

Validation process forVAUPES

The epidemiology research group, EAFIT

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Chapter 1. Extension number1

1.1. Basic information

The extension to be validated consists of the time series from the data1 to the 33. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

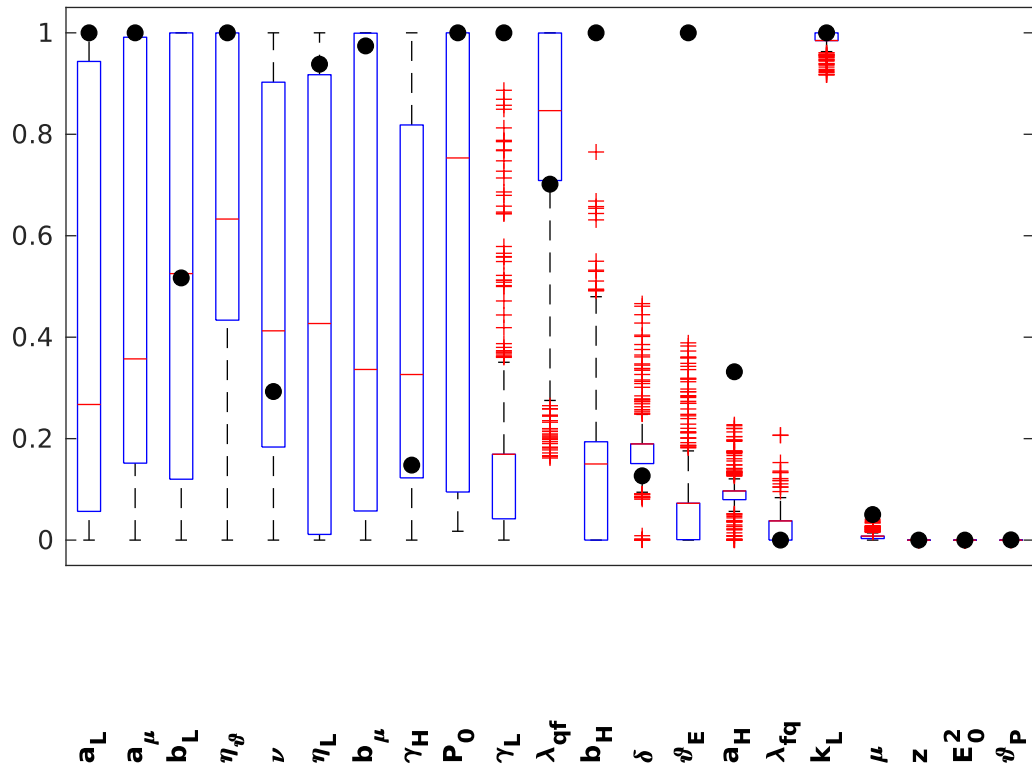
1.2. Estimated parameters with their intervals

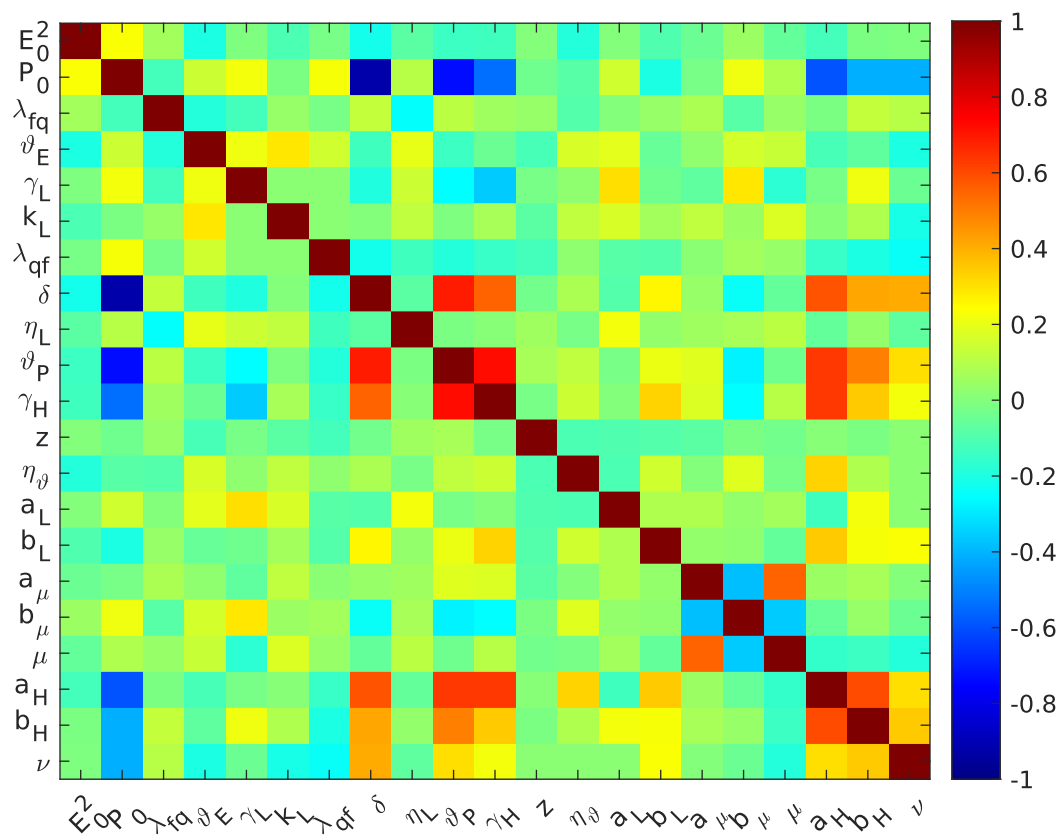
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

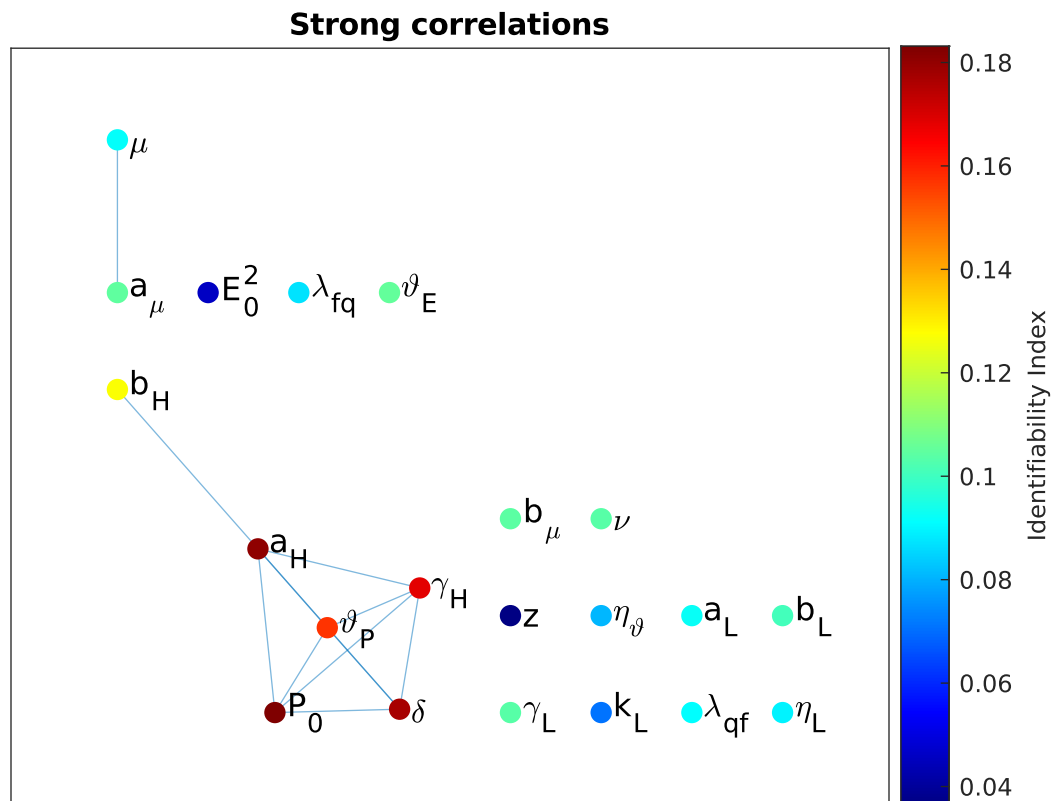
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
E^2_0	'0'	'0'	'0.0001'	'0'	'0.0461'
P_0	'319.2099'	'400'	'301.3366'	'400'	'0.1831'
λ_{fq}	'0'	'0'	'0.038'	'0'	'0.0875'
ϑ_E	'0.025'	'1'	'0.0727'	'1'	'0.1055'
γ_L	'0.1757'	'1'	'0.1692'	'1'	'0.1038'
k_L	'1'	'10'	'9.8619'	'10'	'0.0713'
λ_{qf}	'0'	'0.9'	'0.8459'	'0.7017'	'0.0914'
δ	'0.0189'	'0.0262'	'0.0285'	'0.019'	'0.1772'
η_L	'0.0975'	'1'	'0.427'	'0.9381'	'0.0896'
ϑ_P	'0.0001'	'0.0006'	'0'	'0.0005'	'0.1573'
γ_H	'0.12'	'0.1498'	'0.3264'	'0.1479'	'0.1683'
z	'0'	'0'	'0'	'0'	'0.0366'
η_{ϑ}	'0.899'	'1'	'0.6329'	'1'	'0.0809'
a_L	'2.9889'	'15'	'4.7428'	'15'	'0.0926'
b_L	'4.7323'	'14.4614'	'8.3549'	'8.2361'	'0.1008'
a_{μ}	'12.2786'	'15'	'6.0012'	'15'	'0.1051'
b_{μ}	'10.9738'	'15'	'5.7093'	'14.6386'	'0.1046'
μ	'0.0343'	'0.0513'	'0.0079'	'0.0504'	'0.0918'
a_H	'3.8365'	'6.0903'	'2.3569'	'5.6458'	'0.1805'
b_H	'8.4252'	'15'	'3.1045'	'15'	'0.1276'
ν	'121.5847'	'500'	'206.2669'	'146.437'	'0.104'

1.3. Identifiability analysys

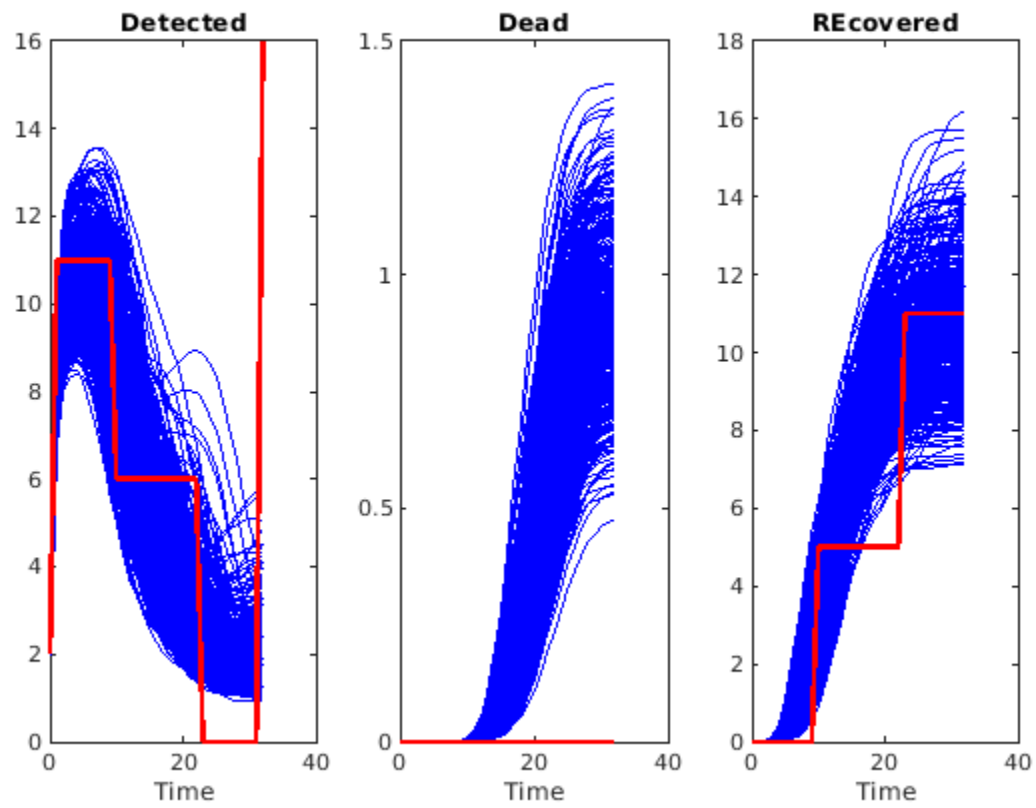






1.4. Uncertainty analysys

N=500



Chapter 2. Extension number2

2.1. Basic information

The extension to be validated consists of the time series from the data33 to the 63. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

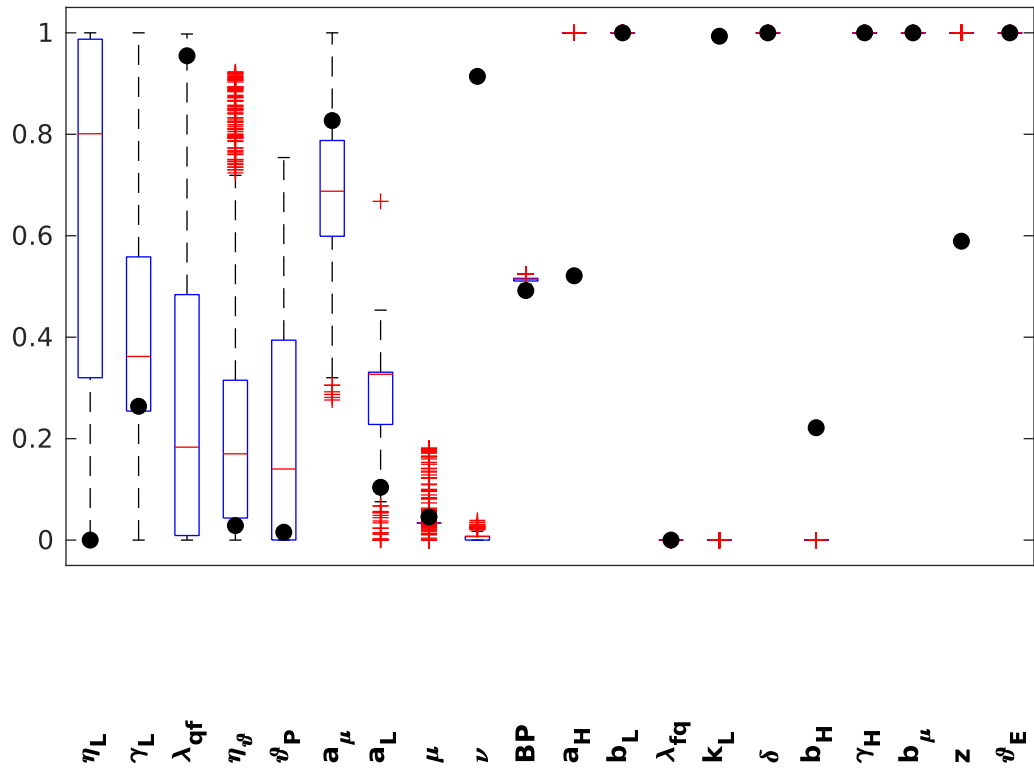
2.2. Estimated parameters with their intervals

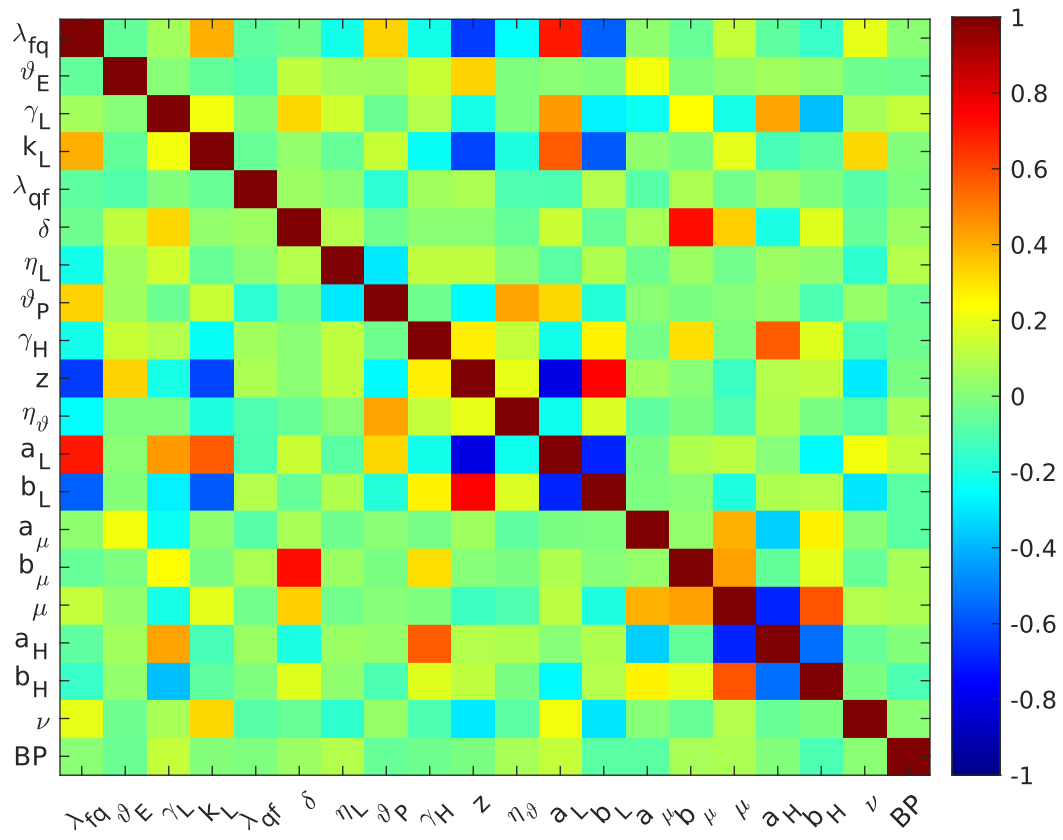
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

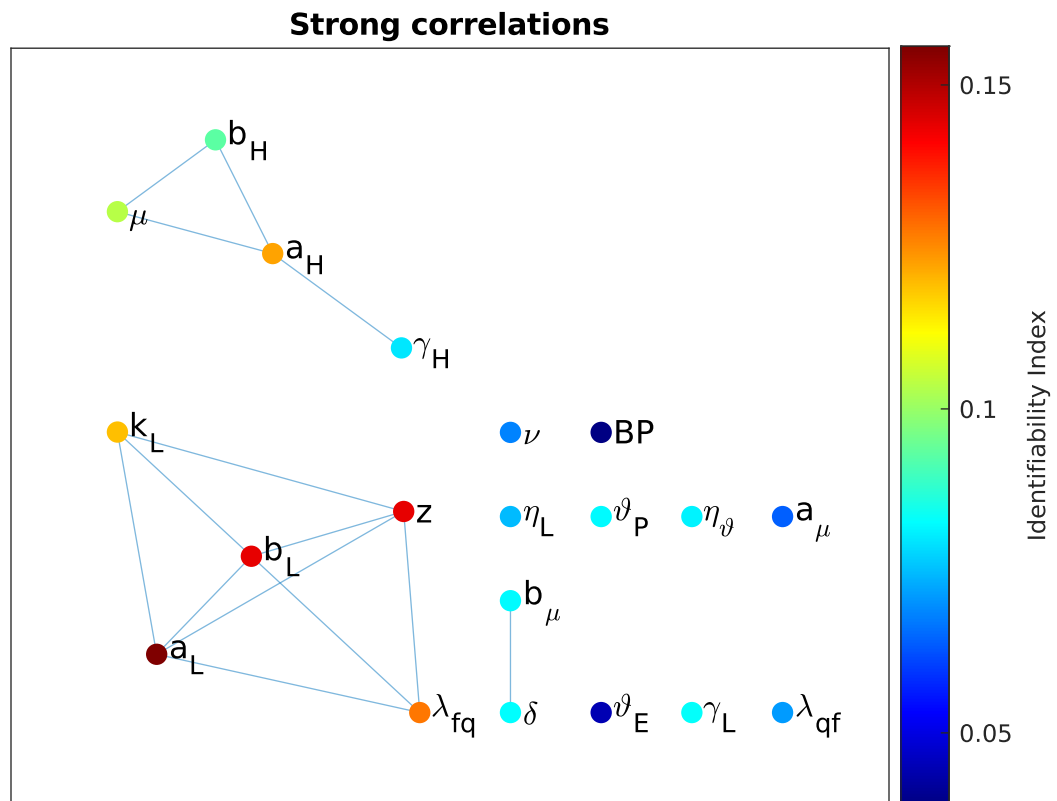
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0'	'0.0002'	'0'	'0.0001'	'0.1273'
ϑ_E	'0.9813'	'1'	'1'	'1'	'0.0449'
γ_L	'0.2219'	'0.8106'	'0.3621'	'0.2638'	'0.083'
k_L	'1'	'10'	'1'	'9.9396'	'0.1193'
λ_{qf}	'0'	'1'	'0.1832'	'0.9547'	'0.071'
δ	'0.015'	'0.15'	'0.15'	'0.15'	'0.0827'
η_L	'0'	'0'	'0.8011'	'0'	'0.0749'
ϑ_P	'0'	'0.0349'	'0.1402'	'0.0155'	'0.082'
γ_H	'0.2593'	'1'	'1'	'1'	'0.0798'
z	'12.0596'	'18.1908'	'30'	'17.6766'	'0.1438'
η_{ϑ}	'0'	'0.0643'	'0.1701'	'0.0286'	'0.0812'
a_L	'2.217'	'4.6171'	'5.5768'	'2.4571'	'0.156'
b_L	'4.794'	'15'	'15'	'15'	'0.1437'
a_{μ}	'3.504'	'15'	'10.6286'	'12.578'	'0.0645'
b_{μ}	'1'	'15'	'15'	'15'	'0.0822'
μ	'0'	'0.1024'	'0.0333'	'0.0455'	'0.1038'
a_H	'4.7657'	'15'	'15'	'8.2951'	'0.1223'
b_H	'1'	'4.5482'	'1'	'4.1018'	'0.0933'
ν	'0'	'500'	'3.6408'	'457.0683'	'0.0686'
BP	'31.5'	'31.5'	'32.8942'	'31.5'	'0.039'

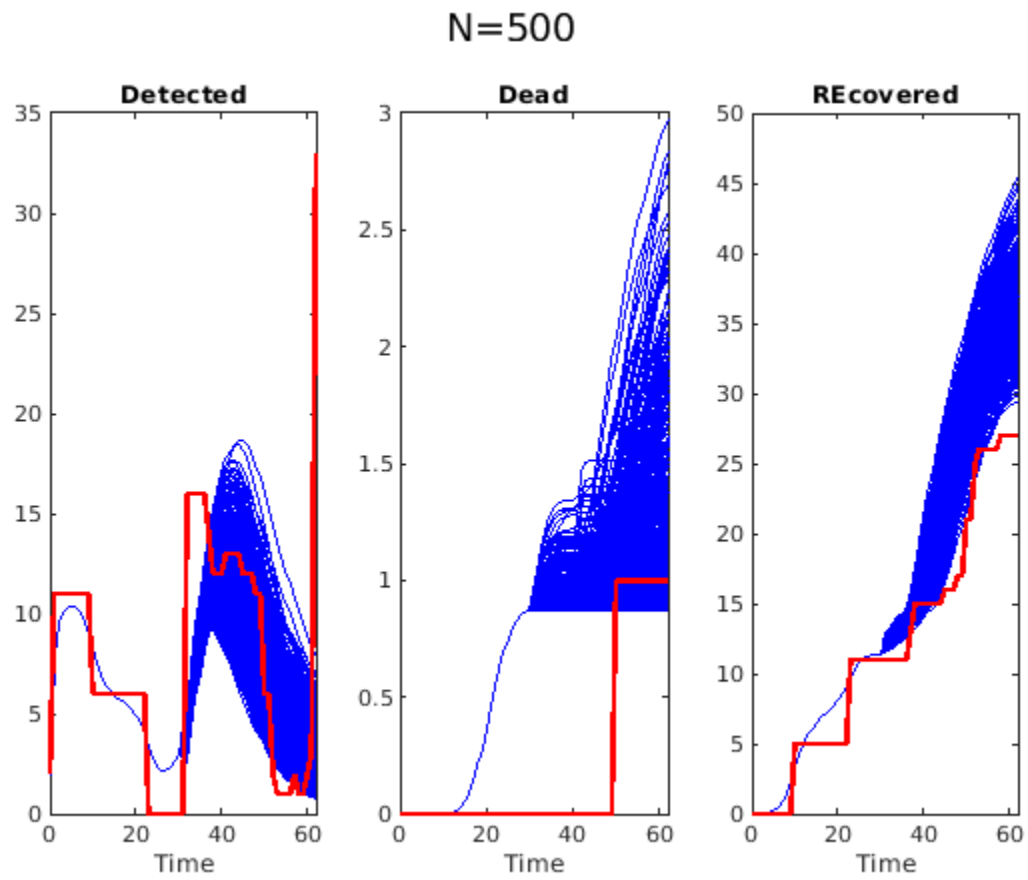
2.3. Identifiability analysis







2.4. Uncertainty analysis



Chapter 3. Extension number3

3.1. Basic information

The extension to be validated consists of the time series from the data63 to the 91. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

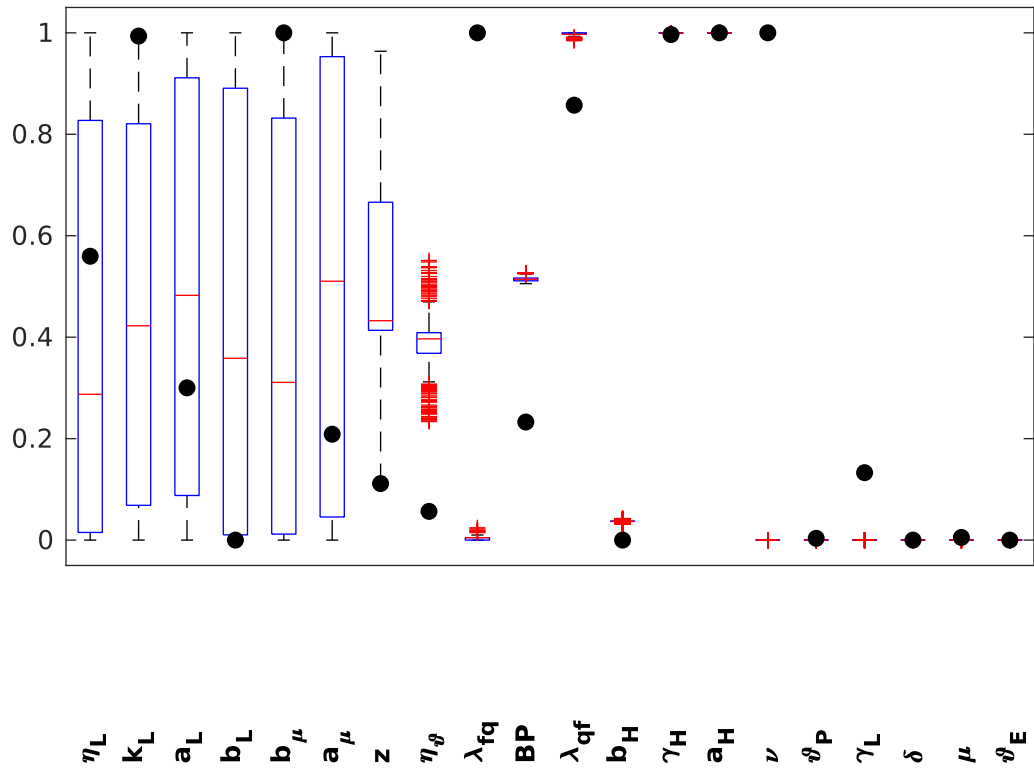
3.2. Estimated parameters with their intervals

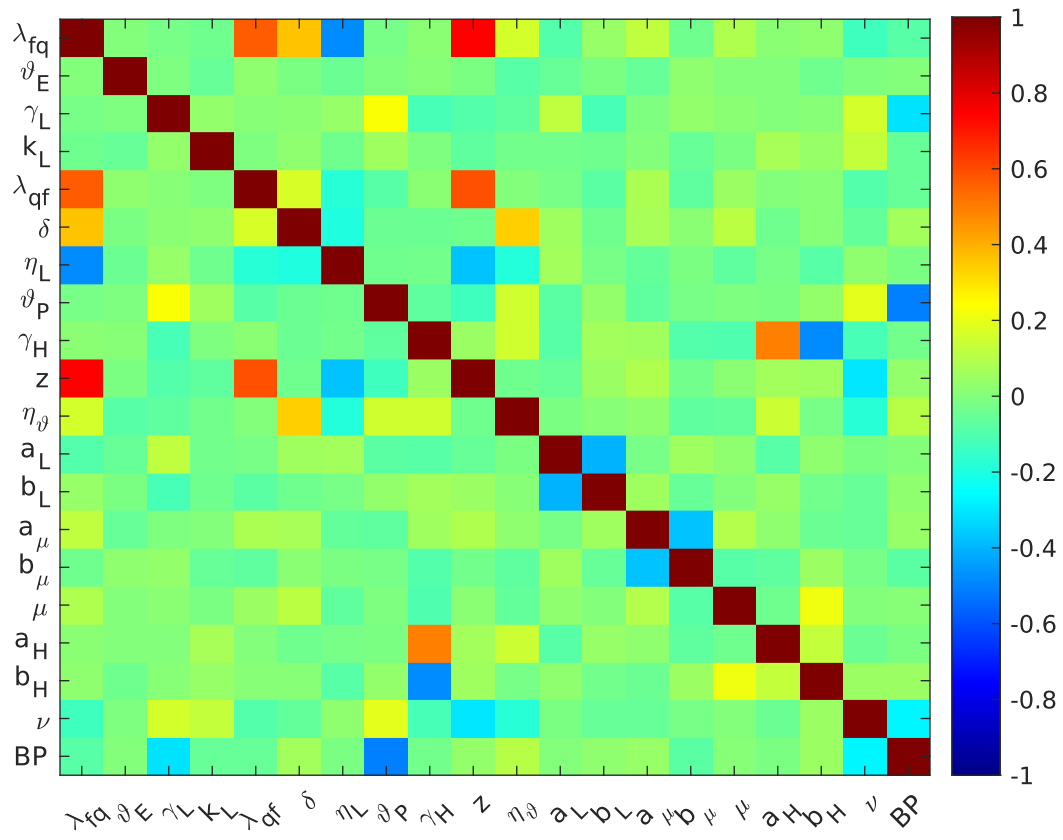
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

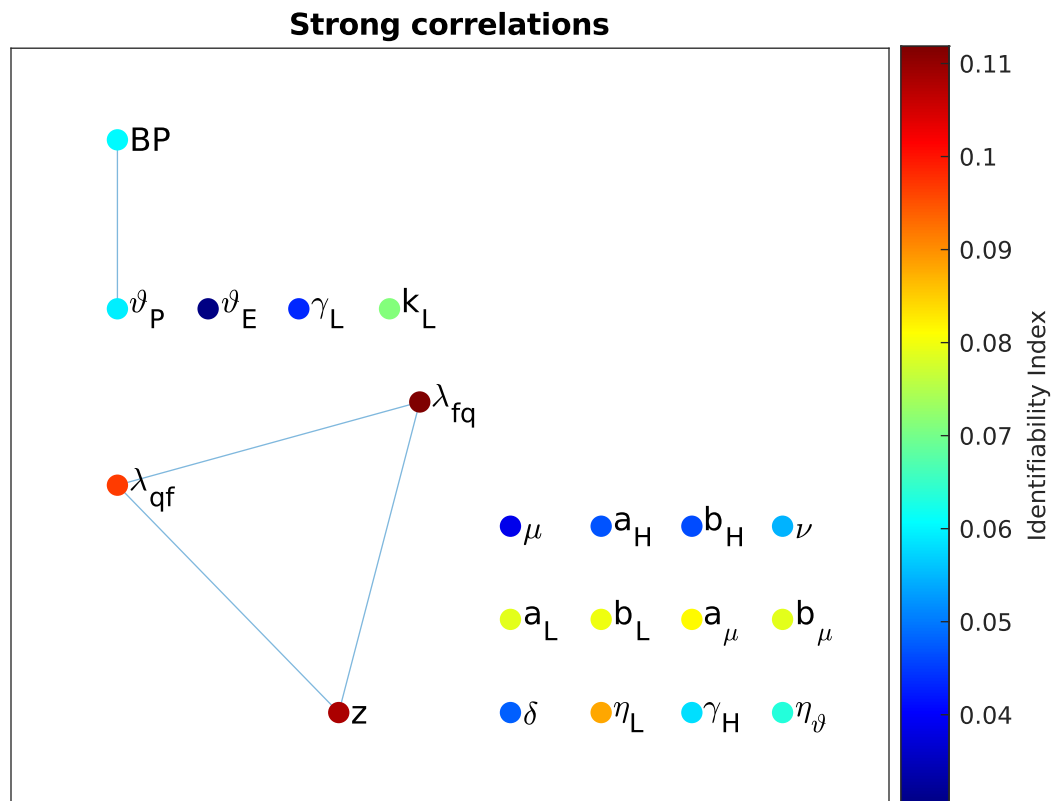
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.7338'	'1'	'0.0048'	'1'	'0.1119'
ϑ_E	'0'	'0'	'0'	'0'	'0.0304'
γ_L	'0.0372'	'0.1462'	'0'	'0.1329'	'0.0435'
k_L	'1'	'10'	'4.8023'	'9.9426'	'0.0712'
λ_{qf}	'0.649'	'0.8739'	'0.9971'	'0.8574'	'0.0969'
δ	'0'	'0'	'0'	'0'	'0.048'
η_L	'0'	'1'	'0.2875'	'0.5596'	'0.0881'
ϑ_P	'0.0034'	'0.1684'	'0'	'0.0035'	'0.0595'
γ_H	'0.4072'	'1'	'0.9996'	'0.9967'	'0.0583'
z	'2.6322'	'4.0289'	'12.9748'	'3.3442'	'0.1082'
η_{ϑ}	'0'	'0.1274'	'0.3967'	'0.0566'	'0.0635'
a_L	'4.6887'	'9.7957'	'7.7548'	'5.2028'	'0.0791'
b_L	'1'	'2.1402'	'6.0183'	'1'	'0.0799'
a_{μ}	'1'	'15'	'8.1443'	'3.9225'	'0.0813'
b_{μ}	'1'	'15'	'5.352'	'15'	'0.0791'
μ	'0'	'0.0117'	'0'	'0.0052'	'0.0389'
a_H	'1.966'	'15'	'14.9996'	'15'	'0.047'
b_H	'1'	'15'	'1.5185'	'1'	'0.0466'
ν	'11.1074'	'500'	'0.0004'	'499.9988'	'0.0547'
BP	'43.9442'	'46.5043'	'62.82'	'46.5'	'0.0604'

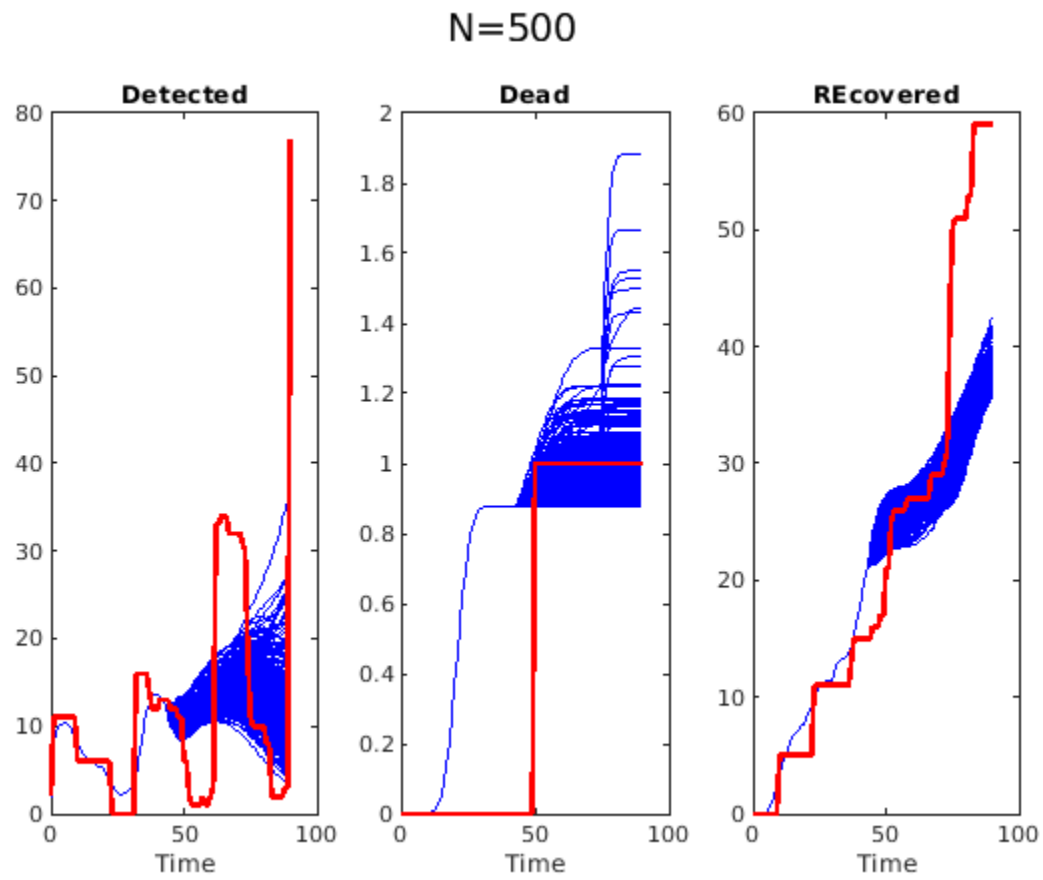
3.3. Identifiability analysis







3.4. Uncertainty analysis



Chapter 4. Extension number4

4.1. Basic information

The extension to be validated consists of the time series from the data91 to the 118. The status of the validation is: COMPLETED.

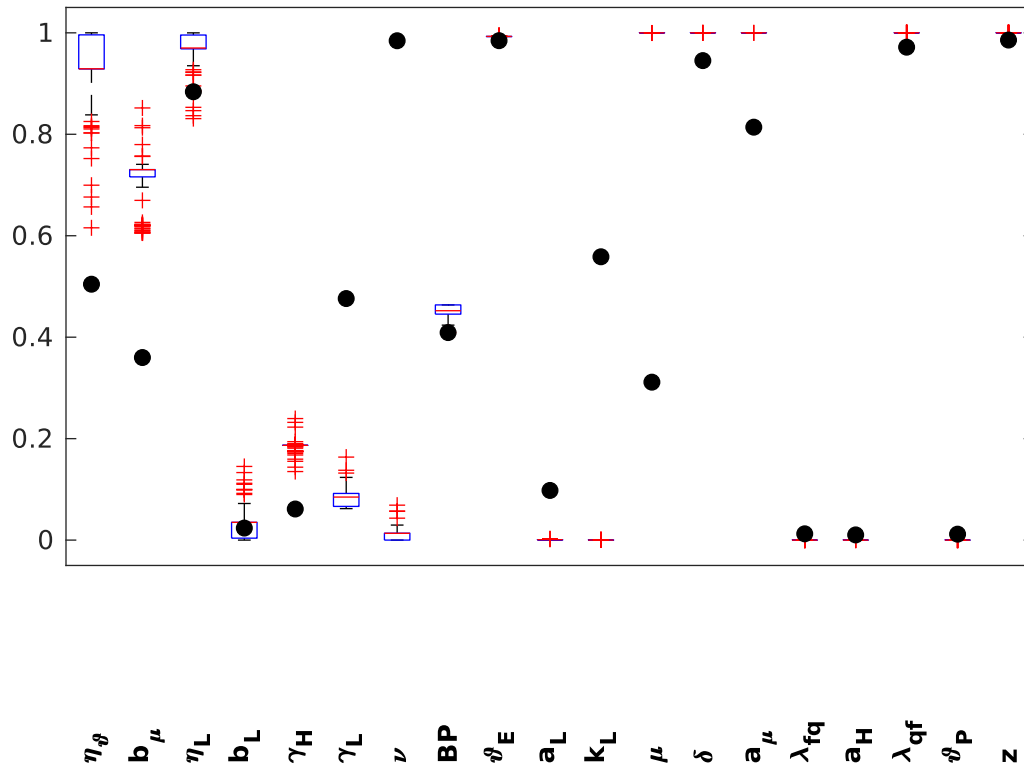
The number of estimations needed to perform the validation was8000.

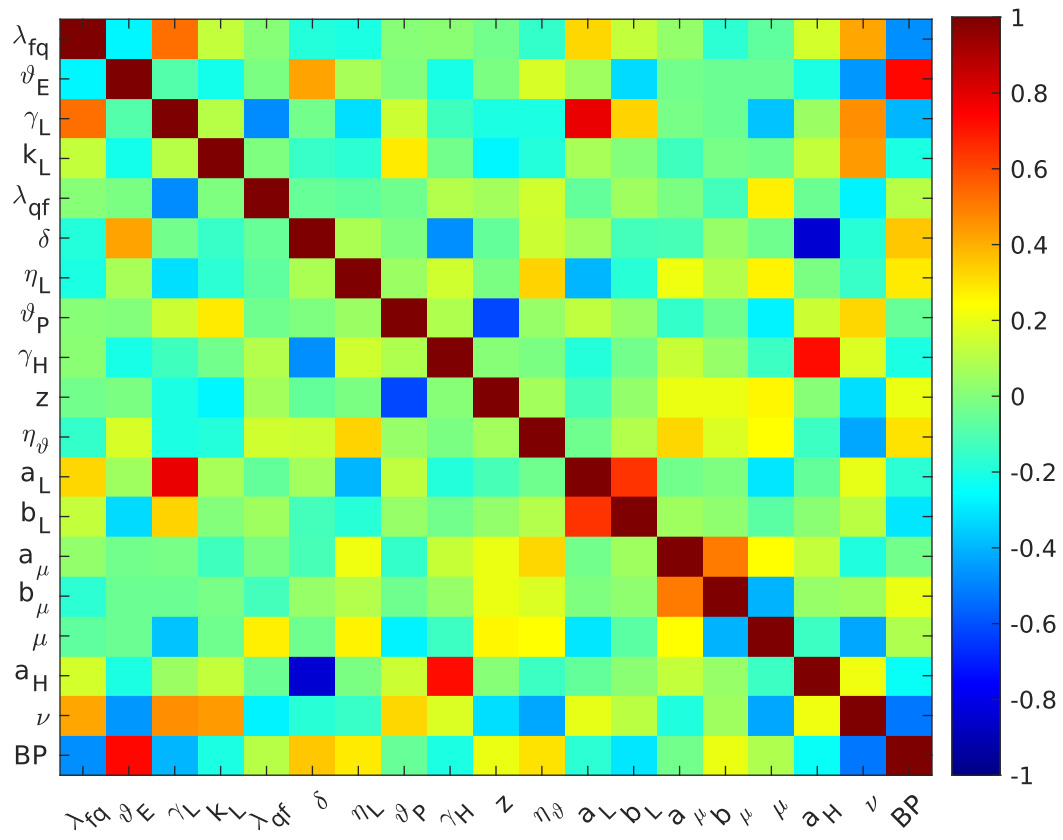
4.2. Estimated parameters with their intervals

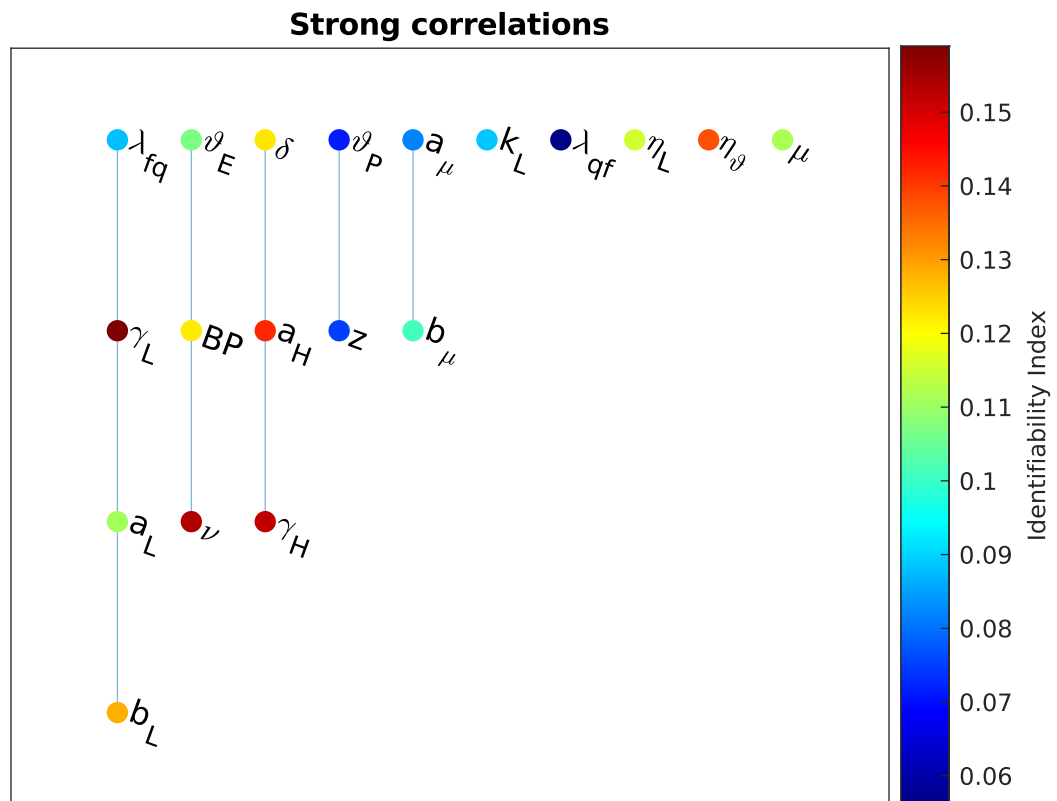
It was necessary to fix 1 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0'	'0.0099'	'0'	'0.0124'	'0.0882'
ϑ_E	'0.9536'	'1'	'0.9929'	'0.9845'	'0.107'
γ_L	'0.0405'	'0.1297'	'0.0851'	'0.4762'	'0.1589'
k_L	'1'	'1.5203'	'1.001'	'6.0267'	'0.089'
λ_{qf}	'0.9911'	'1'	'1'	'0.9717'	'0.0561'
δ	'0.1383'	'0.15'	'0.15'	'0.1418'	'0.1226'
η_L	'0.9019'	'1'	'0.9684'	'0.8838'	'0.1155'
ϑ_P	'0'	'0.0004'	'0'	'0.0117'	'0.0717'
γ_H	'0.1114'	'0.2622'	'0.1868'	'0.0613'	'0.1525'
z	'29.9894'	'30'	'30'	'29.5725'	'0.0751'
η_{ϑ}	'0.8593'	'0.9981'	'0.9287'	'0.5044'	'0.1379'
a_L	'1'	'1.3014'	'1.0107'	'2.3706'	'0.1109'
b_L	'1'	'2.5181'	'1.4911'	'1.3321'	'0.1281'
a_{μ}	'14.7498'	'15'	'14.9997'	'12.3962'	'0.0821'
b_{μ}	'10.7678'	'11.6807'	'11.2243'	'6.0386'	'0.1015'
μ	'0.9264'	'1'	'0.9999'	'0.3113'	'0.1118'
a_H	'1'	'2.2852'	'1'	'1.1435'	'0.1418'
b_H	'4.9925'	'4.9925'	'4.9925'	'4.9925'	'0'
ν	'0'	'44.1105'	'6.8235'	'492.1925'	'0.154'
BP	'87.5632'	'88.1721'	'87.8676'	'85.5'	'0.1221'

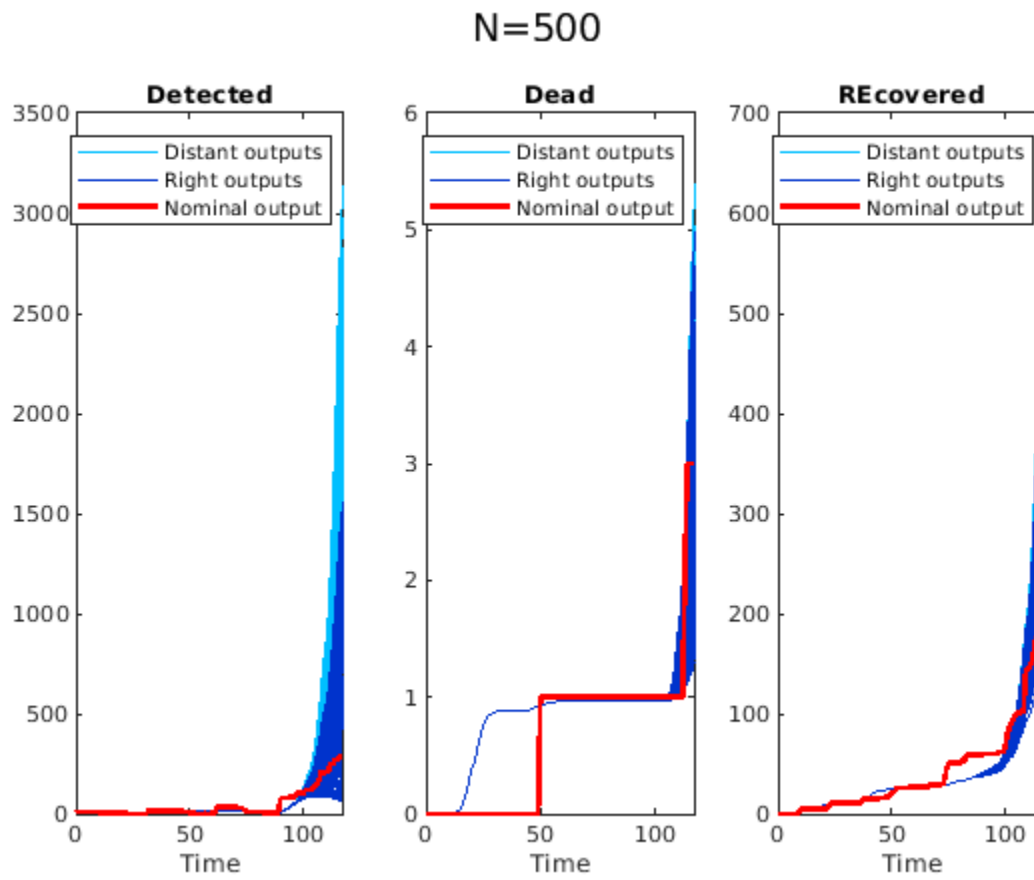
4.3. Identifiability analysis







4.4. Uncertainty analysys



Chapter 5. Extension number5

5.1. Basic information

The extension to be validated consists of the time series from the data118 to the 146. The status of the validation is: COMPLETED.

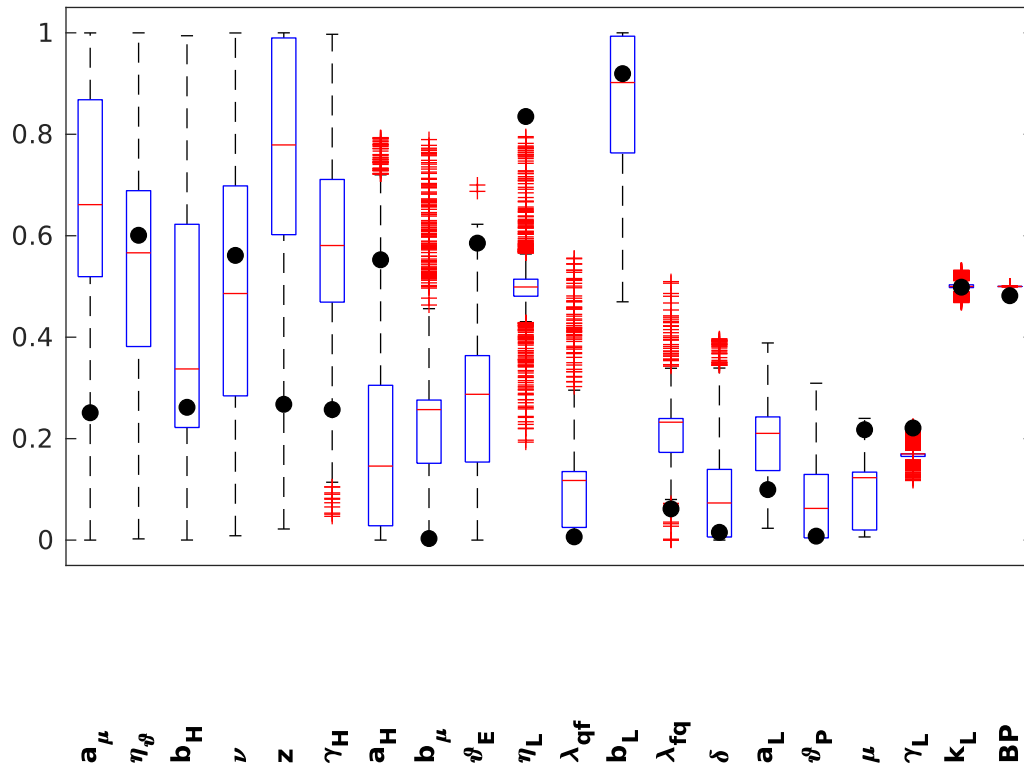
The number of estimations needed to perform the validation was1000.

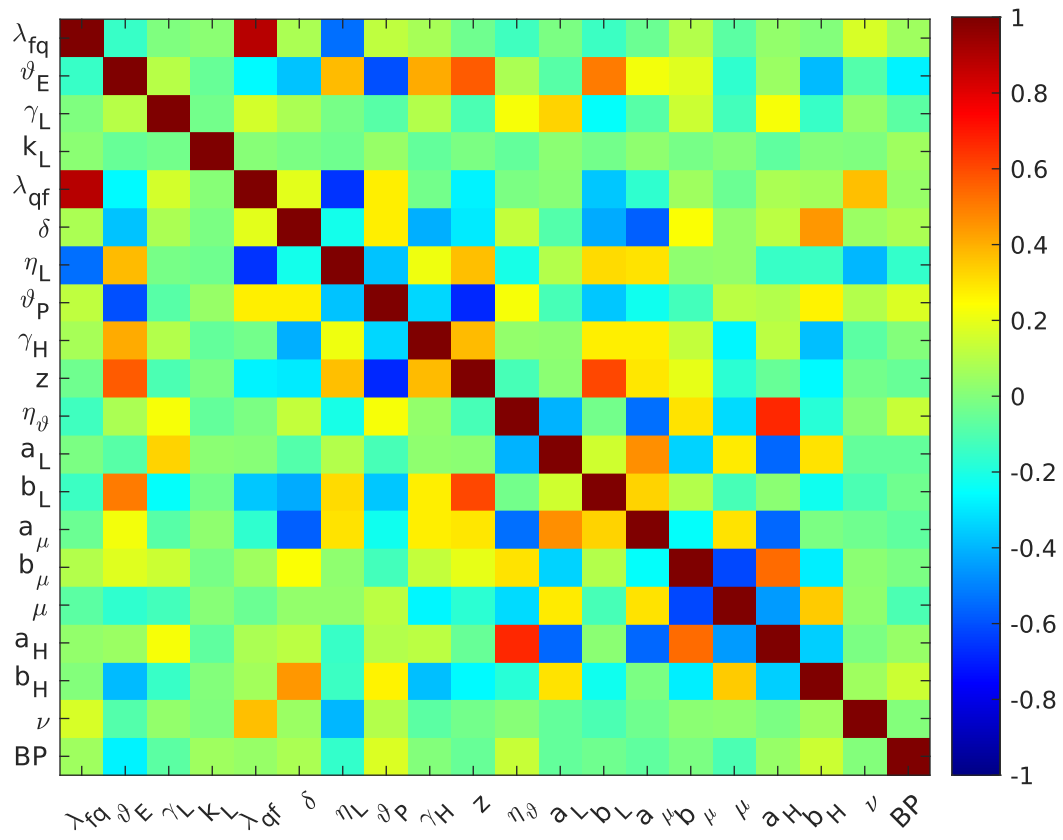
5.2. Estimated parameters with their intervals

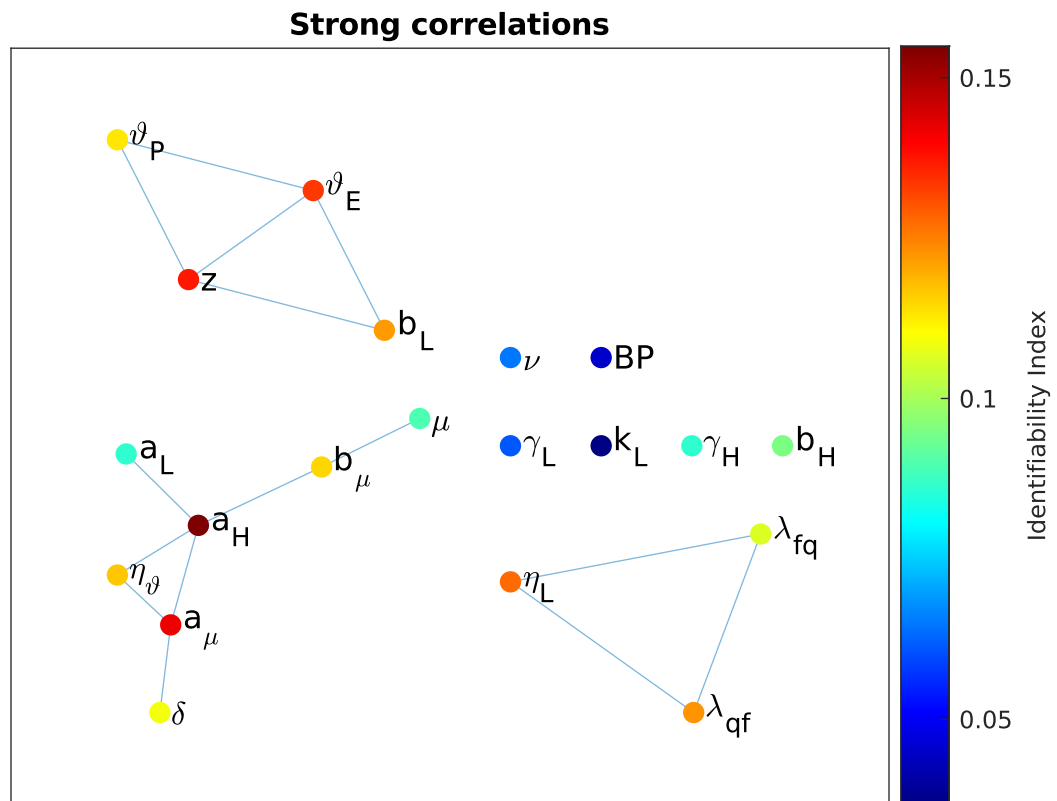
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.2096'	'0.2553'	'0.2324'	'0.0616'	'0.106'
ϑ_E	'0.2775'	'0.2973'	'0.2874'	'0.5854'	'0.1336'
γ_L	'0.1626'	'0.1774'	'0.17'	'0.221'	'0.0615'
k_L	'5.4575'	'5.5423'	'5.4999'	'5.4873'	'0.0368'
λ_{qf}	'0.0942'	'0.1408'	'0.1175'	'0.0065'	'0.1228'
δ	'0.0079'	'0.014'	'0.011'	'0.0023'	'0.109'
η_L	'0.4788'	'0.5191'	'0.499'	'0.835'	'0.1276'
ϑ_P	'0.0564'	'0.0685'	'0.0625'	'0.0078'	'0.1134'
γ_H	'0.5641'	'0.5974'	'0.5807'	'0.2573'	'0.0864'
z	'22.8128'	'23.9275'	'23.3701'	'8.0314'	'0.1372'
η_{ϑ}	'0.5472'	'0.5855'	'0.5663'	'0.6009'	'0.1167'
a_L	'3.8606'	'4.0307'	'3.9456'	'2.3936'	'0.0862'
b_L	'13.3839'	'13.8718'	'13.6278'	'13.8733'	'0.1219'
a_{μ}	'9.9753'	'10.5408'	'10.2581'	'4.5148'	'0.1418'
b_{μ}	'4.3333'	'4.8695'	'4.6014'	'1.0431'	'0.1152'
μ	'0.1158'	'0.1303'	'0.123'	'0.2176'	'0.0897'
a_H	'2.6552'	'3.4303'	'3.0427'	'8.7368'	'0.1549'
b_H	'5.4398'	'6.0073'	'5.7235'	'4.6647'	'0.0952'
ν	'233.1361'	'252.9486'	'243.0424'	'280.6194'	'0.0652'
BP	'118.4785'	'118.5215'	'118.5'	'117.5'	'0.0451'

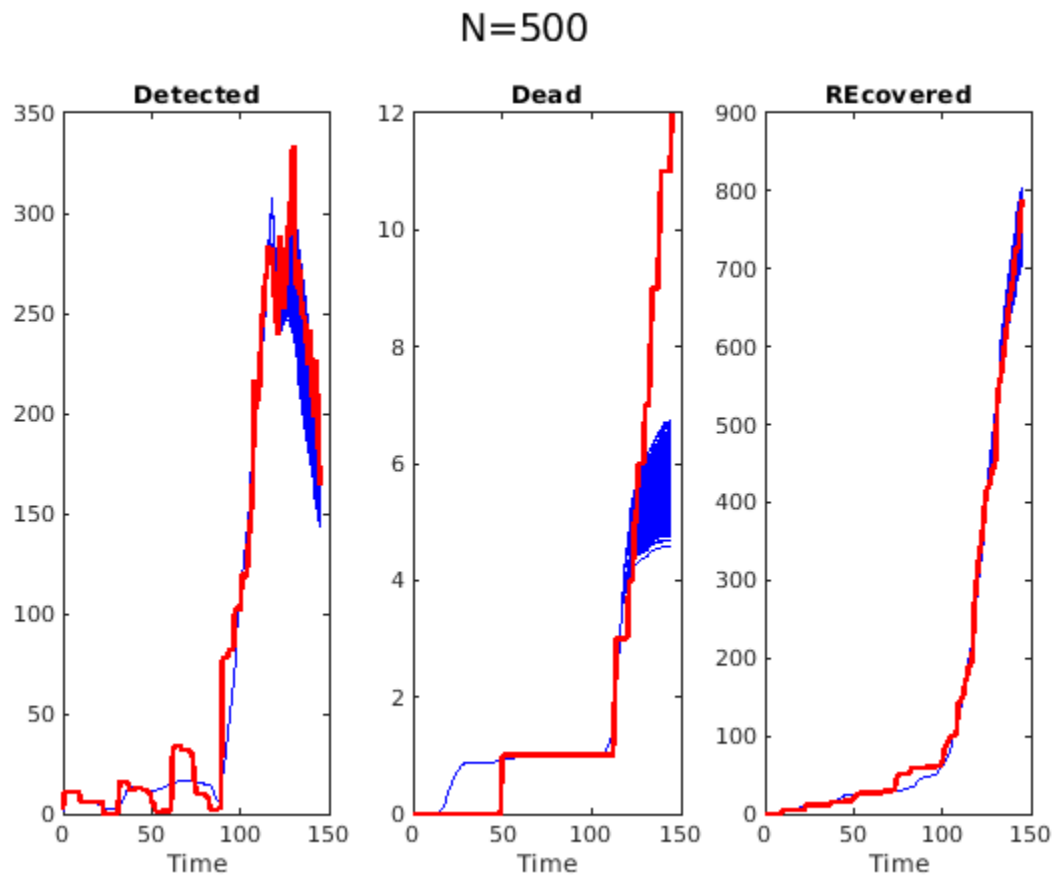
5.3. Identifiability analysys







5.4. Uncertainty analysys



Chapter 6. Extension number6

6.1. Basic information

The extension to be validated consists of the time series from the data146 to the 188. The status of the validation is: COMPLETED.

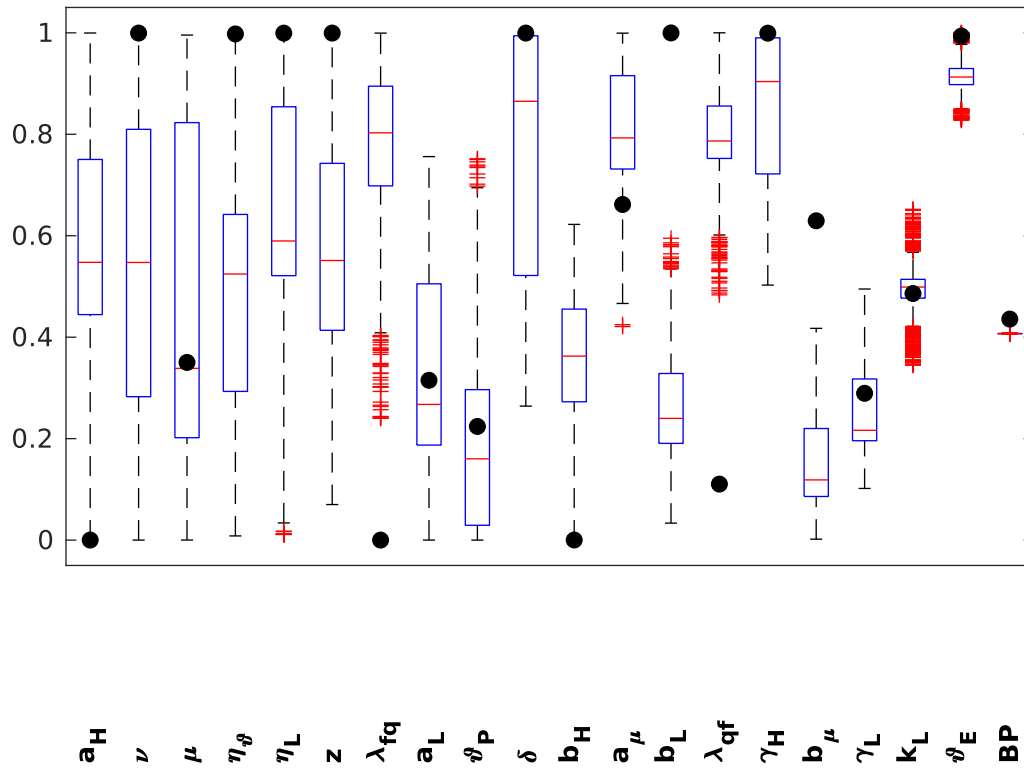
The number of estimations needed to perform the validation was1000.

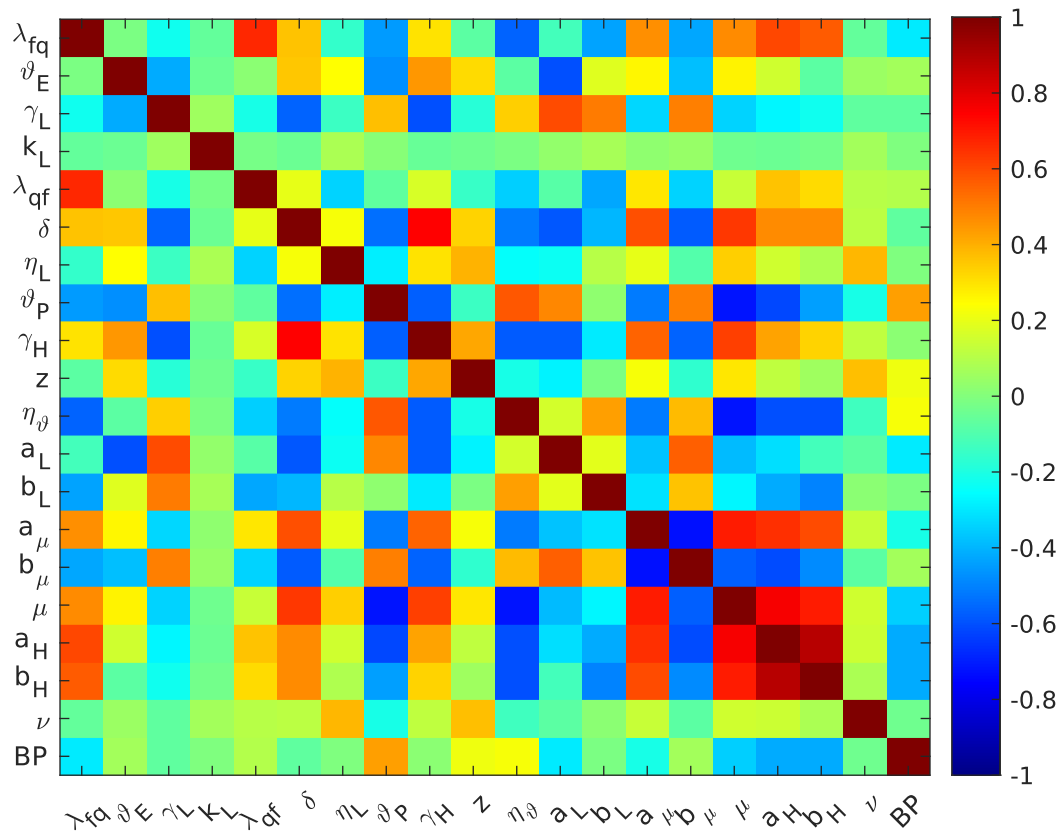
6.2. Estimated parameters with their intervals

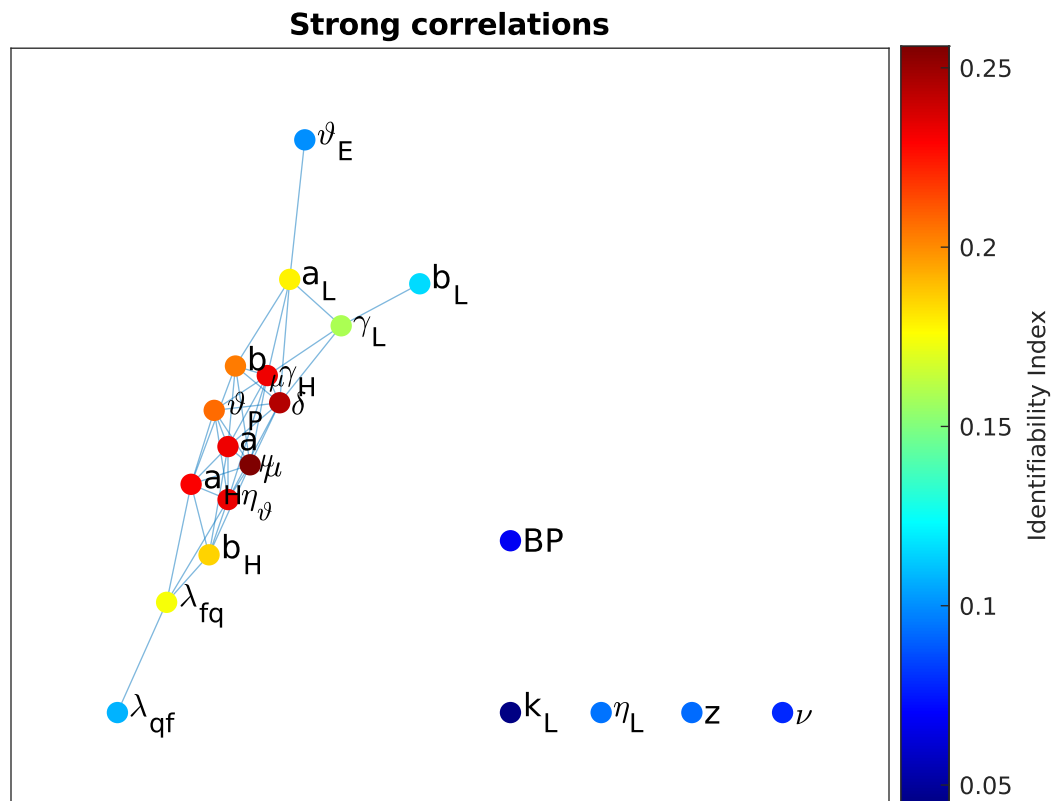
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.7813'	'0.8237'	'0.8025'	'0'	'0.1749'
ϑ_E	'0.9054'	'0.9203'	'0.9128'	'0.9936'	'0.1005'
γ_L	'0.2074'	'0.2258'	'0.2166'	'0.2894'	'0.1591'
k_L	'5.4003'	'5.5788'	'5.4895'	'5.375'	'0.0447'
λ_{qf}	'0.7706'	'0.803'	'0.7868'	'0.1104'	'0.1078'
δ	'0.1262'	'0.1331'	'0.1297'	'0.1499'	'0.2452'
η_L	'0.5705'	'0.6088'	'0.5897'	'0.9994'	'0.0943'
ϑ_P	'0.1455'	'0.1751'	'0.1603'	'0.224'	'0.207'
γ_H	'0.892'	'0.9157'	'0.9038'	'0.9993'	'0.2326'
z	'15.9714'	'17.0983'	'16.5349'	'29.9853'	'0.0934'
η_{ϑ}	'0.5061'	'0.543'	'0.5245'	'0.9978'	'0.2335'
a_L	'4.5206'	'4.97'	'4.7453'	'5.4104'	'0.1792'
b_L	'4.1338'	'4.5858'	'4.3598'	'14.9971'	'0.1158'
a_{μ}	'11.9296'	'12.2638'	'12.0967'	'10.2629'	'0.2327'
b_{μ}	'2.4996'	'2.8253'	'2.6625'	'9.8124'	'0.2039'
μ	'0.313'	'0.3641'	'0.3385'	'0.3503'	'0.256'
a_H	'8.427'	'8.9049'	'8.6659'	'1.0015'	'0.2298'
b_H	'5.9321'	'6.2239'	'6.078'	'1.0027'	'0.1851'
ν	'261.7207'	'285.5999'	'273.6603'	'499.7476'	'0.079'
BP	'146.3587'	'146.6413'	'146.5'	'148.4998'	'0.0681'

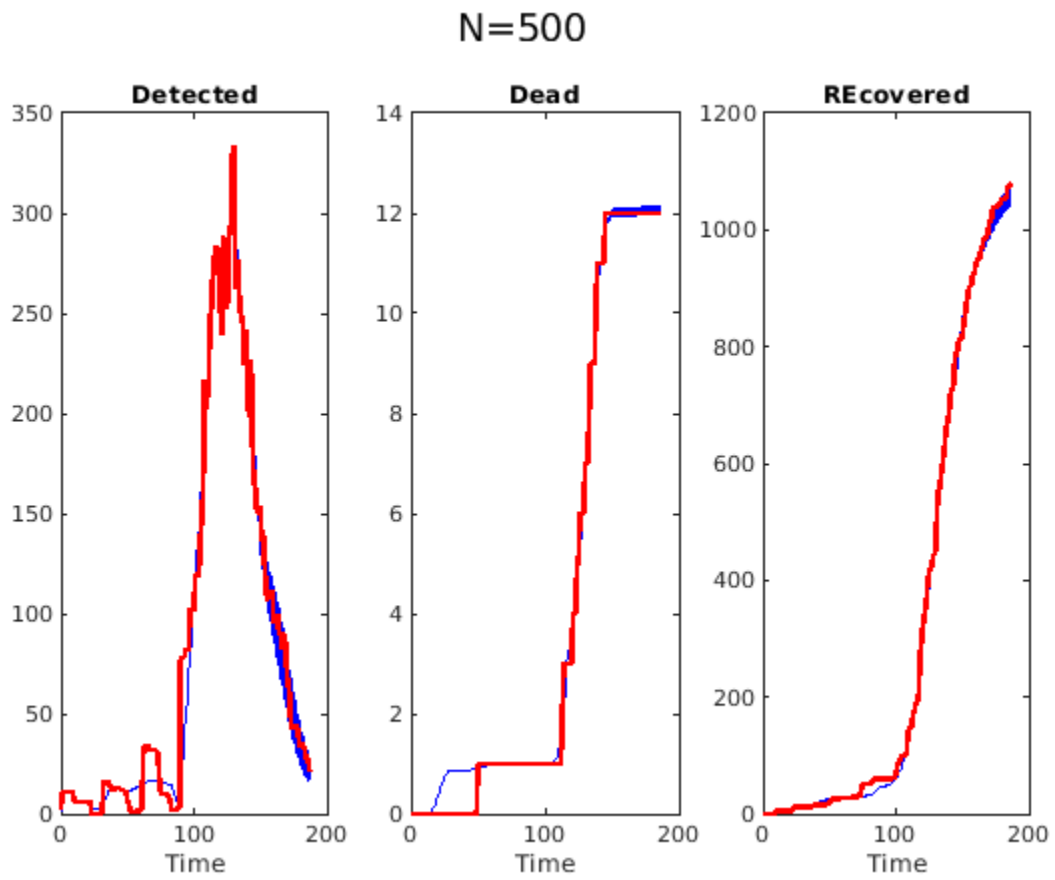
6.3. Identifiability analysis







6.4. Uncertainty analysis



Chapter 7. Extension number7

7.1. Basic information

The extension to be validated consists of the time series from the data188 to the 279. The status of the validation is: COMPLETED.

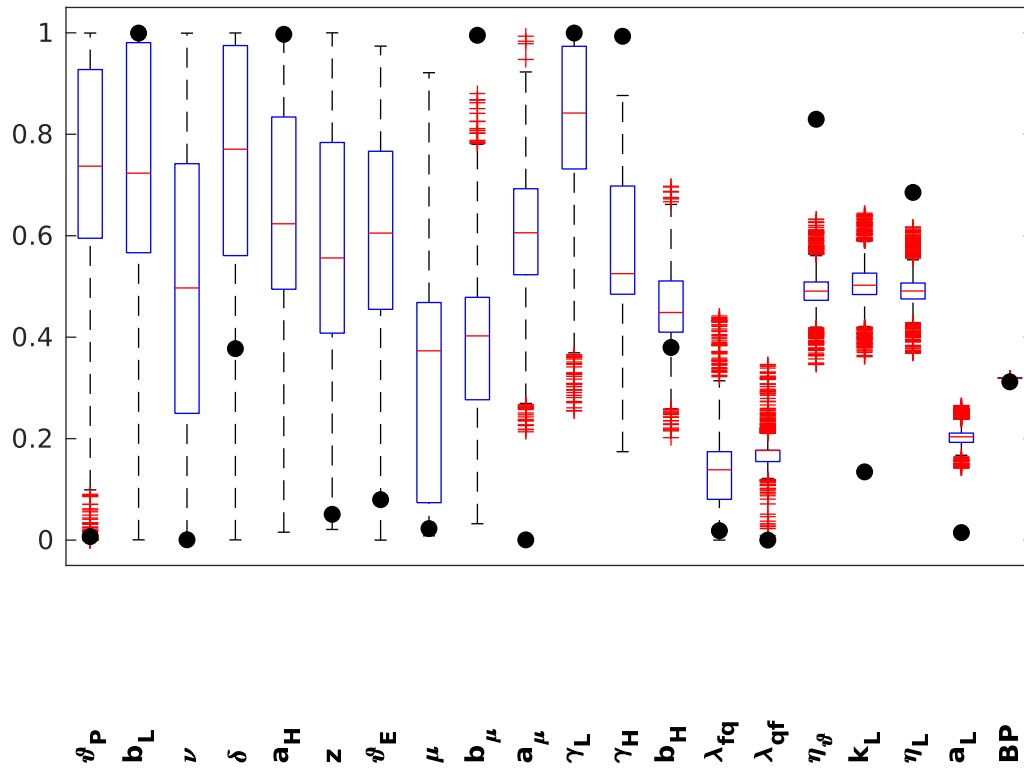
The number of estimations needed to perform the validation was1000.

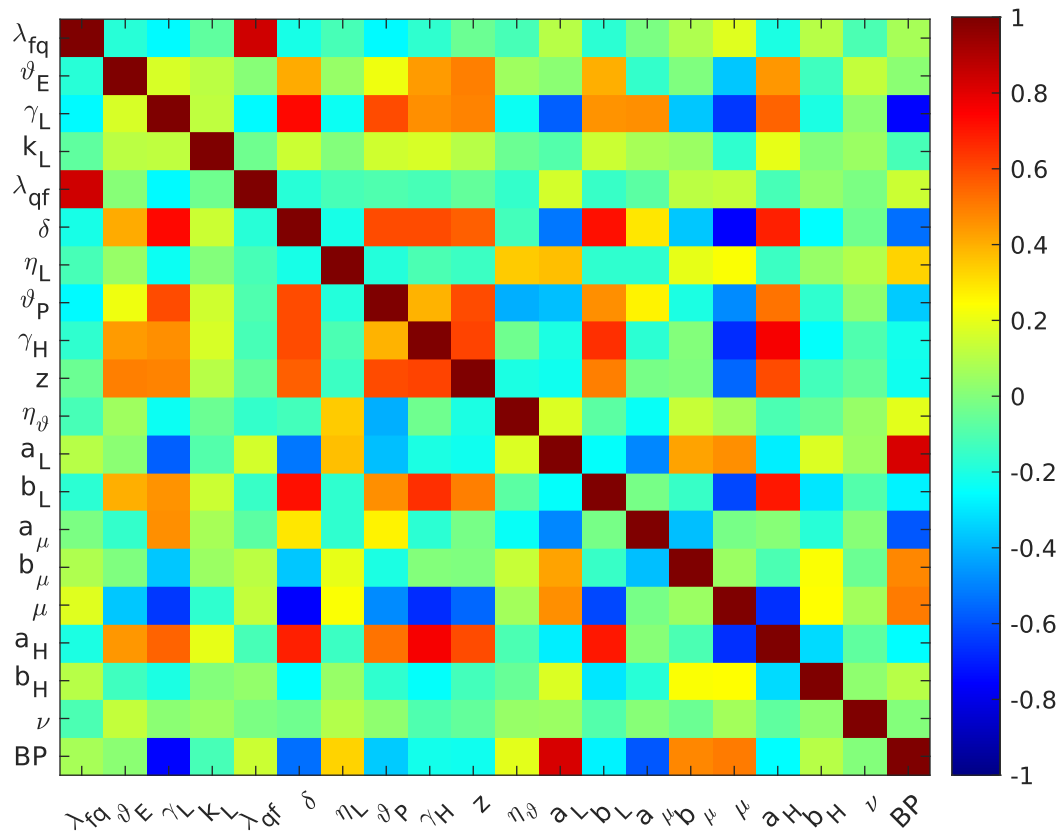
7.2. Estimated parameters with their intervals

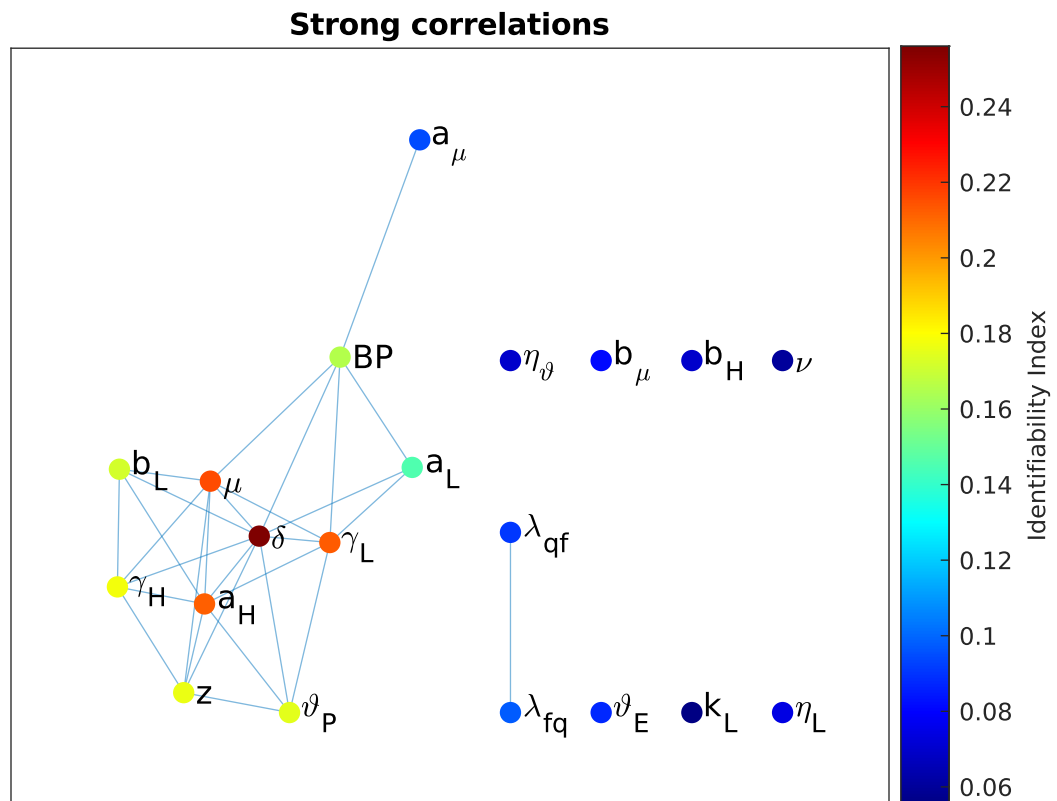
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.1188'	'0.1585'	'0.1386'	'0.0185'	'0.0985'
ϑ_E	'0.5897'	'0.6207'	'0.6052'	'0.0797'	'0.088'
γ_L	'0.8238'	'0.8596'	'0.8417'	'0.9996'	'0.2123'
k_L	'5.4551'	'5.5882'	'5.5216'	'2.2103'	'0.0554'
λ_{qf}	'0.158'	'0.1956'	'0.1768'	'0'	'0.091'
δ	'0.1126'	'0.1185'	'0.1156'	'0.0566'	'0.256'
η_L	'0.4817'	'0.5005'	'0.4911'	'0.6854'	'0.0746'
ϑ_P	'0.7164'	'0.7579'	'0.7372'	'0.007'	'0.1751'
γ_H	'0.5106'	'0.5399'	'0.5253'	'0.9932'	'0.1784'
z	'16.1134'	'17.2594'	'16.6864'	'1.5256'	'0.1763'
η_{ϑ}	'0.4807'	'0.5009'	'0.4908'	'0.8296'	'0.0699'
a_L	'3.6889'	'4.0141'	'3.8515'	'1.2064'	'0.1463'
b_L	'10.8669'	'11.3872'	'11.127'	'14.9924'	'0.1719'
a_{μ}	'9.3126'	'9.6474'	'9.48'	'1.0066'	'0.0947'
b_{μ}	'6.4417'	'6.8304'	'6.636'	'14.9315'	'0.0814'
μ	'0.356'	'0.3902'	'0.3731'	'0.0227'	'0.2154'
a_H	'9.5156'	'9.9445'	'9.7301'	'14.959'	'0.2117'
b_H	'7.1706'	'7.3922'	'7.2814'	'6.3157'	'0.0698'
ν	'237.193'	'259.883'	'248.538'	'0.3359'	'0.0605'
BP	'188.0694'	'188.9306'	'188.5'	'187.5'	'0.1654'

7.3. Identifiability analysis

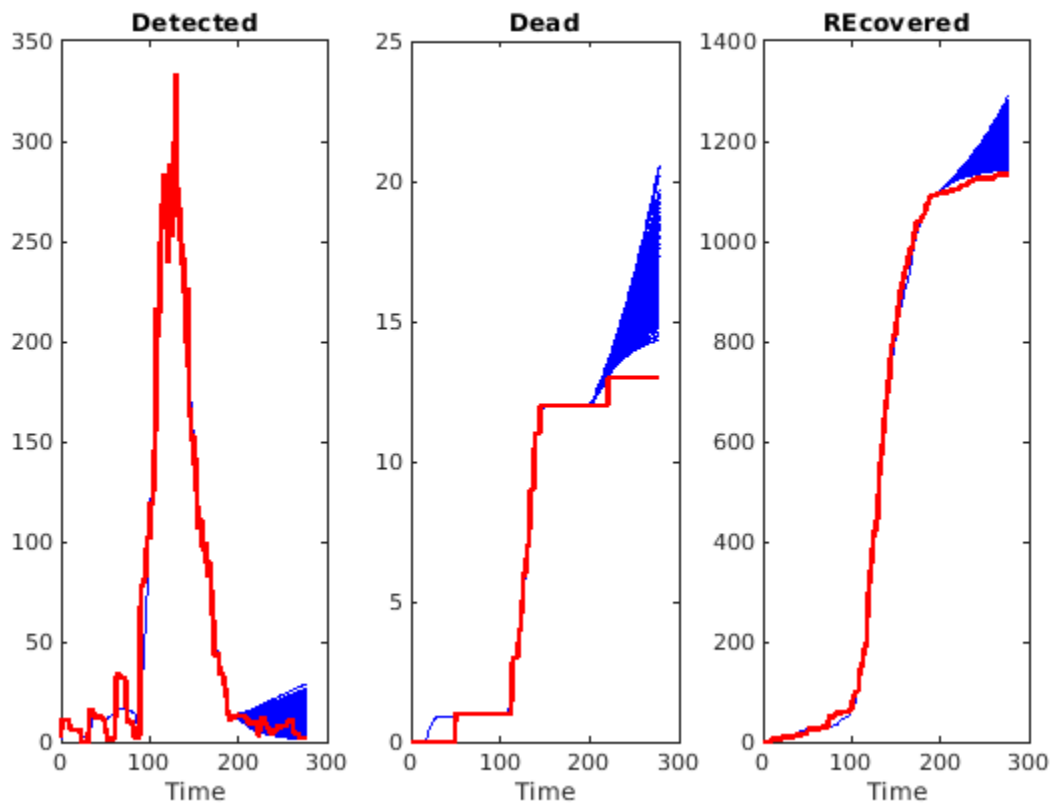






7.4. Uncertainty analysis

N=500



Chapter 8. Extension number8

8.1. Basic information

The extension to be validated consists of the time series from the data279 to the 377. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

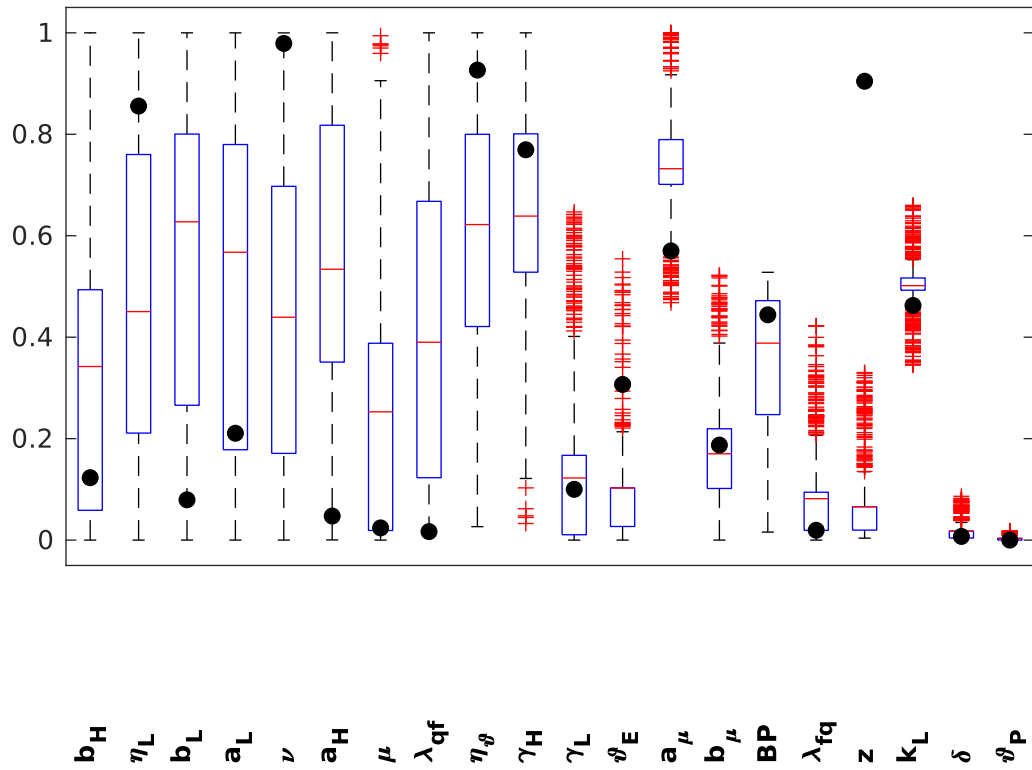
8.2. Estimated parameters with their intervals

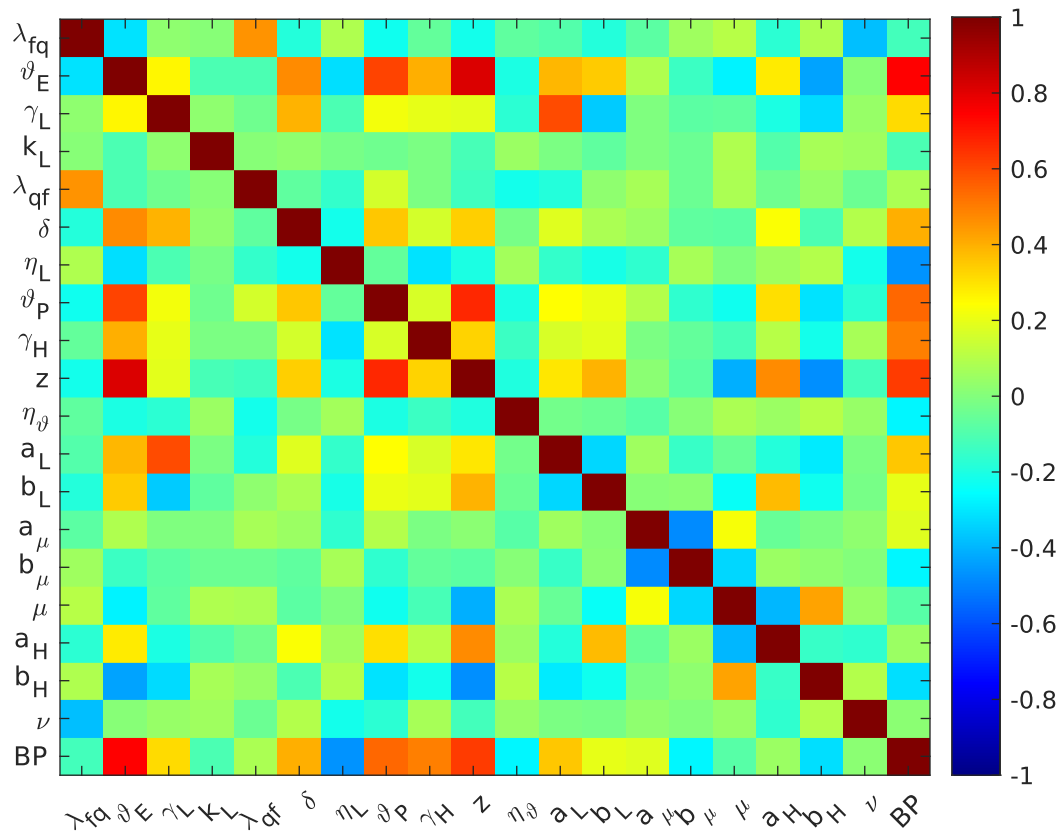
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

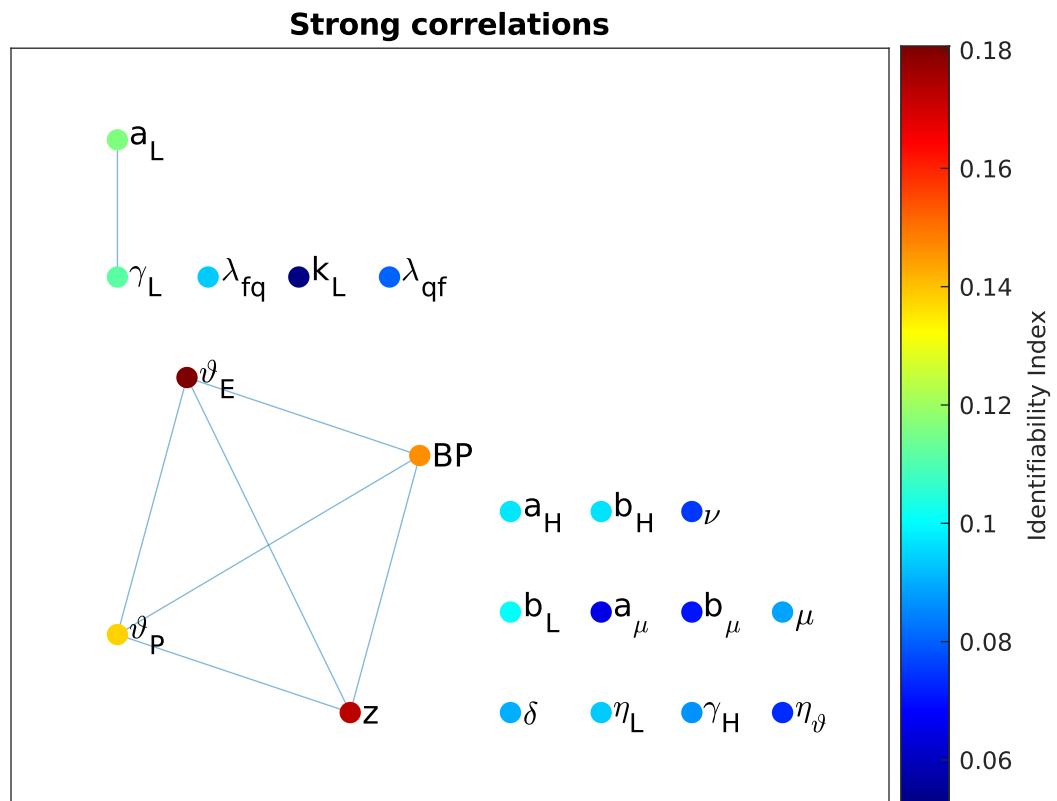
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.0164'	'0.0214'	'0.0818'	'0.0194'	'0.0936'
ϑ_E	'0.267'	'0.3927'	'0.1029'	'0.3069'	'0.1806'
γ_L	'0.0755'	'0.8722'	'0.1225'	'0.1001'	'0.1117'
k_L	'1.18'	'10'	'5.5142'	'5.1626'	'0.0525'
λ_{qf}	'0.0145'	'0.0179'	'0.3901'	'0.0167'	'0.0808'
δ	'0'	'0.0023'	'0.0027'	'0.0011'	'0.0903'
η_L	'0.4395'	'1'	'0.4504'	'0.8557'	'0.0937'
ϑ_P	'0'	'0.0001'	'0.0035'	'0.0001'	'0.1377'
γ_H	'0.1201'	'1'	'0.6385'	'0.7695'	'0.0869'
z	'15.5749'	'28.4596'	'1.9748'	'27.1371'	'0.173'
η_{ϑ}	'0.423'	'1'	'0.622'	'0.9266'	'0.074'
a_L	'2.9288'	'8.2678'	'8.9446'	'3.949'	'0.1163'
b_L	'1.8426'	'9.5552'	'9.7841'	'2.1122'	'0.1007'
a_{μ}	'1.2688'	'13.9132'	'11.249'	'8.9815'	'0.0651'
b_{μ}	'1.8694'	'13.6'	'3.3815'	'3.6221'	'0.071'
μ	'0'	'0.0468'	'0.2528'	'0.0241'	'0.0886'
a_H	'1.4631'	'10.2621'	'8.4755'	'1.6639'	'0.0974'
b_H	'1'	'15'	'5.7908'	'2.7222'	'0.097'
ν	'378.9249'	'493.679'	'219.6701'	'489.5505'	'0.0755'
BP	'260.2533'	'270.4542'	'257.5'	'267.4999'	'0.1464'

8.3. Identifiability analysis

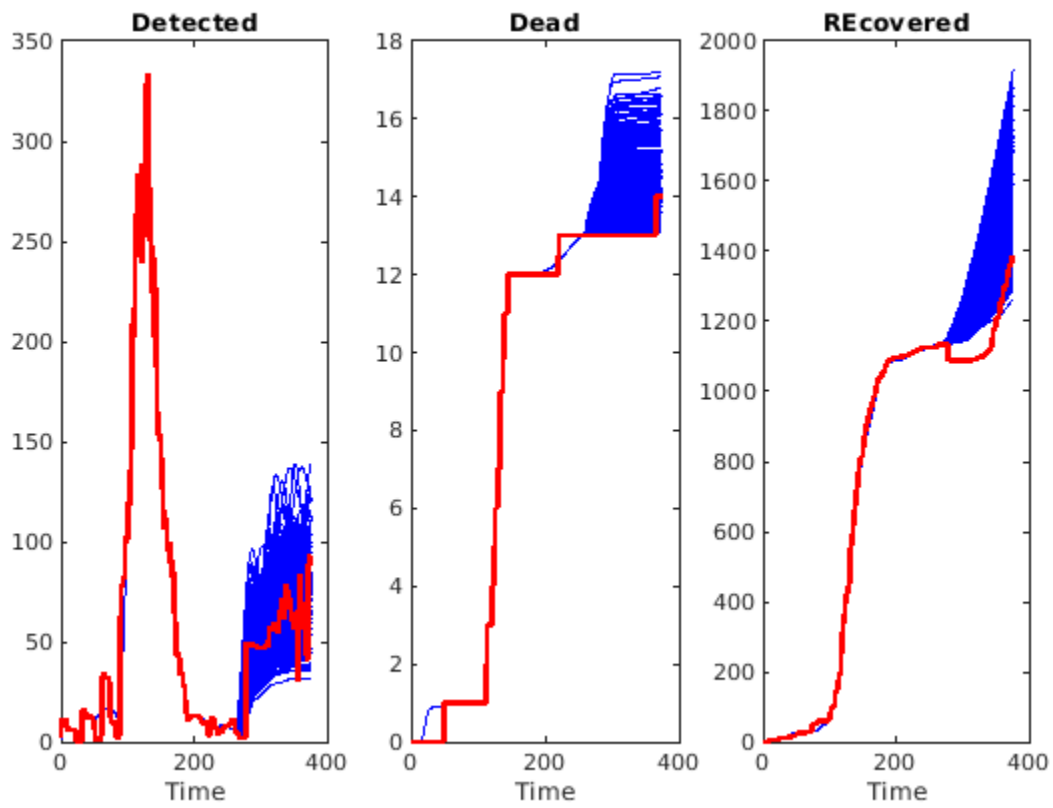






8.4. Uncertainty analysis

N=500



Chapter 9. Extension number9

9.1. Basic information

The extension to be validated consists of the time series from the data377 to the 398. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

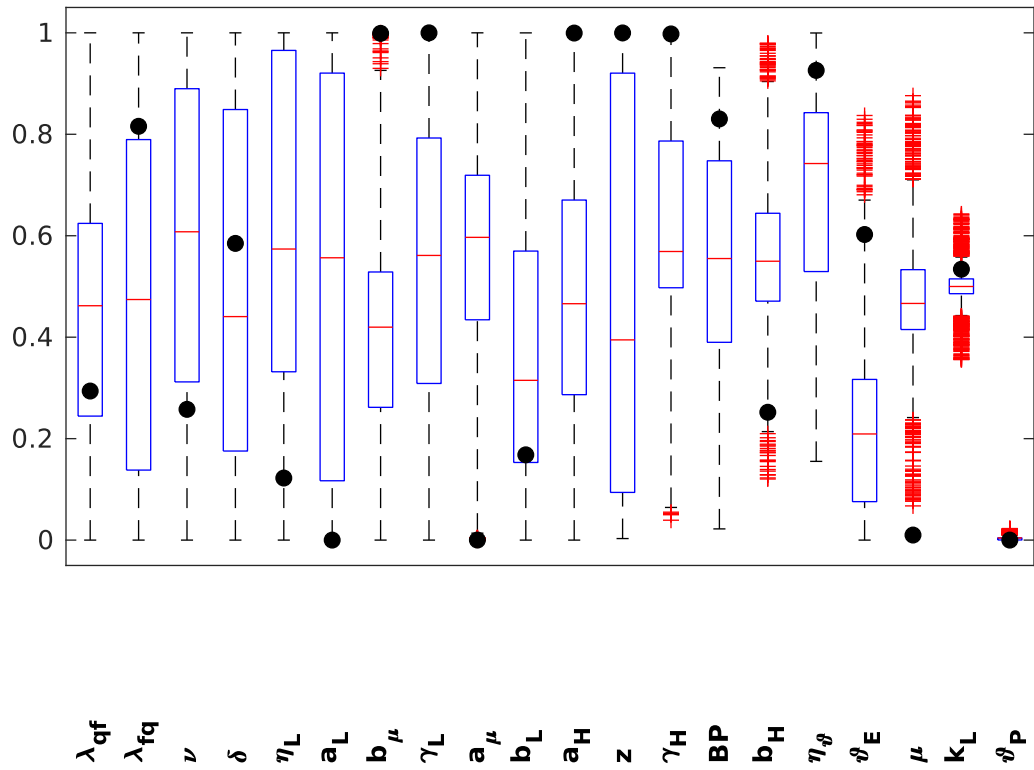
9.2. Estimated parameters with their intervals

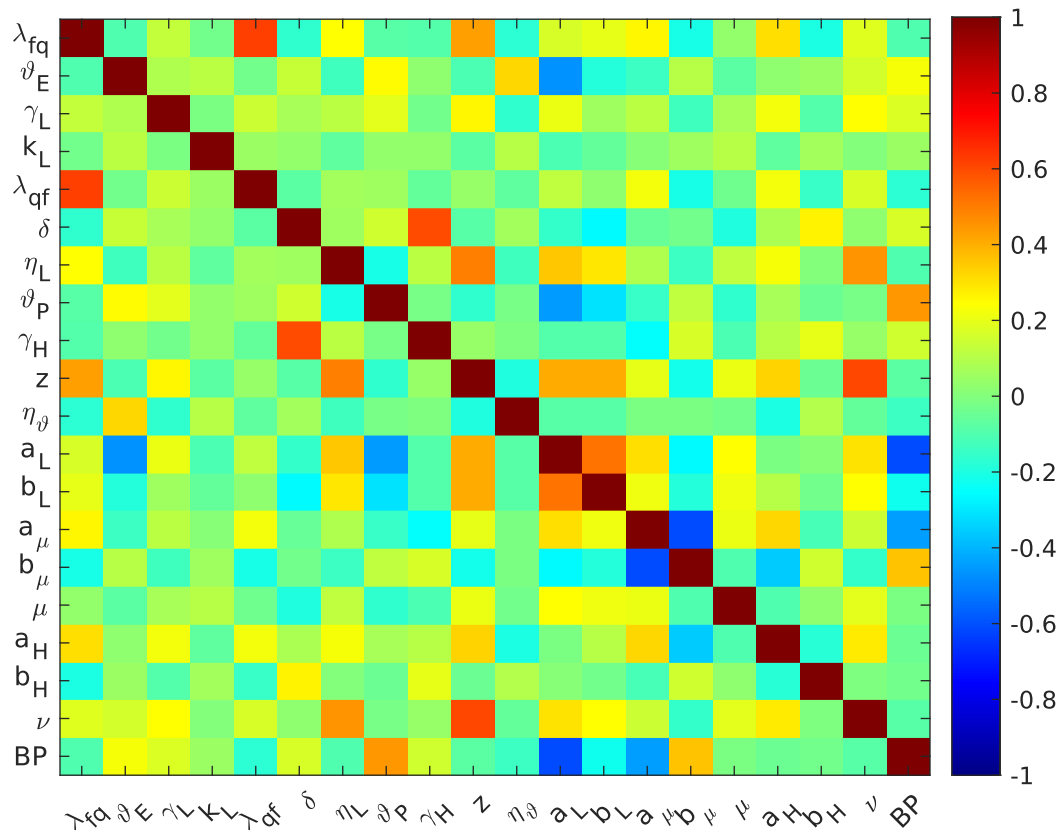
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

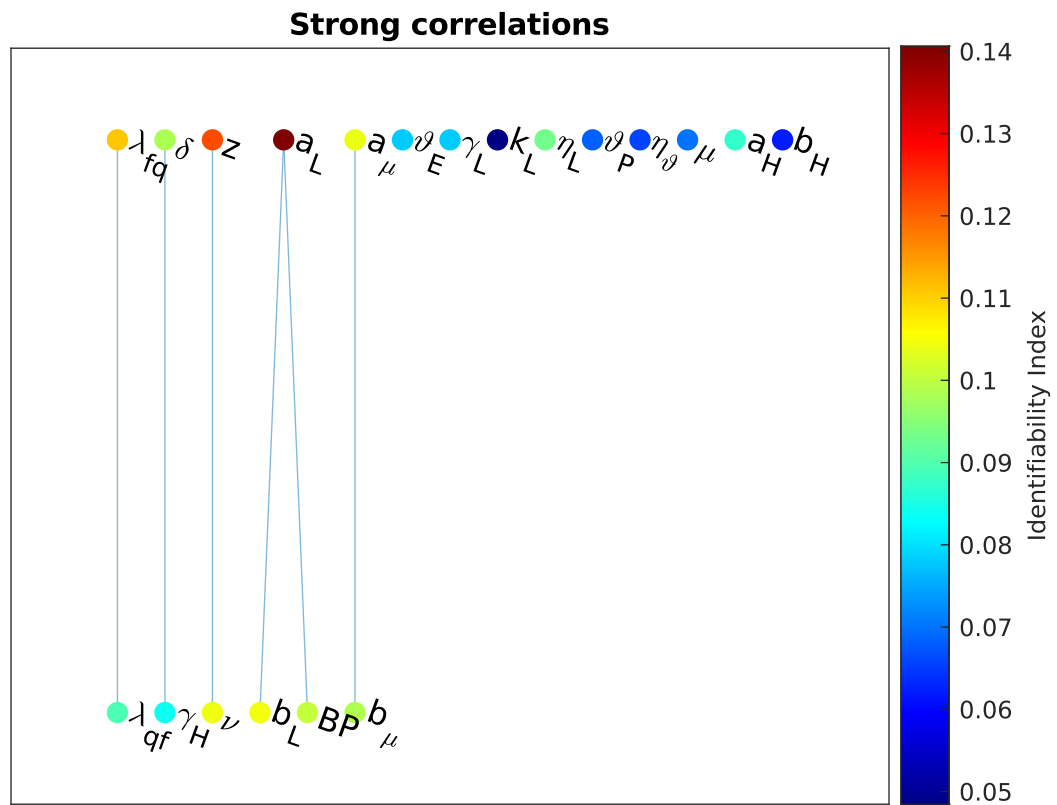
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
λ_{fq}	'0.5966'	'1'	'0.4743'	'0.8157'	'0.1108'
ϑ_E	'0.3808'	'0.6892'	'0.2092'	'0.6025'	'0.0783'
γ_L	'0.4596'	'1'	'0.5612'	'1'	'0.0783'
k_L	'1'	'10'	'5.4996'	'5.8061'	'0.0485'
λ_{qf}	'0.009'	'0.3599'	'0.462'	'0.2939'	'0.0897'
δ	'0.079'	'0.15'	'0.0661'	'0.0877'	'0.0983'
η_L	'0'	'0.2753'	'0.5738'	'0.1223'	'0.0932'
ϑ_P	'0'	'0'	'0.0043'	'0'	'0.0683'
γ_H	'0.19'	'1'	'0.5689'	'0.9978'	'0.0838'
z	'18.4597'	'30'	'11.8405'	'29.9933'	'0.122'
η_{ϑ}	'0.2718'	'0.936'	'0.7423'	'0.926'	'0.0659'
a_L	'1'	'2.4108'	'8.7917'	'1'	'0.1406'
b_L	'3.0841'	'7.6042'	'5.4091'	'3.3534'	'0.1047'
a_{μ}	'1'	'13.6'	'9.3552'	'1.0013'	'0.1042'
b_{μ}	'1'	'15'	'6.8769'	'14.9853'	'0.0988'
μ	'0'	'0.0224'	'0.4665'	'0.01'	'0.0702'
a_H	'7.2593'	'15'	'7.5241'	'14.9937'	'0.0876'
b_H	'1'	'13.432'	'8.6965'	'4.5284'	'0.0622'
ν	'126.4863'	'190.0788'	'303.8982'	'128.8767'	'0.1045'
BP	'369.2005'	'374.1671'	'339.5'	'369.4964'	'0.1004'

9.3. Identifiability analysis







9.4. Uncertainty analysis

