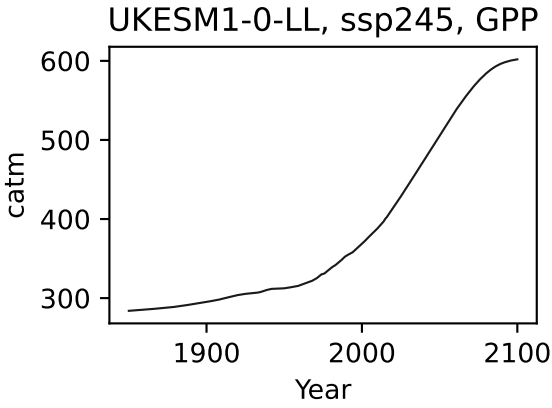
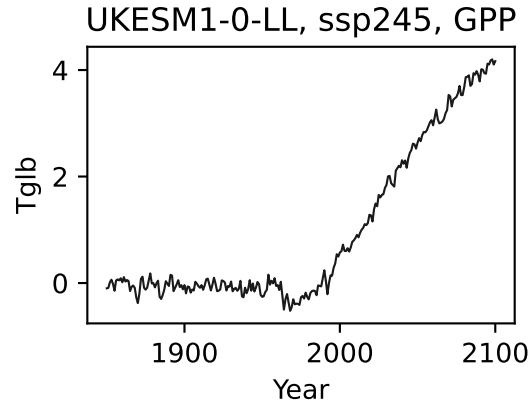
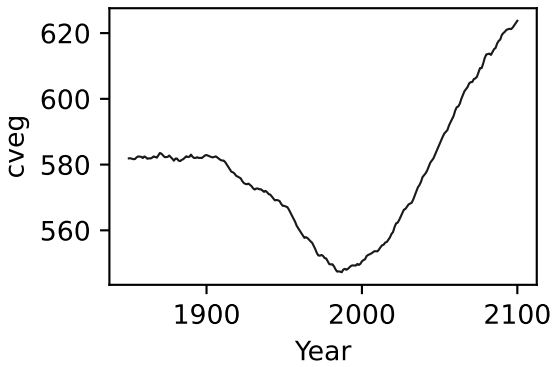
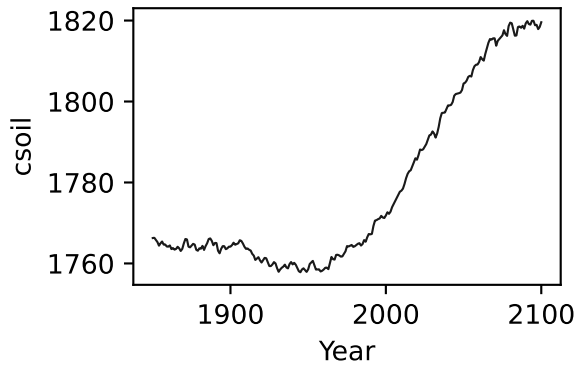
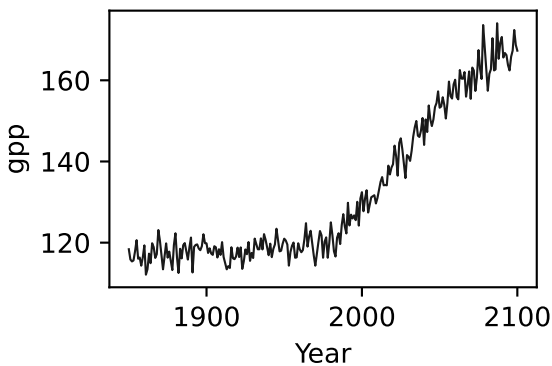
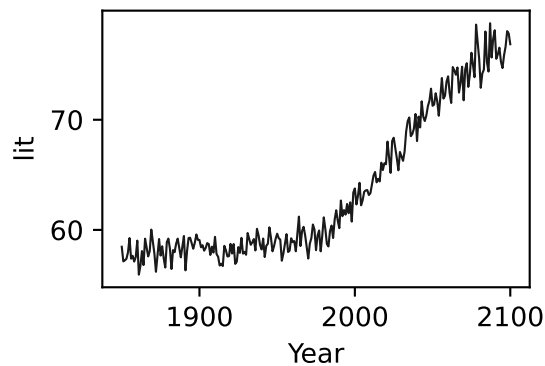

UKESM1-0-LL, ssp245, GPP
catm
600
500
400
300
1900
2000
2100
Year

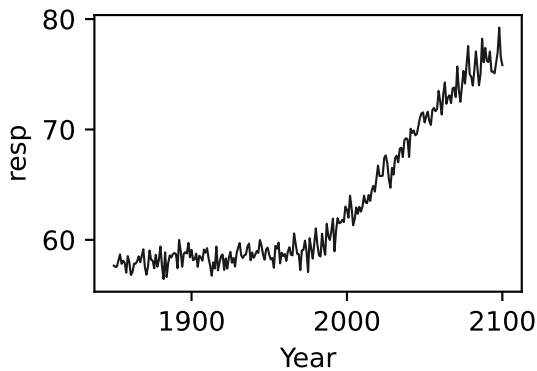

UKESM1-0-LL, ssp245, GPP
Tglb
4
2
0
1900
2000
2100
Year

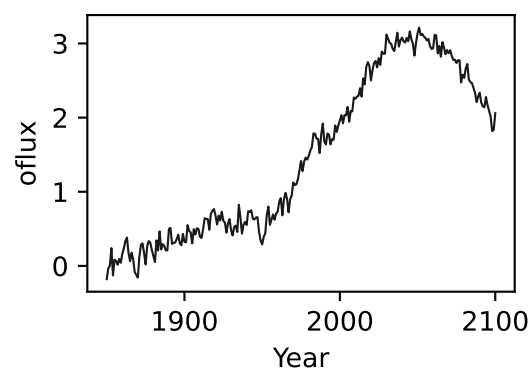

cveg
620
600
580
560
1900
2000
2100
Year

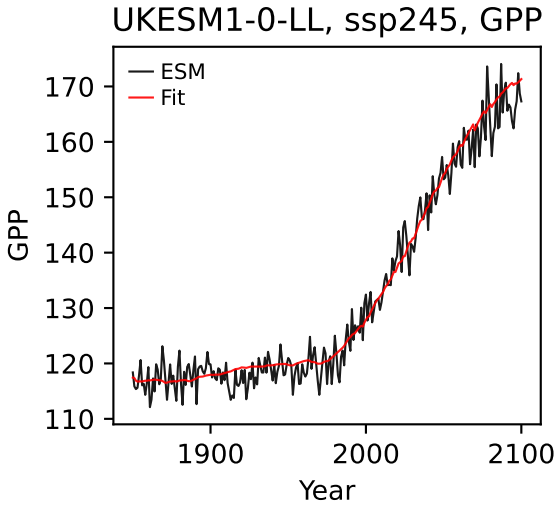

csoil
1820
1800
1780
1760
1900
2000
2100
Year

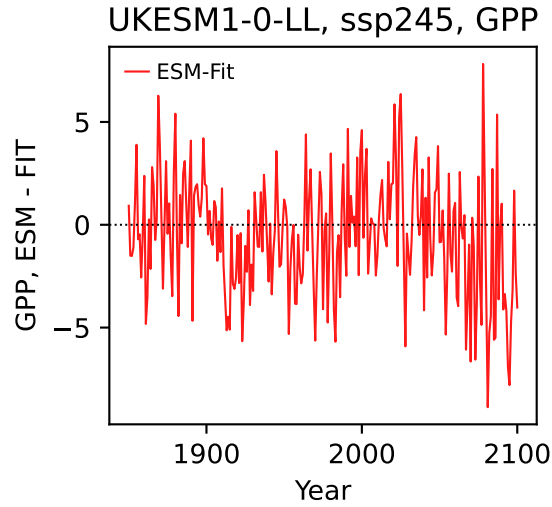

gpp
160
140
120
1900
2000
2100
Year

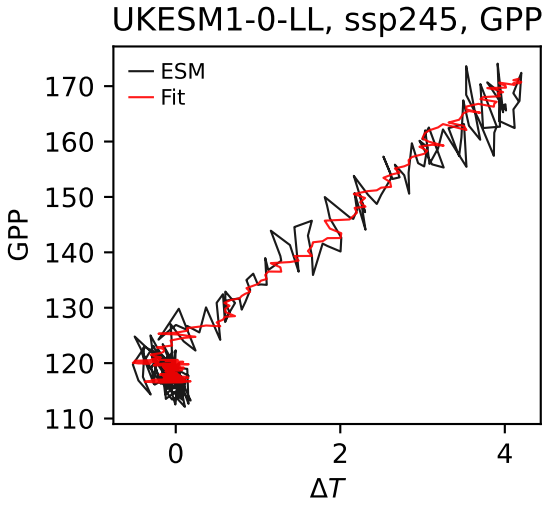

lit
70
60
1900
2000
2100
Year

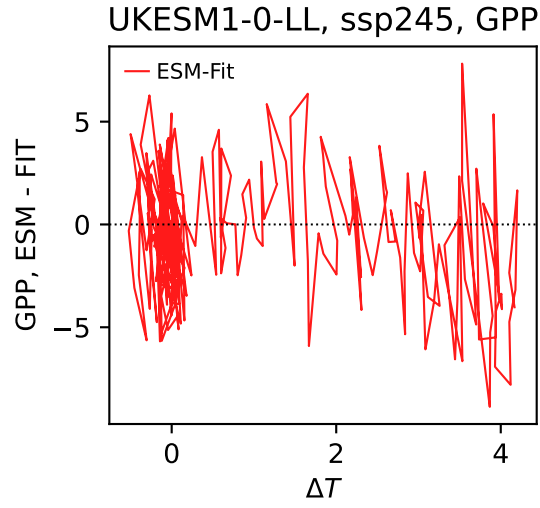

resp
80
70
60
1900
2000
2100
Year

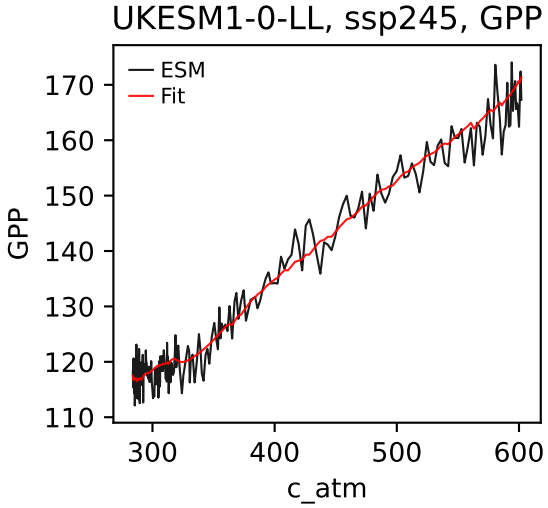

oflux
3
2
1
0
1900
2000
2100
Year

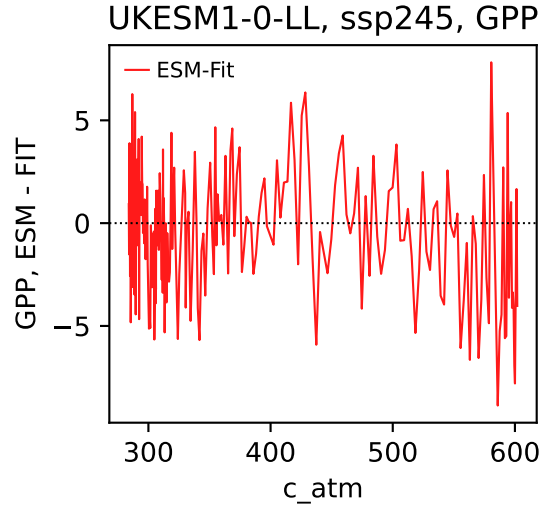

UKESM1-0-LL, ssp245, GPP
ESM
Fit
GPP
Year

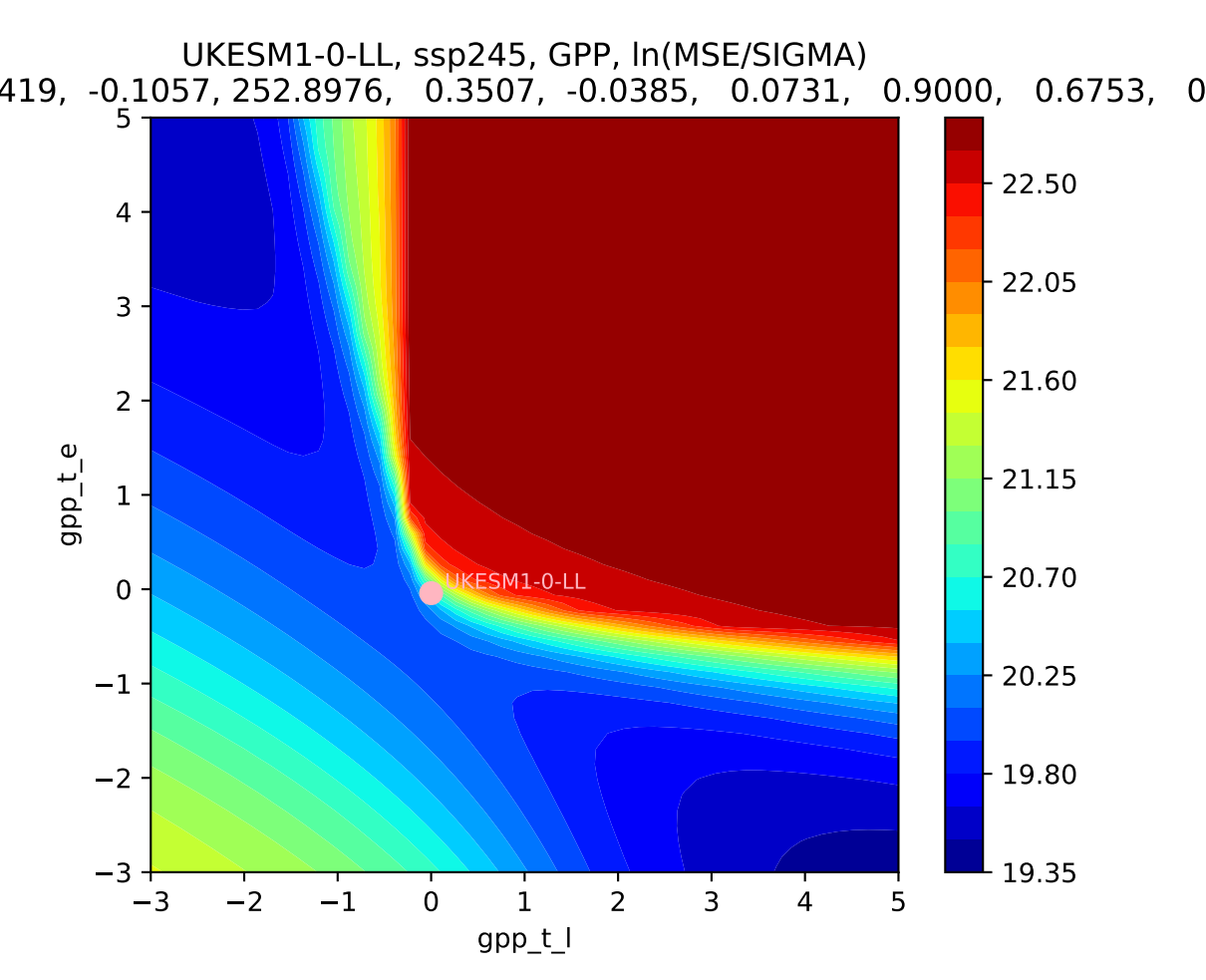

UKESM1-0-LL, ssp245, GPP
ESM-Fit
GPP, ESM - FIT
Year

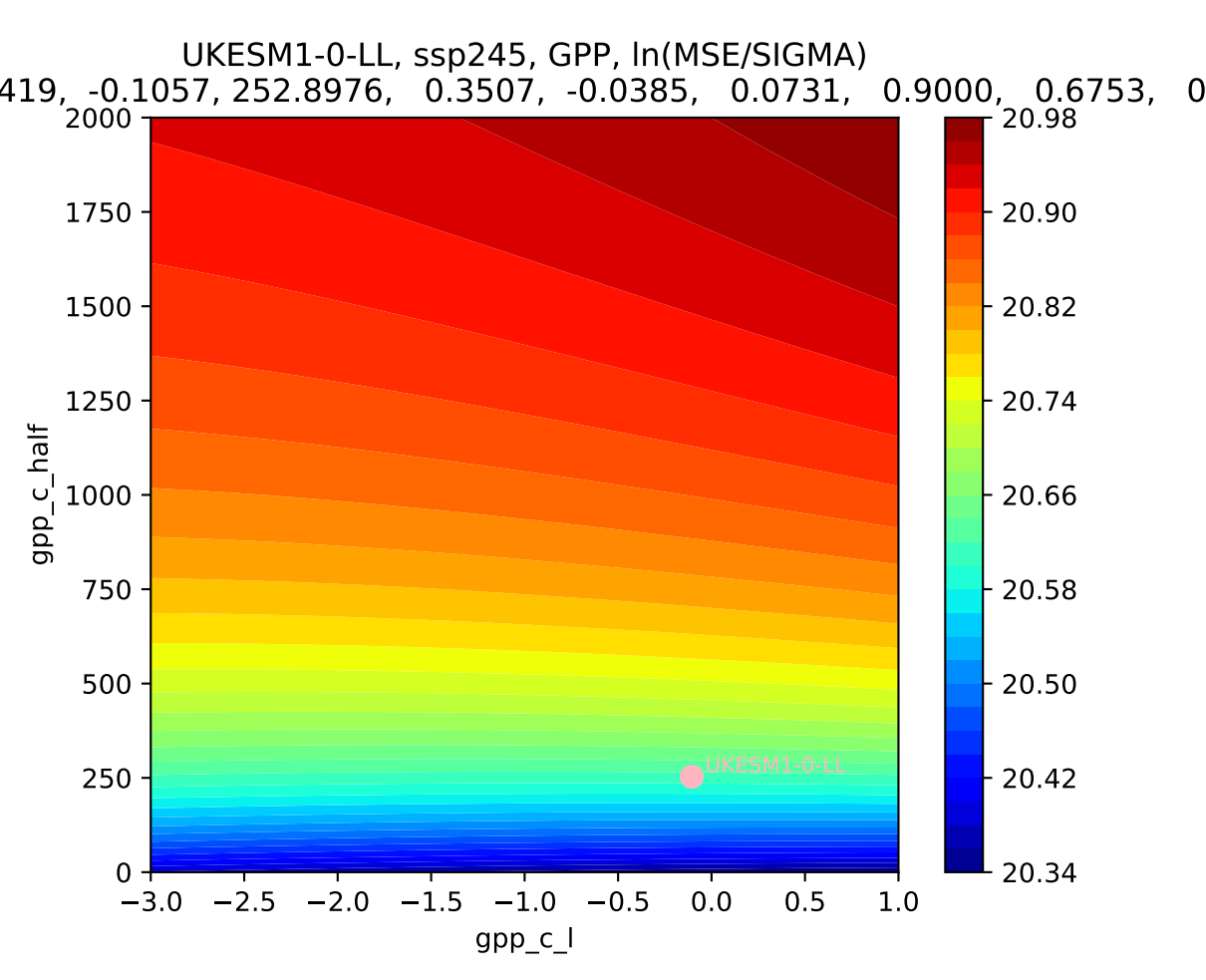

UKESM1-0-LL, ssp245, GPP
ESM
Fit
GPP
ΔT

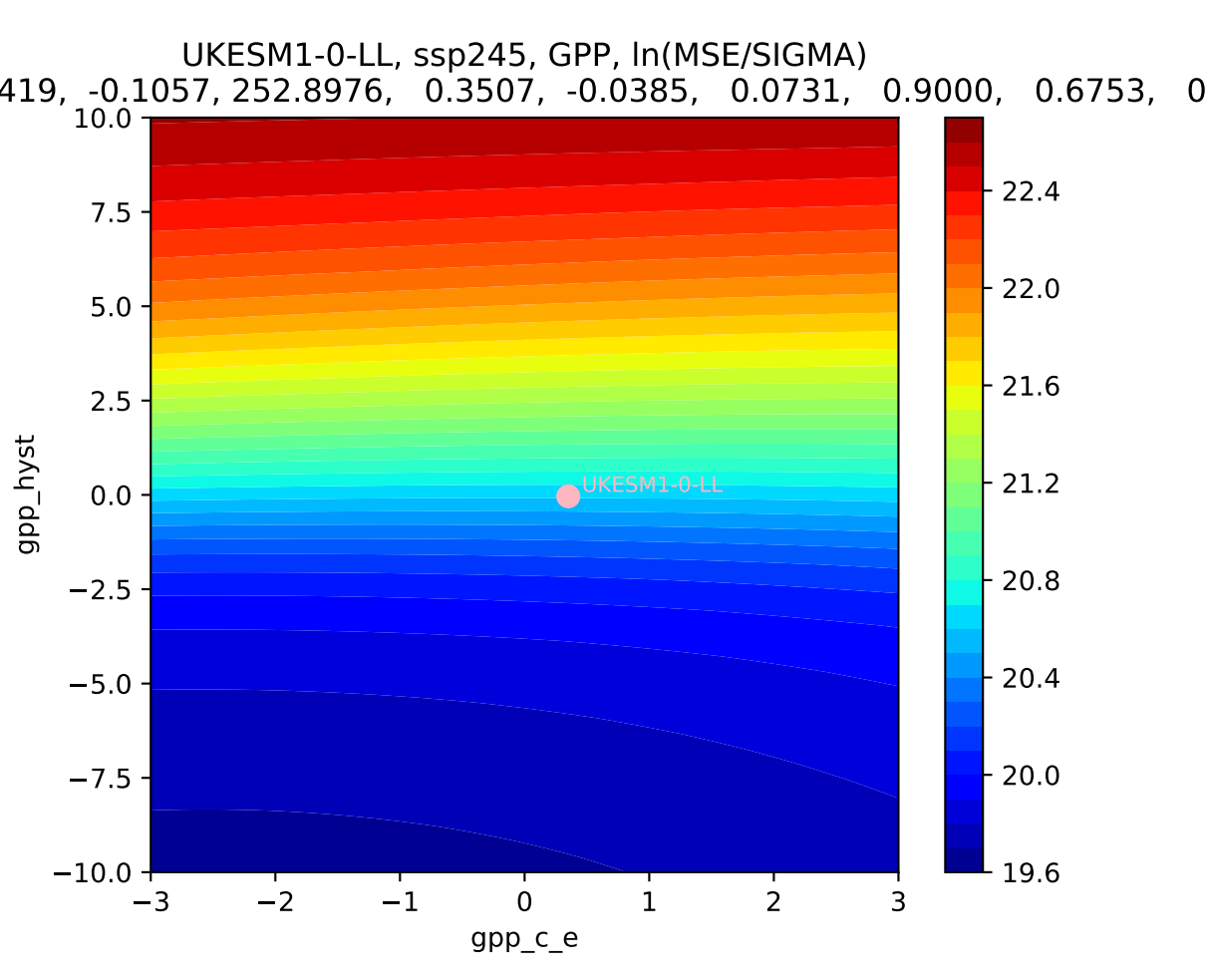

UKESM1-0-LL, ssp245, GPP
ESM-Fit
GPP, ESM - FIT
ΔT

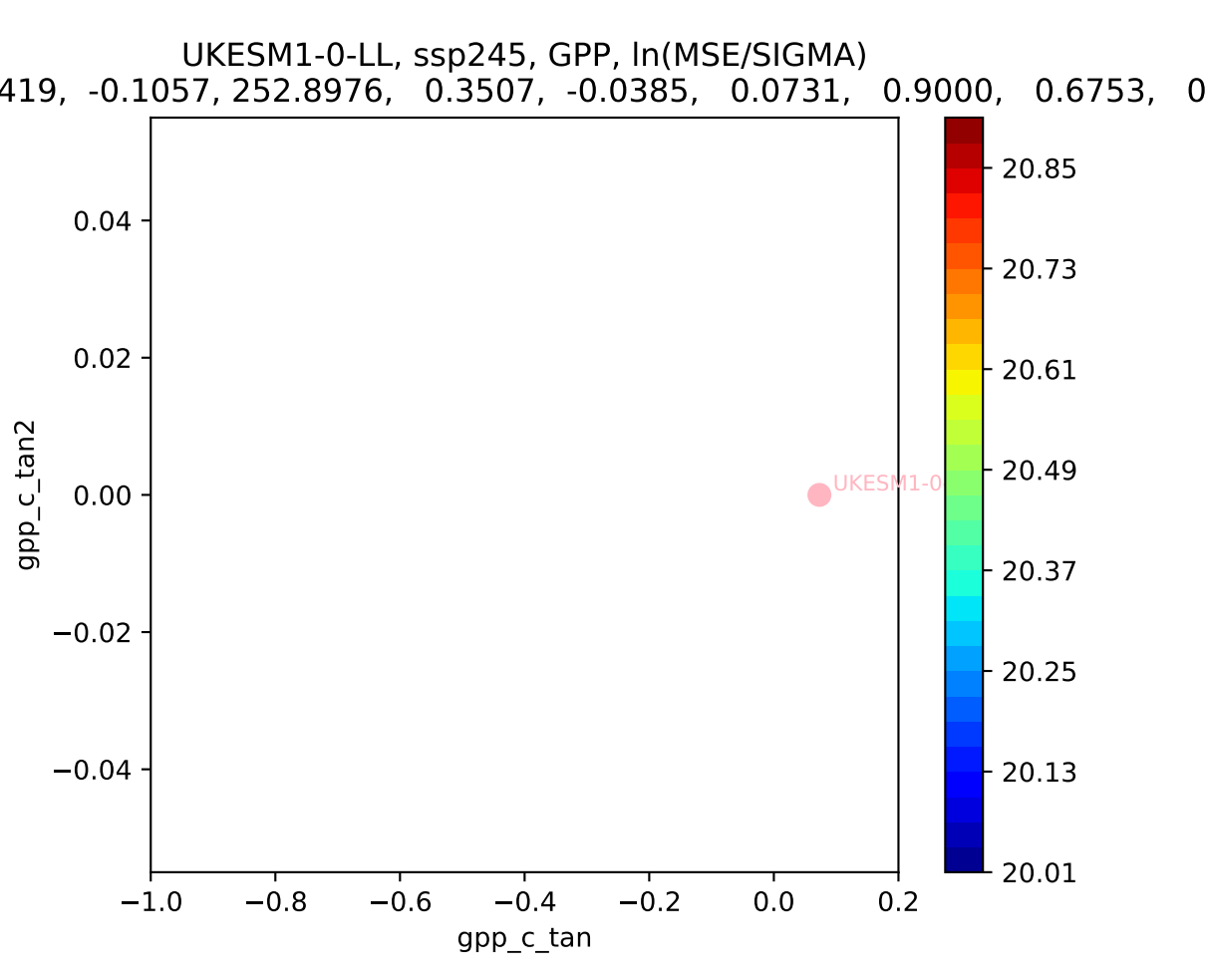

UKESM1-0-LL, ssp245, GPP
ESM
Fit
GPP
c_atm

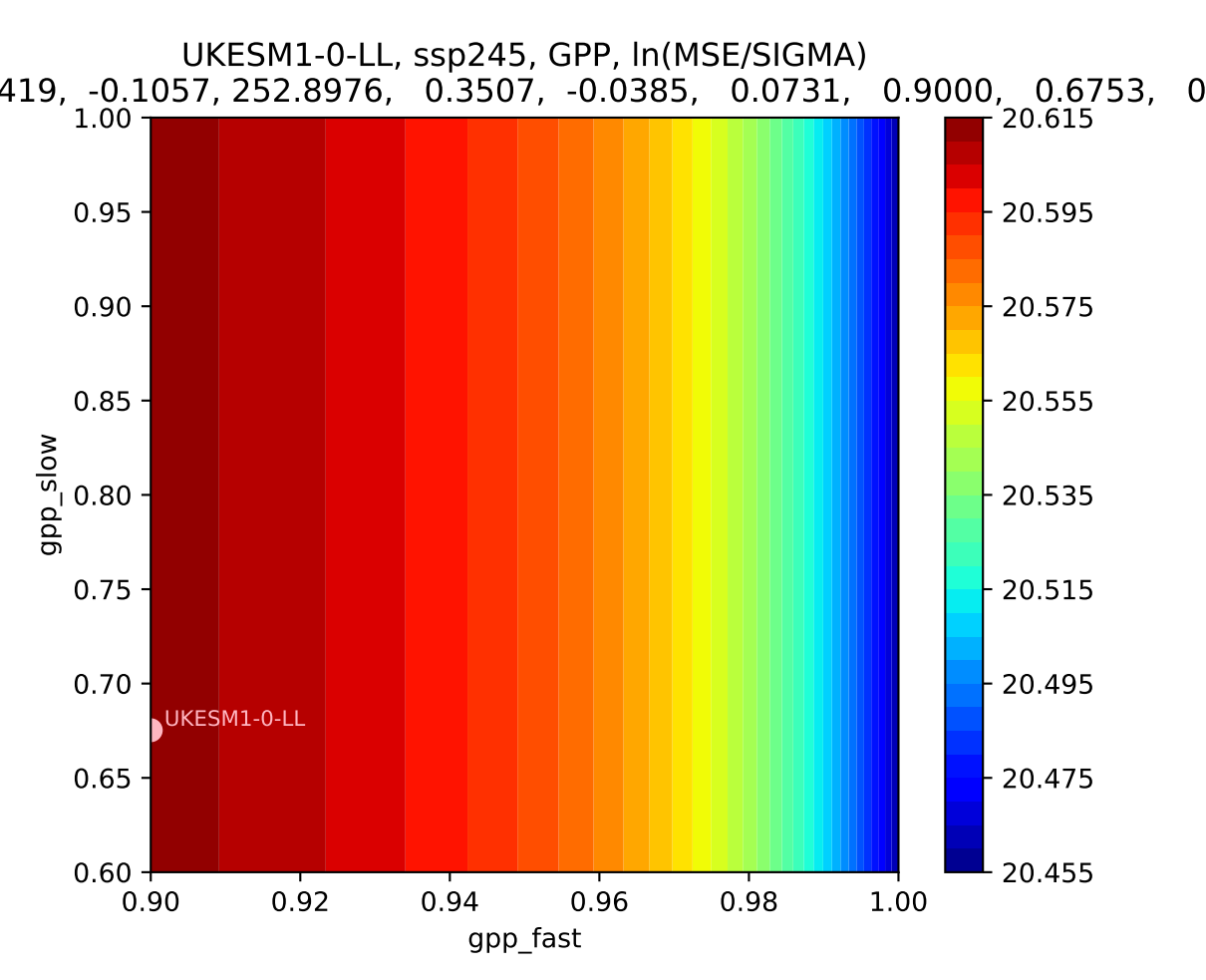

UKESM1-0-LL, ssp245, GPP
ESM-Fit
GPP, ESM - FIT
c_atm

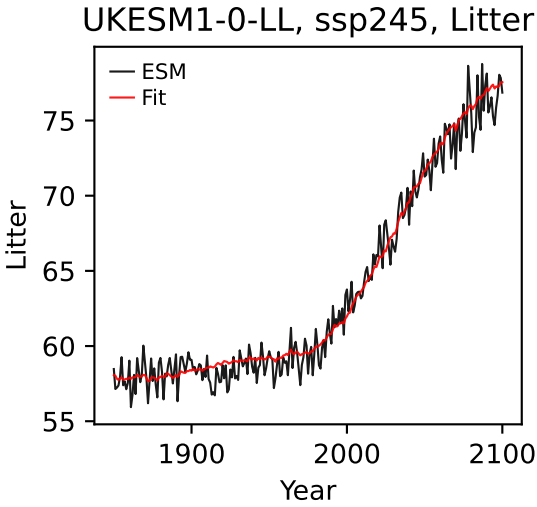

UKESM1-0-LL, ssp245, GPP, ln(MSE/SIGMA)
419, -0.1057, 252.8976, 0.3507, -0.0385, 0.0731, 0.9000, 0.6753, 0
UKESM1-0-LL
gpp_t_e
gpp_t_l
5
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4
5
22.50
22.05
21.60
21.15
20.70
20.25
19.80
19.35

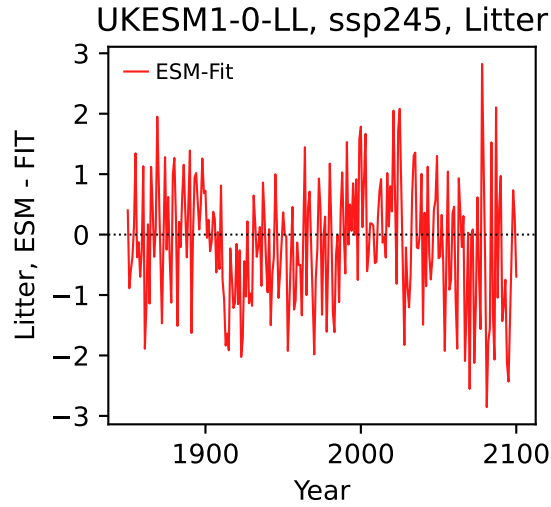

UKESM1-0-LL, ssp245, GPP, ln(MSE/SIGMA)
419, -0.1057, 252.8976, 0.3507, -0.0385, 0.0731, 0.9000, 0.6753, 0
gpp_c_half
gpp_c_l
UKESM1-0-LL
2000
1750
1500
1250
1000
750
500
250
0
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
20.98
20.90
20.82
20.74
20.66
20.58
20.50
20.42
20.34

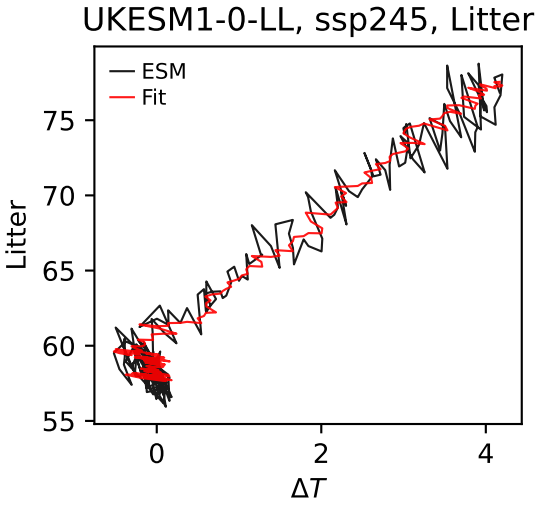

UKESM1-0-LL, ssp245, GPP, ln(MSE/SIGMA)
419, -0.1057, 252.8976, 0.3507, -0.0385, 0.0731, 0.9000, 0.6753, 0
UKESM1-0-LL
gpp_hyst
gpp_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
22.4
22.0
21.6
21.2
20.8
20.4
20.0
19.6

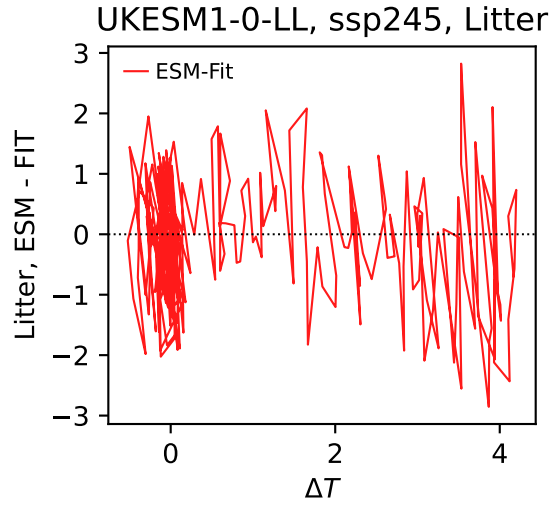

UKESM1-0-LL, ssp245, GPP, ln(MSE/SIGMA)
419, -0.1057, 252.8976, 0.3507, -0.0385, 0.0731, 0.9000, 0.6753, 0
0.04
0.02
0.00
−0.02
−0.04
gpp_c_tan2
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
gpp_c_tan
UKESM1-0
20.85
20.73
20.61
20.49
20.37
20.25
20.13
20.01

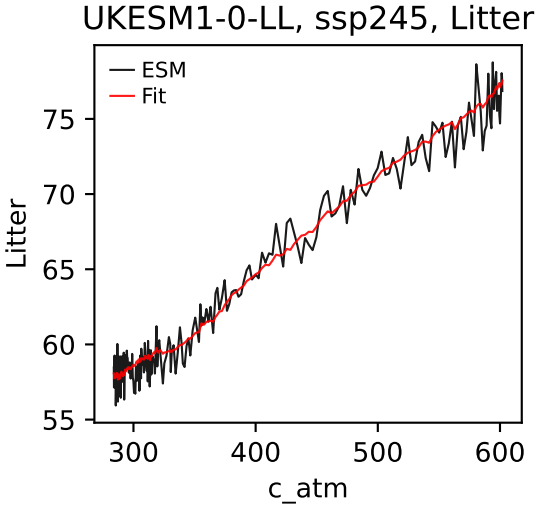

UKESM1-0-LL, ssp245, GPP, ln(MSE/SIGMA)
419, -0.1057, 252.8976, 0.3507, -0.0385, 0.0731, 0.9000, 0.6753, 0
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
gpp_slow
UKESM1-0-LL
0.90
0.92
0.94
0.96
0.98
1.00
gpp_fast
20.615
20.595
20.575
20.555
20.535
20.515
20.495
20.475
20.455

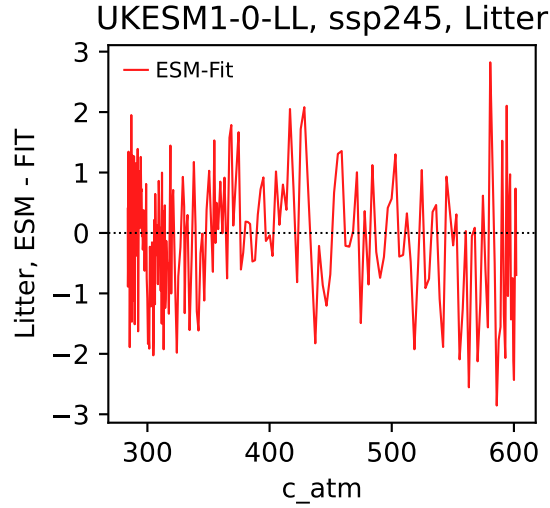

UKESM1-0-LL, ssp245, Litter
ESM
Fit
Litter
Year

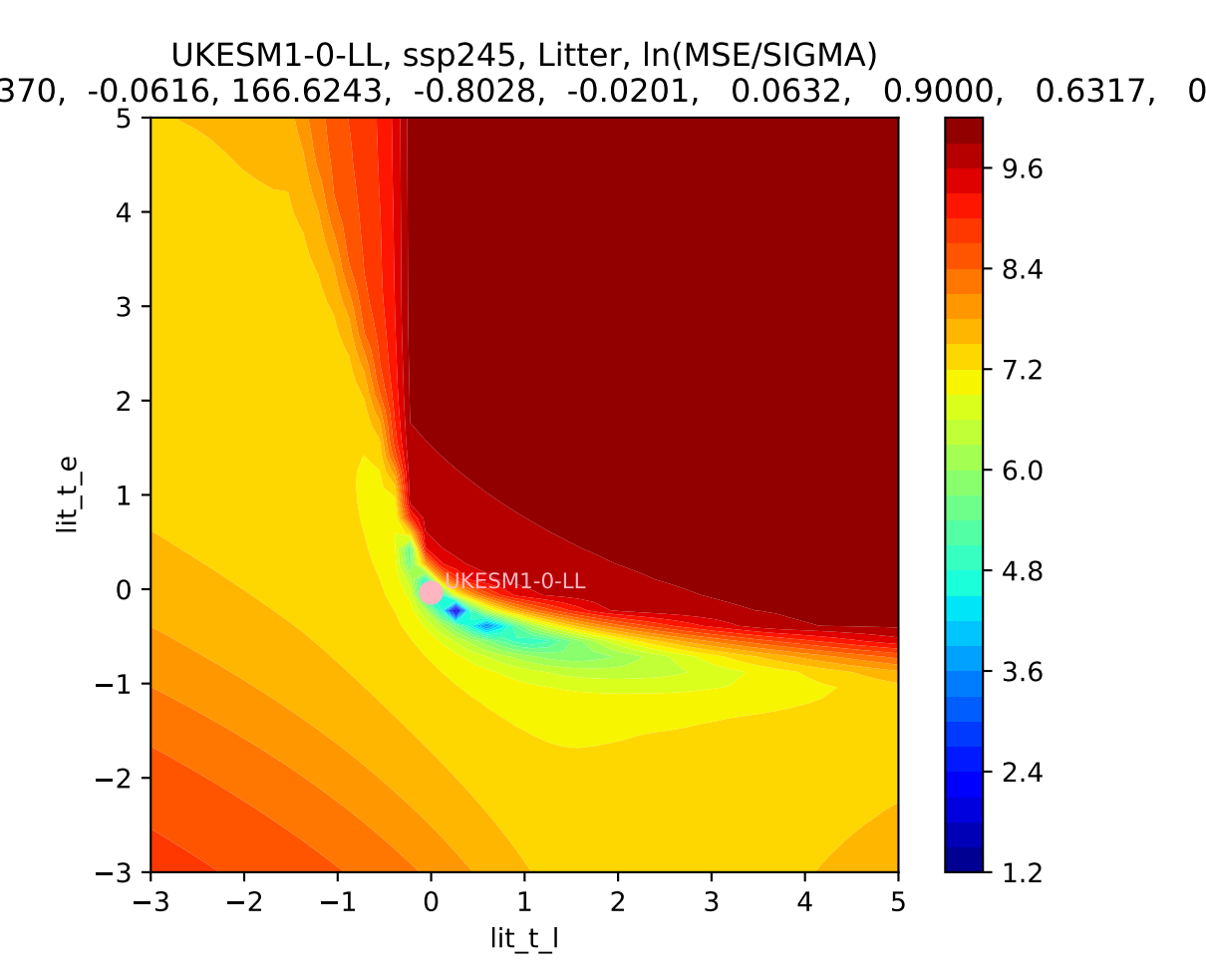

UKESM1-0-LL, ssp245, Litter
ESM-Fit
Litter, ESM - FIT
Year

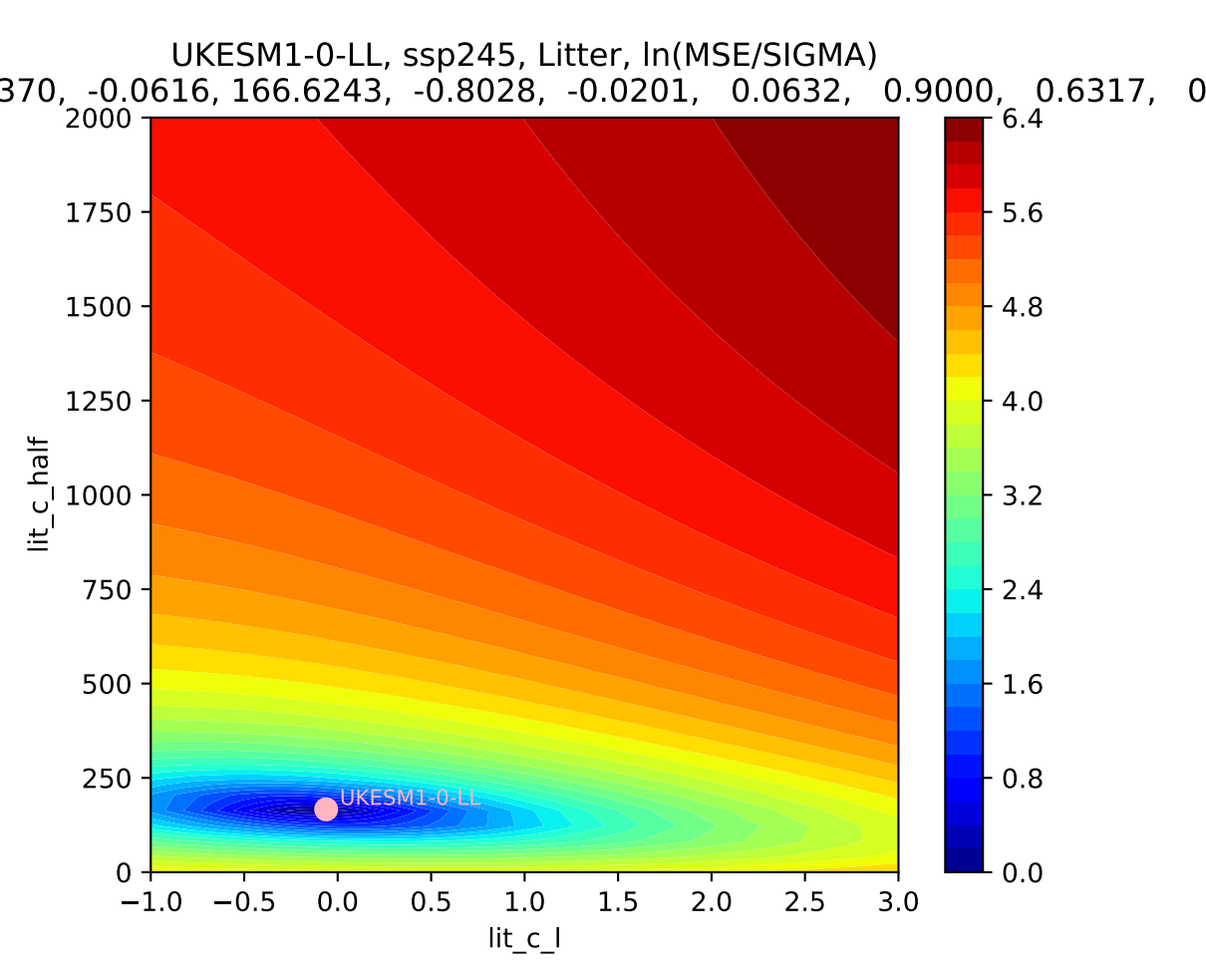

UKESM1-0-LL, ssp245, Litter
ESM
Fit
Litter
ΔT

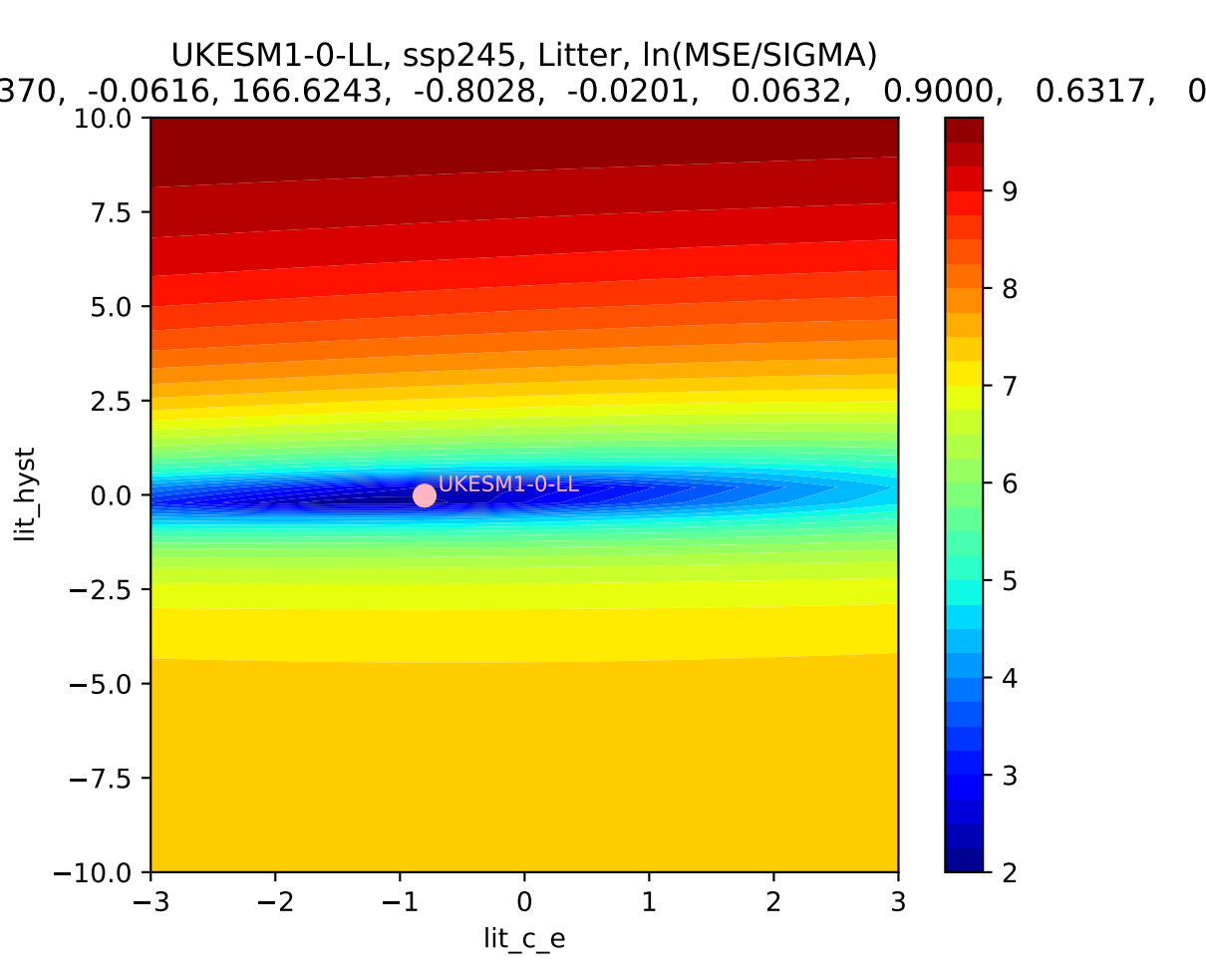

UKESM1-0-LL, ssp245, Litter
ESM-Fit
Litter, ESM - FIT
ΔT

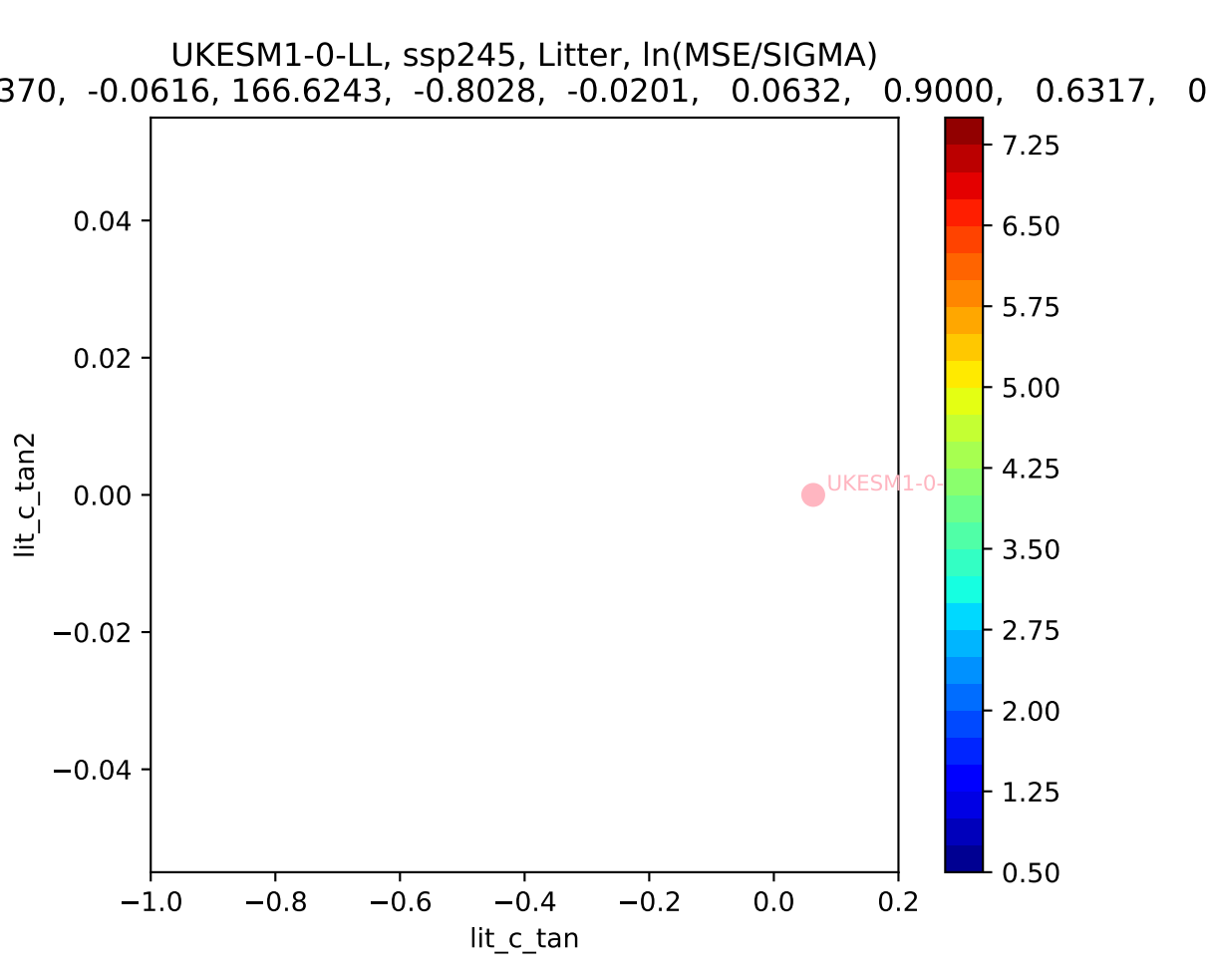

UKESM1-0-LL, ssp245, Litter
ESM
Fit
Litter
c_atm

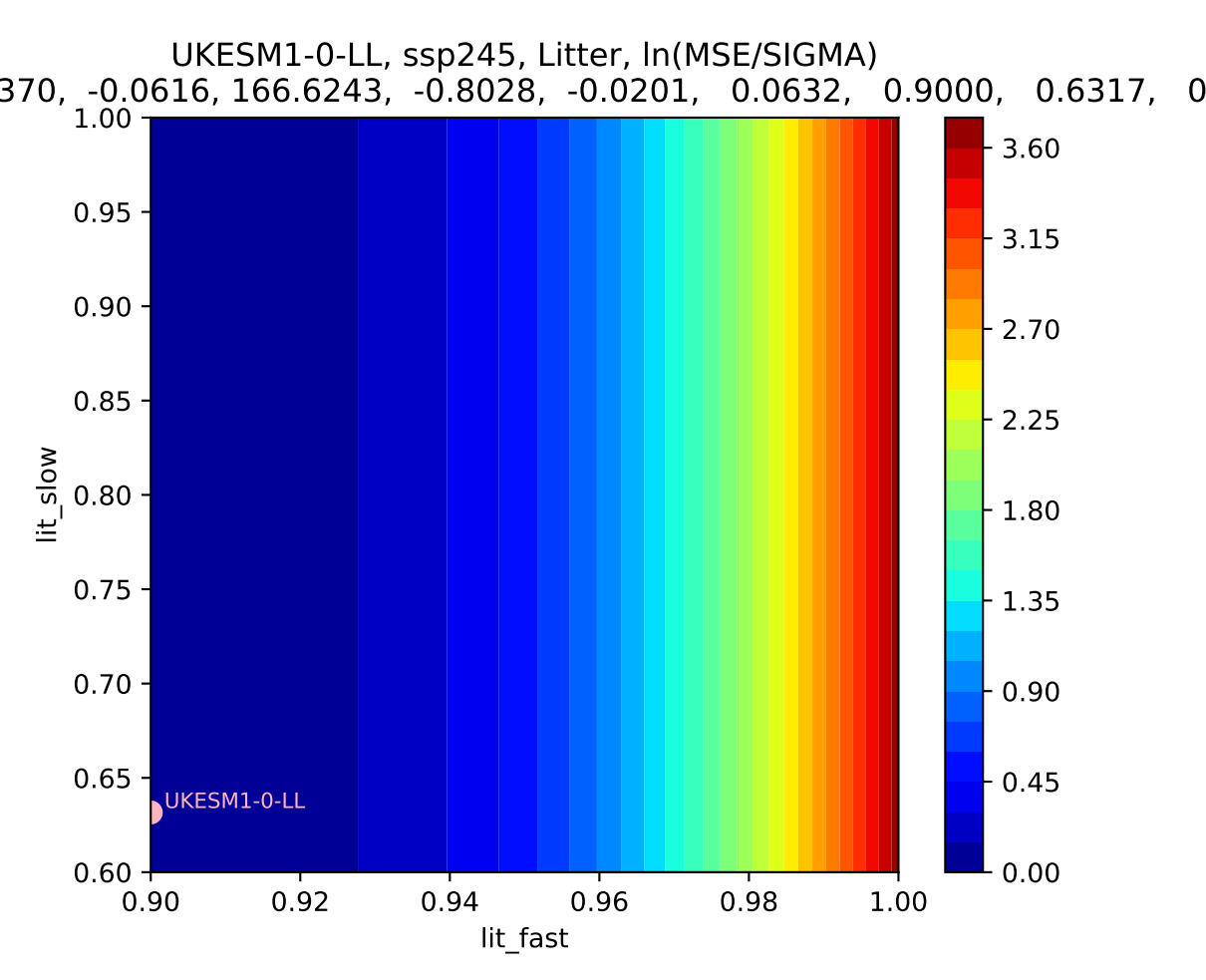

UKESM1-0-LL, ssp245, Litter
ESM-Fit
Litter, ESM - FIT
c_atm

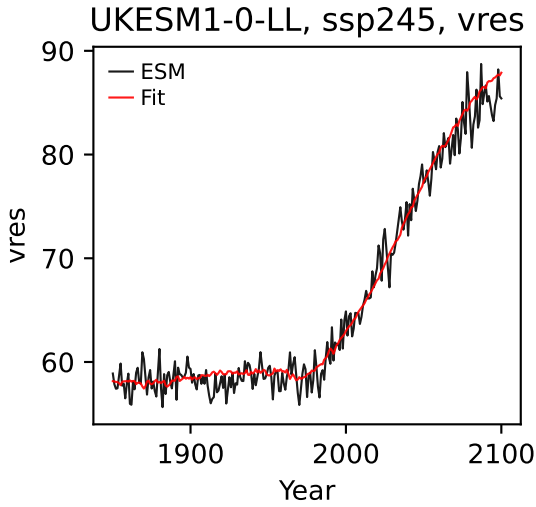

UKESM1-0-LL, ssp245, Litter, ln(MSE/SIGMA)
370, -0.0616, 166.6243, -0.8028, -0.0201, 0.0632, 0.9000, 0.6317, 0
UKESM1-0-LL
lit_t_e
lit_t_l
5
4
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3
4
5
9.6
8.4
7.2
6.0
4.8
3.6
2.4
1.2

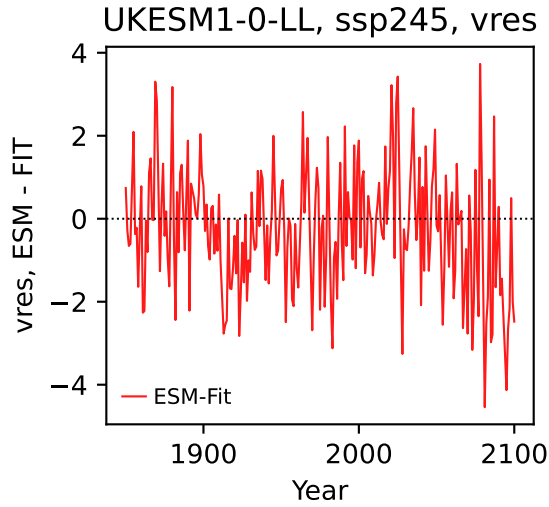

UKESM1-0-LL, ssp245, Litter, ln(MSE/SIGMA)
370, -0.0616, 166.6243, -0.8028, -0.0201, 0.0632, 0.9000, 0.6317, 0
lit_c_half
lit_c_l
UKESM1-0-LL
2000
1750
1500
1250
1000
750
500
250
0
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
6.4
5.6
4.8
4.0
3.2
2.4
1.6
0.8
0.0

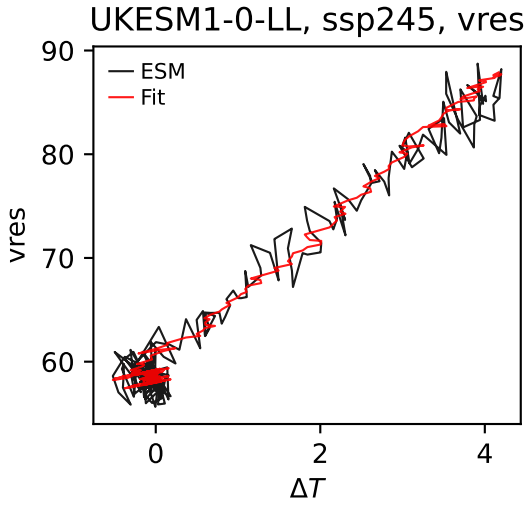

UKESM1-0-LL, ssp245, Litter, ln(MSE/SIGMA)
370, -0.0616, 166.6243, -0.8028, -0.0201, 0.0632, 0.9000, 0.6317, 0
UKESM1-0-LL
lit_hyst
lit_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
9
8
7
6
5
4
3
2

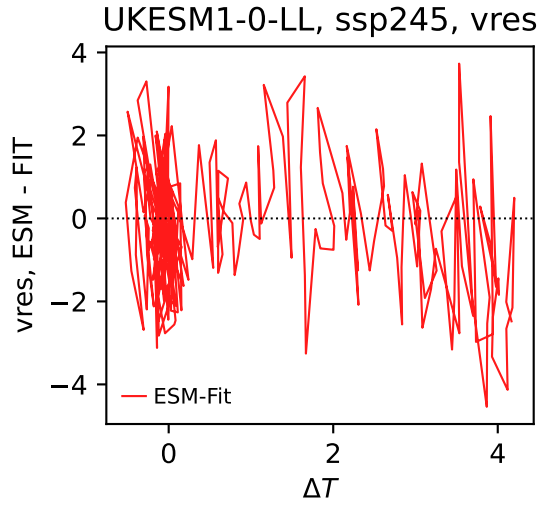

UKESM1-0-LL, ssp245, Litter, ln(MSE/SIGMA)
370, -0.0616, 166.6243, -0.8028, -0.0201, 0.0632, 0.9000, 0.6317, 0
UKESM1-0-
lit_c_tan2
lit_c_tan
0.04
0.02
0.00
−0.02
−0.04
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
7.25
6.50
5.75
5.00
4.25
3.50
2.75
2.00
1.25
0.50

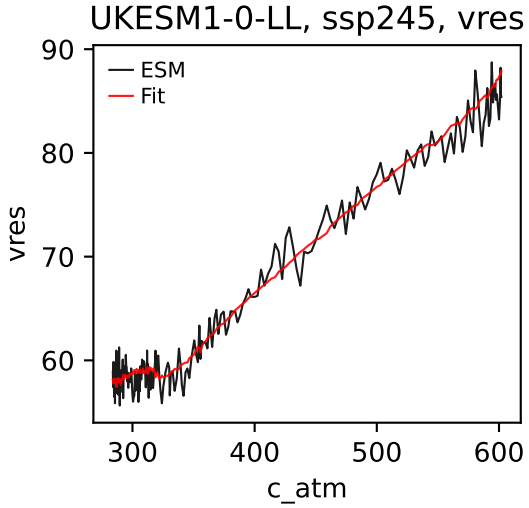

UKESM1-0-LL, ssp245, Litter, ln(MSE/SIGMA)
370, -0.0616, 166.6243, -0.8028, -0.0201, 0.0632, 0.9000, 0.6317, 0
lit_slow
lit_fast
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
3.60
3.15
2.70
2.25
1.80
1.35
0.90
0.45
0.00
UKESM1-0-LL

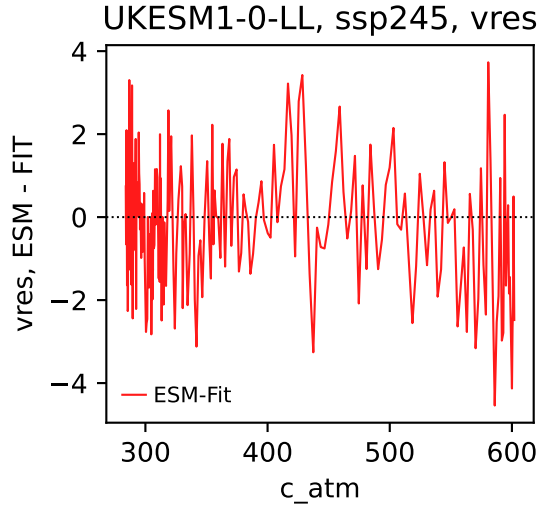

UKESM1-0-LL, ssp245, vres
ESM
Fit
vres
Year

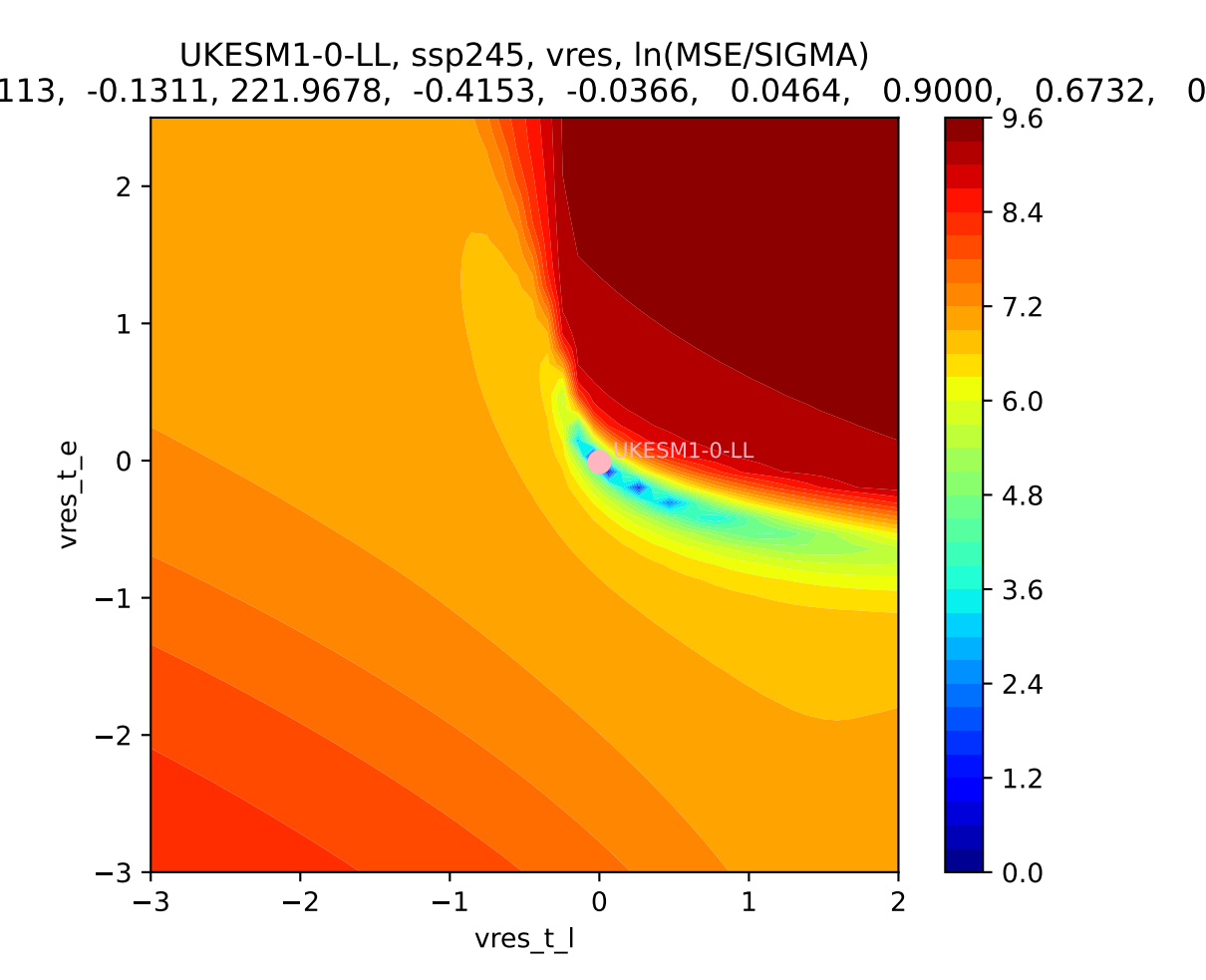

UKESM1-0-LL, ssp245, vres
vres, ESM - FIT
ESM-Fit
Year

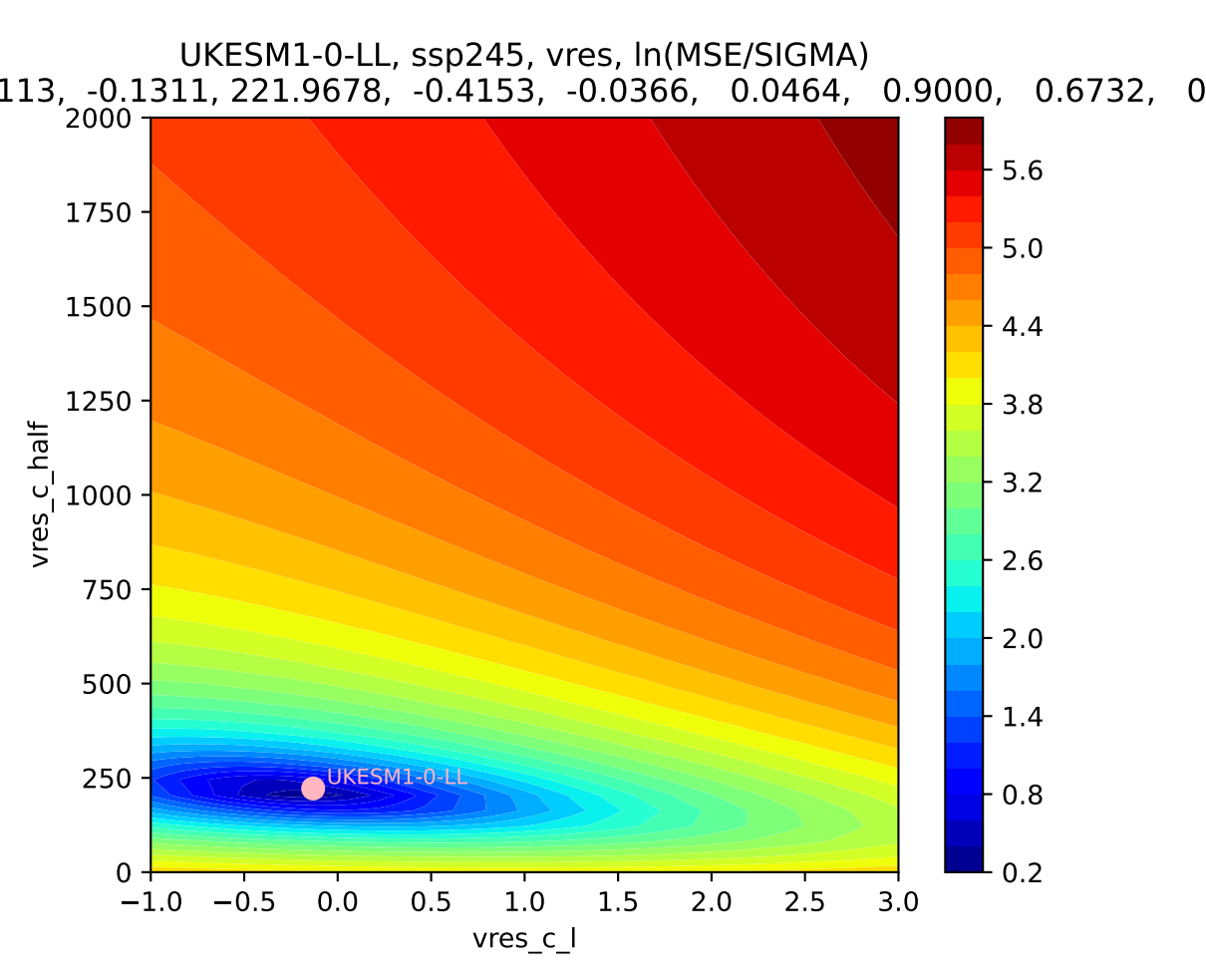

UKESM1-0-LL, ssp245, vres
ESM
Fit
vres
ΔT

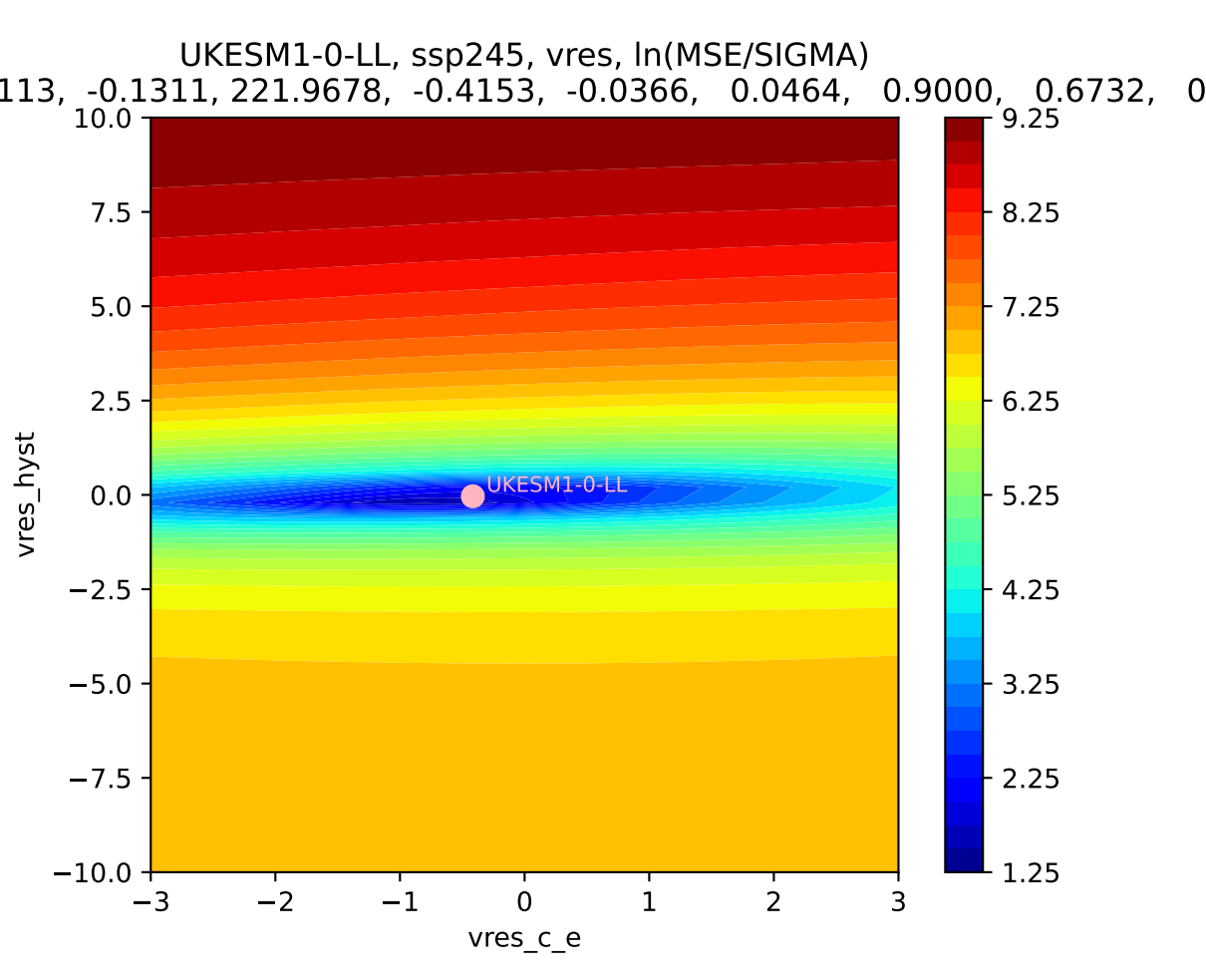

UKESM1-0-LL, ssp245, vres
vres, ESM - FIT
ESM-Fit
ΔT

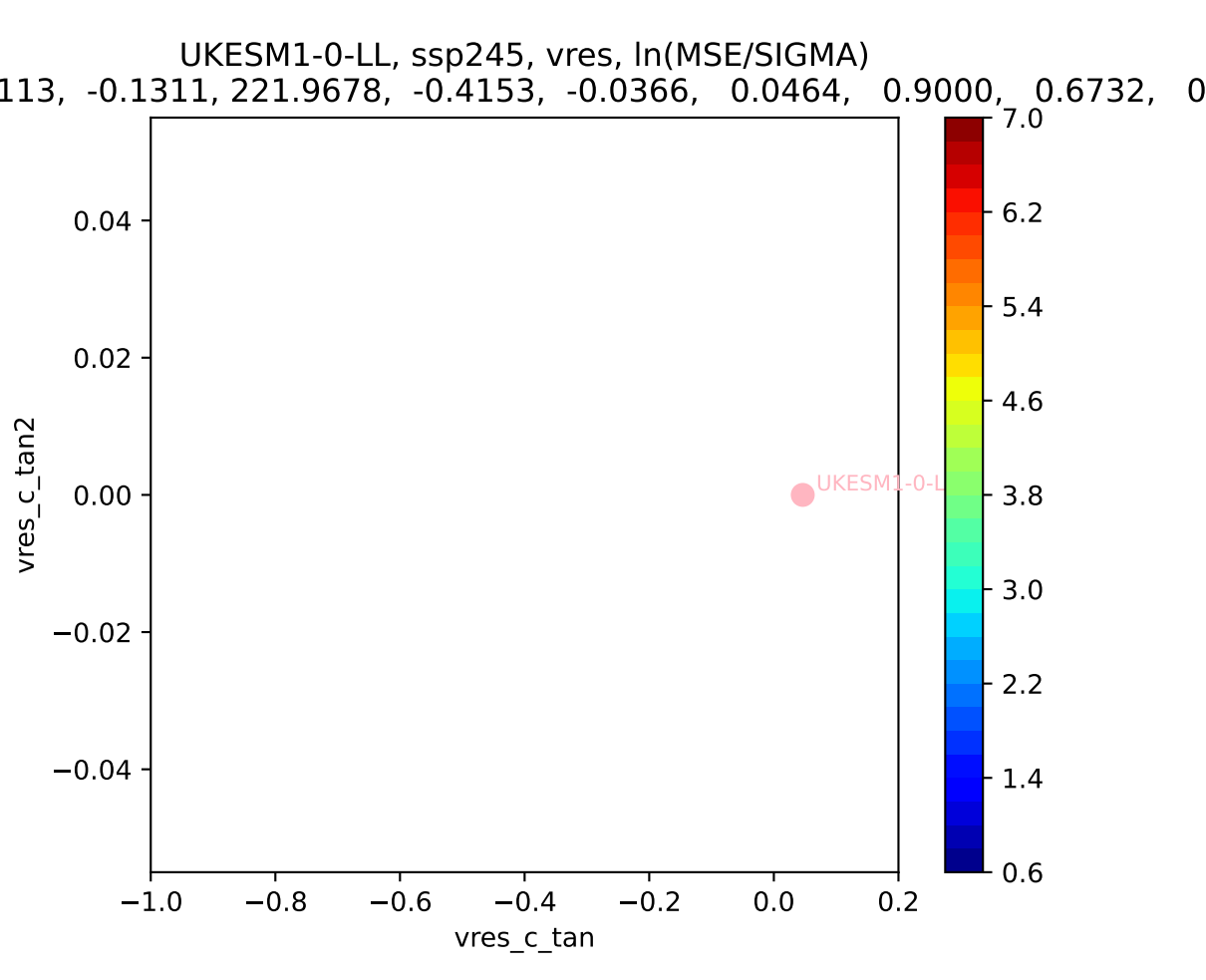

UKESM1-0-LL, ssp245, vres
ESM
Fit
vres
c_atm

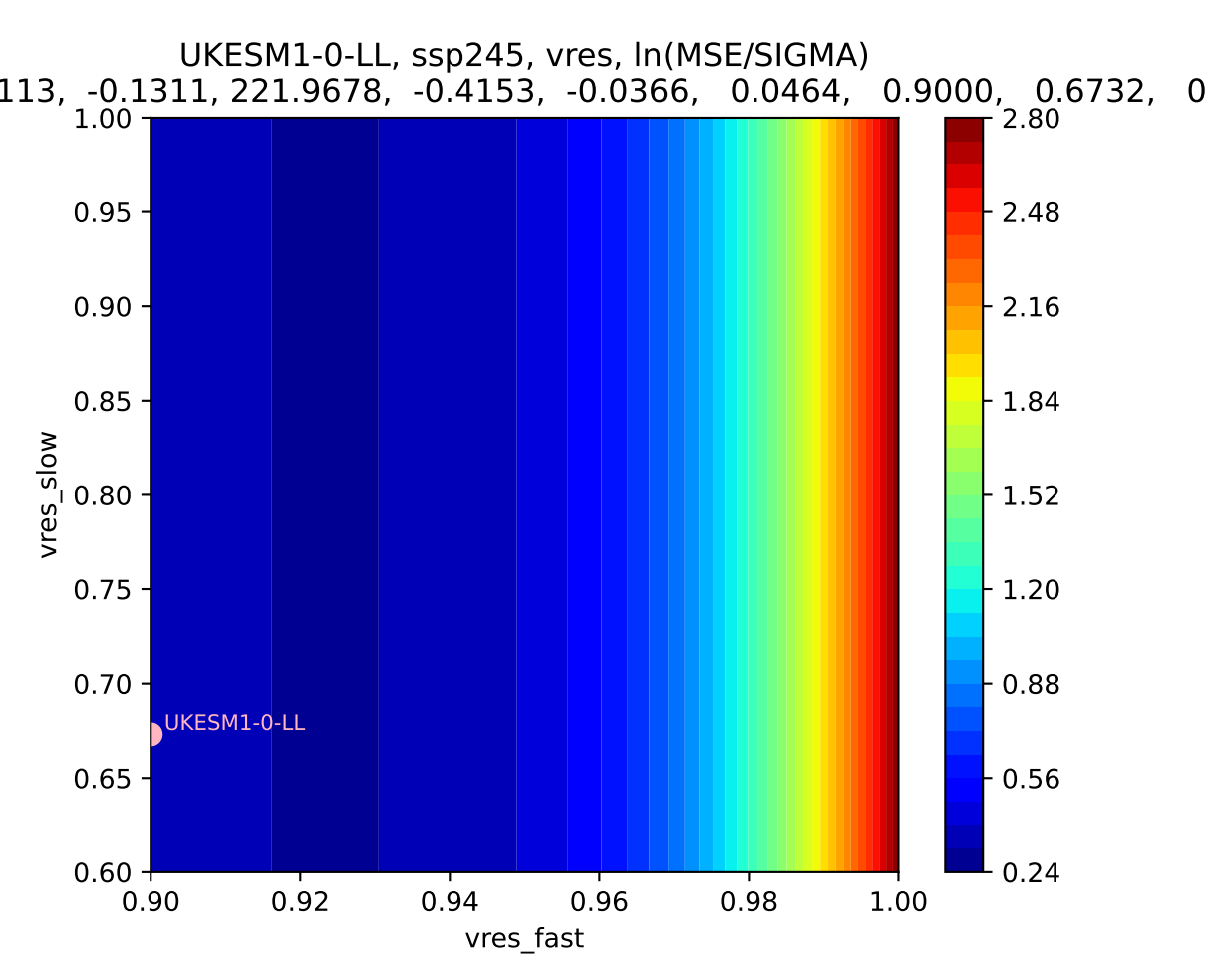

UKESM1-0-LL, ssp245, vres
vres, ESM - FIT
ESM-Fit
c_atm

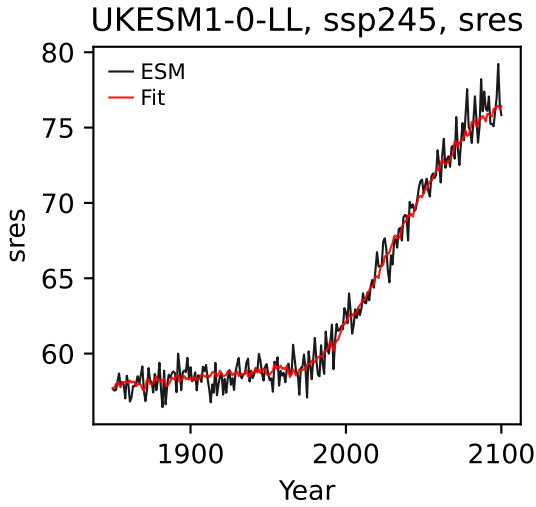

UKESM1-0-LL, ssp245, vres, ln(MSE/SIGMA)
113, -0.1311, 221.9678, -0.4153, -0.0366, 0.0464, 0.9000, 0.6732, 0
UKESM1-0-LL
vres_t_e
vres_t_l
−3
−2
−1
0
1
2
9.6
8.4
7.2
6.0
4.8
3.6
2.4
1.2
0.0

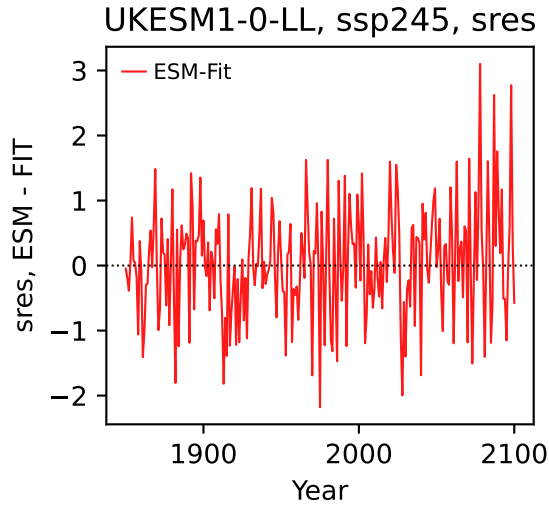

UKESM1-0-LL, ssp245, vres, ln(MSE/SIGMA)
113, -0.1311, 221.9678, -0.4153, -0.0366, 0.0464, 0.9000, 0.6732, 0
vres_c_half
vres_c_l
UKESM1-0-LL
2000
1750
1500
1250
1000
750
500
250
0
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
5.6
5.0
4.4
3.8
3.2
2.6
2.0
1.4
0.8
0.2

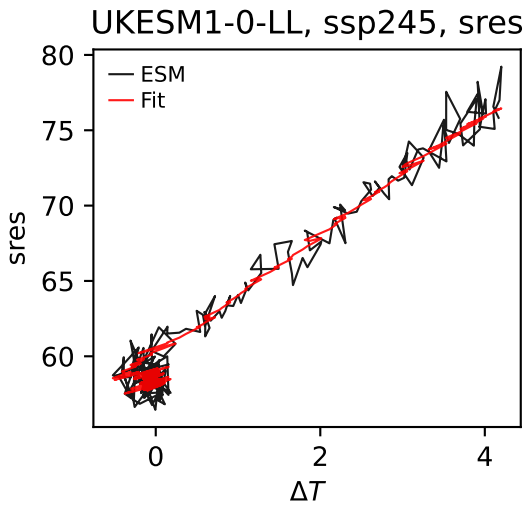

UKESM1-0-LL, ssp245, vres, ln(MSE/SIGMA)
113, -0.1311, 221.9678, -0.4153, -0.0366, 0.0464, 0.9000, 0.6732, 0
UKESM1-0-LL
vres_hyst
vres_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
9.25
8.25
7.25
6.25
5.25
4.25
3.25
2.25
1.25

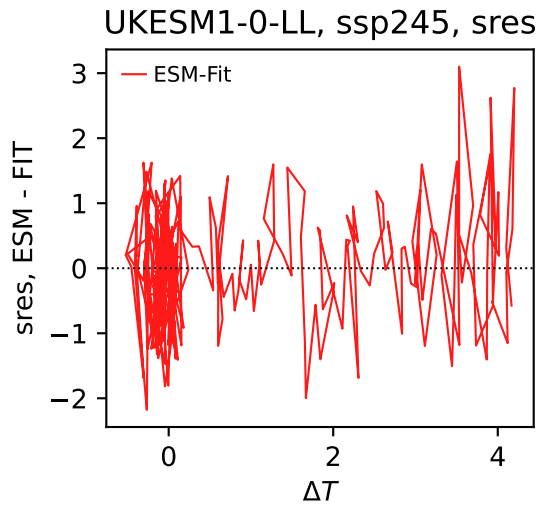

UKESM1-0-LL, ssp245, vres, ln(MSE/SIGMA)
113, -0.1311, 221.9678, -0.4153, -0.0366, 0.0464, 0.9000, 0.6732, 0
0.04
0.02
0.00
−0.02
−0.04
vres_c_tan2
UKESM1-0-L
7.0
6.2
5.4
4.6
3.8
3.0
2.2
1.4
0.6
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
vres_c_tan

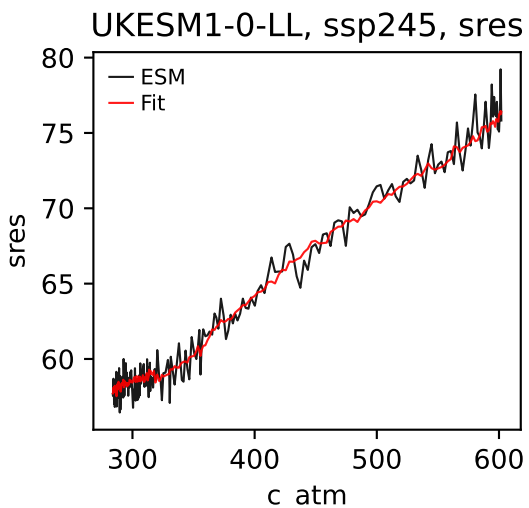

UKESM1-0-LL, ssp245, vres, ln(MSE/SIGMA)
113, -0.1311, 221.9678, -0.4153, -0.0366, 0.0464, 0.9000, 0.6732, 0
vres_slow
vres_fast
UKESM1-0-LL
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
2.80
2.48
2.16
1.84
1.52
1.20
0.88
0.56
0.24

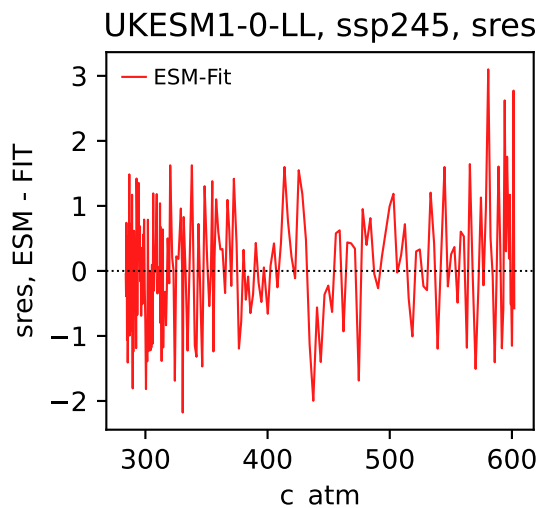

UKESM1-0-LL, ssp245, sres
ESM
Fit
sres
Year

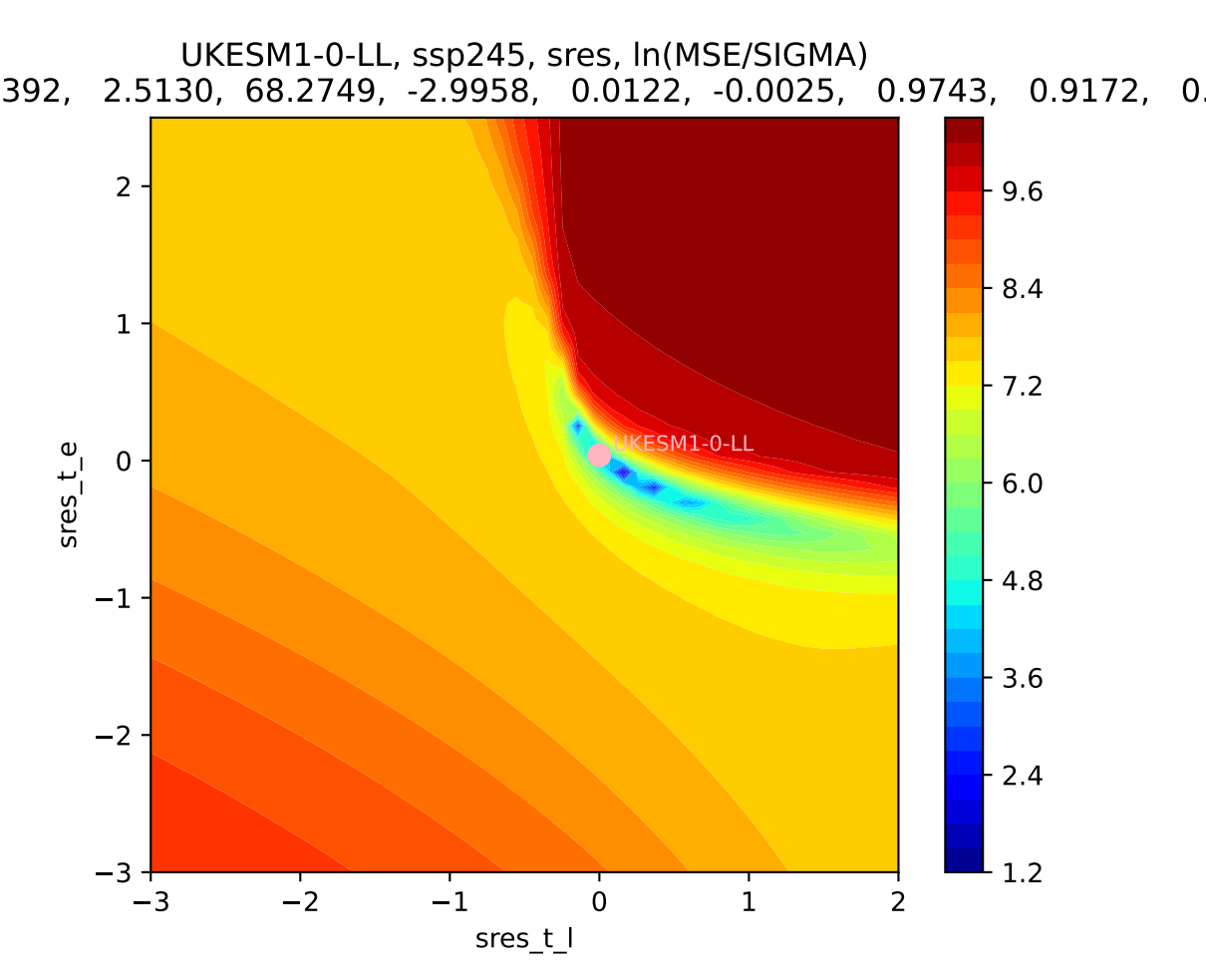

UKESM1-0-LL, ssp245, sres
ESM-Fit
sres, ESM - FIT
Year

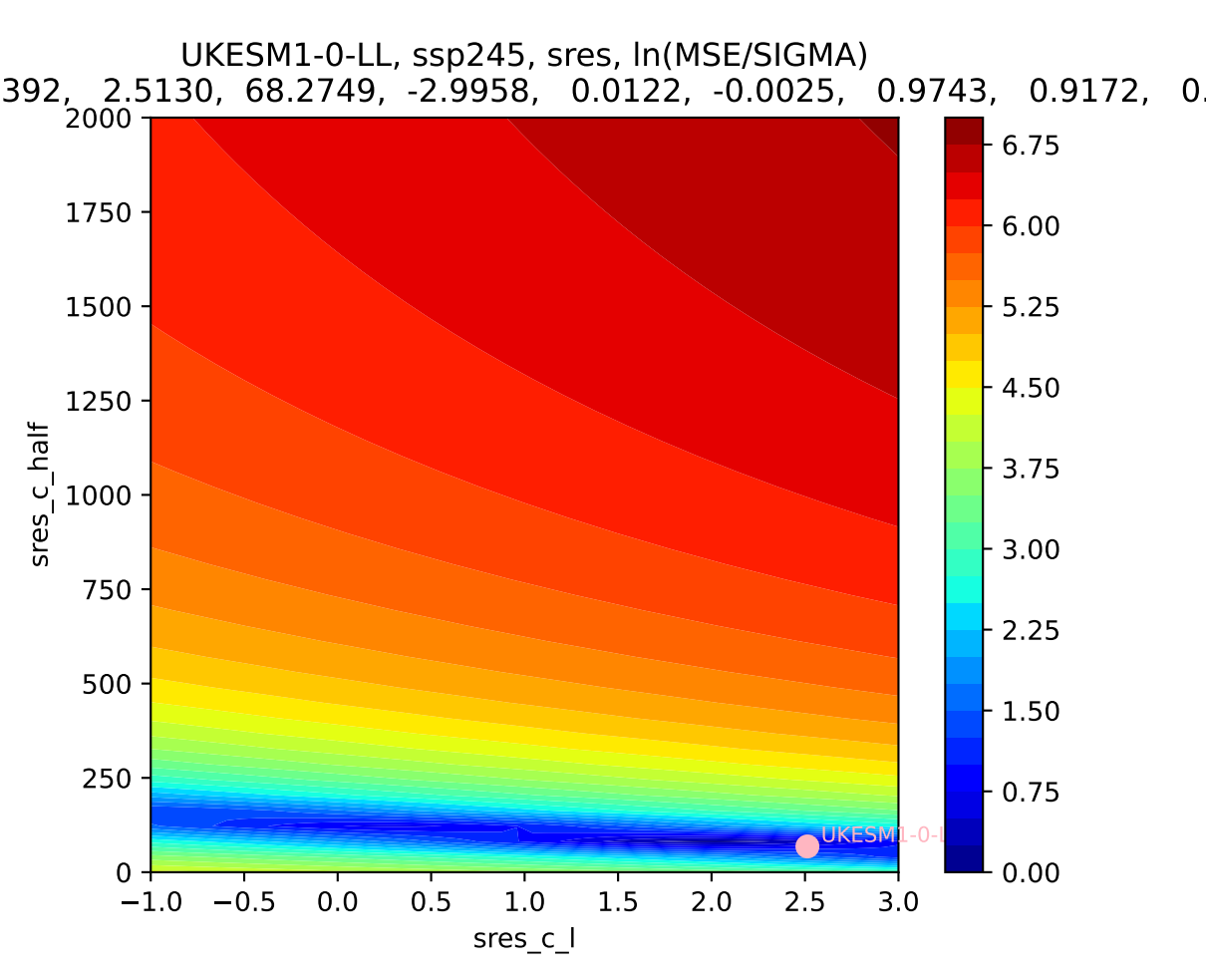

UKESM1-0-LL, ssp245, sres
ESM
Fit
sres
ΔT

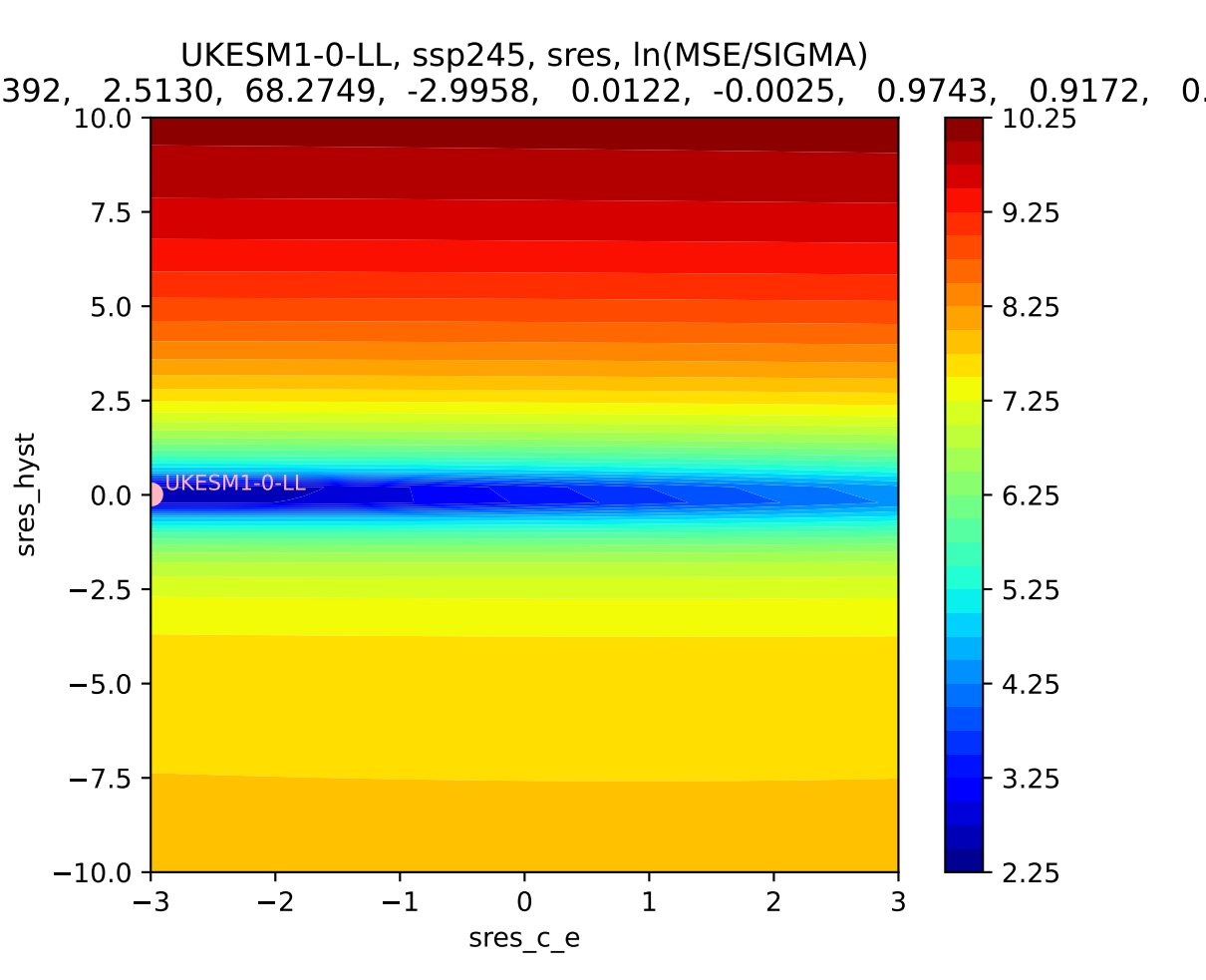

UKESM1-0-LL, ssp245, sres
ESM-Fit
sres, ESM - FIT
ΔT

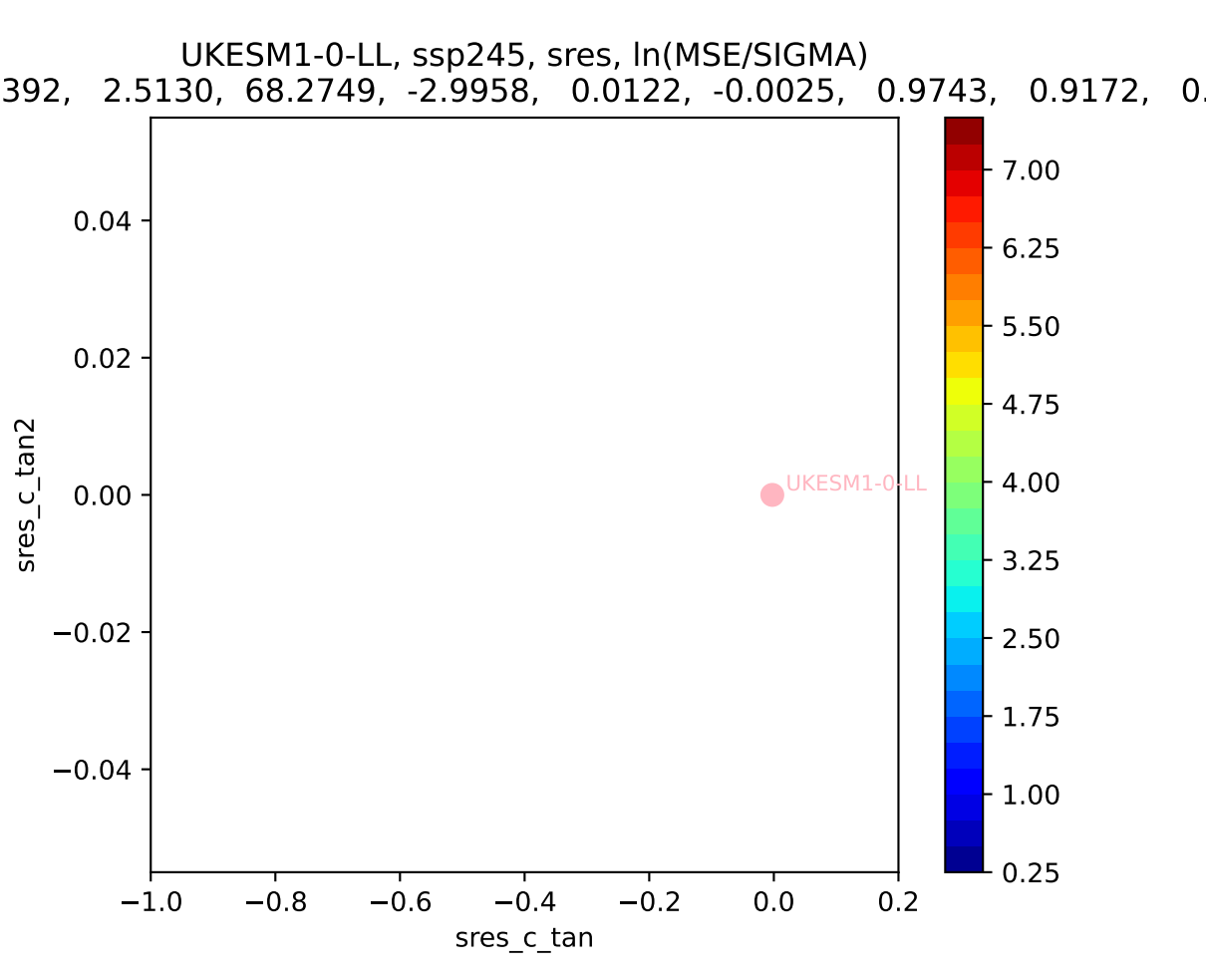

UKESM1-0-LL, ssp245, sres
ESM
Fit
sres
c_atm

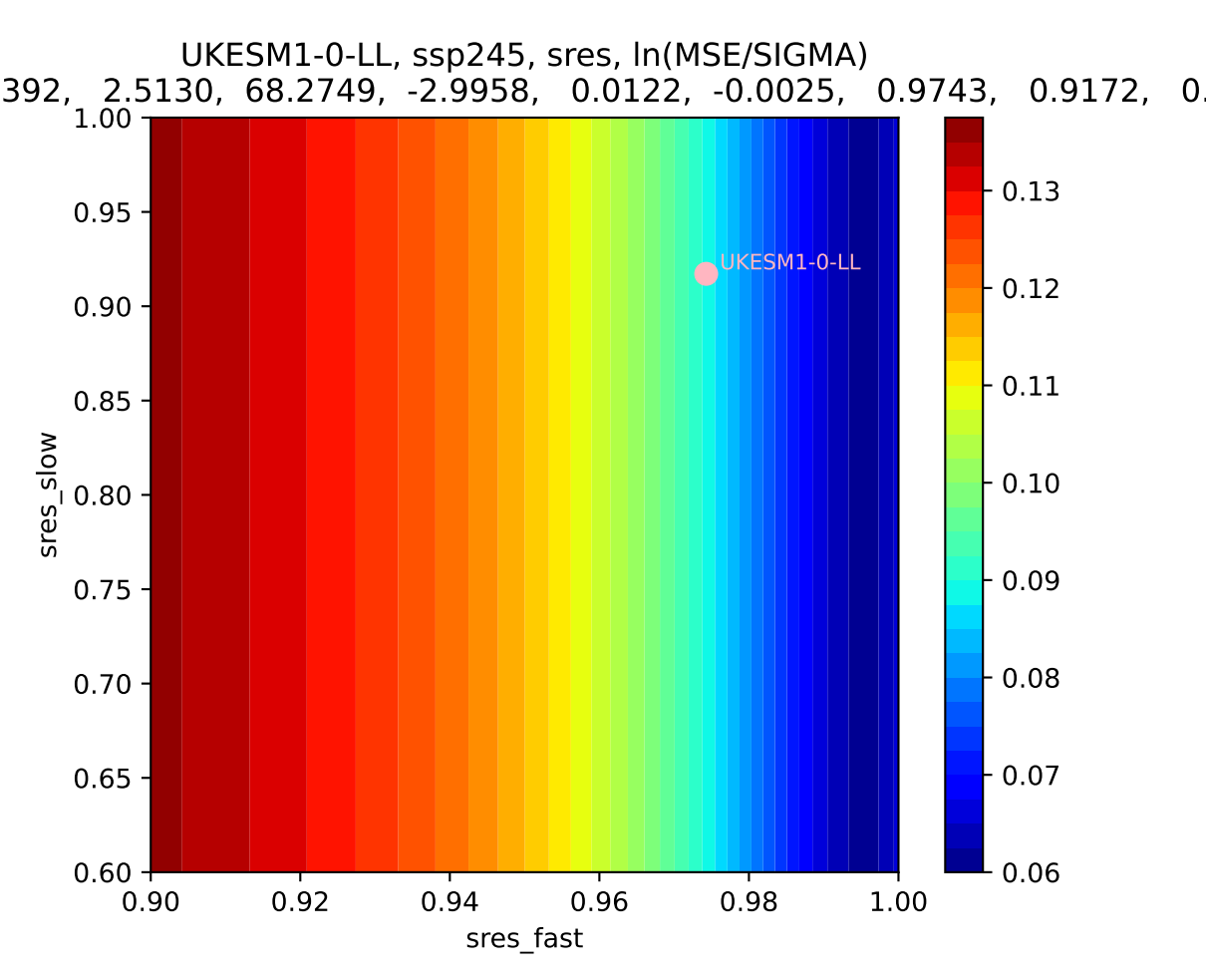

UKESM1-0-LL, ssp245, sres
ESM-Fit
sres, ESM - FIT
c_atm

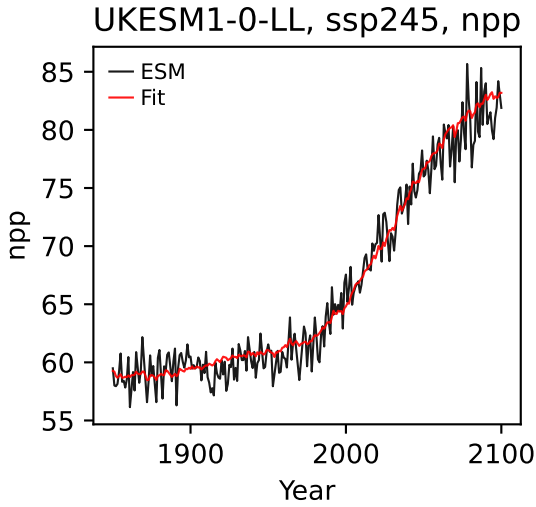

UKESM1-0-LL, ssp245, sres, ln(MSE/SIGMA)
392, 2.5130, 68.2749, -2.9958, 0.0122, -0.0025, 0.9743, 0.9172, 0.
UKESM1-0-LL
sres_t_e
sres_t_l
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
9.6
8.4
7.2
6.0
4.8
3.6
2.4
1.2

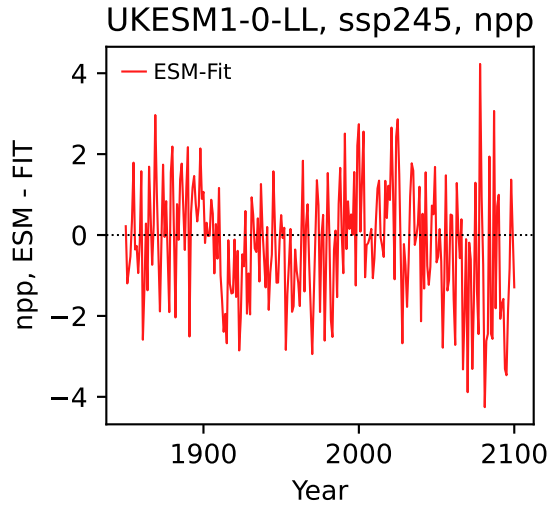

UKESM1-0-LL, ssp245, sres, ln(MSE/SIGMA)
392, 2.5130, 68.2749, -2.9958, 0.0122, -0.0025, 0.9743, 0.9172, 0.
2000
1750
1500
1250
1000
750
500
250
0
sres_c_half
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
sres_c_l
6.75
6.00
5.25
4.50
3.75
3.00
2.25
1.50
0.75
0.00

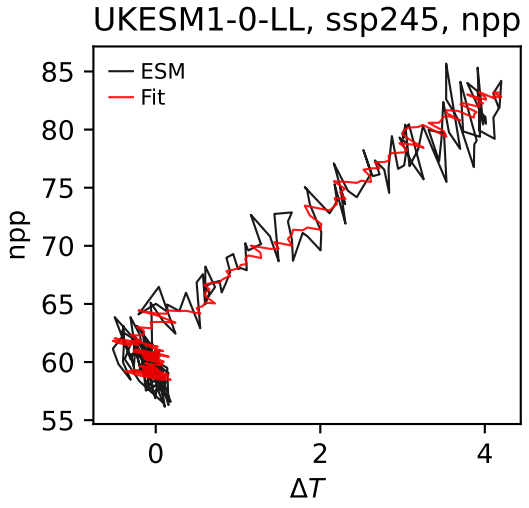

UKESM1-0-LL, ssp245, sres, ln(MSE/SIGMA)
392, 2.5130, 68.2749, -2.9958, 0.0122, -0.0025, 0.9743, 0.9172, 0.
UKESM1-0-LL
sres_hyst
sres_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
10.25
9.25
8.25
7.25
6.25
5.25
4.25
3.25
2.25

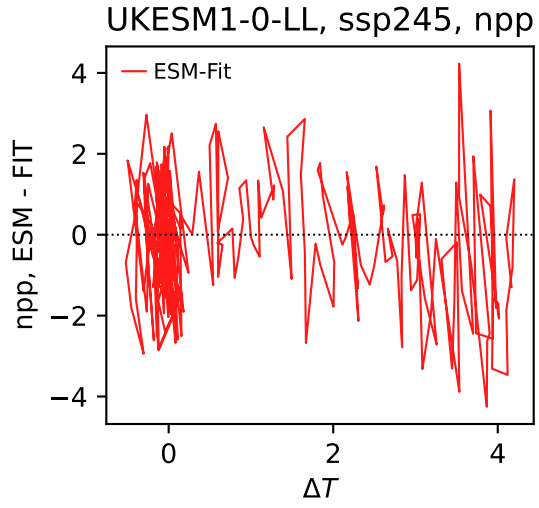

UKESM1-0-LL, ssp245, sres, ln(MSE/SIGMA)
392, 2.5130, 68.2749, -2.9958, 0.0122, -0.0025, 0.9743, 0.9172, 0.
UKESM1-0-LL
sres_c_tan2
sres_c_tan
0.04
0.02
0.00
−0.02
−0.04
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
7.00
6.25
5.50
4.75
4.00
3.25
2.50
1.75
1.00
0.25

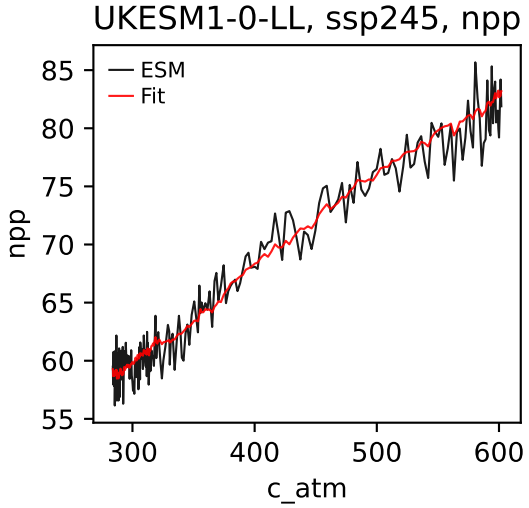

UKESM1-0-LL, ssp245, sres, ln(MSE/SIGMA)
392, 2.5130, 68.2749, -2.9958, 0.0122, -0.0025, 0.9743, 0.9172, 0.
UKESM1-0-LL
sres_slow
sres_fast
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.90
0.92
0.94
0.96
0.98
1.00
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06

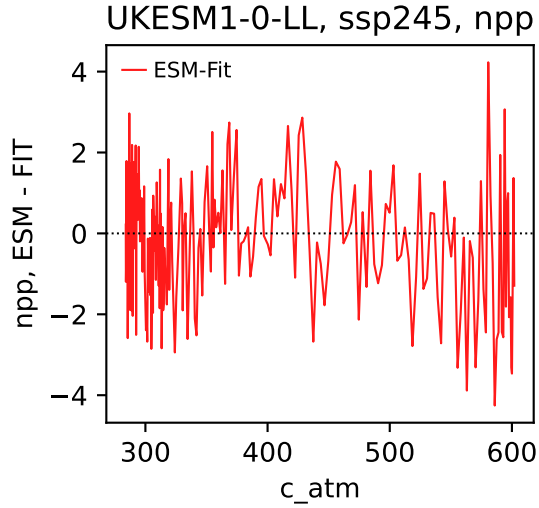

UKESM1-0-LL, ssp245, npp
ESM
Fit
npp
Year

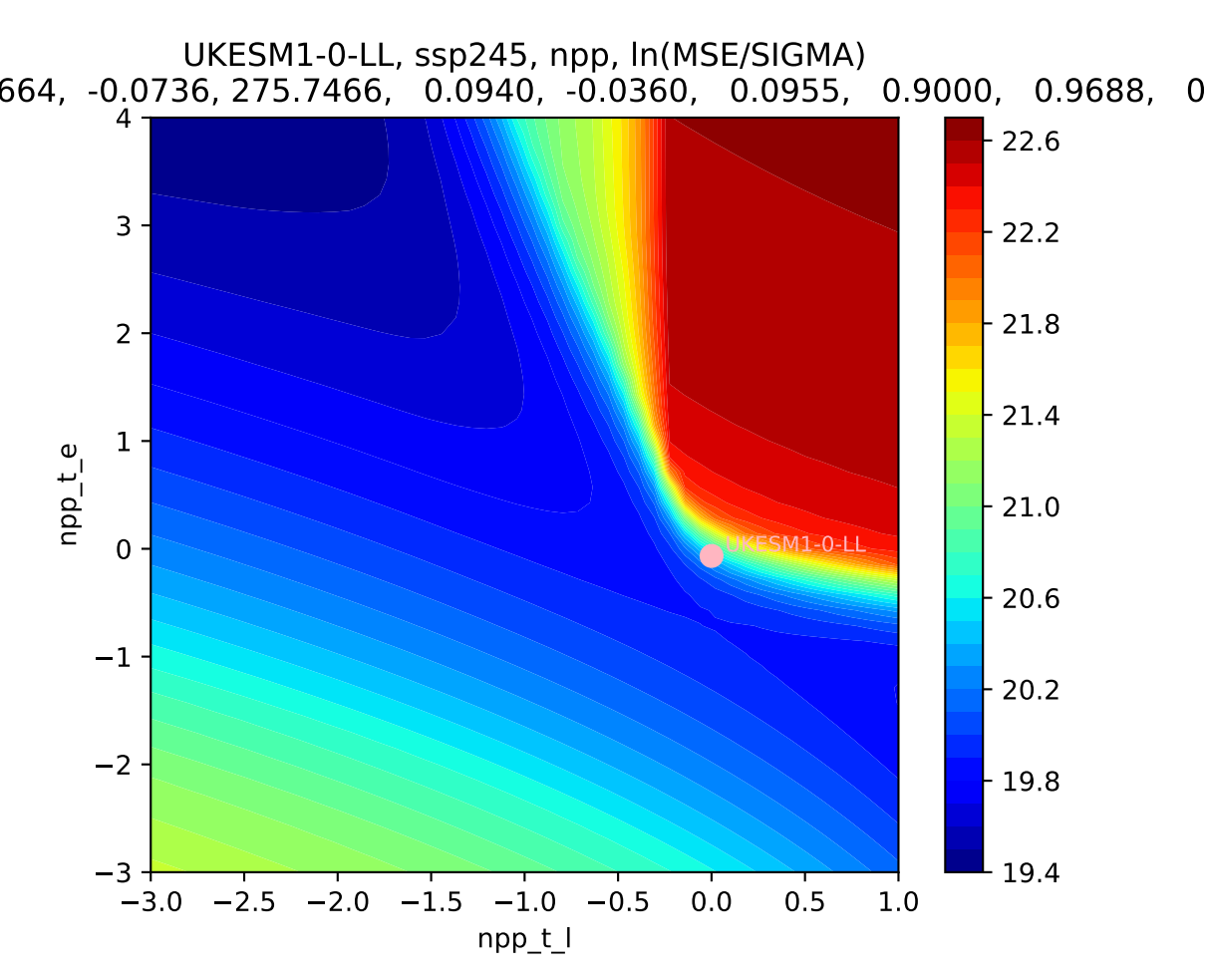

UKESM1-0-LL, ssp245, npp
ESM-Fit
npp, ESM - FIT
Year

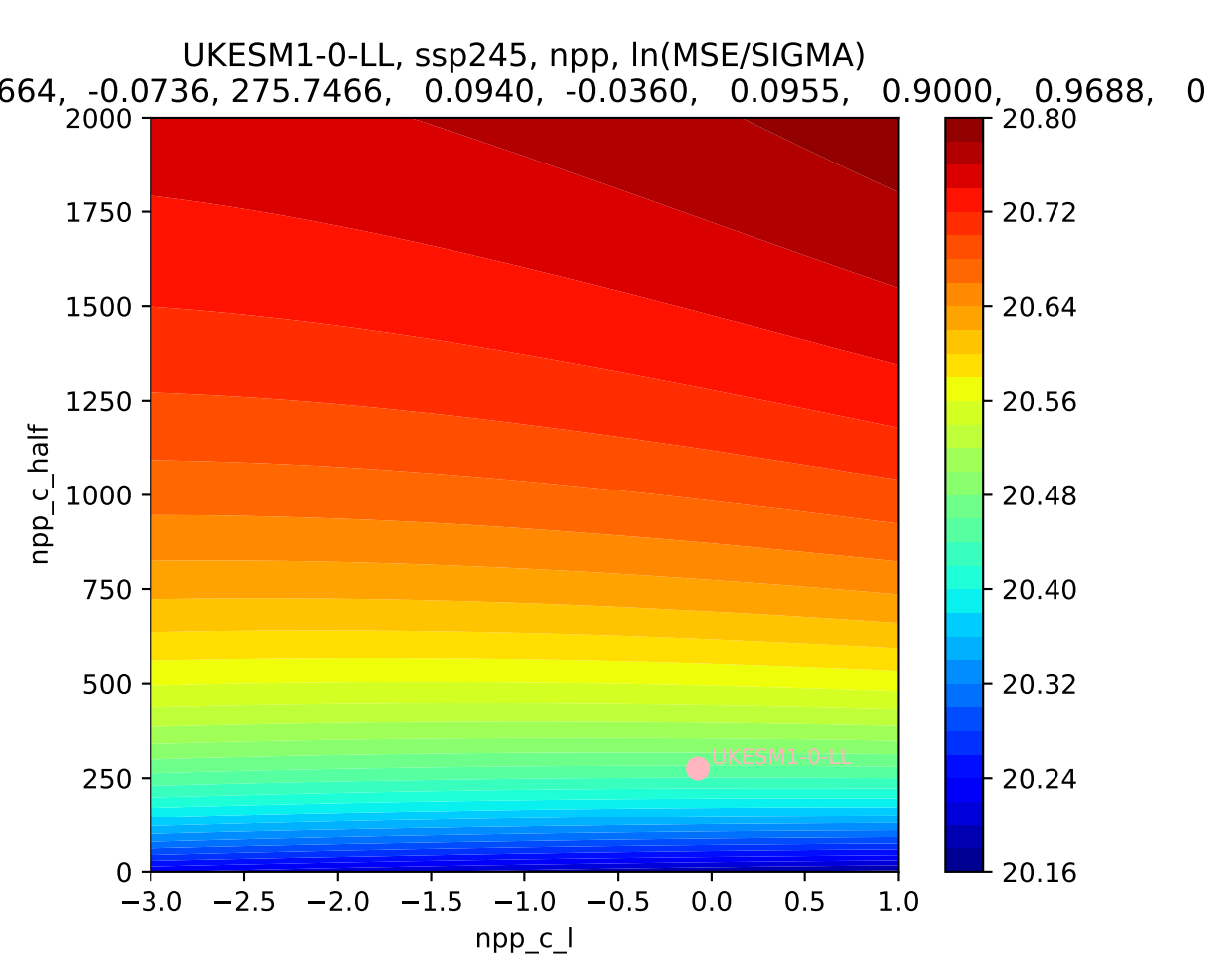

UKESM1-0-LL, ssp245, npp
ESM
Fit
npp
ΔT

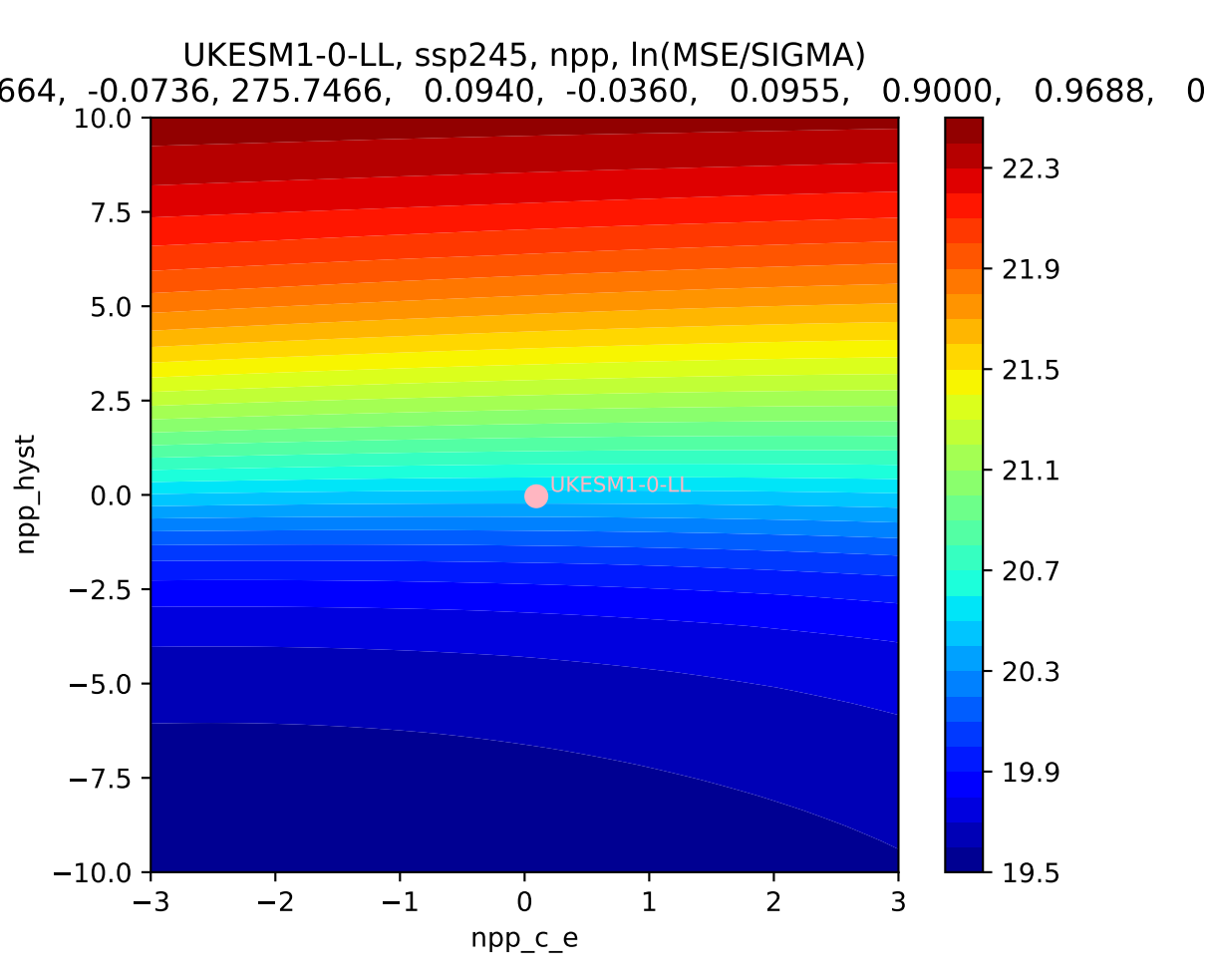

UKESM1-0-LL, ssp245, npp
ESM-Fit
npp, ESM - FIT
ΔT

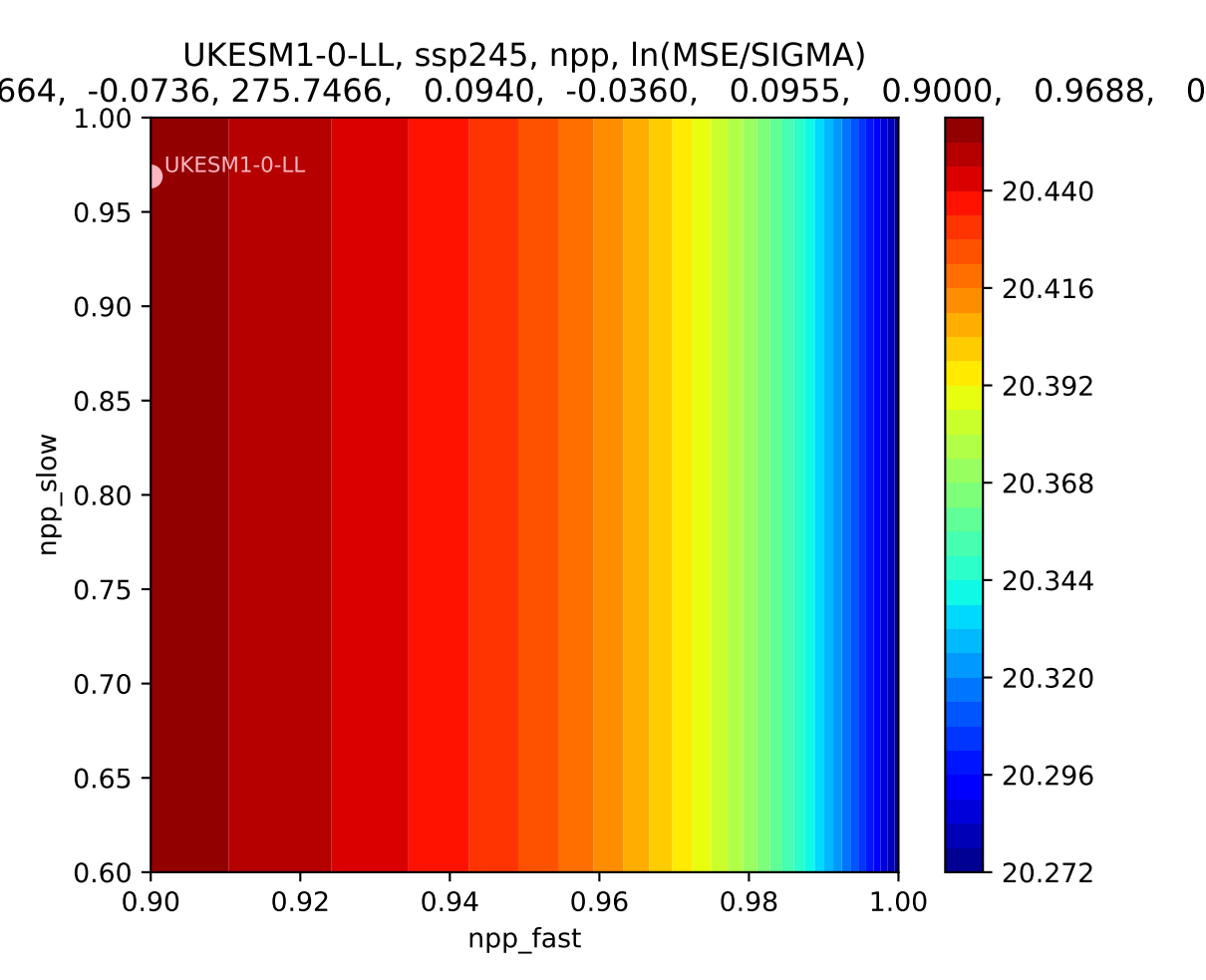

UKESM1-0-LL, ssp245, npp
ESM
Fit
npp
c_atm

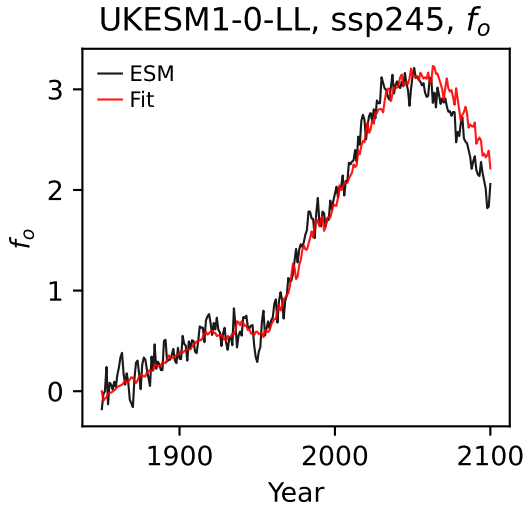

UKESM1-0-LL, ssp245, npp
ESM-Fit
npp, ESM - FIT
c_atm

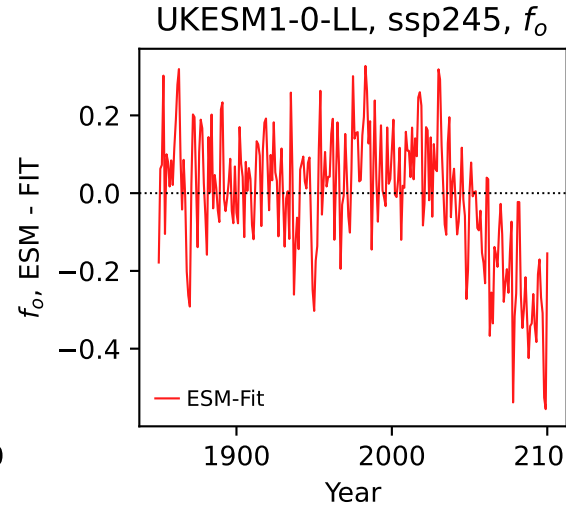

UKESM1-0-LL, ssp245, npp, ln(MSE/SIGMA)
664, -0.0736, 275.7466, 0.0940, -0.0360, 0.0955, 0.9000, 0.9688, 0
UKESM1-0-LL
npp_t_e
npp_t_l
4
3
2
1
0
−1
−2
−3
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
22.6
22.2
21.8
21.4
21.0
20.6
20.2
19.8
19.4

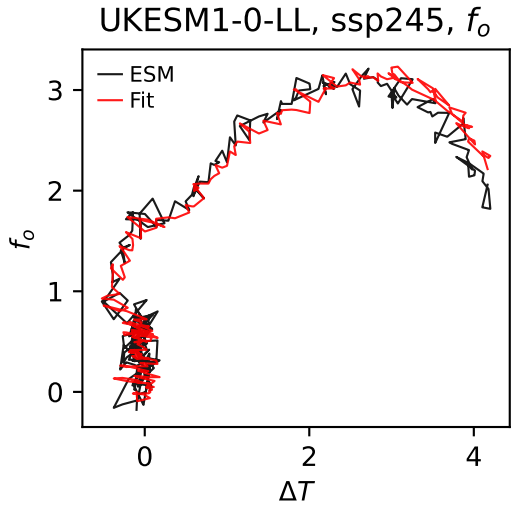

UKESM1-0-LL, ssp245, npp, ln(MSE/SIGMA)
664, -0.0736, 275.7466, 0.0940, -0.0360, 0.0955, 0.9000, 0.9688, 0
2000
1750
1500
1250
1000
750
500
250
0
npp_c_half
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
npp_c_l
UKESM1-0-LL
20.80
20.72
20.64
20.56
20.48
20.40
20.32
20.24
20.16

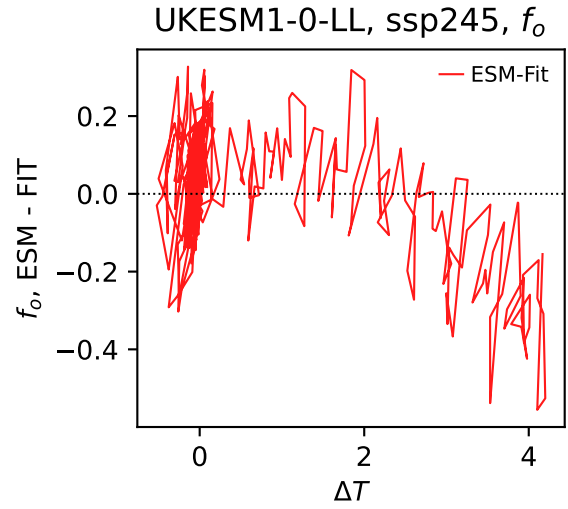

UKESM1-0-LL, ssp245, npp, ln(MSE/SIGMA)
664, -0.0736, 275.7466, 0.0940, -0.0360, 0.0955, 0.9000, 0.9688, 0
UKESM1-0-LL
npp_hyst
npp_c_e
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−3
−2
−1
0
1
2
3
22.3
21.9
21.5
21.1
20.7
20.3
19.9
19.5

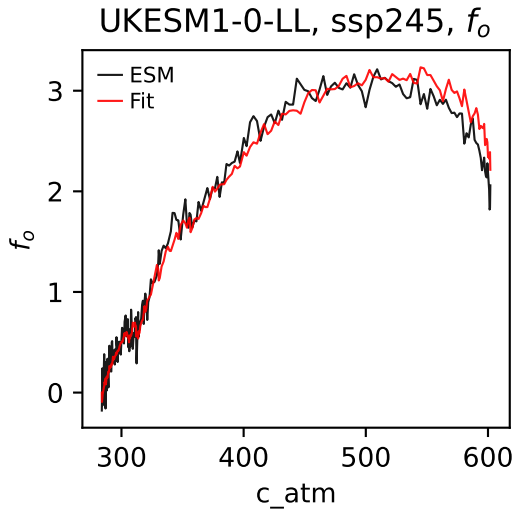

UKESM1-LL, ssp245, npp, ln(MSE/SIGMA)
664, -0.0736, 275.7466, 0.0940, -0.0360, 0.0955, 0.9000, 0.9688, 0
UKESM1-0-LL
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
npp_slow
0.90
0.92
0.94
0.96
0.98
1.00
npp_fast
20.440
20.416
20.392
20.368
20.344
20.320
20.296
20.272

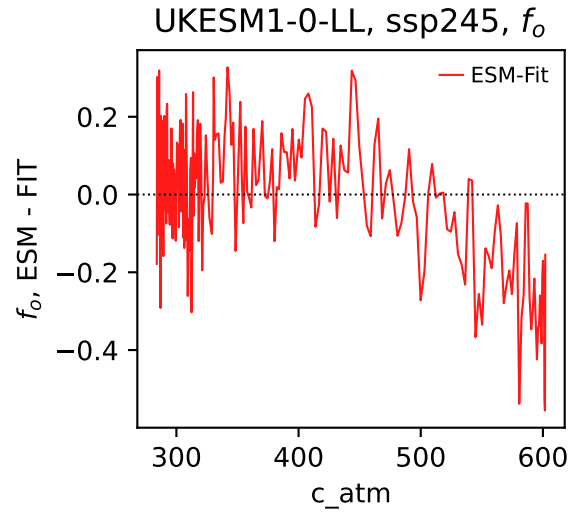

UKESM1-0-LL, ssp245, $f_o$
ESM
Fit
$f_o$
Year

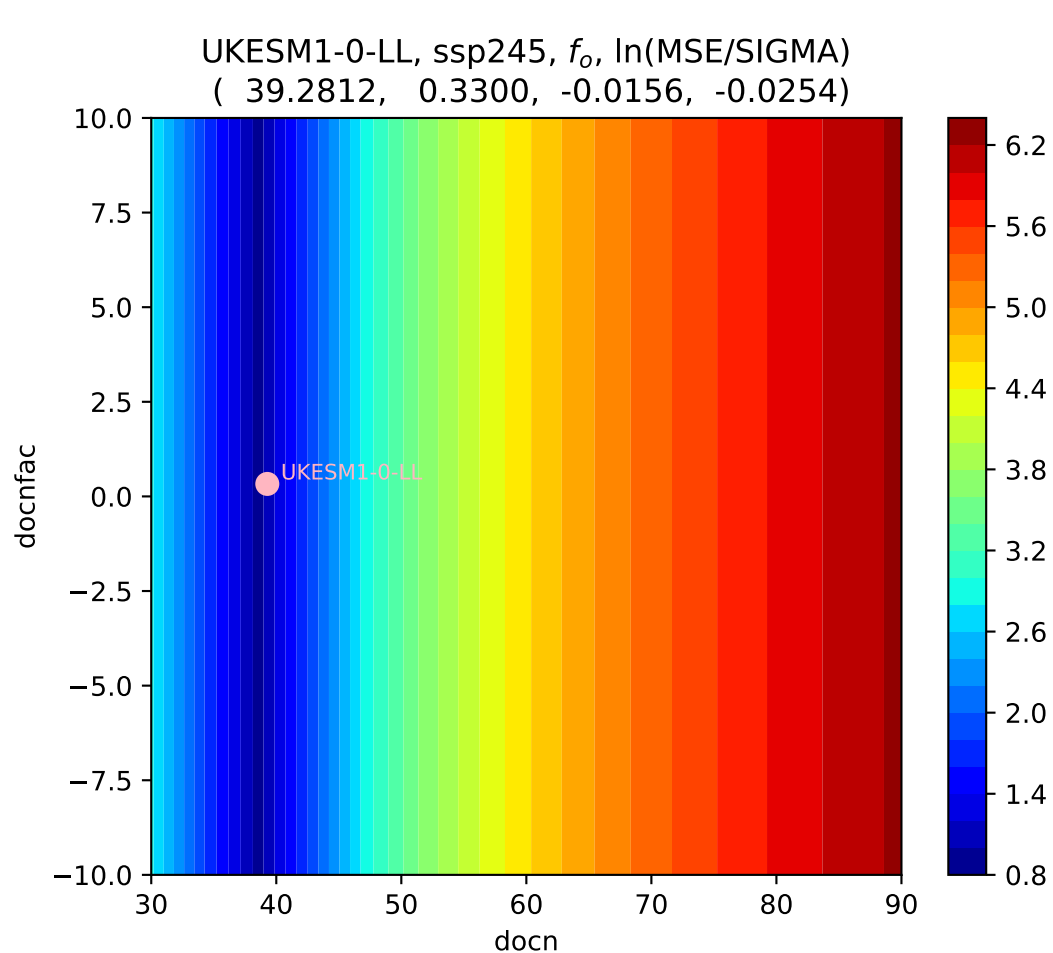

UKESM1-0-LL, ssp245, $f_o$
$f_o$, ESM - FIT
ESM-Fit
Year

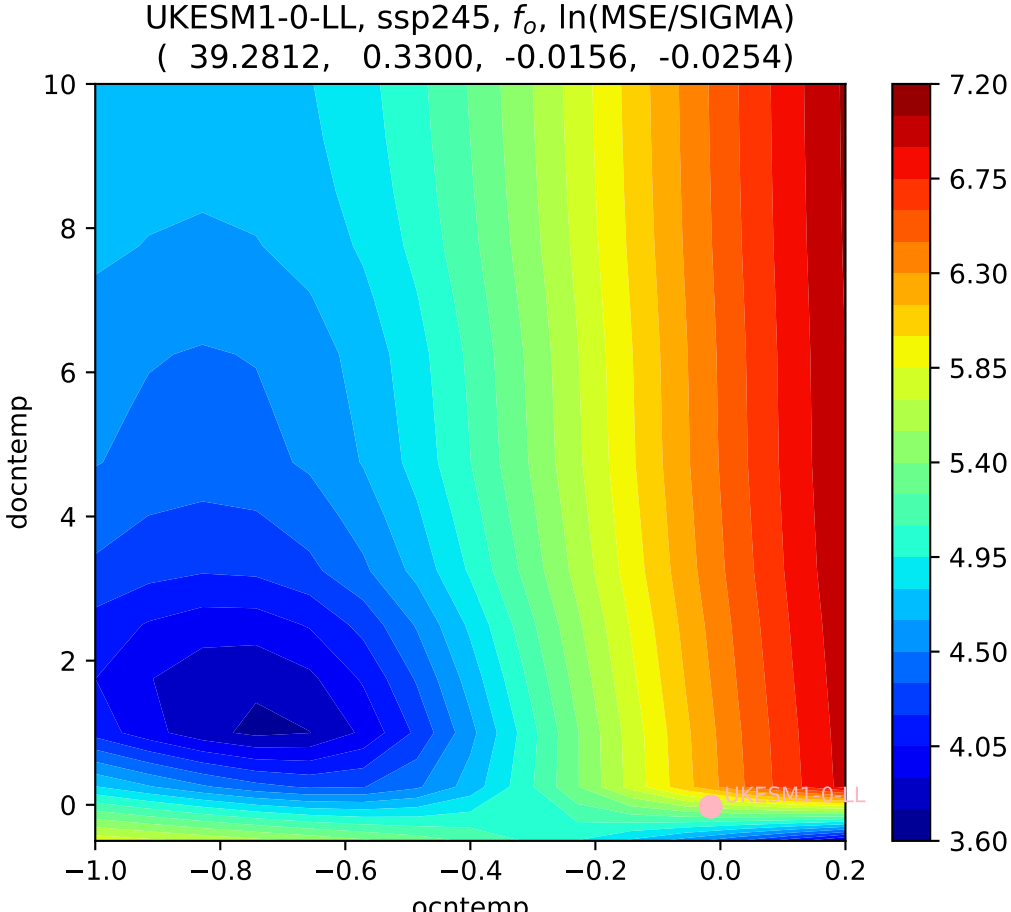

UKESM1-0-LL, ssp245, $f_o$
ESM
Fit
$f_o$
$\Delta T$


UKESM1-0-LL, ssp245, $f_o$
$f_o$, ESM - FIT
ESM-Fit
$\Delta T$


UKESM1-0-LL, ssp245, $f_o$
ESM
Fit
$f_o$
c_atm


UKESM1-0-LL, ssp245, $f_o$
$f_o$, ESM - FIT
ESM-Fit
c_atm


UKESM1-0-LL, ssp245, $f_o$, ln(MSE/SIGMA)
( 39.2812, 0.3300, -0.0156, -0.0254)
UKESM1-0-LL
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
6.2
5.6
5.0
4.4
3.8
3.2
2.6
2.0
1.4
0.8


UKESM1-0-LL, ssp245, $f_o$, ln(MSE/SIGMA)
( 39.2812, 0.3300, -0.0156, -0.0254)
docntemp
ocntemp
10
8
6
4
2
0
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
7.20
6.75
6.30
5.85
5.40
4.95
4.50
4.05
3.60
UKESM1-0-LL