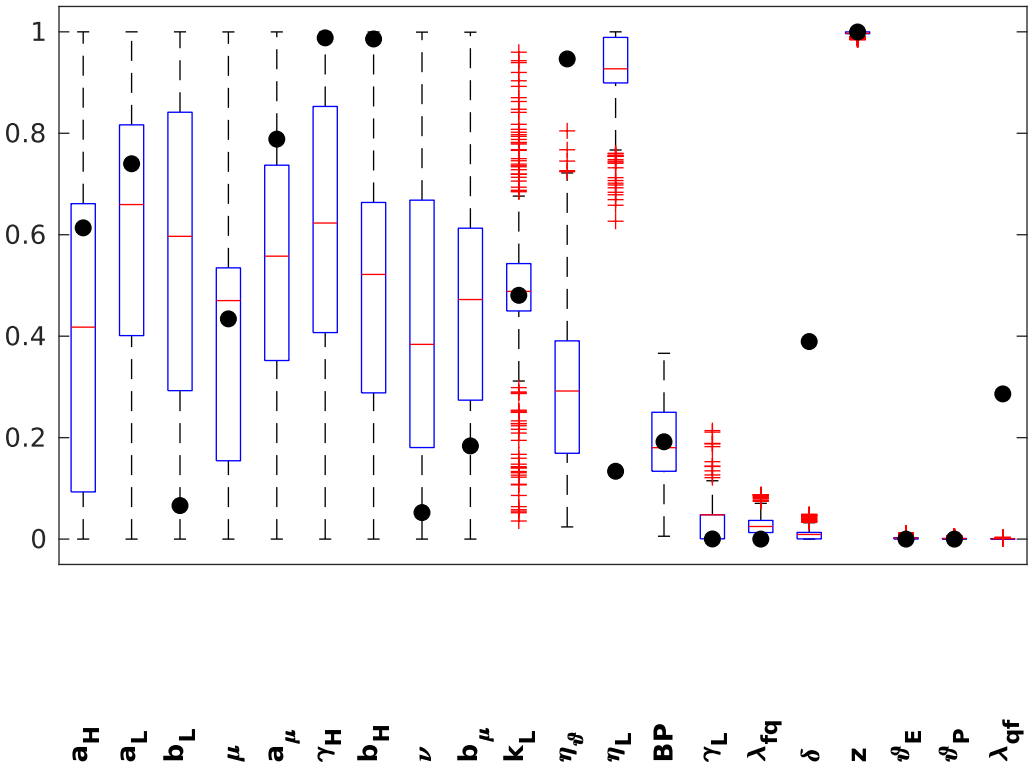
27.2. Estimated parameters with their intervals

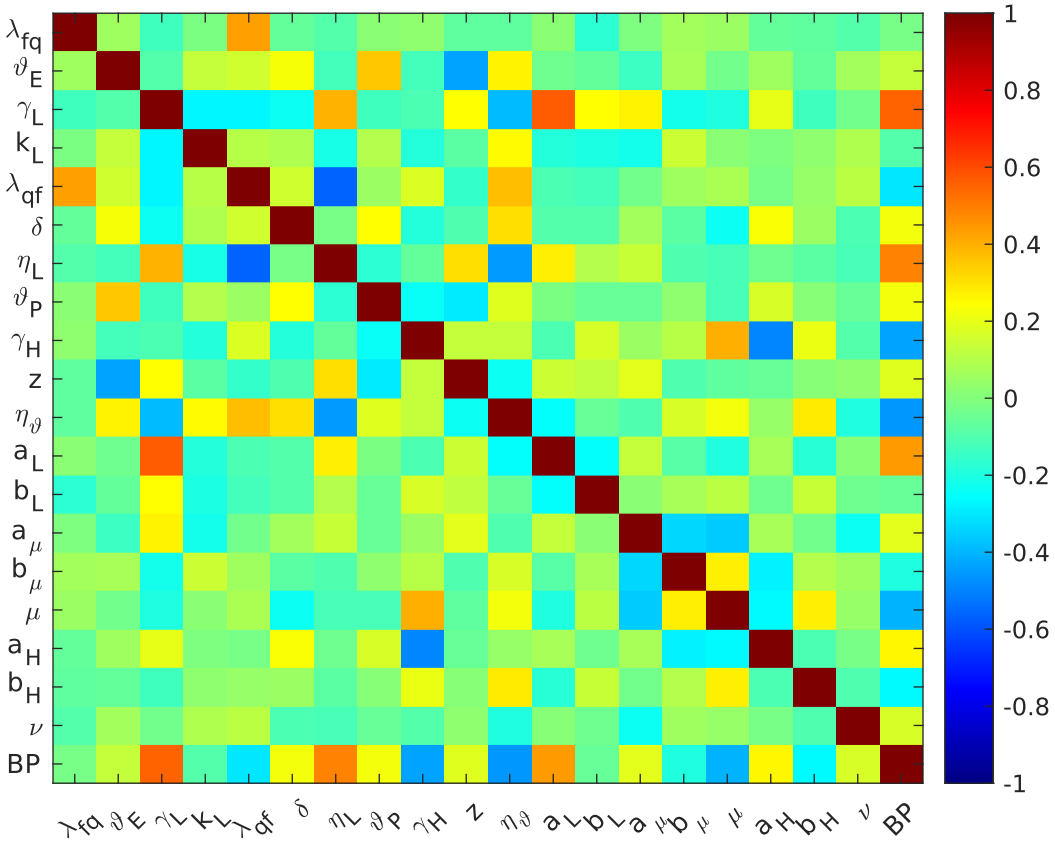
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

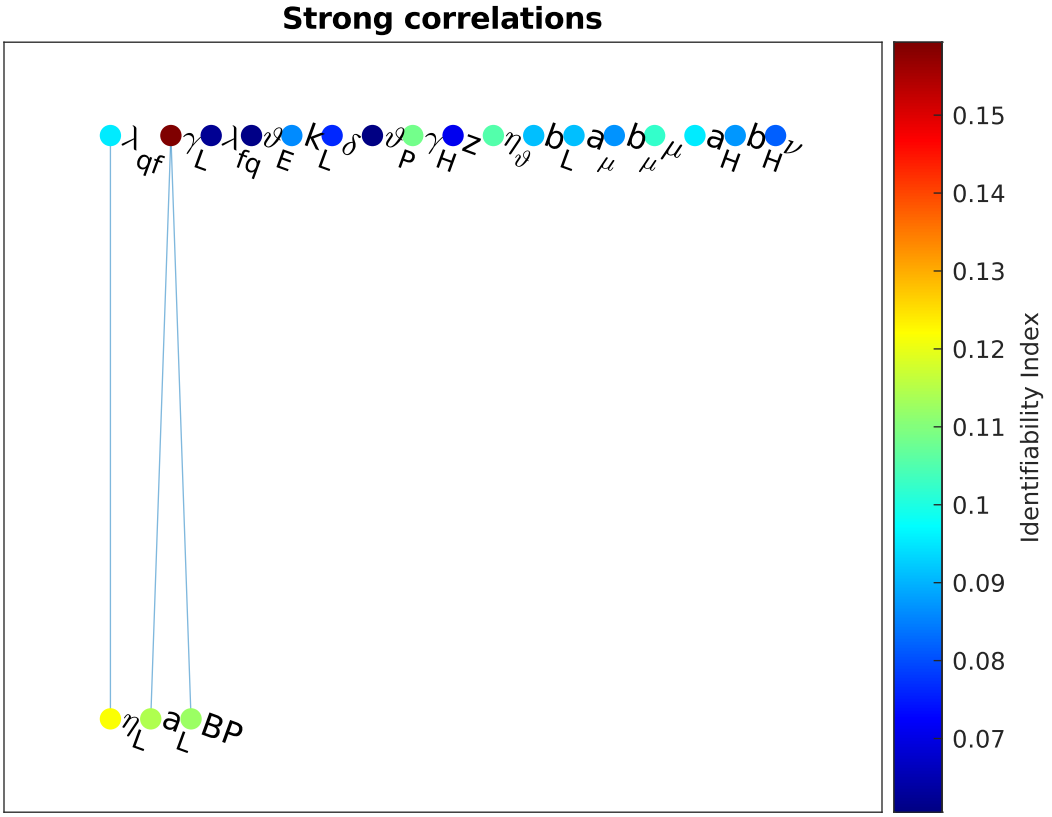
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0'	'0.0249'	'0'	'0.0624'
\vartheta_E	'0'	'0'	'0.0022'	'0'	'0.061'
\gamma_L	'0.0001'	'0.0003'	'0.048'	'0.0003'	'0.1594'
k_L	'3.7524'	'5.8425'	'5.3948'	'5.3254'	'0.086'
\lambda_{qf}	'0.0963'	'0.2996'	'0.0006'	'0.2862'	'0.0956'
\delta	'0.0475'	'0.0585'	'0.0014'	'0.0584'	'0.0765'
\eta_L	'0.1087'	'0.3421'	'0.927'	'0.1338'	'0.1217'
\vartheta_P	'0'	'0'	'0.0011'	'0'	'0.0605'
\gamma_H	'0.7651'	'1'	'0.6231'	'0.9881'	'0.1085'
z	'27.5245'	'30'	'29.911'	'29.9903'	'0.0712'
\eta_\vartheta	'0.8039'	'0.9568'	'0.292'	'0.9466'	'0.1055'
a_L	'5.9464'	'11.9625'	'10.233'	'11.359'	'0.1144'
b_L	'1.8425'	'3.9041'	'9.3559'	'1.9258'	'0.0913'
a_\mu	'7.9073'	'12.5036'	'8.8086'	'12.0387'	'0.0914'
b_\mu	'3.1268'	'7.6968'	'7.6115'	'3.5721'	'0.0869'
\mu	'0.2222'	'0.4495'	'0.4702'	'0.4342'	'0.1024'
a_H	'7.5773'	'9.8468'	'6.8496'	'9.5901'	'0.0955'
b_H	'12.7017'	'15'	'8.3043'	'14.8028'	'0.0874'
\nu	'25.954'	'34.8569'	'191.9318'	'26.1317'	'0.0818'
BP	'513.5'	'587'	'516.5'	'517.5'	'0.1126'

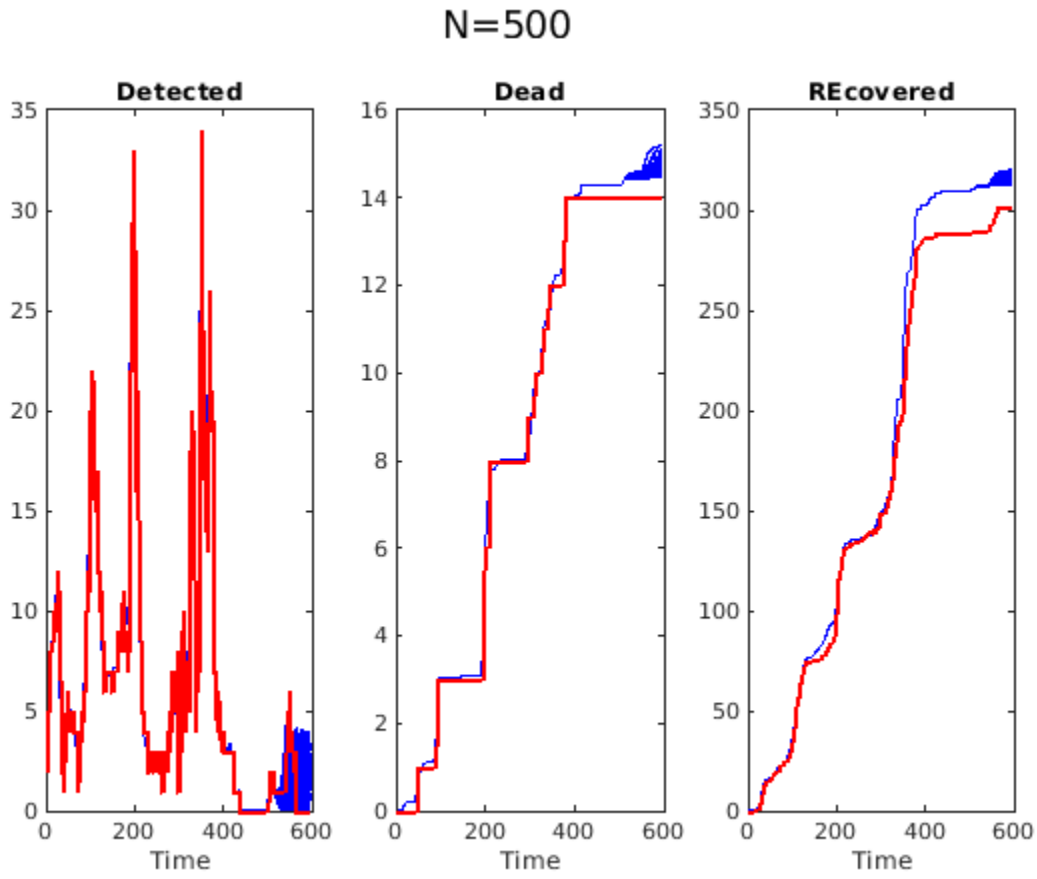
27.3. Identifiability analisys




λ_{fq}
ϑ_E
γ_L
k_L
λ_{qf}
δ
η_L
ϑ_P
γ_H
z
η_ϑ
a_L
b_L
a_μ
b_μ
μ
a_H
b_H
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
Identifiability Index
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07

27.4. Uncertainty analisys



Chapter 28. Extension number28

28.1. Basic information

The extension to be validated consists of the time series from the data597 to the 613. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

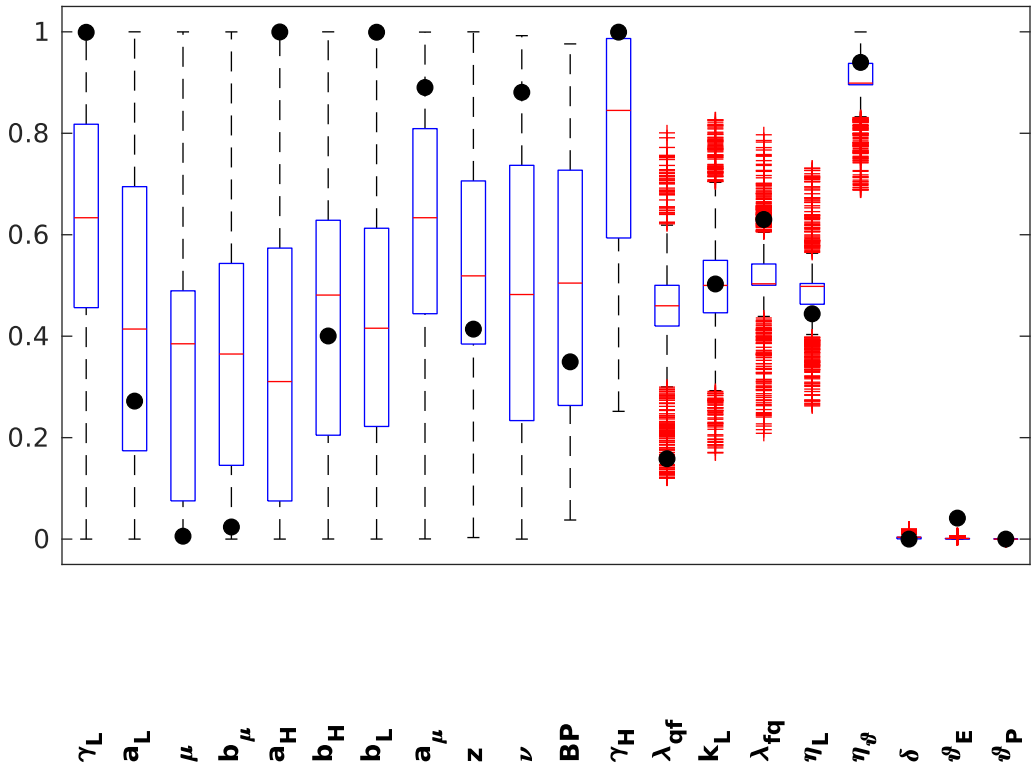
28.2. Estimated parameters with their intervals

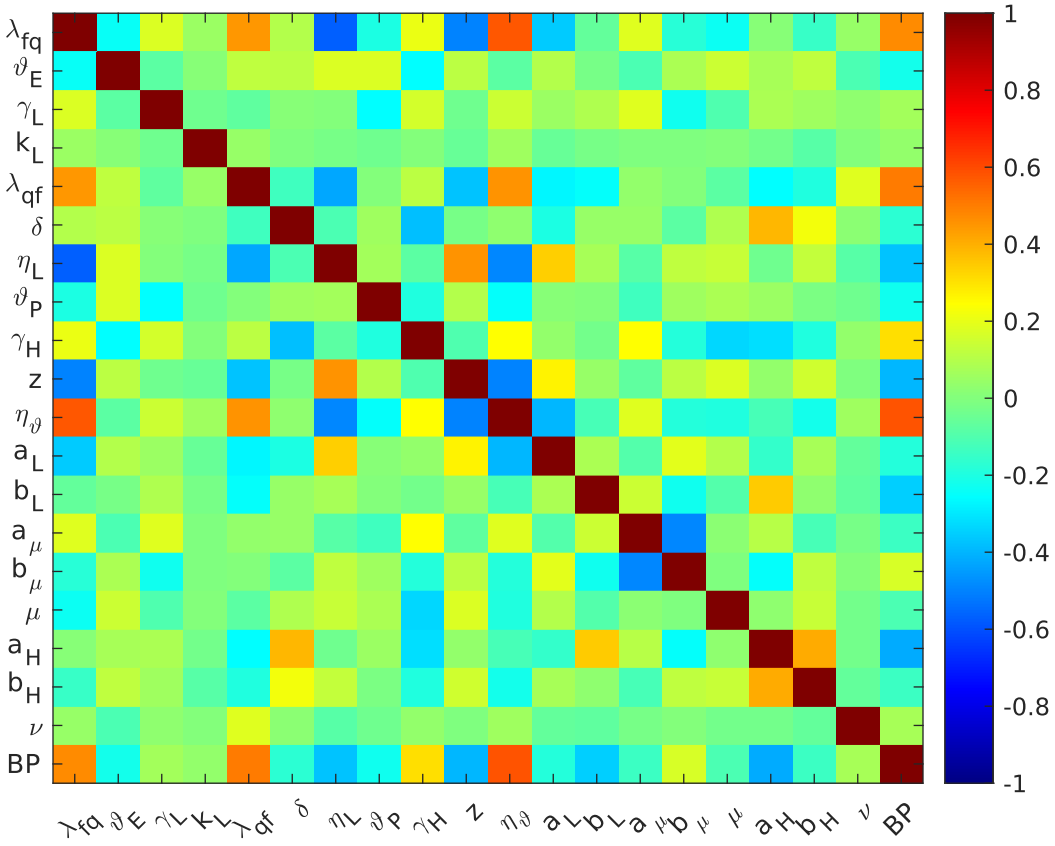
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

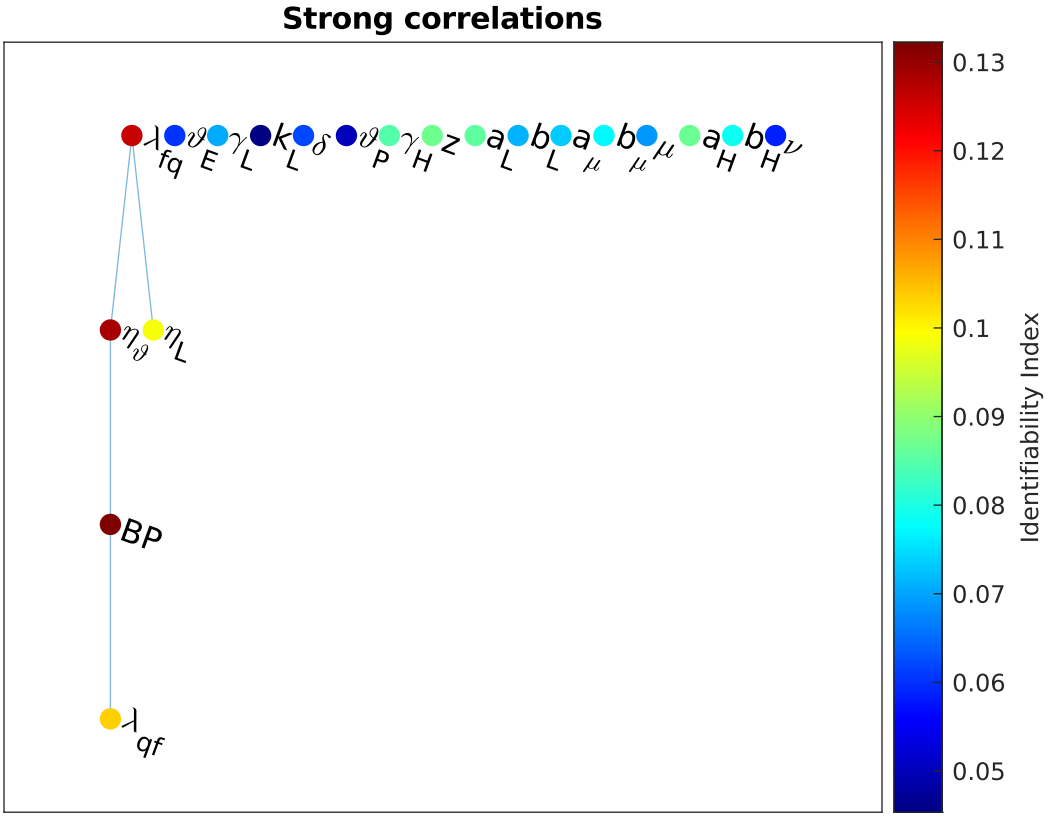
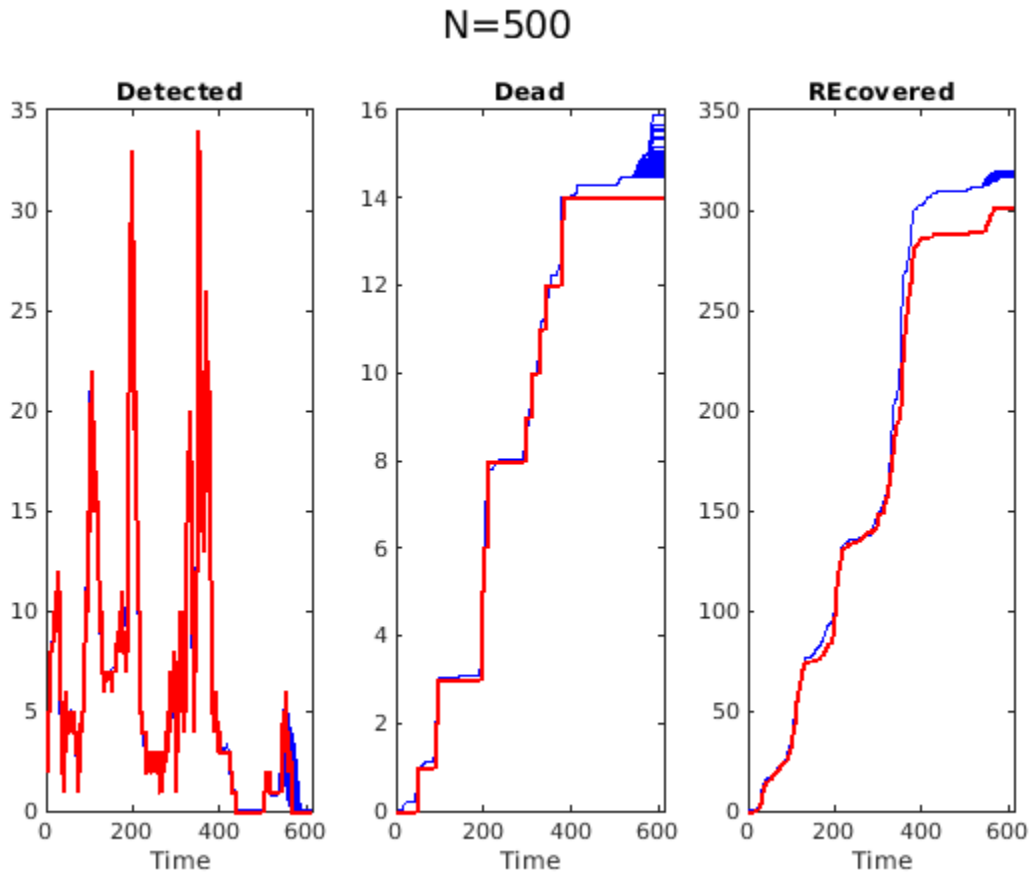
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0.3355'	'1'	'0.5033'	'0.63'	'0.126'
\vartheta_E	'0.0311'	'0.0417'	'0.0012'	'0.0414'	'0.0605'
\gamma_L	'0.6289'	'1'	'0.6335'	'0.9991'	'0.0705'
k_L	'1'	'10'	'5.5007'	'5.5264'	'0.0453'
\lambda_{qf}	'0.0164'	'0.1624'	'0.4599'	'0.1584'	'0.1034'
\delta	'0'	'0'	'0.0006'	'0'	'0.0622'
\eta_L	'0'	'0.9594'	'0.4982'	'0.4442'	'0.0987'
\vartheta_P	'0'	'0'	'0'	'0'	'0.0504'
\gamma_H	'0.2'	'1'	'0.8451'	'0.9994'	'0.0848'
z	'0'	'27.9394'	'15.5675'	'12.4175'	'0.0871'
\eta_\vartheta	'0.4291'	'1'	'0.8989'	'0.9397'	'0.1287'
a_L	'3.6373'	'4.9397'	'6.7973'	'4.8087'	'0.086'
b_L	'10.0947'	'15'	'6.8199'	'14.9888'	'0.0715'
a_\mu	'1'	'15'	'9.8695'	'13.4634'	'0.0733'
b_\mu	'1'	'15'	'6.1078'	'1.3343'	'0.0773'
\mu	'0'	'0.0129'	'0.385'	'0.0057'	'0.0689'
a_H	'1.28'	'15'	'5.3476'	'14.9966'	'0.0869'
b_H	'1'	'15'	'7.7349'	'6.6058'	'0.0789'
\nu	'51.1163'	'500'	'241.0714'	'440.3772'	'0.0587'
BP	'540.4969'	'546.1807'	'556.935'	'542.4999'	'0.1323'

28.3. Identifiability analisys




λfq
ϑE
γL
kL
λqf
δ
ηL
ϑP
γH
z
ηϑ
aL
bL
aμ
bμ
μ
aH
bH
ν
BP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1


Strong correlations
λ_{fq} ϑ_{E} γ_{L} k_{L} δ ϑ_{P} γ_{H} z a_{L} b_{L} a_{μ} b_{μ} μ a_{H} b_{H} ν
η_{ϑ} η_{L}
BP
λ_{qf}
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
Identifiability Index

28.4. Uncertainty analisys