Summary of the calibration of the Control

This document summarizes:  
  
 general analysis about the output generated  
   
The following projects are accounted for:  
 **calib\_g1  
 calib\_fw  
 var\_kmax**

# Control optimal NMSEs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site Name | Flux | 2002 & 2005 | | | 2003 & 2006 | | |
|  | calib g1 | calib fw | control | calib g1 | calib fw | control |
| Hyytiala | GPP | 0.10 | 0.19 | 0.20 | 0.08 | 0.18 | 0.18 |
|  | ET | 0.18 | 0.68 | 1.04 | 0.14 | 0.63 | 1.04 |
| Soroe | GPP | 0.08 | 0.08 | 0.07 | 0.10 | 0.10 | 0.10 |
|  | ET | 0.13 | 0.15 | 0.13 | 0.27 | 0.31 | 0.25 |
| Loobos | GPP | 0.07 | 0.09 | 0.09 | 0.06 | 0.11 | 0.07 |
|  | ET | 0.16 | 0.26 | 0.37 | 0.23 | 0.31 | 0.38 |
| Hesse | GPP | 0.16 | 0.18 | 0.15 | 0.24 | 0.26 | 0.24 |
|  | ET | 0.15 | 0.23 | 0.22 | 0.34 | 0.44 | 0.45 |
| Parco | GPP | 0.30 | 0.34 | 0.34 | 0.25 | 0.37 | 0.25 |
|  | ET | 0.15 | 0.27 | 0.29 | 0.39 | 0.49 | 0.40 |
| Puechabon | GPP | 0.17 | 0.15 | 0.15 | 0.20 | 0.19 | 0.18 |
|  | ET | 0.23 | 0.27 | 0.33 | 0.24 | 0.17 | 0.18 |
| Rocca1 | GPP | 0.14 | 0.15 | 0.17 | 0.25 | 0.24 | 0.21 |
|  | ET | 0.10 | 0.14 | 0.39 | 0.60 | 0.56 | 0.33 |
| Rocca2 | GPP | 0.31 | 0.32 | 0.32 | 0.35 | 0.39 | 0.36 |
|  | ET | 0.34 | 0.36 | 0.36 | 0.59 | 0.74 | 0.60 |
| ElSaler1 | GPP | 0.05 | 0.05 | 0.05 | 0.21 | 0.12 | 0.08 |
|  | ET | 0.11 | 0.25 | 0.31 | 0.23 | 0.41 | 0.48 |
| Espirra | GPP | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 |
|  | ET | 0.12 | 0.11 | 0.13 | 0.30 | 0.43 | 0.30 |
| across sites | GPP | 0.14 | 0.16 | 0.16 | 0.18 | 0.20 | 0.17 |
|  | ET | 0.17 | 0.27 | 0.36 | 0.33 | 0.45 | 0.44 |
|  |  |  |  |  |  |  |  |
| overall | GPP | 0.16 | 0.18 | 0.17 |  |  |  |
|  | ET | 0.25 | 0.36 | 0.40 |  |  |  |

# Control optimal MAEs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site Name | Flux | 2002 & 2005 | | | 2003 & 2006 | | |
|  | calib g1 | calib fw | control | calib g1 | calib fw | control |
| Hyytiala | GPP | 1.20 | 1.57 | 1.59 | 0.94 | 1.35 | 1.34 |
|  | ET | 0.39 | 0.61 | 0.69 | 0.31 | 0.56 | 0.67 |
| Soroe | GPP | 1.71 | 1.72 | 1.71 | 2.00 | 2.03 | 2.00 |
|  | ET | 0.40 | 0.42 | 0.41 | 0.64 | 0.68 | 0.62 |
| Loobos | GPP | 1.33 | 1.49 | 1.49 | 1.10 | 1.28 | 1.17 |
|  | ET | 0.50 | 0.64 | 0.75 | 0.56 | 0.60 | 0.67 |
| Hesse | GPP | 2.88 | 3.00 | 2.81 | 2.84 | 2.86 | 2.90 |
|  | ET | 0.47 | 0.57 | 0.65 | 0.67 | 0.71 | 0.87 |
| Parco | GPP | 2.80 | 2.97 | 2.96 | 2.15 | 2.02 | 2.17 |
|  | ET | 0.55 | 0.73 | 0.71 | 0.94 | 0.83 | 0.89 |
| Puechabon | GPP | 1.47 | 1.33 | 1.30 | 1.46 | 1.36 | 1.33 |
|  | ET | 0.57 | 0.51 | 0.54 | 0.48 | 0.33 | 0.32 |
| Rocca1 | GPP | 1.91 | 2.01 | 2.29 | 2.31 | 2.28 | 2.33 |
|  | ET | 0.37 | 0.42 | 0.94 | 0.81 | 0.84 | 0.86 |
| Rocca2 | GPP | 2.94 | 2.90 | 2.95 | 3.22 | 3.37 | 3.26 |
|  | ET | 0.85 | 0.82 | 0.90 | 1.18 | 1.20 | 1.23 |
| ElSaler1 | GPP | 0.89 | 0.85 | 0.83 | 1.94 | 1.03 | 0.96 |
|  | ET | 0.45 | 0.66 | 0.69 | 0.63 | 0.63 | 0.78 |
| Espirra | GPP | 0.99 | 0.99 | 1.00 | 1.06 | 1.16 | 1.09 |
|  | ET | 0.34 | 0.30 | 0.36 | 0.70 | 0.80 | 0.70 |
| across sites | GPP | 1.81 | 1.88 | 1.89 | 1.90 | 1.87 | 1.86 |
|  | ET | 0.49 | 0.57 | 0.67 | 0.69 | 0.72 | 0.76 |
|  |  |  |  |  |  |  |  |
| overall | GPP | 1.86 | 1.88 | 1.88 |  |  |  |
|  | ET | 0.59 | 0.64 | 0.71 |  |  |  |

# Control optimal SDs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site Name | Flux | 2002 & 2005 | | | 2003 & 2006 | | |
|  | calib g1 | calib fw | control | calib g1 | calib fw | control |
| Hyytiala | GPP | 0.05 | 0.15 | 0.15 | 0.06 | 0.19 | 0.19 |
|  | ET | 0.16 | 0.36 | 0.49 | 0.04 | 0.39 | 0.51 |
| Soroe | GPP | 0.18 | 0.19 | 0.17 | 0.22 | 0.23 | 0.21 |
|  | ET | 0.05 | 0.05 | 0.09 | 0.23 | 0.28 | 0.19 |
| Loobos | GPP | 0.13 | 0.16 | 0.17 | 0.06 | 0.06 | 0.11 |
|  | ET | 0.08 | 0.12 | 0.24 | 0.10 | 0.07 | 0.21 |
| Hesse | GPP | 0.28 | 0.30 | 0.26 | 0.26 | 0.27 | 0.23 |
|  | ET | 0.10 | 0.17 | 0.05 | 0.15 | 0.20 | 0.01 |
| Parco | GPP | 0.43 | 0.45 | 0.45 | 0.30 | 0.27 | 0.33 |
|  | ET | 0.13 | 0.19 | 0.31 | 0.01 | 0.10 | 0.22 |
| Puechabon | GPP | 0.12 | 0.27 | 0.27 | 0.13 | 0.20 | 0.23 |
|  | ET | 0.33 | 0.18 | 0.31 | 0.54 | 0.10 | 0.18 |
| Rocca1 | GPP | 0.13 | 0.09 | 0.03 | 0.11 | 0.17 | 0.15 |
|  | ET | 0.04 | 0.07 | 0.73 | 0.41 | 0.34 | 0.08 |
| Rocca2 | GPP | 0.26 | 0.29 | 0.25 | 0.29 | 0.32 | 0.28 |
|  | ET | 0.17 | 0.21 | 0.19 | 0.25 | 0.37 | 0.21 |
| ElSaler1 | GPP | 0.18 | 0.21 | 0.22 | 0.50 | 0.13 | 0.05 |
|  | ET | 0.07 | 0.13 | 0.26 | 0.15 | 0.09 | 0.16 |
| Espirra | GPP | 0.07 | 0.15 | 0.04 | 0.21 | 0.17 | 0.24 |
|  | ET | 0.16 | 0.06 | 0.27 | 0.23 | 0.09 | 0.35 |
| across sites | GPP | 0.18 | 0.23 | 0.20 | 0.21 | 0.20 | 0.20 |
|  | ET | 0.13 | 0.16 | 0.29 | 0.21 | 0.20 | 0.21 |
|  |  |  |  |  |  |  |  |
| overall | GPP | 0.20 | 0.21 | 0.20 |  |  |  |
|  | ET | 0.17 | 0.18 | 0.25 |  |  |  |

# Control optimal P5s

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site Name | Flux | 2002 & 2005 | | | 2003 & 2006 | | |
|  | calib g1 | calib fw | control | calib g1 | calib fw | control |
| Hyytiala | GPP | 0.46 | 0.46 | 0.46 | 0.14 | 0.14 | 0.14 |
|  | ET | 0.07 | 0.07 | 0.07 | 0.05 | 0.05 | 0.05 |
| Soroe | GPP | 0.21 | 0.21 | 0.21 | 0.24 | 0.24 | 0.24 |
|  | ET | 0.11 | 0.10 | 0.11 | 0.15 | 0.14 | 0.13 |
| Loobos | GPP | 0.94 | 1.00 | 0.96 | 0.78 | 1.03 | 0.81 |
|  | ET | 0.43 | 0.41 | 0.50 | 0.26 | 0.39 | 0.33 |
| Hesse | GPP | 0.90 | 0.91 | 0.91 | 0.68 | 0.64 | 0.64 |
|  | ET | 0.11 | 0.10 | 0.16 | 0.09 | 0.08 | 0.10 |
| Parco | GPP | 0.10 | 0.12 | 0.12 | 0.26 | 0.00 | 0.26 |
|  | ET | 0.18 | 0.17 | 0.15 | 0.09 | 0.00 | 0.12 |
| Puechabon | GPP | 0.41 | 0.36 | 0.36 | 0.70 | 0.40 | 0.69 |
|  | ET | 0.07 | 0.08 | 0.12 | 0.03 | 0.05 | 0.07 |
| Rocca1 | GPP | 1.23 | 0.90 | 0.90 | 0.30 | 0.52 | 0.48 |
|  | ET | 0.13 | 0.10 | 0.16 | 0.28 | 0.34 | 0.36 |
| Rocca2 | GPP | 2.01 | 2.09 | 1.84 | 1.48 | 1.47 | 1.32 |
|  | ET | 0.14 | 0.18 | 0.08 | 0.38 | 0.37 | 0.32 |
| ElSaler1 | GPP | 0.66 | 0.57 | 0.57 | 0.14 | 0.00 | 0.40 |
|  | ET | 0.10 | 0.00 | 0.10 | 0.28 | 0.00 | 0.32 |
| Espirra | GPP | 0.24 | 0.12 | 0.40 | 1.70 | 1.74 | 1.80 |
|  | ET | 0.10 | 0.03 | 0.12 | 0.58 | 0.59 | 0.60 |
| across sites | GPP | 0.72 | 0.67 | 0.67 | 0.64 | 0.62 | 0.68 |
|  | ET | 0.14 | 0.12 | 0.16 | 0.22 | 0.20 | 0.24 |
|  |  |  |  |  |  |  |  |
| overall | GPP | 0.68 | 0.65 | 0.68 |  |  |  |
|  | ET | 0.18 | 0.16 | 0.20 |  |  |  |

# Control optimal P95s

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Site Name | Flux | 2002 & 2005 | | | 2003 & 2006 | | |
|  | calib g1 | calib fw | control | calib g1 | calib fw | control |
| Hyytiala | GPP | 1.22 | 2.39 | 2.43 | 1.23 | 2.32 | 2.39 |
|  | ET | 0.28 | 0.99 | 1.36 | 0.18 | 1.10 | 1.46 |
| Soroe | GPP | 2.44 | 2.50 | 2.32 | 3.13 | 3.32 | 3.03 |
|  | ET | 0.23 | 0.25 | 0.25 | 0.89 | 1.11 | 0.70 |
| Loobos | GPP | 1.76 | 2.03 | 2.05 | 1.26 | 1.56 | 1.61 |
|  | ET | 0.45 | 0.66 | 1.04 | 0.23 | 0.42 | 0.84 |
| Hesse | GPP | 2.46 | 2.61 | 2.19 | 1.99 | 2.15 | 1.71 |
|  | ET | 0.04 | 0.41 | 0.57 | 0.13 | 0.15 | 0.47 |
| Parco | GPP | 5.66 | 6.00 | 5.98 | 2.76 | 2.99 | 3.11 |
|  | ET | 0.41 | 0.32 | 1.07 | 0.32 | 0.66 | 1.11 |
| Puechabon | GPP | 1.07 | 1.02 | 1.02 | 1.10 | 1.20 | 1.19 |
|  | ET | 0.65 | 0.61 | 1.05 | 0.90 | 0.21 | 0.36 |
| Rocca1 | GPP | 0.48 | 0.63 | 0.92 | 1.18 | 1.74 | 1.69 |
|  | ET | 0.08 | 0.18 | 1.71 | 1.55 | 1.38 | 0.35 |
| Rocca2 | GPP | 1.33 | 1.43 | 1.39 | 2.75 | 3.15 | 2.72 |
|  | ET | 0.47 | 0.52 | 0.50 | 1.09 | 1.55 | 0.91 |
| ElSaler1 | GPP | 0.71 | 1.02 | 1.02 | 2.33 | 0.25 | 0.25 |
|  | ET | 0.05 | 0.22 | 0.60 | 0.11 | 0.25 | 0.73 |
| Espirra | GPP | 0.54 | 0.77 | 0.49 | 0.30 | 0.33 | 0.24 |
|  | ET | 0.15 | 0.17 | 0.33 | 0.26 | 0.45 | 0.05 |
| across sites | GPP | 1.77 | 2.04 | 1.98 | 1.80 | 1.90 | 1.79 |
|  | ET | 0.28 | 0.43 | 0.85 | 0.56 | 0.73 | 0.70 |
|  |  |  |  |  |  |  |  |
| overall | GPP | 1.78 | 1.97 | 1.89 |  |  |  |
|  | ET | 0.42 | 0.58 | 0.77 |  |  |  |

# % overall improvement on Control metrics

|  |  |  |  |
| --- | --- | --- | --- |
| metric | flux | g1 | fw |
| NMSE | GPP | 2.43 | -9.56 |
| ET | 37.45 | 9.41 |
| MAE | GPP | 1.03 | -0.13 |
| ET | 17.46 | 9.89 |
| SD | GPP | 2.03 | -5.89 |
| ET | 33.07 | 29.15 |
| P5 | GPP | -0.48 | 4.46 |
| ET | 9.42 | 18.27 |
| P95 | GPP | 5.43 | -4.47 |
| ET | 45.54 | 24.96 |