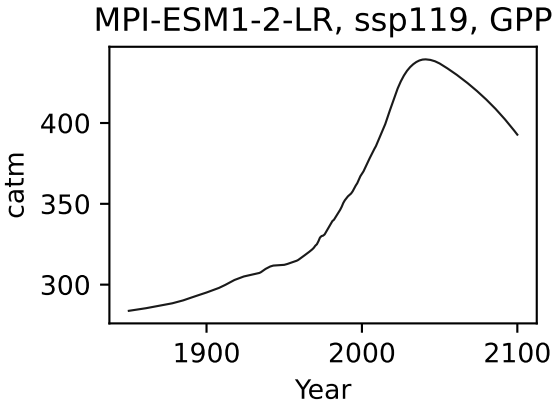
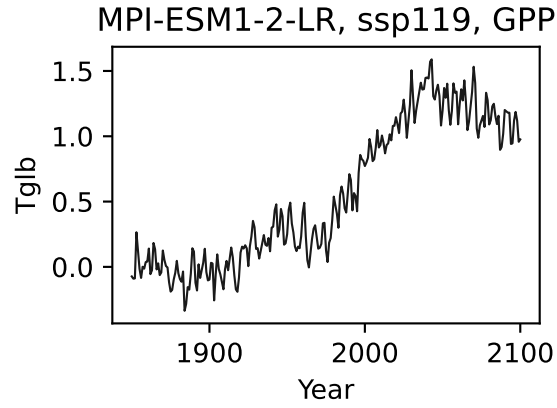
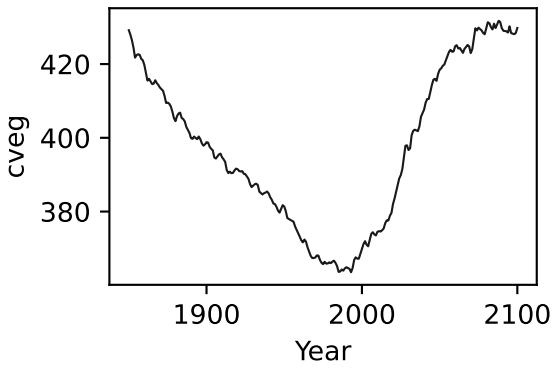
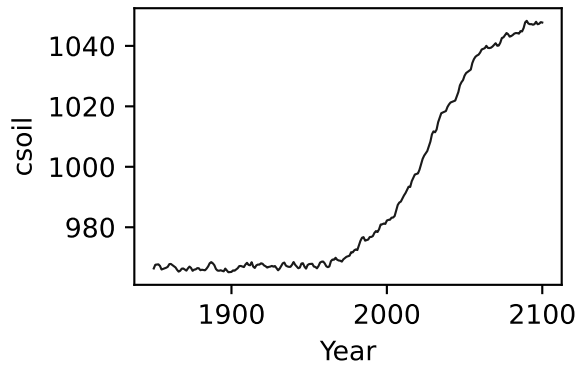
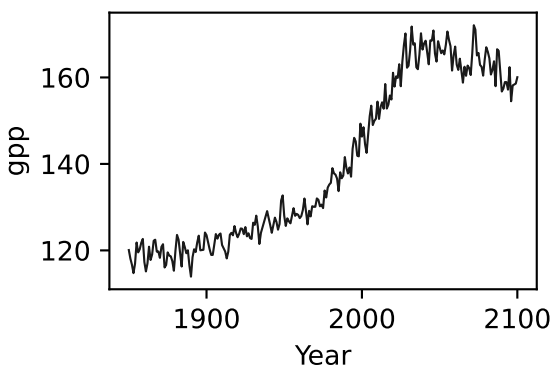
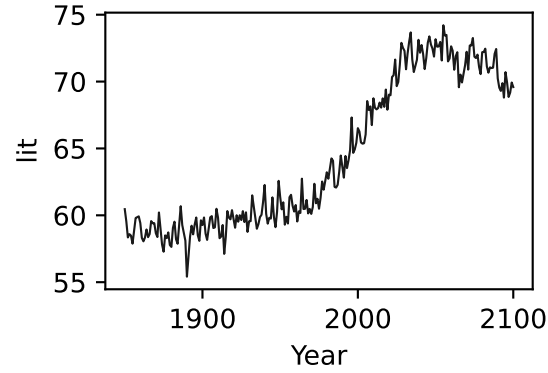

MPI-ESM1-2-LR, ssp119, GPP
catm
400
350
300
1900
2000
2100
Year

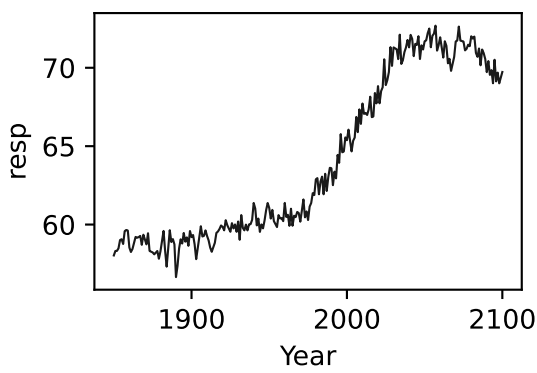

MPI-ESM1-2-LR, ssp119, GPP
Tglb
1.5
1.0
0.5
0.0
1900
2000
2100
Year

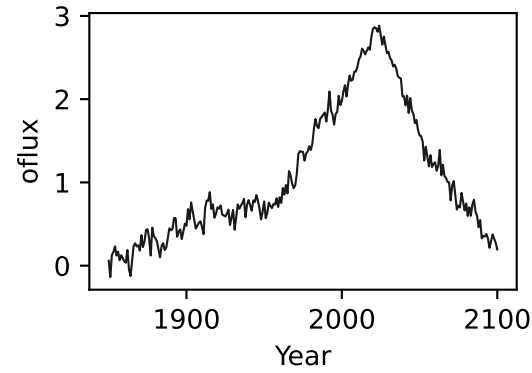

cveg
420
400
380
1900
2000
2100
Year

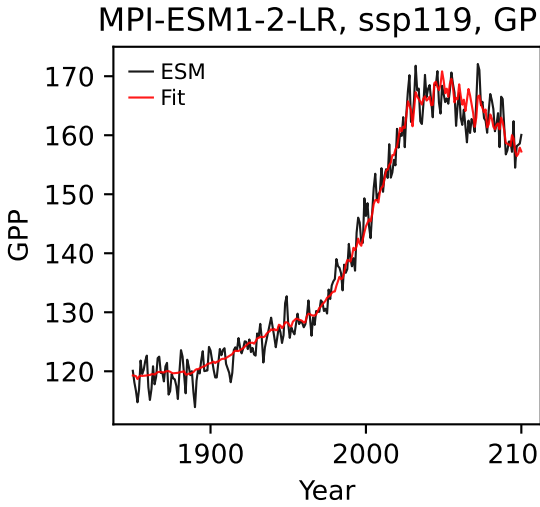

csoil
1040
1020
1000
980
1900
2000
2100
Year

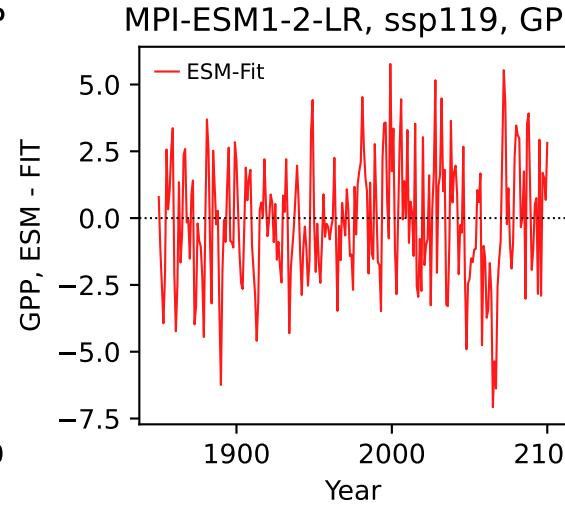

gpp
160
140
120
1900
2000
2100
Year

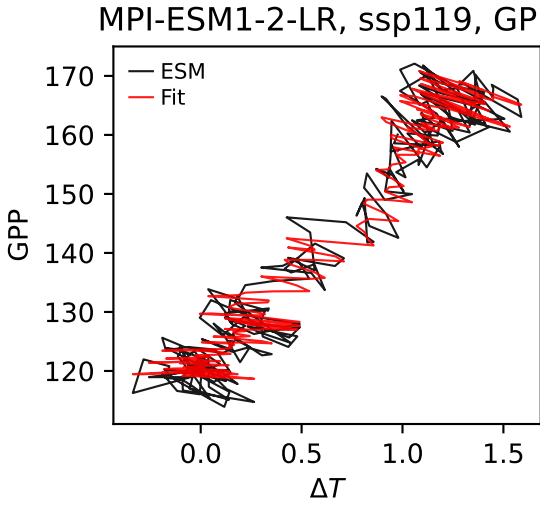

lit
75
70
65
60
55
1900
2000
2100
Year

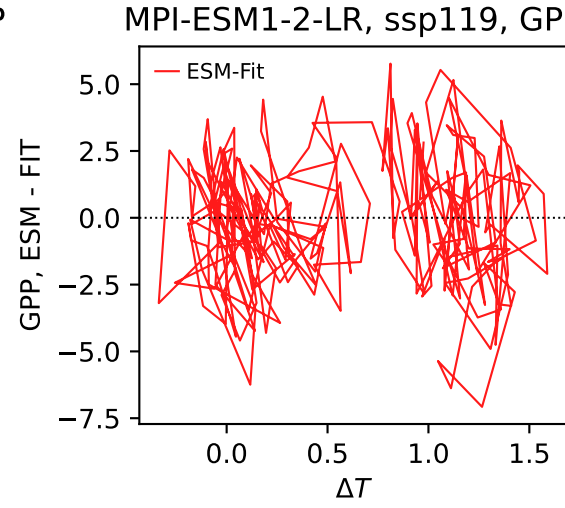

resp
70
65
60
1900
2000
2100
Year

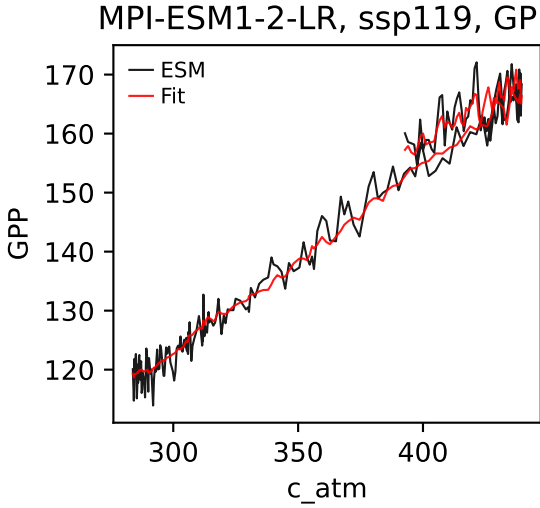

oflux
3
2
1
0
1900
2000
2100
Year

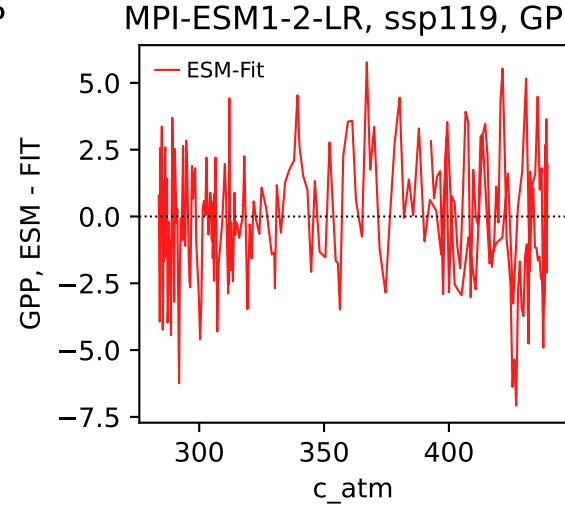

MPI-ESM1-2-LR, ssp119, GPP
ESM
Fit
GPP
Year

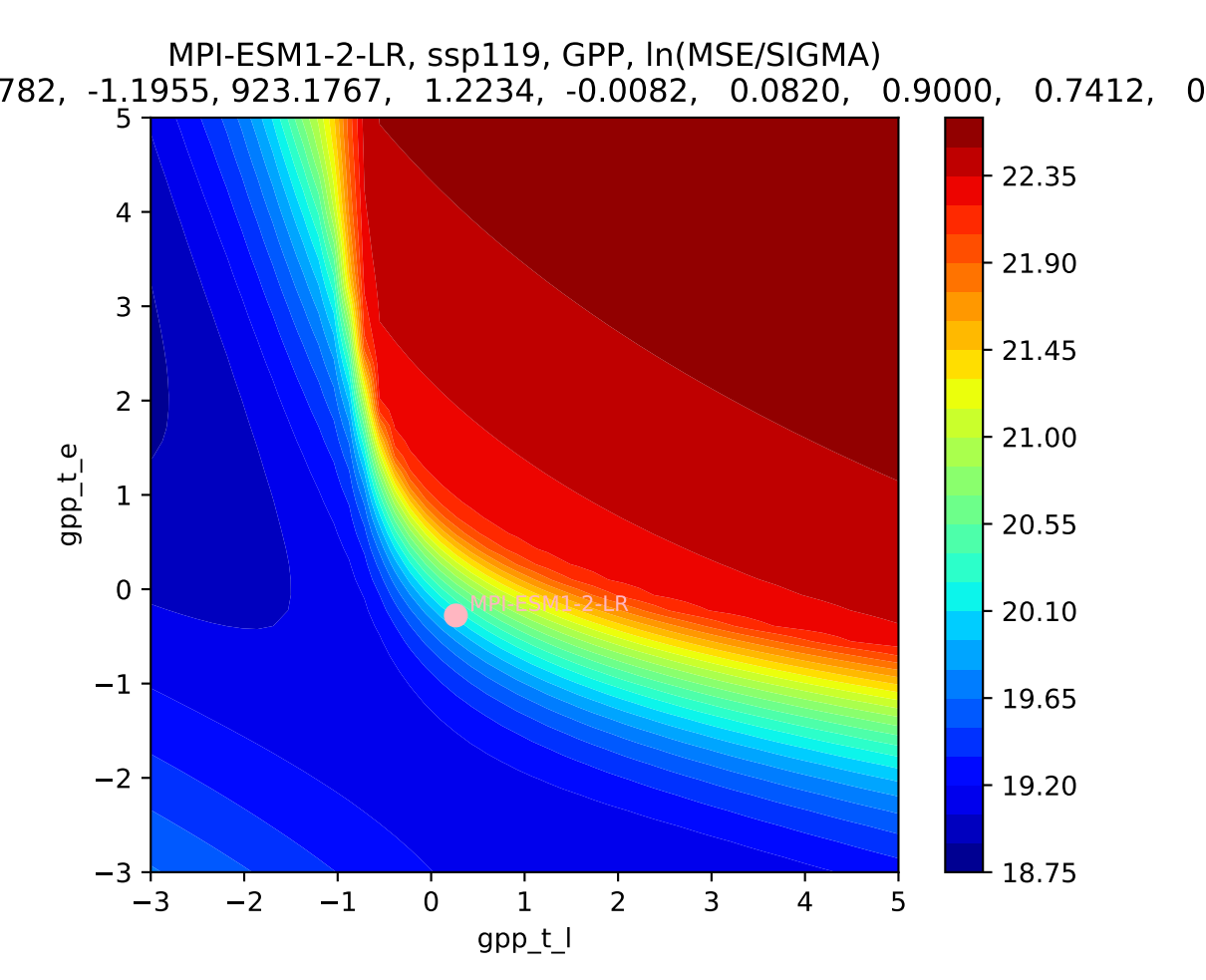

MPI-ESM1-2-LR, ssp119, GPP
ESM-Fit
GPP, ESM - FIT
Year

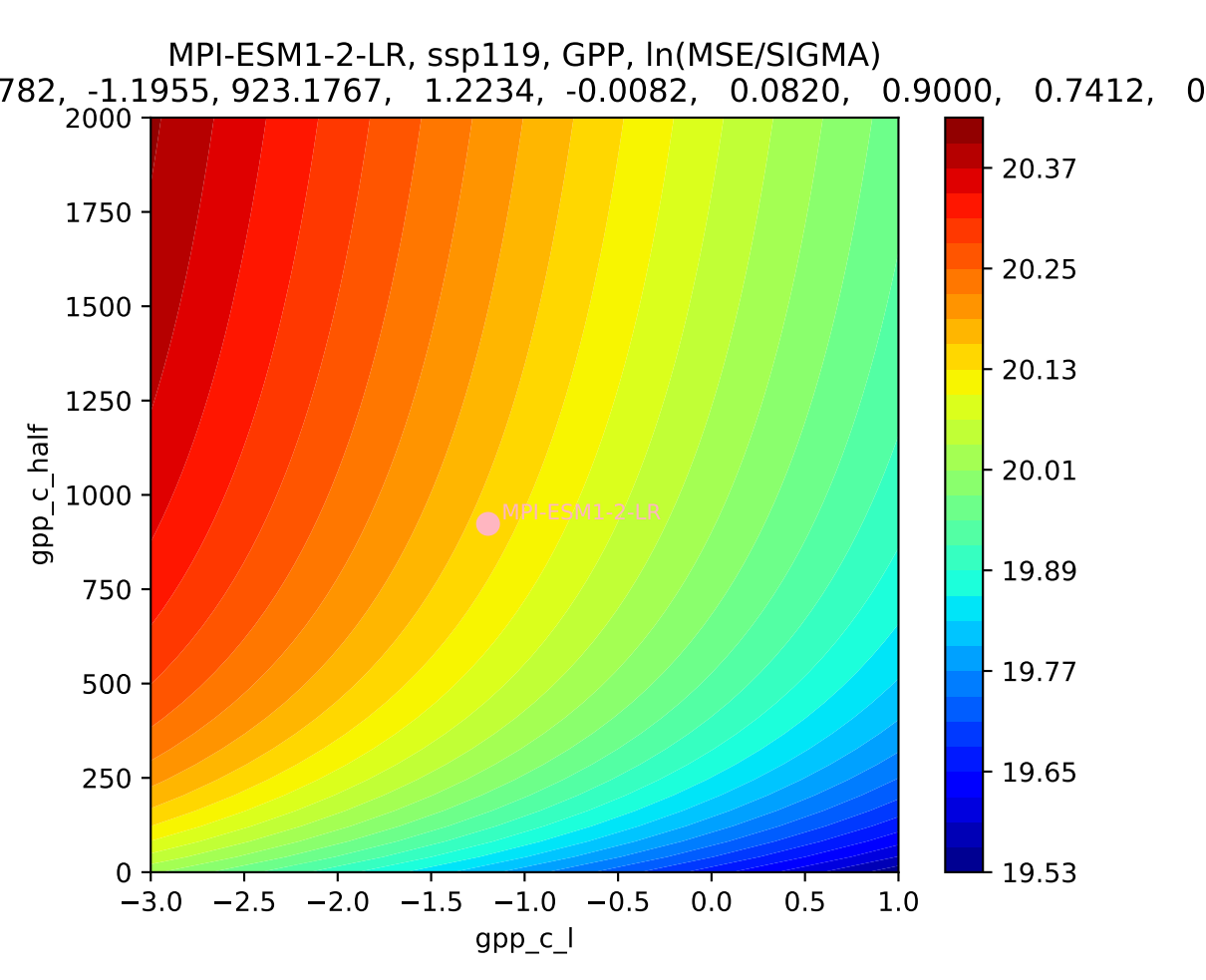

MPI-ESM1-2-LR, ssp119, GPP
ESM
Fit
GPP
ΔT

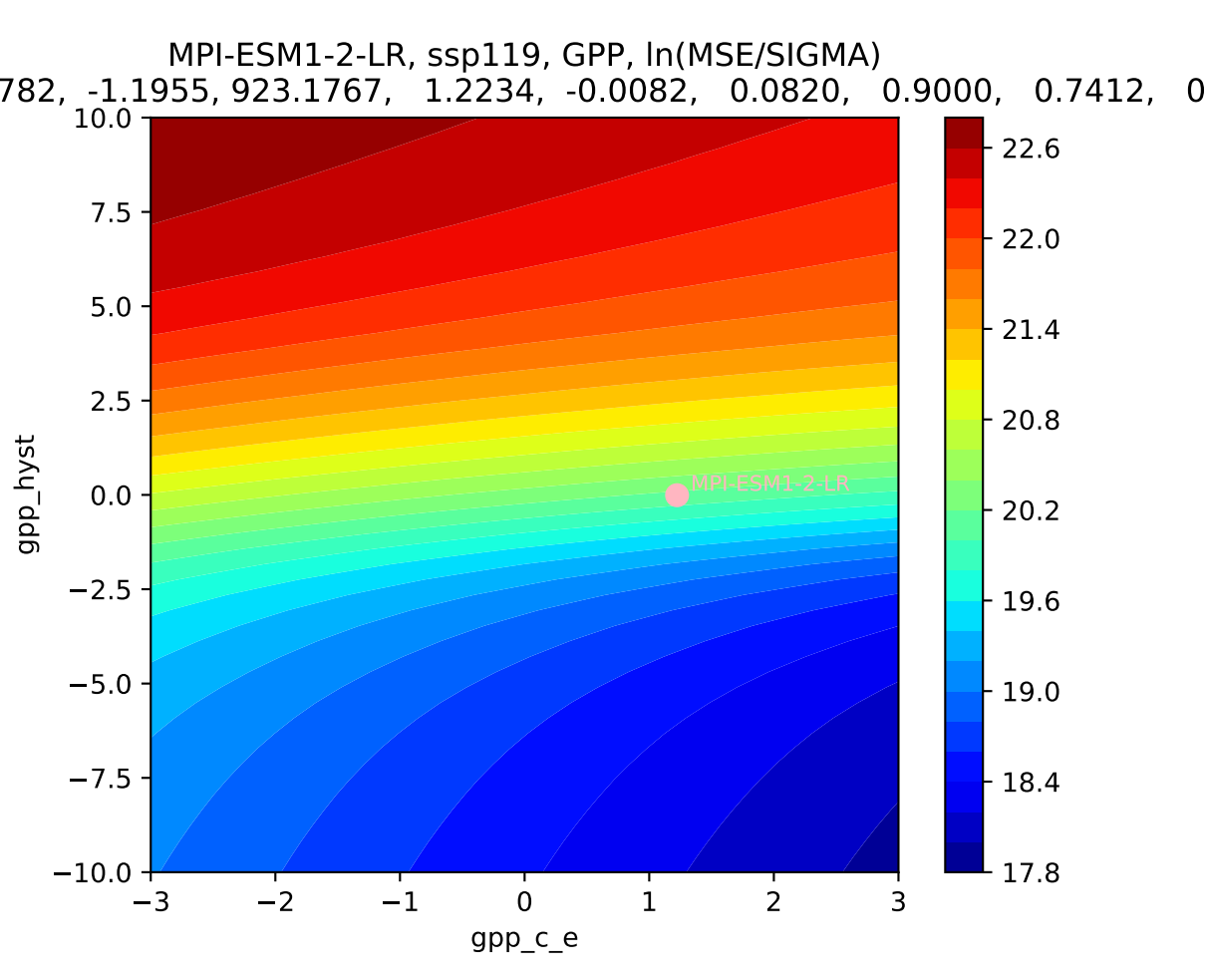

MPI-ESM1-2-LR, ssp119, GPP
ESM-Fit
GPP, ESM - FIT
ΔT

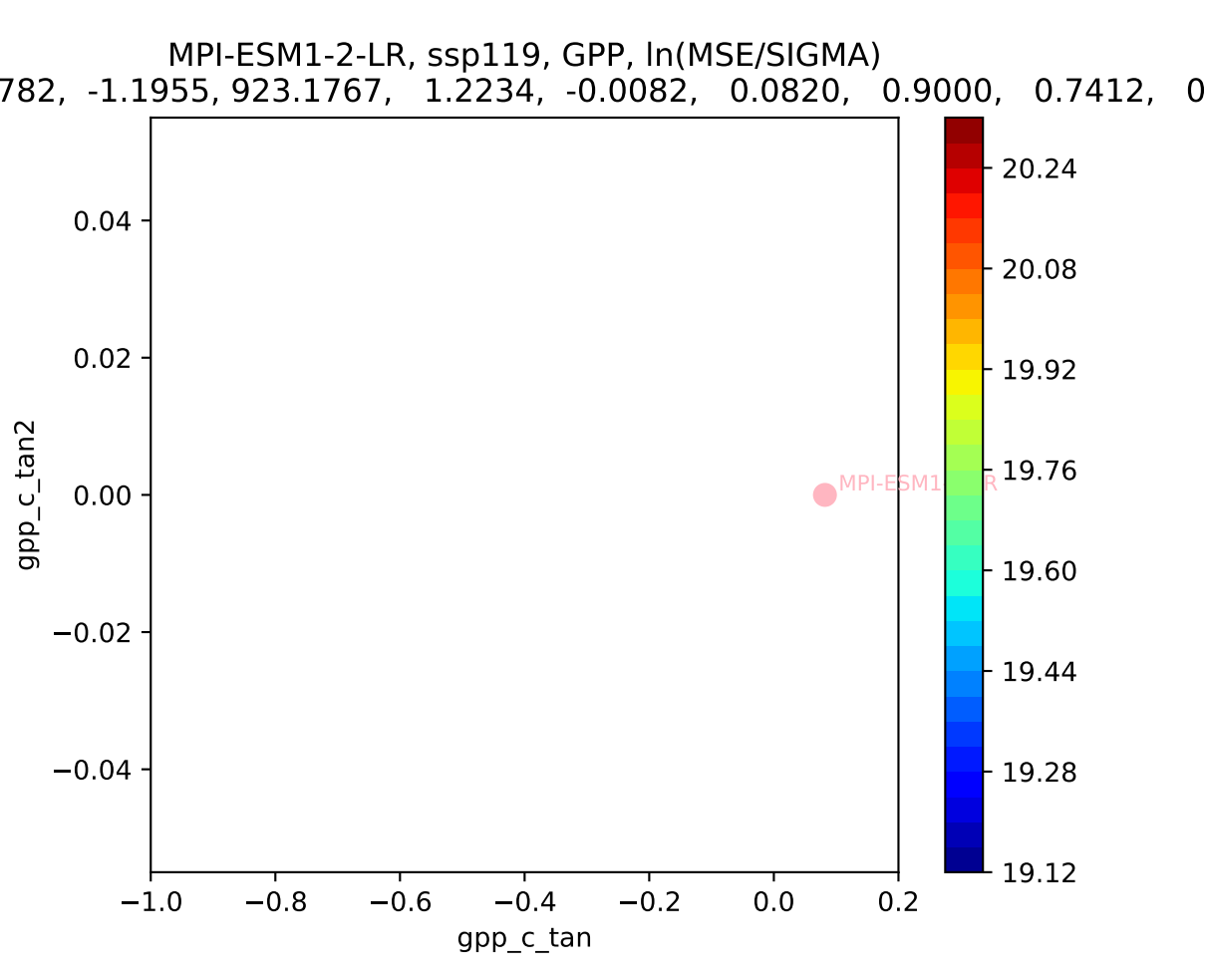

MPI-ESM1-2-LR, ssp119, GPP
ESM
Fit
GPP
c_atm

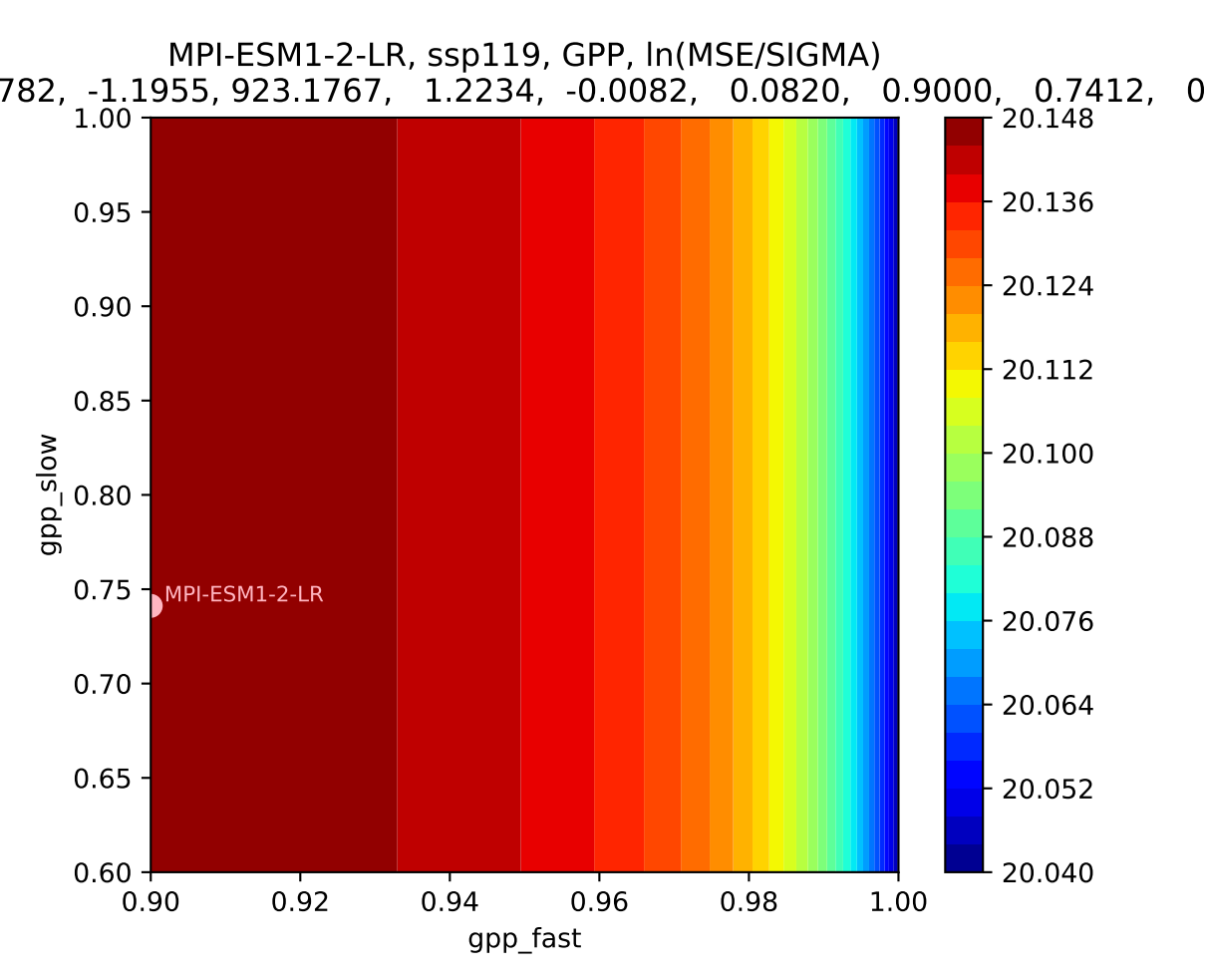

MPI-ESM1-2-LR, ssp119, GPP
ESM-Fit
GPP, ESM - FIT
c_atm

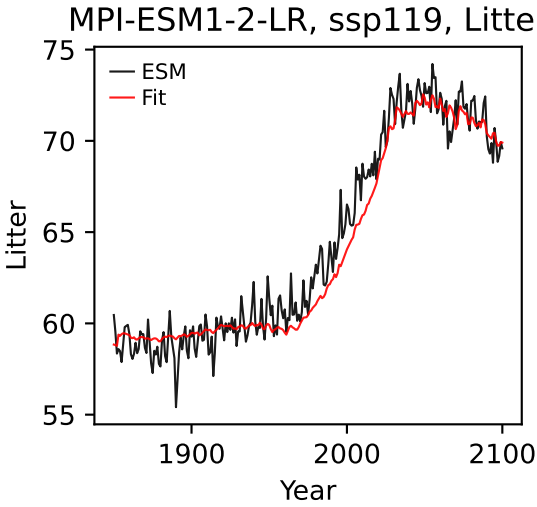

MPI-ESM1-2-LR, ssp119, GPP, ln(MSE/SIGMA)
782, -1.1955, 923.1767, 1.2234, -0.0082, 0.0820, 0.9000, 0.7412, 0
MPI-ESM1-2-LR
gpp_t_e
gpp_t_l
5
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4
5
22.35
21.90
21.45
21.00
20.55
20.10
19.65
19.20
18.75

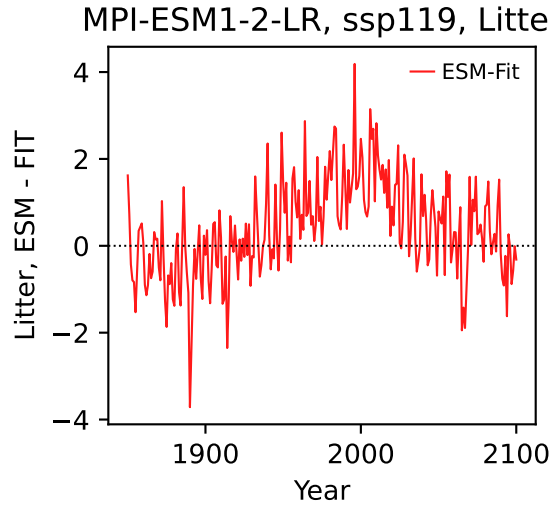

MPI-ESM1-2-LR, ssp119, GPP, ln(MSE/SIGMA)
782, -1.1955, 923.1767, 1.2234, -0.0082, 0.0820, 0.9000, 0.7412, 0
MPI-ESM1-2-LR
gpp_c_half
gpp_c_l
2000
1750
1500
1250
1000
750
500
250
0
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
20.37
20.25
20.13
20.01
19.89
19.77
19.65
19.53

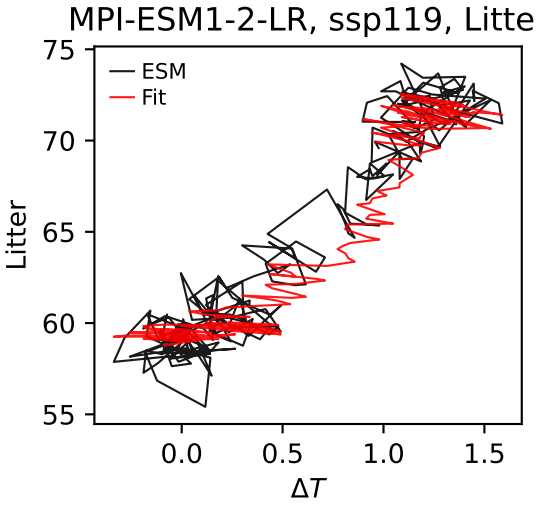

MPI-ESM1-2-LR, ssp119, GPP, ln(MSE/SIGMA)
782, -1.1955, 923.1767, 1.2234, -0.0082, 0.0820, 0.9000, 0.7412, 0
MPI-ESM1-2-LR
gpp_hyst
gpp_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
22.6
22.0
21.4
20.8
20.2
19.6
19.0
18.4
17.8

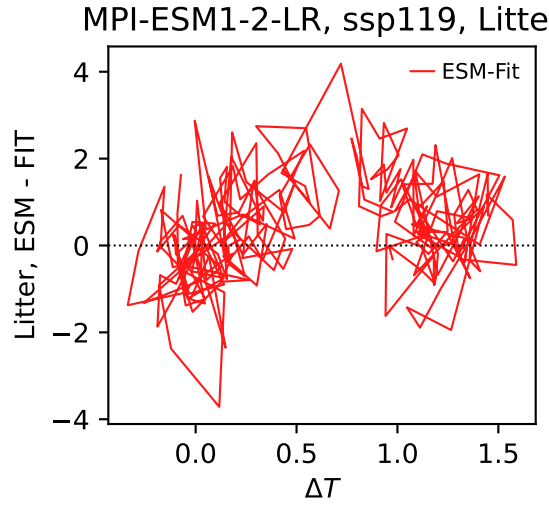

MPI-ESM1-2-LR, ssp119, GPP, ln(MSE/SIGMA)
782, -1.1955, 923.1767, 1.2234, -0.0082, 0.0820, 0.9000, 0.7412, 0
0.04
0.02
0.00
−0.02
−0.04
gpp_c_tan2
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
gpp_c_tan
20.24
20.08
19.92
19.76
19.60
19.44
19.28
19.12

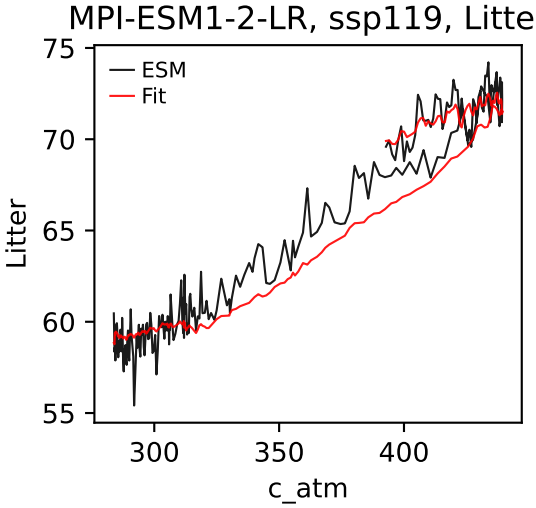

MPI-ESM1-2-LR, ssp119, GPP, ln(MSE/SIGMA)
782, -1.1955, 923.1767, 1.2234, -0.0082, 0.0820, 0.9000, 0.7412, 0
gpp_slow
gpp_fast
MPI-ESM1-2-LR
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
20.148
20.136
20.124
20.112
20.100
20.088
20.076
20.064
20.052
20.040

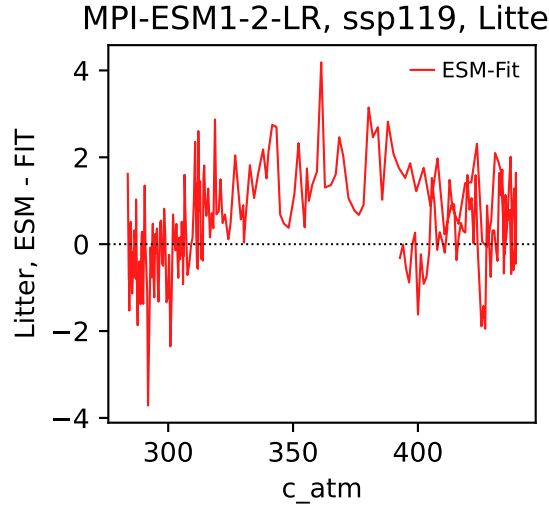

MPI-ESM1-2-LR, ssp119, Litter
ESM
Fit
Litter
Year
75
70
65
60
55
1900
2000
2100

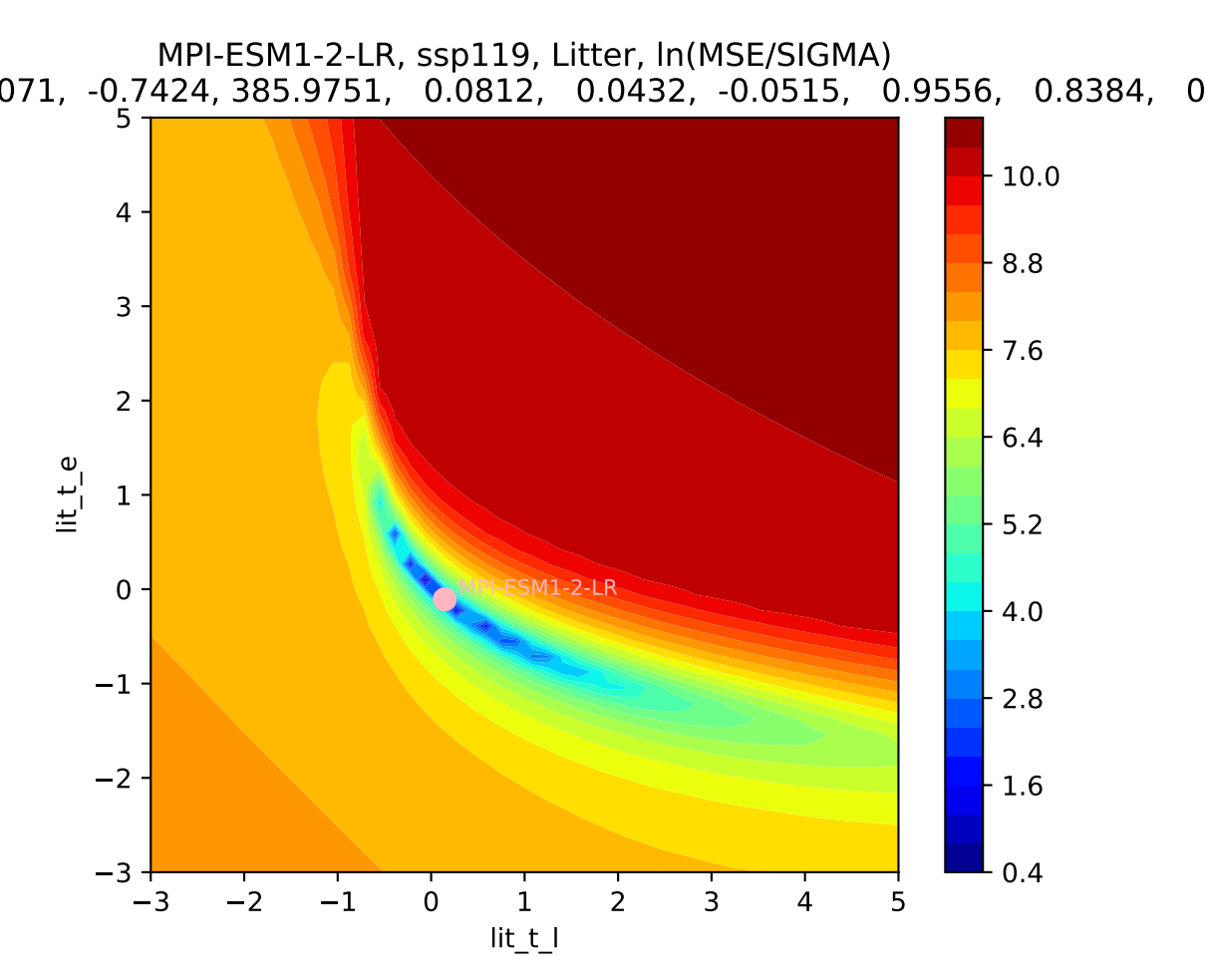

MPI-ESM1-2-LR, ssp119, Litter
ESM-Fit
Litter, ESM - FIT
Year
4
2
0
−2
−4
1900
2000
2100

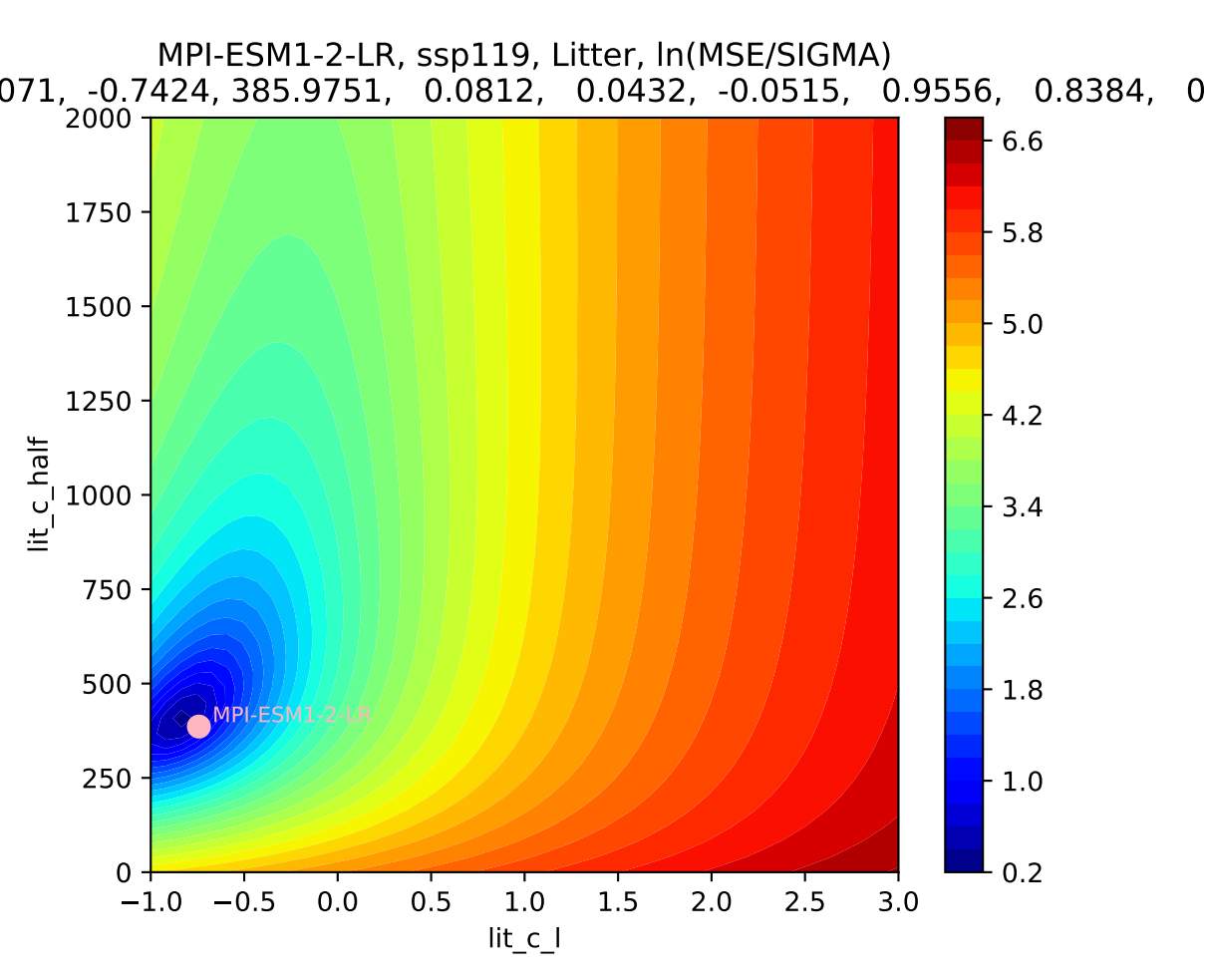

MPI-ESM1-2-LR, ssp119, Litter
ESM
Fit
Litter
ΔT
75
70
65
60
55
0.0
0.5
1.0
1.5

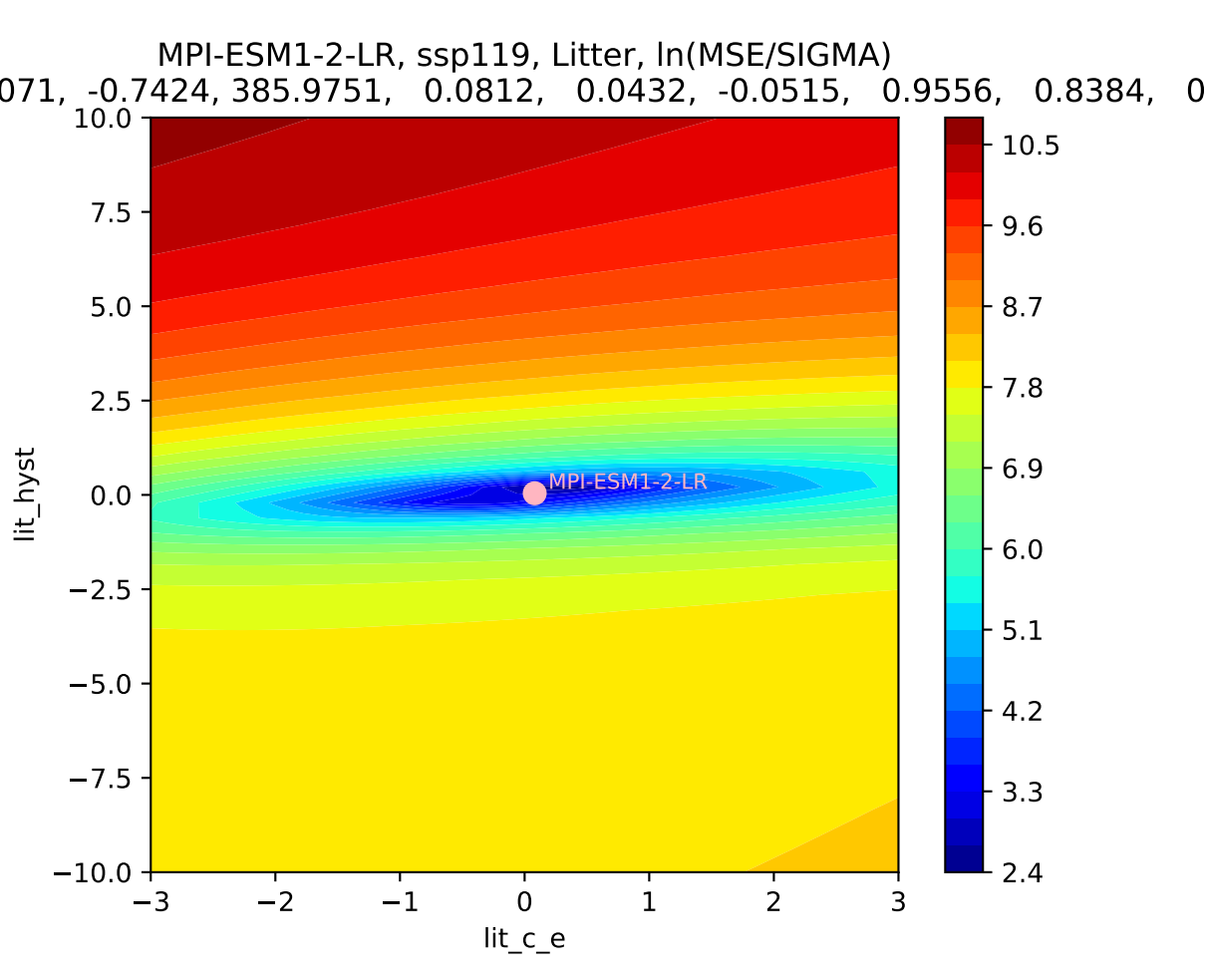

MPI-ESM1-2-LR, ssp119, Litter
ESM-Fit
Litter, ESM - FIT
ΔT
4
2
0
−2
−4
0.0
0.5
1.0
1.5

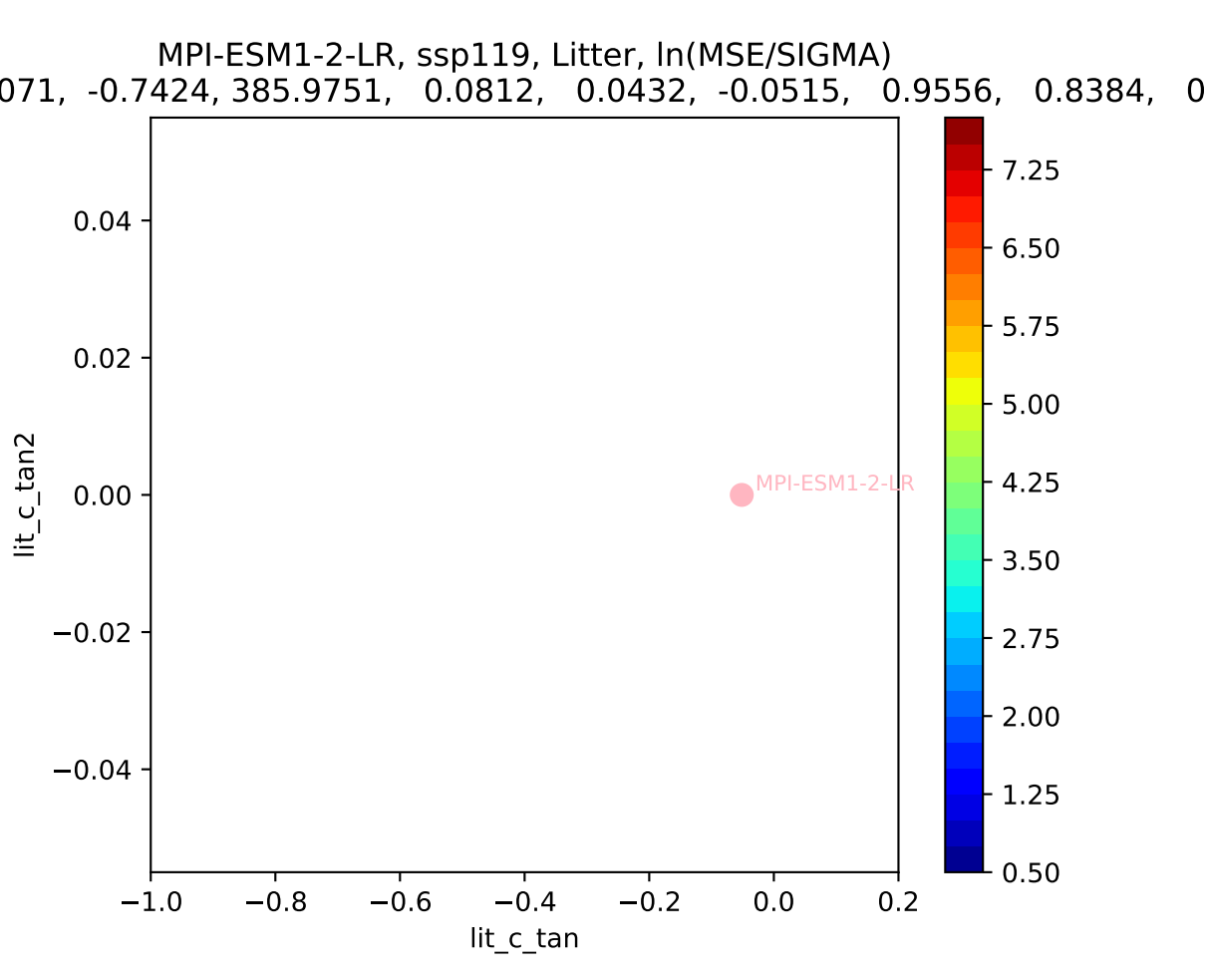

MPI-ESM1-2-LR, ssp119, Litter
ESM
Fit
Litter
c_atm
75
70
65
60
55
300
350
400

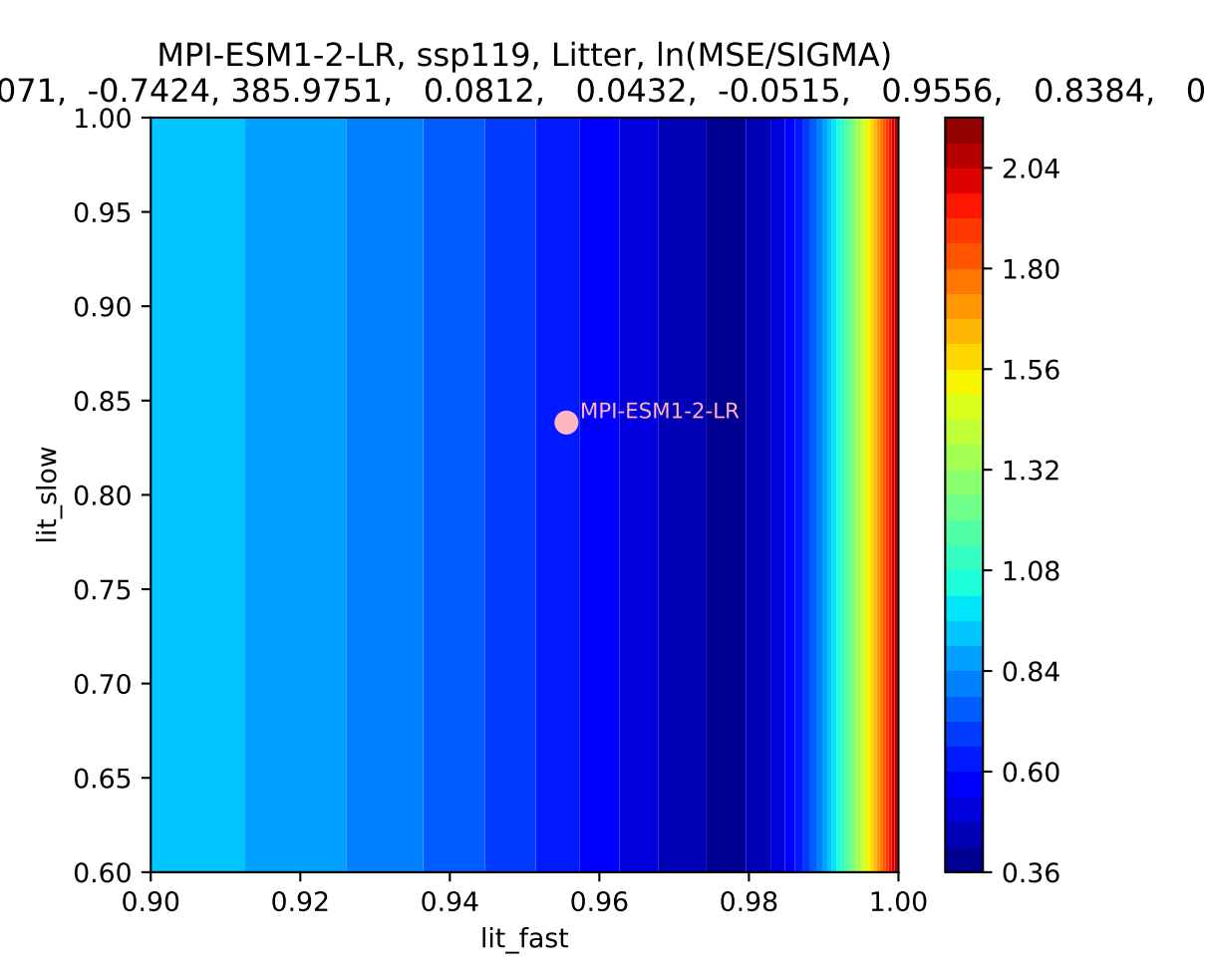

MPI-ESM1-2-LR, ssp119, Litter
ESM-Fit
Litter, ESM - FIT
c_atm
4
2
0
−2
−4
300
350
400

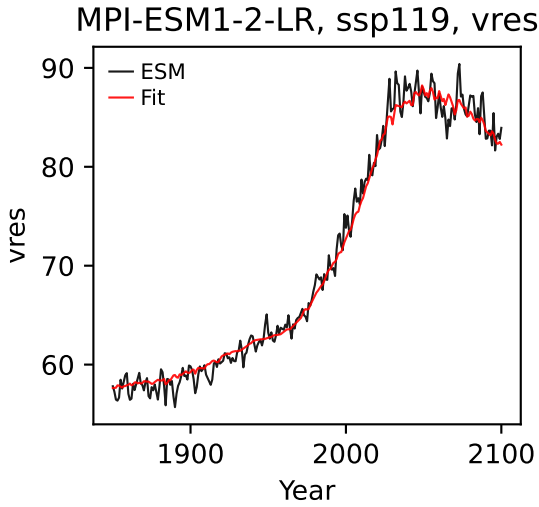

MPI-ESM1-2-LR, ssp119, Litter, ln(MSE/SIGMA)
071, -0.7424, 385.9751, 0.0812, 0.0432, -0.0515, 0.9556, 0.8384, 0
MPI-ESM1-2-LR
lit_t_e
lit_t_l
5
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4
5
10.0
8.8
7.6
6.4
5.2
4.0
2.8
1.6
0.4

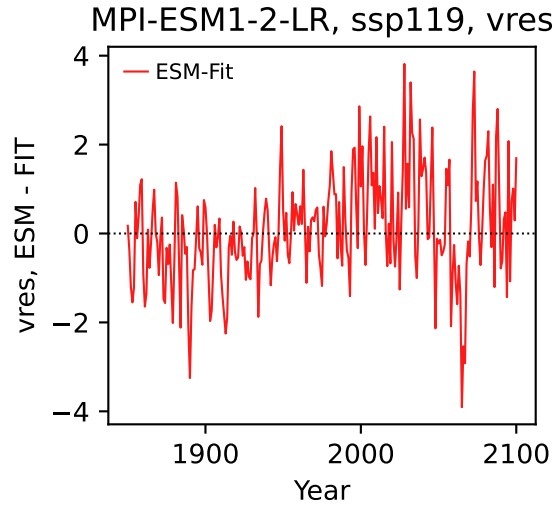

MPI-ESM1-2-LR, ssp119, Litter, ln(MSE/SIGMA)
071, -0.7424, 385.9751, 0.0812, 0.0432, -0.0515, 0.9556, 0.8384, 0
MPI-ESM1-2-LR
lit_c_half
lit_c_l
2000
1750
1500
1250
1000
750
500
250
0
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
6.6
5.8
5.0
4.2
3.4
2.6
1.8
1.0
0.2

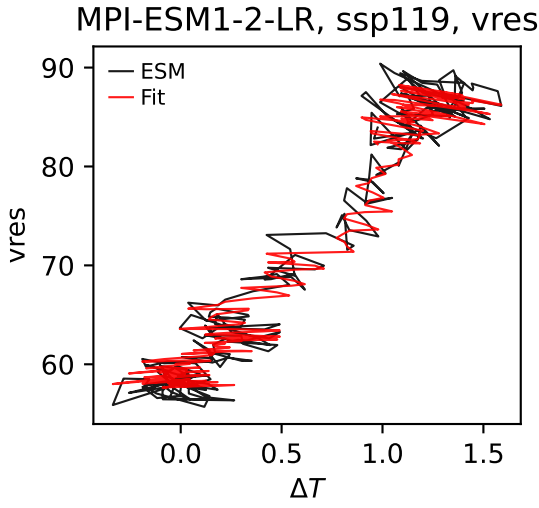

MPI-ESM1-2-LR, ssp119, Litter, ln(MSE/SIGMA)
071, -0.7424, 385.9751, 0.0812, 0.0432, -0.0515, 0.9556, 0.8384, 0
MPI-ESM1-2-LR
lit_hyst
lit_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
10.5
9.6
8.7
7.8
6.9
6.0
5.1
4.2
3.3
2.4

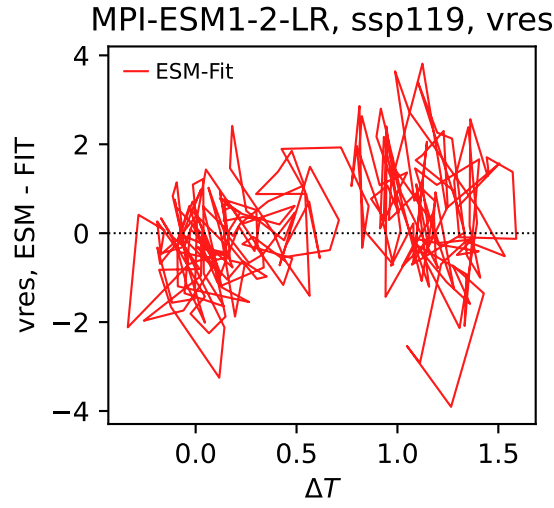

MPI-ESM1-2-LR, ssp119, Litter, ln(MSE/SIGMA)
071, -0.7424, 385.9751, 0.0812, 0.0432, -0.0515, 0.9556, 0.8384, 0
MPI-ESM1-2-LR
lit_c_tan2
lit_c_tan
0.04
0.02
0.00
−0.02
−0.04
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
7.25
6.50
5.75
5.00
4.25
3.50
2.75
2.00
1.25
0.50

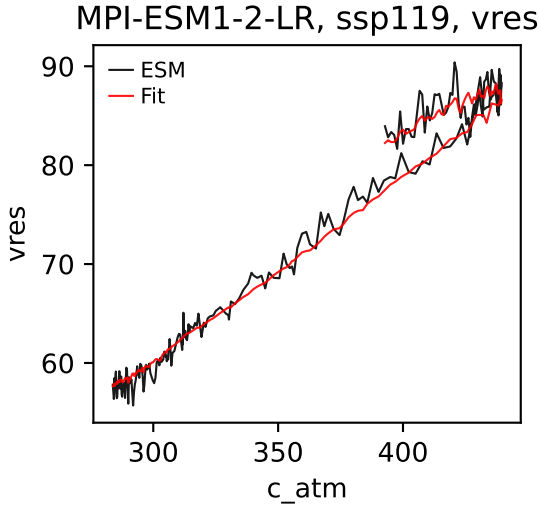

MPI-ESM1-2-LR, ssp119, Litter, ln(MSE/SIGMA)
071, -0.7424, 385.9751, 0.0812, 0.0432, -0.0515, 0.9556, 0.8384, 0
MPI-ESM1-2-LR
lit_slow
lit_fast
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
2.04
1.80
1.56
1.32
1.08
0.84
0.60
0.36

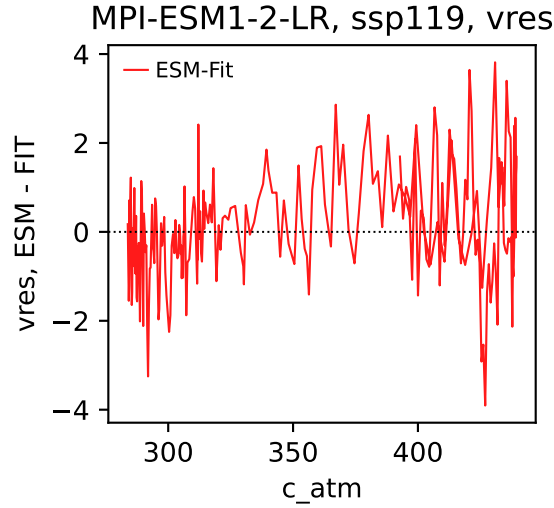

MPI-ESM1-2-LR, ssp119, vres
ESM
Fit
vres
Year

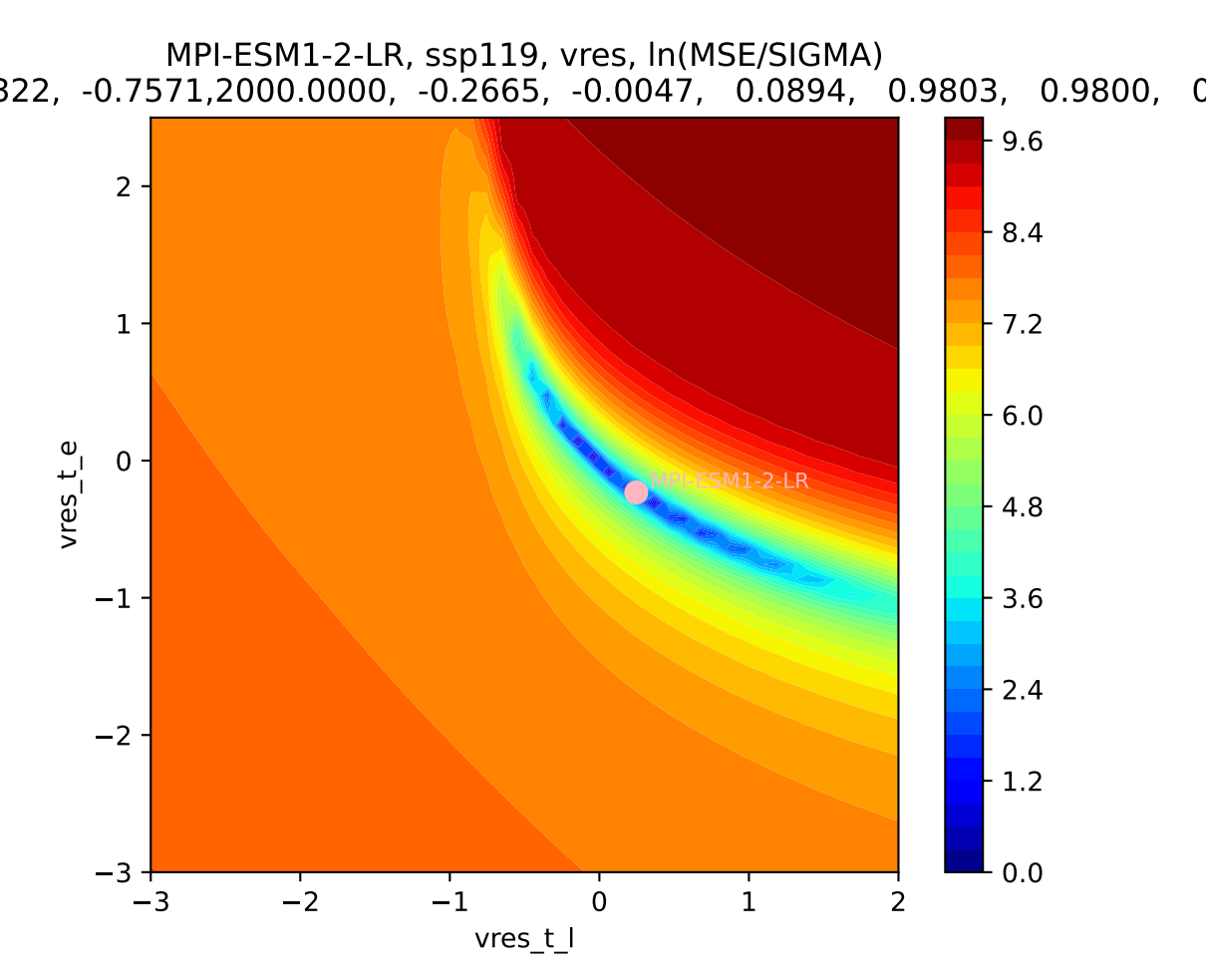

MPI-ESM1-2-LR, ssp119, vres
ESM-Fit
vres, ESM - FIT
Year

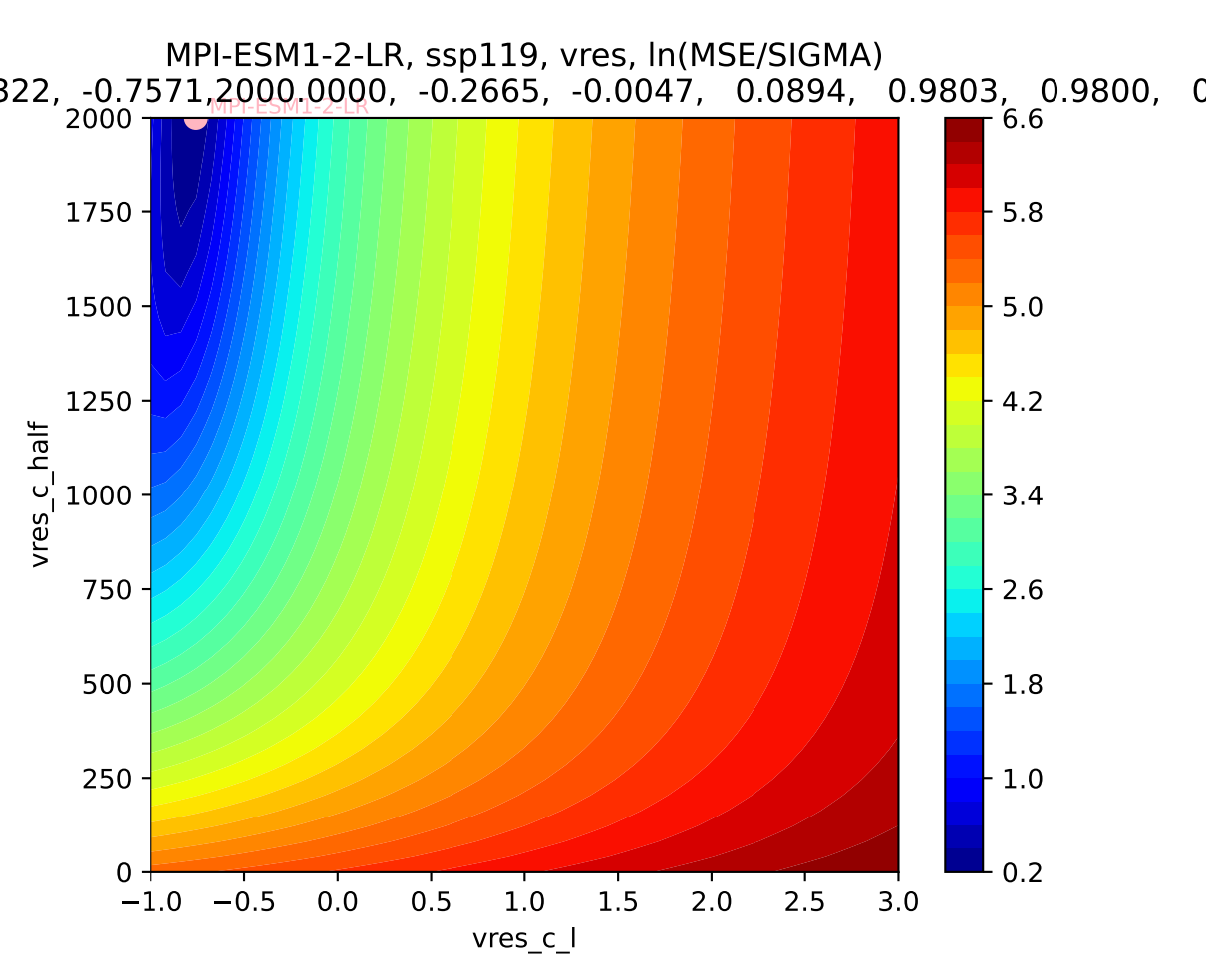

MPI-ESM1-2-LR, ssp119, vres
ESM
Fit
vres
ΔT

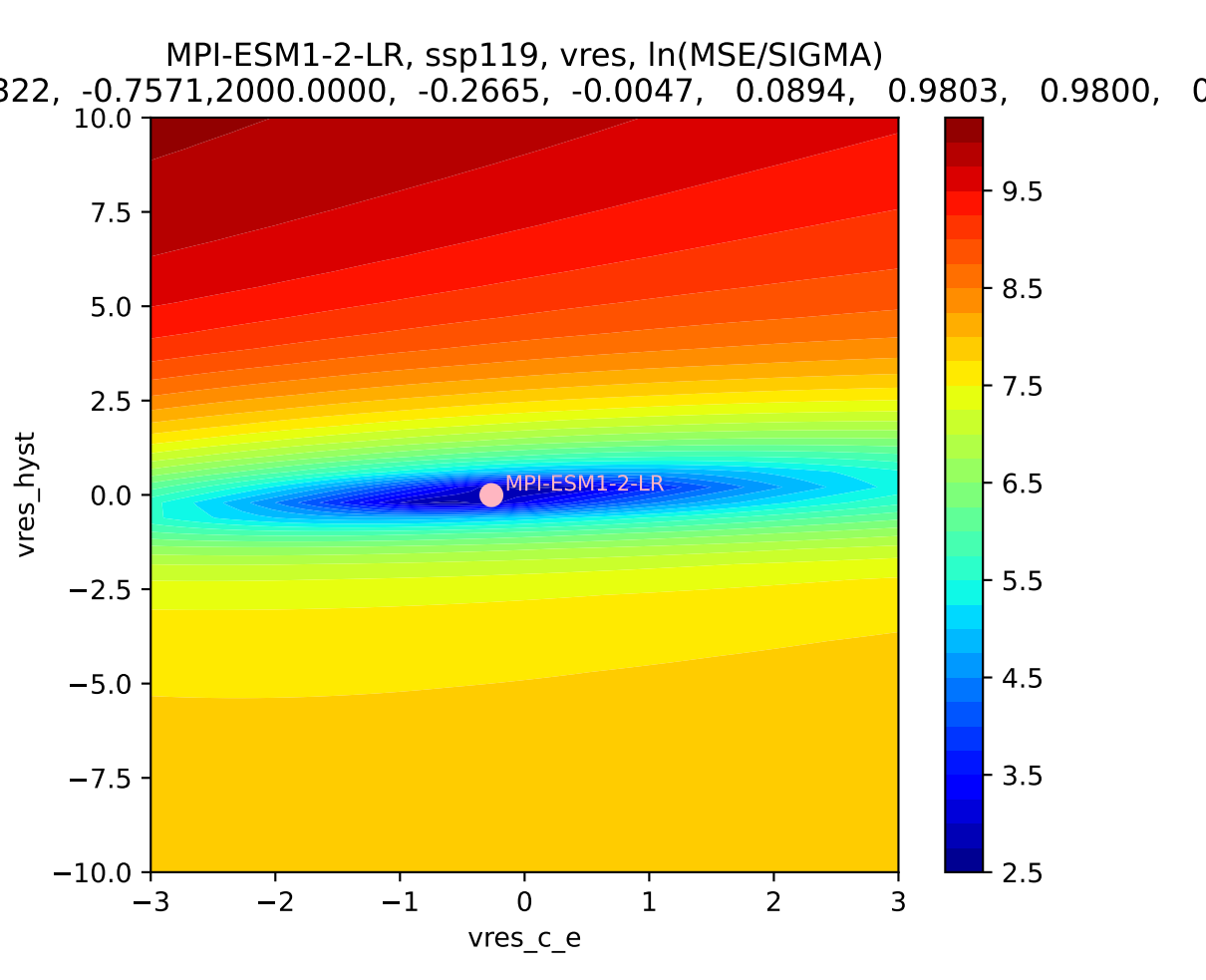

MPI-ESM1-2-LR, ssp119, vres
ESM-Fit
vres, ESM - FIT
ΔT

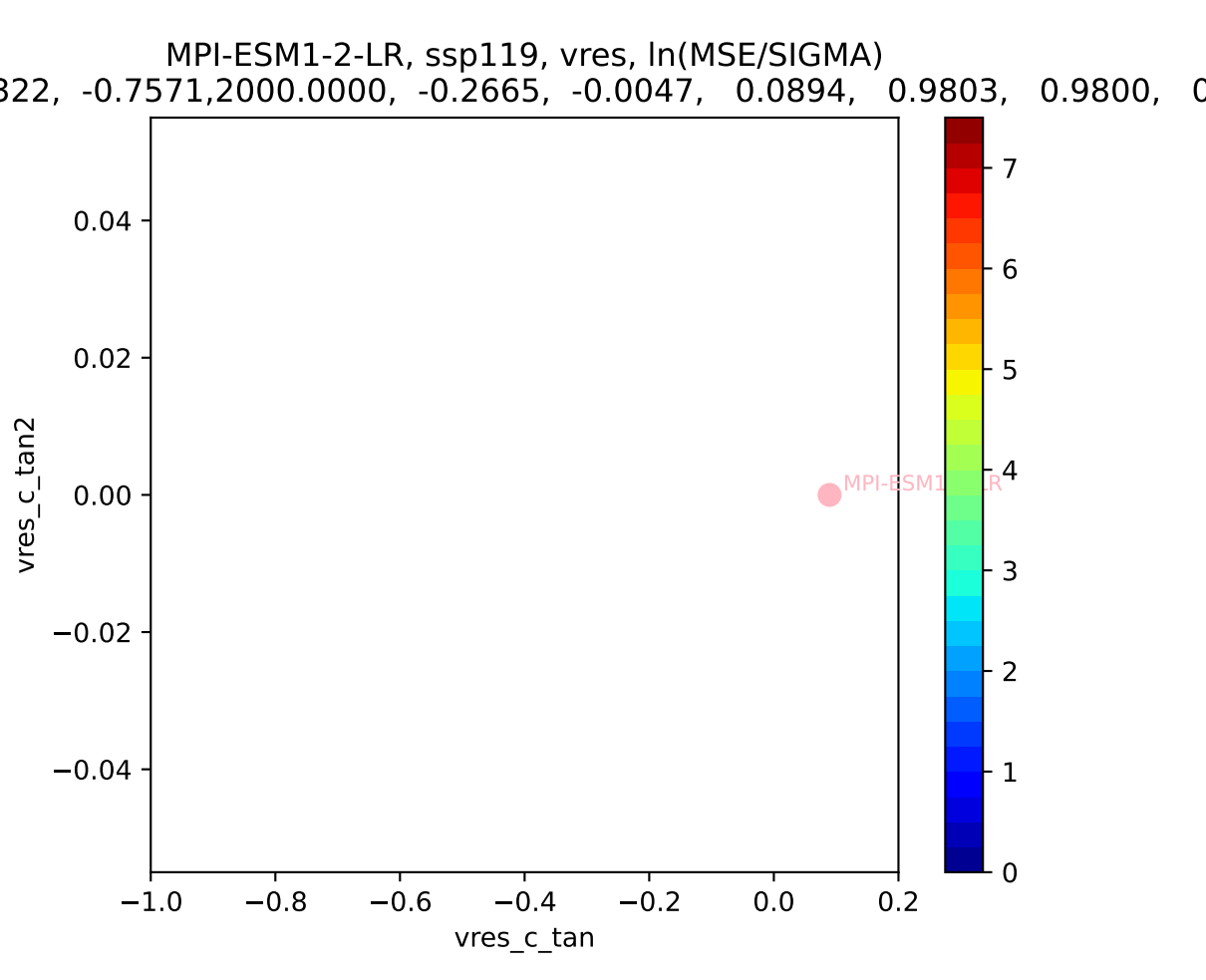

MPI-ESM1-2-LR, ssp119, vres
ESM
Fit
vres
c_atm

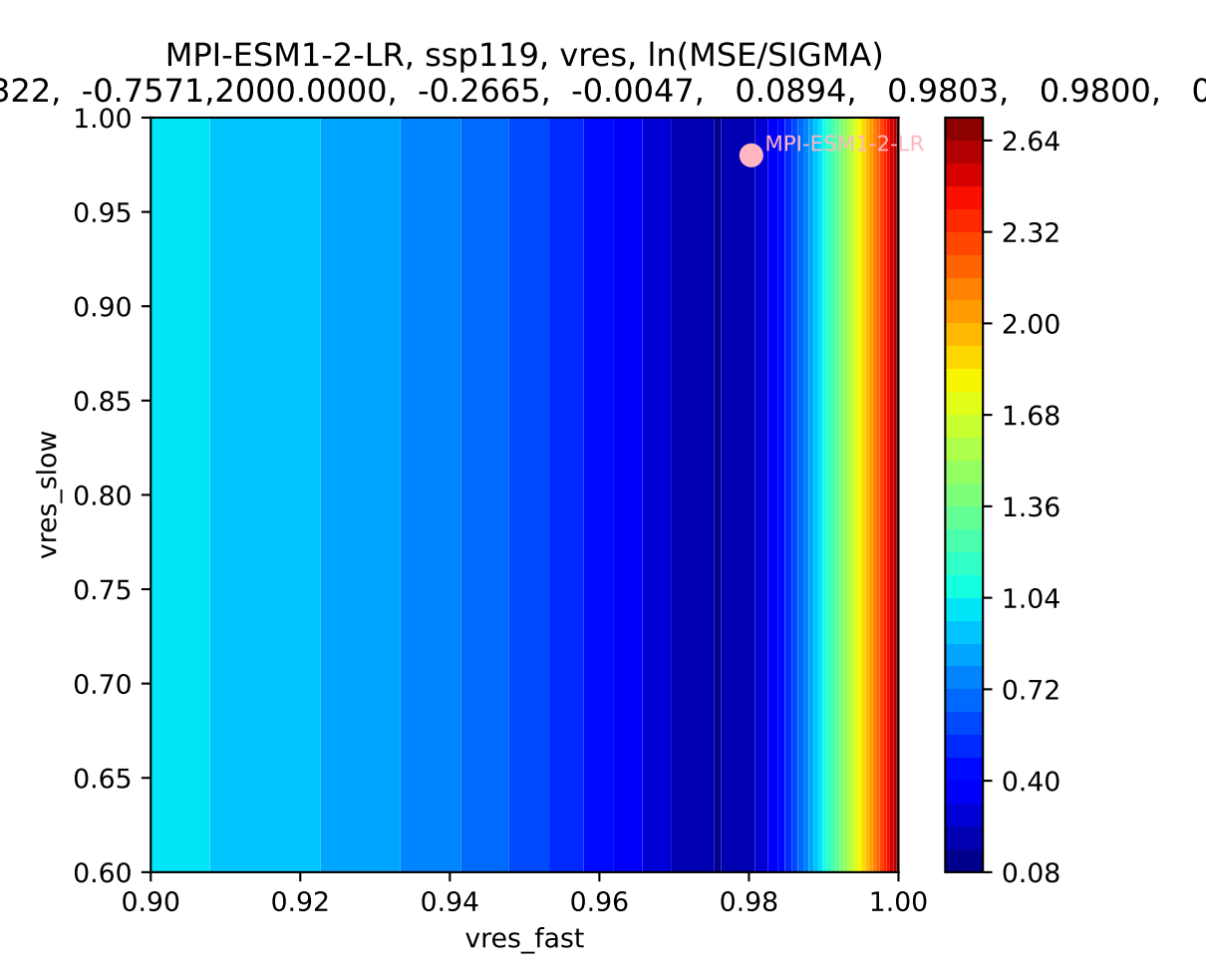

MPI-ESM1-2-LR, ssp119, vres
ESM-Fit
vres, ESM - FIT
c_atm

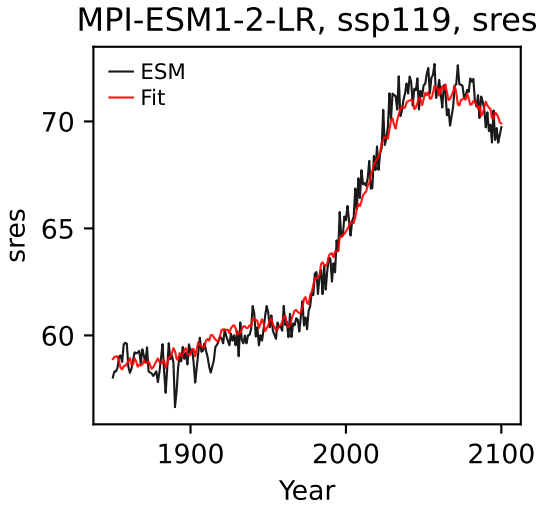

MPI-ESM1-2-LR, ssp119, vres, ln(MSE/SIGMA)
322, -0.7571,2000.0000, -0.2665, -0.0047, 0.0894, 0.9803, 0.9800, 0
MPI-ESM1-2-LR
vres_t_e
vres_t_l
2
1
0
−1
−2
−3
9.6
8.4
7.2
6.0
4.8
3.6
2.4
1.2
0.0

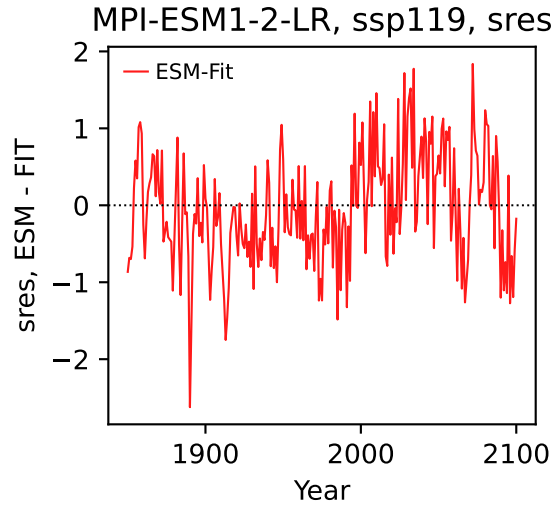

MPI-ESM1-2-LR, ssp119, vres, ln(MSE/SIGMA)
322, -0.7571,2000.0000, -0.2665, -0.0047, 0.0894, 0.9803, 0.9800, 0
MPI-ESM1-2-LR
vres_c_half
2000
1750
1500
1250
1000
750
500
250
0
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
vres_c_l
6.6
5.8
5.0
4.2
3.4
2.6
1.8
1.0
0.2

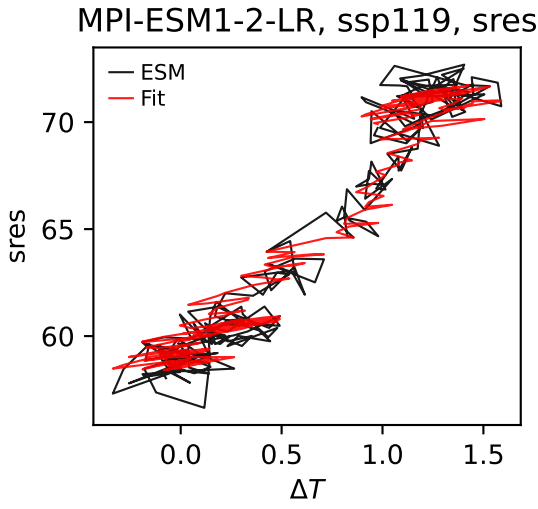

MPI-ESM1-2-LR, ssp119, vres, ln(MSE/SIGMA)
322, -0.7571,2000.0000, -0.2665, -0.0047, 0.0894, 0.9803, 0.9800, 0
MPI-ESM1-2-LR
vres_hyst
vres_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5

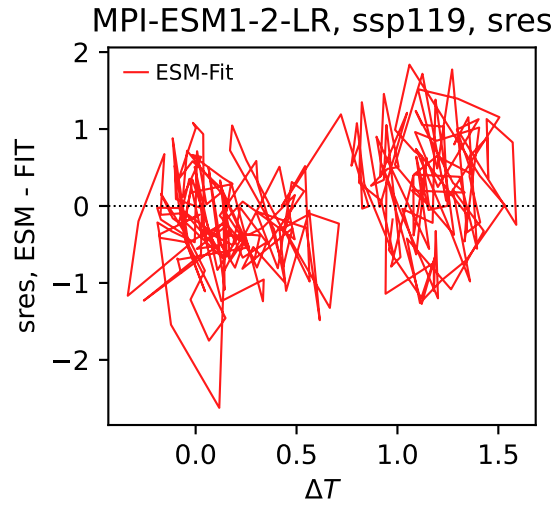

MPI-ESM1-2-LR, ssp119, vres, ln(MSE/SIGMA)
322, -0.7571,2000.0000, -0.2665, -0.0047, 0.0894, 0.9803, 0.9800, 0
0.04
0.02
0.00
−0.02
−0.04
vres_c_tan2
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
vres_c_tan
MPI-ESM1
R
7
6
5
4
3
2
1
0

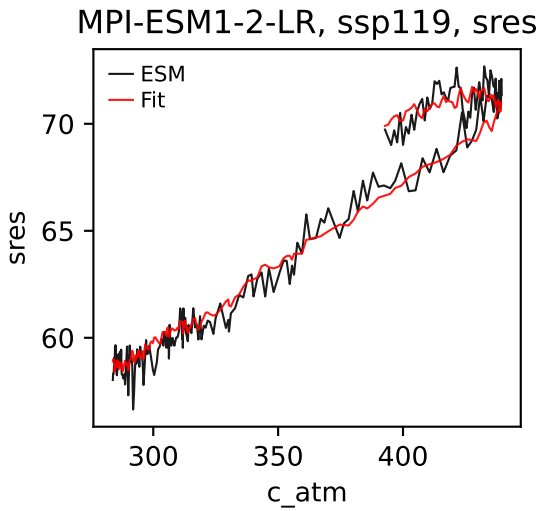

MPI-ESM1-2-LR, ssp119, vres, ln(MSE/SIGMA)
322, -0.7571,2000.0000, -0.2665, -0.0047, 0.0894, 0.9803, 0.9800, 0
MPI-ESM1-2-LR
vres_slow
vres_fast
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
2.64
2.32
2.00
1.68
1.36
1.04
0.72
0.40
0.08

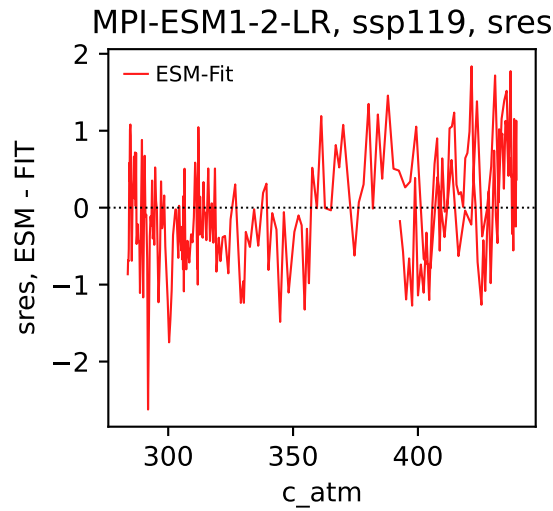

MPI-ESM1-2-LR, ssp119, sres
ESM
Fit
sres
70
65
60
1900
2000
2100
Year

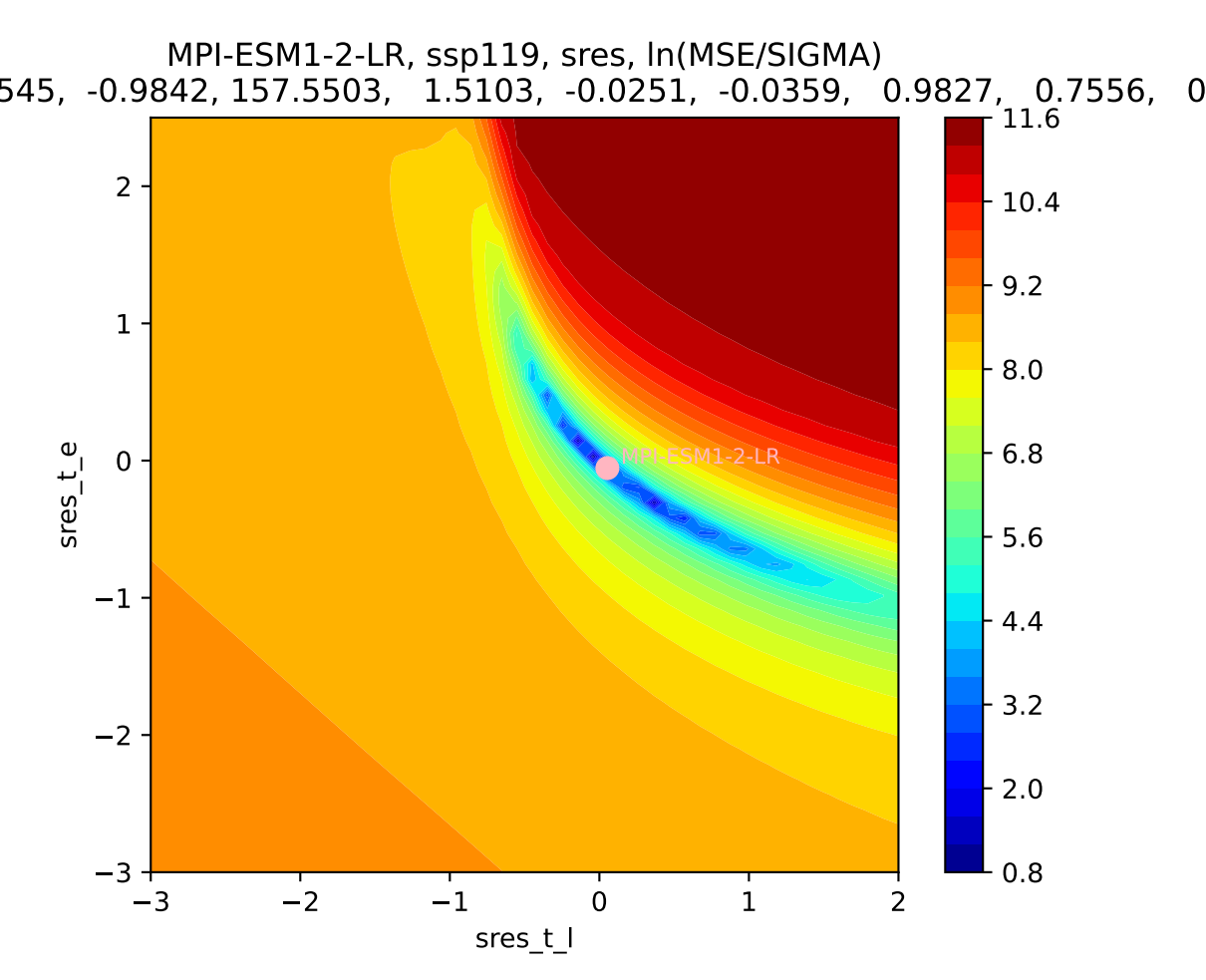

MPI-ESM1-2-LR, ssp119, sres
ESM-Fit
sres, ESM - FIT
2
1
0
−1
−2
1900
2000
2100
Year

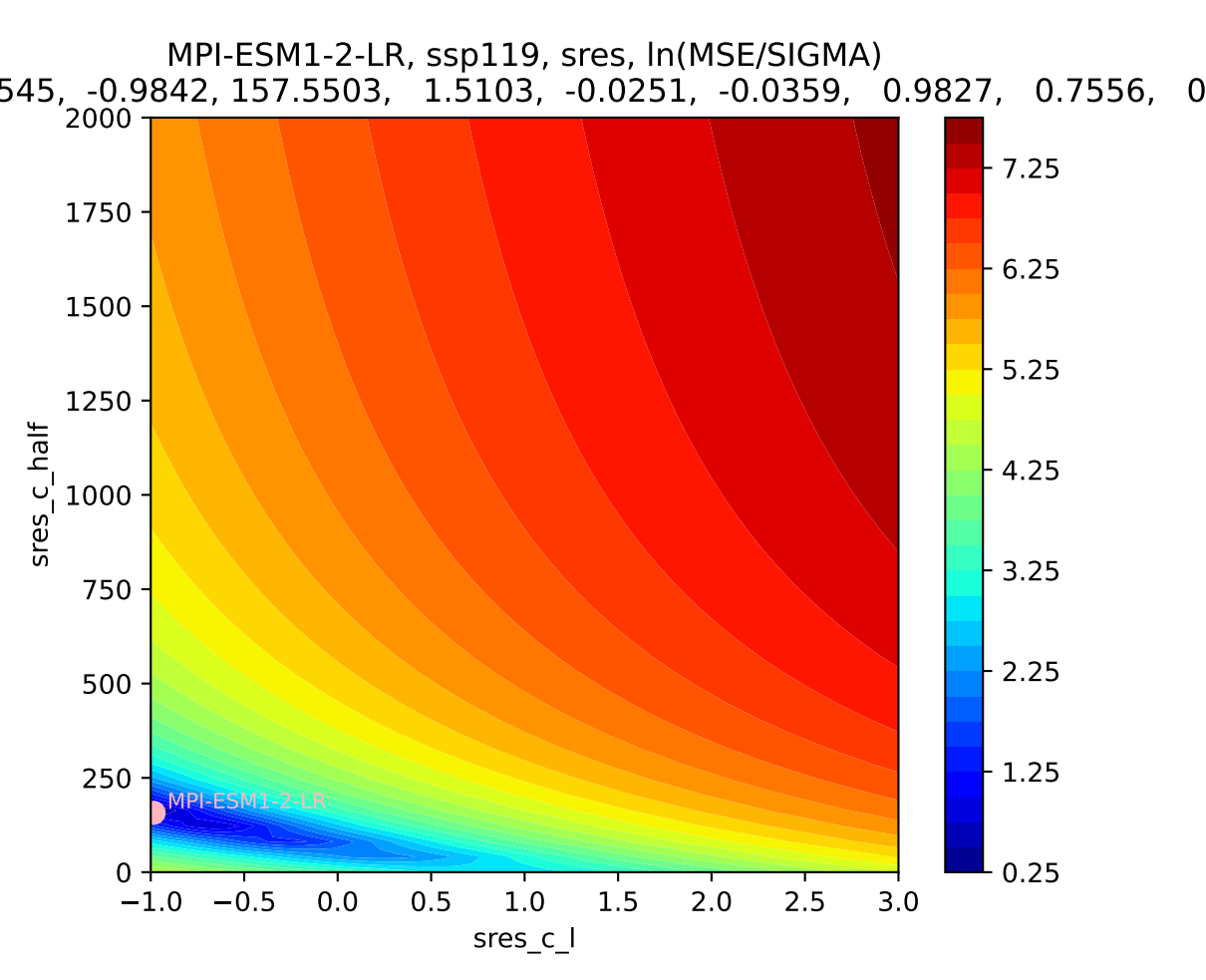

MPI-ESM1-2-LR, ssp119, sres
ESM
Fit
sres
70
65
60
0.0
0.5
1.0
1.5
ΔT

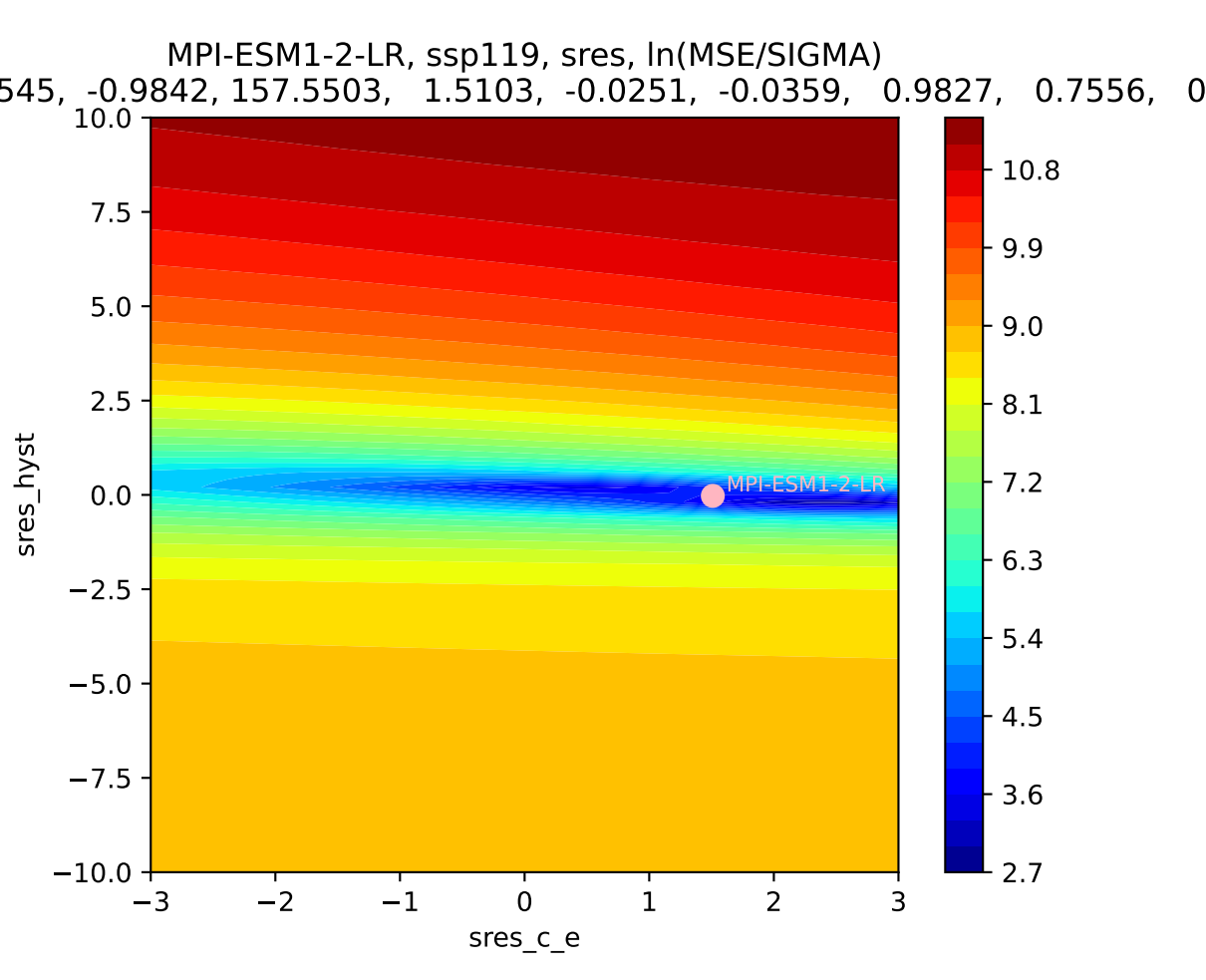

MPI-ESM1-2-LR, ssp119, sres
ESM-Fit
sres, ESM - FIT
2
1
0
−1
−2
0.0
0.5
1.0
1.5
ΔT

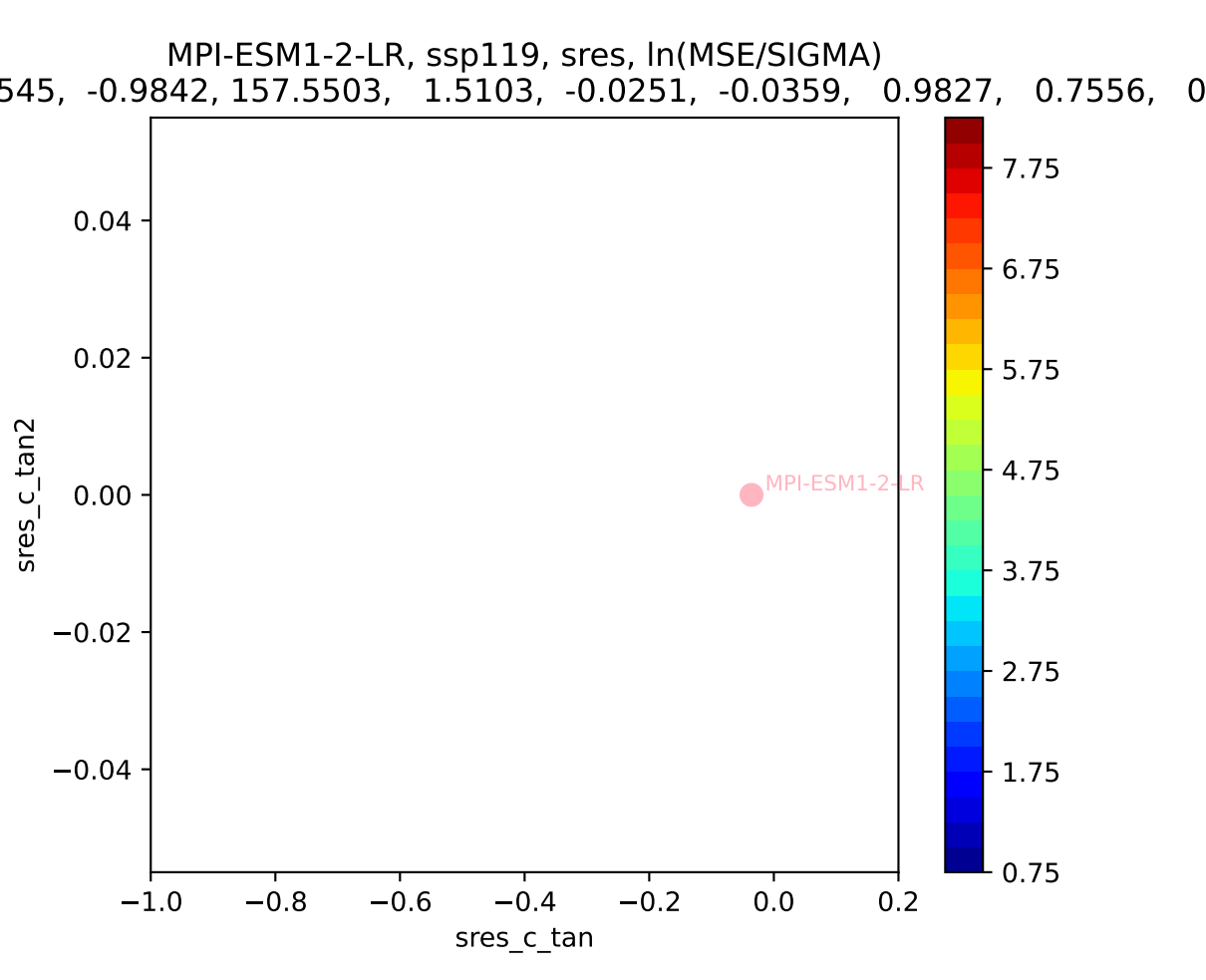

MPI-ESM1-2-LR, ssp119, sres
ESM
Fit
sres
70
65
60
300
350
400
c_atm

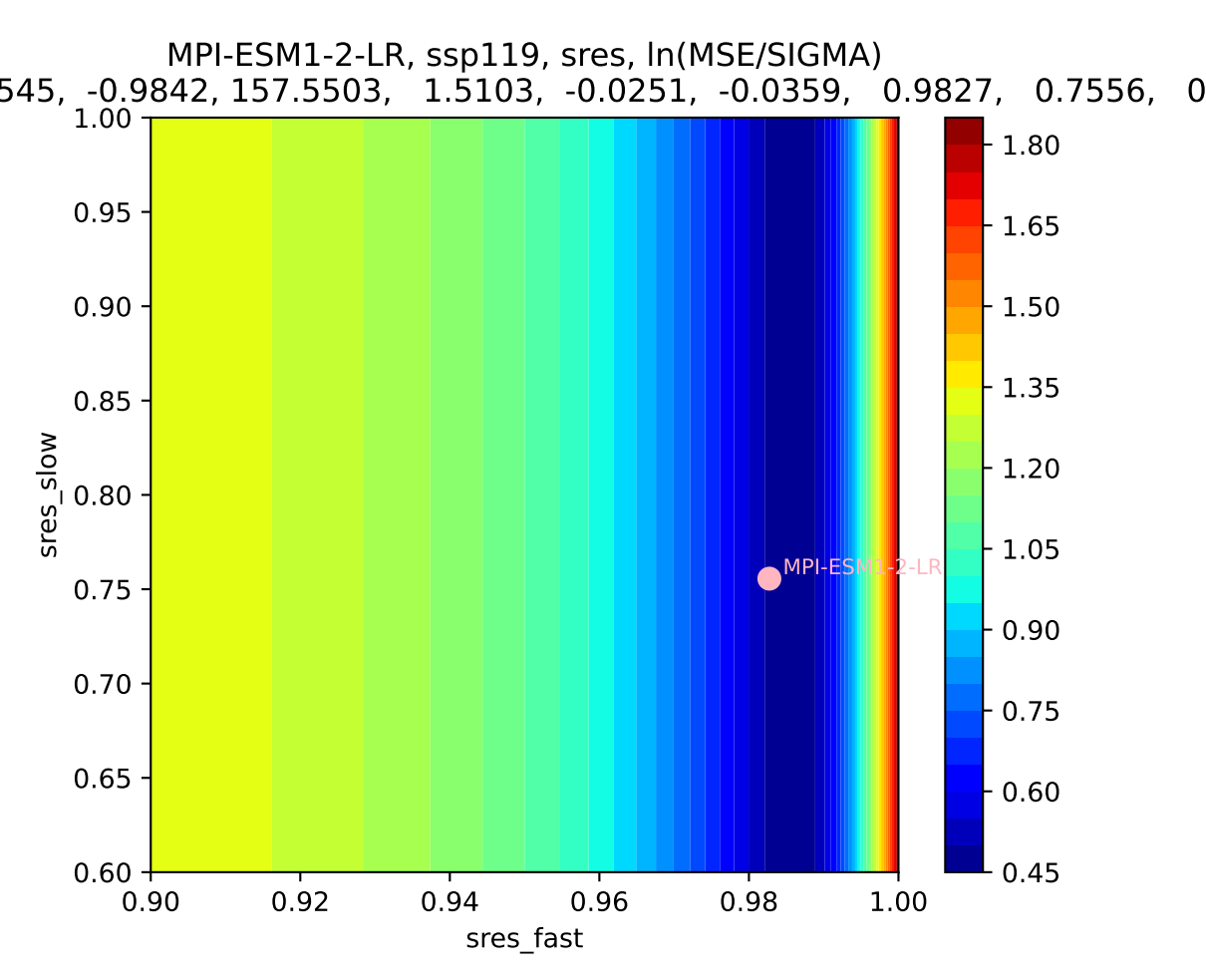

MPI-ESM1-2-LR, ssp119, sres
ESM-Fit
sres, ESM - FIT
2
1
0
−1
−2
300
350
400
c_atm

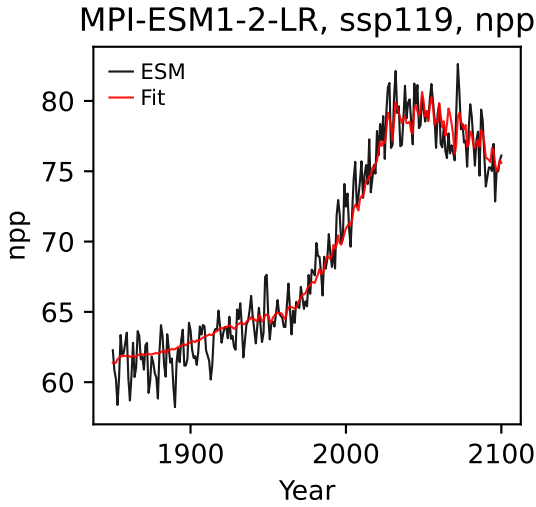

MPI-ESM1-2-LR, ssp119, sres, ln(MSE/SIGMA)
545, -0.9842, 157.5503, 1.5103, -0.0251, -0.0359, 0.9827, 0.7556, 0
MPI-ESM1-2-LR
sres_t_e
sres_t_l
−3
−2
−1
0
1
2
11.6
10.4
9.2
8.0
6.8
5.6
4.4
3.2
2.0
0.8

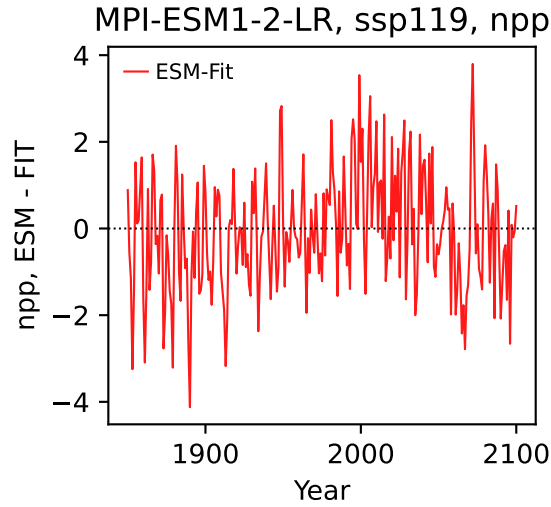

MPI-ESM1-2-LR, ssp119, sres, ln(MSE/SIGMA)
545, -0.9842, 157.5503, 1.5103, -0.0251, -0.0359, 0.9827, 0.7556, 0
sres_c_half
sres_c_l
MPI-ESM1-2-LR
2000
1750
1500
1250
1000
750
500
250
0
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
7.25
6.25
5.25
4.25
3.25
2.25
1.25
0.25

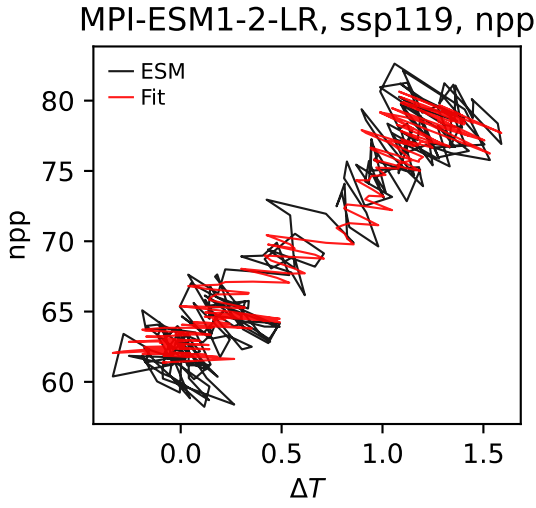

MPI-ESM1-2-LR, ssp119, sres, ln(MSE/SIGMA)
545, -0.9842, 157.5503, 1.5103, -0.0251, -0.0359, 0.9827, 0.7556, 0
MPI-ESM1-2-LR
sres_hyst
sres_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
10.8
9.9
9.0
8.1
7.2
6.3
5.4
4.5
3.6
2.7

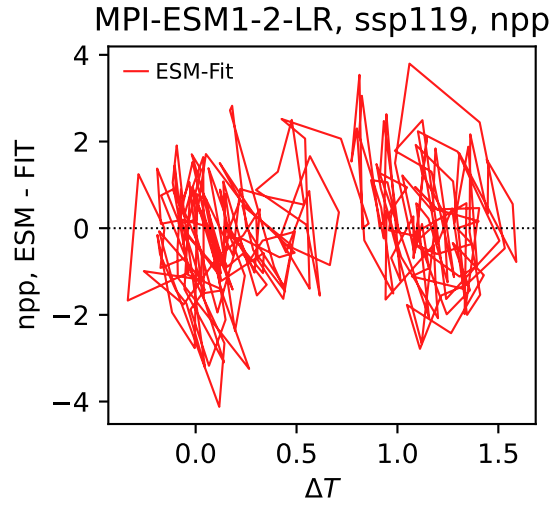

MPI-ESM1-2-LR, ssp119, sres, ln(MSE/SIGMA)
545, -0.9842, 157.5503, 1.5103, -0.0251, -0.0359, 0.9827, 0.7556, 0
MPI-ESM1-2-LR
0.04
0.02
0.00
−0.02
−0.04
sres_c_tan2
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
sres_c_tan
7.75
6.75
5.75
4.75
3.75
2.75
1.75
0.75

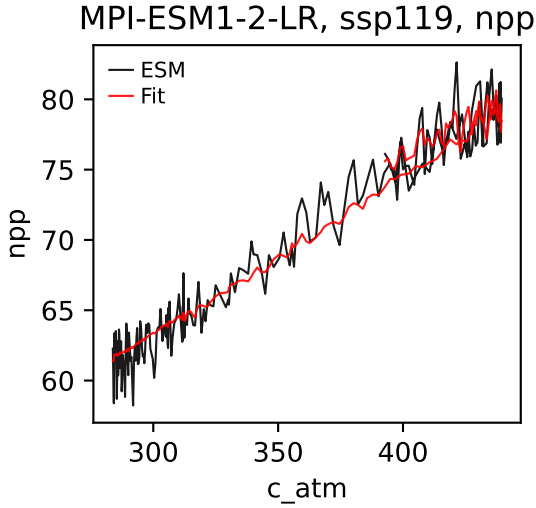

MPI-ESM1-2-LR, ssp119, sres, ln(MSE/SIGMA)
545, -0.9842, 157.5503, 1.5103, -0.0251, -0.0359, 0.9827, 0.7556, 0
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
sres_slow
MPI-ESM1-2-LR
0.90
0.92
0.94
0.96
0.98
1.00
sres_fast
1.80
1.65
1.50
1.35
1.20
1.05
0.90
0.75
0.60
0.45

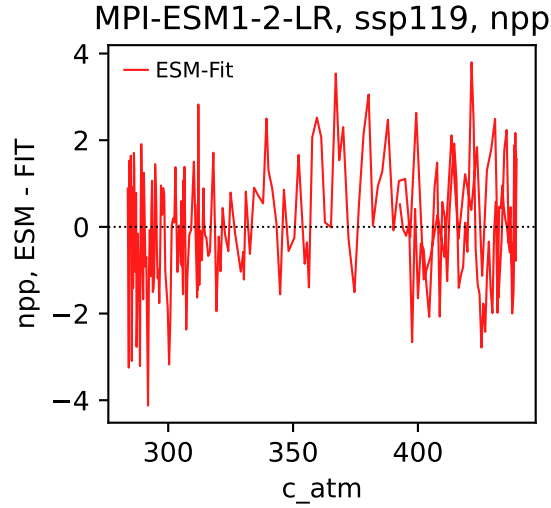

MPI-ESM1-2-LR, ssp119, npp
ESM
Fit
npp
Year

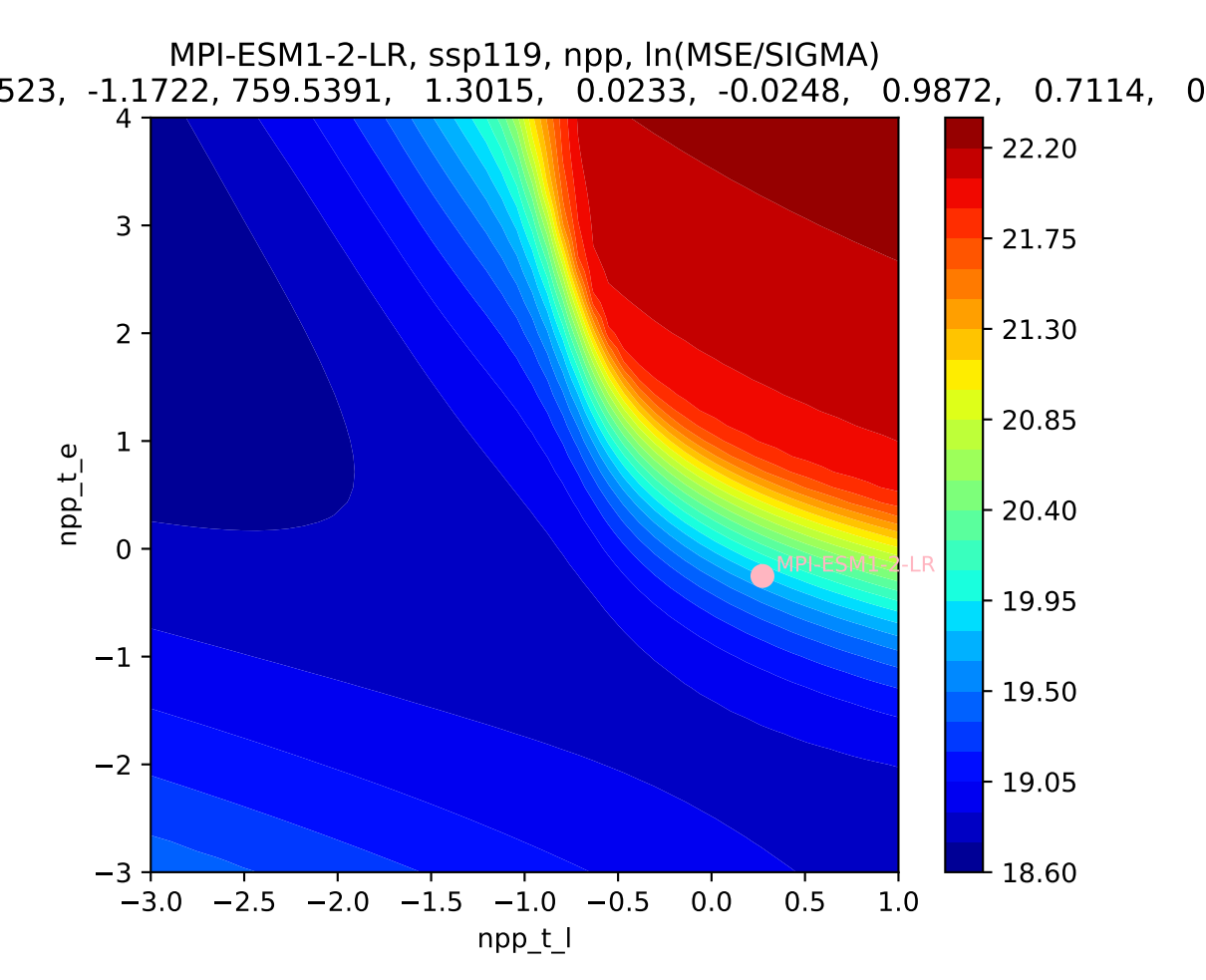

MPI-ESM1-2-LR, ssp119, npp
ESM-Fit
npp, ESM - FIT
Year

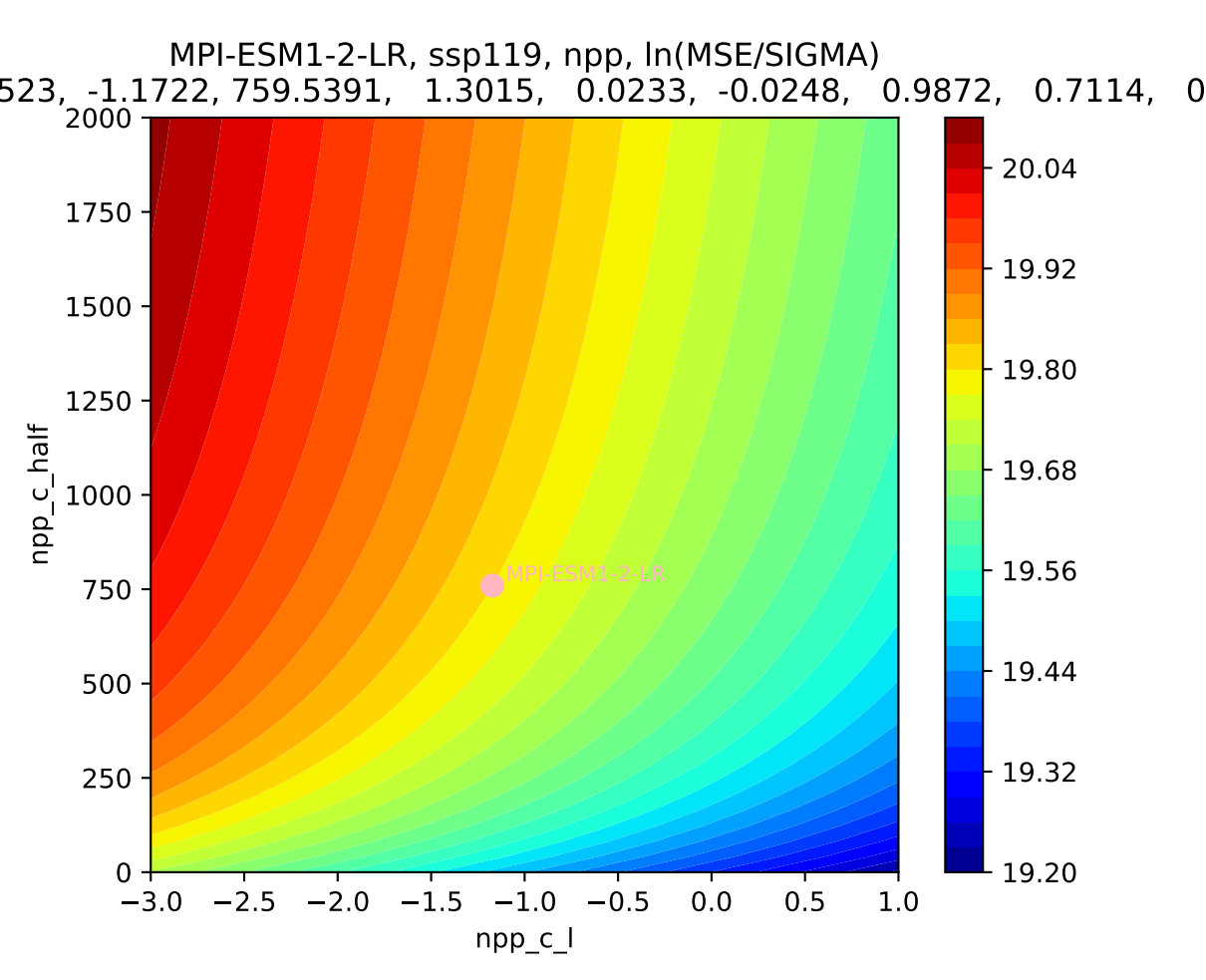

MPI-ESM1-2-LR, ssp119, npp
ESM
Fit
npp
ΔT

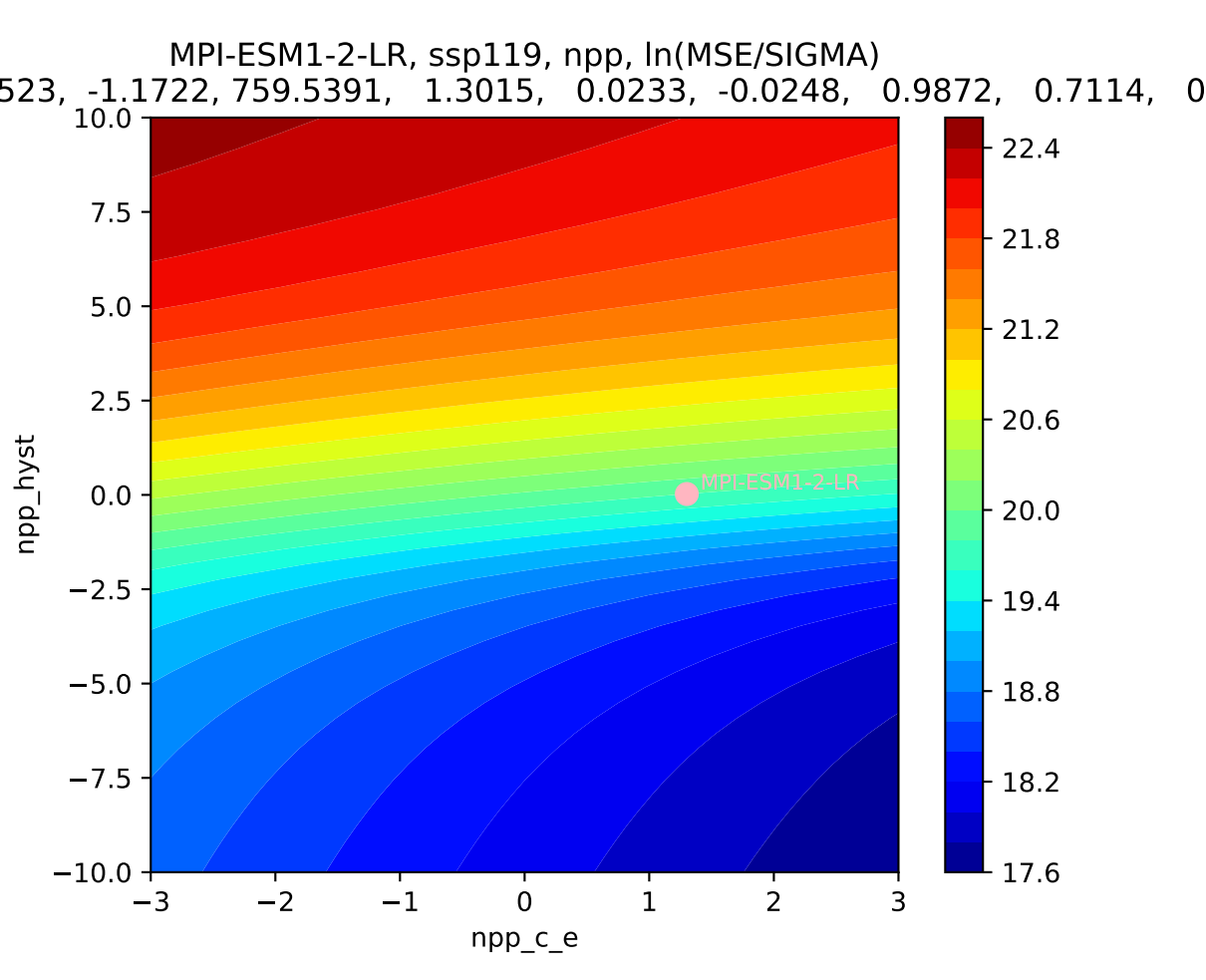

MPI-ESM1-2-LR, ssp119, npp
ESM-Fit
npp, ESM - FIT
ΔT

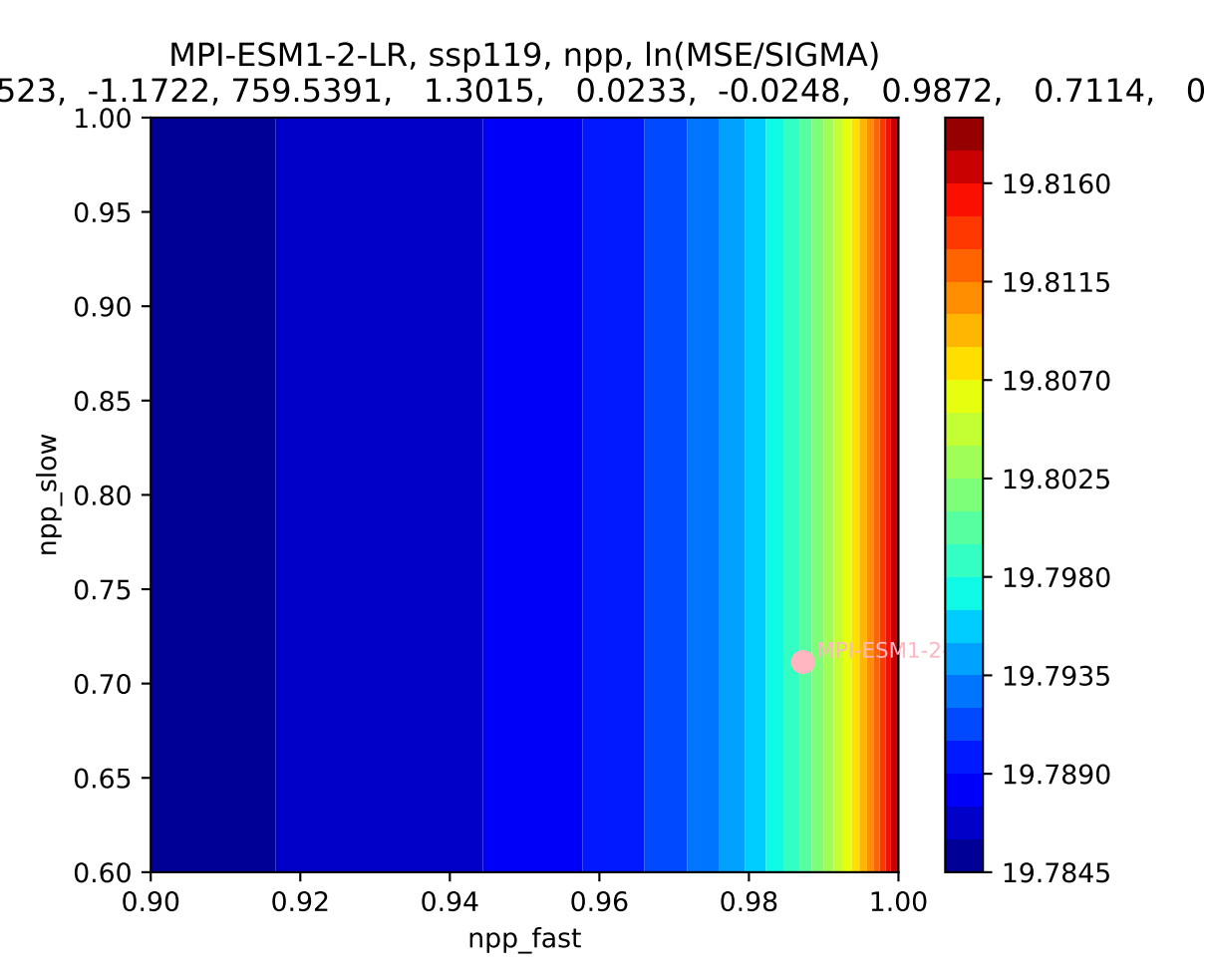

MPI-ESM1-2-LR, ssp119, npp
ESM
Fit
npp
c_atm

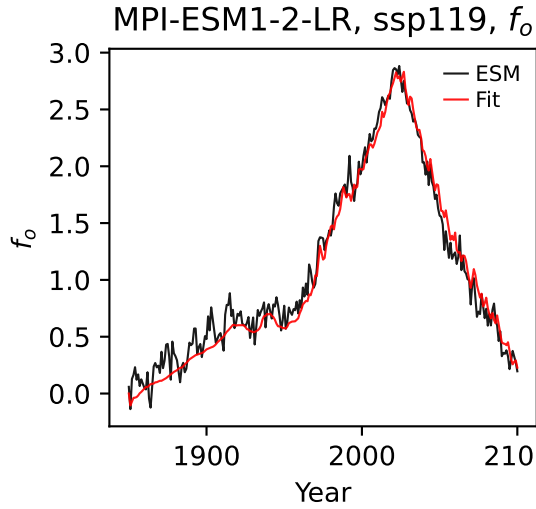

MPI-ESM1-2-LR, ssp119, npp
ESM-Fit
npp, ESM - FIT
c_atm

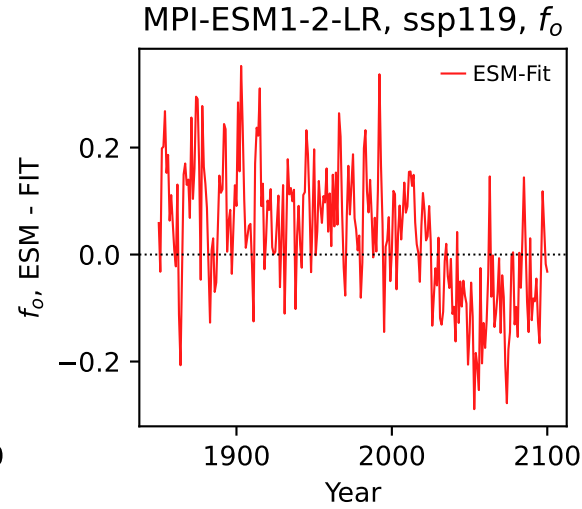

MPI-ESM1-2-LR, ssp119, npp, ln(MSE/SIGMA)
523, -1.1722, 759.5391, 1.3015, 0.0233, -0.0248, 0.9872, 0.7114, 0
MPI-ESM1-2-LR
npp_t_e
npp_t_l
4
3
2
1
0
−1
−2
−3
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
22.20
21.75
21.30
20.85
20.40
19.95
19.50
19.05
18.60

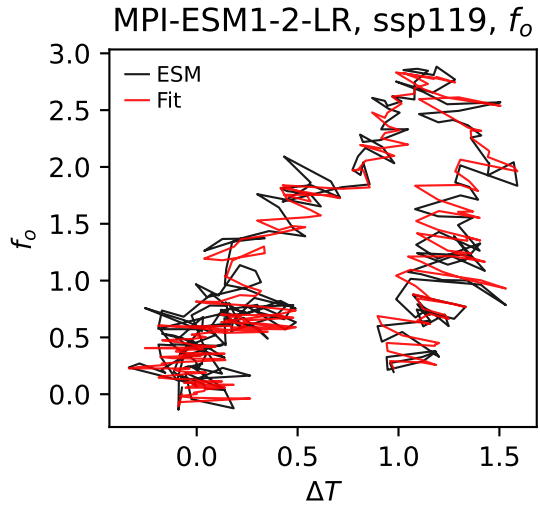

MPI-ESM1-2-LR, ssp119, npp, ln(MSE/SIGMA)
523, -1.1722, 759.5391, 1.3015, 0.0233, -0.0248, 0.9872, 0.7114, 0
MPI-ESM1-2-LR
npp_c_half
npp_c_l
2000
1750
1500
1250
1000
750
500
250
0
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
20.04
19.92
19.80
19.68
19.56
19.44
19.32
19.20

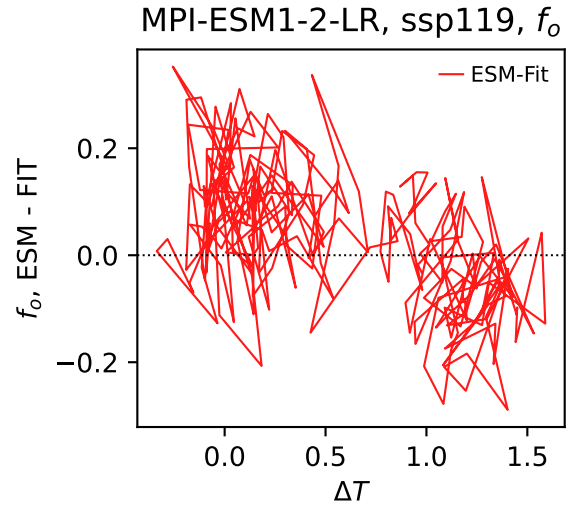

MPI-ESM1-2-LR, ssp119, npp, ln(MSE/SIGMA)
523, -1.1722, 759.5391, 1.3015, 0.0233, -0.0248, 0.9872, 0.7114, 0
MPI-ESM1-2-LR
npp_hyst
npp_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
22.4
21.8
21.2
20.6
20.0
19.4
18.8
18.2
17.6

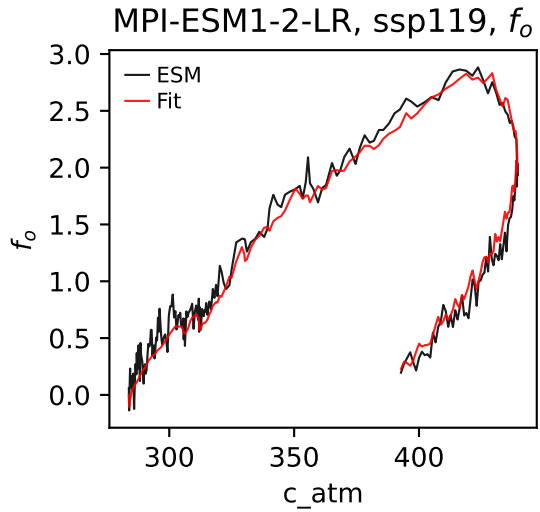

MPI-ESM1-2-LR, ssp119, npp, ln(MSE/SIGMA)
523, -1.1722, 759.5391, 1.3015, 0.0233, -0.0248, 0.9872, 0.7114, 0
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
npp_slow
0.90
0.92
0.94
0.96
0.98
1.00
npp_fast
MPI-ESM1-2
19.8160
19.8115
19.8070
19.8025
19.7980
19.7935
19.7890
19.7845

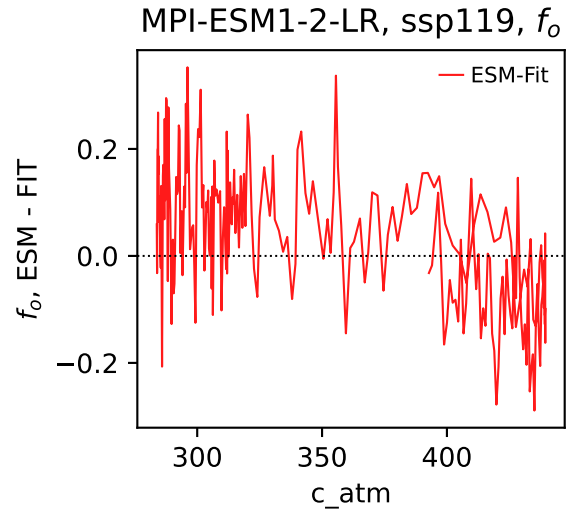

MPI-ESM1-2-LR, ssp119, f_o
ESM
Fit
f_o
Year

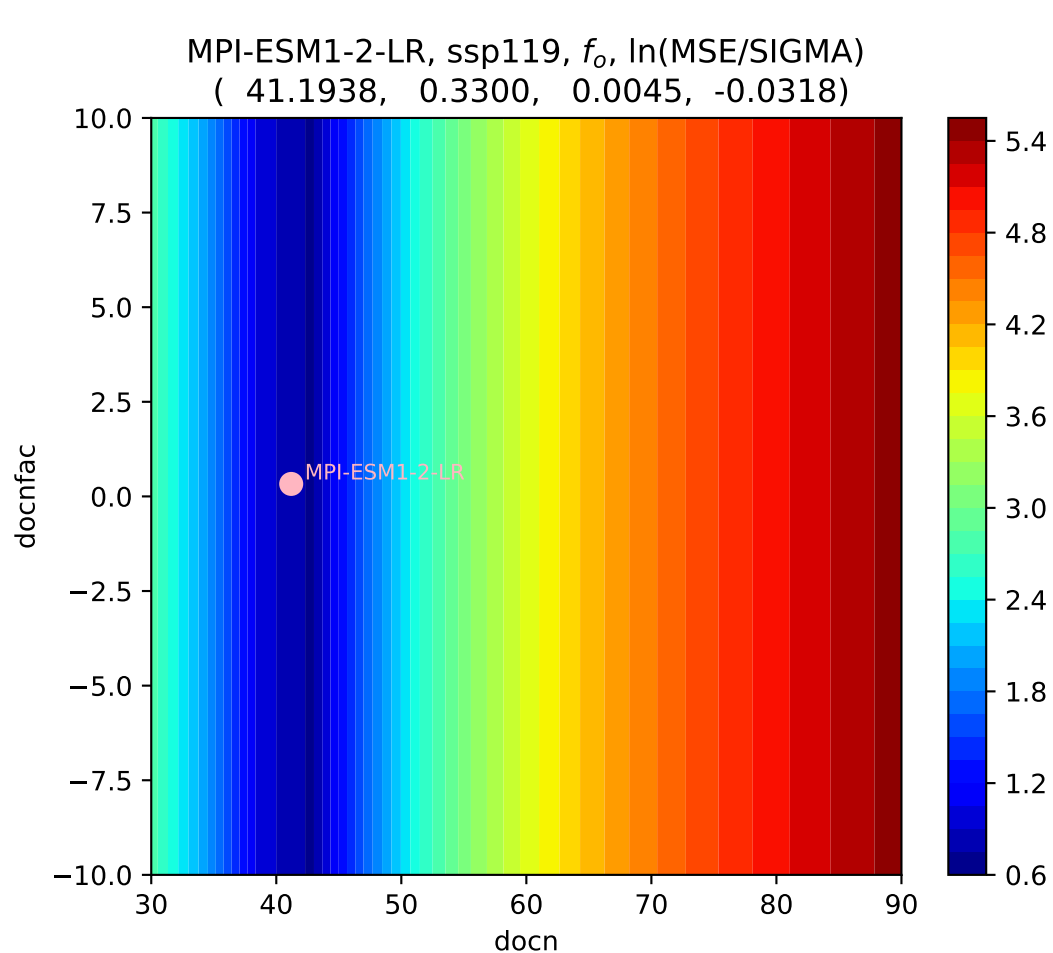

MPI-ESM1-2-LR, ssp119, f_o
ESM-Fit
f_o, ESM - FIT
Year

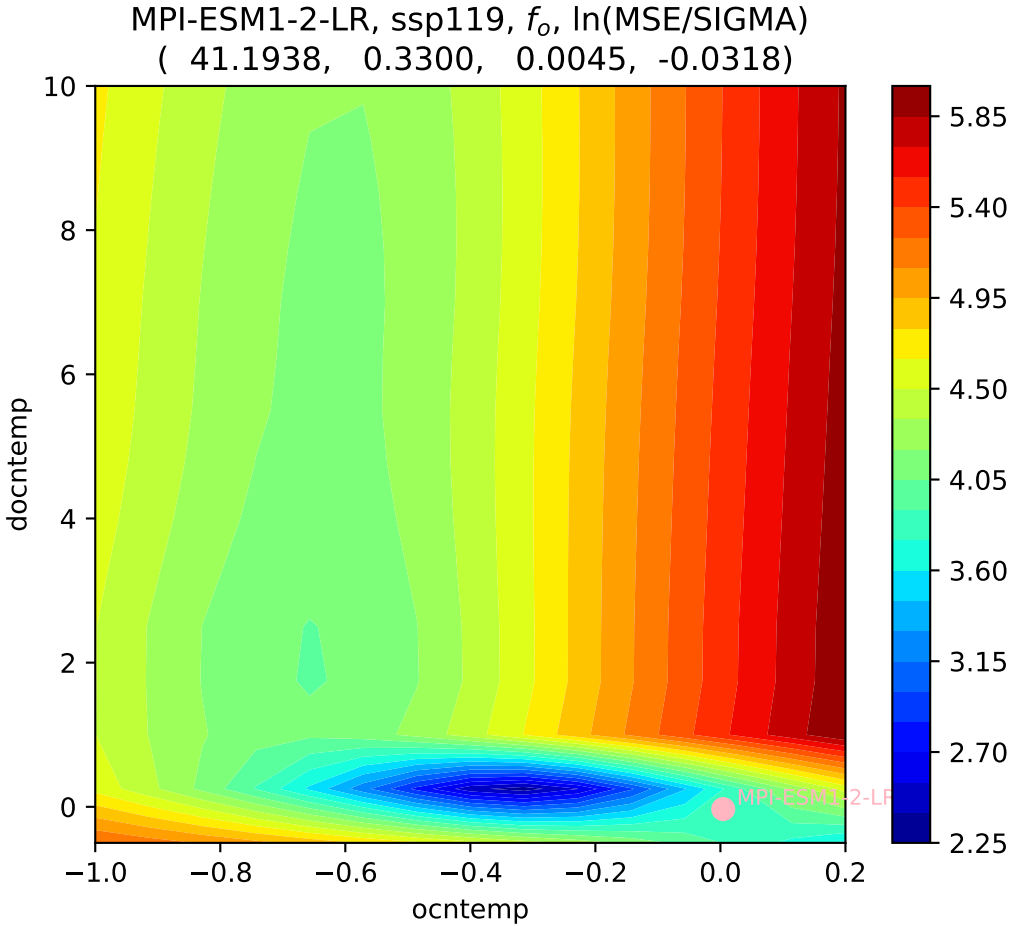

MPI-ESM1-2-LR, ssp119, f_o
ESM
Fit
f_o
ΔT


MPI-ESM1-2-LR, ssp119, f_o
ESM-Fit
f_o, ESM - FIT
ΔT


MPI-ESM1-2-LR, ssp119, f_o
ESM
Fit
f_o
c_atm


MPI-ESM1-2-LR, ssp119, f_o
ESM-Fit
f_o, ESM - FIT
c_atm


MPI-ESM1-2-LR, ssp119, f_o, ln(MSE/SIGMA)
(41.1938, 0.3300, 0.0045, -0.0318)
MPI-ESM1-2-LR
docnfac
docn
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
30
40
50
60
70
80
90
5.4
4.8
4.2
3.6
3.0
2.4
1.8
1.2
0.6


MPI-ESM1-2-LR, ssp119, f_o, ln(MSE/SIGMA)
(41.1938, 0.3300, 0.0045, -0.0318)
docntemp
ocntemp
10
8
6
4
2
0
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
5.85
5.40
4.95
4.50
4.05
3.60
3.15
2.70
2.25
MPI-ESM1-2-LR