

# **Validation process forCARTAGENA**

**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 57. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was 1000.

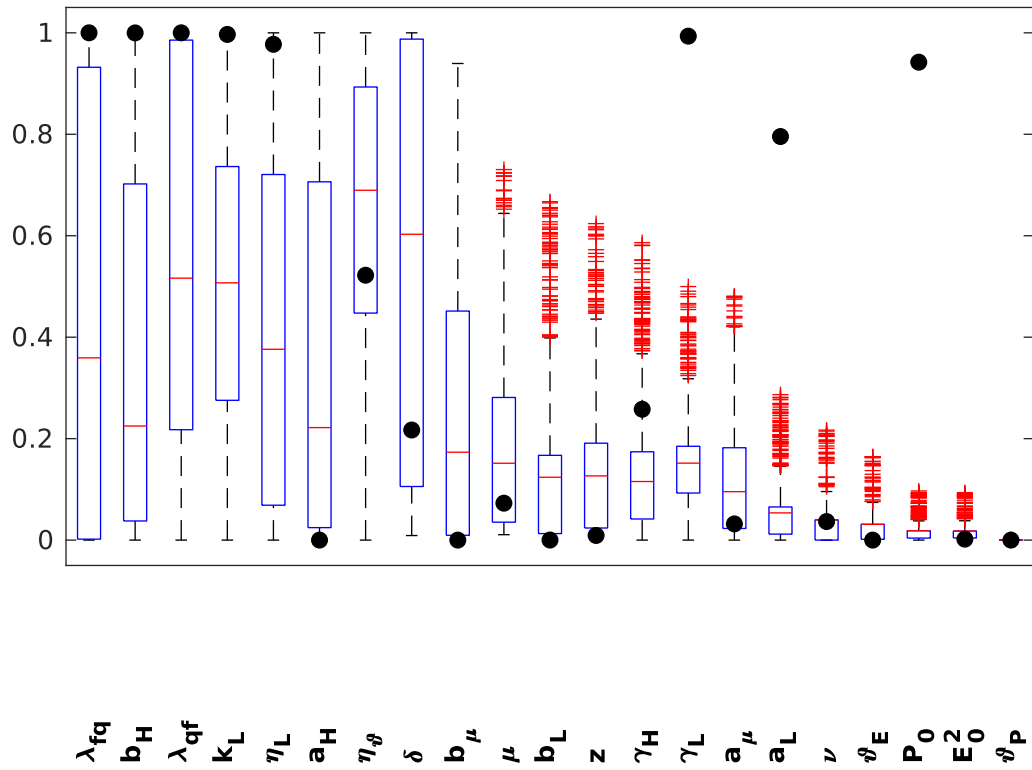
### 1.2. Estimated parameters with their intervals

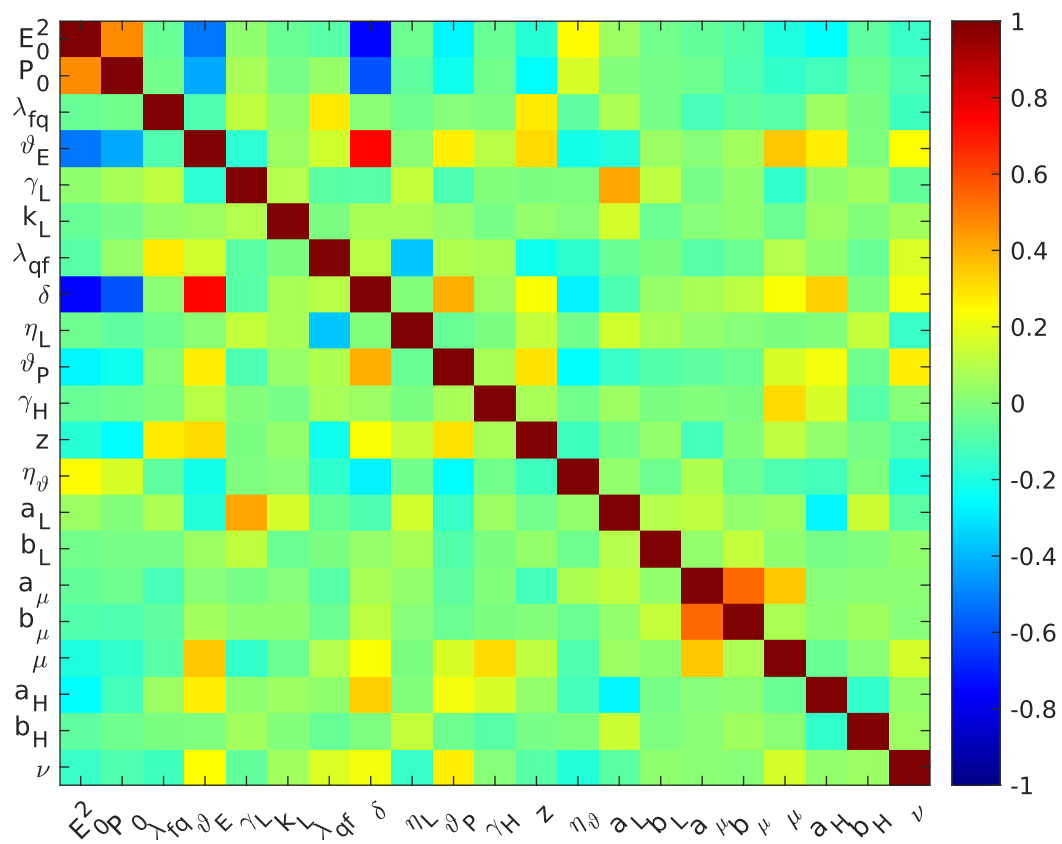
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

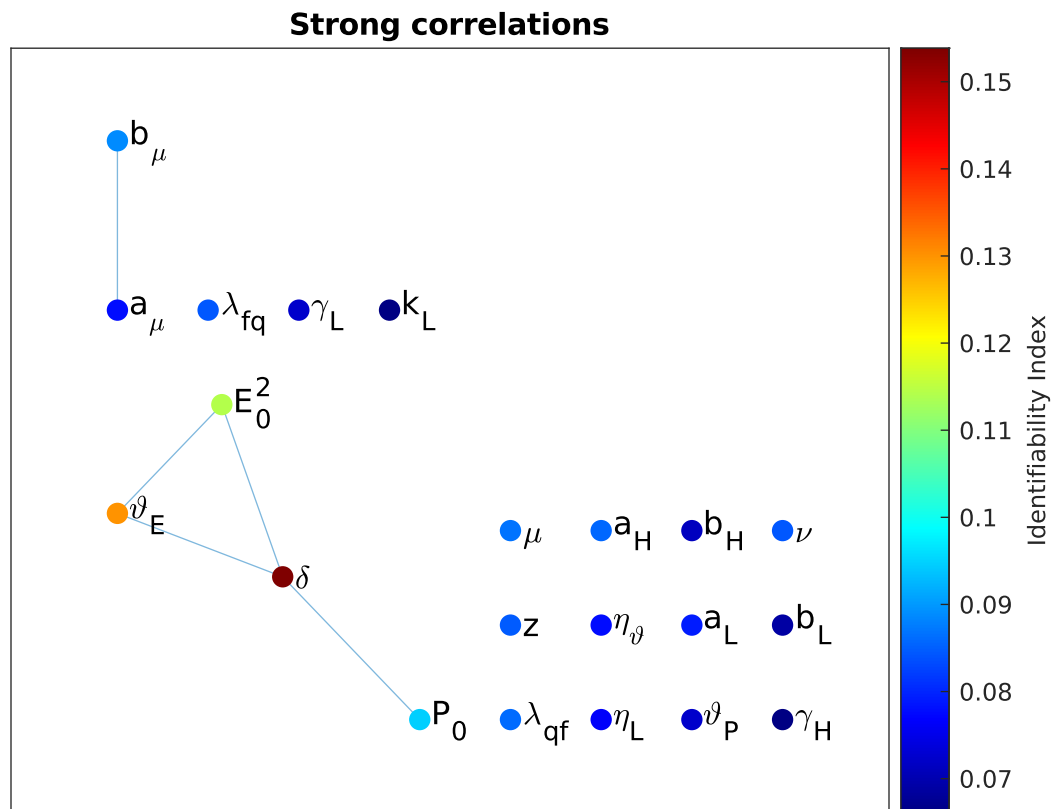
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
$E^2_0$	'1.7575'	'6.9302'	'35.6665'	'3.7772'	'0.1143'
$P_0$	'376.5937'	'385.1654'	'7.3843'	'376.8436'	'0.0948'
$\lambda_{fq}$	'0.7'	'1'	'0.3592'	'1'	'0.0844'
$\vartheta_E$	'0'	'0'	'0.0311'	'0'	'0.1299'
$\gamma_L$	'0.8499'	'1'	'0.1517'	'0.9935'	'0.0725'
$k_L$	'5.4406'	'10'	'5.5641'	'9.9717'	'0.0663'
$\lambda_{qf}$	'0.9944'	'1'	'0.5164'	'1'	'0.0862'
$\delta$	'0.0324'	'0.035'	'0.0904'	'0.0326'	'0.1539'
$\eta_L$	'0.7294'	'1'	'0.3762'	'0.9774'	'0.0766'
$\vartheta_P$	'0'	'0'	'0.0001'	'0'	'0.0726'
$\gamma_H$	'0.232'	'0.2609'	'0.1155'	'0.258'	'0.0662'
$z$	'0.2746'	'0.2799'	'3.7962'	'0.2747'	'0.0849'
$\eta_{\vartheta}$	'0.5191'	'0.5225'	'0.6897'	'0.5221'	'0.0781'
$a_L$	'11.9991'	'13.3066'	'1.751'	'12.1382'	'0.0792'
$b_L$	'1'	'1.0925'	'2.7346'	'1.0017'	'0.0692'
$a_{\mu}$	'1.2925'	'1.5074'	'2.3365'	'1.4466'	'0.0778'
$b_{\mu}$	'1'	'1.3566'	'3.4261'	'1.0001'	'0.0891'
$\mu$	'0.0628'	'0.0827'	'0.1515'	'0.0728'	'0.087'
$a_H$	'1'	'1.1166'	'4.1049'	'1.0001'	'0.086'
$b_H$	'12.3635'	'15'	'4.1484'	'14.998'	'0.0716'
$\nu$	'11.3994'	'19.0892'	'19.9328'	'18.2755'	'0.0845'

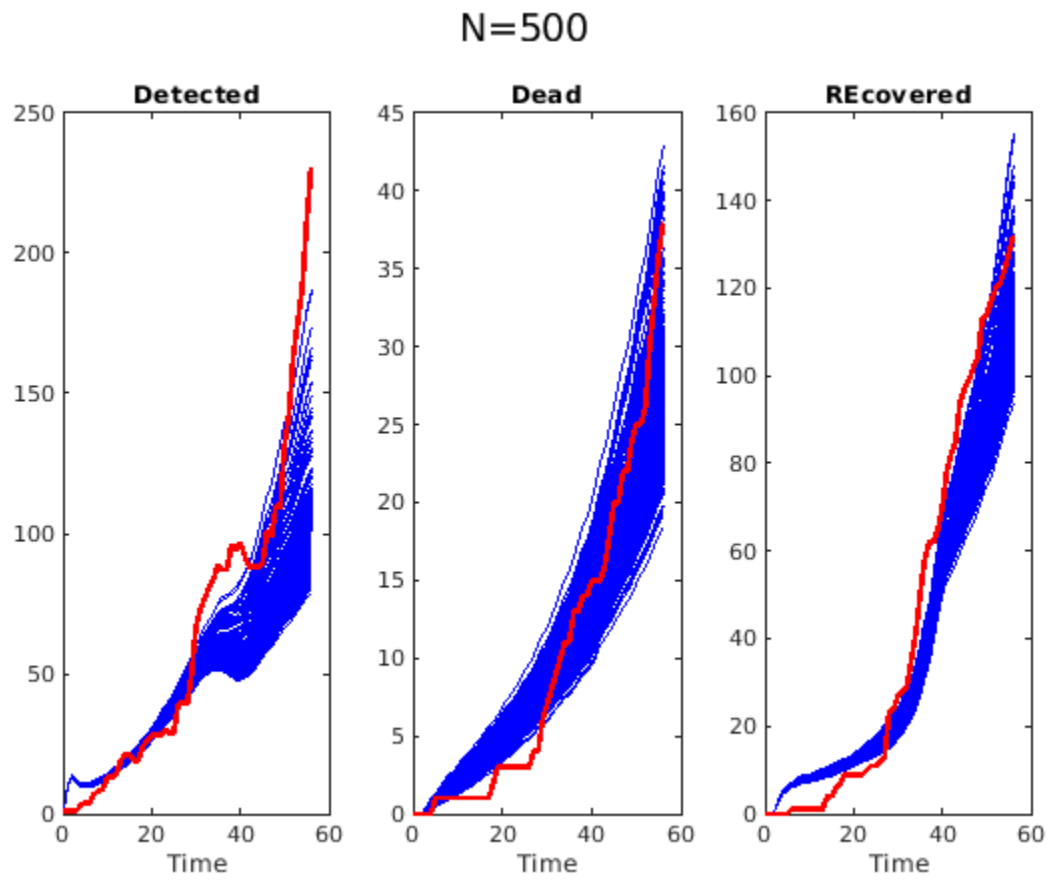
### 1.3. Identifiability analysis







## 1.4. Uncertainty analysis





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## Chapter 2. Extension number2

### 2.1. Basic information

The extension to be validated consists of the time series from the data57 to the 125. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

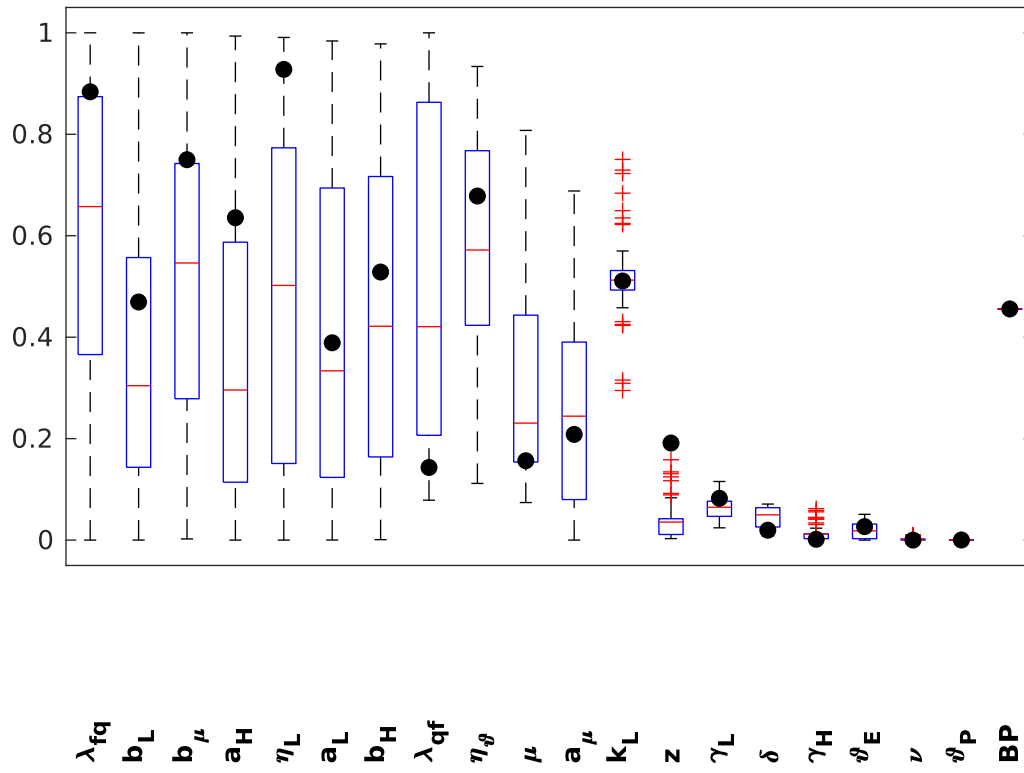
### 2.2. Estimated parameters with their intervals

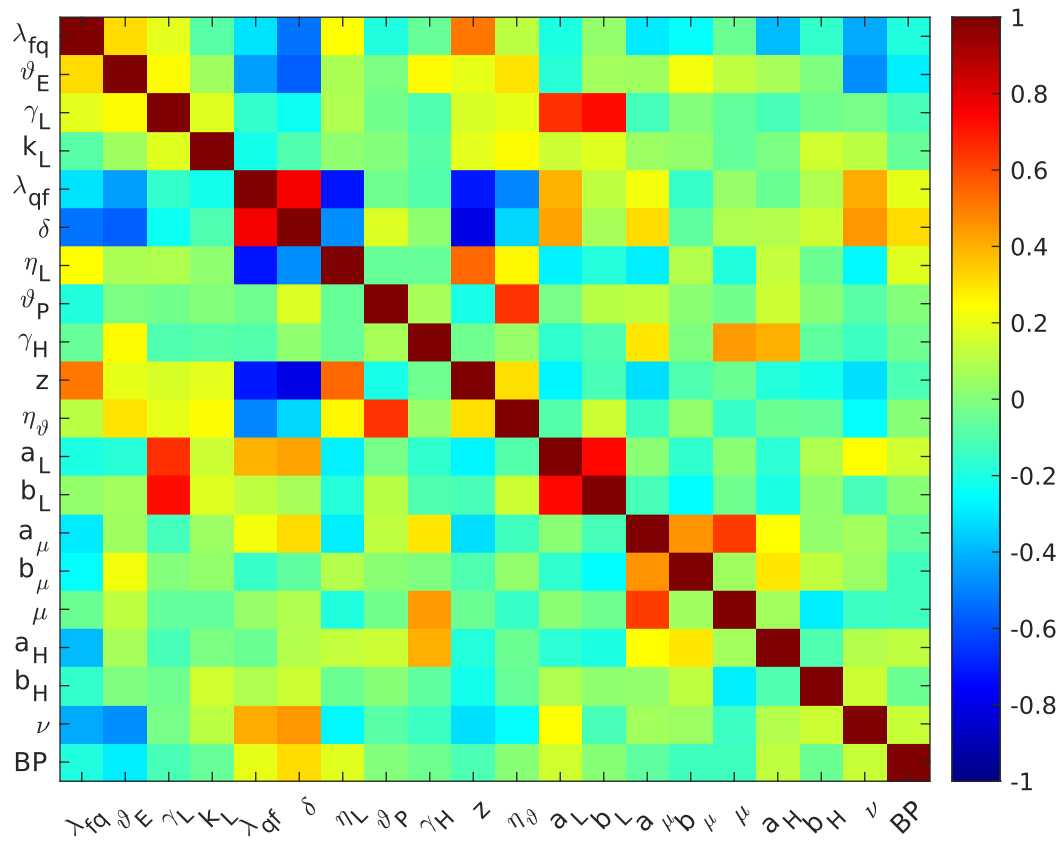
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

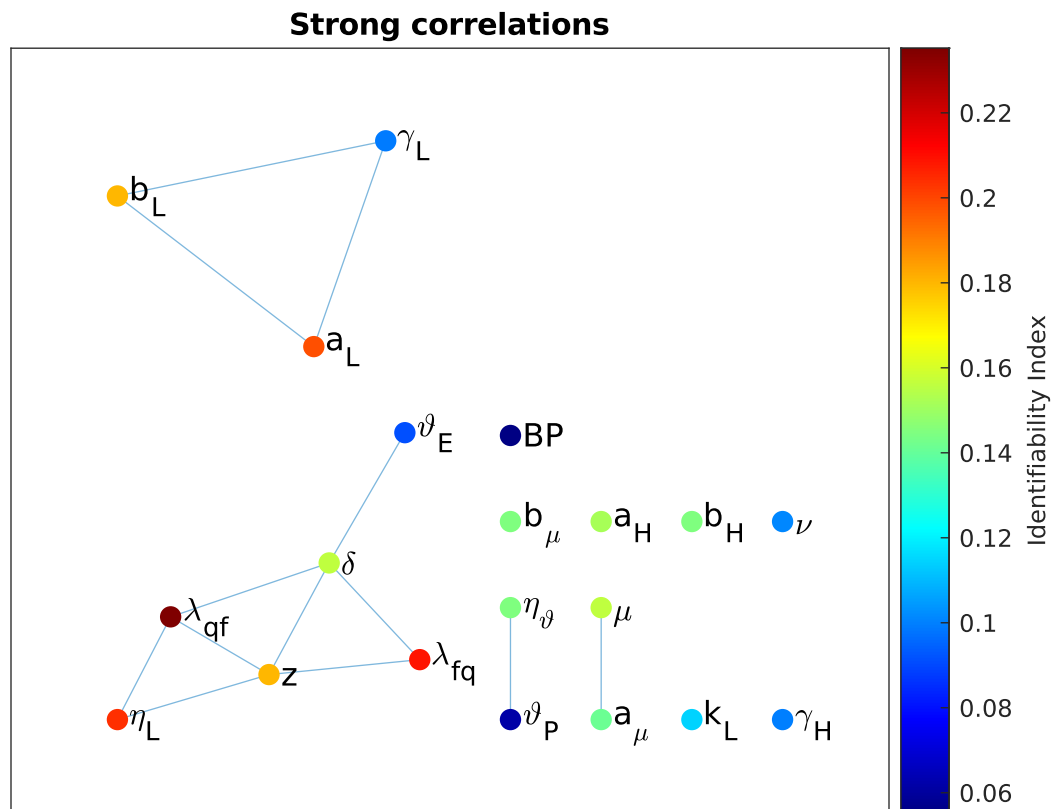
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.8306'	'0.8869'	'0.6575'	'0.8838'	'0.2087'
$\vartheta_E$	'0.0234'	'0.0344'	'0.0183'	'0.0266'	'0.0915'
$\gamma_L$	'0.0718'	'0.0836'	'0.0648'	'0.0823'	'0.099'
$k_L$	'3.5647'	'5.8251'	'5.6122'	'5.5972'	'0.115'
$\lambda_{qf}$	'0.134'	'0.1441'	'0.4207'	'0.1432'	'0.2352'
$\delta$	'0.0025'	'0.0035'	'0.0075'	'0.0029'	'0.1559'
$\eta_L$	'0.8954'	'0.9509'	'0.502'	'0.9279'	'0.2041'
$\vartheta_P$	'0.0002'	'0.0002'	'0.0001'	'0.0002'	'0.0622'
$\gamma_H$	'0.0007'	'0.002'	'0.0124'	'0.0016'	'0.1001'
$z$	'5.338'	'5.7909'	'1.1146'	'5.7409'	'0.1803'
$\eta_{\vartheta}$	'0.6519'	'0.6814'	'0.5719'	'0.6783'	'0.1452'
$a_L$	'4.4494'	'6.5766'	'5.6711'	'6.4453'	'0.1983'
$b_L$	'7.1882'	'11.6491'	'5.2613'	'7.5709'	'0.18'
$a_{\mu}$	'3.4676'	'7.5828'	'4.4203'	'3.9173'	'0.1417'
$b_{\mu}$	'6.4268'	'11.5013'	'8.6481'	'11.498'	'0.1451'
$\mu$	'0.1248'	'0.4406'	'0.2331'	'0.1565'	'0.1563'
$a_H$	'3.9557'	'10.2367'	'5.1421'	'9.8977'	'0.1516'
$b_H$	'3.4177'	'9.9603'	'6.9015'	'8.3979'	'0.1451'
$\nu$	'0.0092'	'0.0161'	'0.9804'	'0.0132'	'0.1016'
BP	'54.5'	'59.1658'	'57.5'	'57.5'	'0.0554'

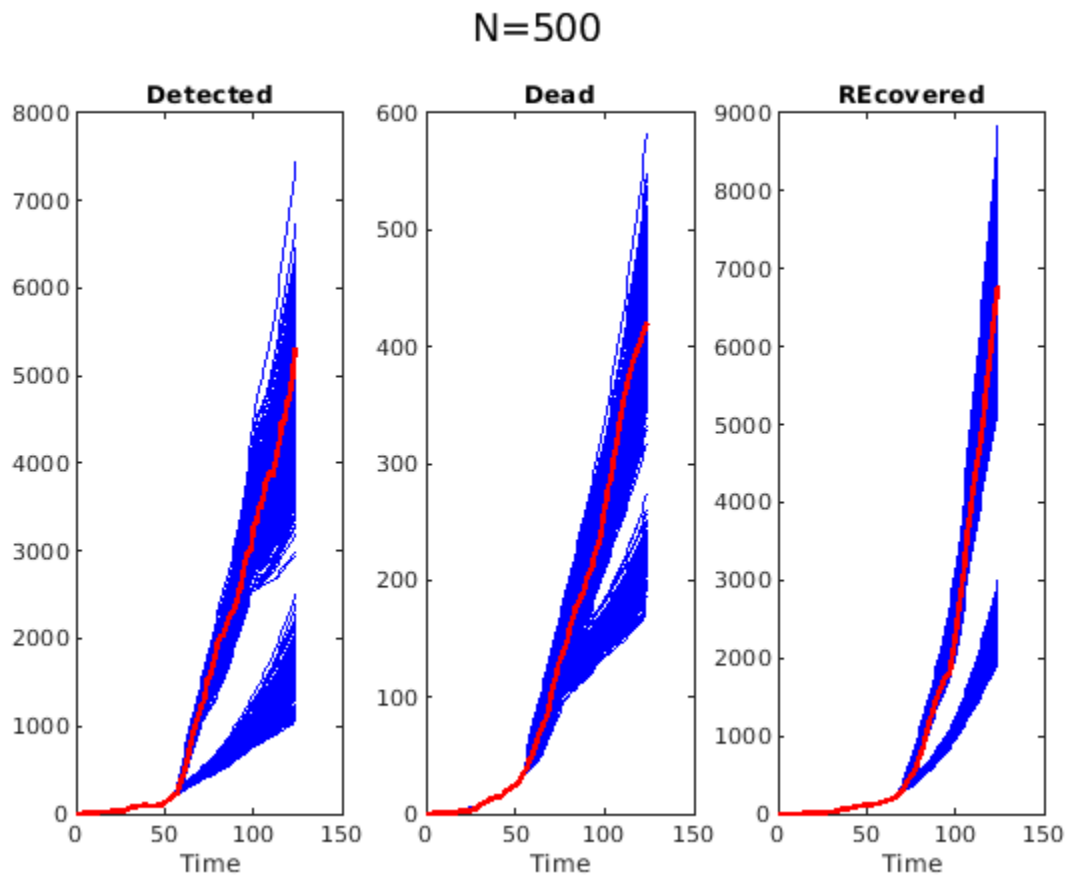
## 2.3. Identifiability analysis







## 2.4. Uncertainty analysys



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## Chapter 3. Extension number3

### 3.1. Basic information

The extension to be validated consists of the time series from the data125 to the 166. The status of the validation is: COMPLETED.

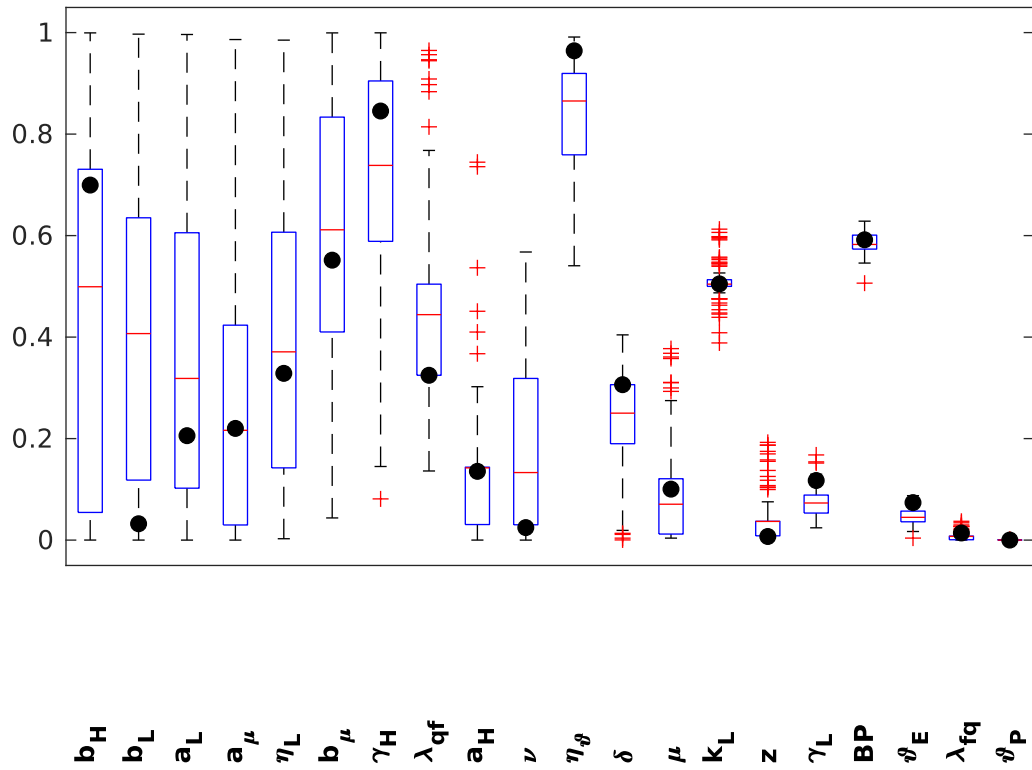
The number of estimations needed to perform the validation was3000.

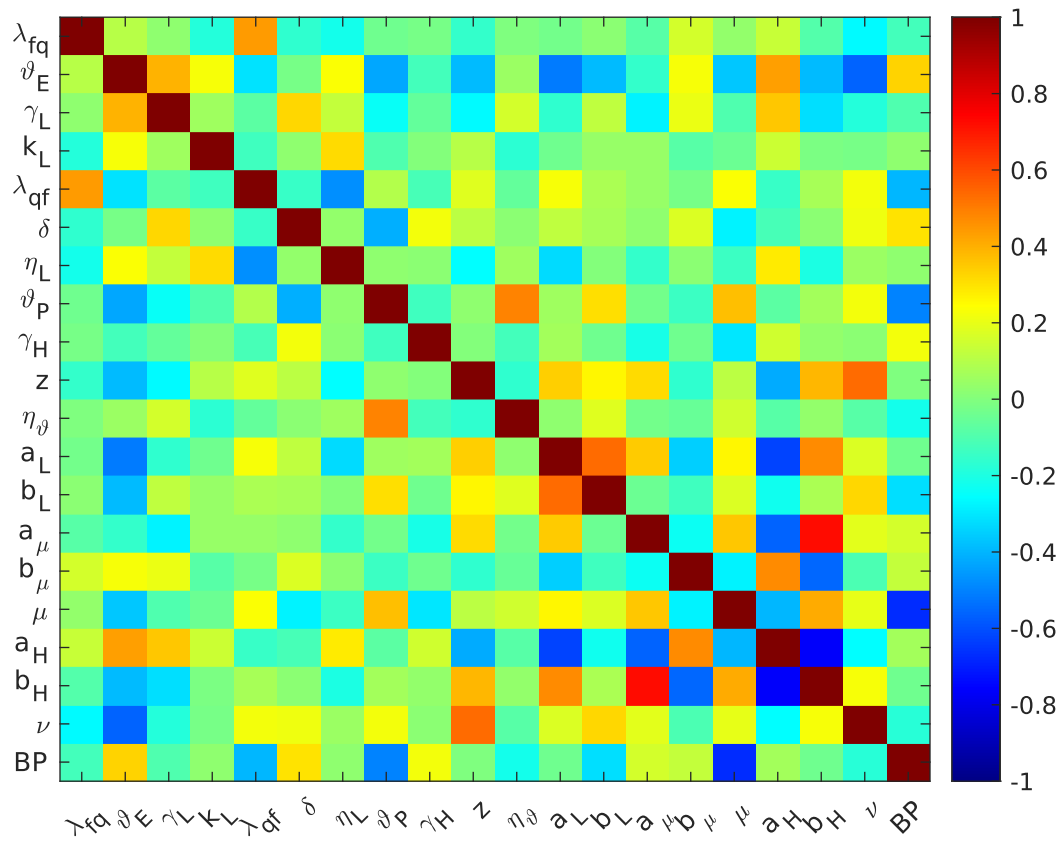
### 3.2. Estimated parameters with their intervals

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

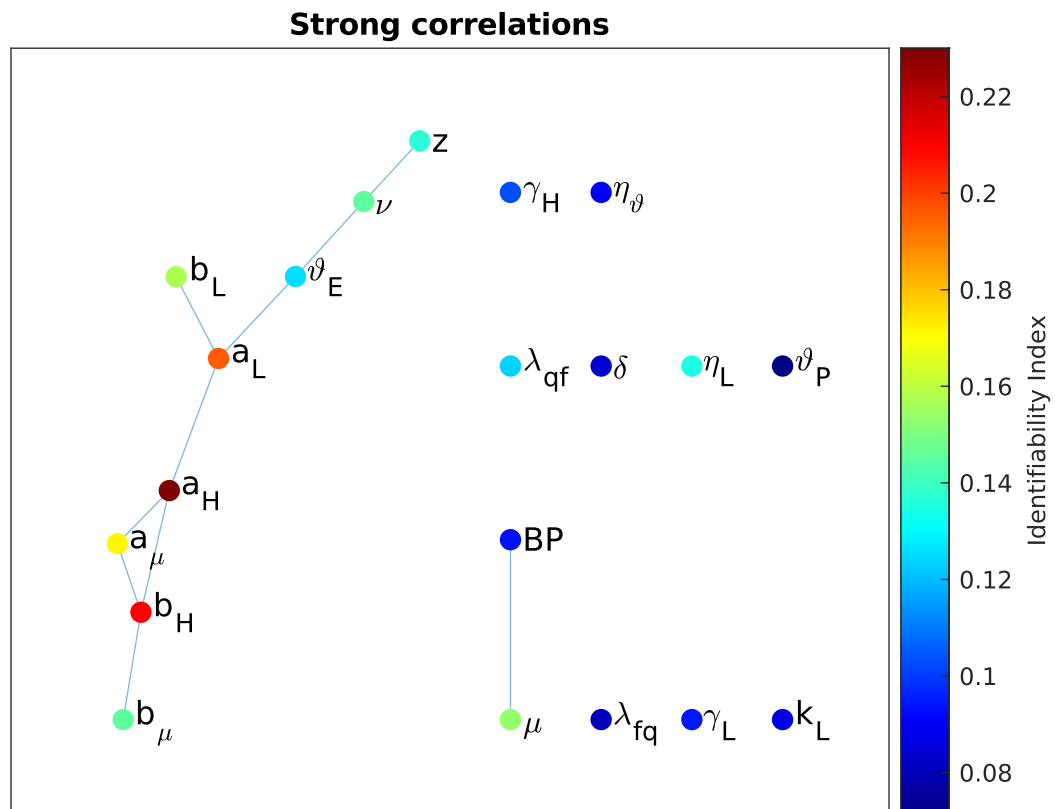
	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0'	'0.0543'	'0.0074'	'0.0141'	'0.0807'
$\vartheta_E$	'0.0398'	'0.0504'	'0.0451'	'0.0739'	'0.1258'
$\gamma_L$	'0.0476'	'0.0994'	'0.0735'	'0.1174'	'0.0952'
$k_L$	'5.1832'	'5.8956'	'5.5394'	'5.5434'	'0.0867'
$\lambda_{qf}$	'0.3899'	'0.5014'	'0.4457'	'0.3248'	'0.124'
$\delta$	'0.034'	'0.0411'	'0.0375'	'0.0459'	'0.0835'
$\eta_L$	'0.298'	'0.4439'	'0.3709'	'0.3286'	'0.1351'
$\vartheta_P$	'0'	'0.0002'	'0.0001'	'0'	'0.0718'
$\gamma_H$	'0.6836'	'0.793'	'0.7383'	'0.8455'	'0.1035'
$z$	'0'	'2.8634'	'1.1131'	'0.213'	'0.1375'
$\eta_{\vartheta}$	'0.8246'	'0.9006'	'0.8626'	'0.9642'	'0.0899'
$a_L$	'4.4166'	'6.5028'	'5.4597'	'3.8807'	'0.1956'
$b_L$	'5.6101'	'7.7839'	'6.697'	'1.4509'	'0.1571'
$a_{\mu}$	'3.0191'	'5.0385'	'4.0288'	'4.0811'	'0.1718'
$b_{\mu}$	'8.6624'	'10.4579'	'9.5602'	'8.7224'	'0.1456'
$\mu$	'0.0198'	'0.1302'	'0.075'	'0.1004'	'0.1535'
$a_H$	'1.6637'	'4.3604'	'3.0121'	'2.8967'	'0.23'
$b_H$	'6.7795'	'9.1983'	'7.9889'	'10.7939'	'0.2101'
$\nu$	'43.8042'	'89.2808'	'66.5425'	'12.3109'	'0.1458'
BP	'119.5585'	'121.4415'	'120.5'	'121.5'	'0.094'

### 3.3. Identifiability analysys

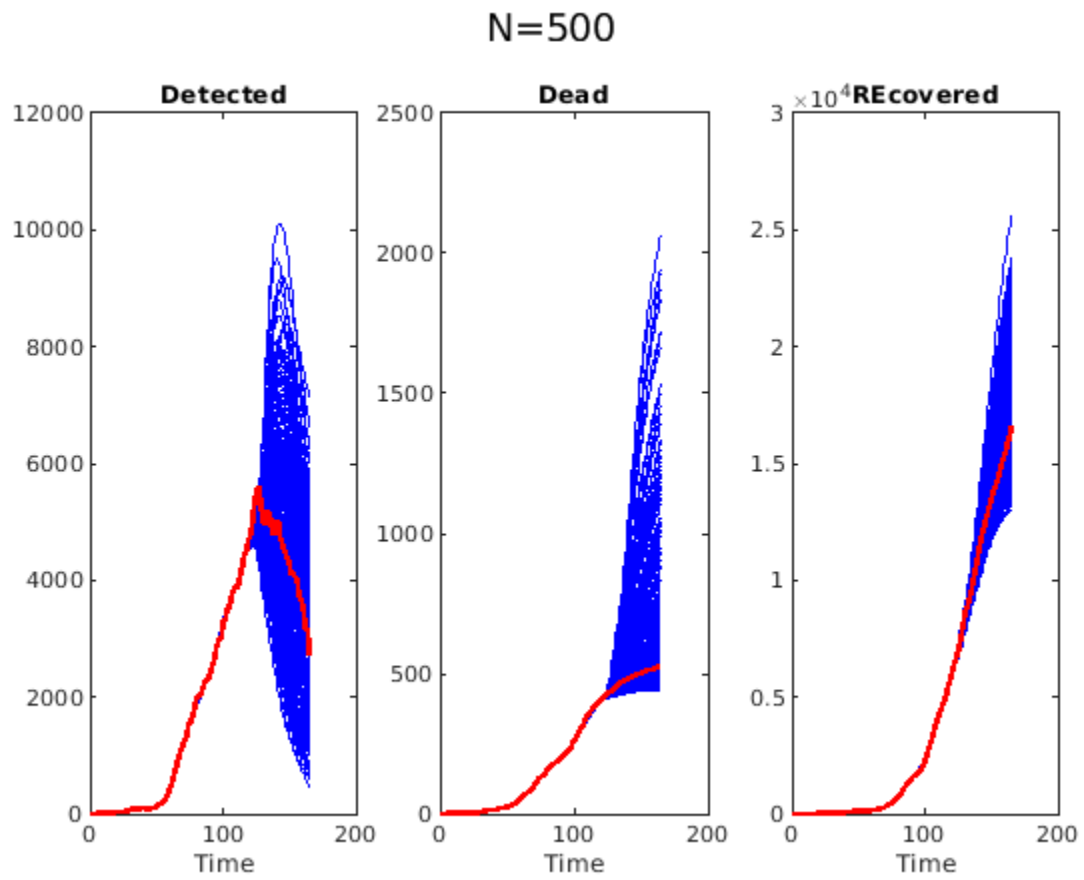








### 3.4. Uncertainty analysys



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## Chapter 4. Extension number4

### 4.1. Basic information

The extension to be validated consists of the time series from the data166 to the 225. The status of the validation is: COMPLETED.

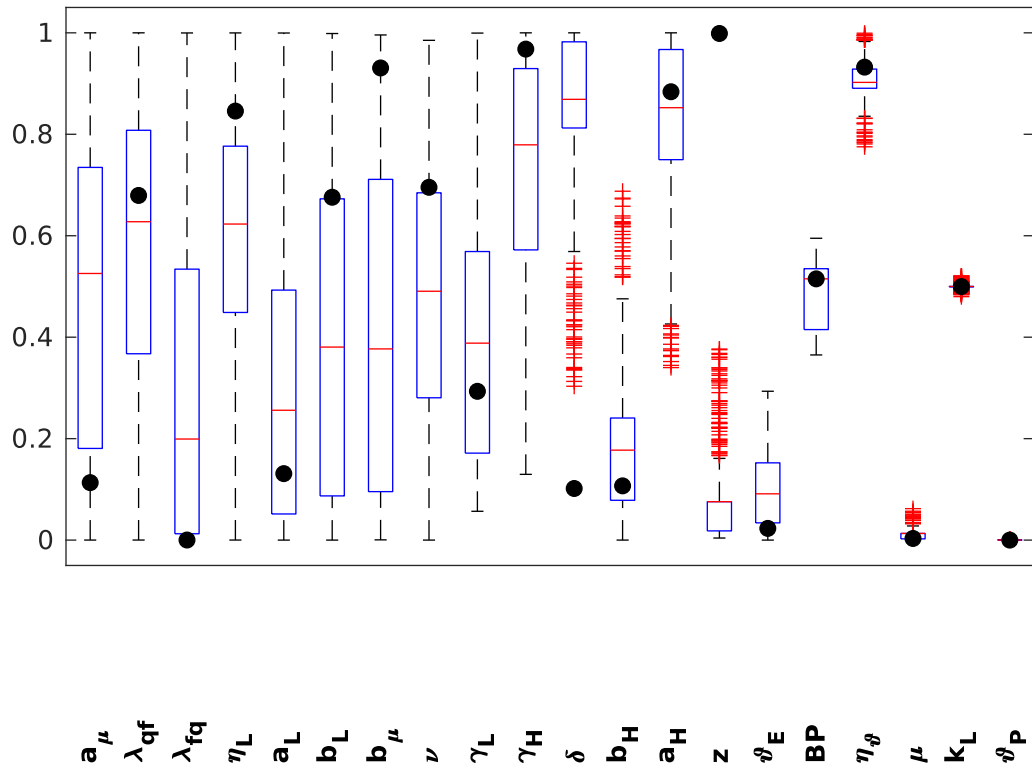
The number of estimations needed to perform the validation was1000.

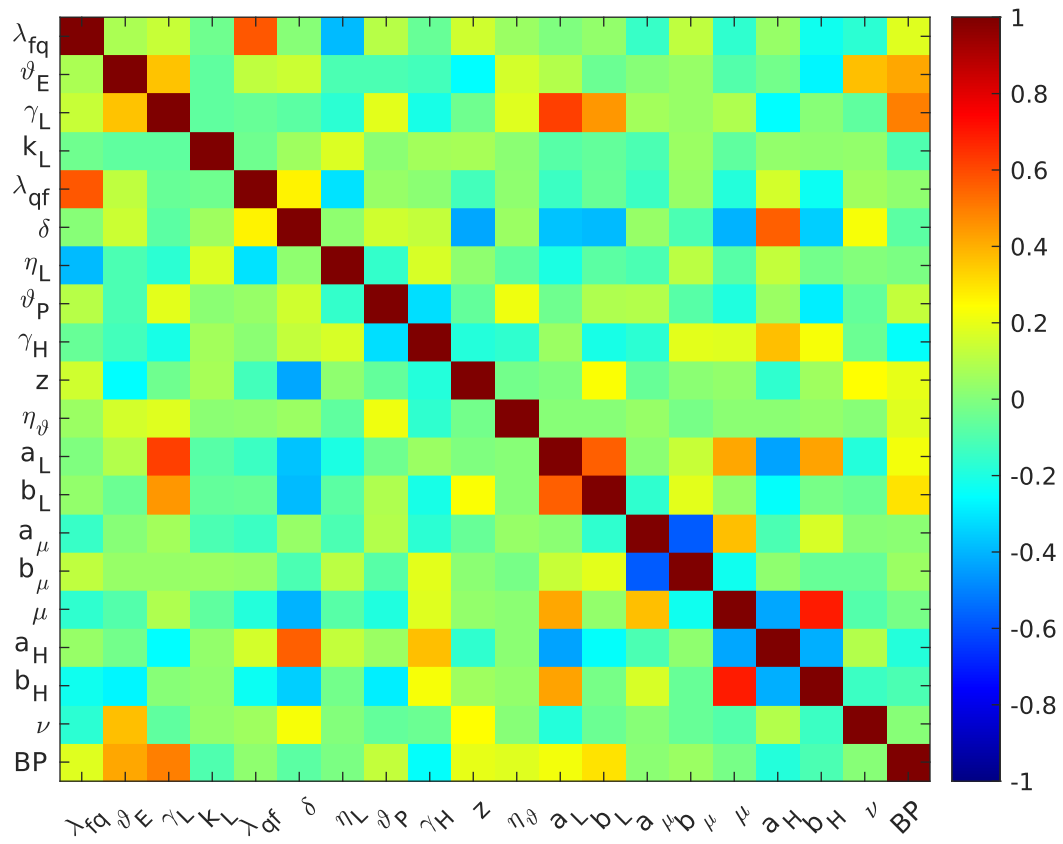
### 4.2. Estimated parameters with their intervals

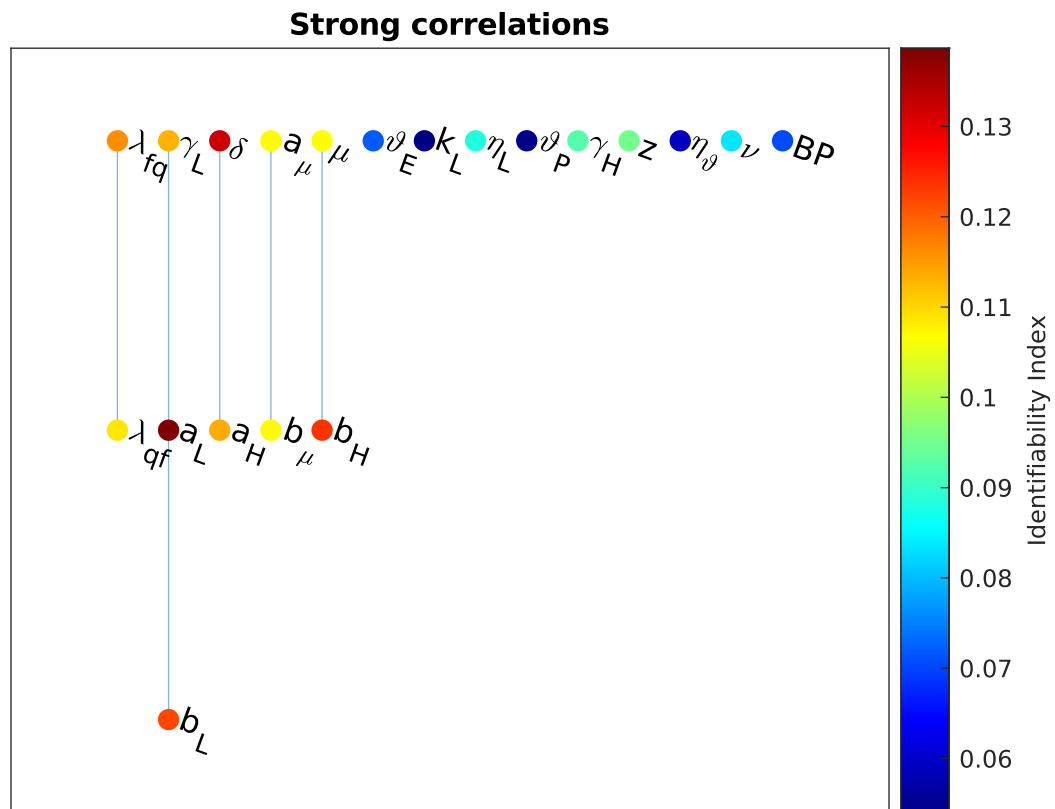
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.1541'	'0.2444'	'0.1992'	'0.0001'	'0.1159'
$\vartheta_E$	'0.0801'	'0.1023'	'0.0912'	'0.0231'	'0.0722'
$\gamma_L$	'0.3573'	'0.4193'	'0.3883'	'0.2933'	'0.113'
$k_L$	'5.3692'	'5.6305'	'5.4998'	'5.4985'	'0.0541'
$\lambda_{qf}$	'0.589'	'0.6662'	'0.6276'	'0.6794'	'0.1086'
$\delta$	'0.1234'	'0.1373'	'0.1303'	'0.0153'	'0.1321'
$\eta_L$	'0.5888'	'0.6573'	'0.623'	'0.8457'	'0.0883'
$\vartheta_P$	'0'	'0.0002'	'0.0001'	'0'	'0.0549'
$\gamma_H$	'0.7504'	'0.8079'	'0.7792'	'0.9679'	'0.0925'
$z$	'1.047'	'3.4967'	'2.2719'	'29.9619'	'0.0953'
$\eta_{\vartheta}$	'0.8847'	'0.9199'	'0.9023'	'0.9323'	'0.059'
$a_L$	'4.0422'	'5.1251'	'4.5837'	'2.8344'	'0.1387'
$b_L$	'5.703'	'6.9513'	'6.3271'	'10.4622'	'0.1221'
$a_{\mu}$	'7.8082'	'8.9088'	'8.3585'	'2.5861'	'0.1071'
$b_{\mu}$	'5.6762'	'6.8768'	'6.2765'	'14.0303'	'0.1072'
$\mu$	'0'	'0.0445'	'0.0131'	'0.0032'	'0.1068'
$a_H$	'12.5172'	'13.3497'	'12.9334'	'13.3738'	'0.1138'
$b_H$	'2.935'	'4.0297'	'3.4824'	'2.4971'	'0.1235'
$\nu$	'228.071'	'262.5249'	'245.298'	'347.7294'	'0.0835'
BP	'175.6649'	'177.3351'	'176.5'	'176.4992'	'0.0707'

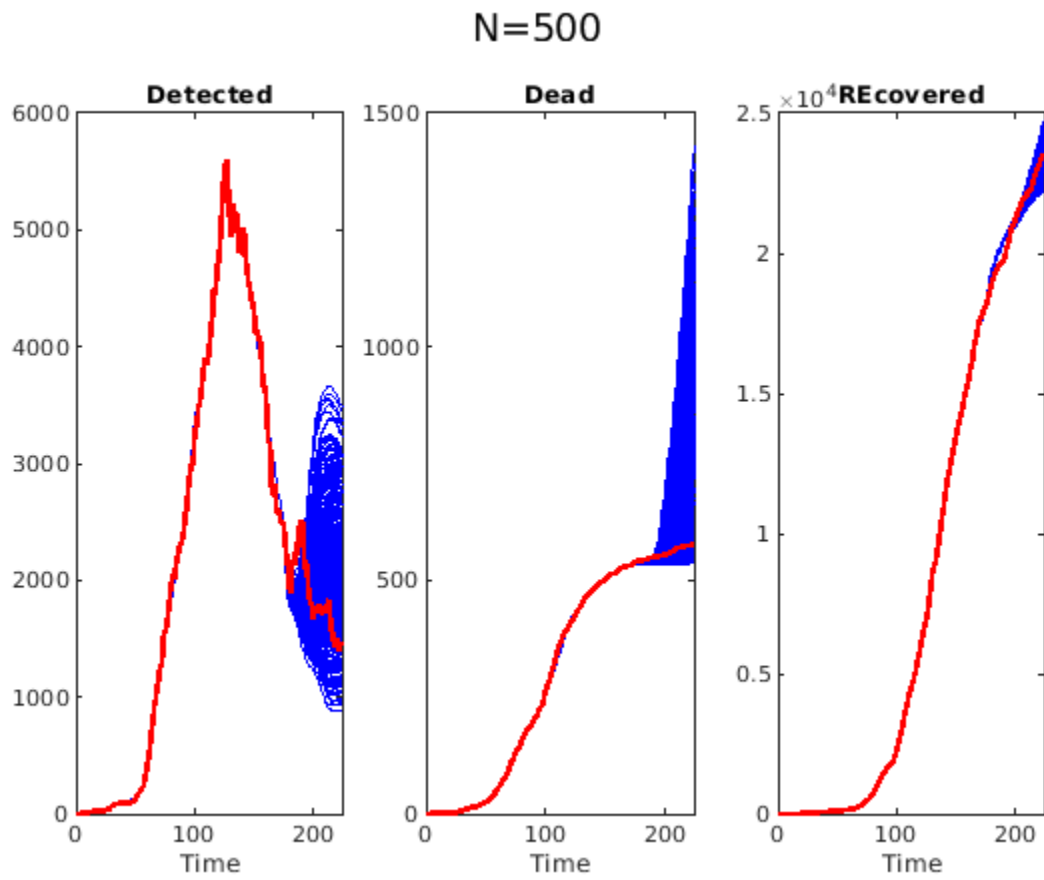
### 4.3. Identifiability analysis







#### 4.4. Uncertainty analysis



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## Chapter 5. Extension number5

### 5.1. Basic information

The extension to be validated consists of the time series from the data225 to the 255. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

### 5.2. Estimated parameters with their intervals

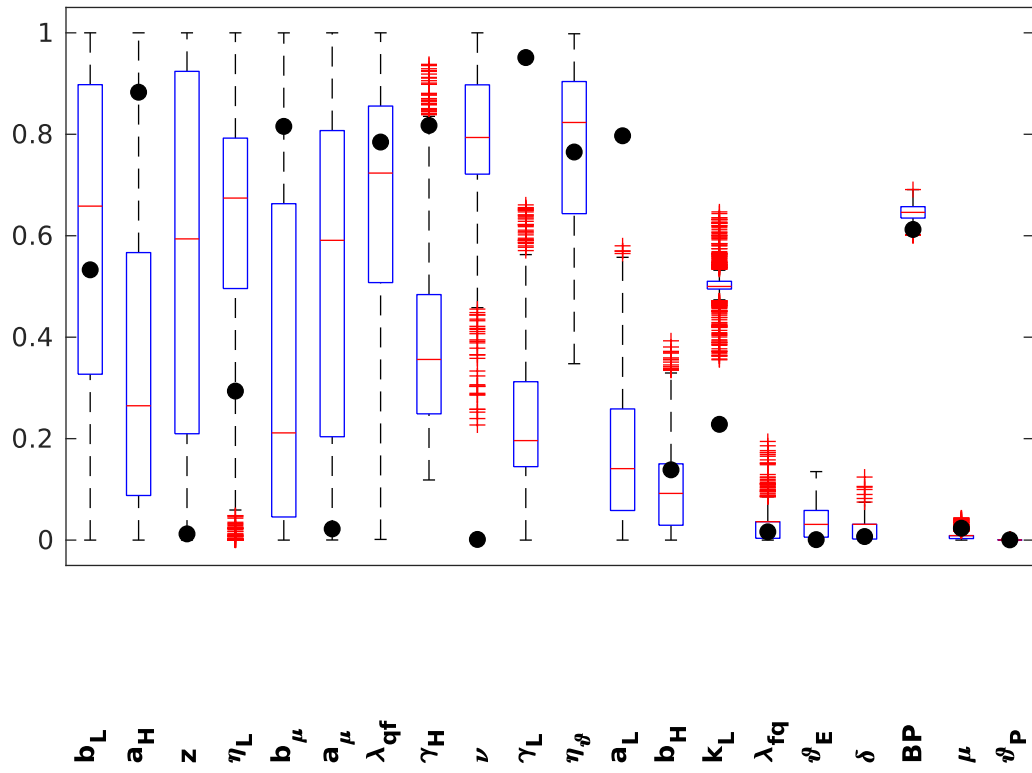
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

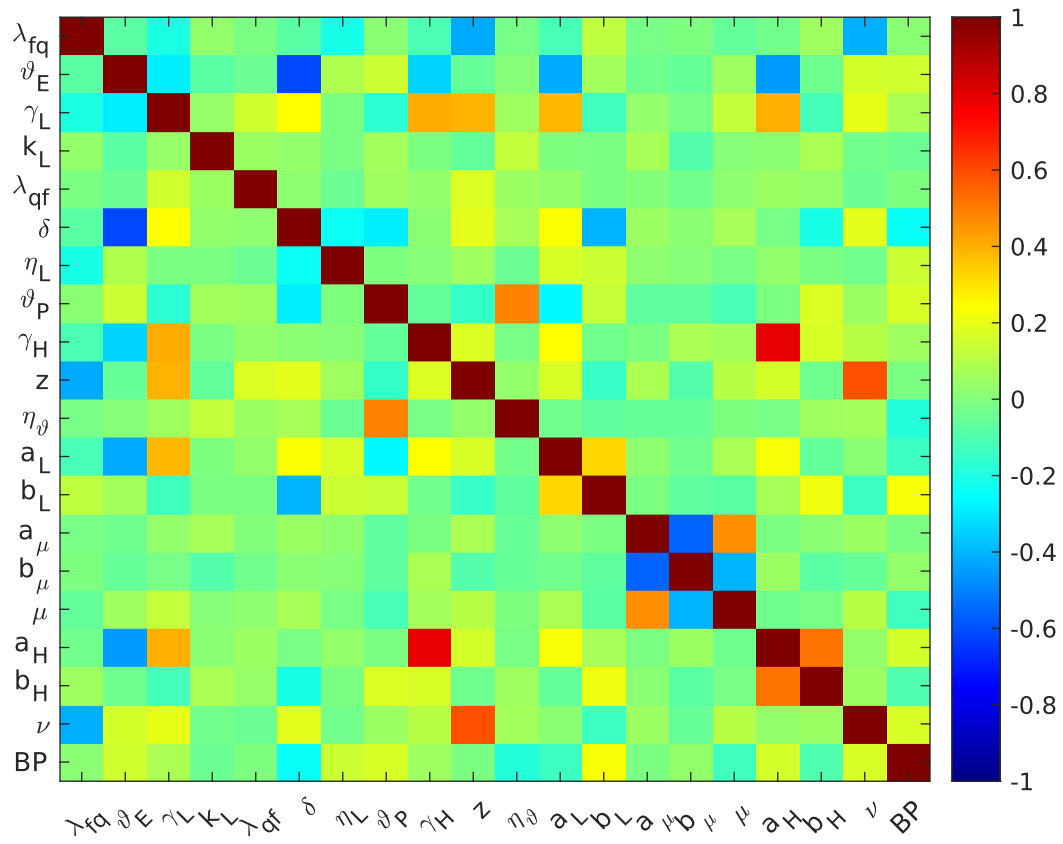
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

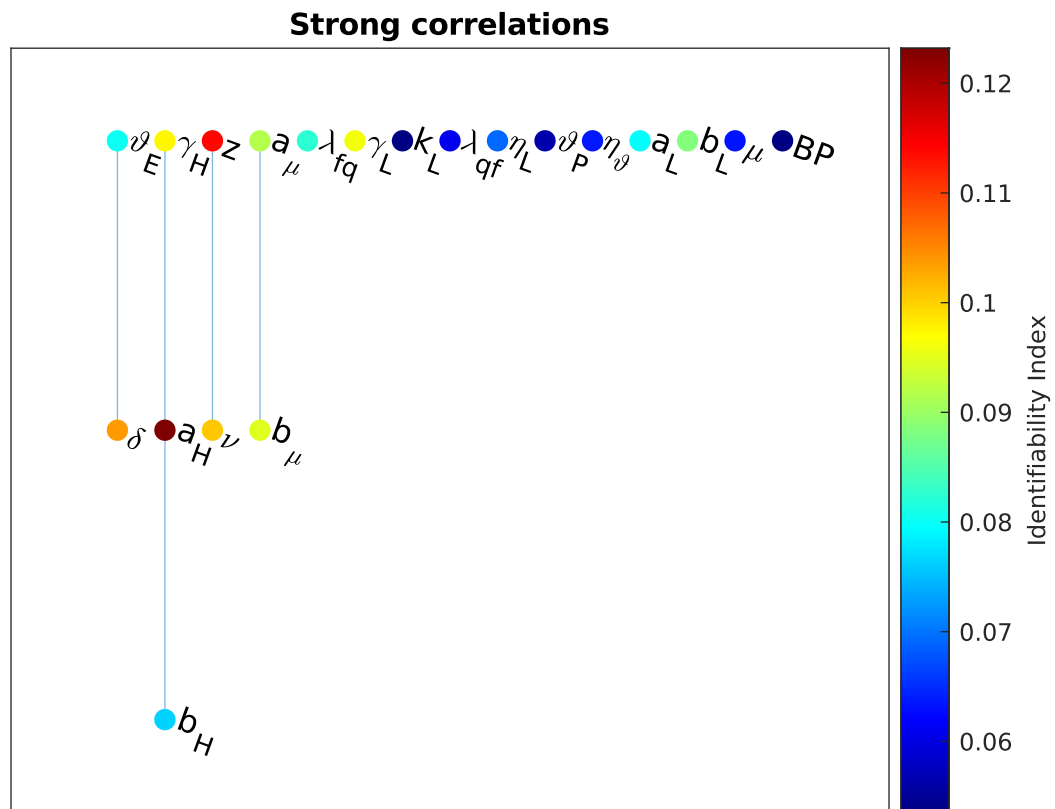
	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.013'	'0.098'	'0.0363'	'0.0163'	'0.0824'
$\vartheta_E$	'0'	'0.0016'	'0.031'	'0.0009'	'0.0805'
$\gamma_L$	'0.415'	'0.9702'	'0.1961'	'0.9512'	'0.0962'
$k_L$	'1.45'	'9.3297'	'5.5'	'3.054'	'0.0535'
$\lambda_{qf}$	'0.6328'	'0.9252'	'0.7235'	'0.7847'	'0.0612'
$\delta$	'0.0001'	'0.0019'	'0.0047'	'0.0011'	'0.1037'
$\eta_L$	'0.2838'	'0.5752'	'0.6742'	'0.2938'	'0.0693'
$\vartheta_P$	'0.0004'	'0.0007'	'0.0003'	'0.0005'	'0.0565'
$\gamma_H$	'0.2605'	'0.9621'	'0.3561'	'0.8175'	'0.0975'
$z$	'0.2837'	'0.3929'	'17.8135'	'0.3677'	'0.1137'
$\eta_{\vartheta}$	'0.7362'	'0.7814'	'0.8233'	'0.765'	'0.0637'
$a_L$	'11.0826'	'13.9807'	'2.9723'	'12.1589'	'0.0799'
$b_L$	'7.6039'	'11.0819'	'10.2172'	'8.4595'	'0.0886'
$a_{\mu}$	'1.28'	'14.4512'	'9.2734'	'1.3095'	'0.0916'
$b_{\mu}$	'1.3192'	'13.768'	'3.9589'	'12.4182'	'0.0949'
$\mu$	'0.0035'	'0.0291'	'0.0088'	'0.0234'	'0.0634'
$a_H$	'7.93'	'14.6973'	'4.7076'	'13.3608'	'0.1232'
$b_H$	'2.5971'	'9.087'	'2.2885'	'2.9392'	'0.0766'
$\nu$	'0'	'1.3639'	'396.8399'	'0.6589'	'0.1007'
BP	'220.3437'	'226.0695'	'223.5'	'220.5'	'0.0537'



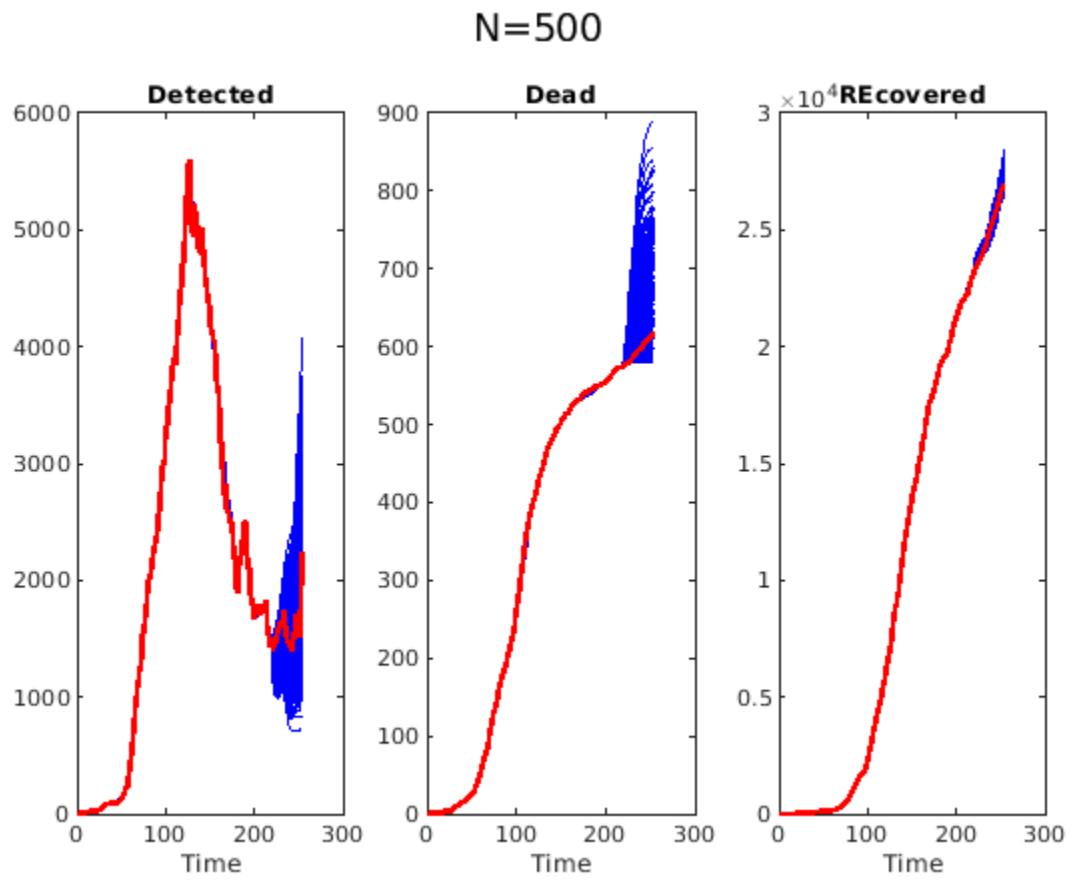
### 5.3. Identifiability analysys







## 5.4. Uncertainty analysys



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## Chapter 6. Extension number6

### 6.1. Basic information

The extension to be validated consists of the time series from the data255 to the 285. The status of the validation is: COMPLETED.

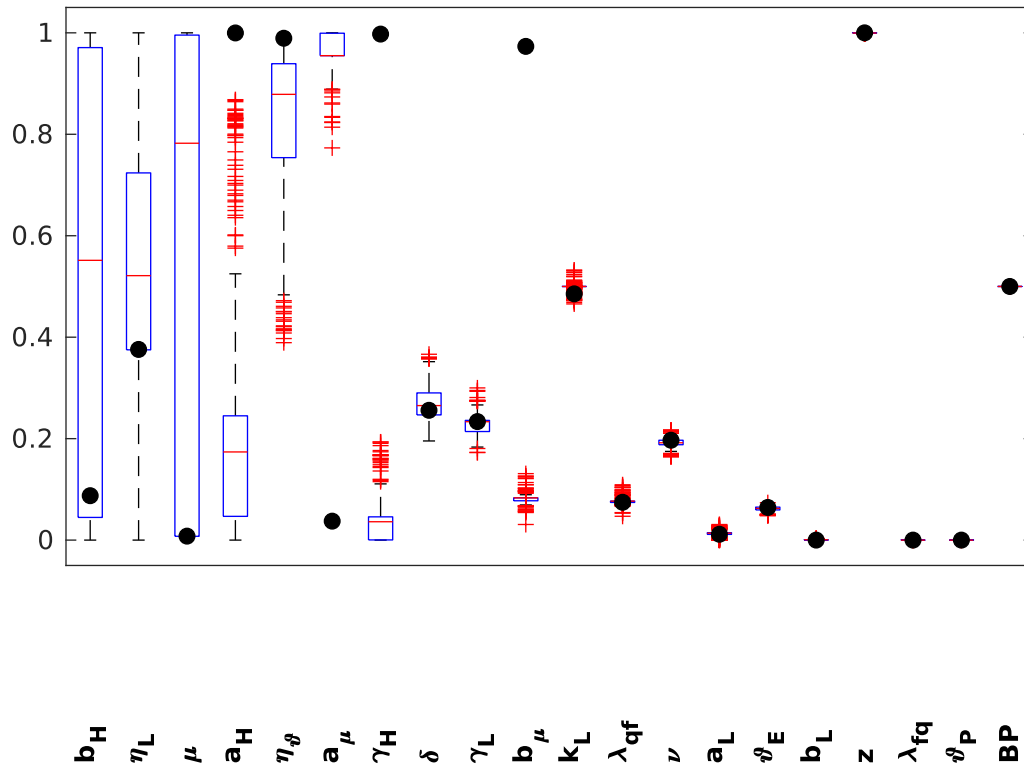
The number of estimations needed to perform the validation was1000.

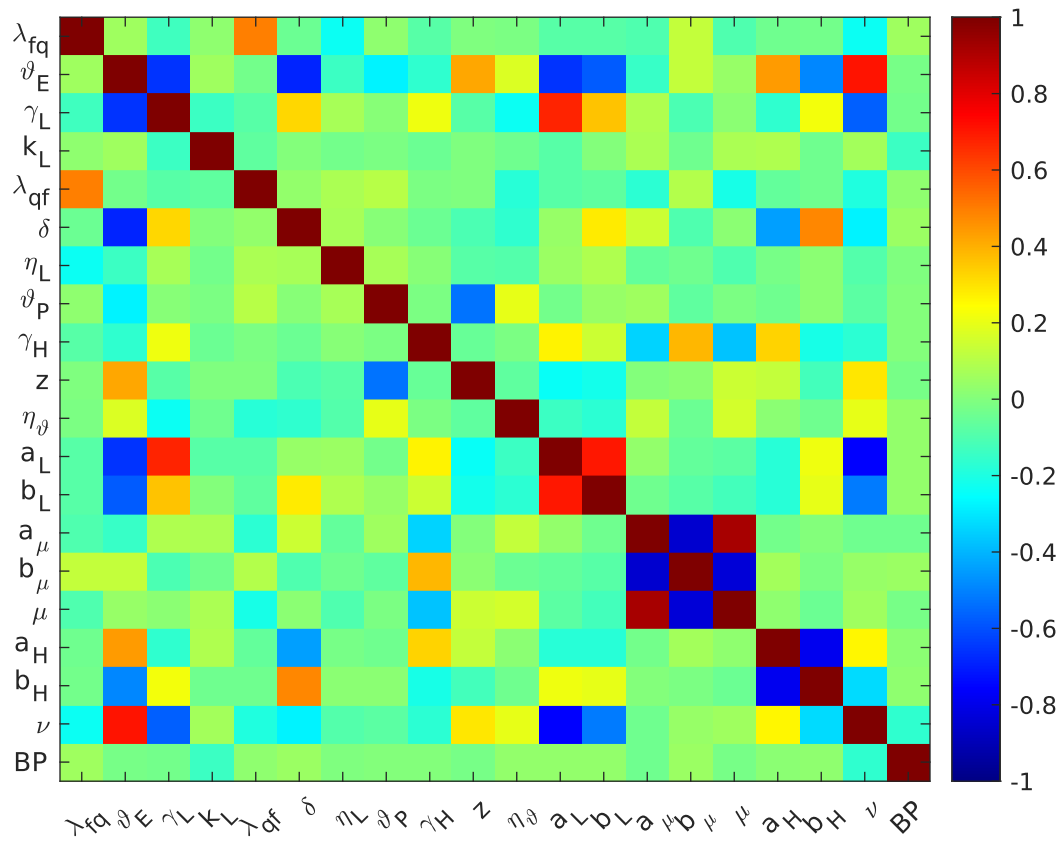
### 6.2. Estimated parameters with their intervals

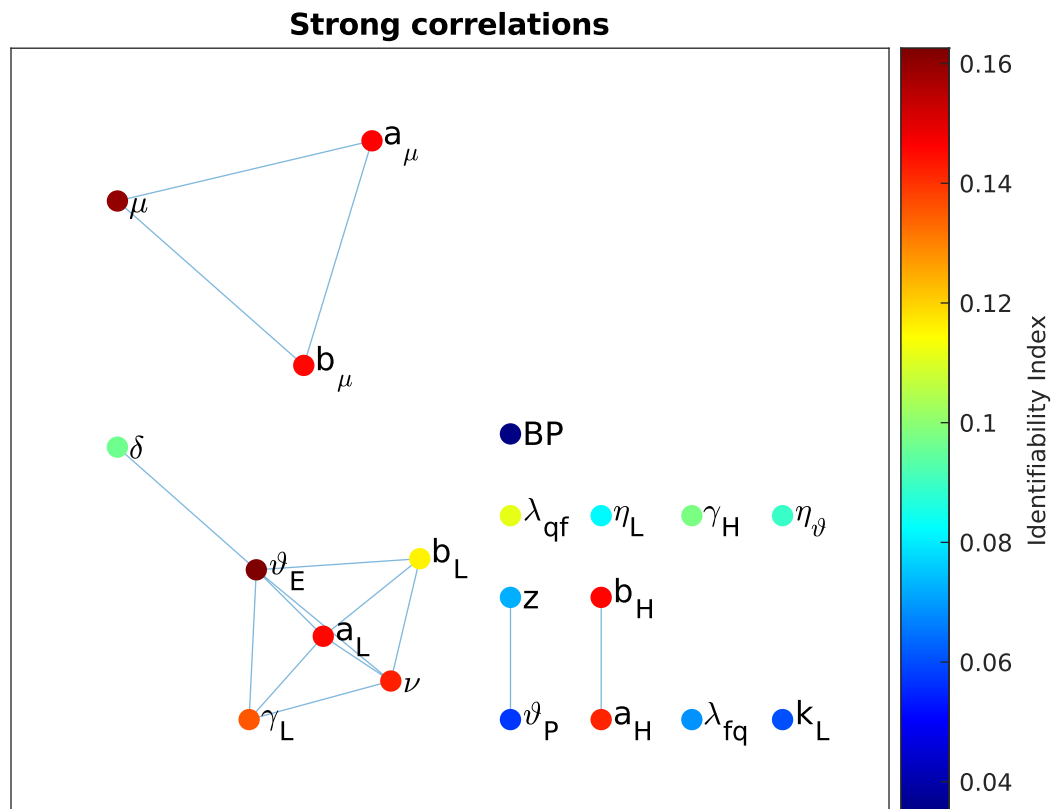
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0'	'0.0394'	'0'	'0'	'0.0691'
$\vartheta_E$	'0.0603'	'0.0646'	'0.0625'	'0.0644'	'0.1626'
$\gamma_L$	'0.2128'	'0.254'	'0.2334'	'0.2336'	'0.1352'
$k_L$	'5.296'	'5.704'	'5.5'	'5.3688'	'0.0606'
$\lambda_{qf}$	'0.0156'	'0.1381'	'0.0769'	'0.0746'	'0.1115'
$\delta$	'0.0372'	'0.0424'	'0.0398'	'0.0384'	'0.0964'
$\eta_L$	'0.4813'	'0.5614'	'0.5213'	'0.3759'	'0.0818'
$\vartheta_P$	'0'	'0.0001'	'0'	'0'	'0.0574'
$\gamma_H$	'0'	'0.0746'	'0.0362'	'0.9975'	'0.0982'
$z$	'29.7979'	'30'	'29.9884'	'29.9992'	'0.0724'
$\eta_{\vartheta}$	'0.84'	'0.9174'	'0.8787'	'0.9893'	'0.0897'
$a_L$	'1'	'1.4397'	'1.1912'	'1.1614'	'0.1454'
$b_L$	'1'	'1.1295'	'1.0089'	'1.0002'	'0.1158'
$a_{\mu}$	'13.4333'	'15'	'14.3699'	'1.523'	'0.1463'
$b_{\mu}$	'1.3768'	'2.9555'	'2.1661'	'14.6259'	'0.1455'
$\mu$	'0.7142'	'0.8505'	'0.7823'	'0.0078'	'0.1599'
$a_H$	'2.5565'	'4.3096'	'3.4331'	'14.9967'	'0.1418'
$b_H$	'7.7829'	'9.6596'	'8.7212'	'2.2256'	'0.1459'
$\nu$	'93.5655'	'98.2698'	'95.9176'	'98.4435'	'0.1423'
BP	'254.9776'	'255.0224'	'255'	'255'	'0.0349'

### 6.3. Identifiability analysis



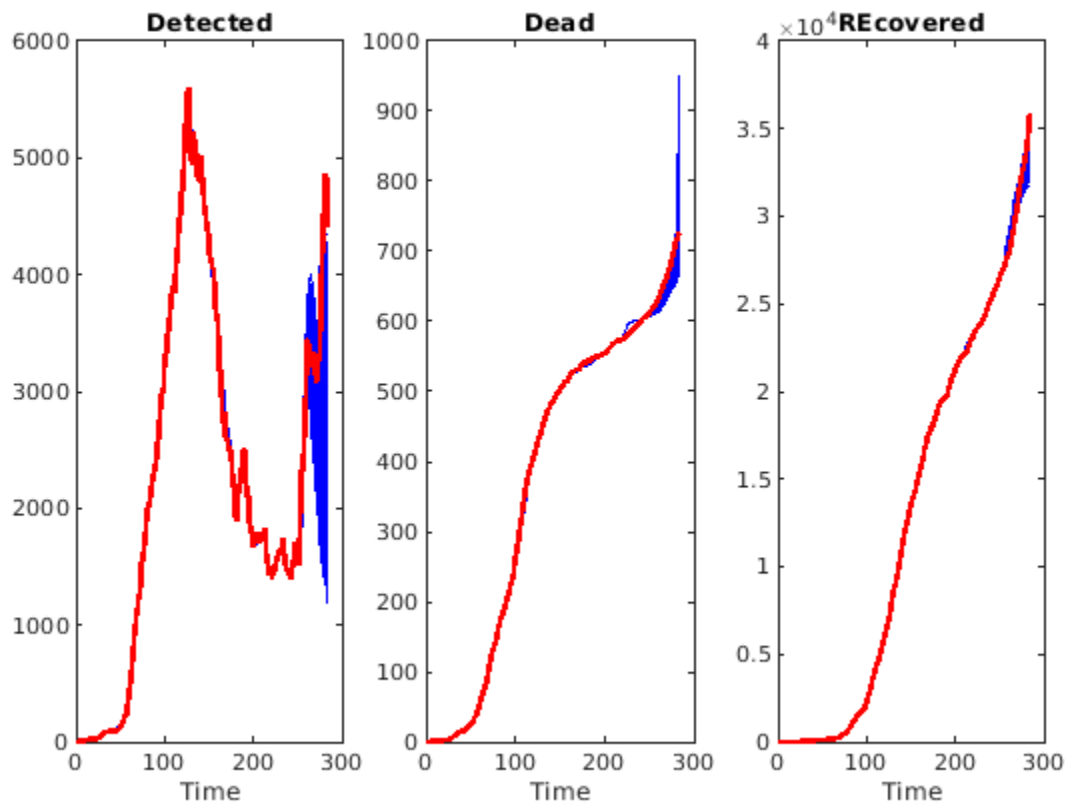






## 6.4. Uncertainty analysis

N=500



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## Chapter 7. Extension number7

### 7.1. Basic information

The extension to be validated consists of the time series from the data285 to the 322. The status of the validation is: COMPLETED.

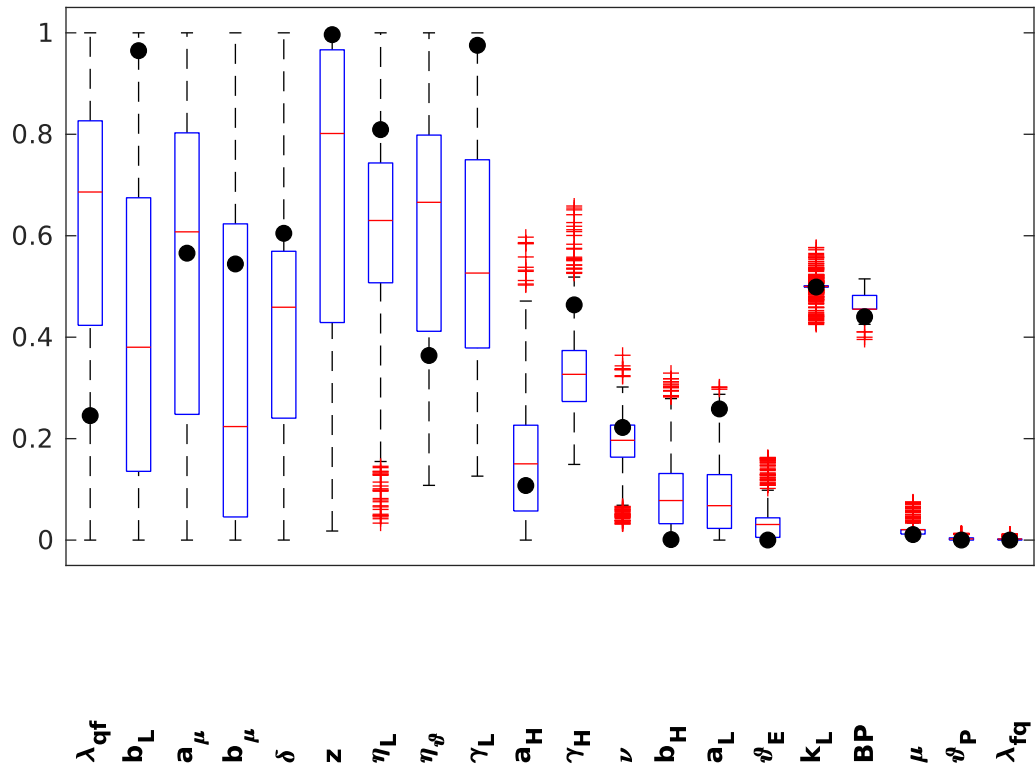
The number of estimations needed to perform the validation was1000.

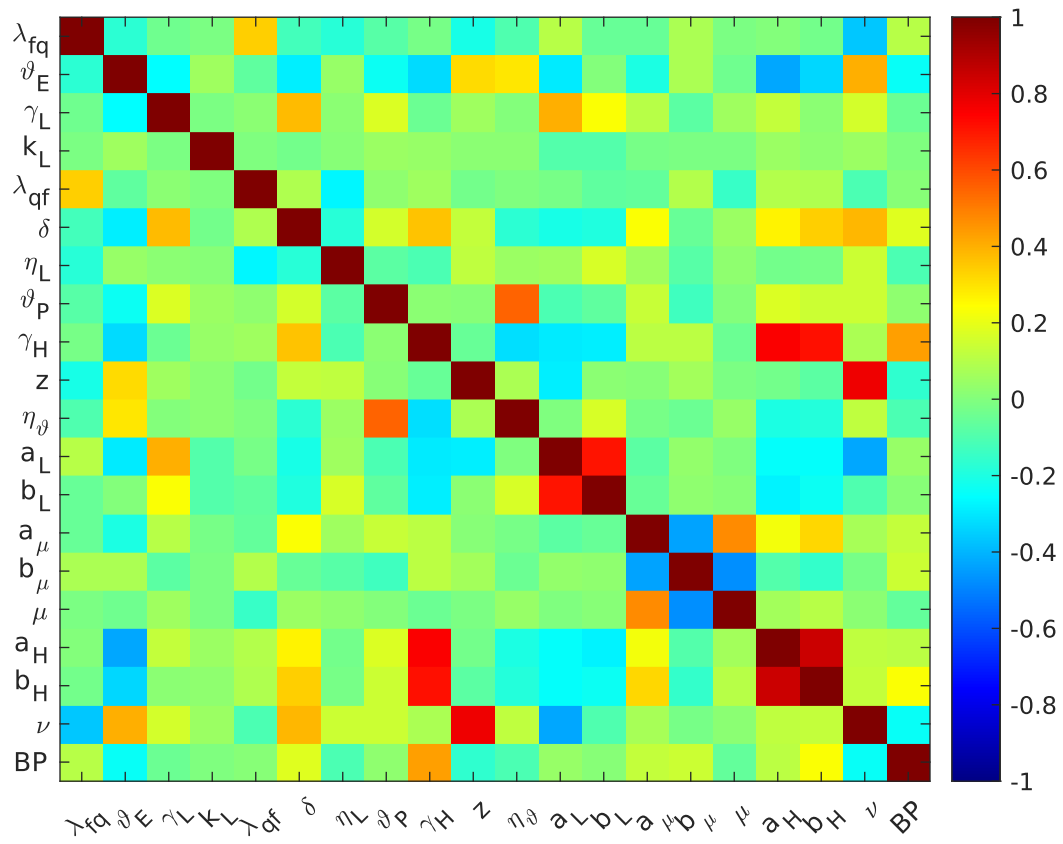
### 7.2. Estimated parameters with their intervals

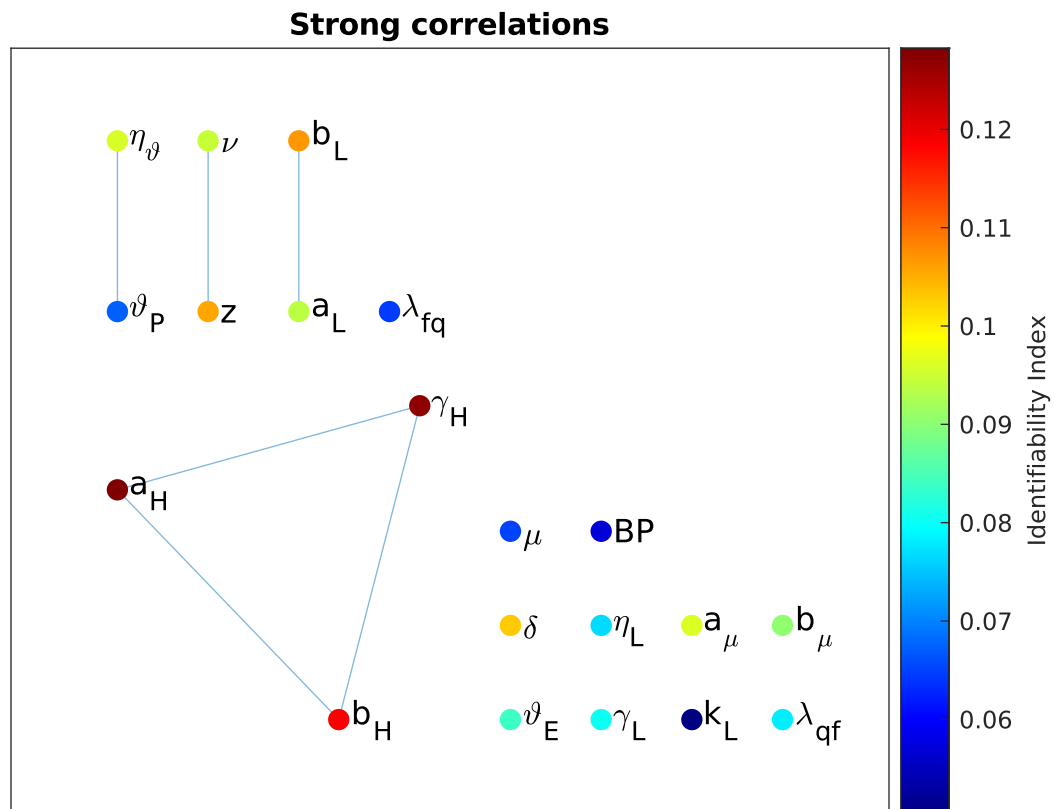
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0'	'0.0276'	'0.0022'	'0'	'0.0645'
$\vartheta_E$	'0.0222'	'0.0397'	'0.0309'	'0.0001'	'0.0842'
$\gamma_L$	'0.4985'	'0.5543'	'0.5264'	'0.9754'	'0.0805'
$k_L$	'5.337'	'5.6626'	'5.4998'	'5.4896'	'0.0506'
$\lambda_{qf}$	'0.6527'	'0.7197'	'0.6862'	'0.2454'	'0.0783'
$\delta$	'0.0643'	'0.0734'	'0.0689'	'0.0907'	'0.1031'
$\eta_L$	'0.5996'	'0.6599'	'0.6297'	'0.8092'	'0.0768'
$\vartheta_P$	'0.0015'	'0.0033'	'0.0024'	'0.0001'	'0.0674'
$\gamma_H$	'0.3022'	'0.3515'	'0.3269'	'0.4638'	'0.1268'
$z$	'22.9141'	'25.1787'	'24.0464'	'29.8917'	'0.1056'
$\eta_{\vartheta}$	'0.6384'	'0.6934'	'0.6659'	'0.364'	'0.0958'
$a_L$	'1.7993'	'2.1011'	'1.9502'	'4.6201'	'0.0938'
$b_L$	'5.8359'	'6.81'	'6.3229'	'14.5074'	'0.1068'
$a_{\mu}$	'8.9961'	'10.0187'	'9.5074'	'8.9184'	'0.0962'
$b_{\mu}$	'3.6025'	'4.6646'	'4.1336'	'8.6211'	'0.0906'
$\mu$	'0.0011'	'0.0402'	'0.0206'	'0.0109'	'0.0652'
$a_H$	'2.7376'	'3.4795'	'3.1086'	'2.5062'	'0.1283'
$b_H$	'1.8774'	'2.3101'	'2.0937'	'1.0145'	'0.1185'
$\nu$	'93.8712'	'102.8502'	'98.3607'	'111.017'	'0.0946'
BP	'285.3521'	'285.6479'	'285.5'	'284.4999'	'0.057'

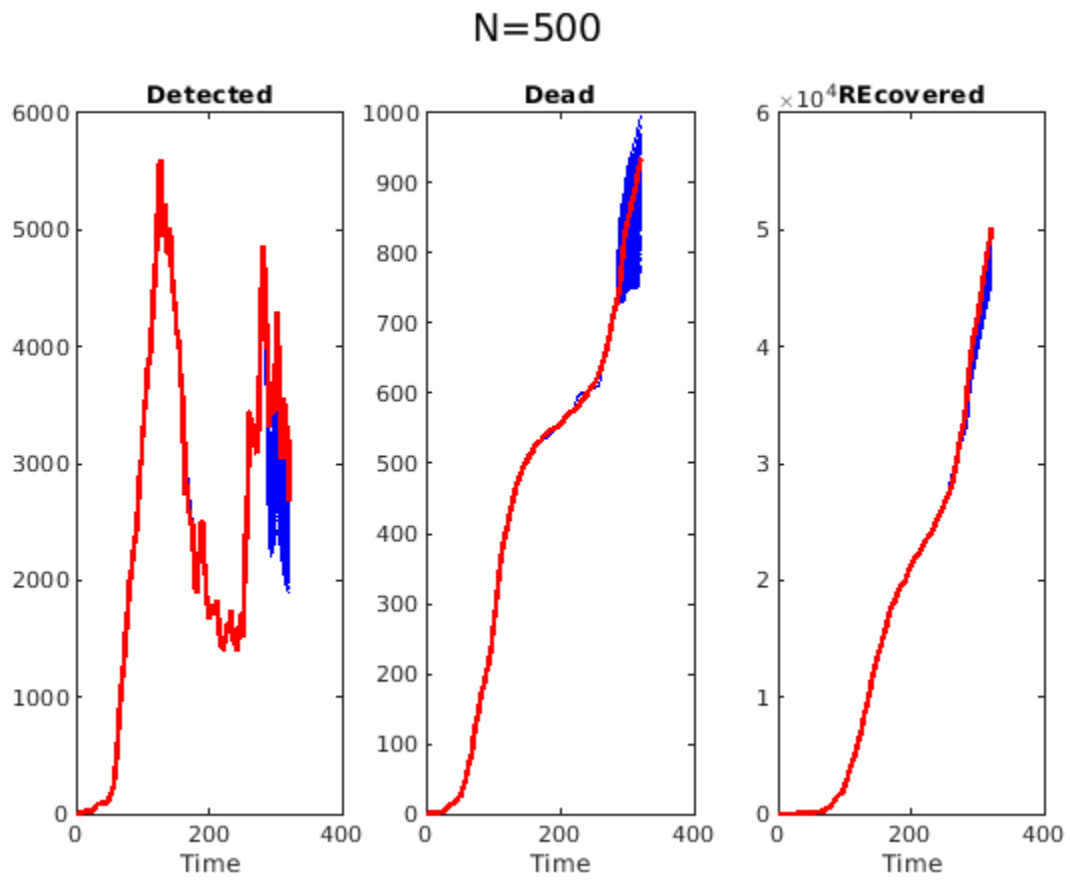
### 7.3. Identifiability analysis







## 7.4. Uncertainty analysys



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## Chapter 8. Extension number8

### 8.1. Basic information

The extension to be validated consists of the time series from the data322 to the 356. The status of the validation is: COMPLETED.

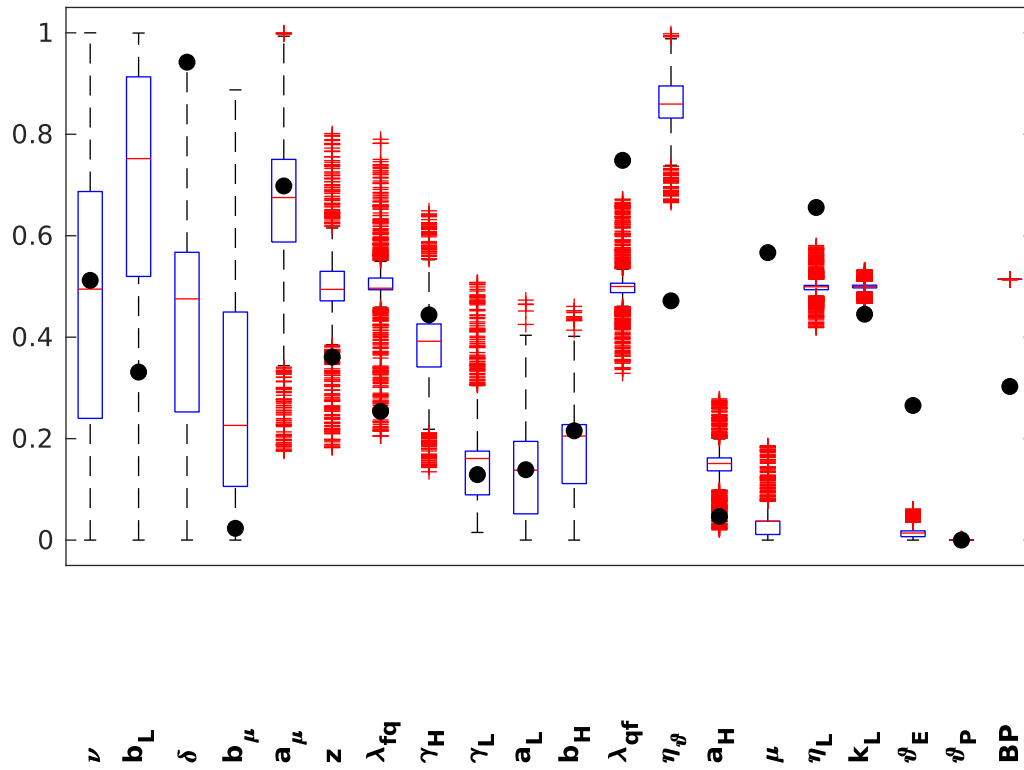
The number of estimations needed to perform the validation was1000.

### 8.2. Estimated parameters with their intervals

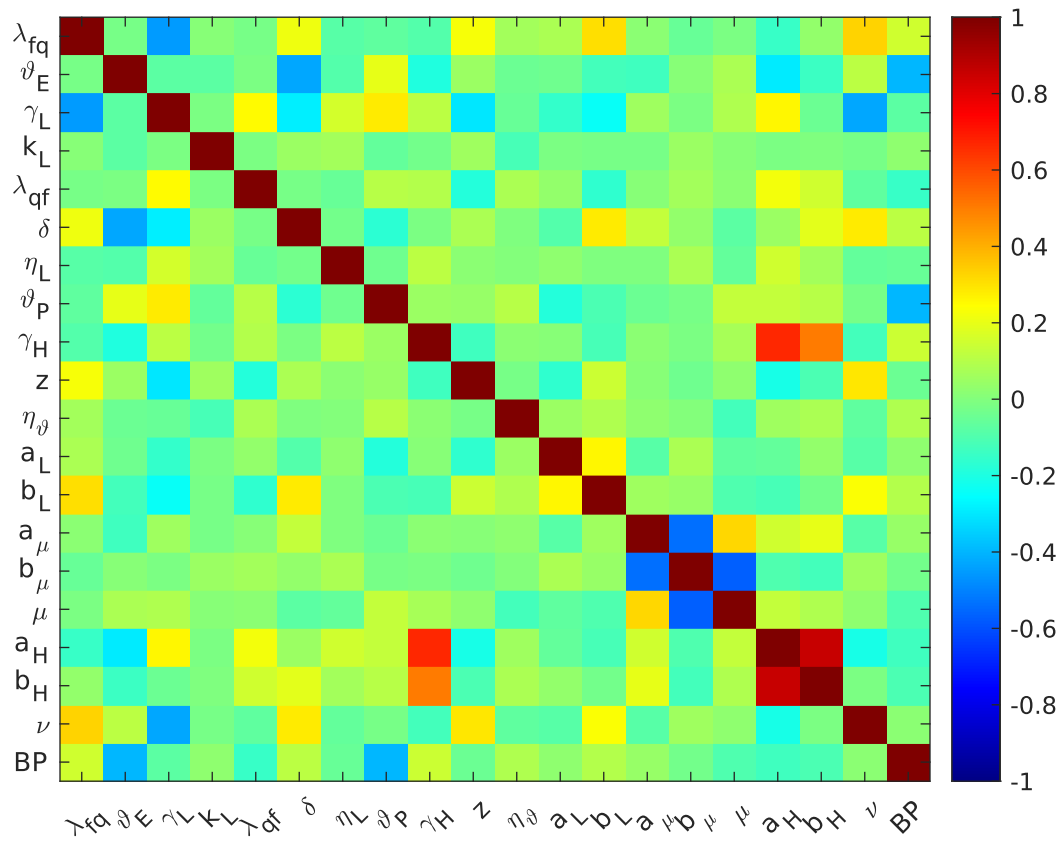
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

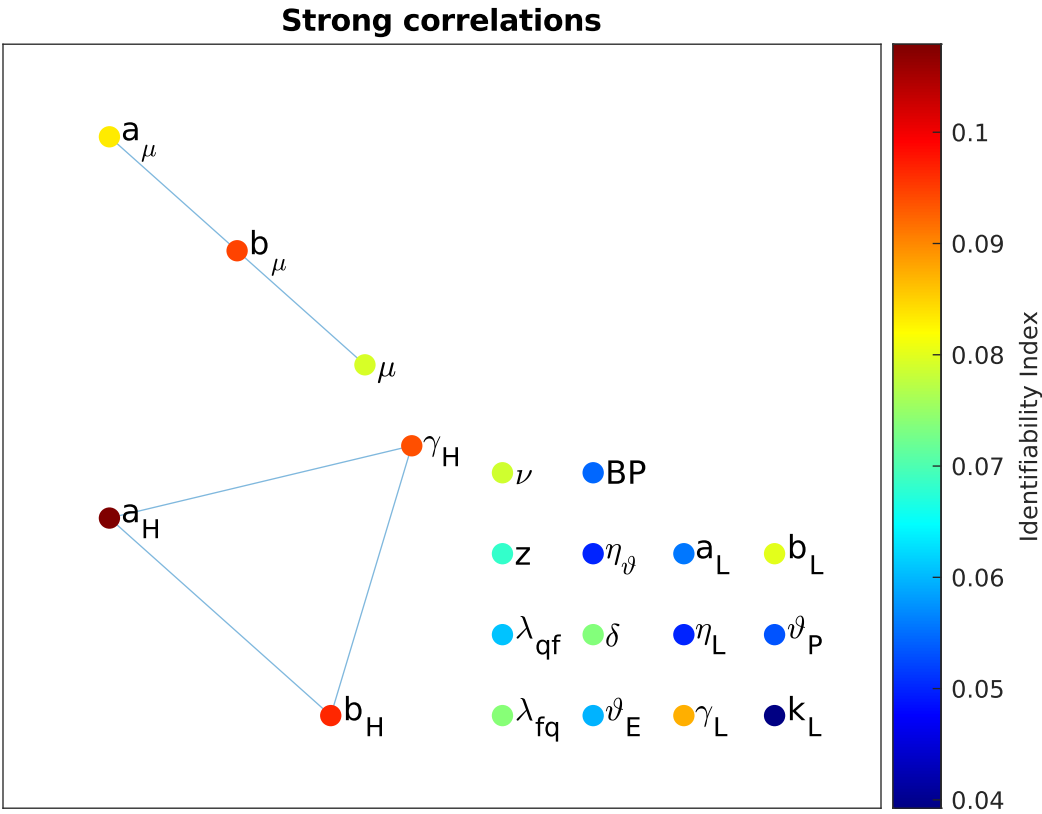
	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.4777'	'0.5154'	'0.4965'	'0.2539'	'0.0739'
$\vartheta_E$	'0.0107'	'0.0172'	'0.014'	'0.2654'	'0.0596'
$\gamma_L$	'0.1402'	'0.1815'	'0.1609'	'0.1291'	'0.0874'
$k_L$	'5.4453'	'5.555'	'5.5001'	'5.0075'	'0.0393'
$\lambda_{qf}$	'0.4856'	'0.5143'	'0.5'	'0.7486'	'0.0607'
$\delta$	'0.0688'	'0.0739'	'0.0714'	'0.1413'	'0.0737'
$\eta_L$	'0.4887'	'0.51'	'0.4993'	'0.6557'	'0.0502'
$\vartheta_P$	'0.0002'	'0.0007'	'0.0005'	'0'	'0.0533'
$\gamma_H$	'0.3796'	'0.4045'	'0.392'	'0.444'	'0.0939'
$z$	'14.33'	'15.3232'	'14.8266'	'10.8302'	'0.0684'
$\eta_{\vartheta}$	'0.8481'	'0.8709'	'0.8595'	'0.4717'	'0.05'
$a_L$	'2.7699'	'3.0983'	'2.9341'	'2.9429'	'0.0558'
$b_L$	'11.2015'	'11.8551'	'11.5283'	'5.6371'	'0.0801'
$a_{\mu}$	'10.1502'	'10.7553'	'10.4528'	'10.7732'	'0.0834'
$b_{\mu}$	'3.8775'	'4.457'	'4.1672'	'1.3249'	'0.0946'
$\mu$	'0.0218'	'0.0529'	'0.0373'	'0.5667'	'0.0793'
$a_H$	'2.9944'	'3.2333'	'3.1139'	'1.6524'	'0.1079'
$b_H$	'3.7232'	'4.0203'	'3.8717'	'4.016'	'0.0965'
$\nu$	'236.1555'	'258.6304'	'247.3929'	'255.9896'	'0.0789'
BP	'321.3287'	'321.6712'	'321.4999'	'306.5023'	'0.0547'

## 8.3. Identifiability analysys

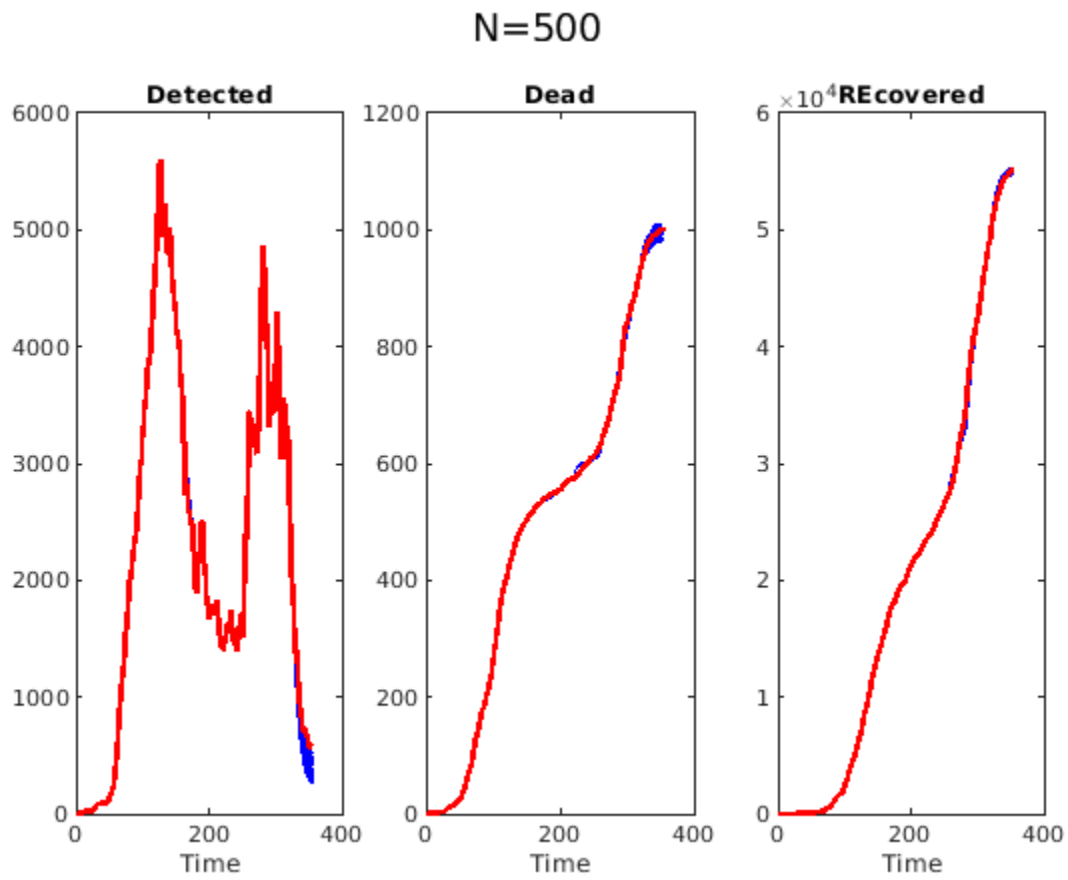








## 8.4. Uncertainty analysis



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## Chapter 9. Extension number9

### 9.1. Basic information

The extension to be validated consists of the time series from the data356 to the 409. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

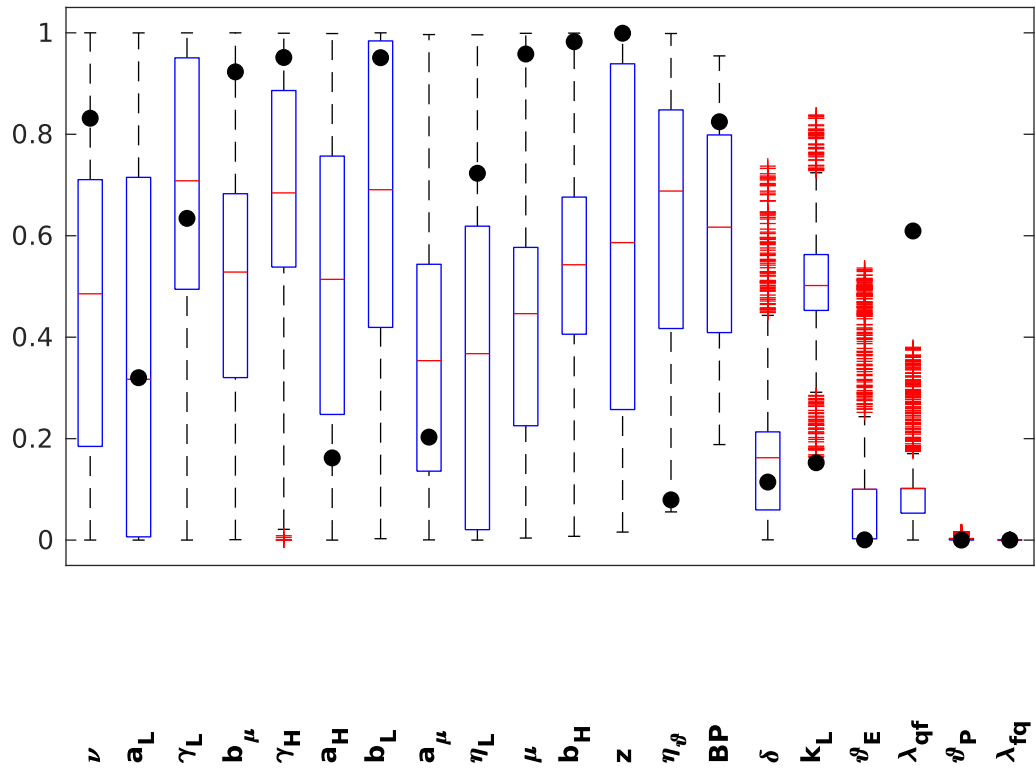
### 9.2. Estimated parameters with their intervals

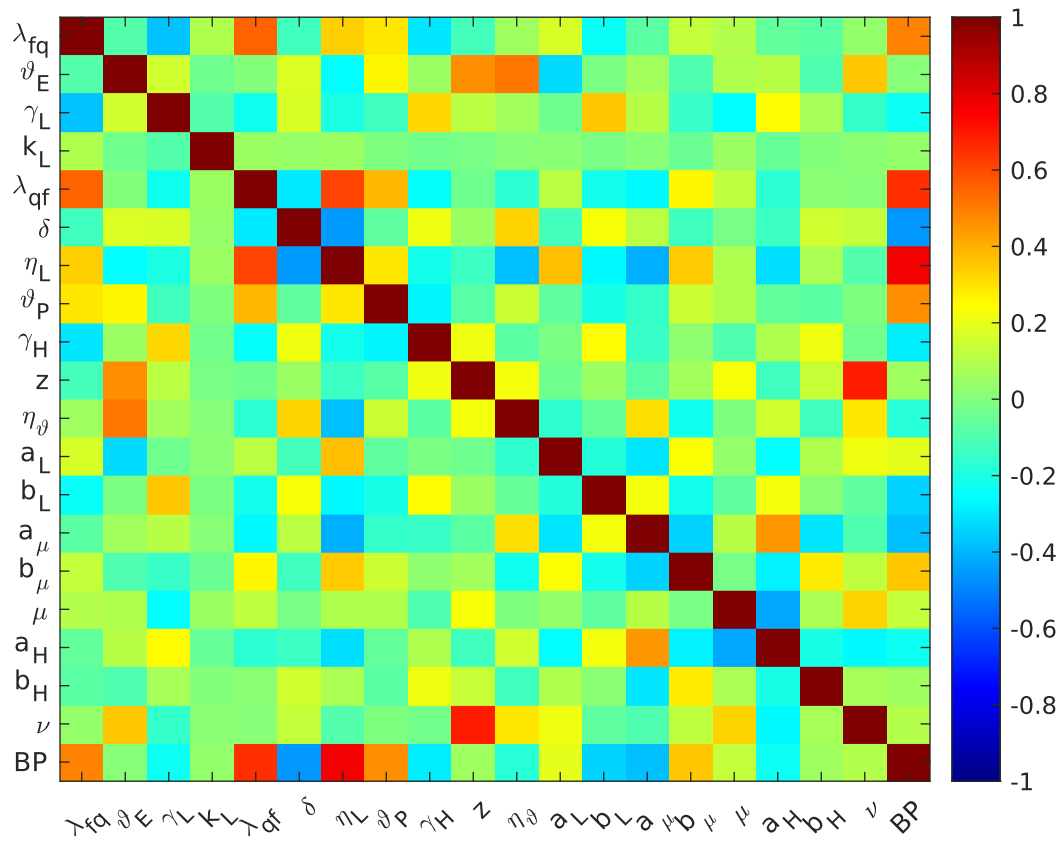
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

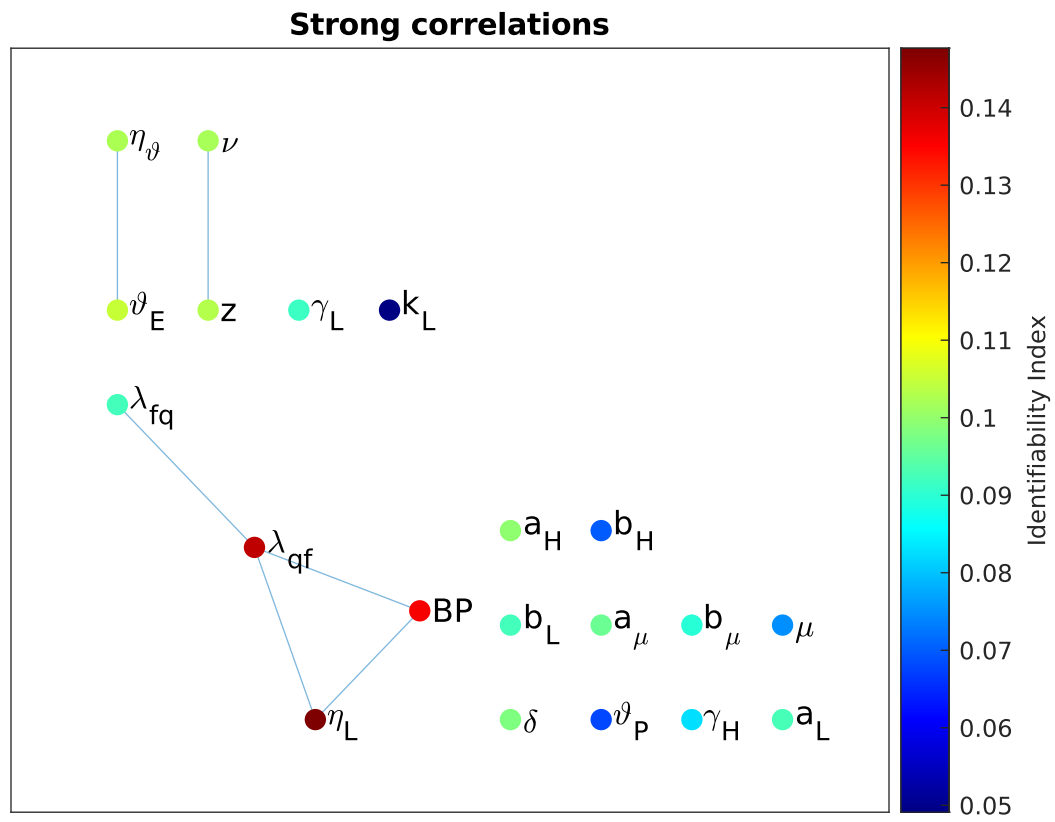
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0001'	'0.0003'	'0.0001'	'0.0924'
\vartheta_E	'0'	'0.0012'	'0.1001'	'0.0005'	'0.1052'
\gamma_L	'0.2952'	'1'	'0.7083'	'0.6343'	'0.0918'
k_L	'1'	'10'	'5.5166'	'2.3727'	'0.0491'
\lambda_{qf}	'0.2225'	'1'	'0.1018'	'0.6094'	'0.1415'
\delta	'0'	'0.0386'	'0.0244'	'0.0172'	'0.0984'
\eta_L	'0'	'1'	'0.3675'	'0.7232'	'0.1477'
\vartheta_P	'0'	'0.4915'	'0.003'	'0'	'0.0683'
\gamma_H	'0'	'1'	'0.6844'	'0.9514'	'0.0828'
z	'17.2611'	'30'	'17.5944'	'29.9763'	'0.1031'
\eta_{\vartheta}	'0'	'0.1785'	'0.6881'	'0.0793'	'0.1026'
a_L	'1.1856'	'7.5774'	'5.4389'	'5.4818'	'0.0928'
b_L	'5.7044'	'15'	'10.6697'	'14.3136'	'0.0926'
a_{\mu}	'1'	'15'	'5.9522'	'3.8425'	'0.0961'
b_{\mu}	'1'	'15'	'8.3974'	'13.9226'	'0.0897'
\mu	'0'	'1'	'0.4464'	'0.9582'	'0.0751'
a_H	'1'	'15'	'8.1963'	'3.2681'	'0.0999'
b_H	'1'	'15'	'8.5989'	'14.7546'	'0.0702'
\nu	'298.1789'	'422.1778'	'242.7716'	'415.8223'	'0.1021'
BP	'384.8021'	'390.9941'	'369.5'	'385.5'	'0.1359'

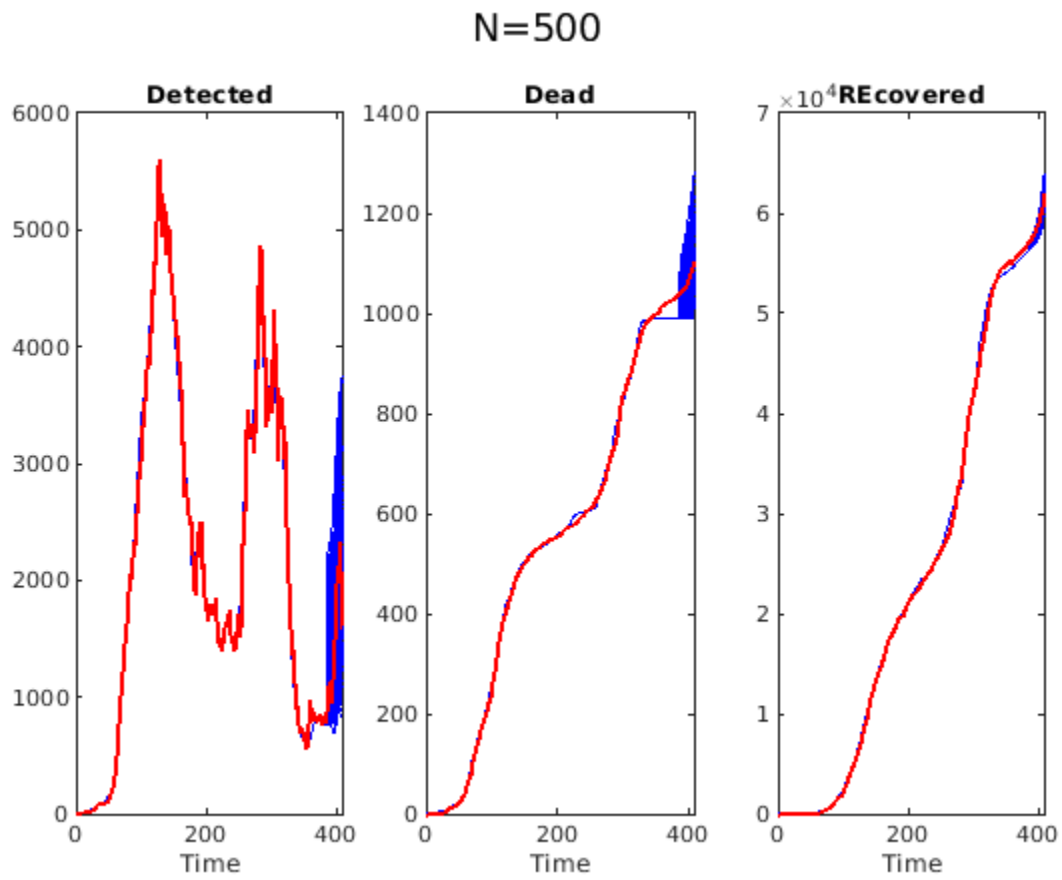
### 9.3. Identifiability analysis







## 9.4. Uncertainty analysis





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## Chapter 10. Extension number10

### 10.1. Basic information

The extension to be validated consists of the time series from the data409 to the 439. The status of the validation is: COMPLETED.

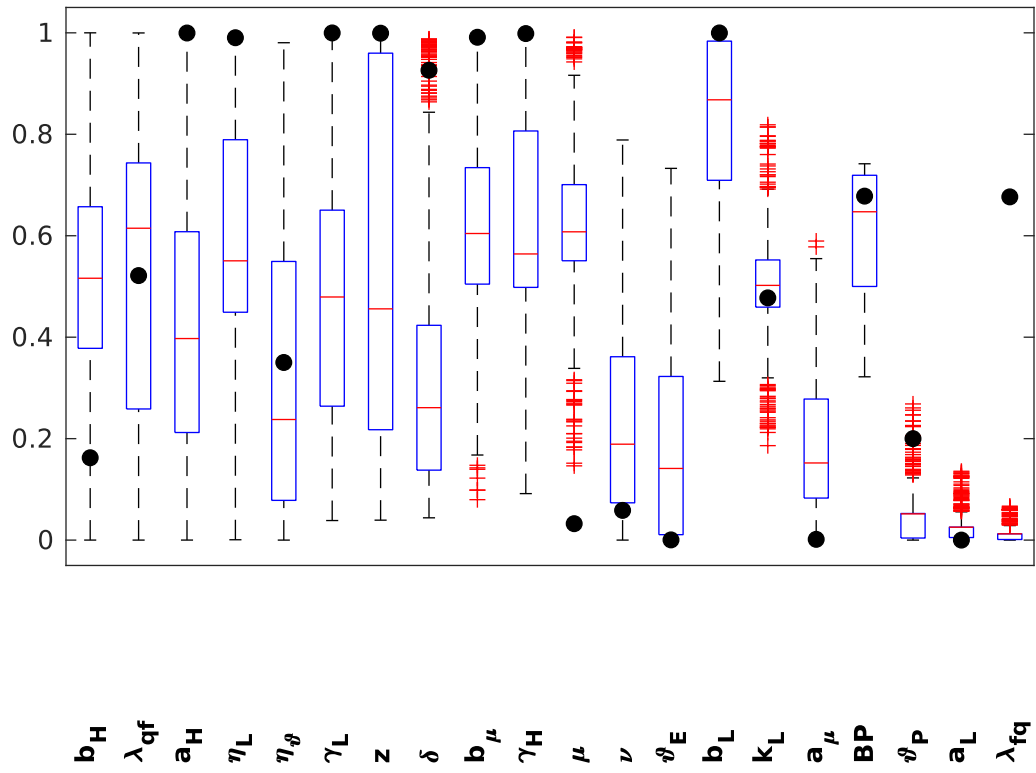
The number of estimations needed to perform the validation was1000.

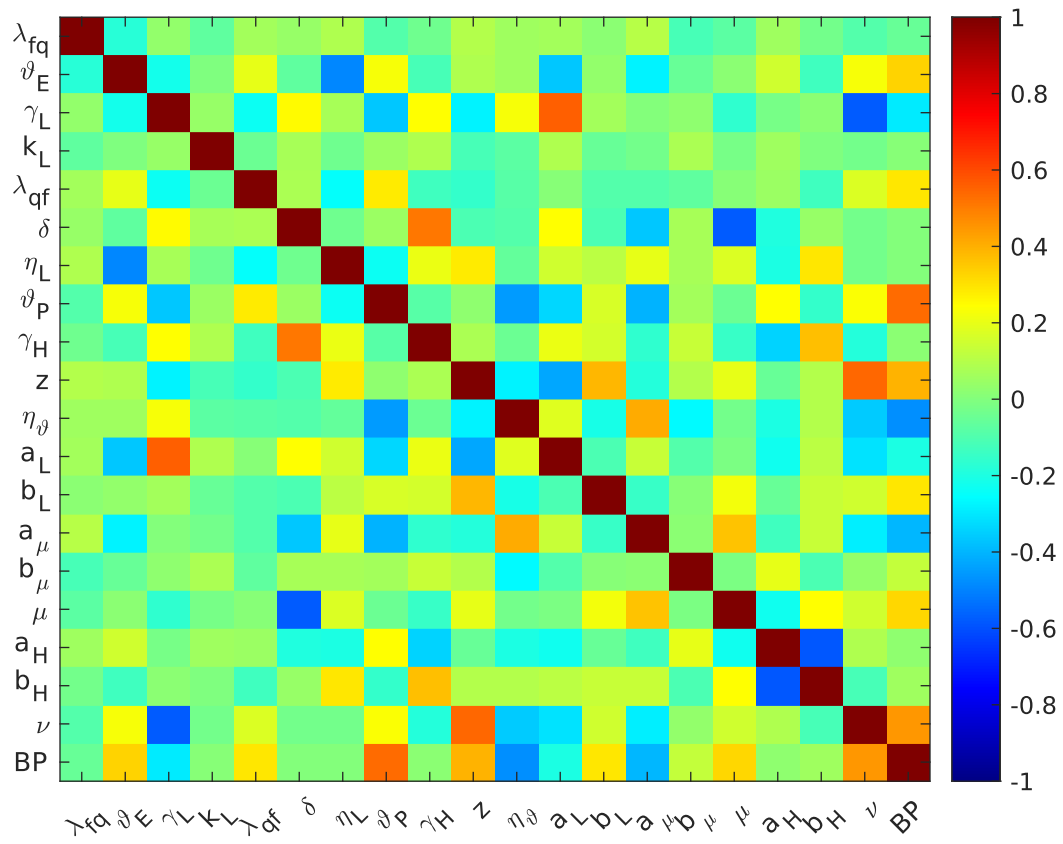
### 10.2. Estimated parameters with their intervals

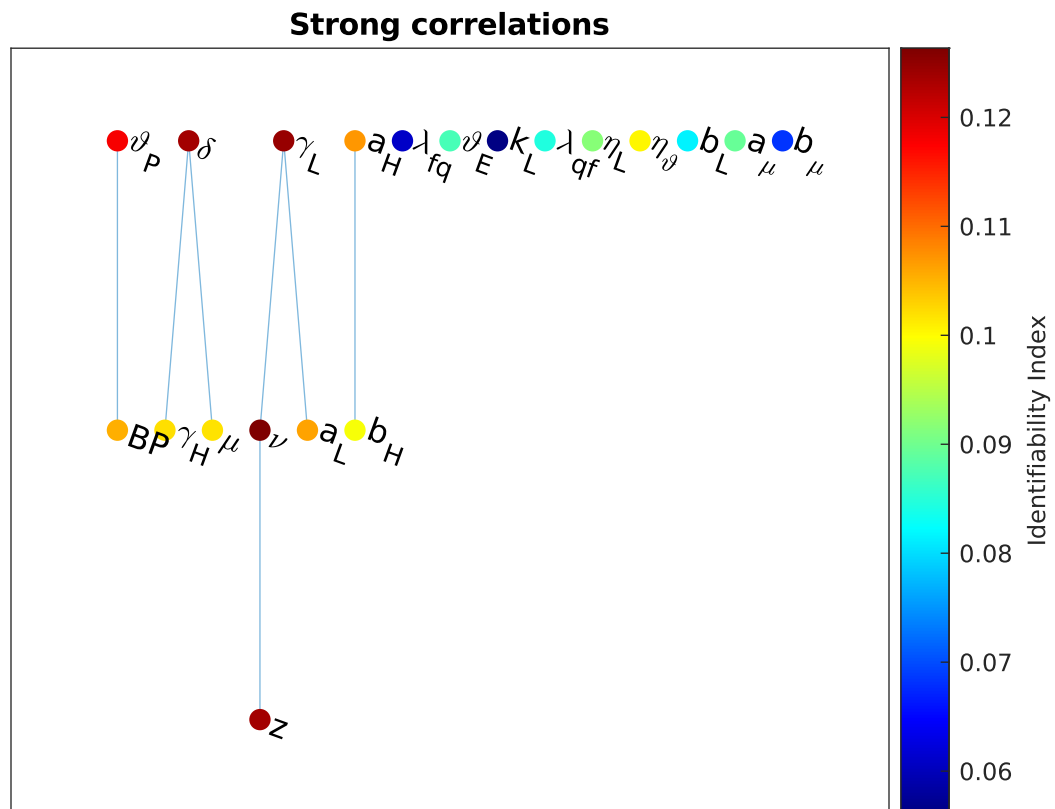
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0378'	'0.0124'	'0.6766'	'0.061'
\vartheta_E	'0.1196'	'0.1632'	'0.1414'	'0.0004'	'0.0872'
\gamma_L	'0.4509'	'0.5076'	'0.4793'	'0.9998'	'0.1246'
k_L	'5.3472'	'5.691'	'5.5191'	'5.2976'	'0.0562'
\lambda_{qf}	'0.5857'	'0.6439'	'0.6148'	'0.5215'	'0.0845'
\delta	'0.0339'	'0.045'	'0.0395'	'0.1389'	'0.1237'
\eta_L	'0.5211'	'0.58'	'0.5505'	'0.9903'	'0.0918'
\vartheta_P	'0.0216'	'0.0819'	'0.0517'	'0.2'	'0.1181'
\gamma_H	'0.5399'	'0.5882'	'0.5641'	'0.9985'	'0.1022'
z	'12.5457'	'14.8057'	'13.6757'	'29.9782'	'0.1239'
\eta_{\vartheta}	'0.2076'	'0.2679'	'0.2377'	'0.3501'	'0.1005'
a_L	'1.067'	'1.6499'	'1.3585'	'1.0002'	'0.1061'
b_L	'12.8011'	'13.5008'	'13.1509'	'14.9969'	'0.0814'
a_{\mu}	'2.8991'	'3.3594'	'3.1292'	'1.0211'	'0.0894'
b_{\mu}	'9.1436'	'9.7751'	'9.4594'	'14.8774'	'0.0683'
\mu	'0.5805'	'0.6349'	'0.6077'	'0.0324'	'0.1019'
a_H	'6.1302'	'6.9948'	'6.5625'	'14.9949'	'0.107'
b_H	'7.8606'	'8.5931'	'8.2268'	'3.2728'	'0.0993'
\nu	'81.7747'	'107.3168'	'94.5457'	'29.2906'	'0.1263'
BP	'401.947'	'404.0517'	'402.9993'	'405.5'	'0.1054'

### 10.3. Identifiability analysis

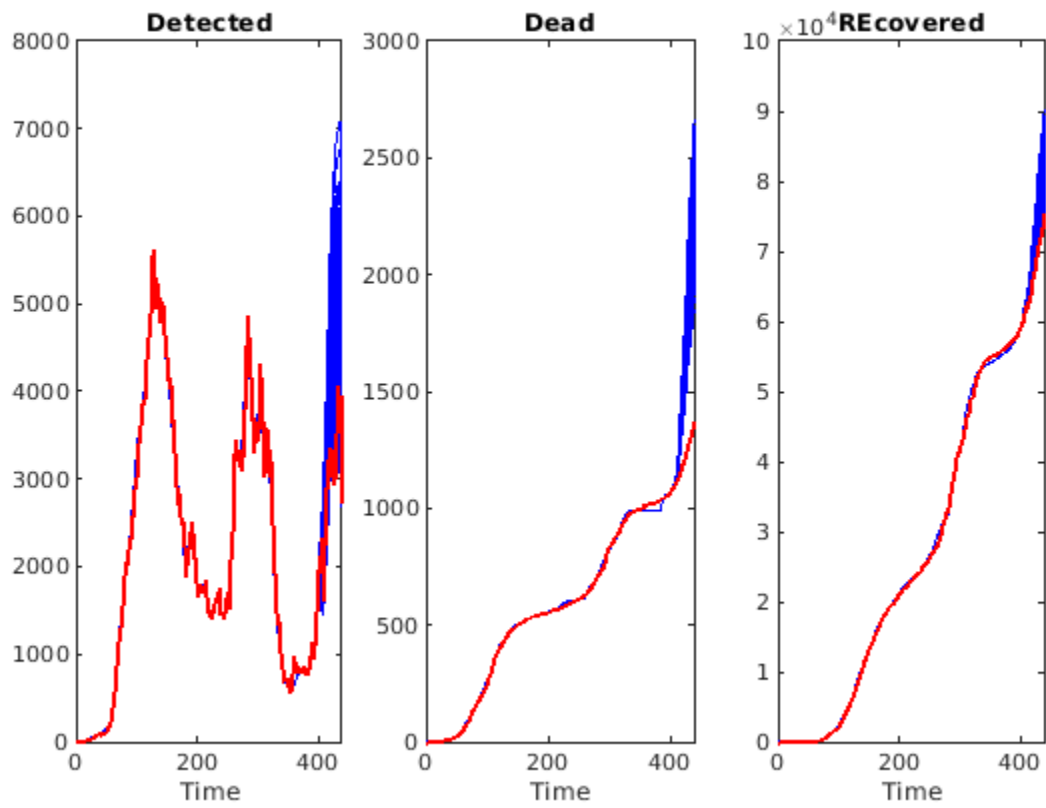






## 10.4. Uncertainty analysys

N=500



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## Chapter 11. Extension number11

### 11.1. Basic information

The extension to be validated consists of the time series from the data439 to the 459. The status of the validation is: COMPLETED.

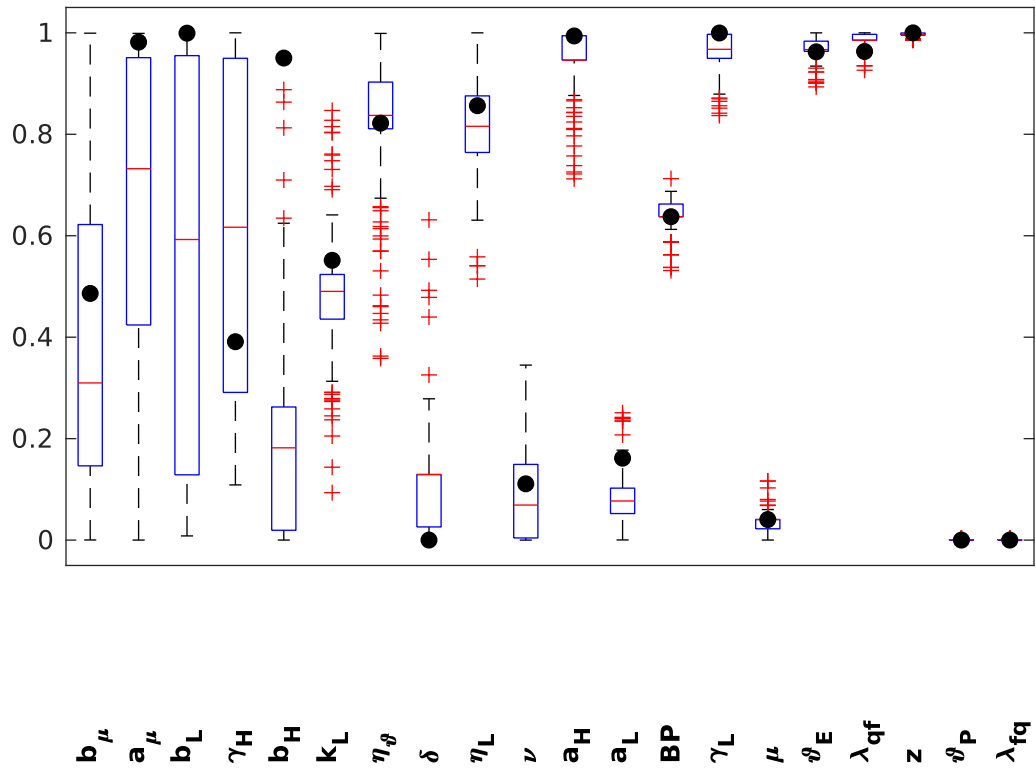
The number of estimations needed to perform the validation was1000.

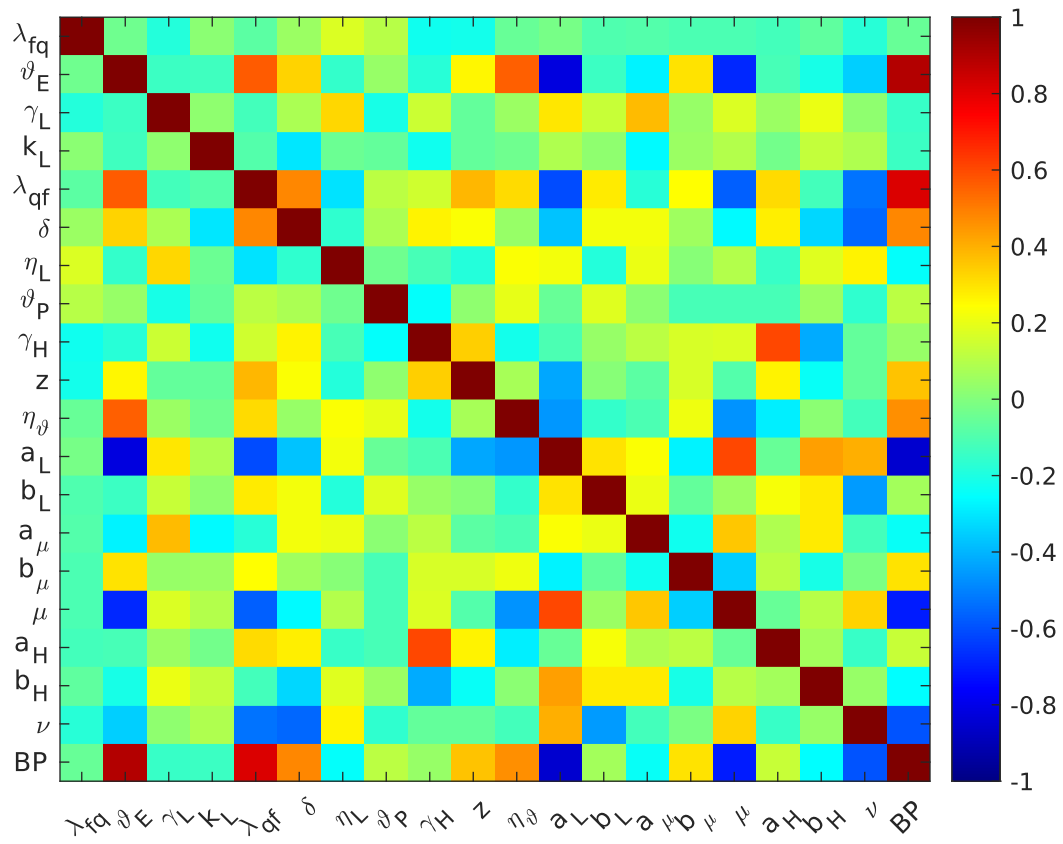
### 11.2. Estimated parameters with their intervals

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

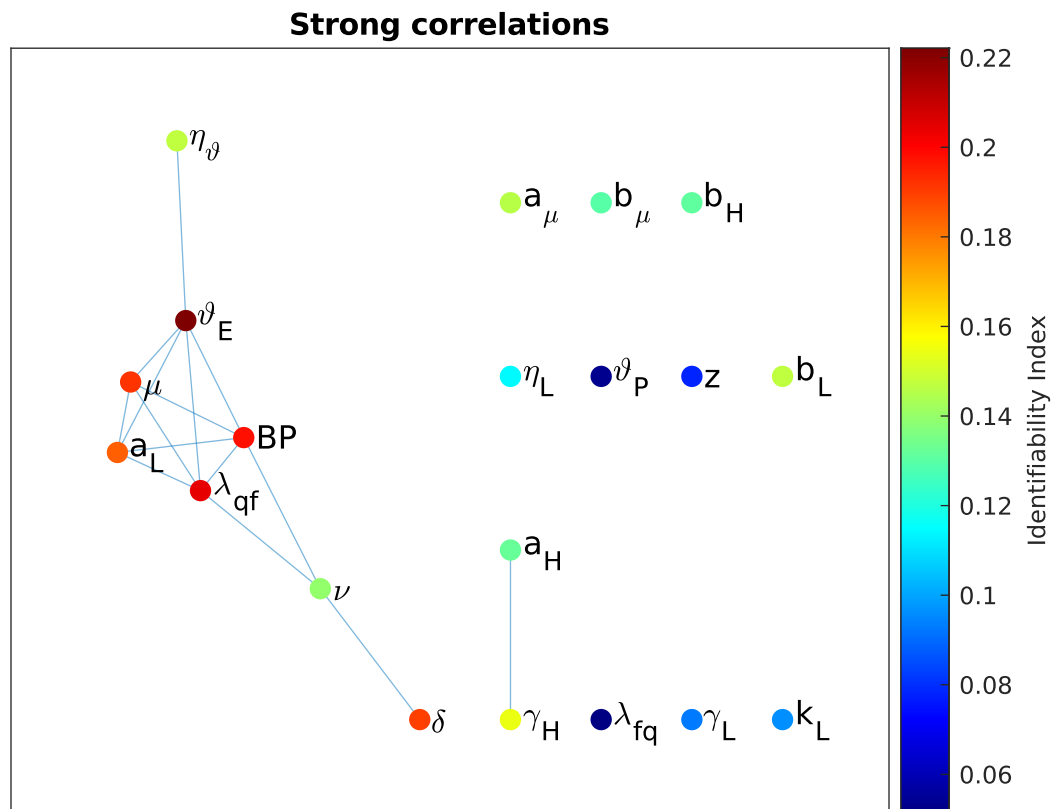
	Rango		Nominal	Mejor	Index
\lambda_{fq}	'0'	'0.0041'	'0.0007'	'0'	'0.0516'
\vartheta_E	'0.8847'	'1'	'0.967'	'0.9625'	'0.2221'
\gamma_L	'0.9338'	'1'	'0.9675'	'0.9997'	'0.0932'
k_L	'4.981'	'5.844'	'5.4125'	'5.9641'	'0.0966'
\lambda_{qf}	'0.9235'	'1'	'0.9855'	'0.9632'	'0.2044'
\delta	'0.0056'	'0.0332'	'0.0194'	'0'	'0.1898'
\eta_L	'0.7672'	'0.8642'	'0.8157'	'0.8564'	'0.1146'
\vartheta_P	'0'	'0.0069'	'0.0009'	'0'	'0.0539'
\gamma_H	'0.5479'	'0.6857'	'0.6168'	'0.3911'	'0.1545'
z	'29.4581'	'30'	'29.9115'	'29.9966'	'0.0784'
\eta_{\vartheta}	'0.7785'	'0.8959'	'0.8372'	'0.822'	'0.1472'
a_L	'1.7039'	'2.4552'	'2.0795'	'3.2603'	'0.1845'
b_L	'8.1359'	'10.4555'	'9.2957'	'14.9905'	'0.1471'
a_{\mu}	'10.1981'	'12.3024'	'11.2503'	'14.7433'	'0.1461'
b_{\mu}	'4.3968'	'6.2783'	'5.3375'	'7.8073'	'0.13'
\mu	'0'	'0.099'	'0.0405'	'0.0405'	'0.1917'
a_H	'13.4725'	'15'	'14.2466'	'14.9135'	'0.1323'
b_H	'2.7027'	'4.3905'	'3.5466'	'14.3039'	'0.1311'
\nu	'23.8047'	'45.2588'	'34.5317'	'55.4733'	'0.1401'
BP	'433.5423'	'435.4577'	'434.5'	'434.5'	'0.1976'

### 11.3. Identifiability analysis

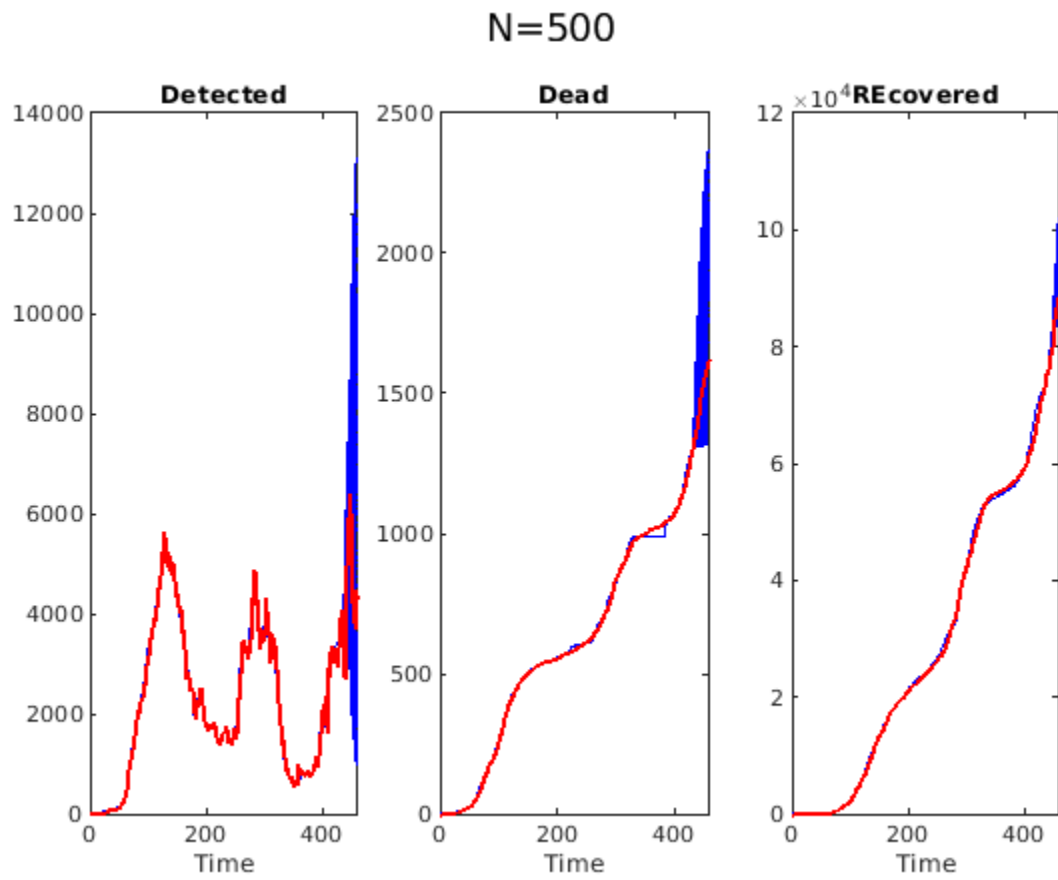








## 11.4. Uncertainty analysis



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## Chapter 12. Extension number12

### 12.1. Basic information

The extension to be validated consists of the time series from the data459 to the 541. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was2000.

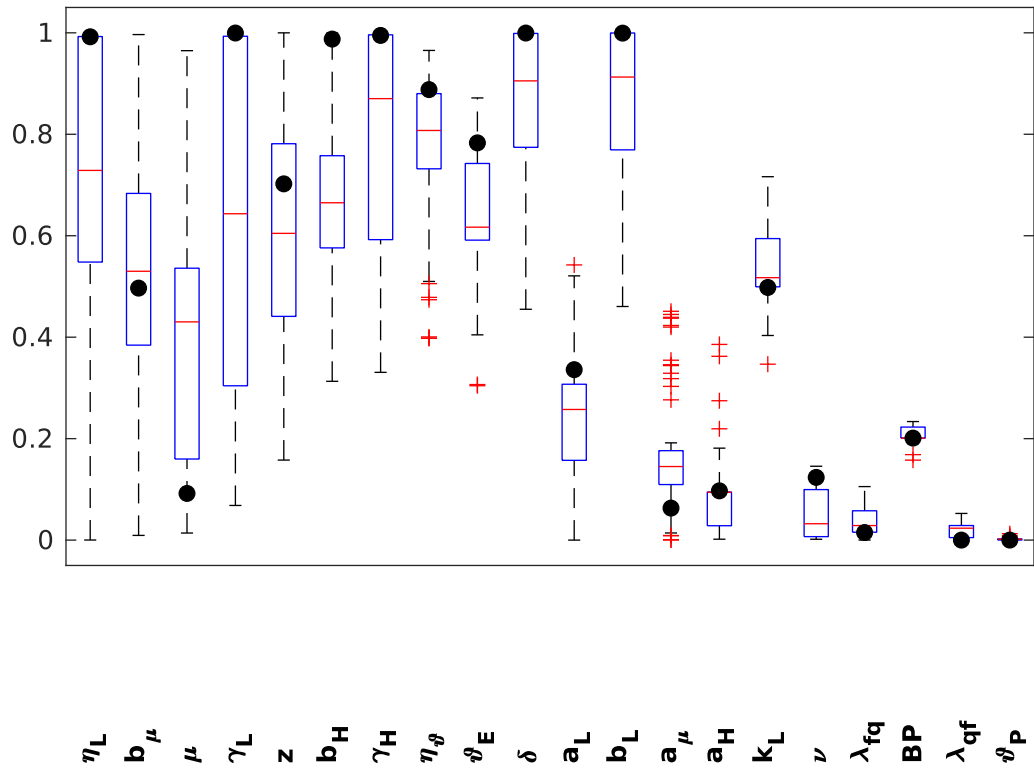
### 12.2. Estimated parameters with their intervals

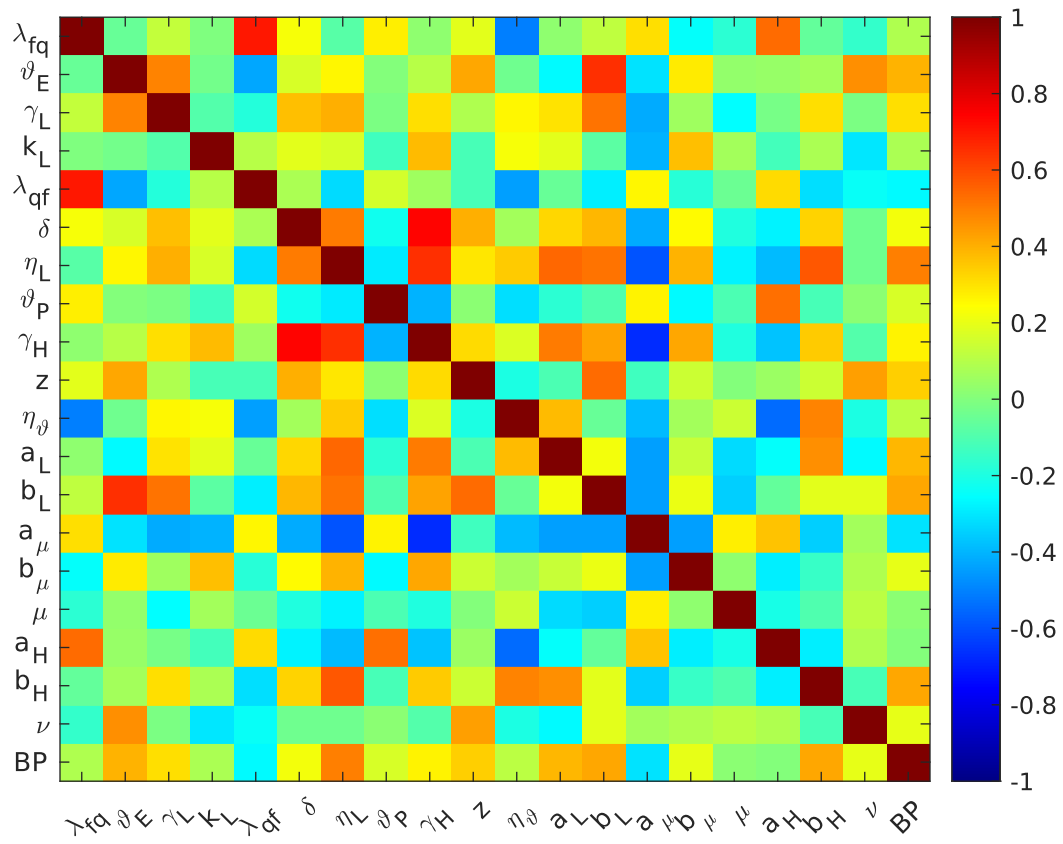
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

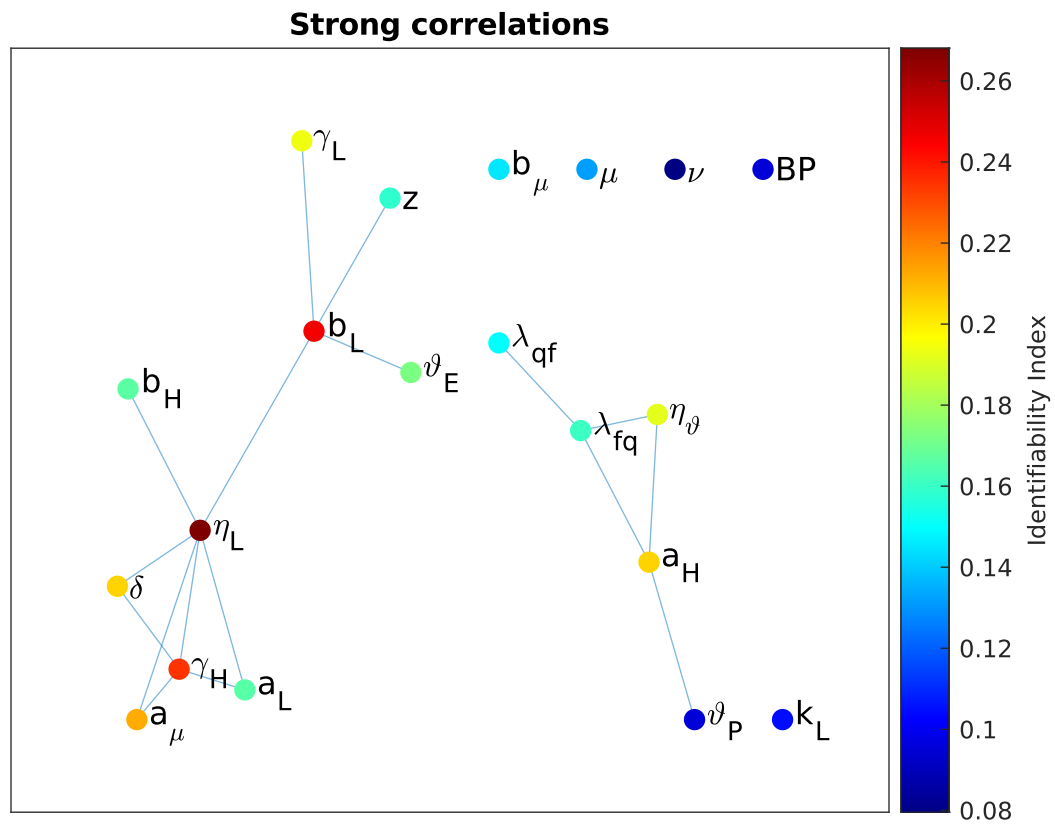
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.0101'	'0.0202'	'0.0289'	'0.0149'	'0.1607'
$\vartheta_E$	'0.4127'	'0.851'	'0.6152'	'0.7831'	'0.173'
$\gamma_L$	'0.2739'	'1'	'0.6433'	'0.9996'	'0.1943'
$k_L$	'1'	'10'	'5.6557'	'5.4822'	'0.1052'
$\lambda_{qf}$	'0'	'0'	'0.0235'	'0'	'0.15'
$\delta$	'0.015'	'0.15'	'0.1348'	'0.1499'	'0.2053'
$\eta_L$	'0.2622'	'1'	'0.7288'	'0.9922'	'0.2681'
$\vartheta_P$	'0'	'0.0001'	'0.0024'	'0'	'0.0955'
$\gamma_H$	'0.2357'	'1'	'0.8701'	'0.9949'	'0.2349'
$z$	'15.3976'	'29.4015'	'18.1399'	'21.0681'	'0.1587'
$\eta_{\vartheta}$	'0.0728'	'1'	'0.8043'	'0.8881'	'0.1922'
$a_L$	'3.7579'	'5.8951'	'4.6187'	'5.7036'	'0.1662'
$b_L$	'6.2567'	'15'	'13.5088'	'14.9914'	'0.2461'
$a_{\mu}$	'1'	'13.6'	'3.0352'	'1.8831'	'0.2125'
$b_{\mu}$	'1'	'14.44'	'8.4197'	'7.9545'	'0.1451'
$\mu$	'0'	'0.207'	'0.4302'	'0.092'	'0.1322'
$a_H$	'1'	'5.198'	'2.3226'	'2.3594'	'0.2054'
$b_H$	'2.0895'	'15'	'10.2947'	'14.8271'	'0.1668'
$\nu$	'59.5972'	'97.988'	'16.1943'	'61.8079'	'0.0795'
BP	'456.9442'	'468.9526'	'457.5'	'457.4996'	'0.0957'

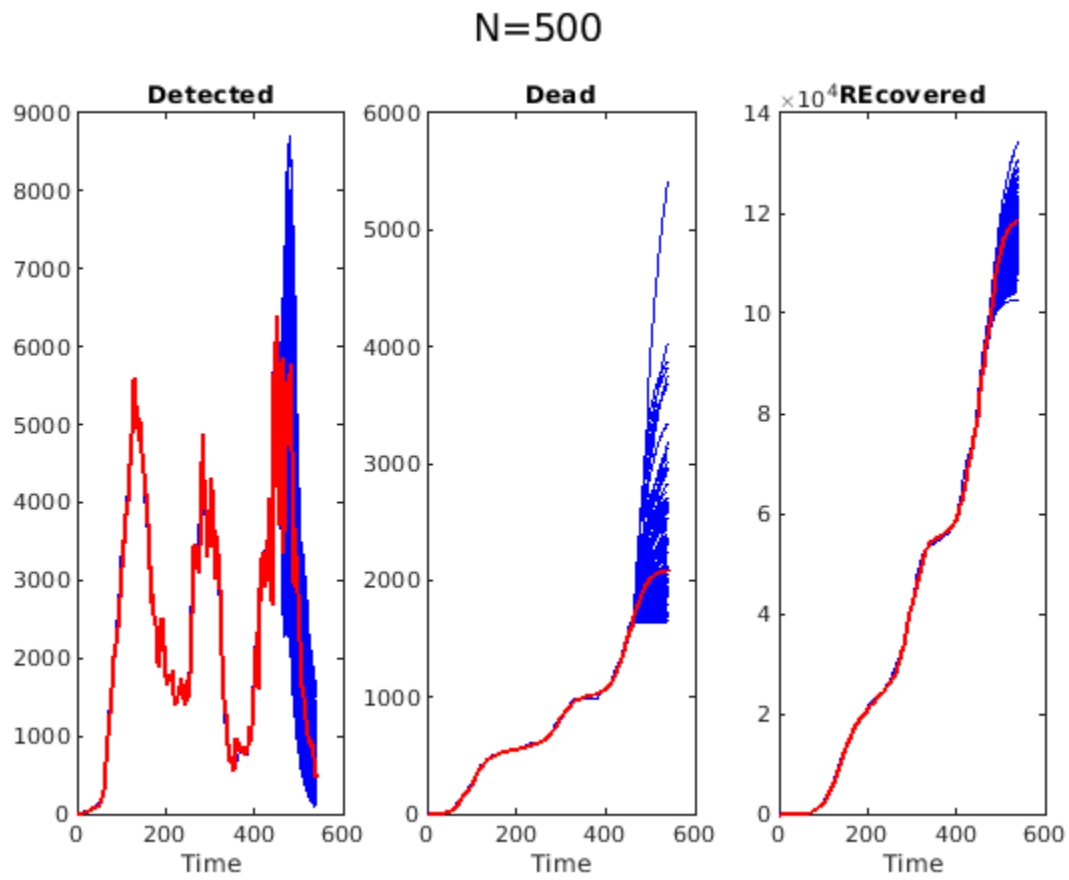
### 12.3. Identifiability analysis







## 12.4. Uncertainty analysis



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## Chapter 13. Extension number13

### 13.1. Basic information

The extension to be validated consists of the time series from the data541 to the 723. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was2000.

### 13.2. Estimated parameters with their intervals

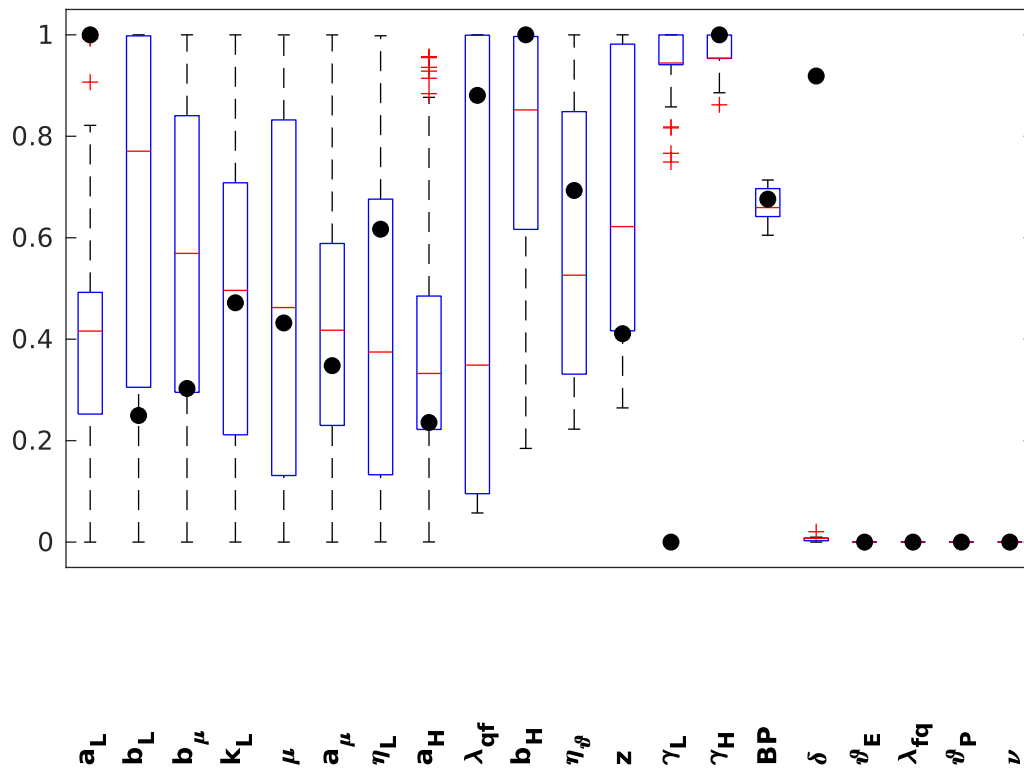
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

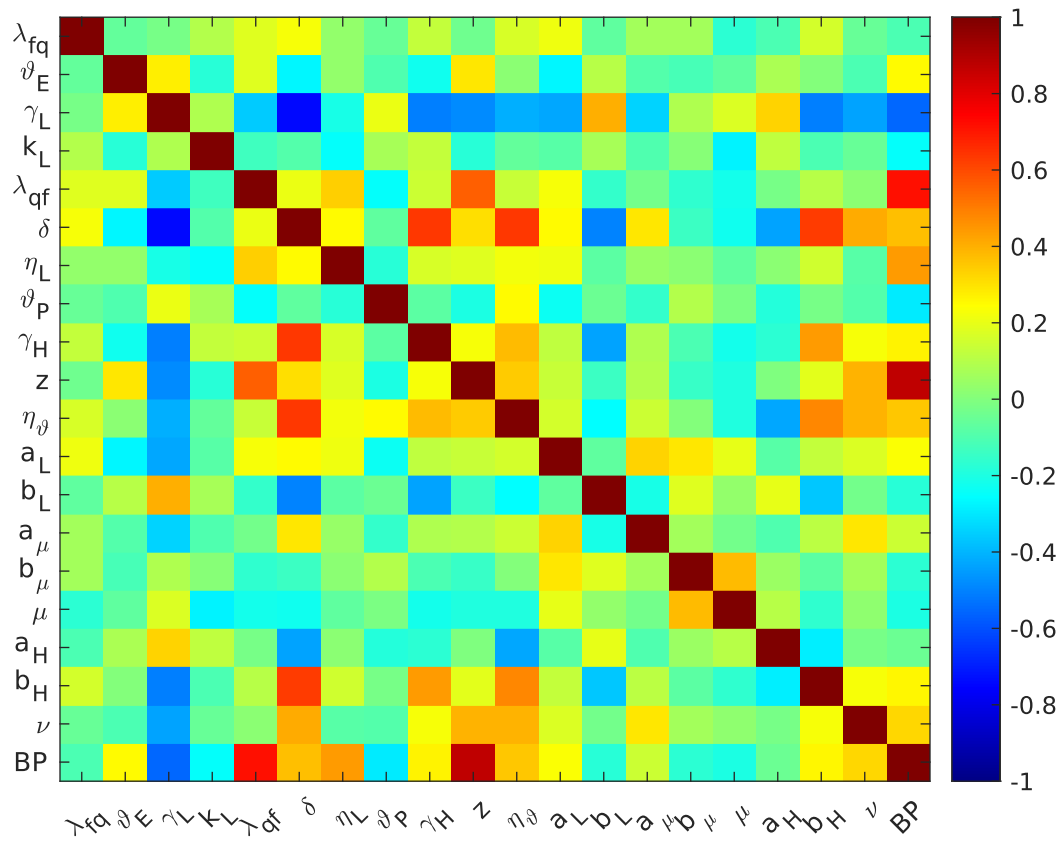
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

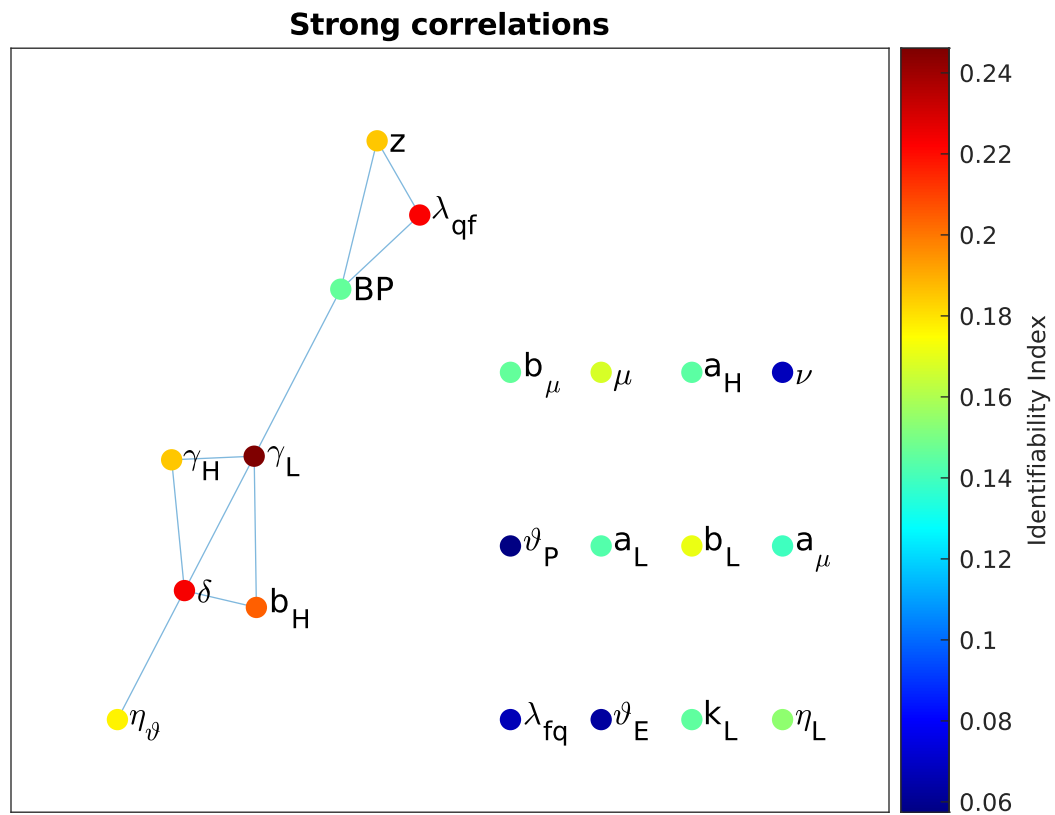
	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0'	'0'	'0'	'0'	'0.0677'
$\vartheta_E$	'0'	'0'	'0'	'0'	'0.0627'
$\gamma_L$	'0'	'0'	'0.9411'	'0'	'0.2461'
$k_L$	'3.6313'	'5.498'	'5.4658'	'5.246'	'0.1457'
$\lambda_{qf}$	'0.626'	'0.8873'	'0.3488'	'0.8807'	'0.2232'
$\delta$	'0.1257'	'0.1385'	'0.0012'	'0.1378'	'0.2238'
$\eta_L$	'0.4479'	'0.7401'	'0.3747'	'0.6168'	'0.1545'
$\vartheta_P$	'0'	'0'	'0'	'0'	'0.0575'
$\gamma_H$	'0.8869'	'1'	'0.9535'	'1'	'0.1855'
$z$	'11.5111'	'14.3354'	'18.6598'	'12.3262'	'0.1852'
$\eta_{\vartheta}$	'0.681'	'0.8018'	'0.5262'	'0.6932'	'0.1773'
$a_L$	'13.6354'	'15'	'6.8238'	'14.9994'	'0.1434'
$b_L$	'4.379'	'7.5021'	'11.7885'	'4.4943'	'0.1712'
$a_{\mu}$	'5.5694'	'8.3874'	'6.8473'	'5.8701'	'0.1395'
$b_{\mu}$	'4.072'	'7.2332'	'8.9677'	'5.2403'	'0.1464'
$\mu$	'0.2022'	'0.6405'	'0.4624'	'0.432'	'0.1675'
$a_H$	'3.5841'	'4.3854'	'5.6547'	'4.3'	'0.1445'
$b_H$	'13.8792'	'15'	'12.8779'	'15'	'0.2047'
$\nu$	'0'	'0'	'0.0001'	'0'	'0.0683'
BP	'627.9292'	'713'	'626.5'	'630.7302'	'0.1466'



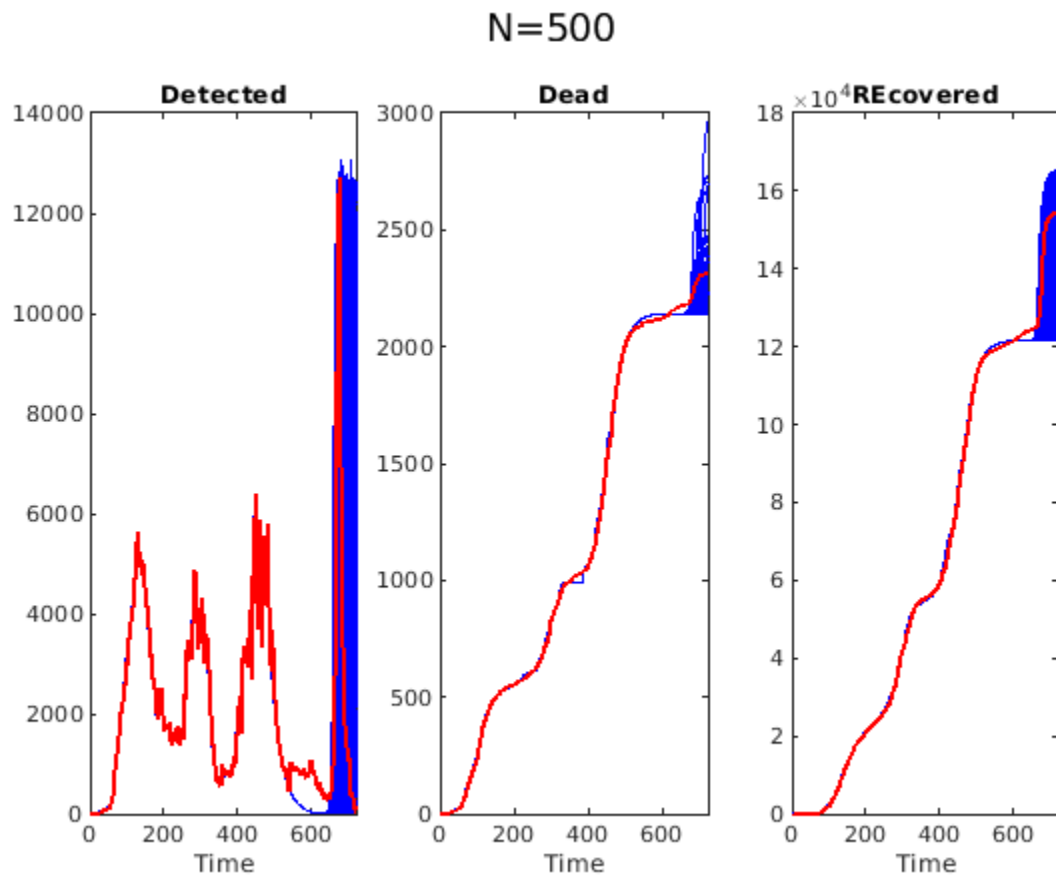
### 13.3. Identifiability analysis







### 13.4. Uncertainty analysis



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## Chapter 14. Extension number14

### 14.1. Basic information

The extension to be validated consists of the time series from the data723 to the 737. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

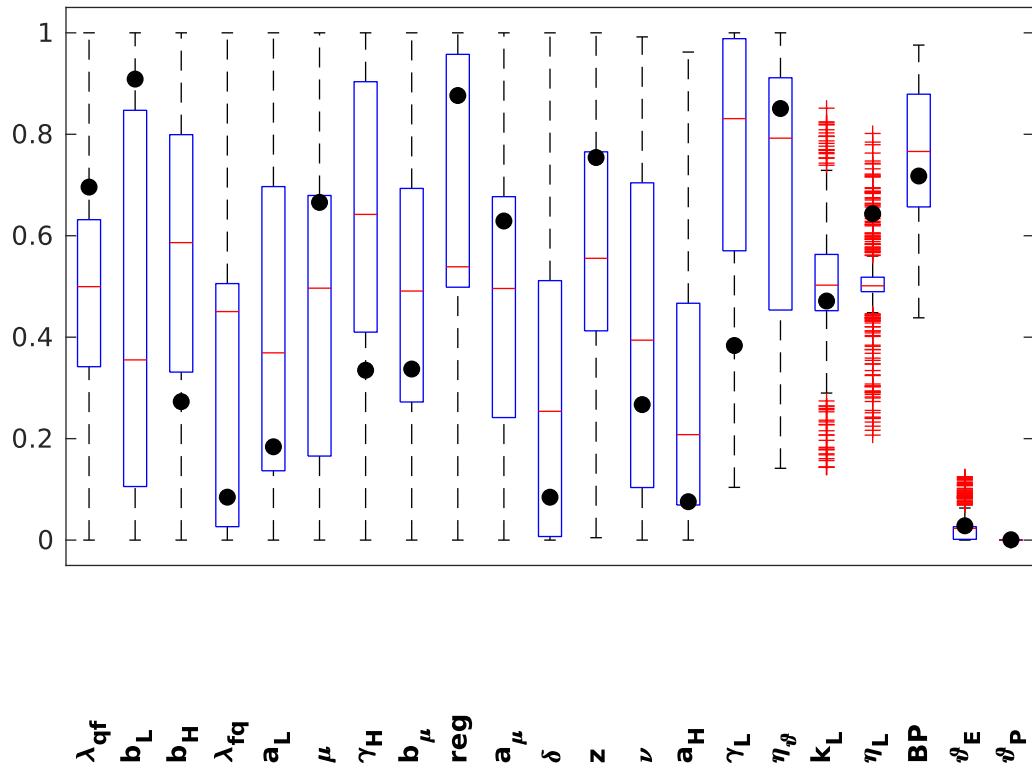
### 14.2. Estimated parameters with their intervals

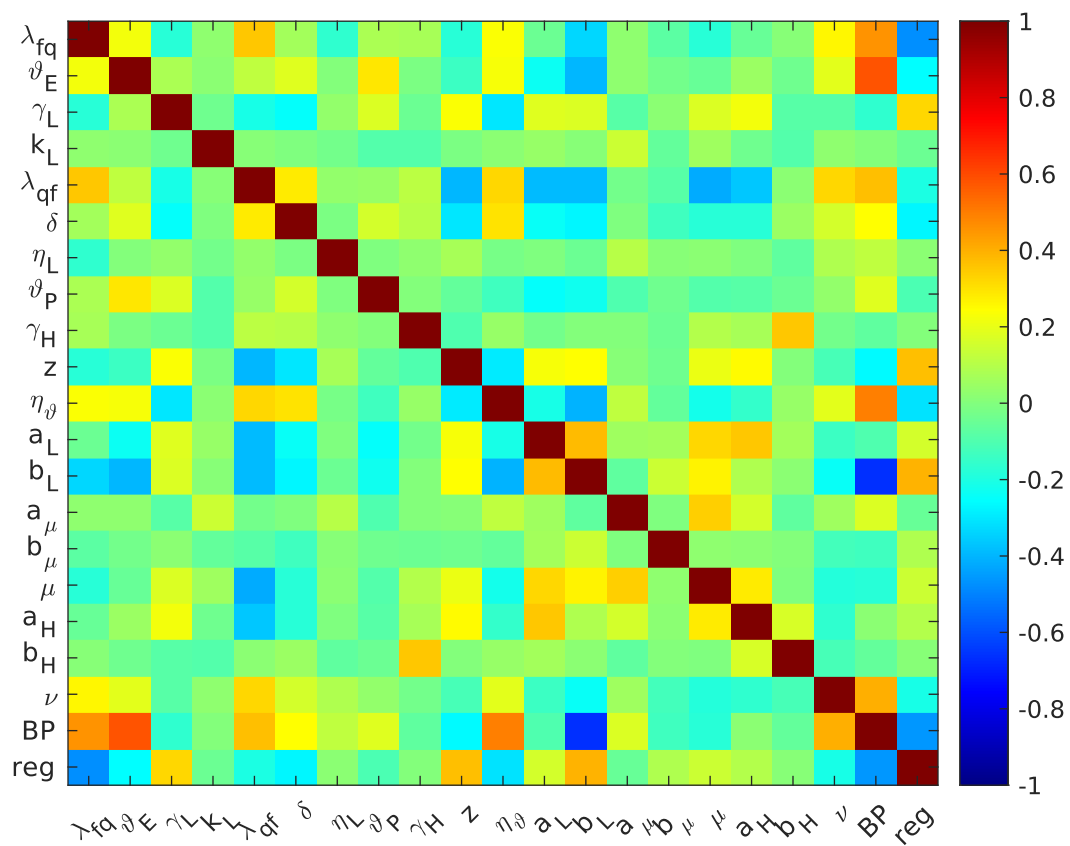
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

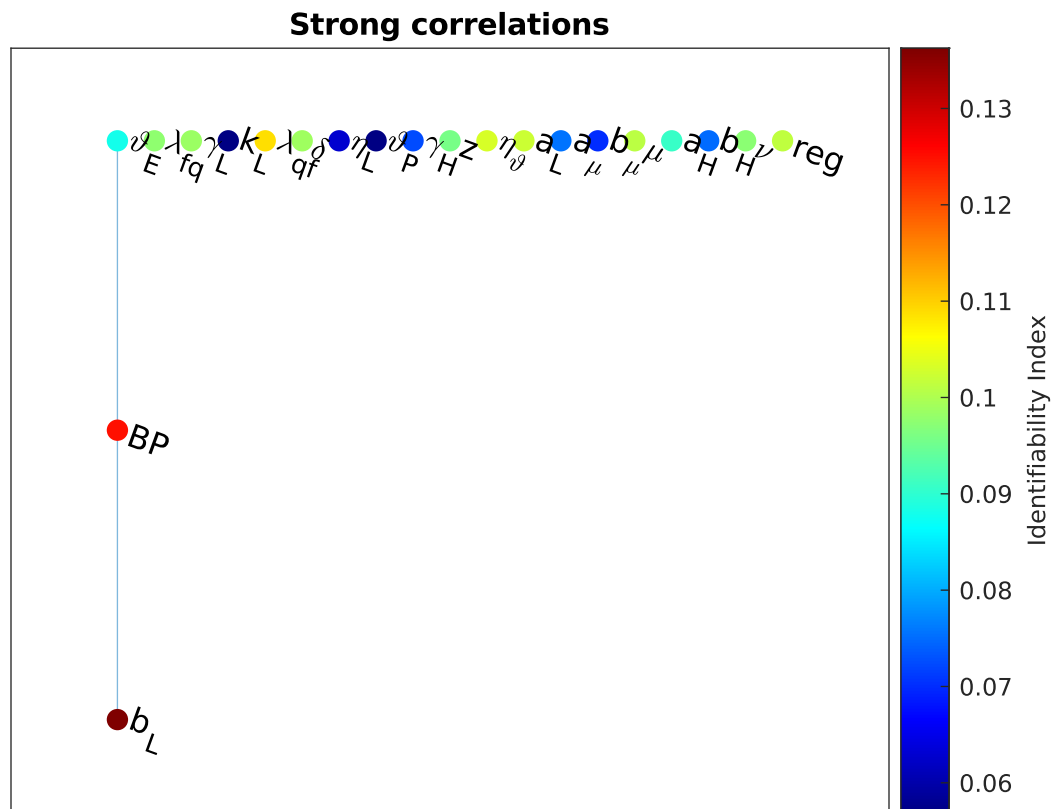
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

	Rango		Nominal	Mejor	Index
$\lambda_{fq}$	'0.0196'	'0.0884'	'0.4505'	'0.0846'	'0.0977'
$\vartheta_E$	'0.0247'	'0.0334'	'0.0231'	'0.0282'	'0.0879'
$\gamma_L$	'0.3709'	'0.6963'	'0.8309'	'0.3836'	'0.0985'
$k_L$	'1.6725'	'8.695'	'5.5234'	'5.2417'	'0.0571'
$\lambda_{qf}$	'0.537'	'0.9069'	'0.4996'	'0.6959'	'0.1088'
$\delta$	'0.0046'	'0.0194'	'0.0381'	'0.0127'	'0.0991'
$\eta_L$	'0.4333'	'0.8563'	'0.5013'	'0.6434'	'0.0631'
$\vartheta_P$	'0.0002'	'0.0007'	'0'	'0.0007'	'0.057'
$\gamma_H$	'0.3067'	'0.822'	'0.642'	'0.3349'	'0.0727'
$z$	'13.2365'	'22.9475'	'16.6657'	'22.6264'	'0.0957'
$\eta_{\vartheta}$	'0.8188'	'0.9164'	'0.7923'	'0.8508'	'0.1032'
$a_L$	'3.5403'	'5.9895'	'6.1677'	'3.5756'	'0.1022'
$b_L$	'6.9502'	'13.7691'	'5.9734'	'13.7231'	'0.1363'
$a_{\mu}$	'8.2369'	'12.2006'	'7.9444'	'9.8066'	'0.0758'
$b_{\mu}$	'3.2576'	'8.2982'	'7.8736'	'5.721'	'0.07'
$\mu$	'0.1803'	'0.6697'	'0.4967'	'0.6657'	'0.1012'
$a_H$	'1.5026'	'2.5691'	'3.9109'	'2.0599'	'0.0907'
$b_H$	'3.9537'	'8.4374'	'9.2099'	'4.8217'	'0.0751'
$\nu$	'117.6218'	'148.0784'	'197.0638'	'133.567'	'0.0974'
BP	'667.5'	'687.2611'	'683.5'	'674.5'	'0.1251'
reg	'0.2005'	'0.2259'	'0.1347'	'0.2191'	'0.1014'

### 14.3. Identifiability analysis









## 14.4. Uncertainty analysis

N=500

