

Validation process for PEREIRA

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 163. The status of the validation is: COMPLETED.

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

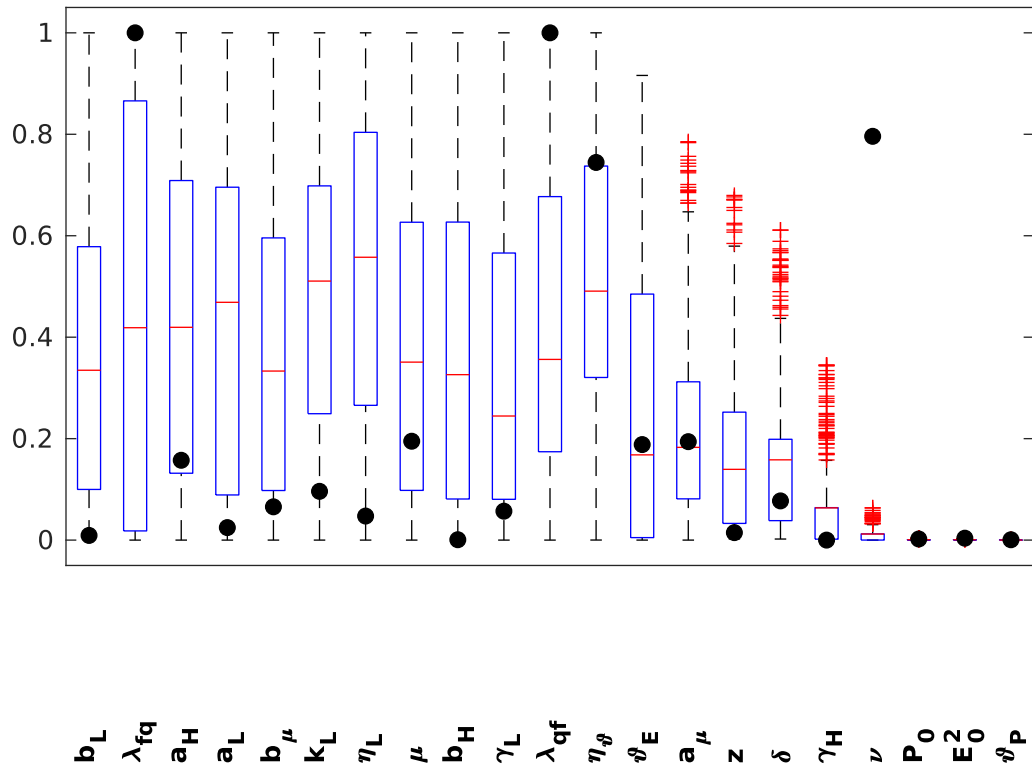
1.2. Estimated parameters with their intervals

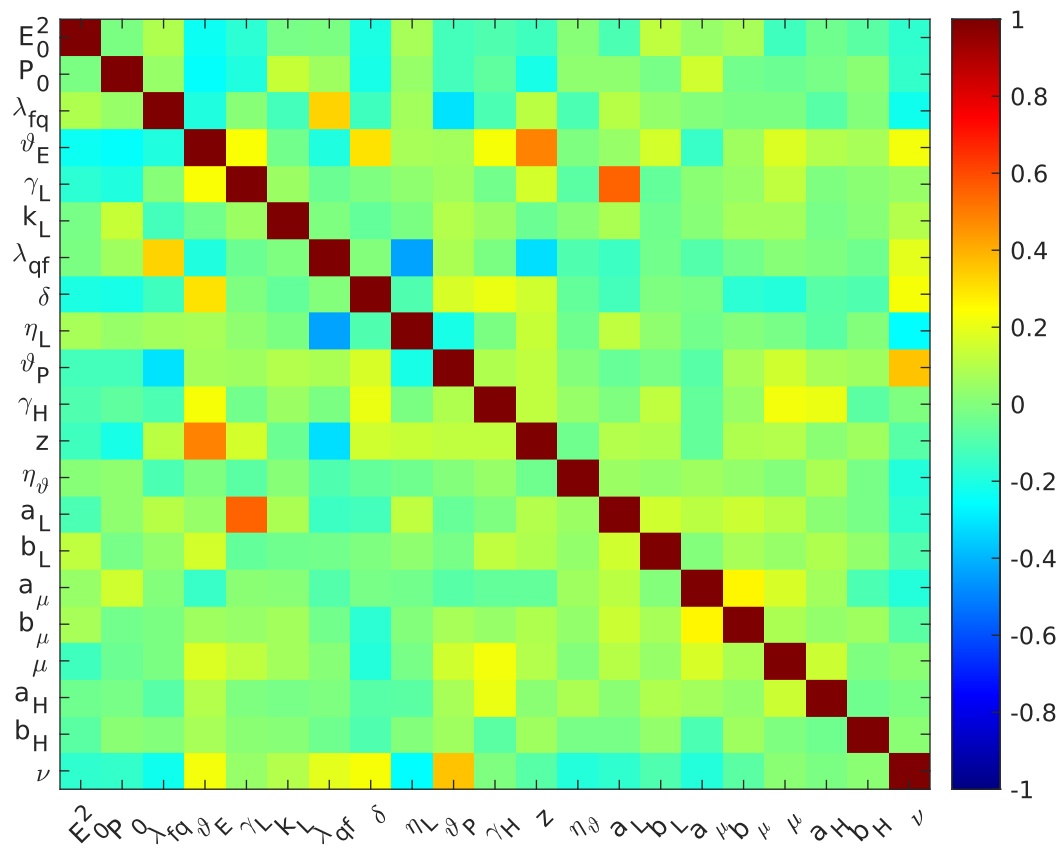
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

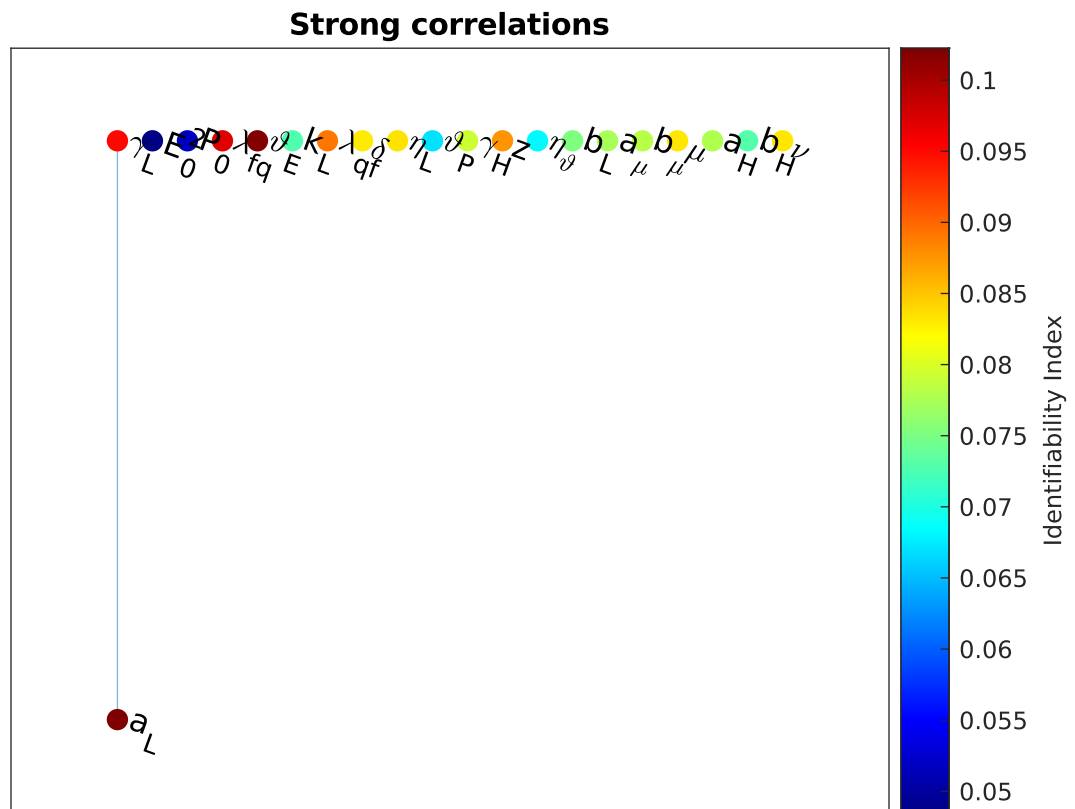
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|----------|------------|----------|
| E^2_0 | '7.3756' | '9.1779' | '1.1793' | '7.5174' | '0.0485' |
| P_0 | '0.4399' | '1.3876' | '0.2802' | '0.8809' | '0.052' |
| λ_{fq} | '0.9997' | '1' | '0.4187' | '1' | '0.0971' |
| ϑ_E | '0.174' | '0.2037' | '0.1683' | '0.1883' | '0.102' |
| γ_L | '0.0534' | '0.0574' | '0.2446' | '0.057' | '0.0951' |
| k_L | '1' | '8.7164' | '5.5955' | '1.8653' | '0.0727' |
| λ_{qf} | '0.9998' | '1' | '0.3562' | '1' | '0.0892' |
| δ | '0.0098' | '0.0116' | '0.0237' | '0.0116' | '0.083' |
| η_L | '0.0207' | '0.2837' | '0.5576' | '0.0474' | '0.0835' |
| ϑ_P | '0.0002' | '0.0012' | '0.0001' | '0.0007' | '0.0672' |
| γ_H | '0' | '0' | '0.064' | '0' | '0.0793' |
| z | '0.4369' | '0.4478' | '4.1923' | '0.4417' | '0.0877' |
| η_{ϑ} | '0.7281' | '0.9603' | '0.4908' | '0.7445' | '0.0684' |
| a_L | '1.3078' | '1.3719' | '7.5627' | '1.345' | '0.1022' |
| b_L | '1.1257' | '1.2795' | '5.6876' | '1.129' | '0.0752' |
| a_{μ} | '3.6565' | '4.703' | '3.5647' | '3.7167' | '0.0774' |
| b_{μ} | '1.6133' | '2.4643' | '5.6654' | '1.9187' | '0.0783' |
| μ | '0.1827' | '0.5194' | '0.3508' | '0.1949' | '0.0833' |
| a_H | '1.3325' | '14.3' | '6.8726' | '3.203' | '0.0778' |
| b_H | '1' | '11.773' | '5.566' | '1.0103' | '0.0729' |
| ν | '131.9208' | '416.8462' | '6.1291' | '397.9952' | '0.0833' |

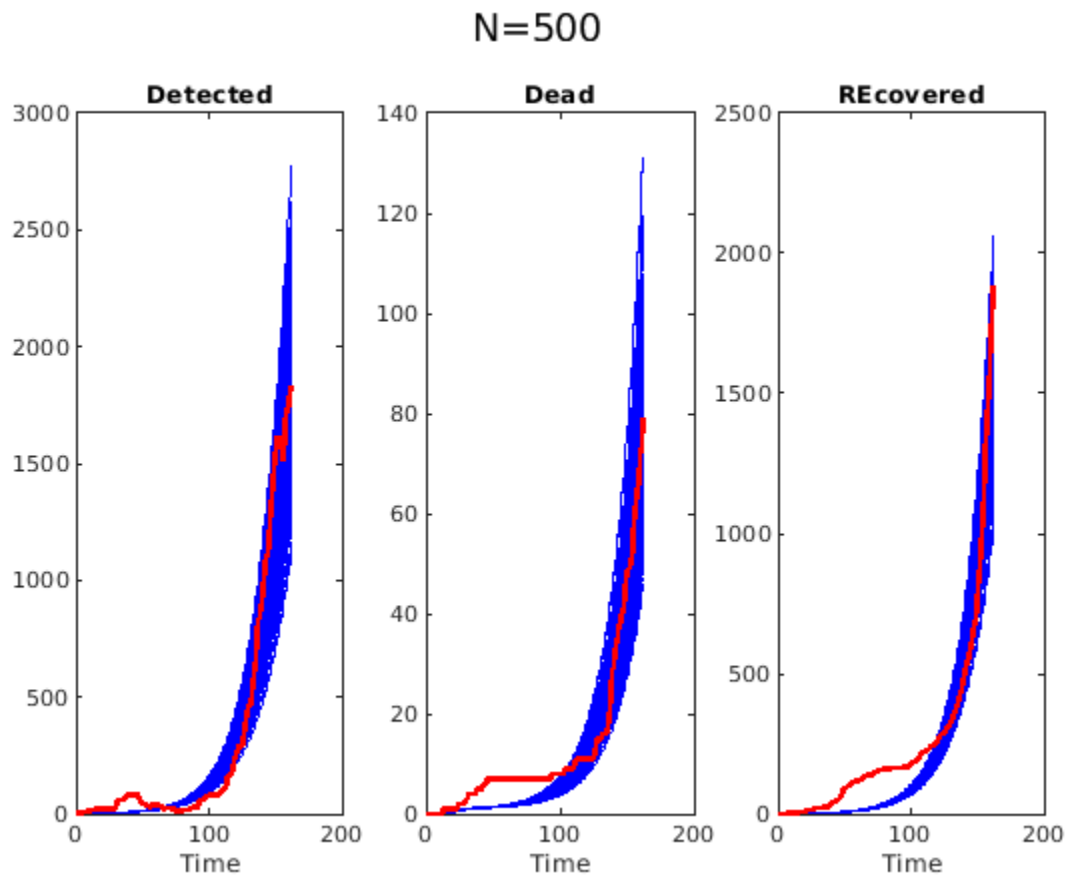
1.3. Identifiability analysis







1.4. Uncertainty analysis



Chapter 2. Extension number2

2.1. Basic information

The extension to be validated consists of the time series from the data163 to the 184. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

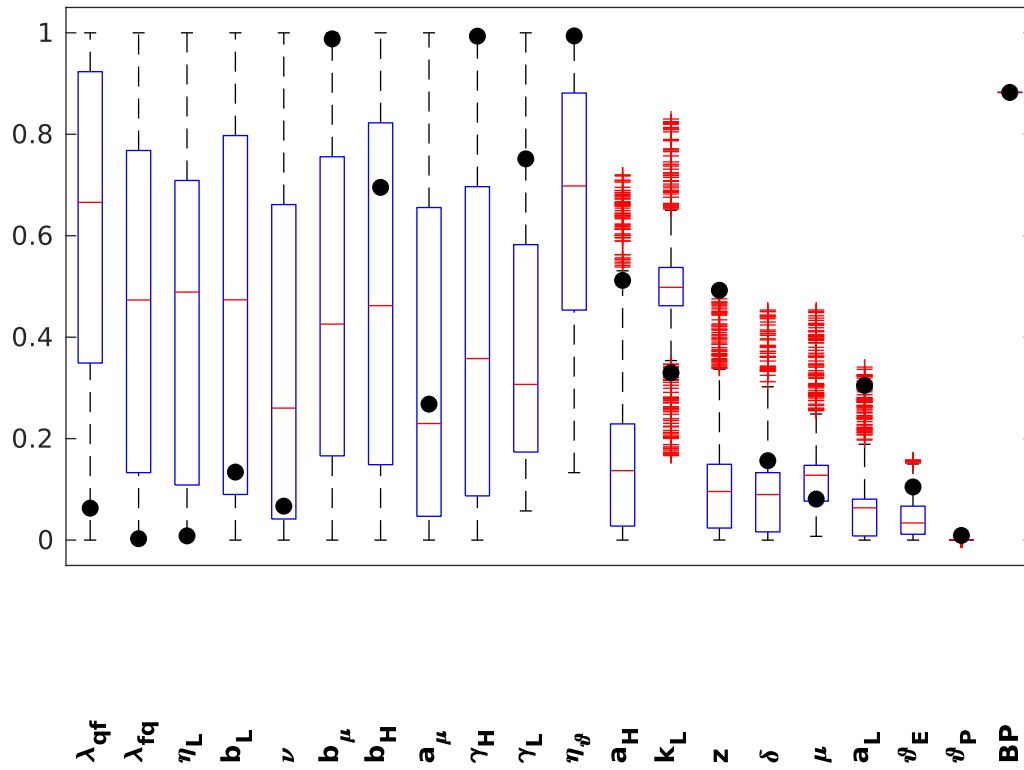
2.2. Estimated parameters with their intervals

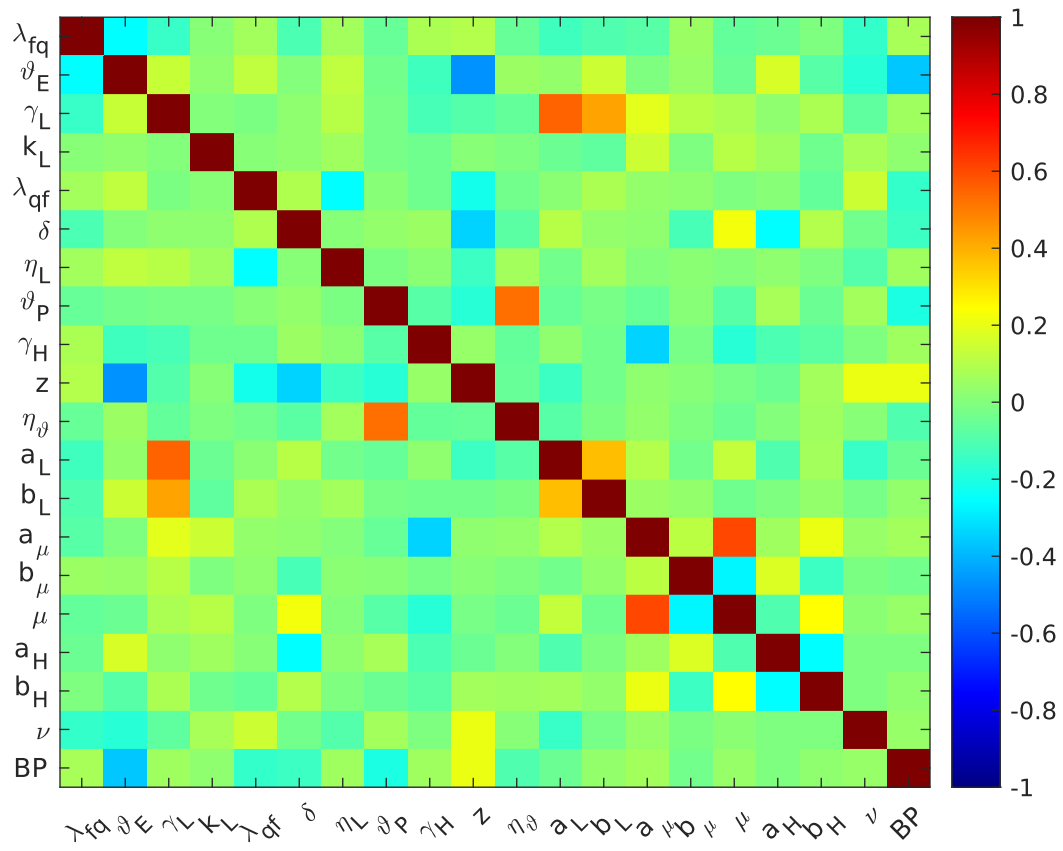
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

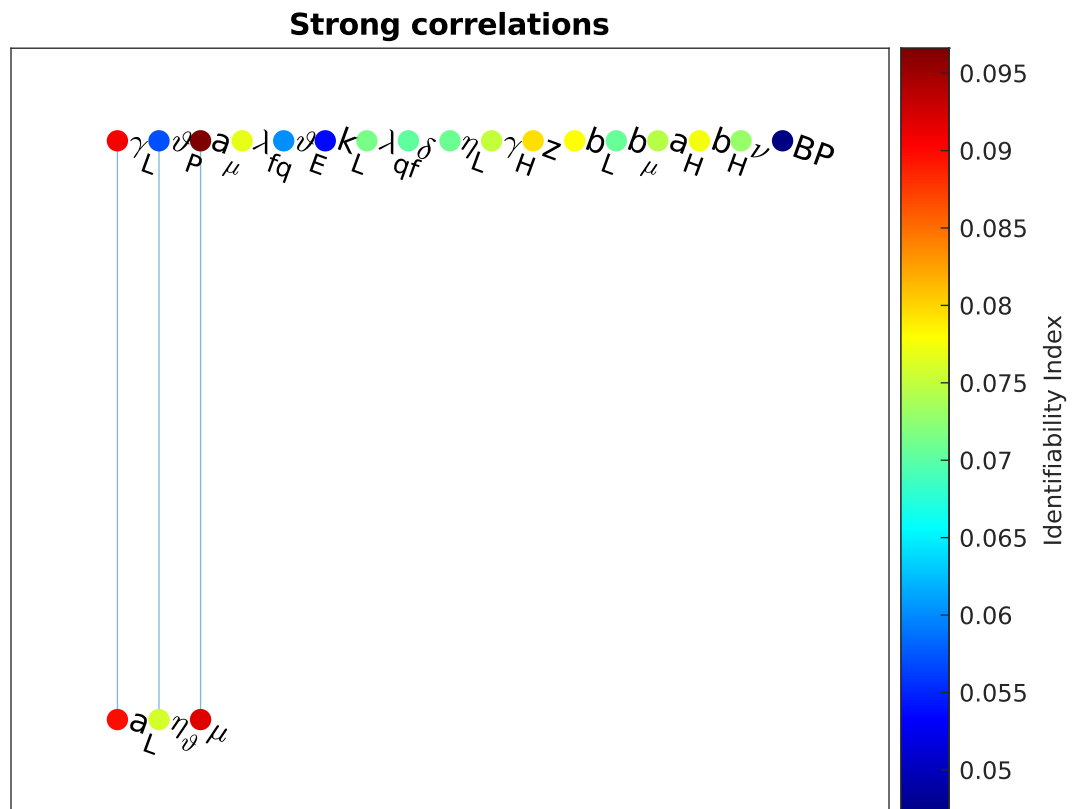
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|-----------|------------|------------|------------|----------|
| λ_{fq} | '0.0015' | '0.0045' | '0.4734' | '0.0028' | '0.0769' |
| ϑ_E | '0.1039' | '0.146' | '0.0339' | '0.1048' | '0.0603' |
| γ_L | '0.5634' | '0.7732' | '0.3069' | '0.7516' | '0.0908' |
| k_L | '2.185' | '4.6002' | '5.4841' | '3.9687' | '0.0537' |
| λ_{qf} | '0.0396' | '0.0657' | '0.6659' | '0.063' | '0.0714' |
| δ | '0.0111' | '0.0301' | '0.0135' | '0.0235' | '0.0703' |
| η_L | '0.0024' | '0.0088' | '0.4889' | '0.0084' | '0.0709' |
| ϑ_P | '0.0083' | '0.011' | '0.0001' | '0.0091' | '0.0571' |
| γ_H | '0.8436' | '1' | '0.3579' | '0.9935' | '0.075' |
| z | '6.9567' | '15.8942' | '2.8784' | '14.7751' | '0.0796' |
| η_{ϑ} | '0.9434' | '0.9999' | '0.6981' | '0.9939' | '0.0759' |
| a_L | '4.8737' | '5.5937' | '1.8942' | '5.2698' | '0.0897' |
| b_L | '2.8642' | '3.5253' | '7.6312' | '2.8776' | '0.078' |
| a_{μ} | '4.4255' | '7.3417' | '4.2167' | '4.7527' | '0.0966' |
| b_{μ} | '12.2103' | '15' | '6.9613' | '14.8322' | '0.0706' |
| μ | '0.038' | '0.0843' | '0.1279' | '0.0809' | '0.0919' |
| a_H | '5.7374' | '10.9862' | '2.9238' | '8.1675' | '0.0746' |
| b_H | '6.9392' | '11.2116' | '7.4695' | '10.7353' | '0.0775' |
| ν | '15.6234' | '154.489' | '130.1103' | '33.4742' | '0.073' |
| BP | '159.5' | '166.0841' | '162.5' | '162.4999' | '0.0473' |

2.3. Identifiability analysis

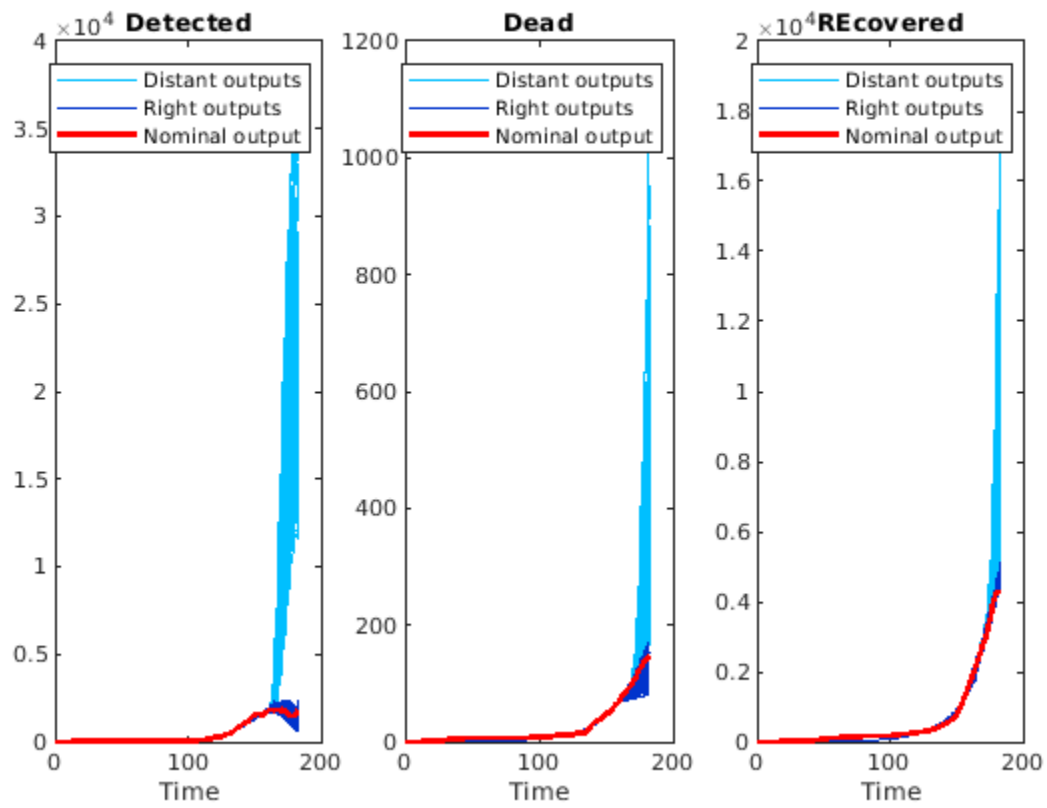






2.4. Uncertainty analysis

N=500



Chapter 3. Extension number3

3.1. Basic information

The extension to be validated consists of the time series from the data184 to the 210. The status of the validation is: COMPLETED.

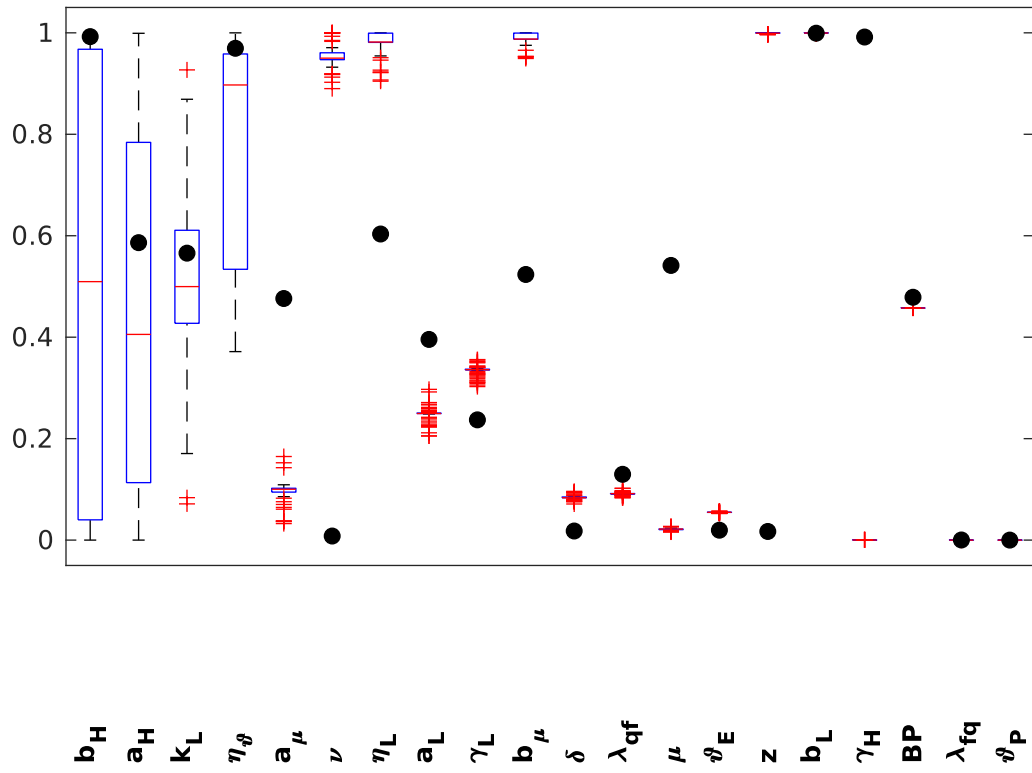
The number of estimations needed to perform the validation was2000.

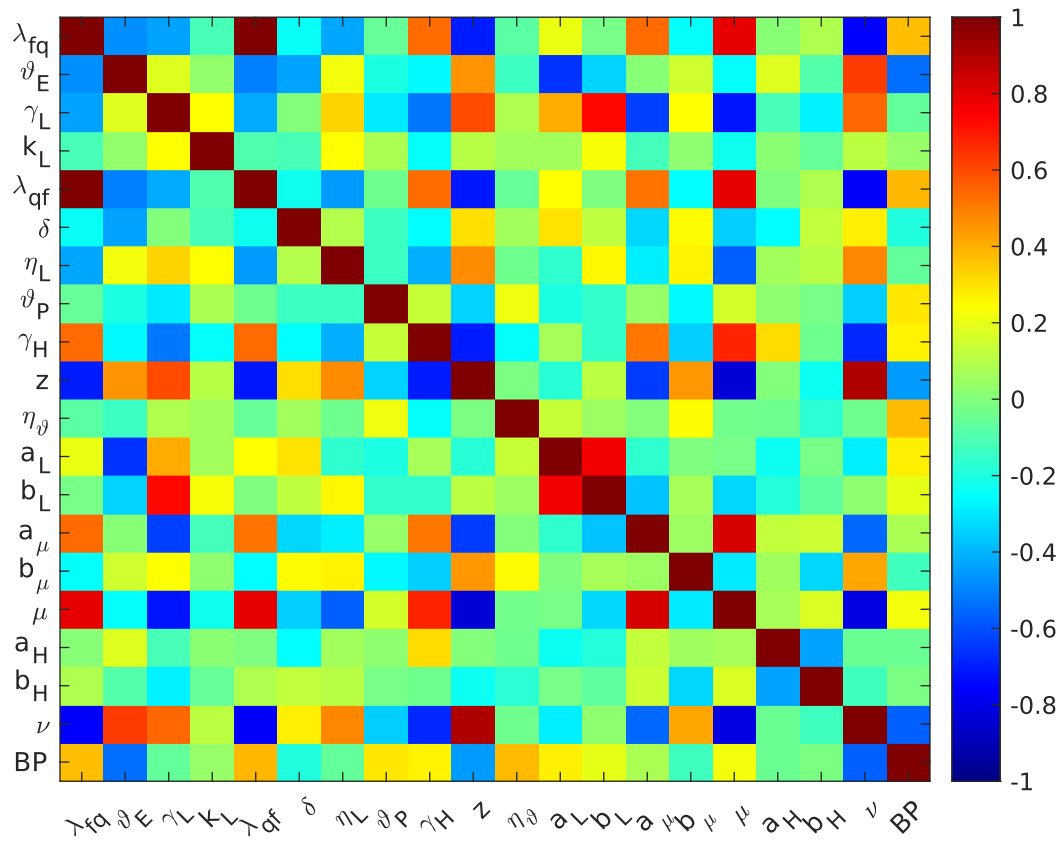
3.2. Estimated parameters with their intervals

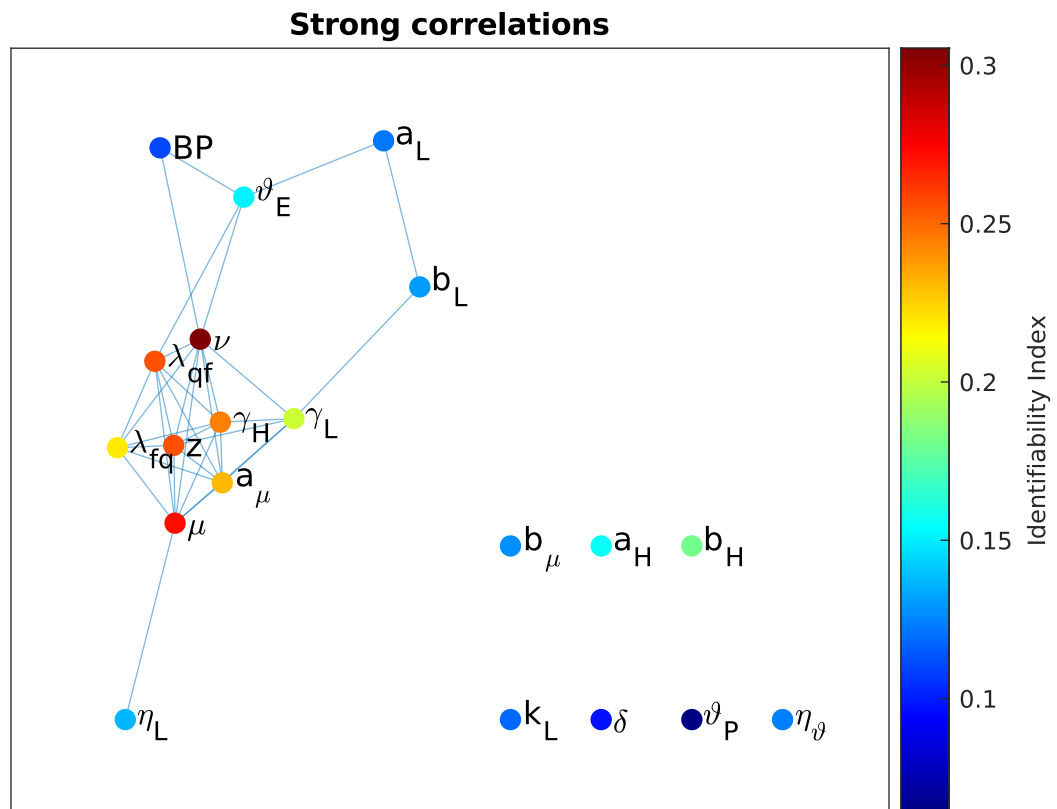
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|-----------|----------|
| λ_{fq} | '0' | '0.0623' | '0' | '0.0002' | '0.2194' |
| ϑ_E | '0.0499' | '0.0596' | '0.0548' | '0.0195' | '0.1517' |
| γ_L | '0.3193' | '0.3526' | '0.336' | '0.2371' | '0.2022' |
| k_L | '4.9085' | '6.0867' | '5.4976' | '6.0909' | '0.1186' |
| λ_{qf} | '0.0363' | '0.1467' | '0.0915' | '0.1297' | '0.2563' |
| δ | '0.0093' | '0.0157' | '0.0125' | '0.0027' | '0.0974' |
| η_L | '0.9275' | '1' | '0.9811' | '0.6034' | '0.1373' |
| ϑ_P | '0' | '0' | '0' | '0' | '0.0641' |
| γ_H | '0' | '0.0925' | '0.0001' | '0.9917' | '0.245' |
| z | '27.544' | '30' | '29.979' | '0.5106' | '0.2559' |
| η_{ϑ} | '0.8092' | '0.9559' | '0.8825' | '0.9695' | '0.1244' |
| a_L | '4.2545' | '4.7326' | '4.4936' | '6.5384' | '0.1222' |
| b_L | '14.2209' | '15' | '14.9945' | '14.9894' | '0.1302' |
| a_{μ} | '1.7704' | '3.0364' | '2.4034' | '7.6675' | '0.2319' |
| b_{μ} | '13.5699' | '15' | '14.8229' | '8.3309' | '0.1276' |
| μ | '0' | '0.0909' | '0.0218' | '0.5415' | '0.2721' |
| a_H | '5.2372' | '8.1164' | '6.6768' | '9.2089' | '0.1558' |
| b_H | '6.3949' | '9.8714' | '8.1332' | '14.8952' | '0.1815' |
| ν | '436.6055' | '500' | '475.0344' | '4.0057' | '0.3054' |
| BP | '184.3469' | '184.6531' | '184.5' | '185.5' | '0.1106' |

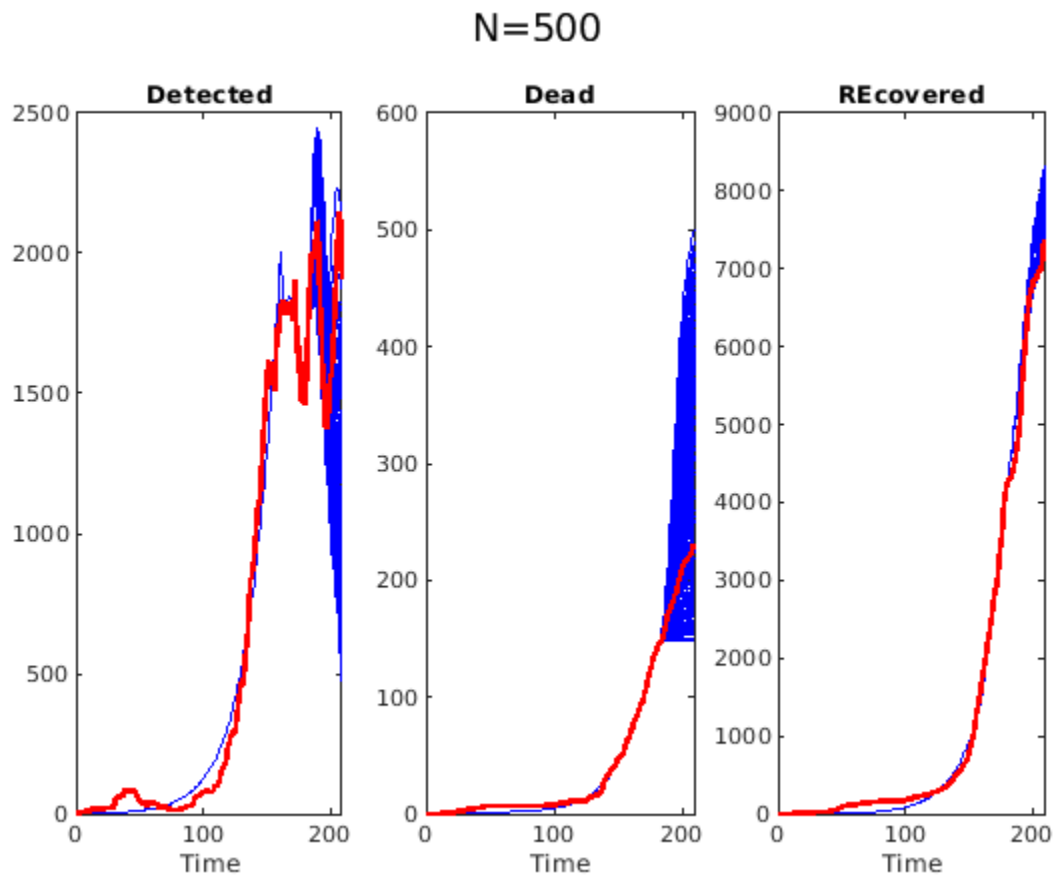
3.3. Identifiability analysis







3.4. Uncertainty analysis



Chapter 4. Extension number4

4.1. Basic information

The extension to be validated consists of the time series from the data210 to the 248. The status of the validation is: COMPLETED.

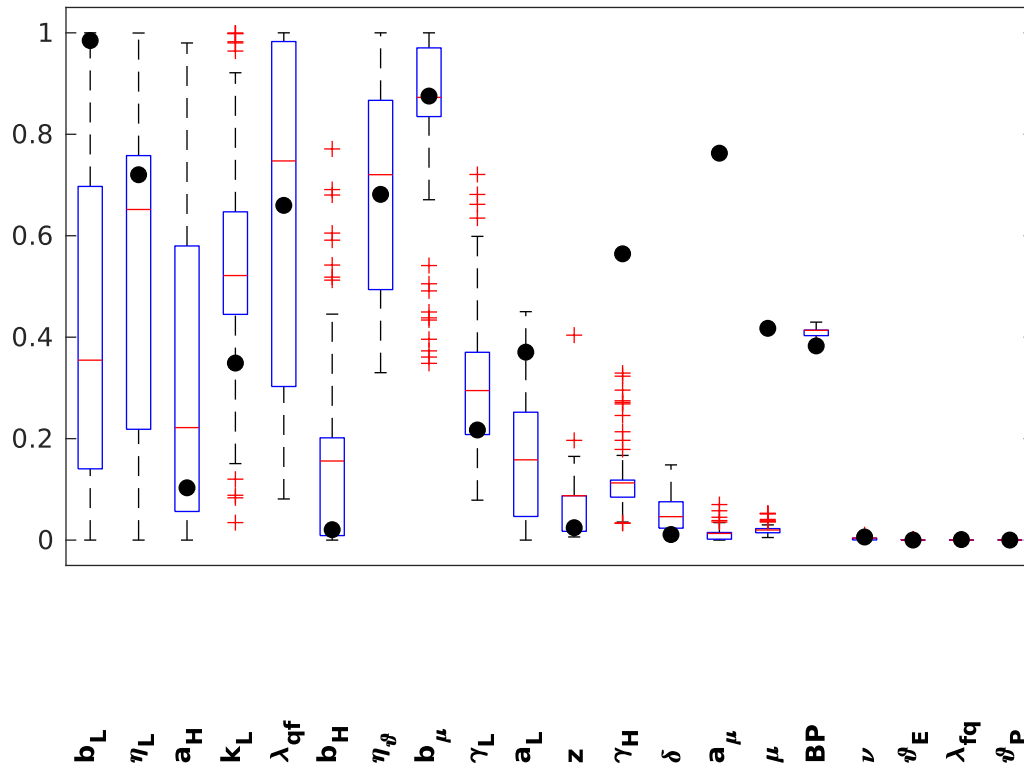
The number of estimations needed to perform the validation was1000.

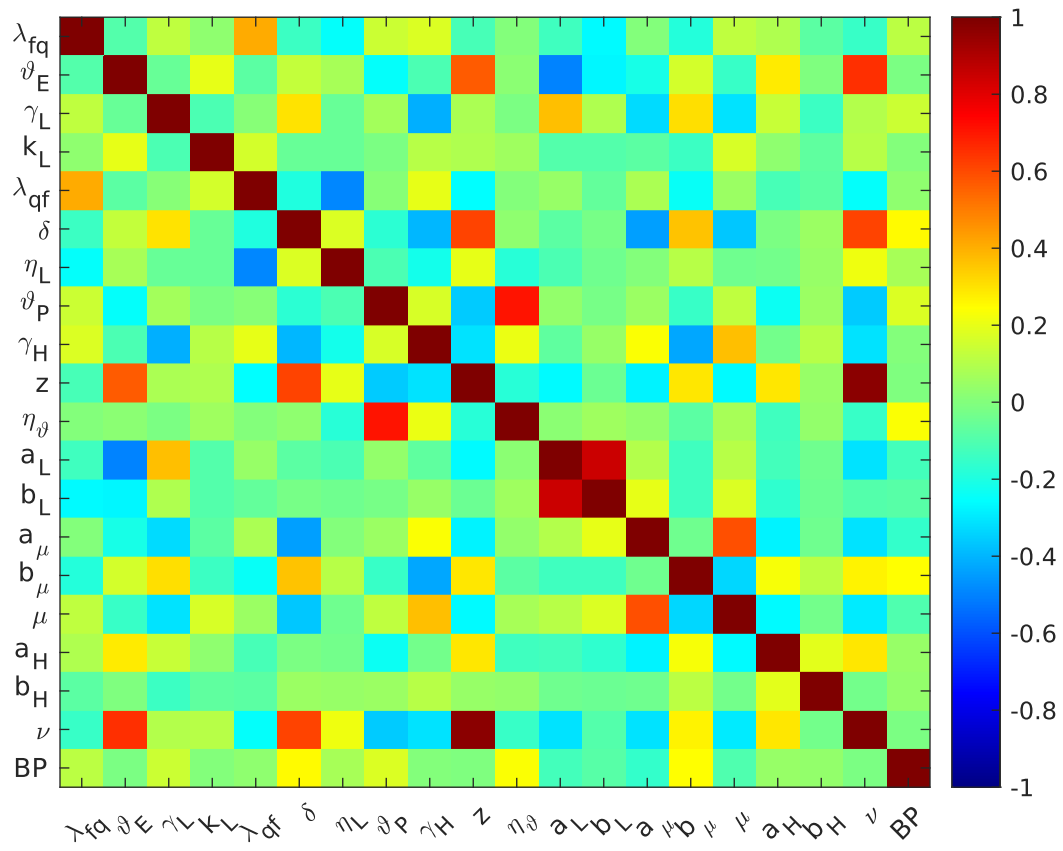
4.2. Estimated parameters with their intervals

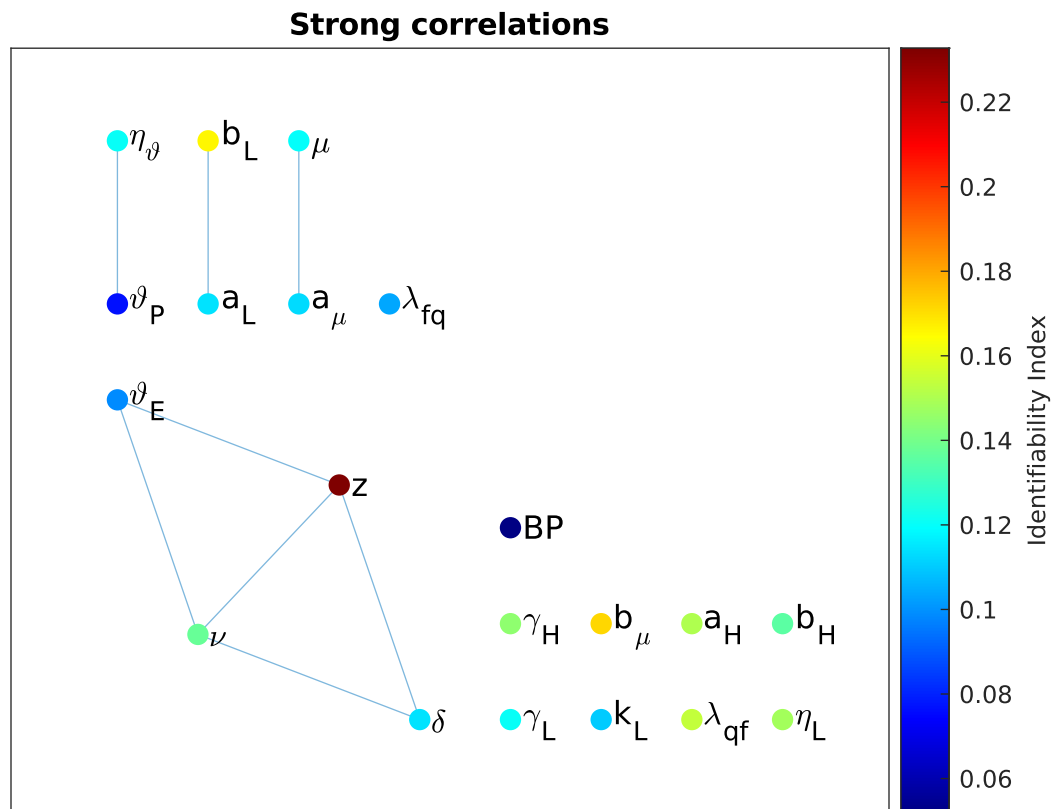
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|-----------|----------|
| λ_{fq} | '0' | '0.0928' | '0.0002' | '0.001' | '0.1037' |
| ϑ_E | '0' | '0.0026' | '0.0005' | '0.0001' | '0.0988' |
| γ_L | '0.2383' | '0.3512' | '0.2948' | '0.2171' | '0.1207' |
| k_L | '5.1069' | '6.2807' | '5.6938' | '4.1407' | '0.1102' |
| λ_{qf} | '0.6524' | '0.8424' | '0.7474' | '0.6599' | '0.1544' |
| δ | '0.0054' | '0.0084' | '0.0069' | '0.0016' | '0.1145' |
| η_L | '0.5584' | '0.7451' | '0.6518' | '0.7203' | '0.1486' |
| ϑ_P | '0' | '0.0001' | '0' | '0.0001' | '0.0772' |
| γ_H | '0.0411' | '0.1844' | '0.1127' | '0.5644' | '0.1452' |
| z | '0' | '6.3106' | '2.6235' | '0.7328' | '0.2328' |
| η_{ϑ} | '0.6645' | '0.7762' | '0.7204' | '0.6816' | '0.1209' |
| a_L | '2.7356' | '3.6952' | '3.2154' | '6.1871' | '0.1149' |
| b_L | '4.6383' | '7.2936' | '5.9659' | '14.787' | '0.1664' |
| a_{μ} | '1' | '1.9096' | '1.1843' | '11.6783' | '0.113' |
| b_{μ} | '11.8456' | '14.5899' | '13.2177' | '13.2549' | '0.1718' |
| μ | '0' | '0.0679' | '0.0199' | '0.4175' | '0.1203' |
| a_H | '2.8655' | '5.3441' | '4.1048' | '2.4434' | '0.1503' |
| b_H | '1.8381' | '4.5279' | '3.183' | '1.2873' | '0.1358' |
| ν | '0' | '6.746' | '2.0118' | '3.0528' | '0.1375' |
| BP | '210.2213' | '210.7169' | '210.4691' | '208.5' | '0.052' |

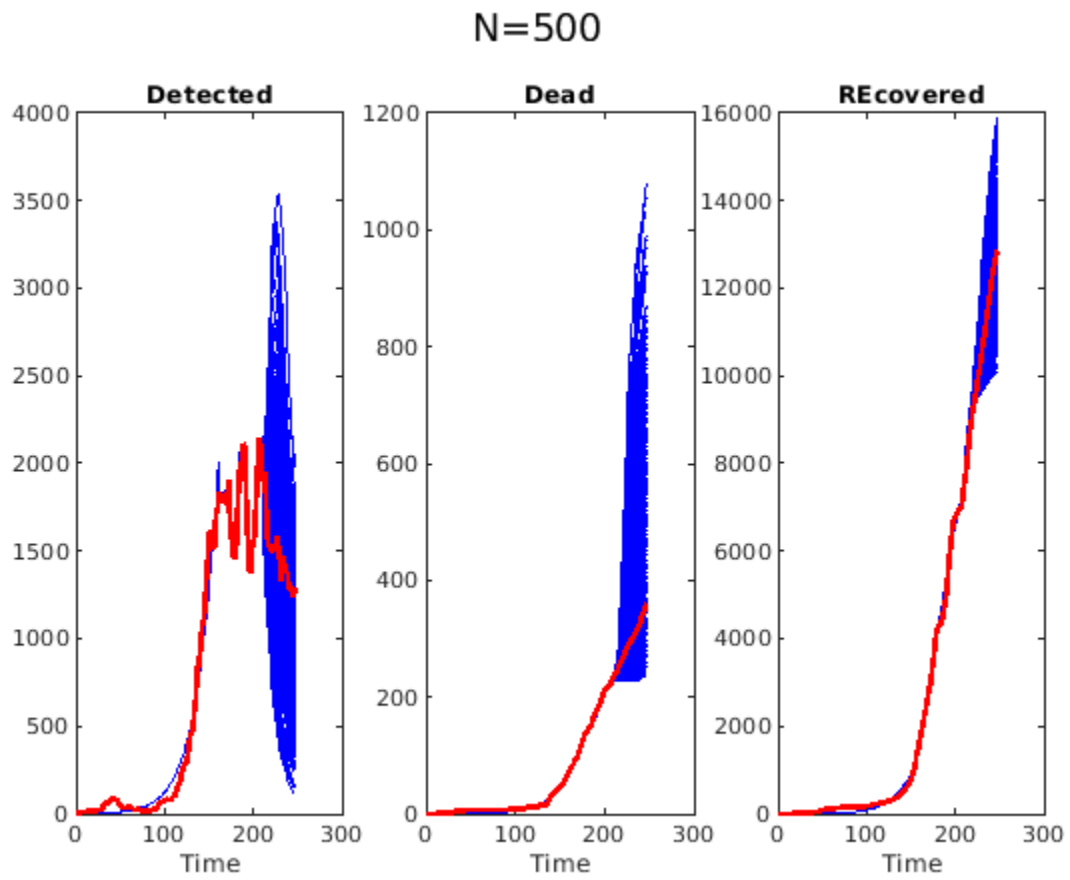
4.3. Identifiability analysis







4.4. Uncertainty analysys



Chapter 5. Extension number5

5.1. Basic information

The extension to be validated consists of the time series from the data248 to the 284. The status of the validation is: COMPLETED.

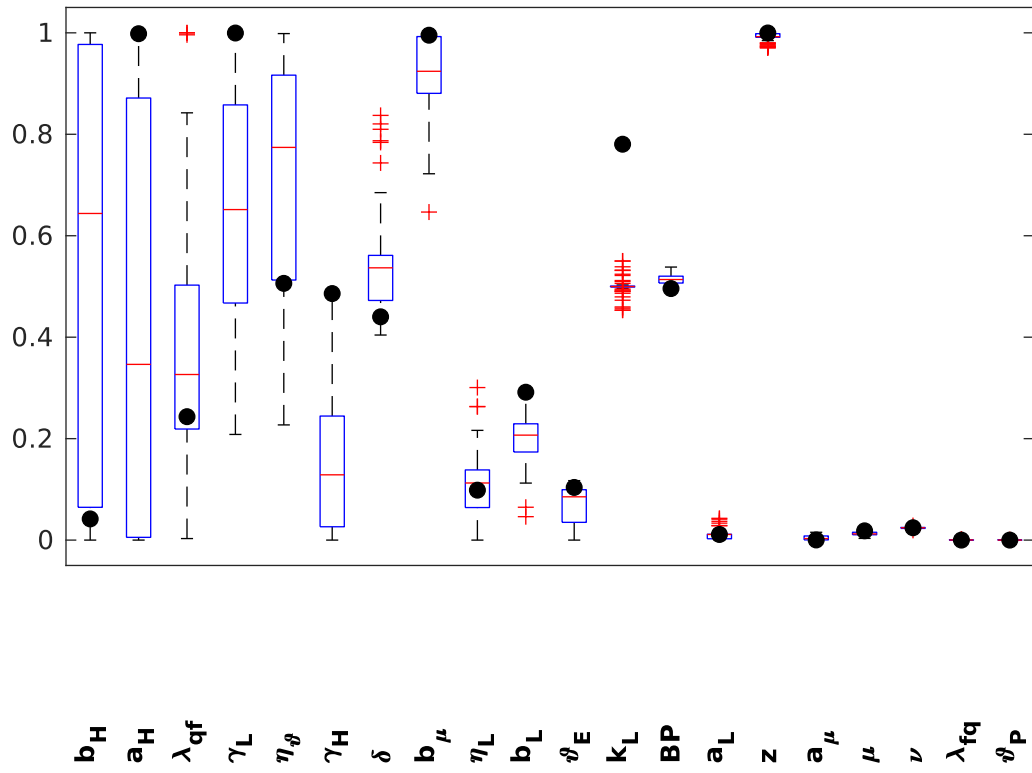
The number of estimations needed to perform the validation was1000.

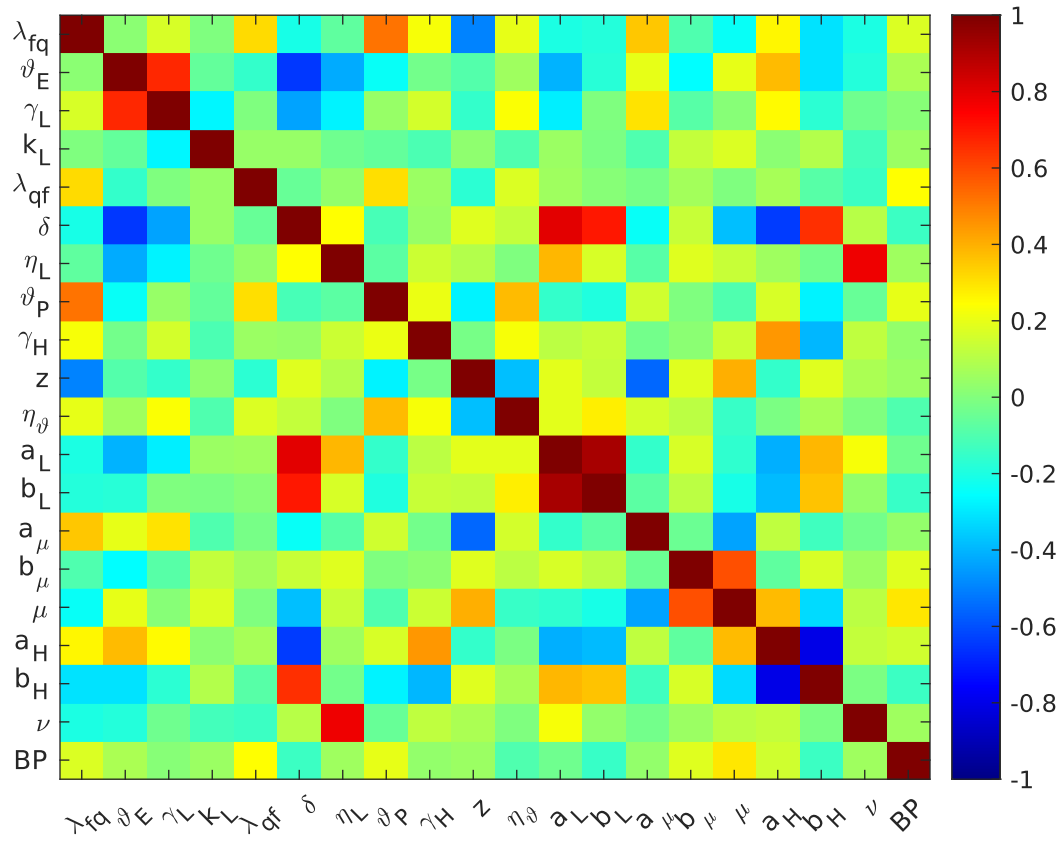
5.2. Estimated parameters with their intervals

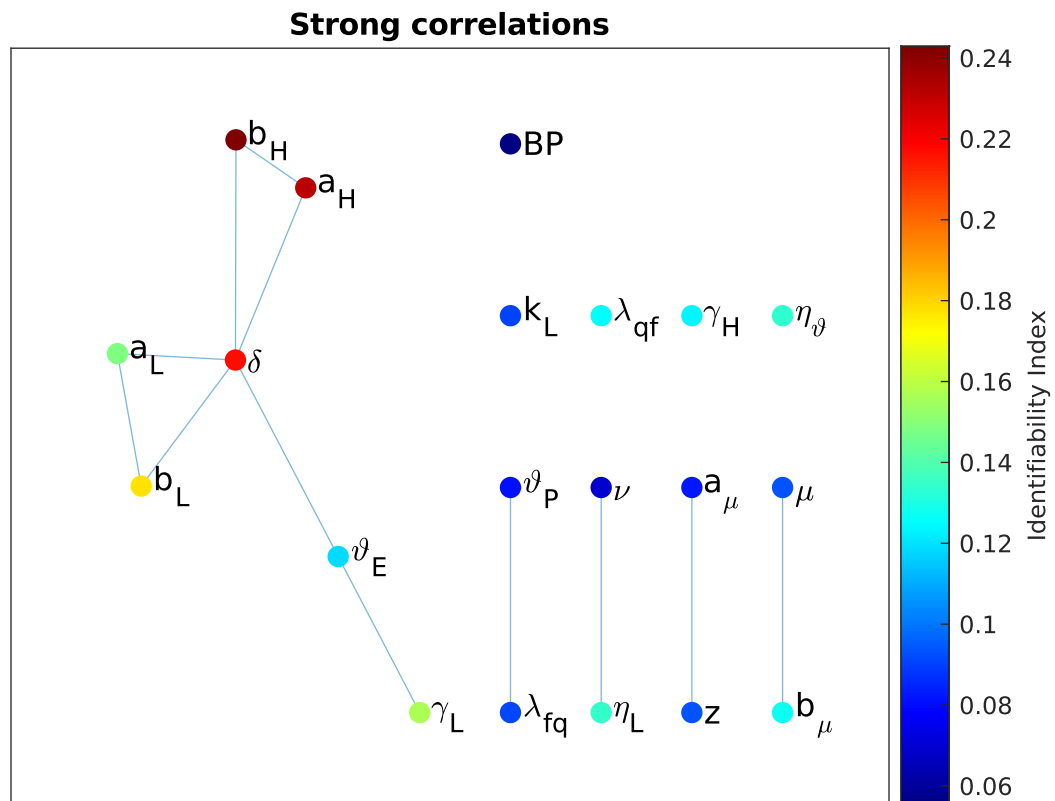
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|-----------|-----------|------------|----------|
| λ_{fq} | '0' | '0.002' | '0.0003' | '0' | '0.0915' |
| ϑ_E | '0.0731' | '0.0976' | '0.0853' | '0.1038' | '0.1192' |
| γ_L | '0.5769' | '0.7262' | '0.6516' | '0.9996' | '0.1568' |
| k_L | '5.074' | '5.9229' | '5.4984' | '8.0236' | '0.0908' |
| λ_{qf} | '0.251' | '0.4019' | '0.3264' | '0.2433' | '0.1256' |
| δ | '0.0721' | '0.0889' | '0.0805' | '0.066' | '0.2172' |
| η_L | '0.0562' | '0.169' | '0.1126' | '0.0984' | '0.1349' |
| ϑ_P | '0' | '0.0006' | '0.0001' | '0' | '0.0816' |
| γ_H | '0.0629' | '0.1945' | '0.1287' | '0.486' | '0.1239' |
| z | '29.4719' | '30' | '29.772' | '29.991' | '0.0938' |
| η_{ϑ} | '0.7022' | '0.8461' | '0.7741' | '0.5061' | '0.1341' |
| a_L | '1' | '1.9078' | '1.1553' | '1.1553' | '0.1487' |
| b_L | '2.8565' | '4.9372' | '3.8969' | '5.0813' | '0.1772' |
| a_{μ} | '1' | '1.1475' | '1.0423' | '1.0038' | '0.0828' |
| b_{μ} | '13.1422' | '14.735' | '13.9386' | '14.9341' | '0.1275' |
| μ | '0.0112' | '0.0133' | '0.0122' | '0.0183' | '0.0938' |
| a_H | '4.1724' | '7.5267' | '5.8496' | '14.9756' | '0.2312' |
| b_H | '8.1695' | '11.8596' | '10.0145' | '1.5848' | '0.2429' |
| ν | '11.6799' | '12.5936' | '12.1367' | '12.1764' | '0.0697' |
| BP | '247.7659' | '248.26' | '248.013' | '246.6931' | '0.0555' |

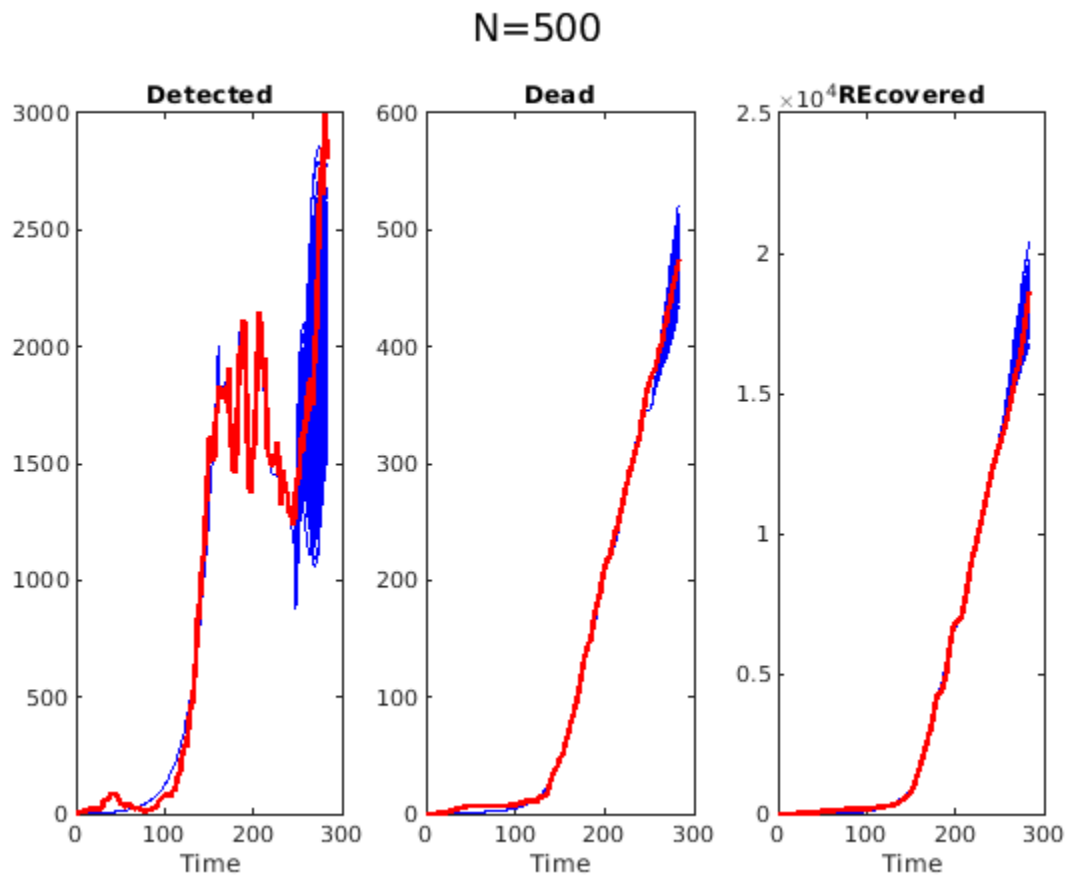
5.3. Identifiability analysis







5.4. Uncertainty analysis



Chapter 6. Extension number6

6.1. Basic information

The extension to be validated consists of the time series from the data284 to the 313. The status of the validation is: COMPLETED.

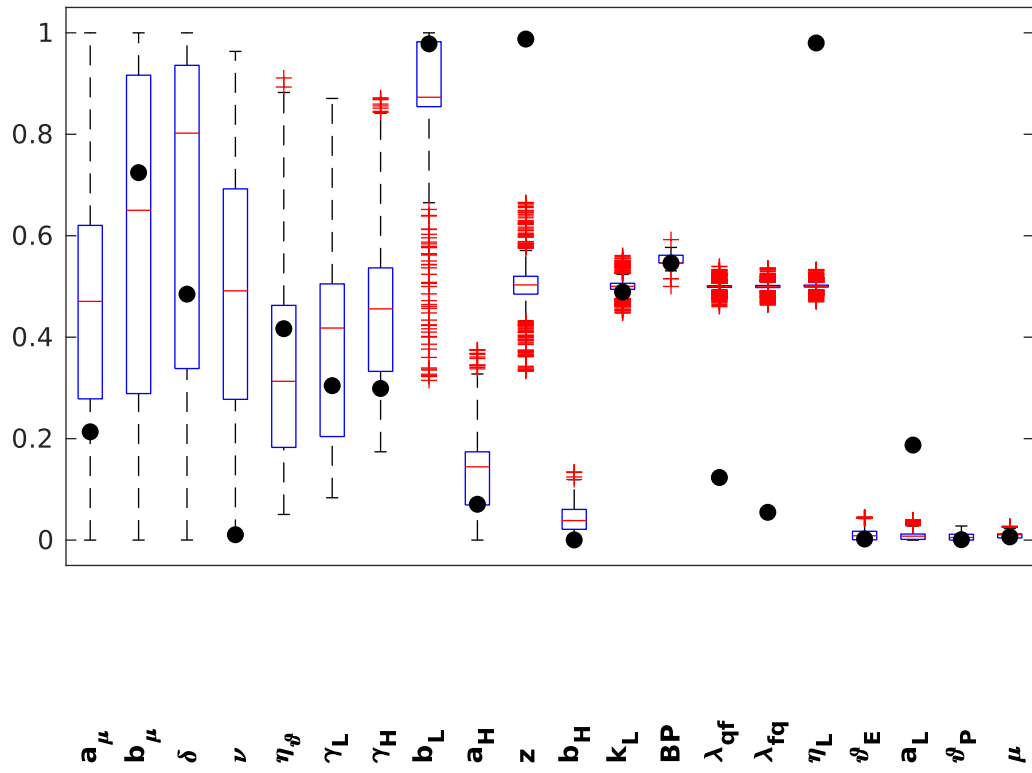
The number of estimations needed to perform the validation was1000.

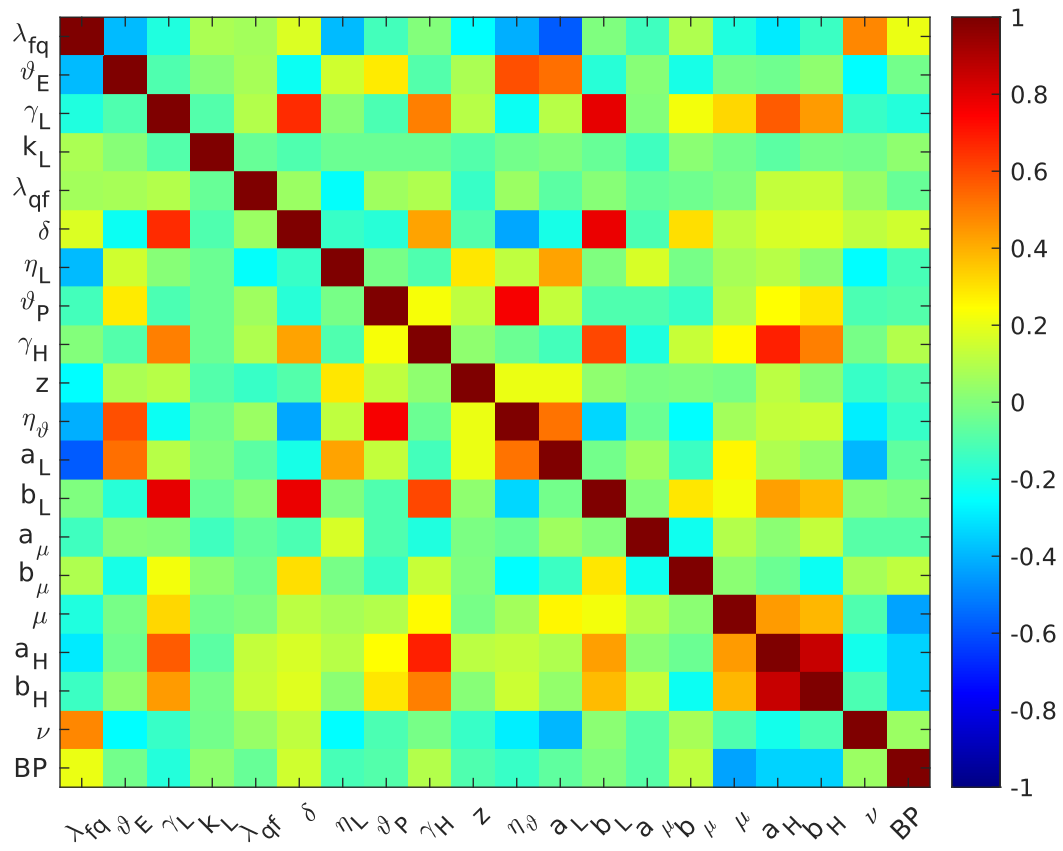
6.2. Estimated parameters with their intervals

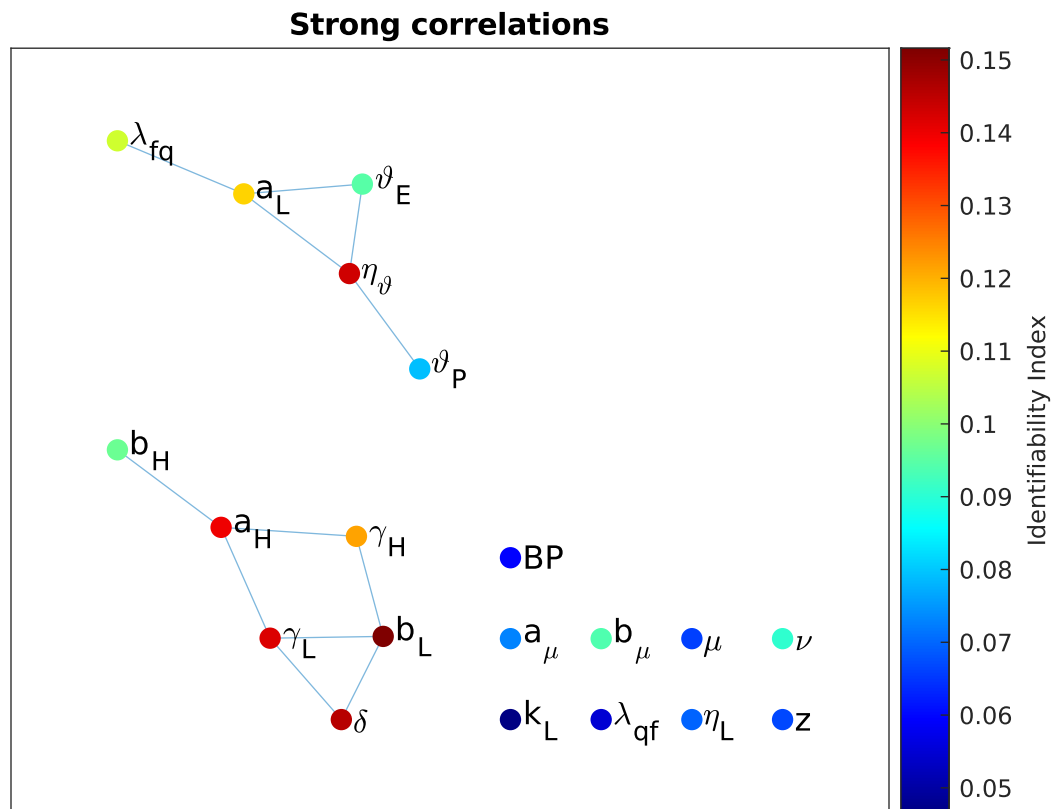
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|-----------|----------|
| λ_{fq} | '0.482' | '0.5166' | '0.4993' | '0.0548' | '0.1072' |
| ϑ_E | '0.0046' | '0.0124' | '0.0085' | '0.0021' | '0.0948' |
| γ_L | '0.3995' | '0.4366' | '0.418' | '0.3045' | '0.1419' |
| k_L | '5.4143' | '5.5912' | '5.5027' | '5.4015' | '0.0467' |
| λ_{qf} | '0.4881' | '0.5119' | '0.5' | '0.1234' | '0.0552' |
| δ | '0.1146' | '0.1261' | '0.1203' | '0.0727' | '0.1459' |
| η_L | '0.4893' | '0.5112' | '0.5002' | '0.98' | '0.0697' |
| ϑ_P | '0.0039' | '0.0064' | '0.0051' | '0.0008' | '0.0792' |
| γ_H | '0.4364' | '0.4752' | '0.4558' | '0.2989' | '0.1216' |
| z | '14.5979' | '15.5883' | '15.0931' | '29.6305' | '0.0671' |
| η_{ϑ} | '0.2924' | '0.3336' | '0.313' | '0.4167' | '0.1431' |
| a_L | '1.0456' | '1.1702' | '1.1079' | '3.6229' | '0.1164' |
| b_L | '12.7233' | '13.721' | '13.2222' | '14.6958' | '0.1516' |
| a_{μ} | '7.1988' | '7.9782' | '7.5885' | '3.9887' | '0.0732' |
| b_{μ} | '9.5887' | '10.616' | '10.1024' | '11.1411' | '0.0938' |
| μ | '0.0092' | '0.0125' | '0.0109' | '0.0064' | '0.066' |
| a_H | '2.8061' | '3.2379' | '3.022' | '1.9892' | '0.1401' |
| b_H | '1.4728' | '1.6045' | '1.5387' | '1.0047' | '0.0967' |
| ν | '230.8689' | '260.5093' | '245.6891' | '5.2976' | '0.0907' |
| BP | '283.388' | '283.612' | '283.5' | '283.5' | '0.0595' |

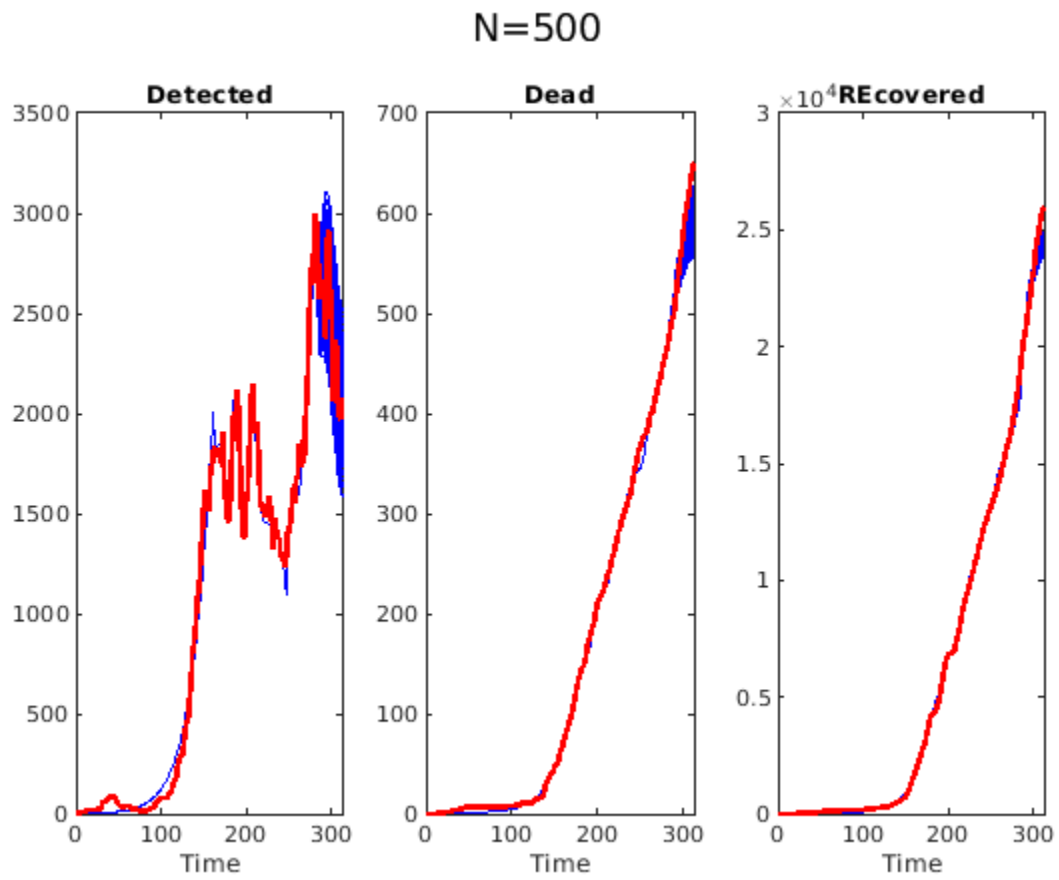
6.3. Identifiability analysis







6.4. Uncertainty analysis



Chapter 7. Extension number7

7.1. Basic information

The extension to be validated consists of the time series from the data313 to the 323. The status of the validation is: COMPLETED.

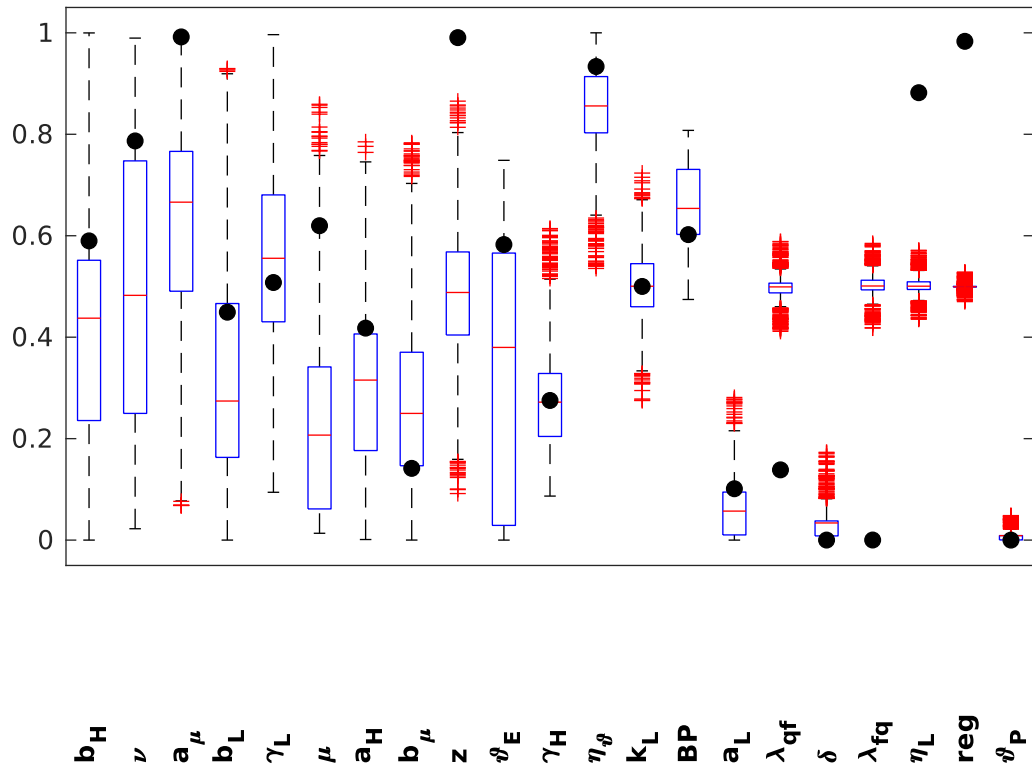
The number of estimations needed to perform the validation was1000.

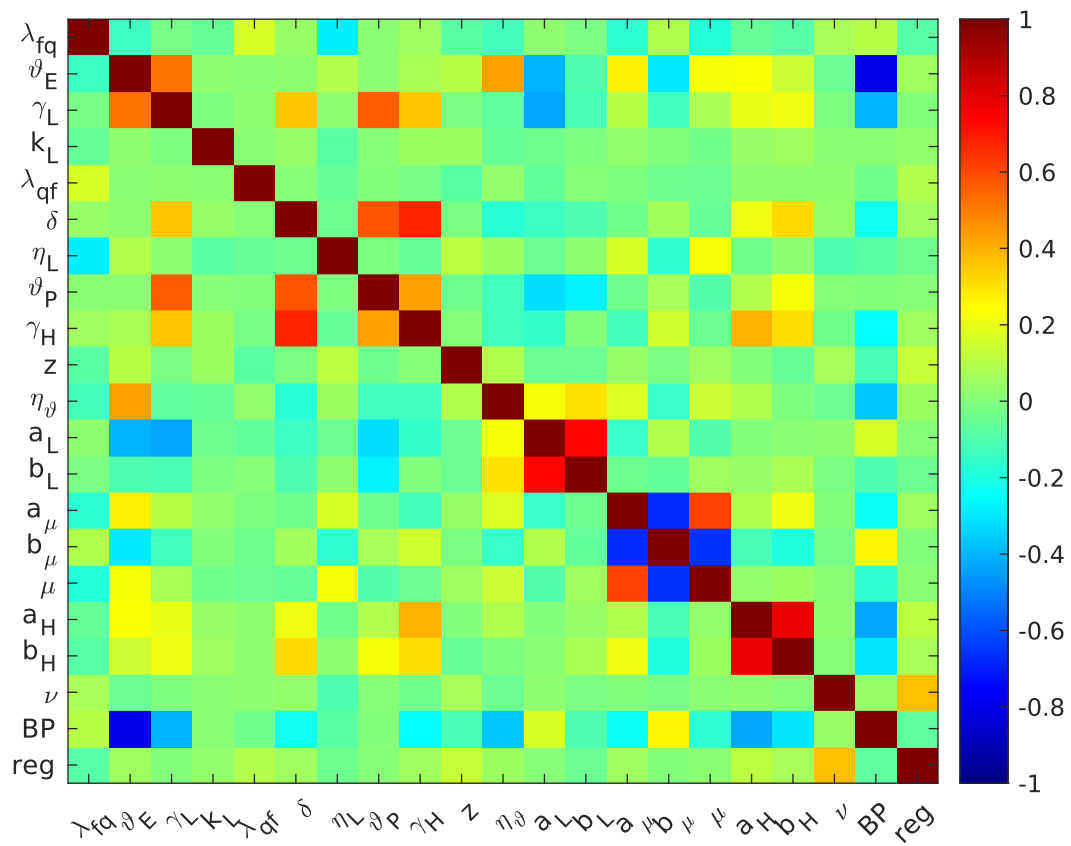
7.2. Estimated parameters with their intervals

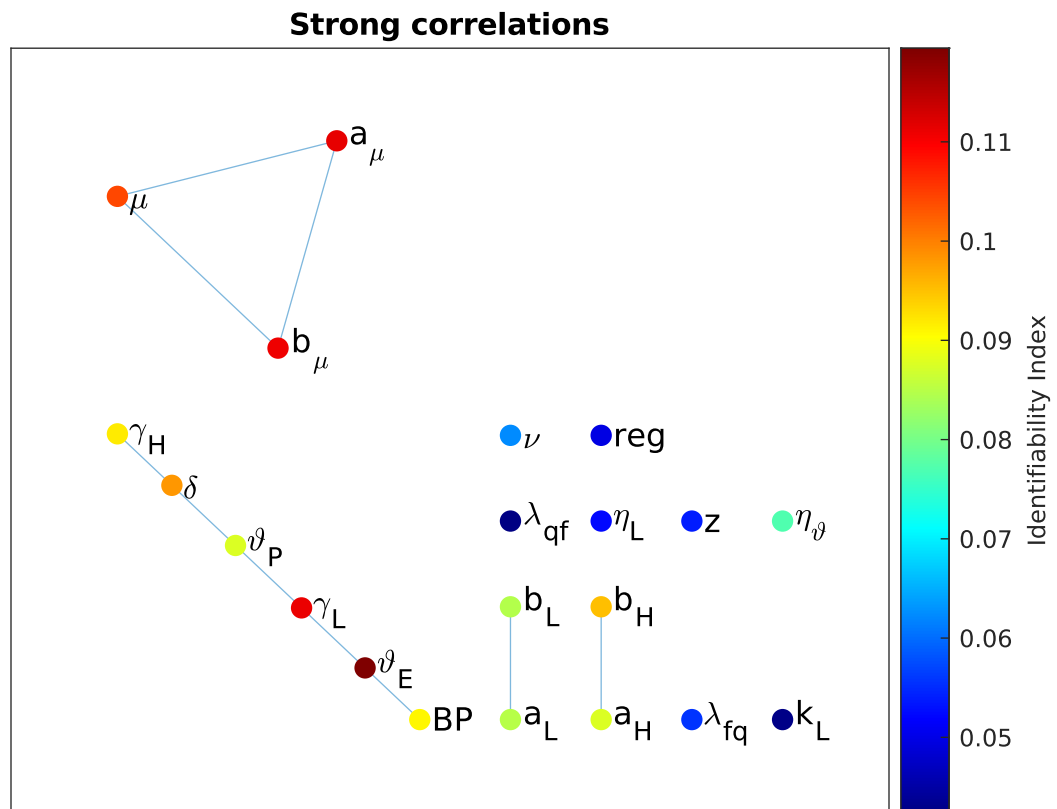
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|------------|----------|
| λ_{fq} | '0.4909' | '0.5109' | '0.5009' | '0.0002' | '0.056' |
| ϑ_E | '0.3561' | '0.4036' | '0.3798' | '0.5826' | '0.1194' |
| γ_L | '0.5353' | '0.5758' | '0.5556' | '0.5078' | '0.1112' |
| k_L | '5.4036' | '5.6048' | '5.5042' | '5.5002' | '0.0428' |
| λ_{qf} | '0.4899' | '0.5084' | '0.4991' | '0.1385' | '0.0425' |
| δ | '0.0032' | '0.007' | '0.0051' | '0' | '0.0982' |
| η_L | '0.4918' | '0.5093' | '0.5005' | '0.882' | '0.0525' |
| ϑ_P | '0.0039' | '0.0139' | '0.0089' | '0' | '0.0876' |
| γ_H | '0.2563' | '0.288' | '0.2722' | '0.2753' | '0.0918' |
| z | '14.1513' | '15.137' | '14.6442' | '29.7159' | '0.0541' |
| η_{ϑ} | '0.8362' | '0.8755' | '0.8559' | '0.9336' | '0.0771' |
| a_L | '1.6368' | '1.964' | '1.8004' | '2.4172' | '0.0851' |
| b_L | '4.5147' | '5.1697' | '4.8422' | '7.2895' | '0.0848' |
| a_{μ} | '9.9681' | '10.6819' | '10.325' | '14.8871' | '0.1115' |
| b_{μ} | '4.1543' | '4.8471' | '4.5007' | '2.9797' | '0.1109' |
| μ | '0.1847' | '0.2294' | '0.2071' | '0.6198' | '0.1043' |
| a_H | '5.1934' | '5.6452' | '5.4193' | '6.8503' | '0.0878' |
| b_H | '6.8232' | '7.4264' | '7.1248' | '9.2583' | '0.0951' |
| ν | '227.7213' | '254.7569' | '241.2391' | '393.4574' | '0.0625' |
| BP | '309.2573' | '309.7427' | '309.5' | '307.4862' | '0.0911' |
| reg | '0.1224' | '0.1273' | '0.1248' | '0.2458' | '0.0499' |

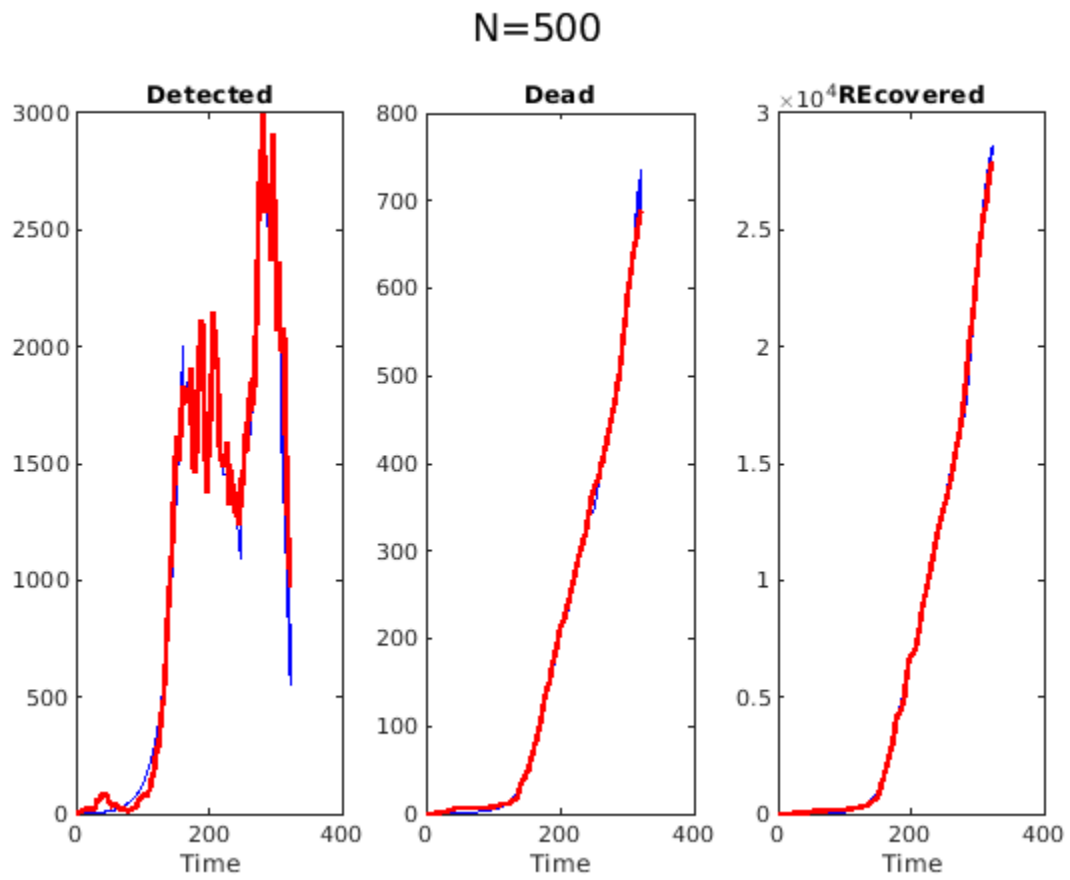
7.3. Identifiability analysis







7.4. Uncertainty analysis



Chapter 8. Extension number8

8.1. Basic information

The extension to be validated consists of the time series from the data323 to the 350. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

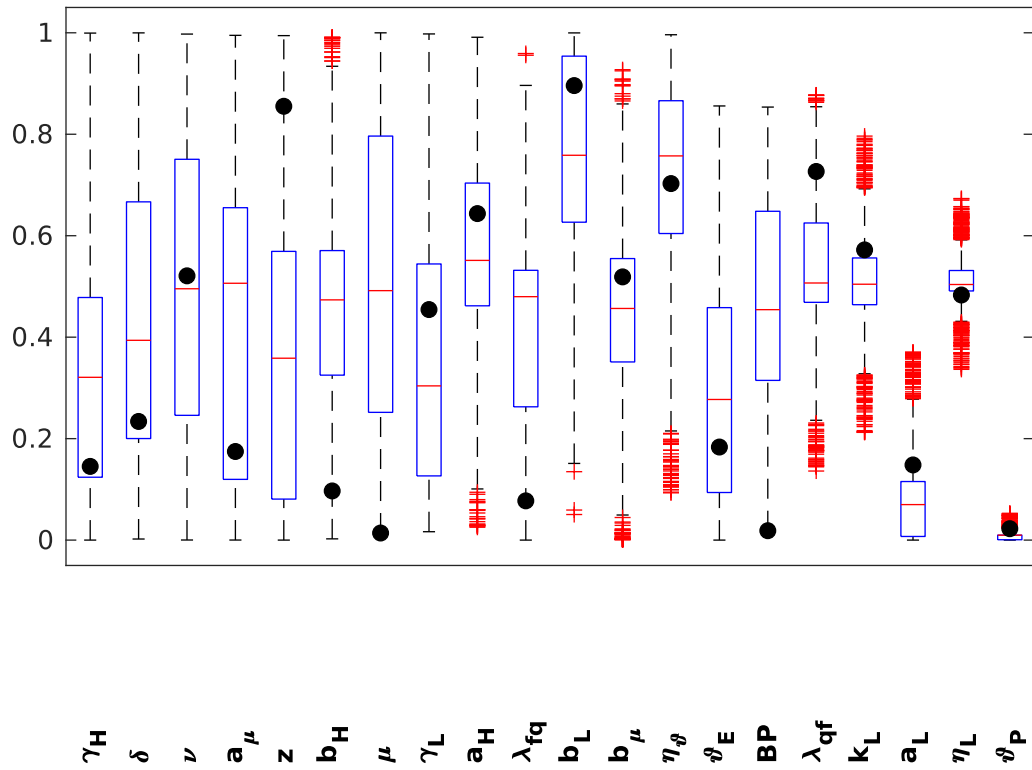
8.2. Estimated parameters with their intervals

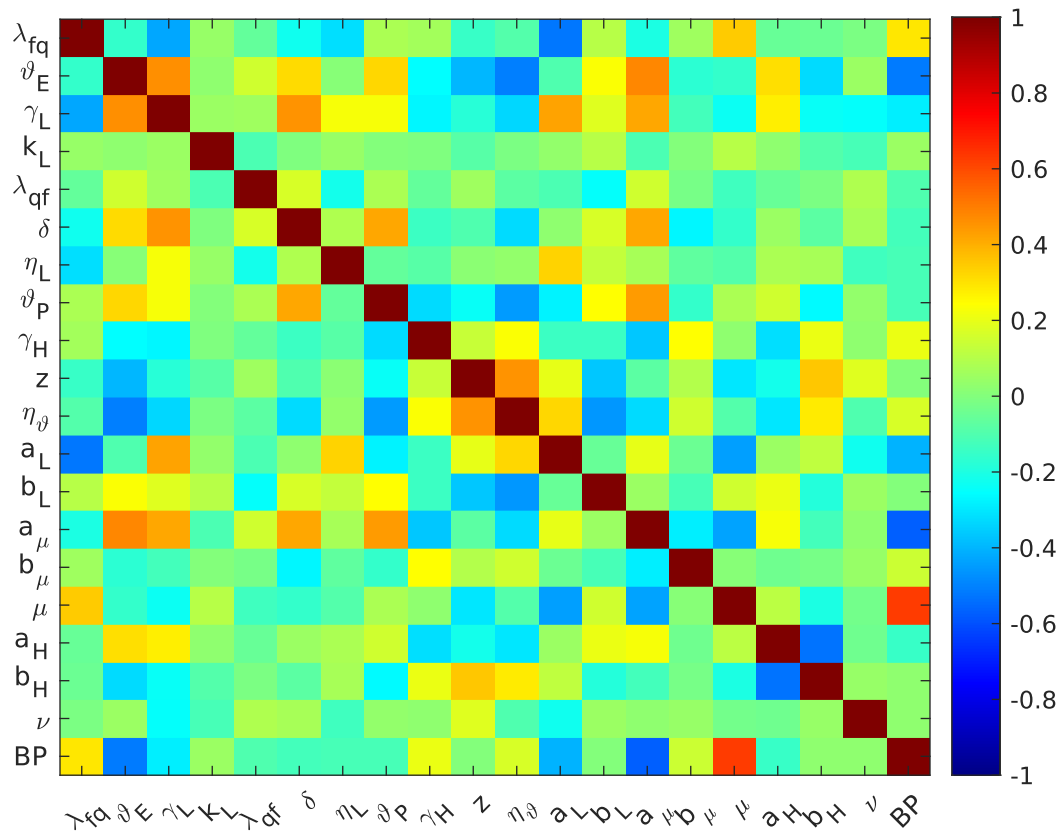
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

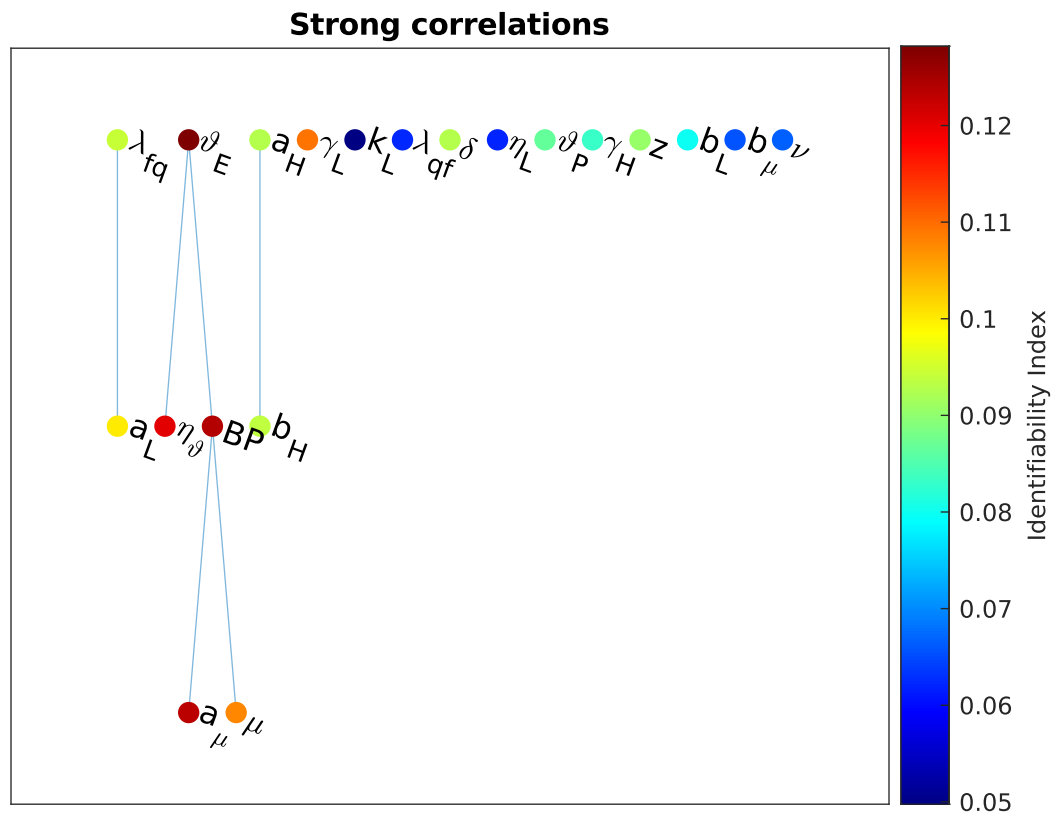
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|-----------|----------|
| λ_{fq} | '0.0173' | '0.1294' | '0.4801' | '0.0774' | '0.0943' |
| ϑ_E | '0.0979' | '0.4127' | '0.2772' | '0.1834' | '0.1282' |
| γ_L | '0.2879' | '0.5438' | '0.304' | '0.4544' | '0.1093' |
| k_L | '1' | '9.1' | '5.5394' | '6.1486' | '0.0498' |
| λ_{qf} | '0.4397' | '1' | '0.5068' | '0.7266' | '0.0625' |
| δ | '0.002' | '0.0789' | '0.0591' | '0.0351' | '0.0927' |
| η_L | '0.1509' | '0.966' | '0.5038' | '0.4831' | '0.0622' |
| ϑ_P | '0.0078' | '0.0505' | '0.0098' | '0.0225' | '0.0868' |
| γ_H | '0' | '0.2447' | '0.3209' | '0.1453' | '0.0833' |
| z | '12.2576' | '26.4003' | '10.7559' | '25.6541' | '0.0906' |
| η_{ϑ} | '0.2084' | '0.7387' | '0.7571' | '0.7028' | '0.1205' |
| a_L | '1.3426' | '4.2546' | '1.982' | '3.0743' | '0.1001' |
| b_L | '6.6207' | '13.6058' | '11.6183' | '13.543' | '0.08' |
| a_{μ} | '1' | '14.44' | '8.0878' | '3.4452' | '0.1233' |
| b_{μ} | '1' | '14.3' | '7.3931' | '8.2639' | '0.0659' |
| μ | '0' | '0.0314' | '0.4917' | '0.014' | '0.1078' |
| a_H | '1' | '13.3863' | '8.7157' | '10.0106' | '0.0929' |
| b_H | '2.0325' | '15' | '7.6302' | '2.3567' | '0.0936' |
| ν | '250.0563' | '381.1279' | '247.7226' | '260.461' | '0.0667' |
| BP | '313' | '321.2717' | '325.2642' | '313.5' | '0.1241' |

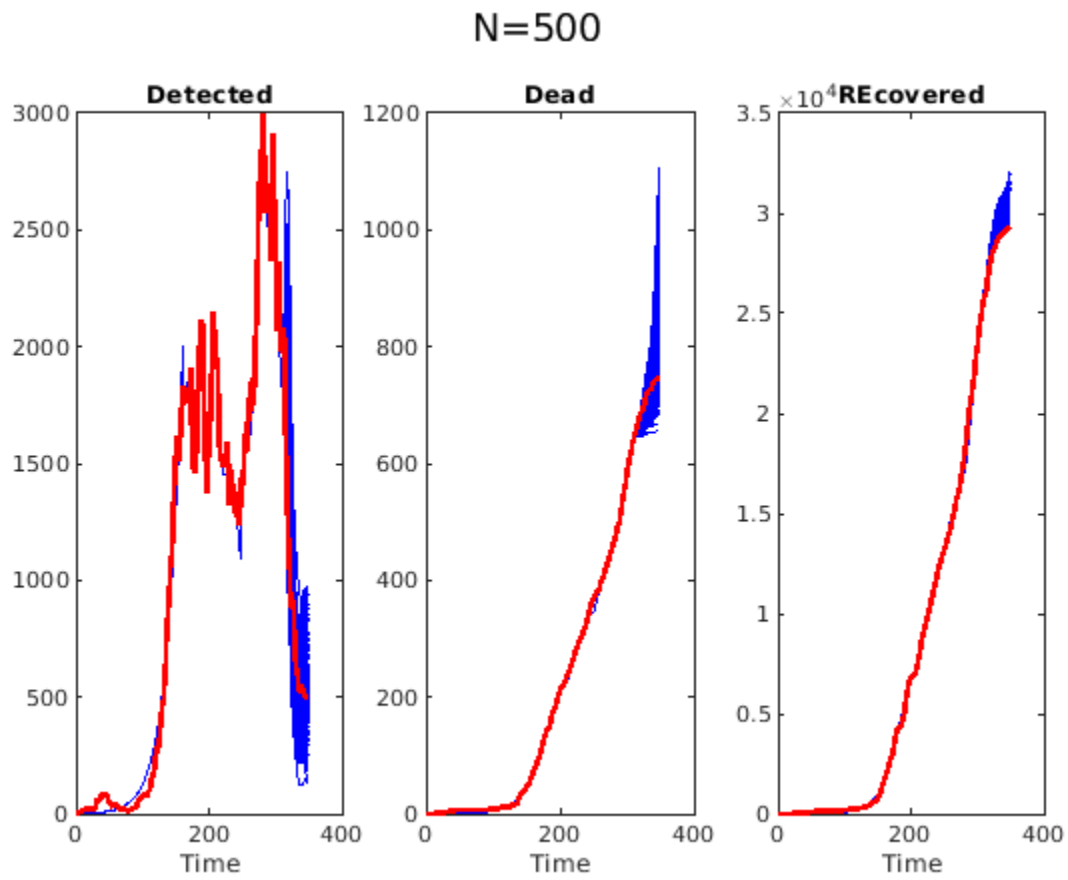
8.3. Identifiability analysis







8.4. Uncertainty analysis



Chapter 9. Extension number9

9.1. Basic information

The extension to be validated consists of the time series from the data350 to the 382. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

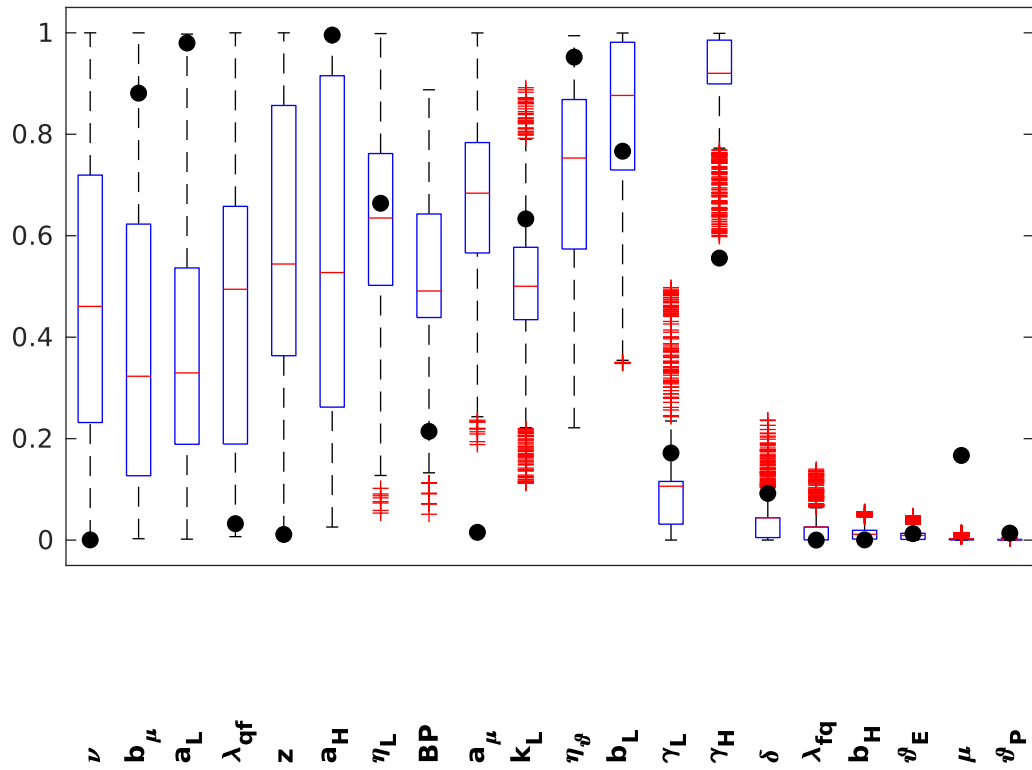
9.2. Estimated parameters with their intervals

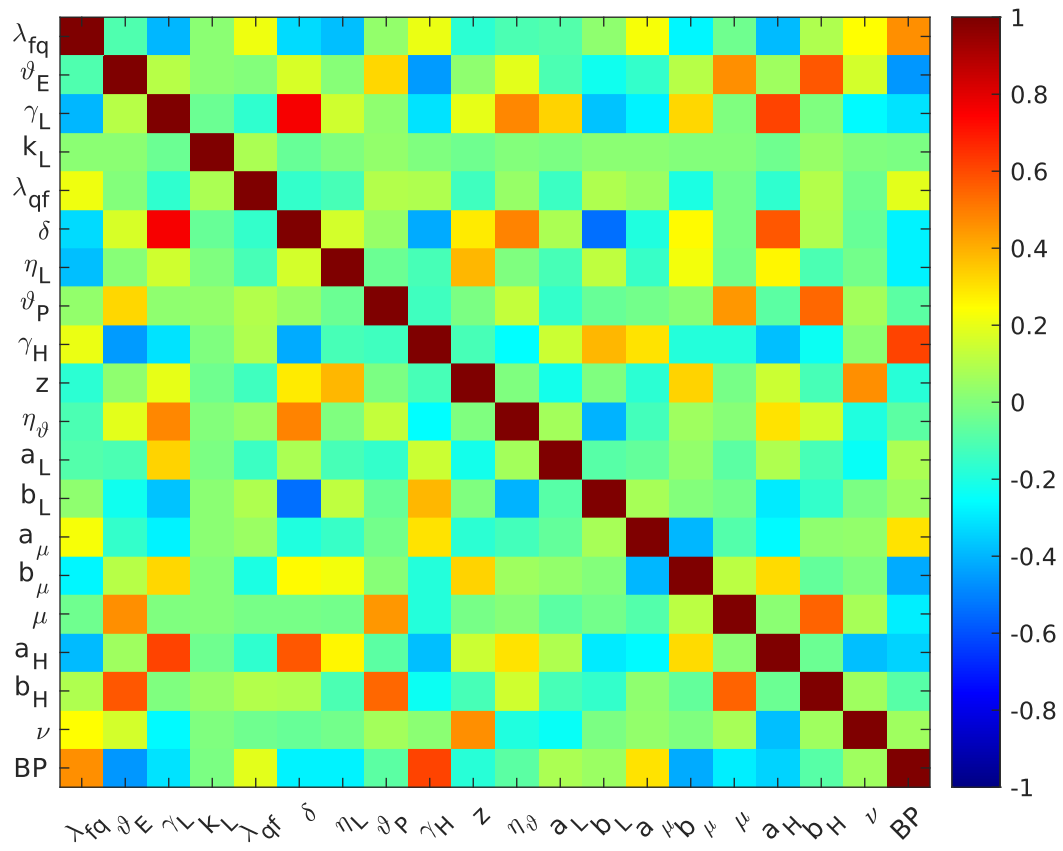
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

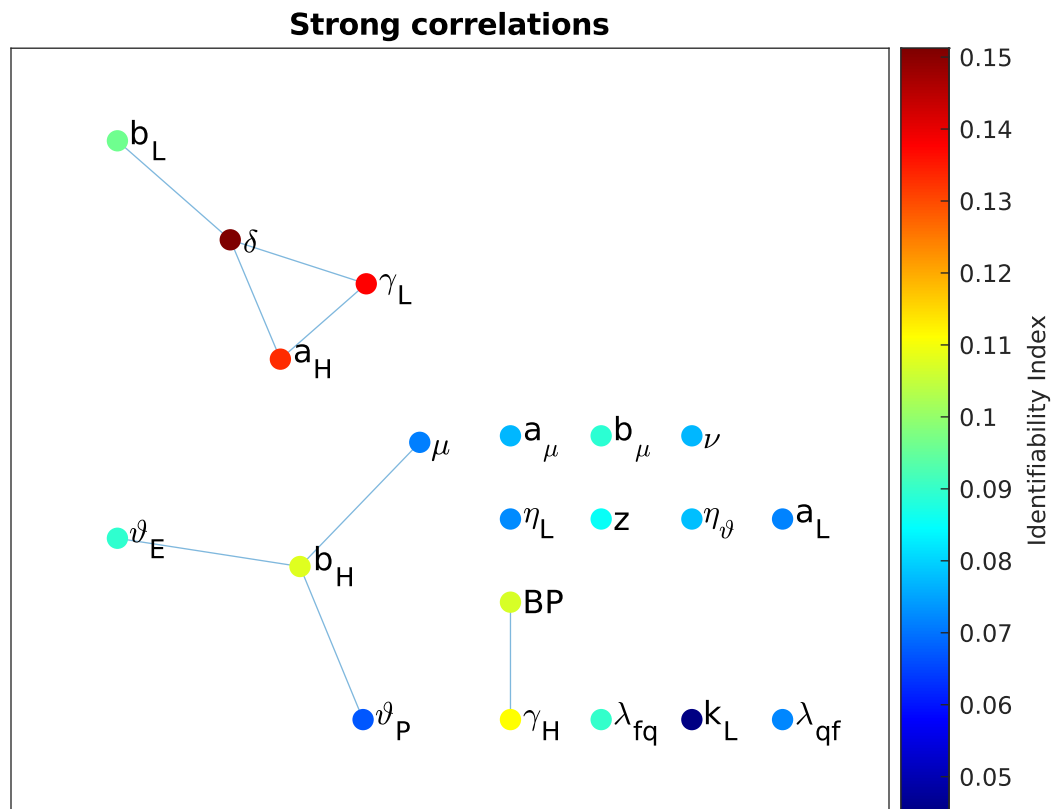
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|------------|----------|
| λ_{fq} | '0' | '0.0001' | '0.0258' | '0' | '0.0899' |
| ϑ_E | '0.0025' | '0.0275' | '0.0091' | '0.0127' | '0.0897' |
| γ_L | '0.1286' | '0.2404' | '0.1062' | '0.1717' | '0.138' |
| k_L | '1.1557' | '8.4781' | '5.504' | '6.6987' | '0.0451' |
| λ_{qf} | '0.0067' | '0.0729' | '0.4945' | '0.0324' | '0.0721' |
| δ | '0' | '0.0288' | '0.0066' | '0.0138' | '0.1512' |
| η_L | '0.4024' | '1' | '0.635' | '0.664' | '0.0727' |
| ϑ_P | '0.0084' | '0.0148' | '0.0009' | '0.0138' | '0.0674' |
| γ_H | '0.1104' | '1' | '0.9202' | '0.5559' | '0.1112' |
| z | '0.3164' | '0.4574' | '16.3271' | '0.3336' | '0.0857' |
| η_{ϑ} | '0.8891' | '0.9943' | '0.7532' | '0.9521' | '0.0779' |
| a_L | '10.3292' | '14.8086' | '5.6137' | '14.7186' | '0.072' |
| b_L | '8.2134' | '13.6737' | '13.2716' | '11.7325' | '0.0962' |
| a_{μ} | '1' | '12.97' | '10.5743' | '1.2146' | '0.0771' |
| b_{μ} | '3.1429' | '14.5281' | '5.5222' | '13.3351' | '0.0892' |
| μ | '0.0185' | '0.3612' | '0.0028' | '0.1669' | '0.0716' |
| a_H | '3.66' | '15' | '8.3841' | '14.9379' | '0.1333' |
| b_H | '1' | '11.0155' | '1.1615' | '1.006' | '0.1079' |
| ν | '0.009' | '0.45' | '230.3689' | '0.2083' | '0.0773' |
| BP | '332.5485' | '358.0587' | '347.0603' | '333.4997' | '0.107' |

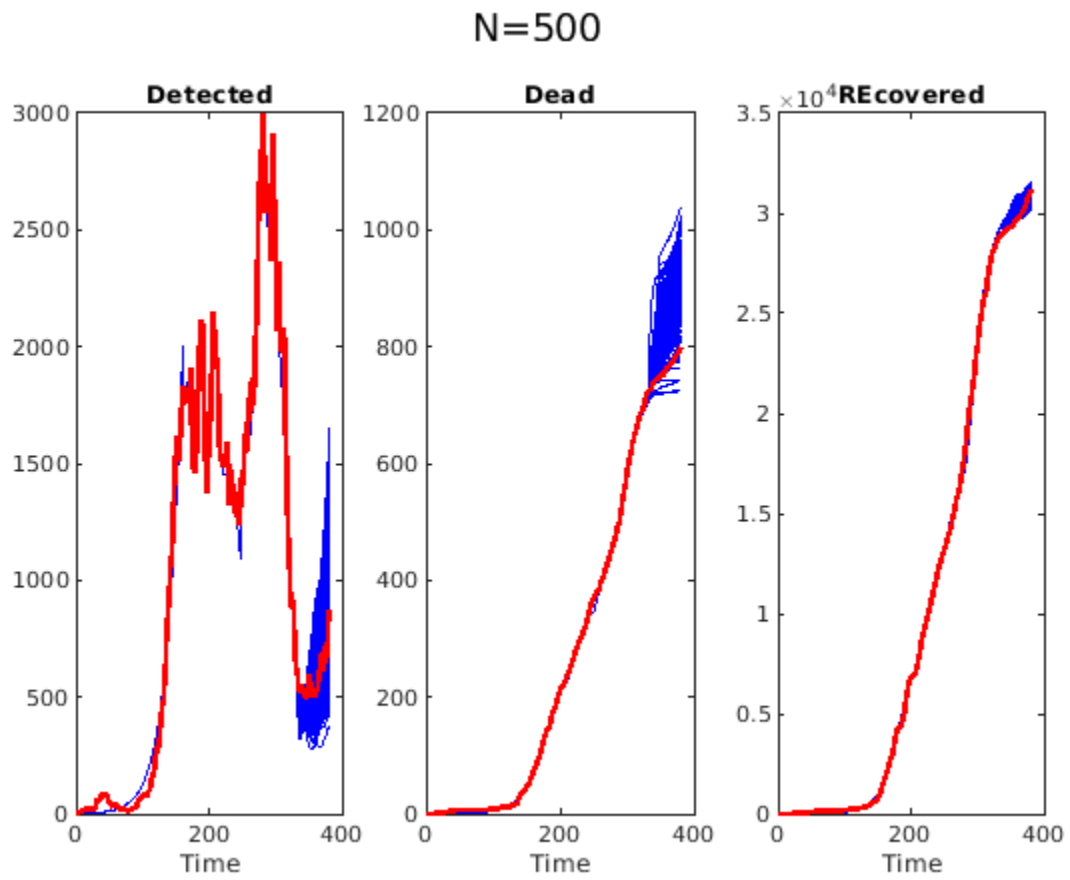
9.3. Identifiability analysis







9.4. Uncertainty analysis



Chapter 10. Extension number10

10.1. Basic information

The extension to be validated consists of the time series from the data382 to the 403. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

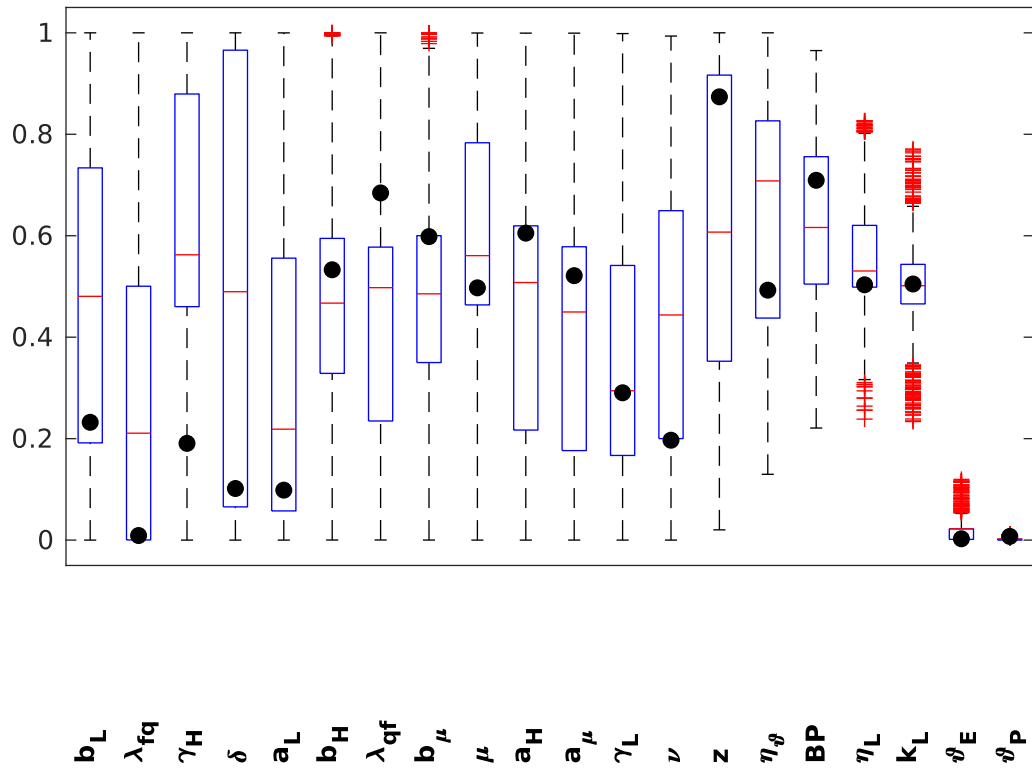
10.2. Estimated parameters with their intervals

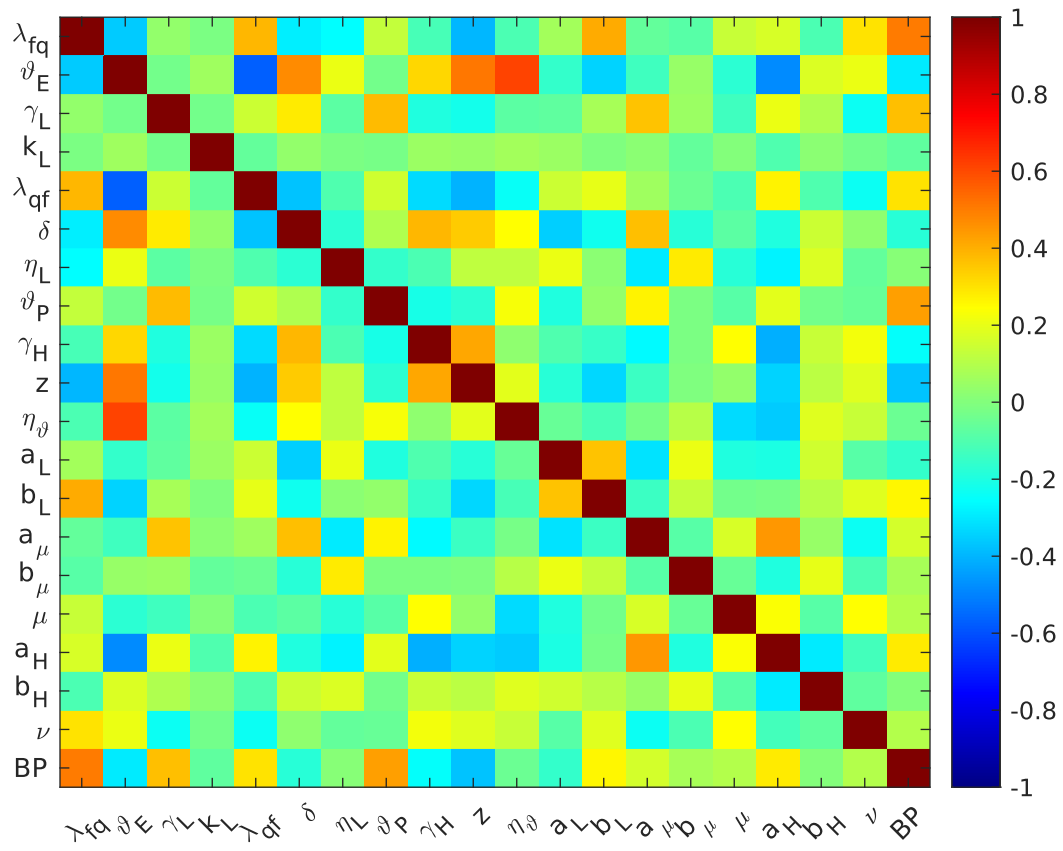
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

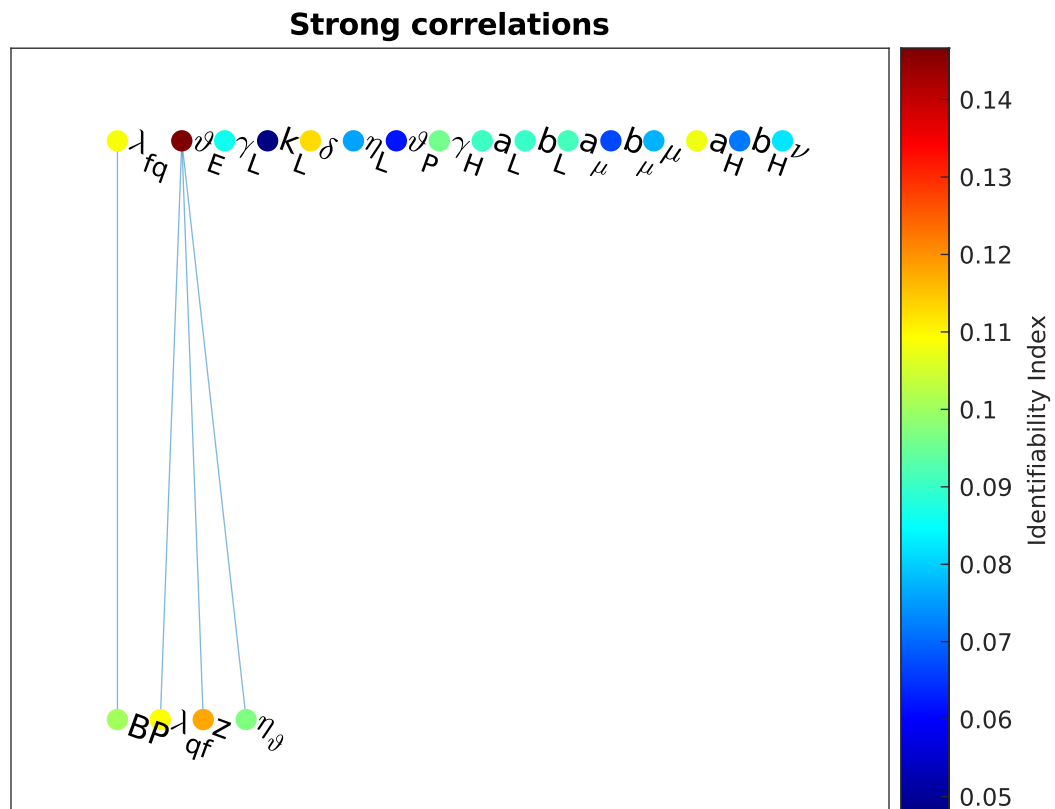
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|------------|------------|------------|-----------|----------|
| λ_{fq} | '0' | '0.017' | '0.2108' | '0.009' | '0.1088' |
| ϑ_E | '0' | '0.0053' | '0.0222' | '0.0026' | '0.1466' |
| γ_L | '0.2818' | '0.4284' | '0.2944' | '0.2904' | '0.0862' |
| k_L | '1' | '10' | '5.513' | '5.5438' | '0.048' |
| λ_{qf} | '0.0758' | '0.92' | '0.4976' | '0.6844' | '0.1095' |
| δ | '0.0044' | '0.0343' | '0.0734' | '0.0153' | '0.1129' |
| η_L | '0.2143' | '1' | '0.5305' | '0.5033' | '0.0759' |
| ϑ_P | '0.0061' | '0.0197' | '0.0021' | '0.0073' | '0.0621' |
| γ_H | '0' | '0.3707' | '0.5625' | '0.1907' | '0.0961' |
| z | '13.2689' | '30' | '18.2145' | '26.2145' | '0.1177' |
| η_{ϑ} | '0.4154' | '0.5727' | '0.7081' | '0.4927' | '0.0969' |
| a_L | '1.2946' | '3.068' | '4.0614' | '2.3788' | '0.0906' |
| b_L | '4.0677' | '6.3651' | '7.7276' | '4.2509' | '0.0903' |
| a_{μ} | '1.28' | '15' | '7.2959' | '8.2982' | '0.0913' |
| b_{μ} | '1.35' | '15' | '7.7967' | '9.376' | '0.0671' |
| μ | '0' | '0.9' | '0.5608' | '0.4973' | '0.0776' |
| a_H | '1.6913' | '15' | '8.1085' | '9.4716' | '0.1081' |
| b_H | '1.35' | '15' | '7.5402' | '8.4605' | '0.0719' |
| ν | '76.7437' | '114.0767' | '221.8982' | '98.4617' | '0.0826' |
| BP | '380.3658' | '388.0295' | '376.5' | '380.5' | '0.1004' |

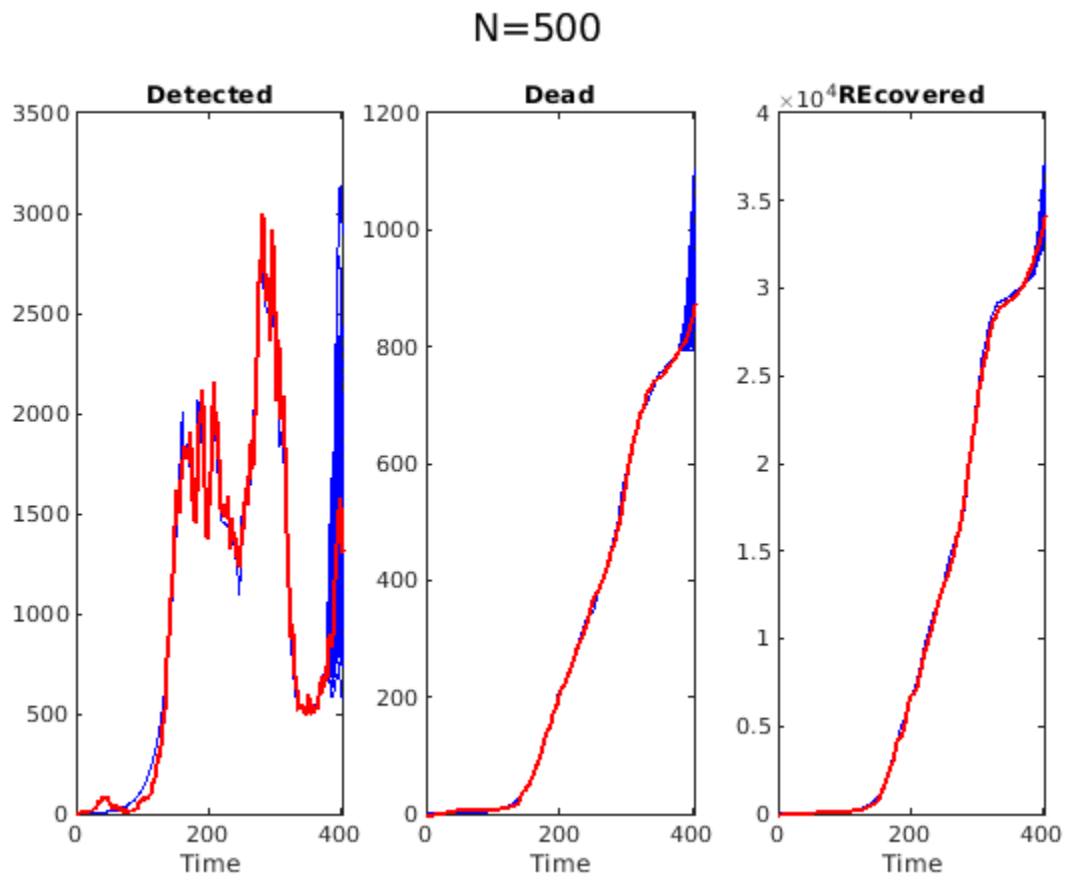
10.3. Identifiability analysis







10.4. Uncertainty analysis



Chapter 11. Extension number11

11.1. Basic information

The extension to be validated consists of the time series from the data403 to the 454. The status of the validation is: COMPLETED.

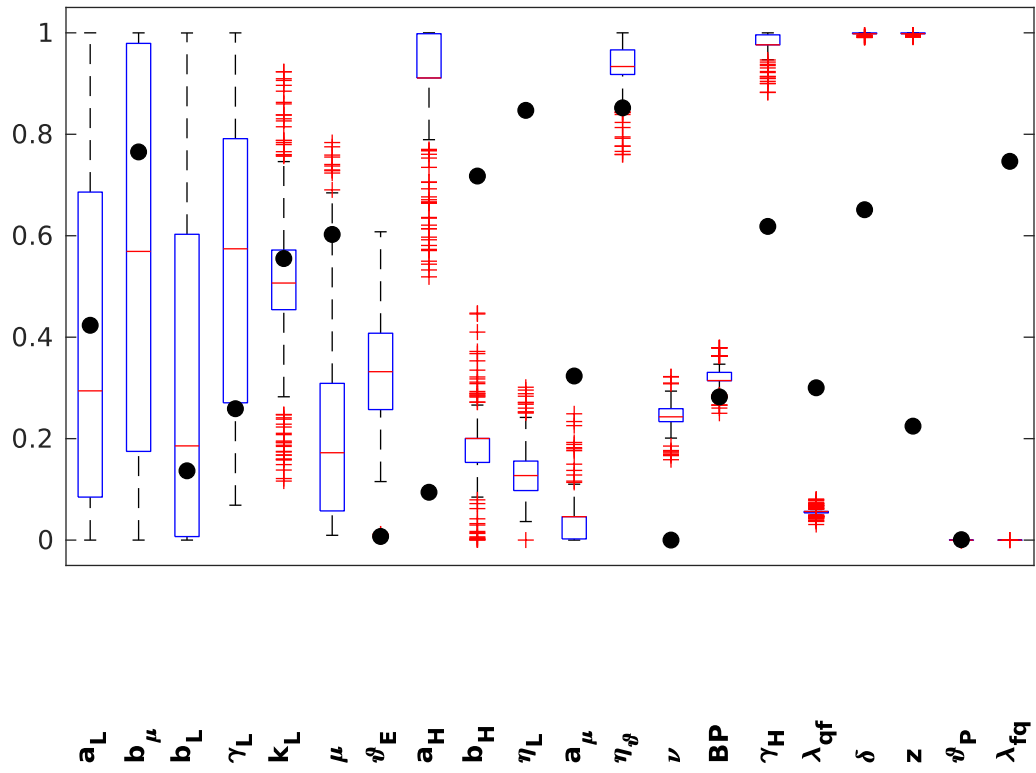
The number of estimations needed to perform the validation was1000.

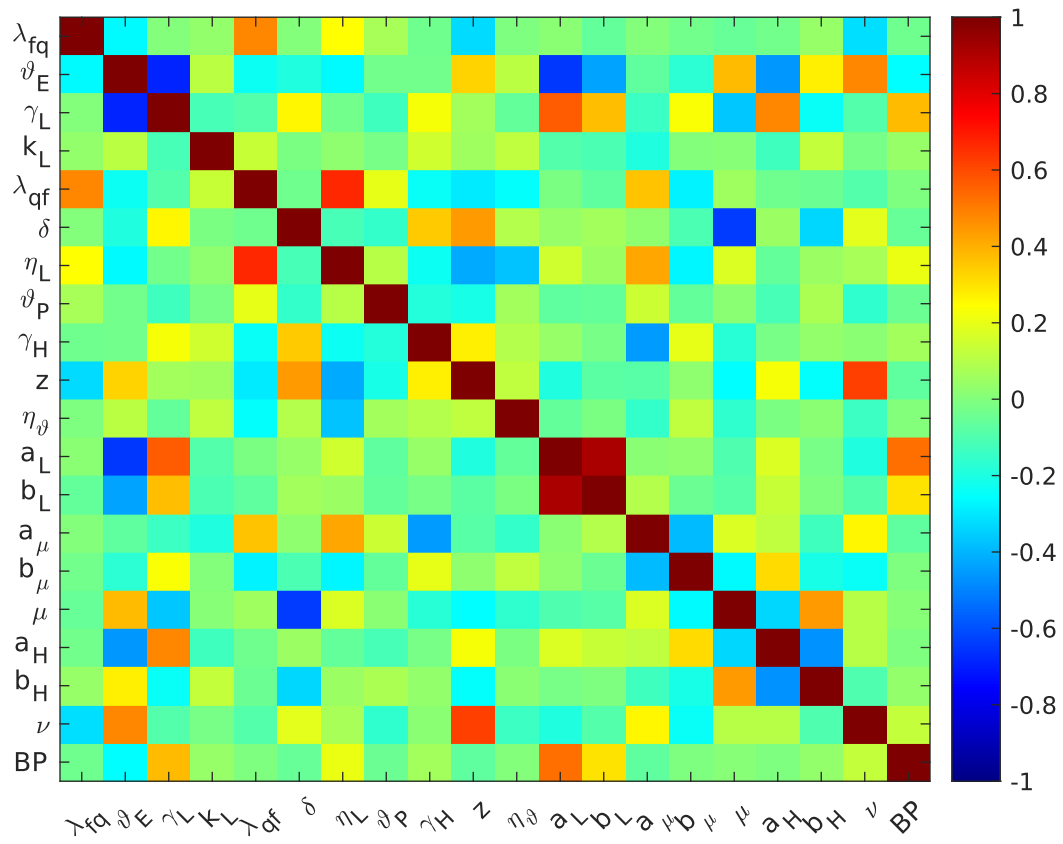
11.2. Estimated parameters with their intervals

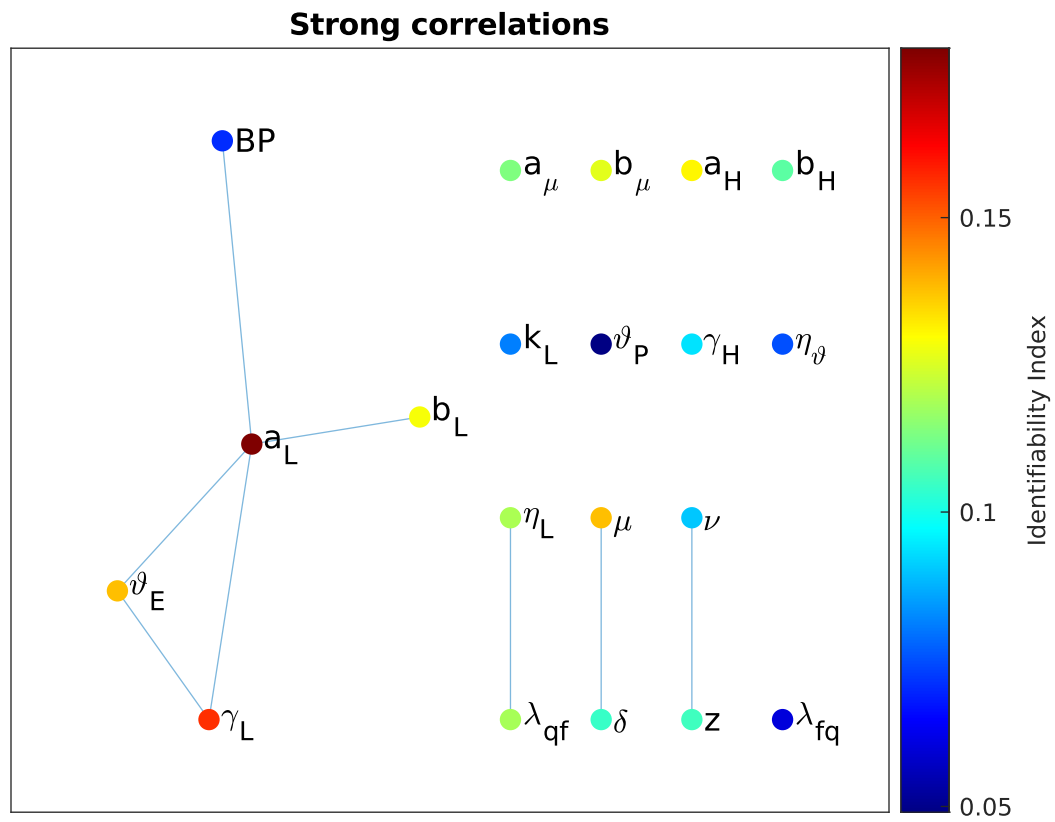
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|------------------|------------|------------|-----------|-----------|----------|
| \lambda_{fq} | '0' | '0.0197' | '0' | '0.7467' | '0.0605' |
| \vartheta_E | '0.3119' | '0.352' | '0.332' | '0.0072' | '0.1377' |
| \gamma_L | '0.5247' | '0.6237' | '0.5742' | '0.259' | '0.1562' |
| k_L | '5.2268' | '5.8947' | '5.5607' | '5.9952' | '0.0812' |
| \lambda_{qf} | '0.02' | '0.0929' | '0.0564' | '0.3003' | '0.1186' |
| \delta | '0.1417' | '0.15' | '0.1497' | '0.0977' | '0.1047' |
| \eta_L | '0.0947' | '0.1597' | '0.1272' | '0.8472' | '0.1191' |
| \vartheta_P | '0' | '0.0002' | '0' | '0.0008' | '0.049' |
| \gamma_H | '0.9327' | '1' | '0.9763' | '0.6184' | '0.094' |
| z | '29.1577' | '30' | '29.9459' | '6.739' | '0.1055' |
| \eta_{\vartheta} | '0.9083' | '0.9589' | '0.9336' | '0.8521' | '0.0751' |
| a_L | '4.3403' | '5.8974' | '5.1188' | '6.9285' | '0.1788' |
| b_L | '2.8357' | '4.3644' | '3.6' | '2.9126' | '0.129' |
| a_{\mu} | '1' | '2.3339' | '1.6463' | '5.5288' | '0.1137' |
| b_{\mu} | '8.0761' | '9.8588' | '8.9674' | '11.7131' | '0.1262' |
| \mu | '0.119' | '0.2254' | '0.1722' | '0.6025' | '0.1381' |
| a_H | '12.8434' | '14.6644' | '13.7539' | '2.32' | '0.1309' |
| b_H | '3.1368' | '4.4729' | '3.8049' | '11.0473' | '0.109' |
| \nu | '116.6591' | '126.3609' | '121.51' | '0.0298' | '0.0901' |
| BP | '401.1731' | '401.8269' | '401.5' | '399.5' | '0.0707' |

11.3. Identifiability analysis

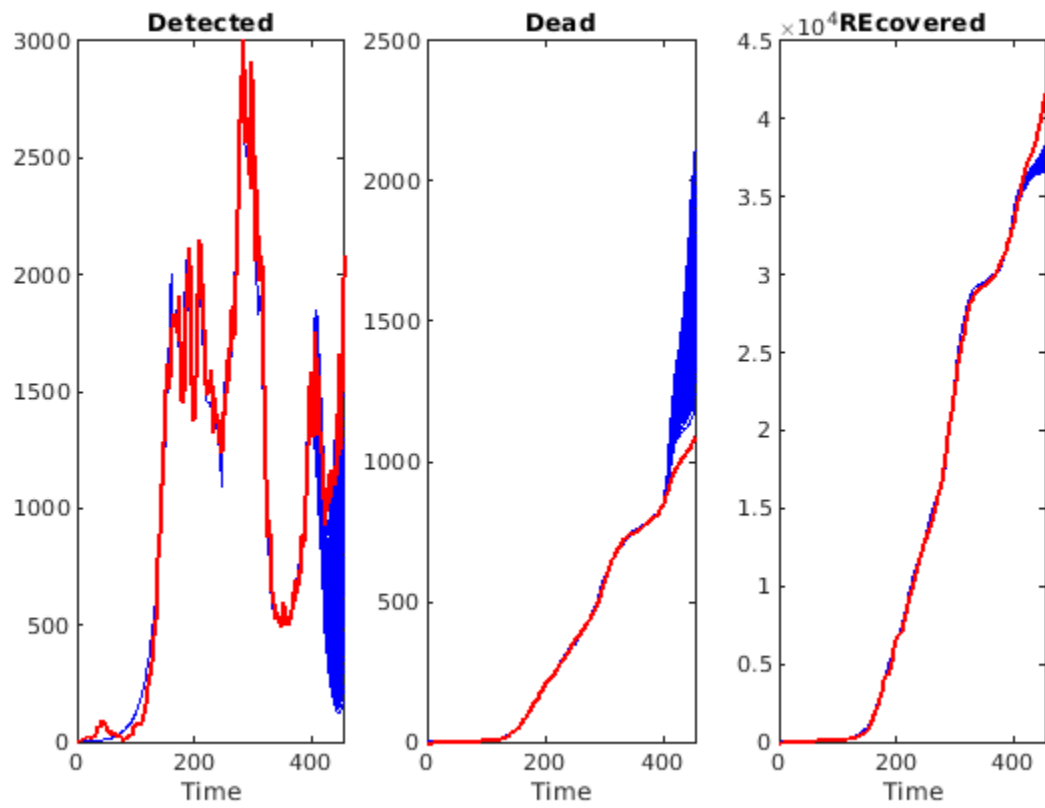






11.4. Uncertainty analysis

N=500



Chapter 12. Extension number12

12.1. Basic information

The extension to be validated consists of the time series from the data454 to the 490. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

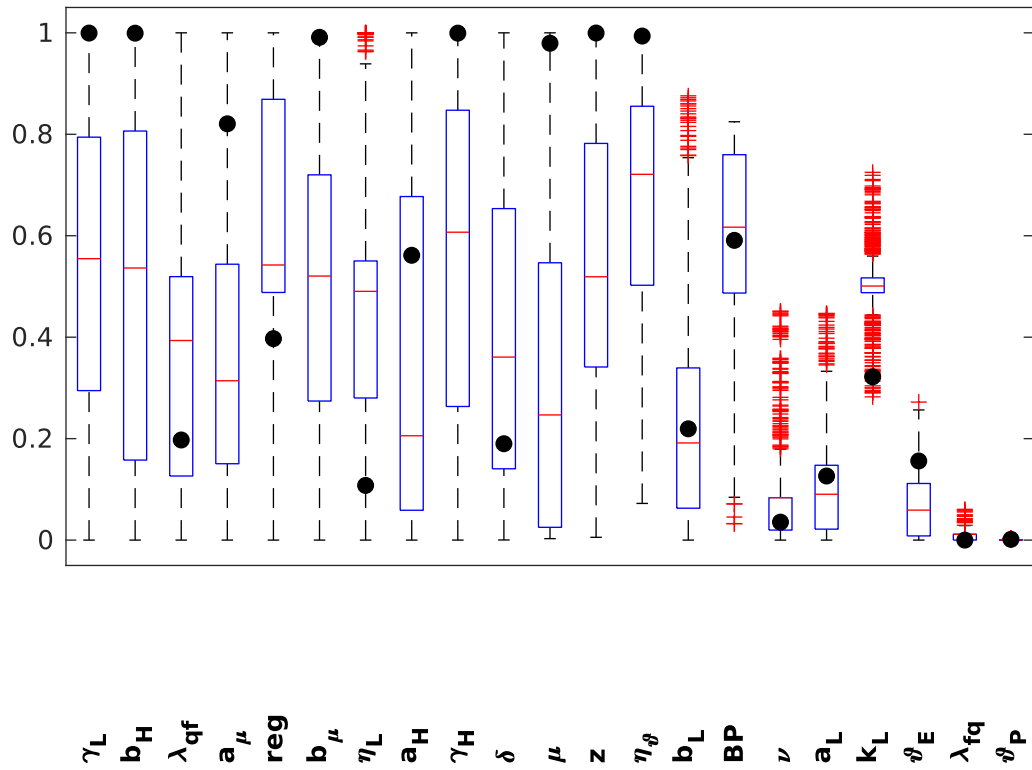
12.2. Estimated parameters with their intervals

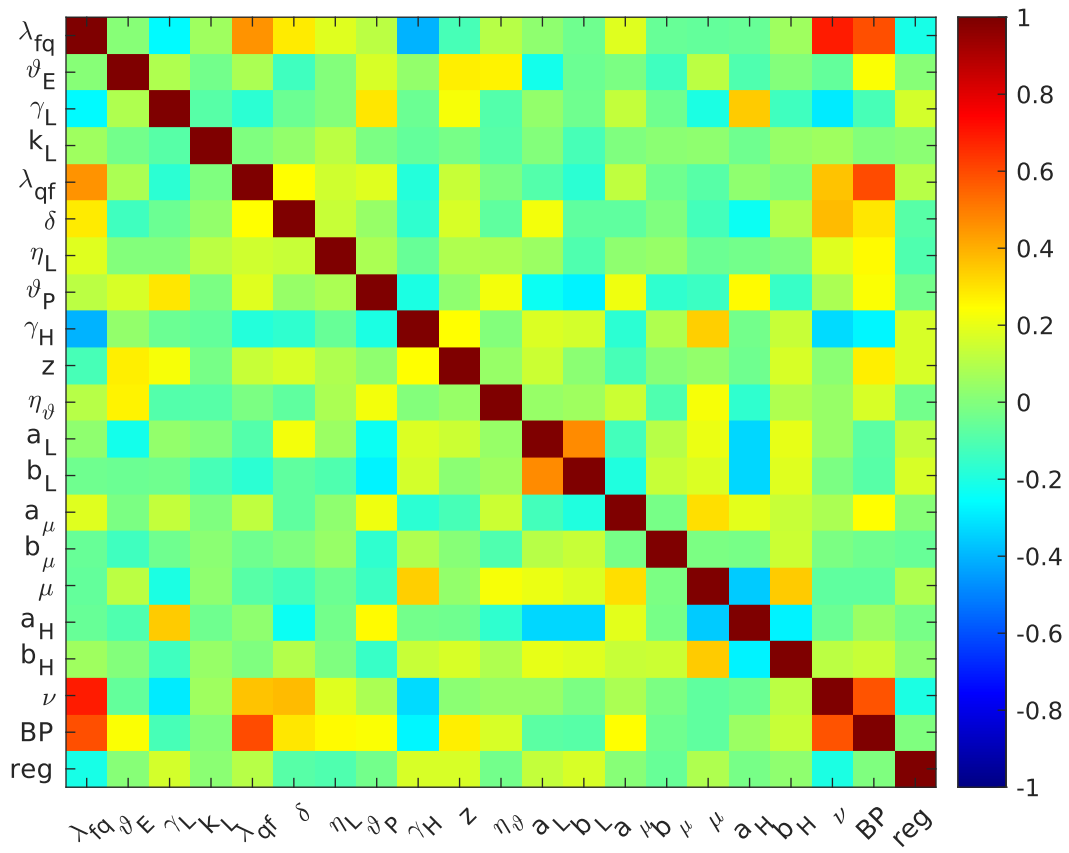
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

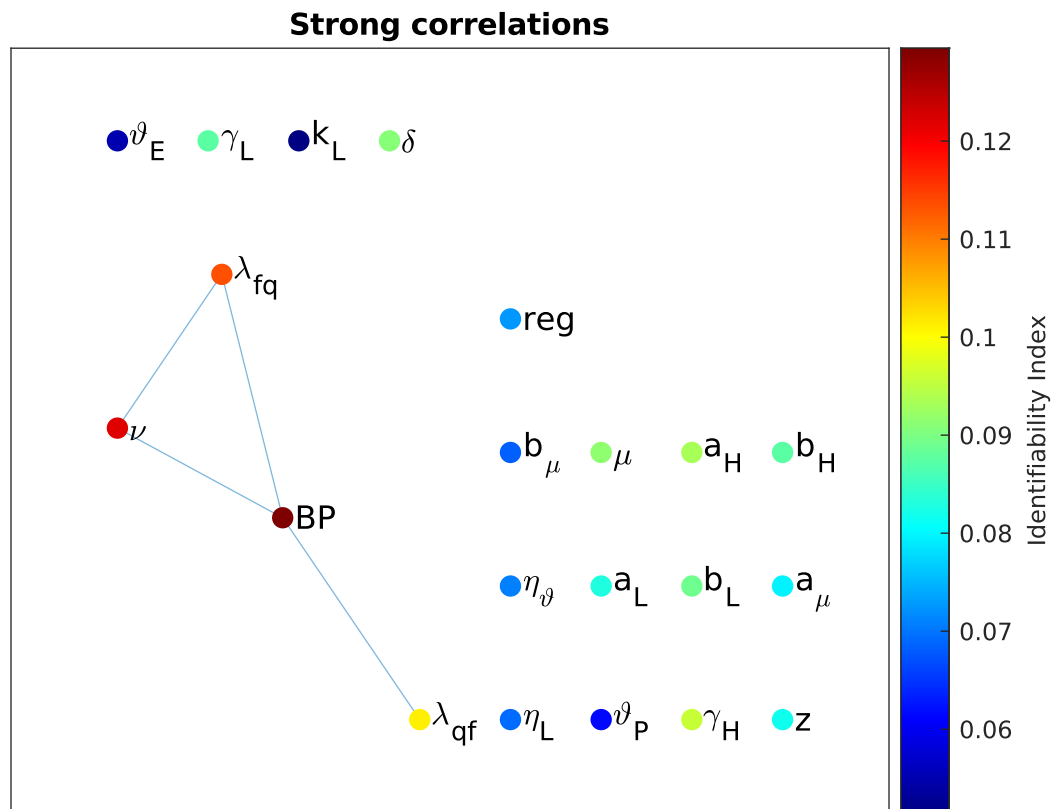
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|------------------|------------|------------|-----------|------------|----------|
| \lambda_{fq} | '0' | '0' | '0.0115' | '0' | '0.1134' |
| \vartheta_E | '0.1082' | '0.1673' | '0.0592' | '0.156' | '0.0549' |
| \gamma_L | '0.4321' | '1' | '0.5548' | '0.9995' | '0.0877' |
| k_L | '2.2422' | '9.5725' | '5.5076' | '3.8968' | '0.0515' |
| \lambda_{qf} | '0.1844' | '0.3119' | '0.3934' | '0.1974' | '0.1013' |
| \delta | '0.0116' | '0.0488' | '0.0541' | '0.0285' | '0.091' |
| \eta_L | '0.0917' | '0.2425' | '0.4904' | '0.1078' | '0.0694' |
| \vartheta_P | '0.0007' | '0.0034' | '0.0006' | '0.0015' | '0.0616' |
| \gamma_H | '0.2571' | '1' | '0.607' | '0.9994' | '0.096' |
| z | '18.0125' | '30' | '15.5741' | '29.989' | '0.0819' |
| \eta_{\vartheta} | '0.8165' | '1' | '0.7211' | '0.9936' | '0.0709' |
| a_L | '1.646' | '2.8349' | '2.2686' | '2.7688' | '0.083' |
| b_L | '3.3143' | '8.2101' | '3.6925' | '4.0713' | '0.089' |
| a_{\mu} | '10.1021' | '14.4436' | '5.3978' | '12.4894' | '0.0797' |
| b_{\mu} | '6.7331' | '15' | '8.2873' | '14.876' | '0.0683' |
| \mu | '0.19' | '1' | '0.2468' | '0.9795' | '0.0917' |
| a_H | '2.1781' | '9.0906' | '3.8796' | '8.8605' | '0.0933' |
| b_H | '9.4926' | '15' | '8.5096' | '14.9904' | '0.0875' |
| \nu | '13.8476' | '18.166' | '41.84' | '17.7244' | '0.1221' |
| BP | '448.2693' | '455.8586' | '450.5' | '448.4999' | '0.1295' |
| reg | '0.0987' | '0.1336' | '0.1356' | '0.0993' | '0.0727' |

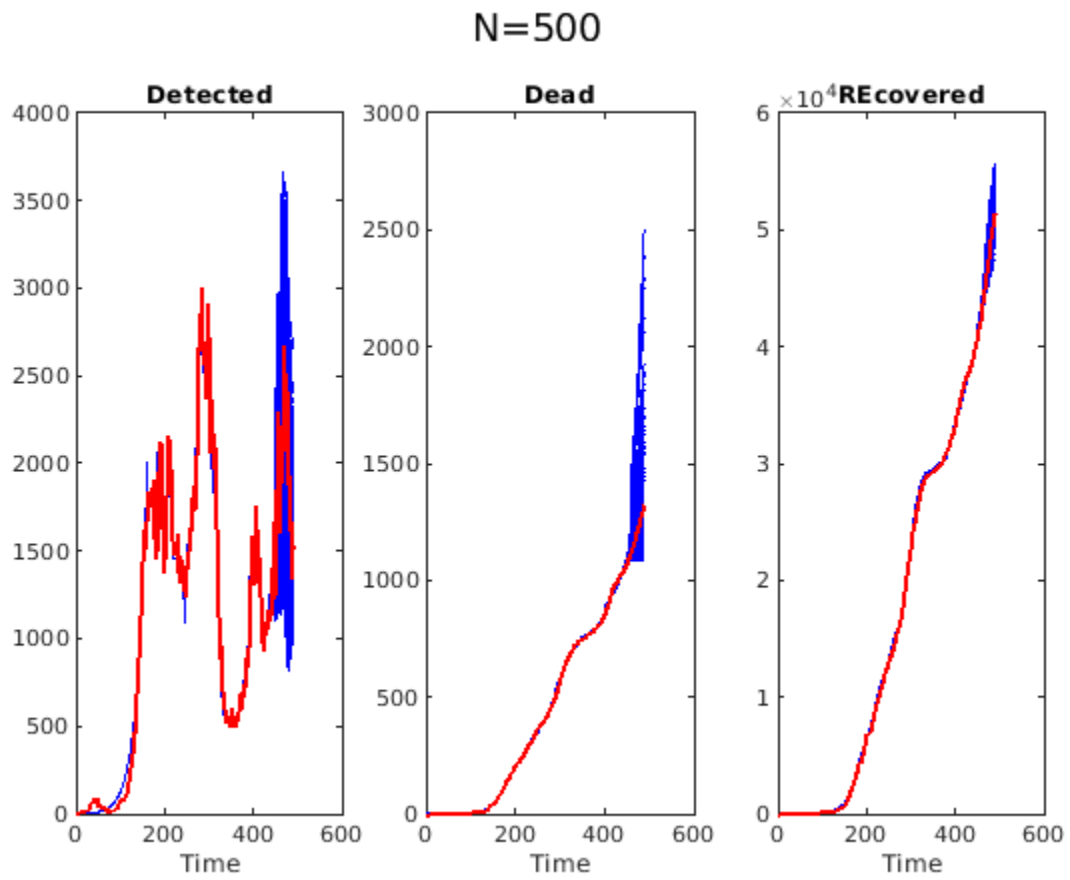
12.3. Identifiability analysis







12.4. Uncertainty analysis



Chapter 13. Extension number13

13.1. Basic information

The extension to be validated consists of the time series from the data490 to the 555. The status of the validation is: COMPLETED.

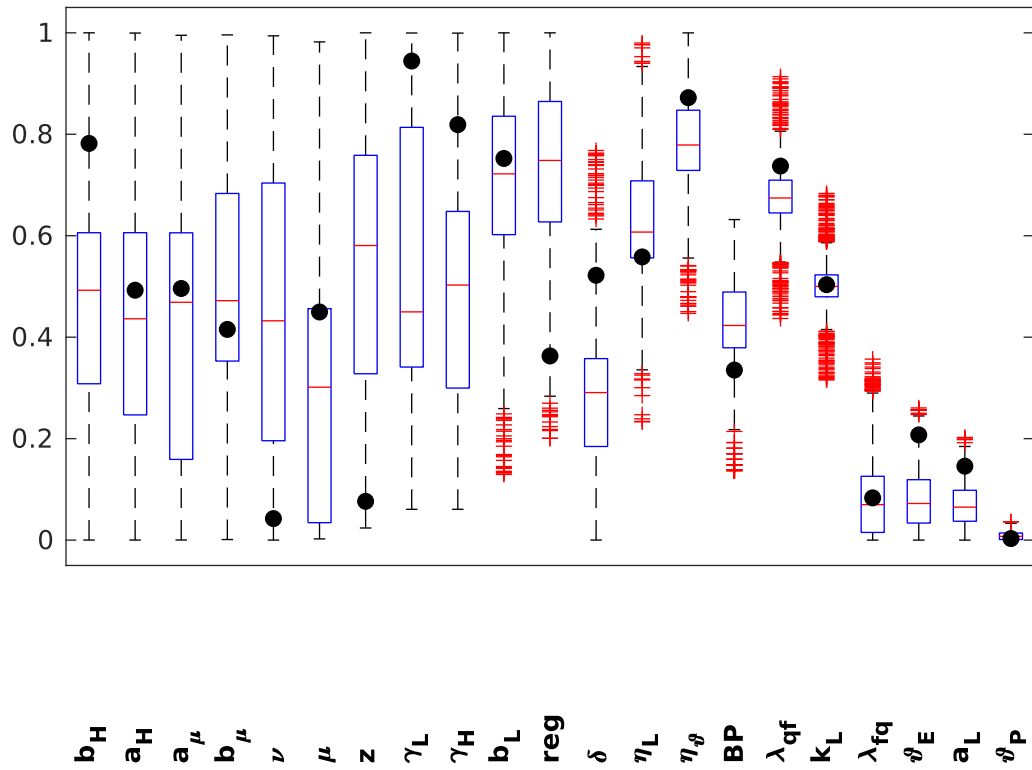
The number of estimations needed to perform the validation was1000.

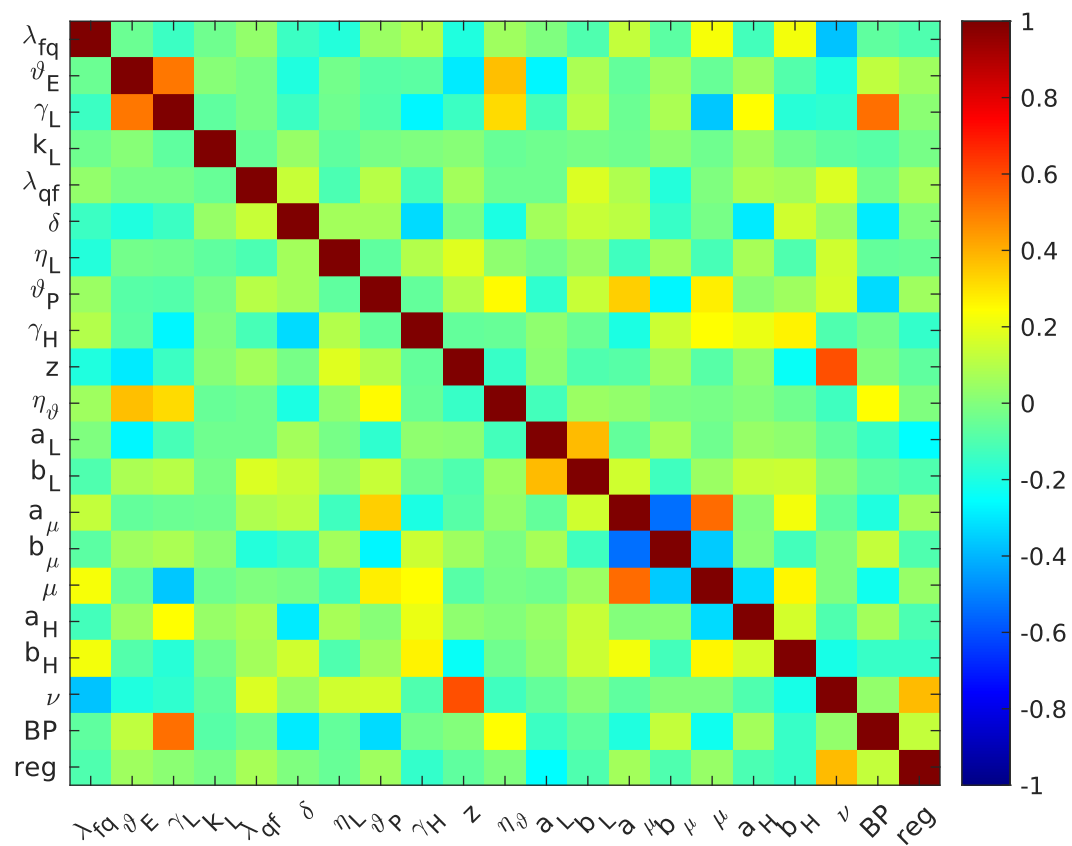
13.2. Estimated parameters with their intervals

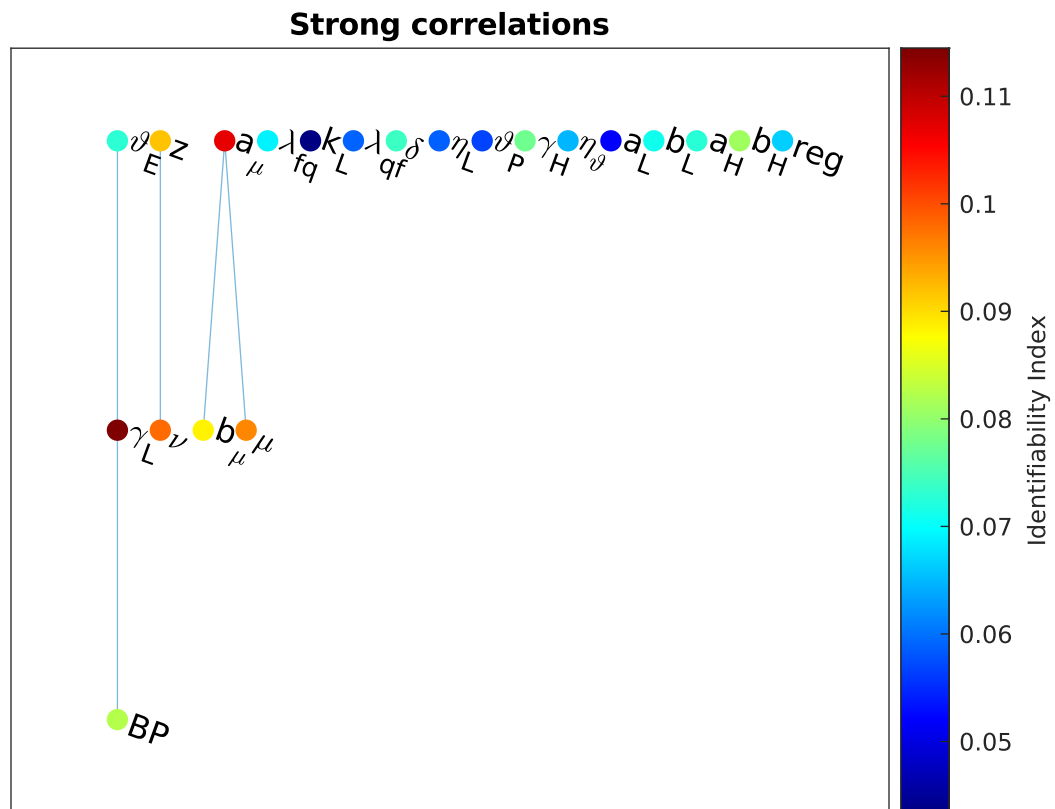
It was necessary to fix 0 parameters of 11 that could be fixed to complete validation.

| | Rango | | Nominal | Mejor | Index |
|------------------|------------|------------|------------|-----------|----------|
| \lambda_{fq} | '0.0532' | '0.0868' | '0.07' | '0.0832' | '0.0691' |
| \vartheta_E | '0.0669' | '0.0775' | '0.0722' | '0.2075' | '0.0729' |
| \gamma_L | '0.4254' | '0.4745' | '0.4499' | '0.9444' | '0.1145' |
| k_L | '5.4017' | '5.5989' | '5.5003' | '5.5317' | '0.0434' |
| \lambda_{qf} | '0.6584' | '0.6904' | '0.6744' | '0.7373' | '0.059' |
| \delta | '0.0407' | '0.0466' | '0.0436' | '0.0783' | '0.0741' |
| \eta_L | '0.5918' | '0.6227' | '0.6072' | '0.5582' | '0.0589' |
| \vartheta_P | '0.0066' | '0.0083' | '0.0074' | '0.0031' | '0.0568' |
| \gamma_H | '0.4794' | '0.5262' | '0.5028' | '0.819' | '0.0778' |
| z | '16.6194' | '18.222' | '17.4207' | '2.2928' | '0.0918' |
| \eta_{\vartheta} | '0.7635' | '0.7941' | '0.7788' | '0.8722' | '0.065' |
| a_L | '1.8359' | '1.9838' | '1.9099' | '3.0397' | '0.052' |
| b_L | '10.8015' | '11.4088' | '11.1051' | '11.5328' | '0.0712' |
| a_{\mu} | '7.2403' | '7.887' | '7.5636' | '7.9441' | '0.1072' |
| b_{\mu} | '7.2952' | '7.9208' | '7.608' | '6.8148' | '0.0886' |
| \mu | '0.28' | '0.3229' | '0.3015' | '0.4497' | '0.0961' |
| a_H | '6.7757' | '7.4406' | '7.1082' | '7.8964' | '0.0726' |
| b_H | '7.57' | '8.2205' | '7.8953' | '11.9477' | '0.0811' |
| \nu | '202.8725' | '229.4339' | '216.1532' | '21.2153' | '0.0979' |
| BP | '491.4012' | '493.5964' | '492.4988' | '484.5' | '0.0824' |
| reg | '0.182' | '0.192' | '0.187' | '0.0908' | '0.0667' |

13.3. Identifiability analysis

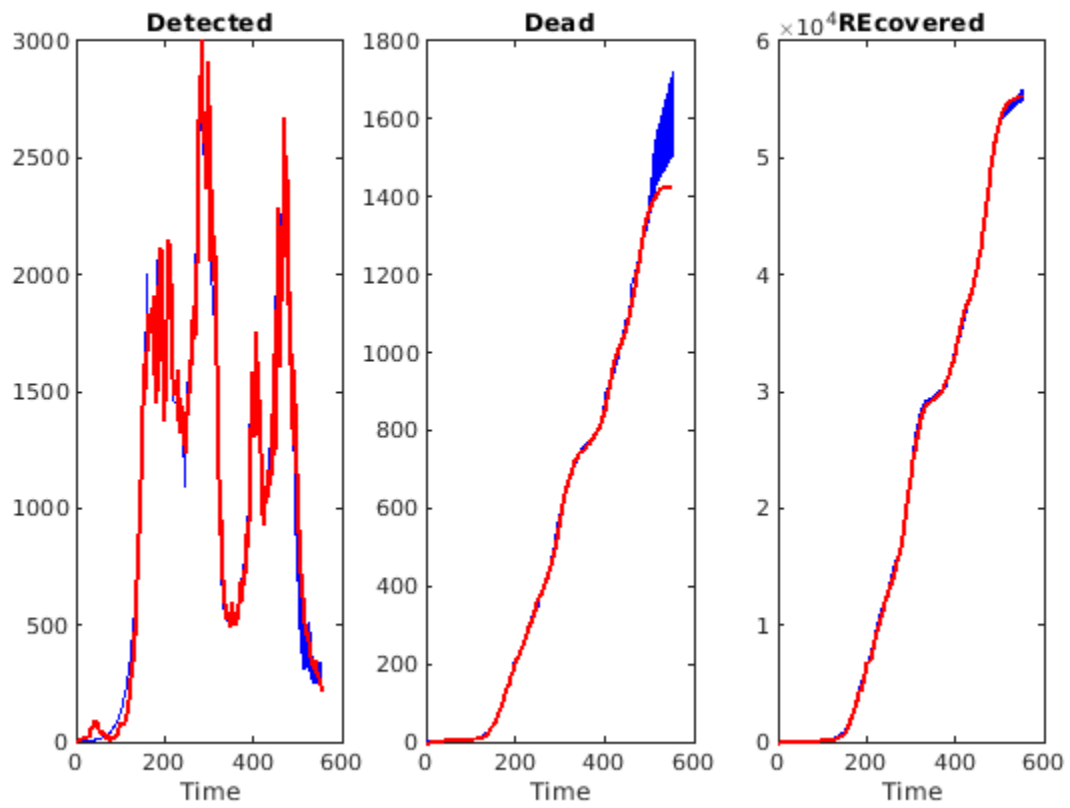






13.4. Uncertainty analysis

N=500



Chapter 14. Extension number14

14.1. Basic information

The extension to be validated consists of the time series from the data555 to the 621. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

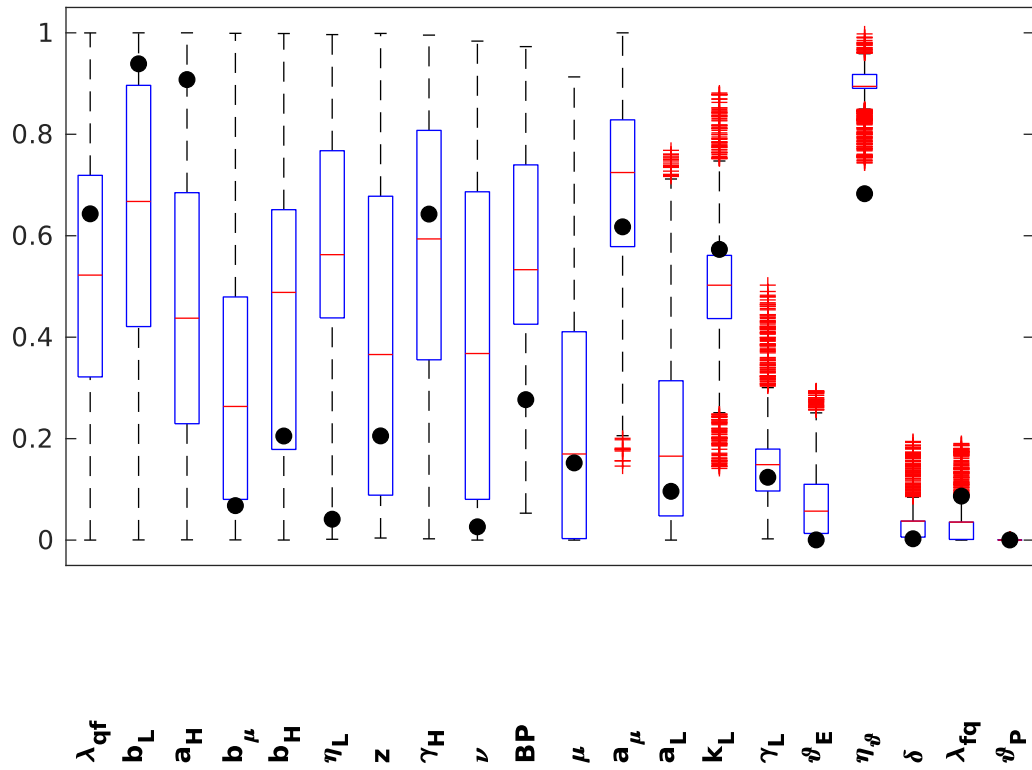
14.2. Estimated parameters with their intervals

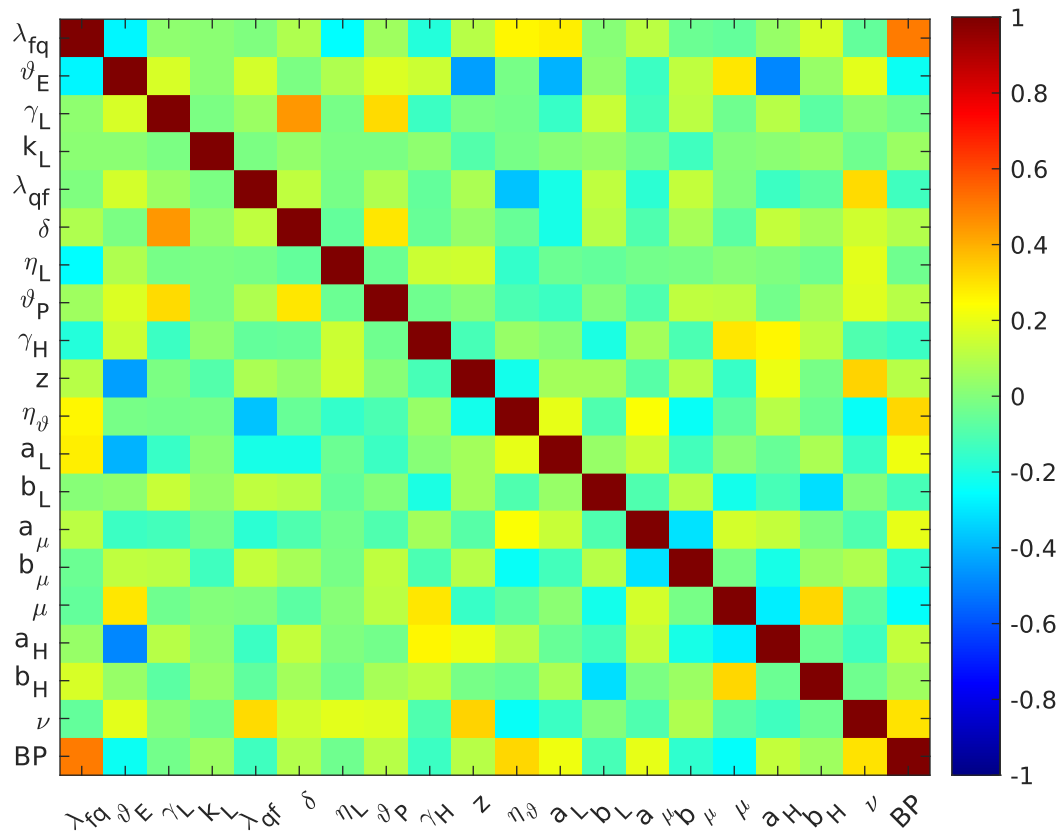
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

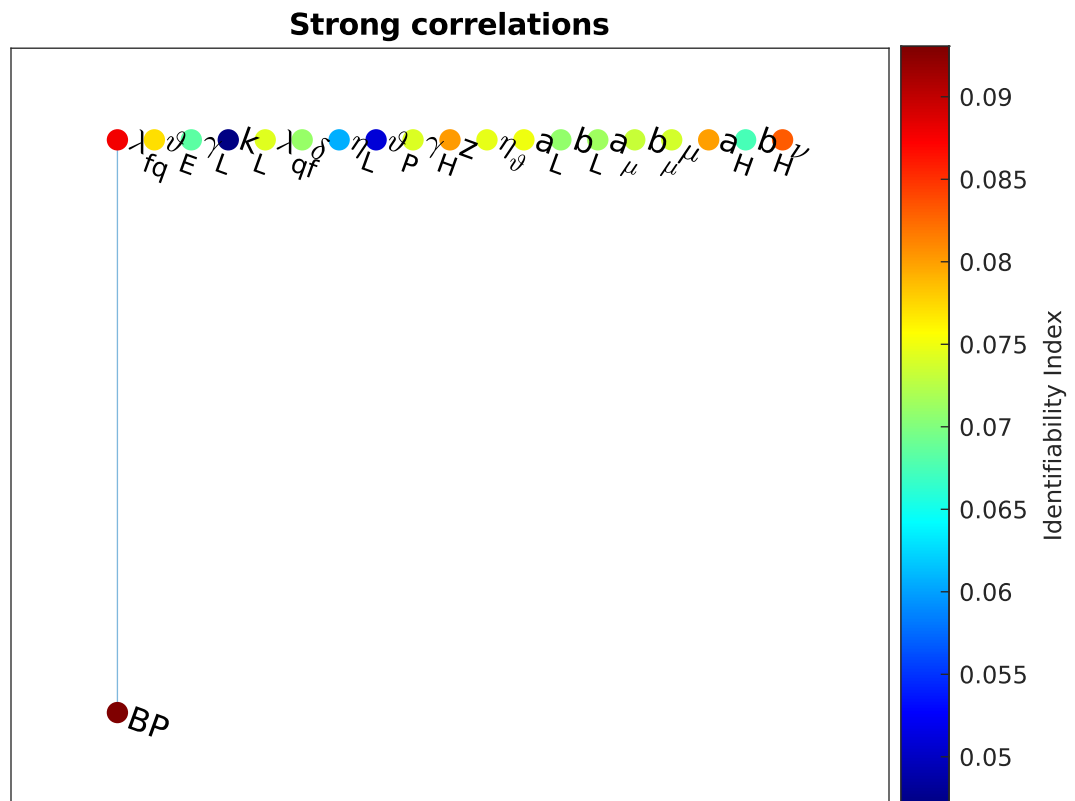
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|-----------|-----------|------------|-----------|----------|
| λ_{fq} | '0.0743' | '0.1328' | '0.0355' | '0.0868' | '0.0878' |
| ϑ_E | '0.0001' | '0.0008' | '0.0571' | '0.0004' | '0.0772' |
| γ_L | '0.1046' | '0.1252' | '0.1487' | '0.1238' | '0.0684' |
| k_L | '1.7802' | '9.269' | '5.5223' | '6.1575' | '0.0471' |
| λ_{qf} | '0.3859' | '0.6577' | '0.5224' | '0.6432' | '0.0743' |
| δ | '0' | '0.0008' | '0.0056' | '0.0004' | '0.0711' |
| η_L | '0.0111' | '0.0847' | '0.5627' | '0.0412' | '0.0606' |
| ϑ_P | '0.0002' | '0.0004' | '0.0001' | '0.0002' | '0.0511' |
| γ_H | '0' | '0.96' | '0.5937' | '0.6427' | '0.0741' |
| z | '5.6302' | '7.8126' | '10.9746' | '6.1628' | '0.0802' |
| η_{ϑ} | '0.6511' | '0.6864' | '0.8944' | '0.6828' | '0.0747' |
| a_L | '2.2044' | '5.5581' | '3.3164' | '2.3461' | '0.0751' |
| b_L | '9.0227' | '14.4692' | '10.346' | '14.1449' | '0.0709' |
| a_{μ} | '7.4035' | '15' | '11.1444' | '9.6456' | '0.0714' |
| b_{μ} | '1' | '8.467' | '4.6885' | '1.9512' | '0.0732' |
| μ | '0.0049' | '0.1649' | '0.1698' | '0.1522' | '0.0738' |
| a_H | '9.2867' | '14.7554' | '7.1244' | '13.7094' | '0.0801' |
| b_H | '1.6263' | '3.8911' | '7.8358' | '3.873' | '0.0675' |
| ν | '12.0168' | '19.8335' | '183.9022' | '13.1052' | '0.0831' |
| BP | '521.226' | '548.405' | '554.5' | '523.5' | '0.0931' |

14.3. Identifiability analysis

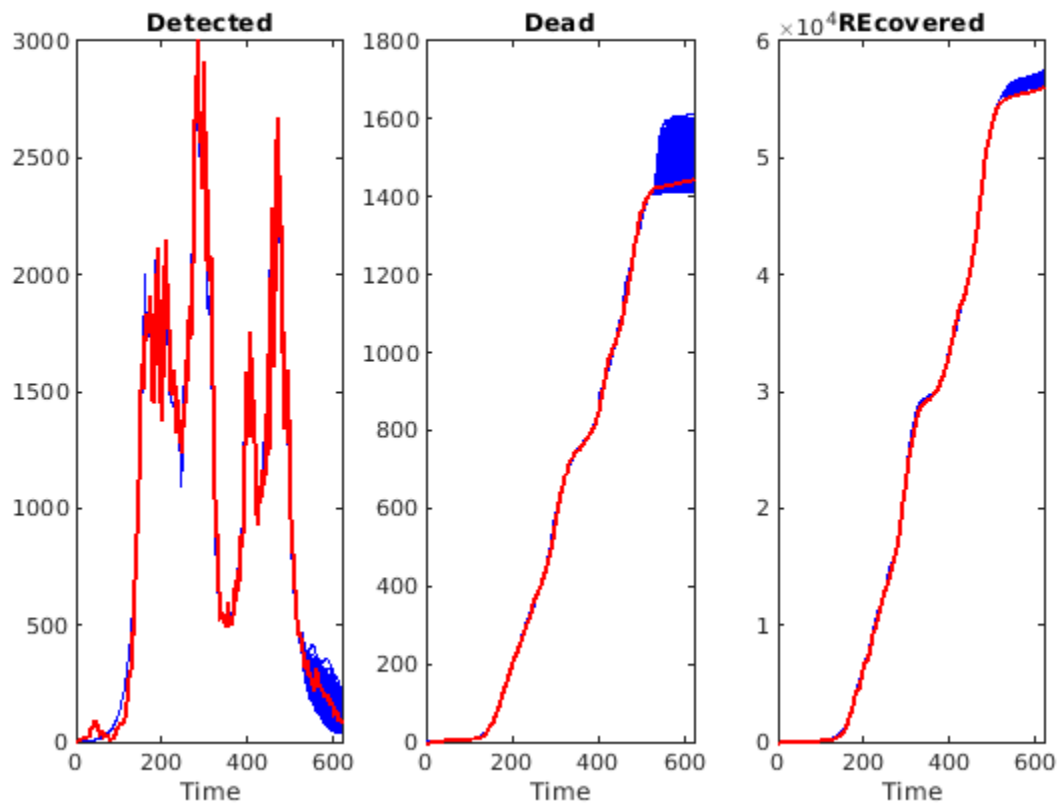






14.4. Uncertainty analysis

N=500



Chapter 15. Extension number15

15.1. Basic information

The extension to be validated consists of the time series from the data621 to the 717. The status of the validation is: COMPLETED.

The number of estimations needed to perform the validation was1000.

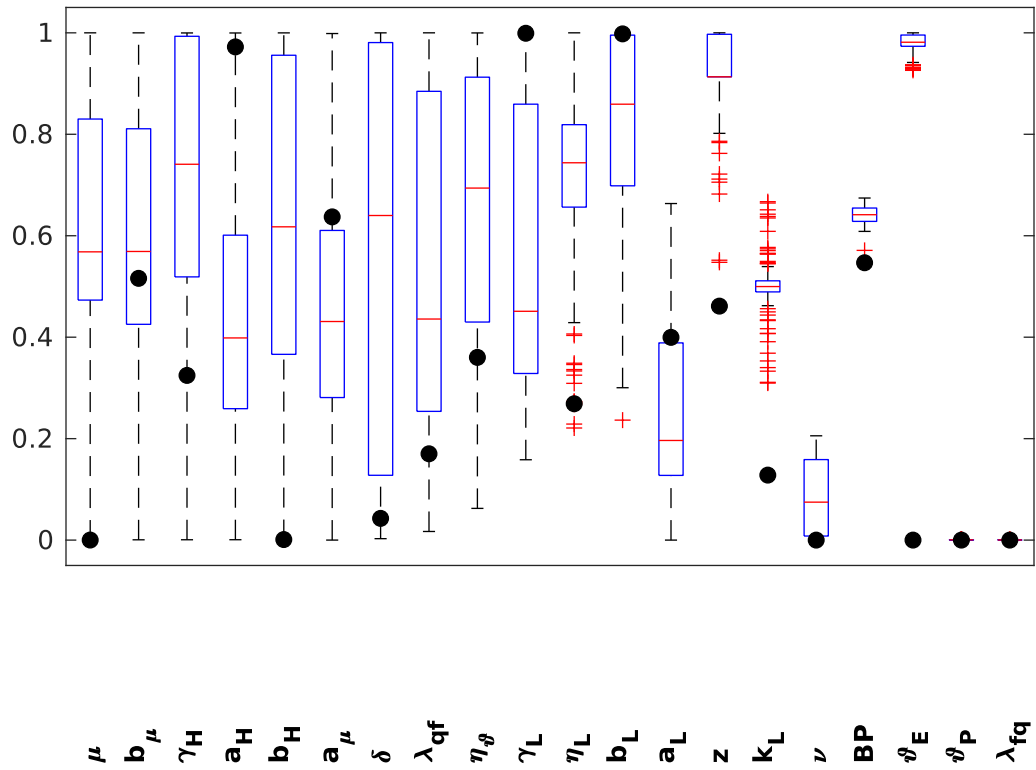
15.2. Estimated parameters with their intervals

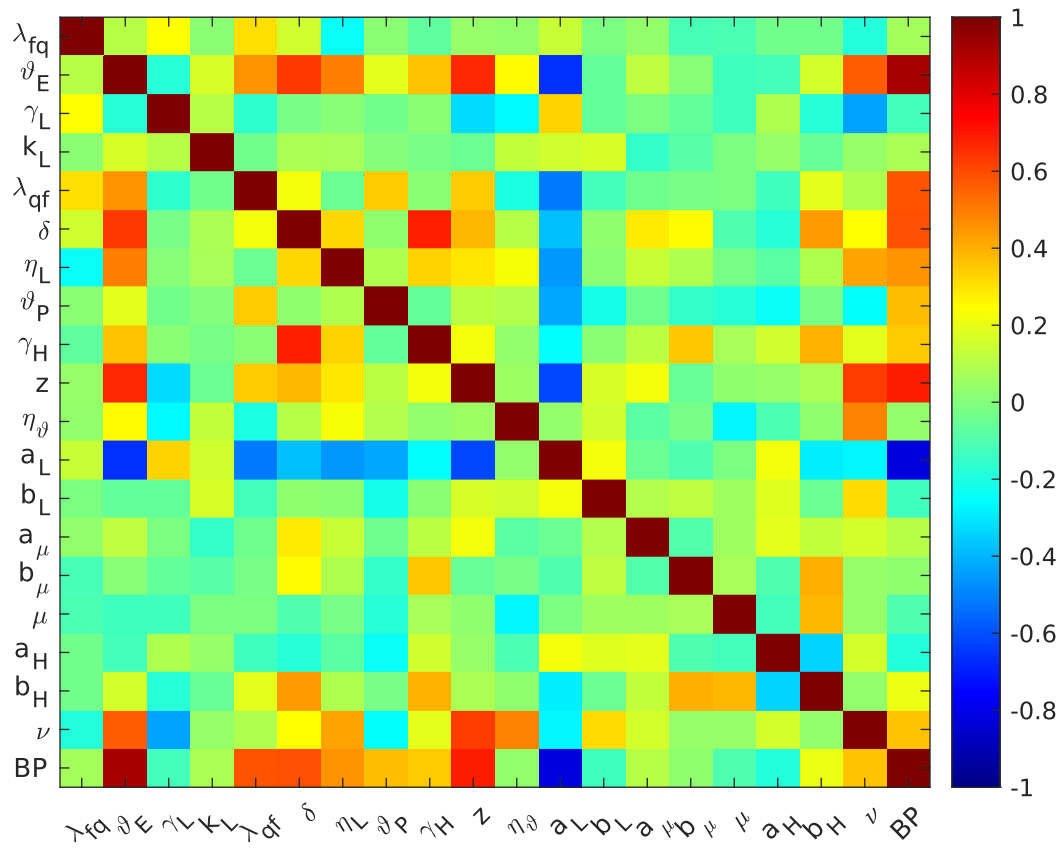
It was necessary to fix 0 parameters of 10 that could be fixed to complete validation.

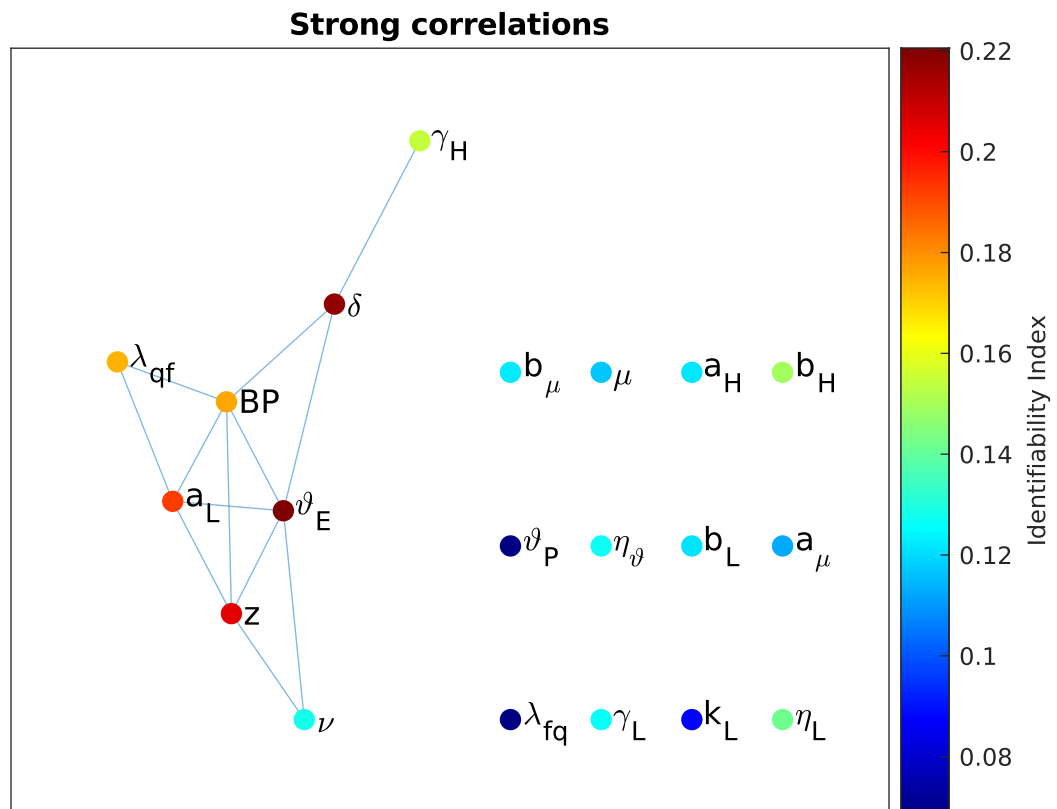
Due to a deviation from the median the CSB method was activated to obtain the parameter intervals.

| | Rango | | Nominal | Mejor | Index |
|--------------------|-----------|-----------|------------|------------|----------|
| λ_{fq} | '0' | '0' | '0.0003' | '0' | '0.0693' |
| ϑ_E | '0' | '0' | '0.9815' | '0' | '0.2205' |
| γ_L | '0.887' | '1' | '0.4511' | '0.9991' | '0.1269' |
| k_L | '1.8766' | '5.0112' | '5.4983' | '2.1532' | '0.0882' |
| λ_{qf} | '0.0946' | '0.2027' | '0.4358' | '0.1702' | '0.1746' |
| δ | '0.0039' | '0.0067' | '0.096' | '0.0064' | '0.2172' |
| η_L | '0.264' | '0.5207' | '0.7438' | '0.2688' | '0.1421' |
| ϑ_P | '0' | '0' | '0.0005' | '0' | '0.069' |
| γ_H | '0.2732' | '0.4919' | '0.7409' | '0.3247' | '0.1546' |
| z | '13.6106' | '18.2843' | '27.3978' | '13.8373' | '0.2053' |
| η_{ϑ} | '0.3599' | '0.3783' | '0.694' | '0.3602' | '0.1274' |
| a_L | '6.0087' | '6.6696' | '3.7496' | '6.5954' | '0.1925' |
| b_L | '13.9082' | '15' | '13.0304' | '14.971' | '0.1212' |
| a_{μ} | '6.0262' | '10.3966' | '7.0327' | '9.9205' | '0.1131' |
| b_{μ} | '4.7376' | '8.2316' | '8.9658' | '8.2242' | '0.1227' |
| μ | '0' | '0.0001' | '0.5682' | '0.0001' | '0.1169' |
| a_H | '8.0359' | '14.6433' | '6.5795' | '14.6119' | '0.1219' |
| b_H | '1' | '2.1756' | '9.646' | '1.015' | '0.1497' |
| ν | '0.0001' | '0.0003' | '37.408' | '0.0002' | '0.1284' |
| BP | '633.5' | '707' | '652.4996' | '638.1071' | '0.1766' |

15.3. Identifiability analysis







15.4. Uncertainty analysis

N=500

