SMAC Results

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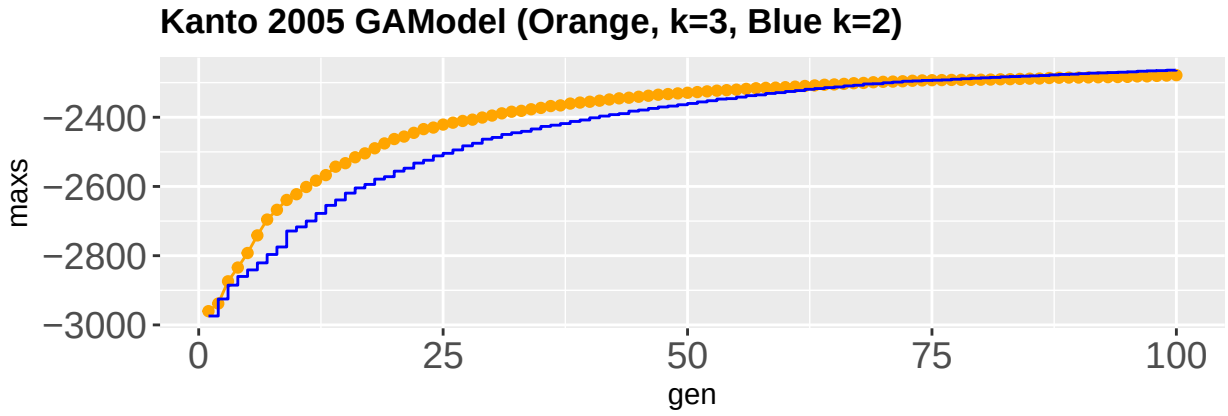
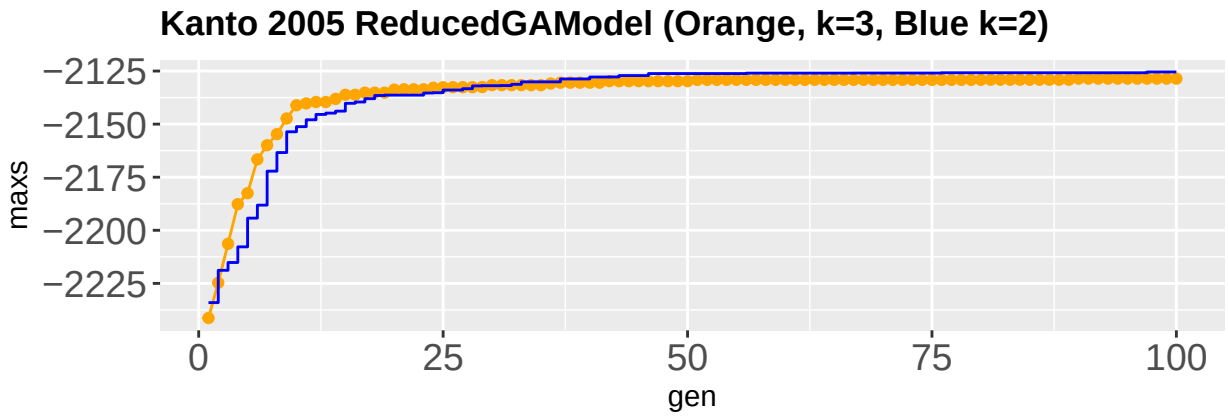
Contents

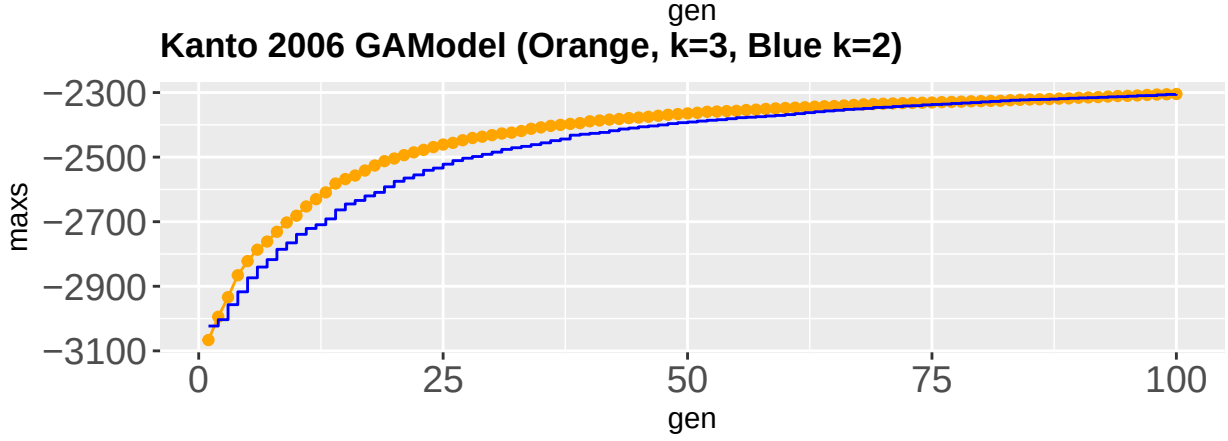
Summary

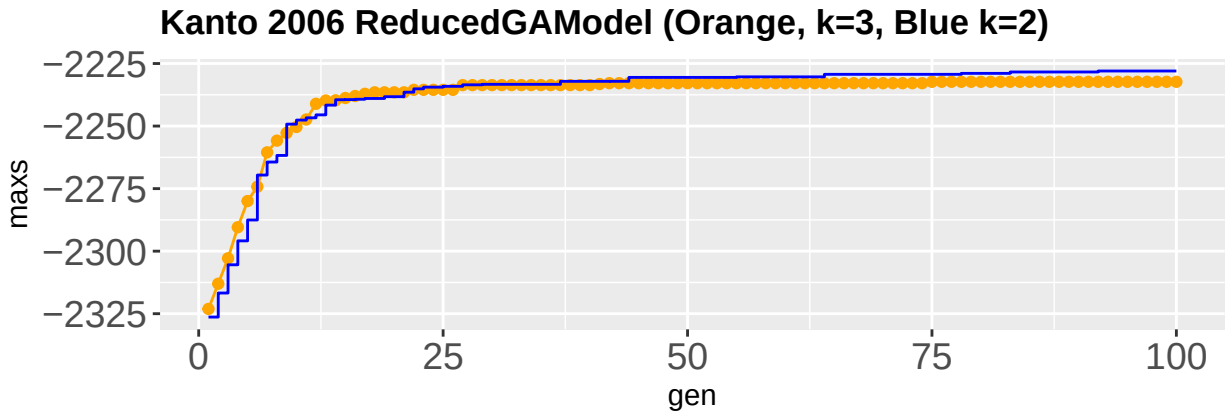
In this document we show the convergency plots for the GAModel and ReducedGAmodel with tournize size (k) 3 and tournsize (k) 2. The value of k being 2 was select by SMAC after it was executed for 2 days for both models.

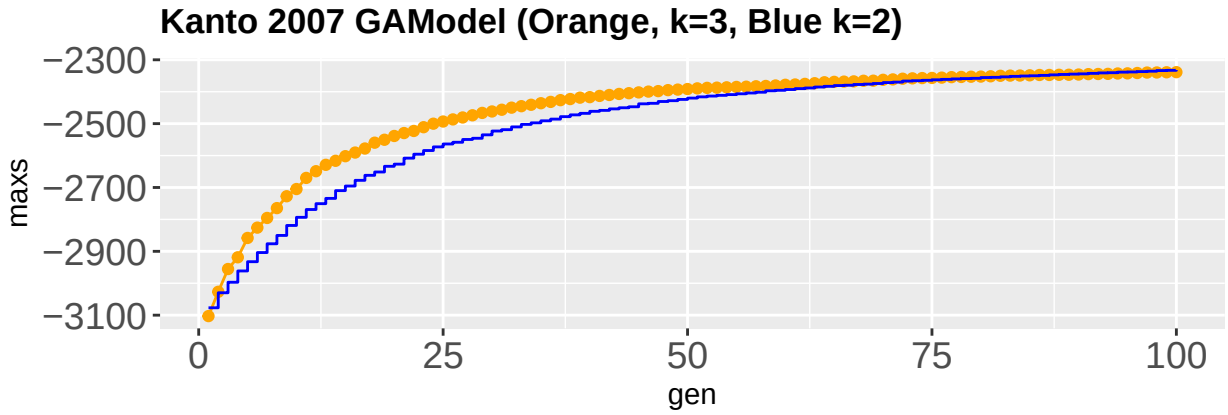
Convergency plots

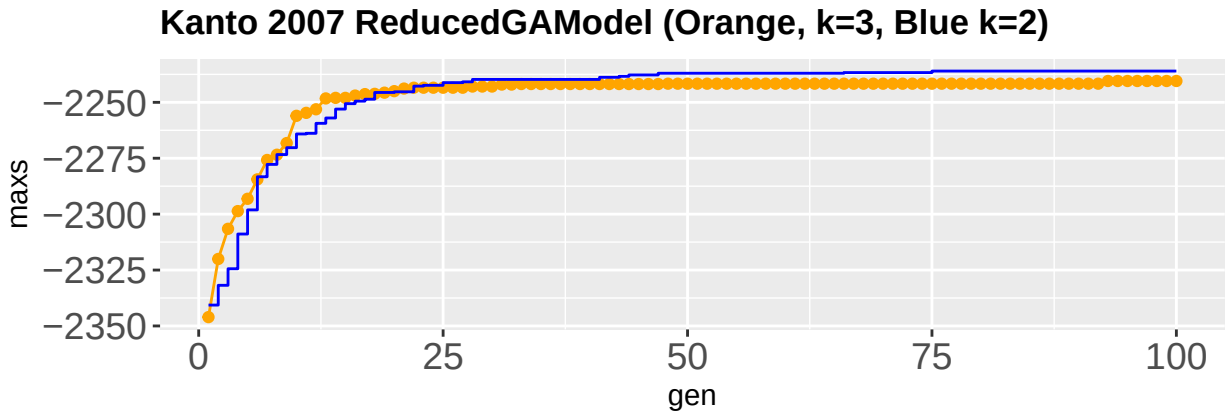


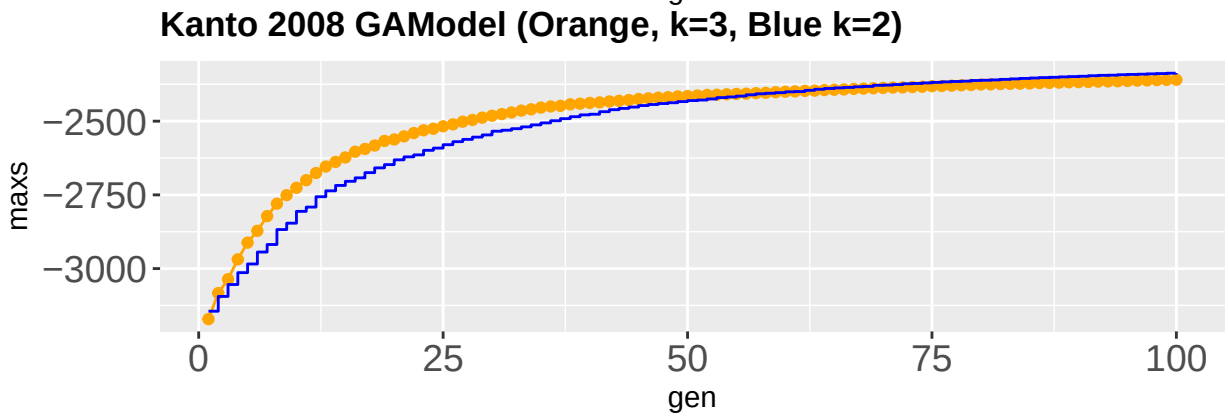


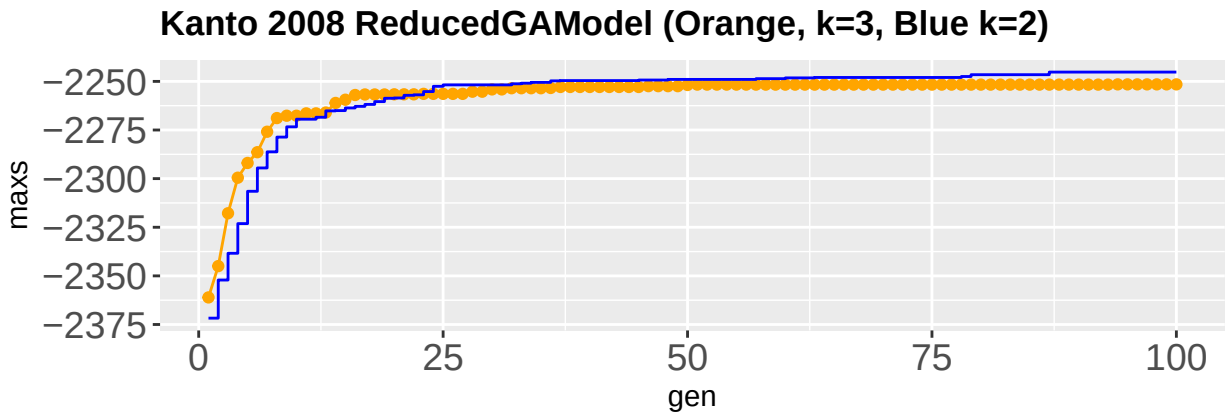


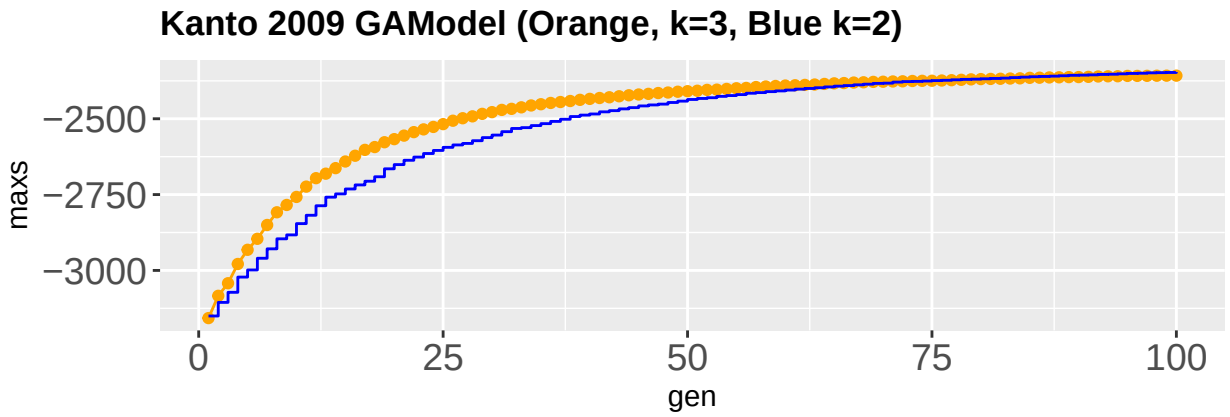


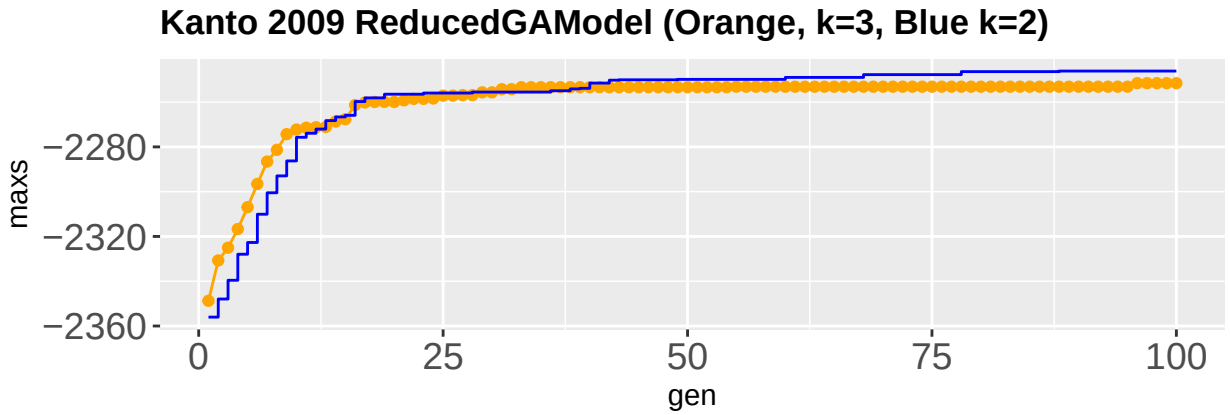

Kanto 2007 GAModel (Orange, k=3, Blue k=2)
maxs
−2300
−2500
−2700
−2900
−3100
0
25
50
75
100
gen

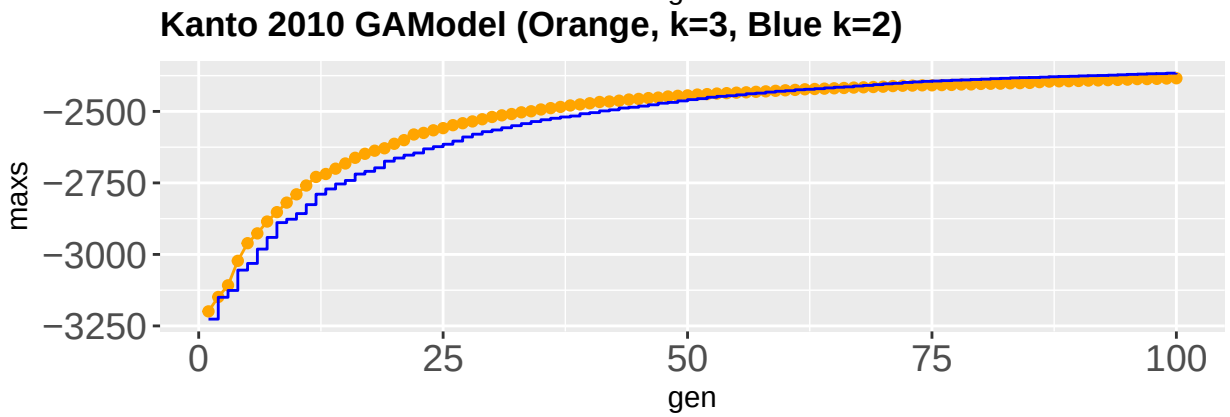

Kanto 2007 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−2250
−2275
−2300
−2325
−2350
0
25
50
75
100
gen

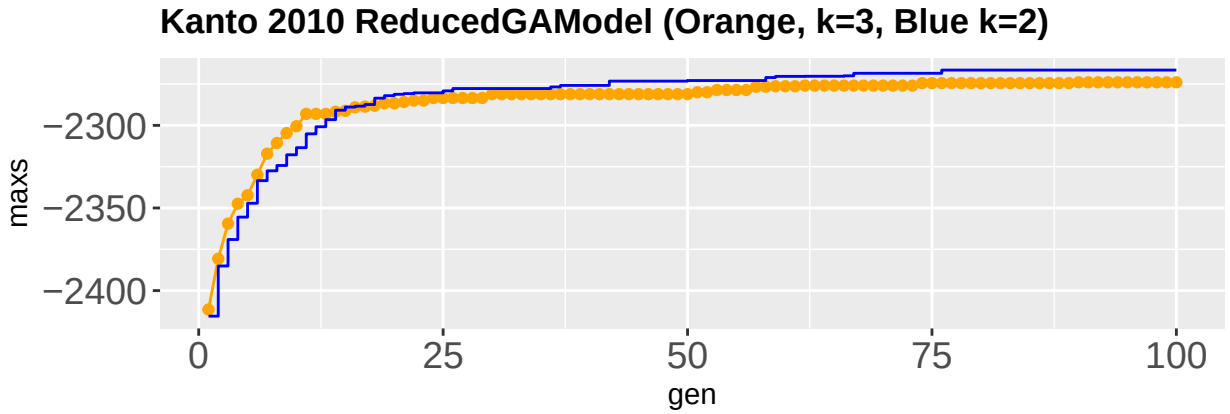

Kanto 2008 GAModel (Orange, k=3, Blue k=2)
maxs
−2500
−2750
−3000
0
25
50
75
100
gen

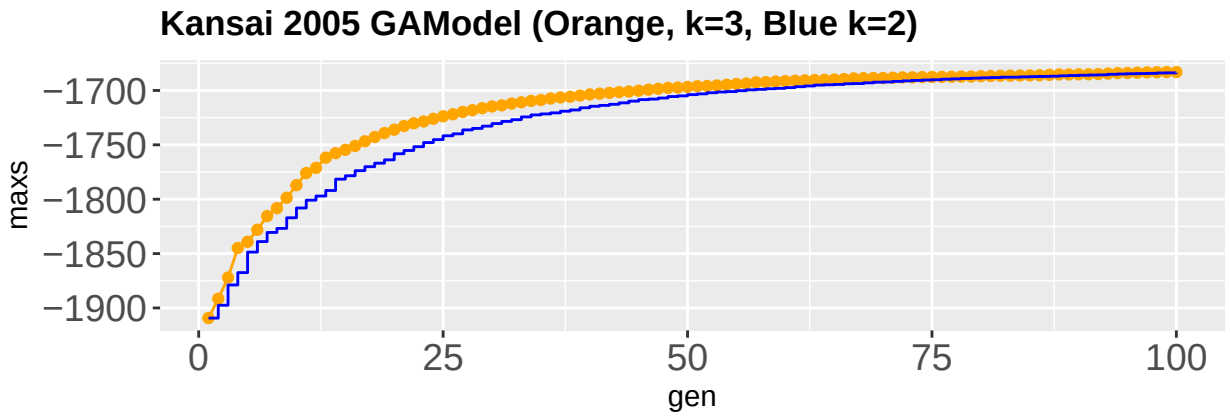

Kanto 2008 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−2250
−2275
−2300
−2325
−2350
−2375
0
25
50
75
100
gen

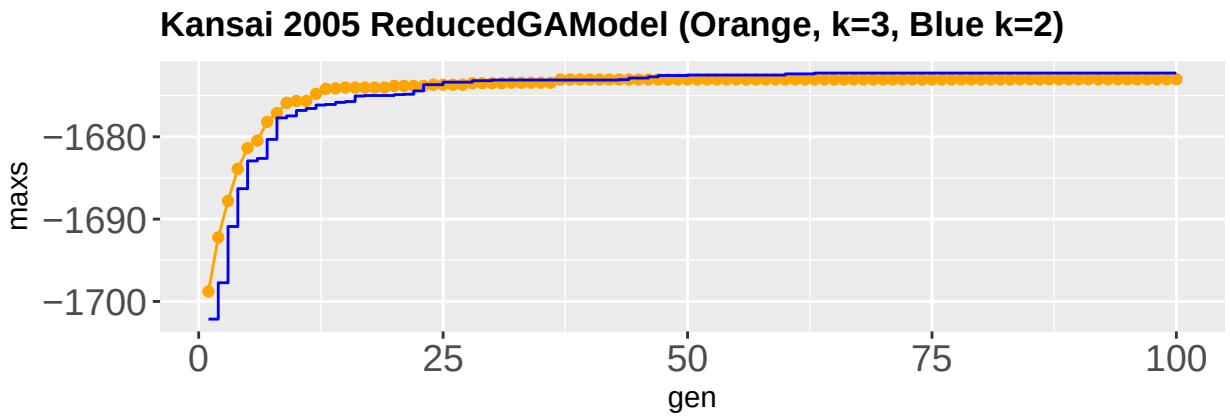

Kanto 2009 GAModel (Orange, k=3, Blue k=2)
maxs
−2500
−2750
−3000
0
25
50
75
100
gen

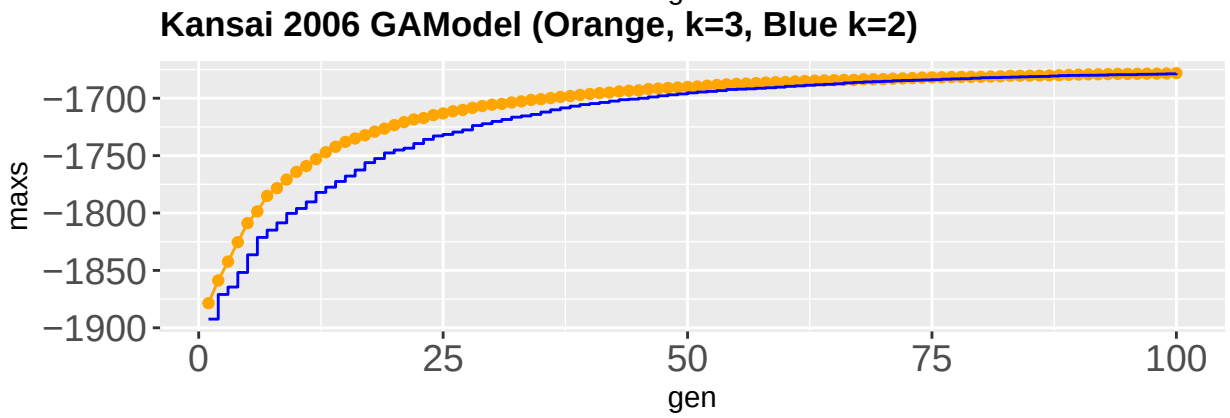

Kanto 2009 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−2280
−2320
−2360
0
25
50
75
100
gen

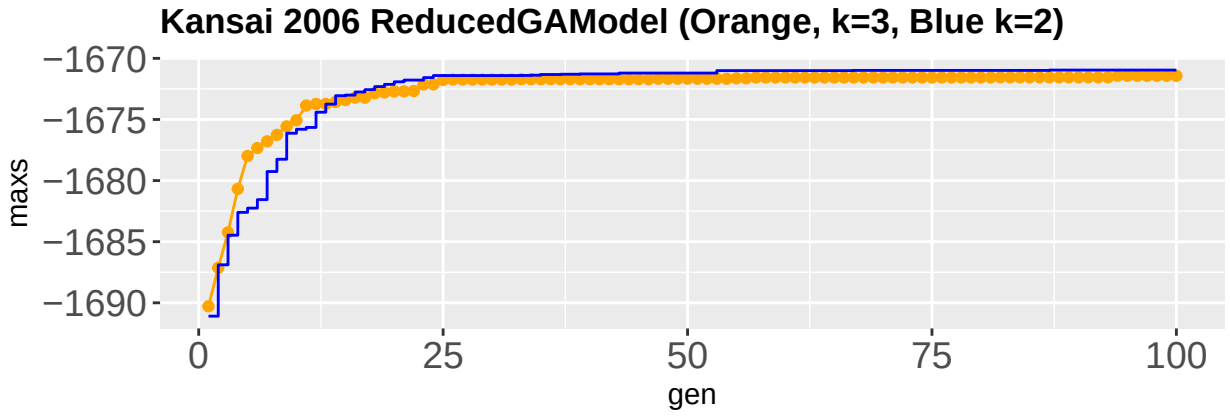

Kanto 2010 GAModel (Orange, k=3, Blue k=2)
maxs
−2500
−2750
−3000
−3250
0
25
50
75
100
gen

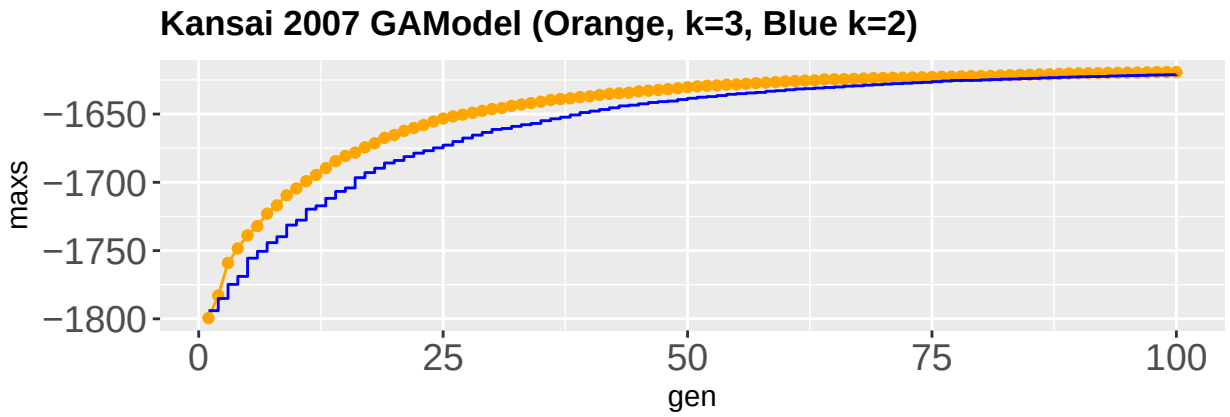

Kanto 2010 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−2300
−2350
−2400
0
25
50
75
100
gen

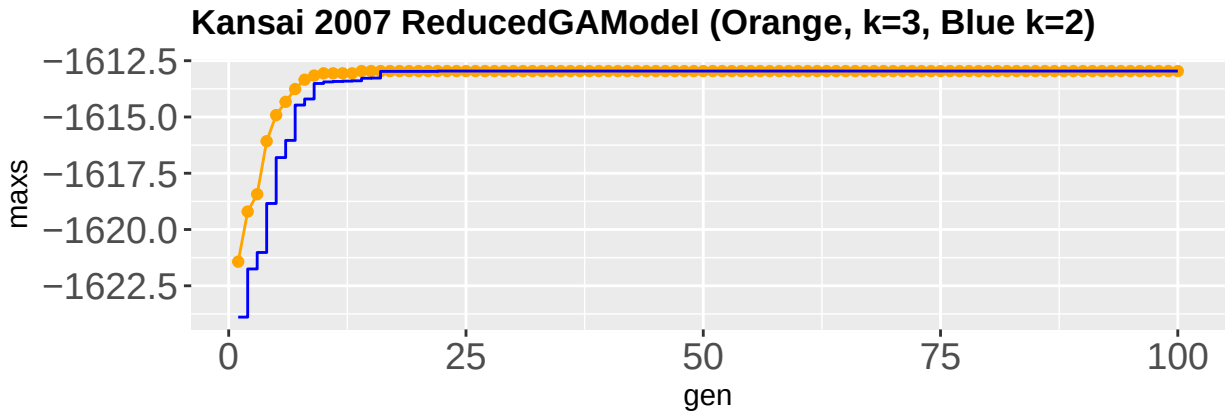

Kansai 2005 GAModel (Orange, k=3, Blue k=2)
maxs
−1700
−1750
−1800
−1850
−1900
0
25
50
75
100
gen

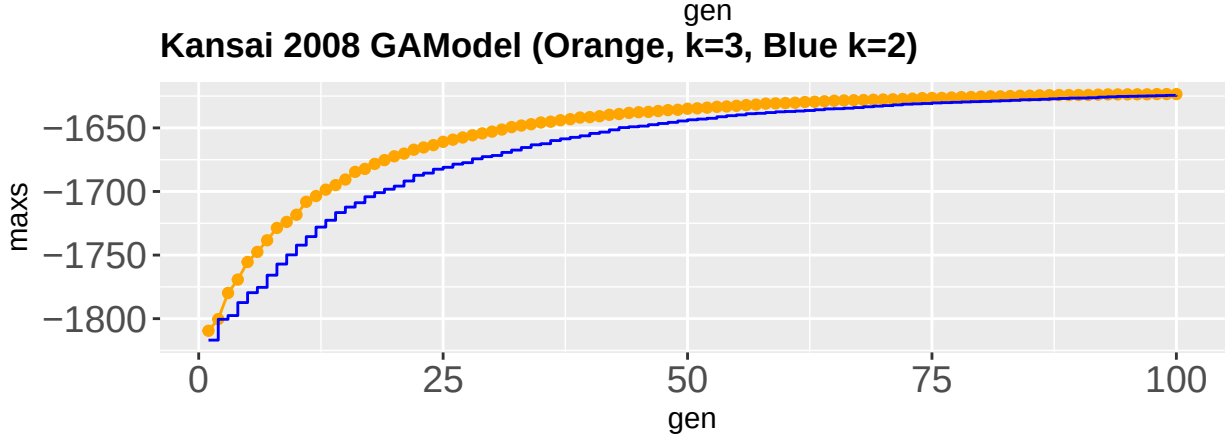

Kansai 2005 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1680
−1690
−1700
0
25
50
75
100
gen

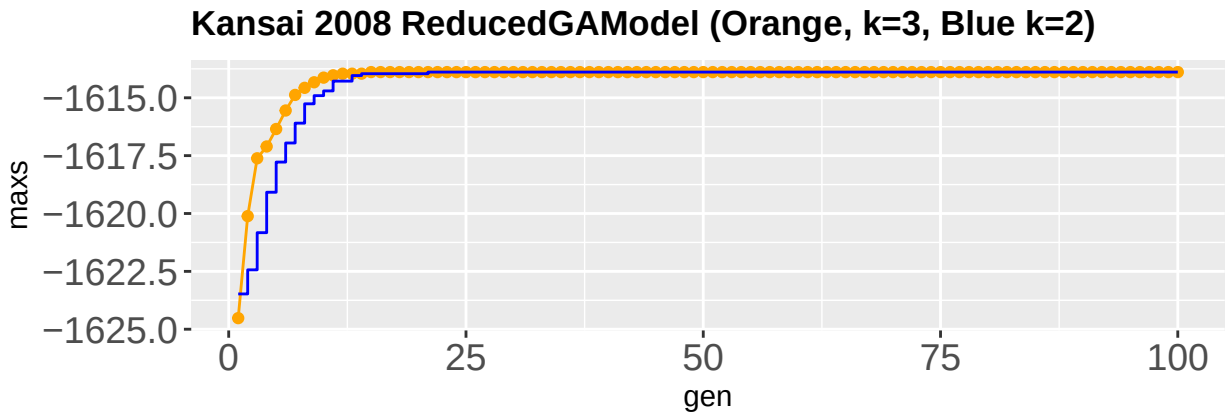

Kansai 2006 GAModel (Orange, k=3, Blue k=2)
maxs
−1700
−1750
−1800
−1850
−1900
0
25
50
75
100
gen

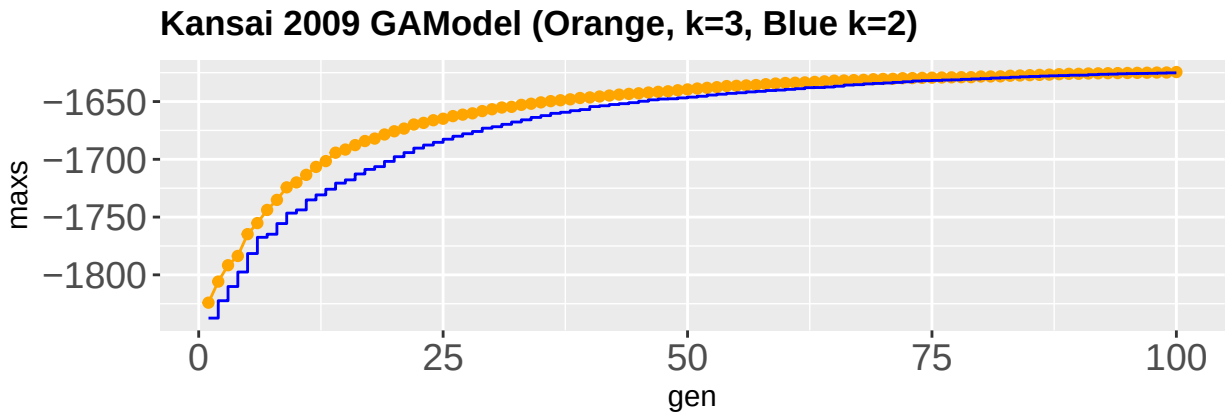

Kansai 2006 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1670
−1675
−1680
−1685
−1690
0
25
50
75
100
gen

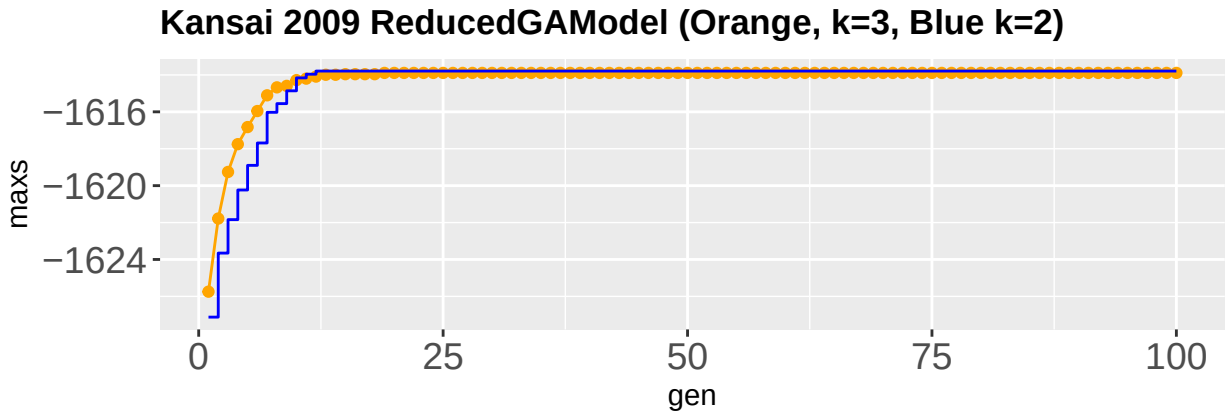

Kansai 2007 GAModel (Orange, k=3, Blue k=2)
maxs
−1650
−1700
−1750
−1800
0
25
50
75
100
gen

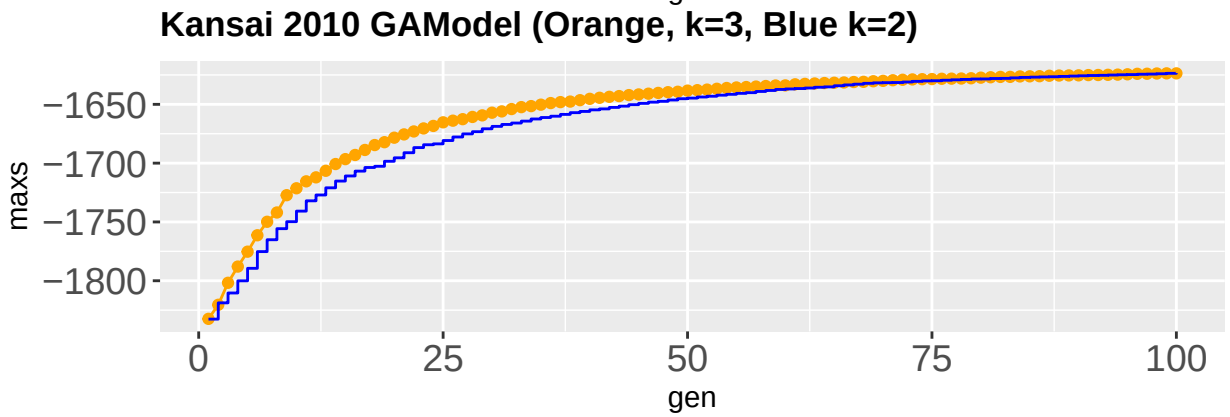

Kansai 2007 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1612.5
−1615.0
−1617.5
−1620.0
−1622.5
0
25
50
75
100
gen

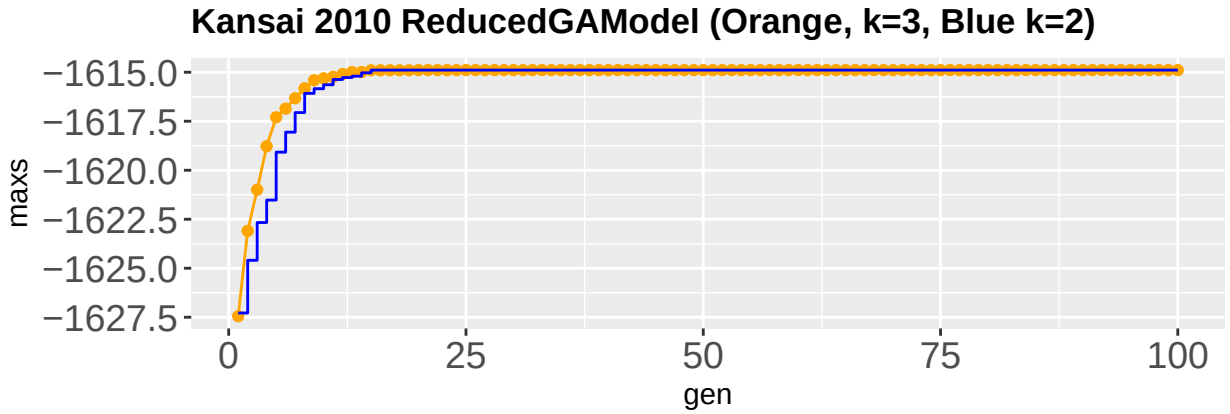

Kansai 2008 GAModel (Orange, k=3, Blue k=2)
maxs
−1650
−1700
−1750
−1800
0
25
50
75
100
gen

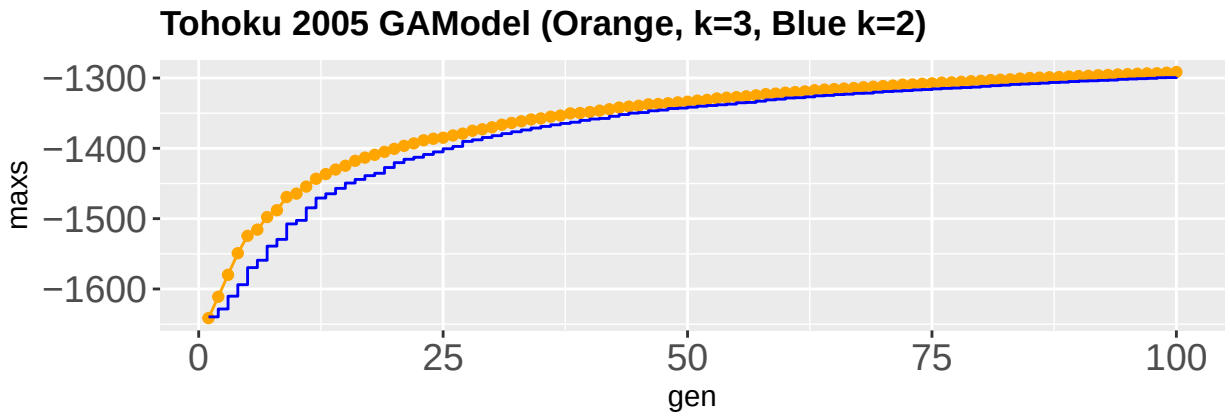

Kansai 2008 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1615.0
−1617.5
−1620.0
−1622.5
−1625.0
0
25
50
75
100
gen

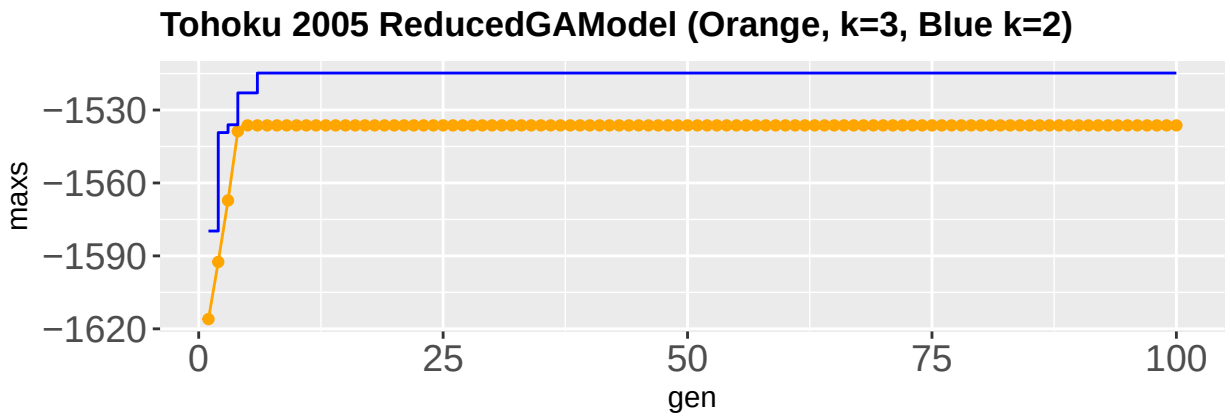

Kansai 2009 GAModel (Orange, k=3, Blue k=2)
maxs
−1650
−1700
−1750
−1800
0
25
50
75
100
gen

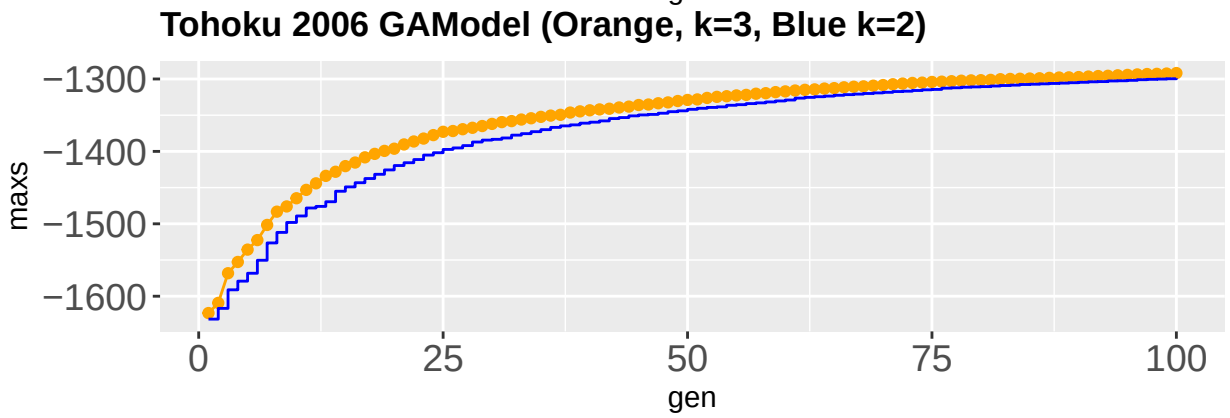

Kansai 2009 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1616
−1620
−1624
0
25
50
75
100
gen

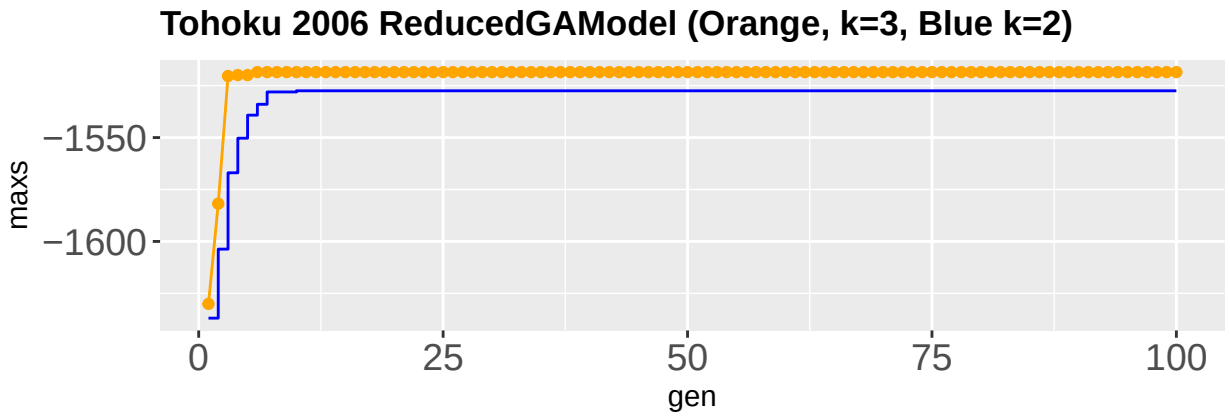

Kansai 2010 GAModel (Orange, k=3, Blue k=2)
maxs
−1650
−1700
−1750
−1800
0
25
50
75
100
gen

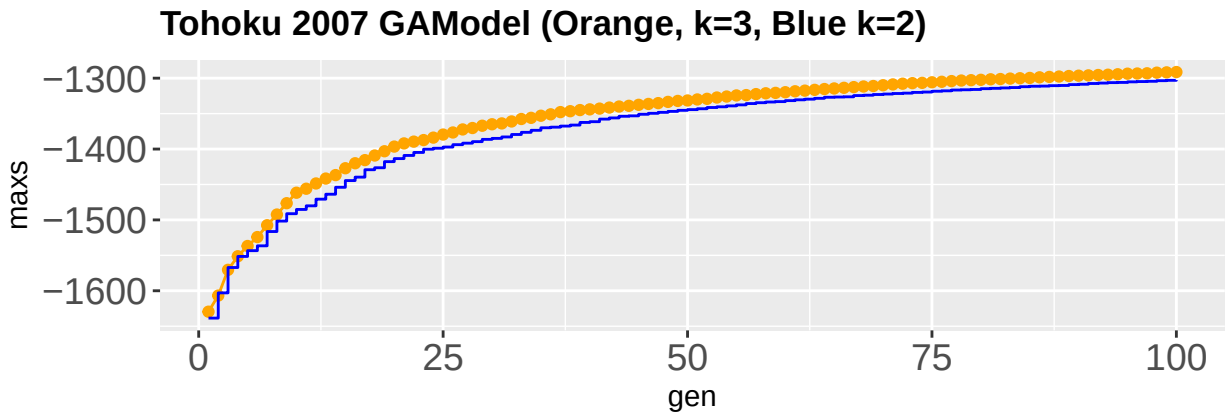

Kansai 2010 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1615.0
−1617.5
−1620.0
−1622.5
−1625.0
−1627.5
0
25
50
75
100
gen

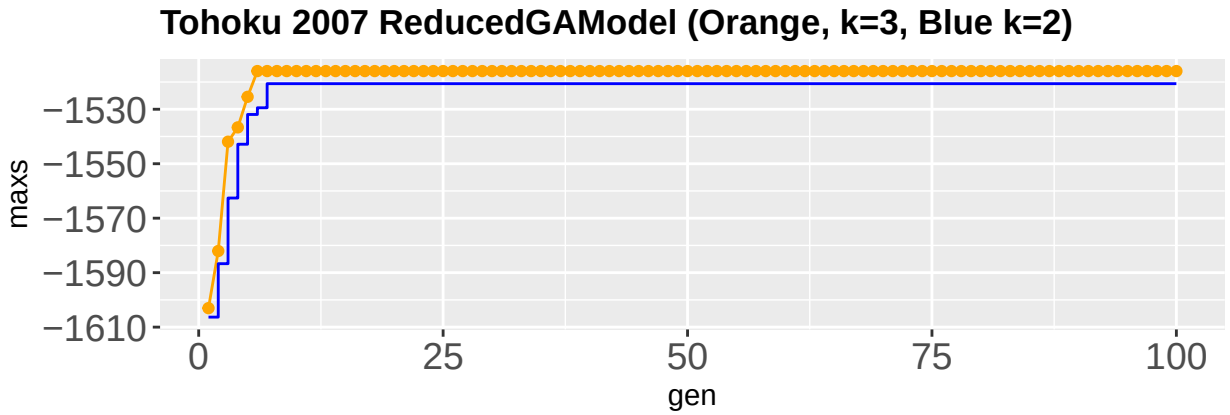

Tohoku 2005 GAModel (Orange, k=3, Blue k=2)
maxs
−1300
−1400
−1500
−1600
0
25
50
75
100
gen

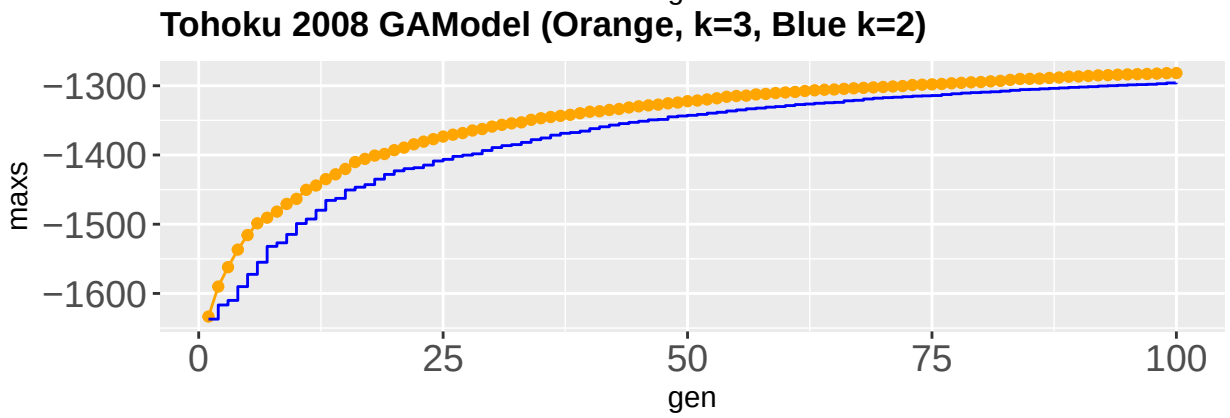

Tohoku 2005 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1530
−1560
−1590
−1620
0
25
50
75
100
gen

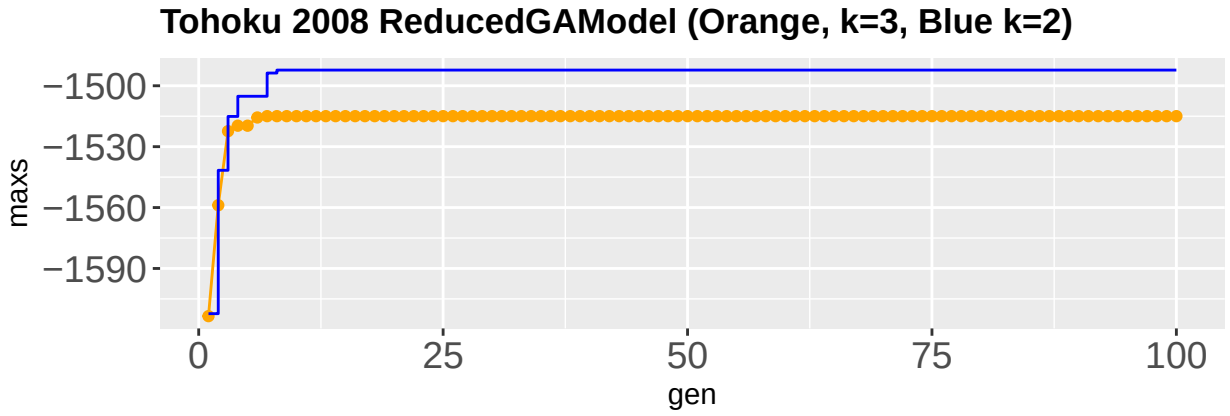

Tohoku 2006 GAModel (Orange, k=3, Blue k=2)
maxs
−1300
−1400
−1500
−1600
0
25
50
75
100
gen

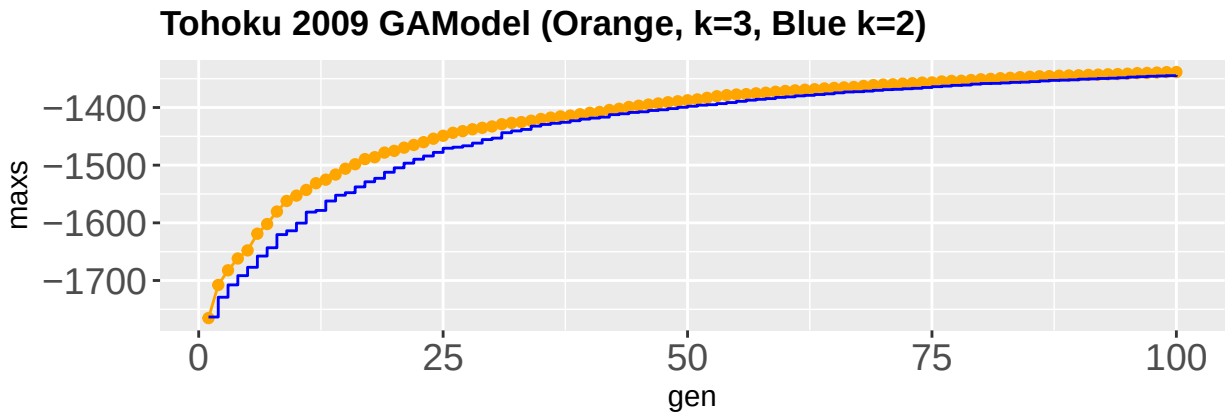

Tohoku 2006 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1550
−1600
0
25
50
75
100
gen

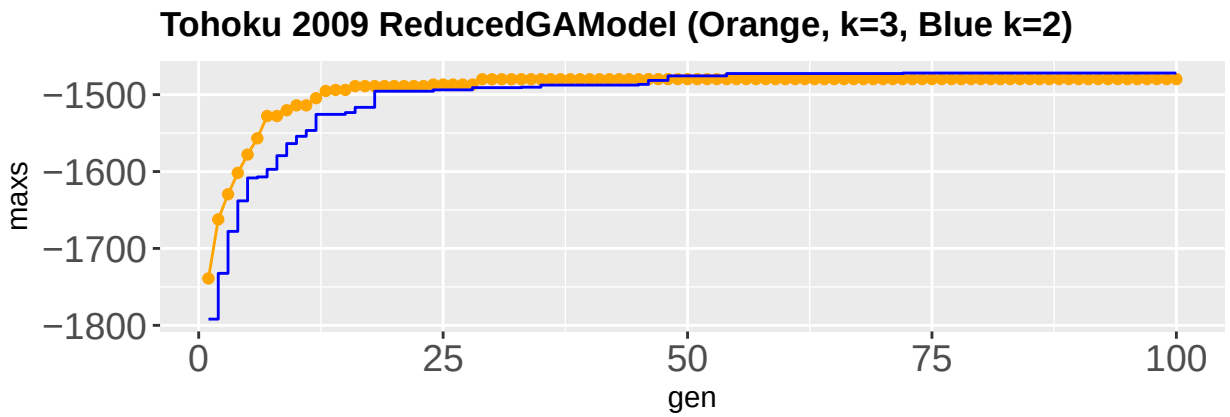

Tohoku 2007 GAModel (Orange, k=3, Blue k=2)
maxs
−1300
−1400
−1500
−1600
0
25
50
75
100
gen

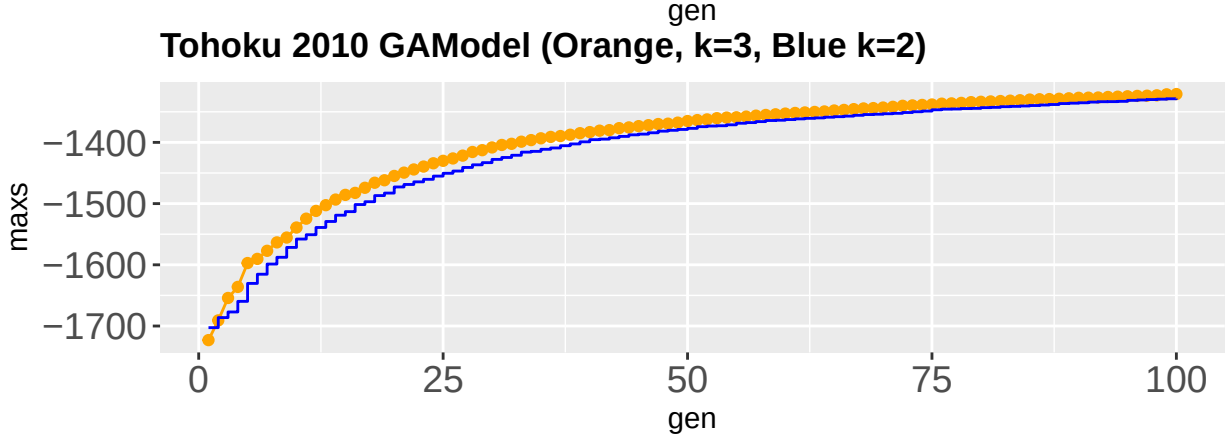

Tohoku 2007 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1530
−1550
−1570
−1590
−1610
0
25
50
75
100
gen

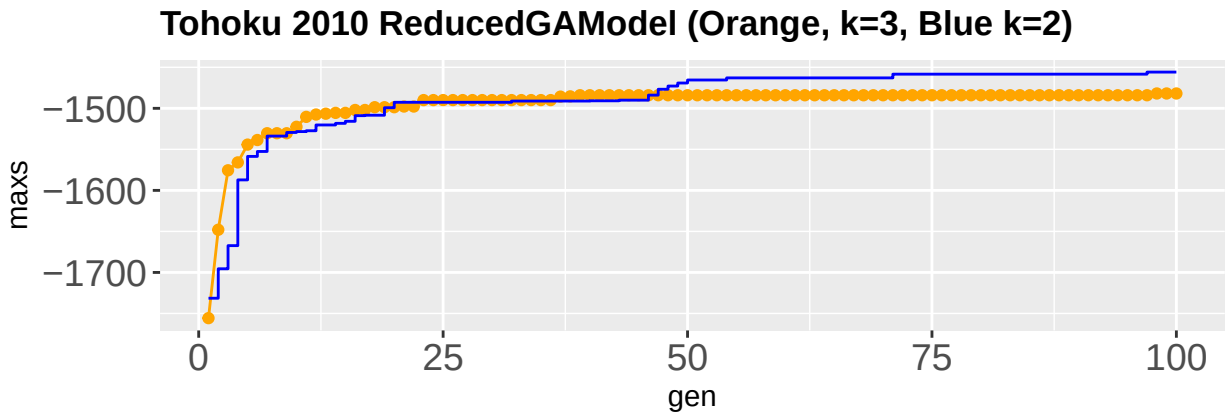

Tohoku 2008 GAModel (Orange, k=3, Blue k=2)
maxs
−1300
−1400
−1500
−1600
0
25
50
75
100
gen

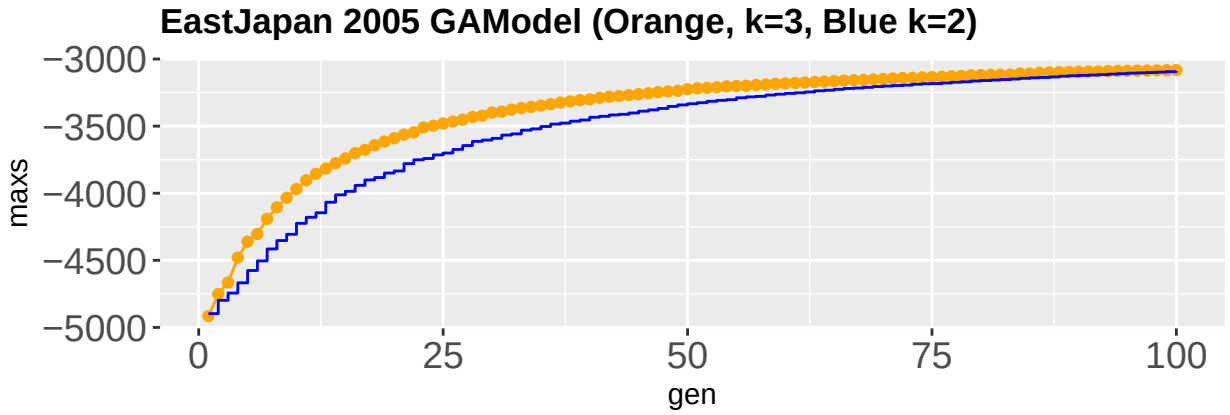

Tohoku 2008 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1500
−1530
−1560
−1590
0
25
50
75
100
gen

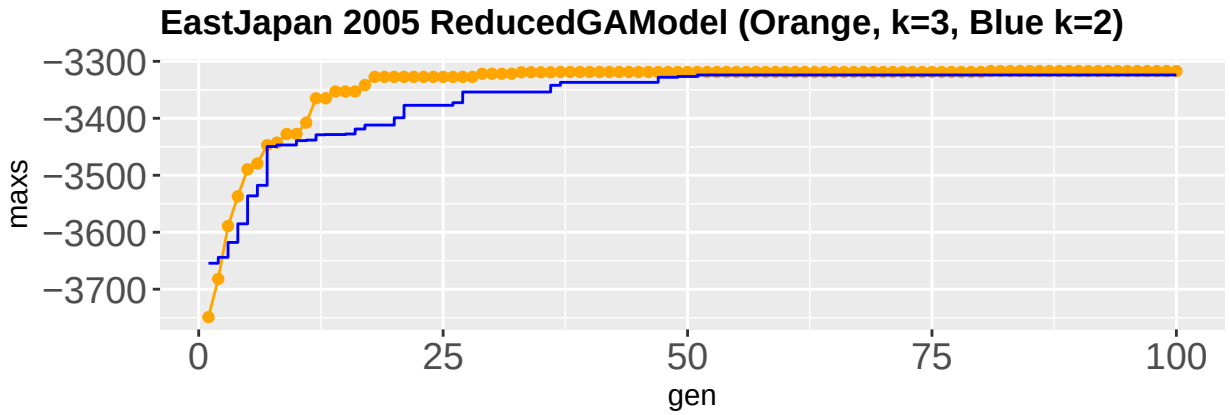

Tohoku 2009 GAModel (Orange, k=3, Blue k=2)
maxs
−1400
−1500
−1600
−1700
0
25
50
75
100
gen

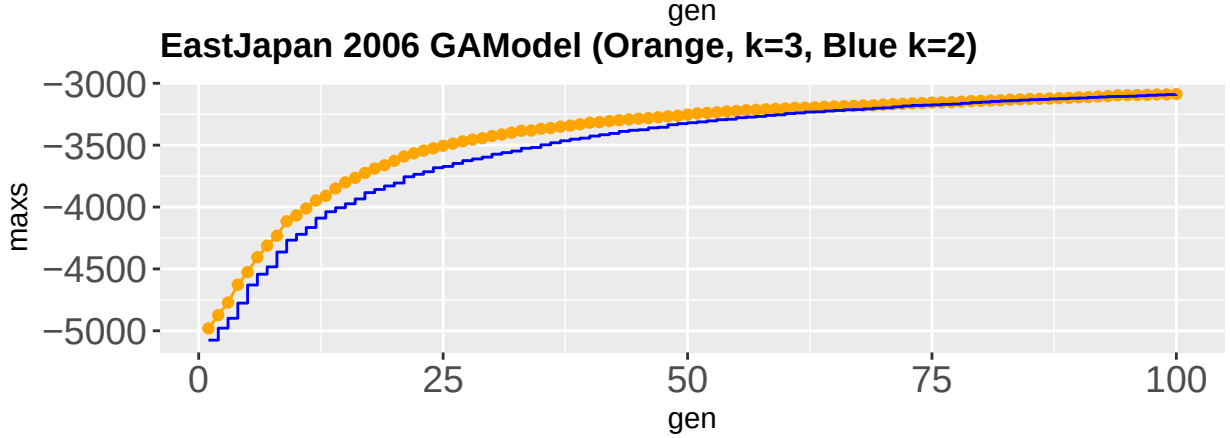

Tohoku 2009 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1500
−1600
−1700
−1800
0
25
50
75
100
gen

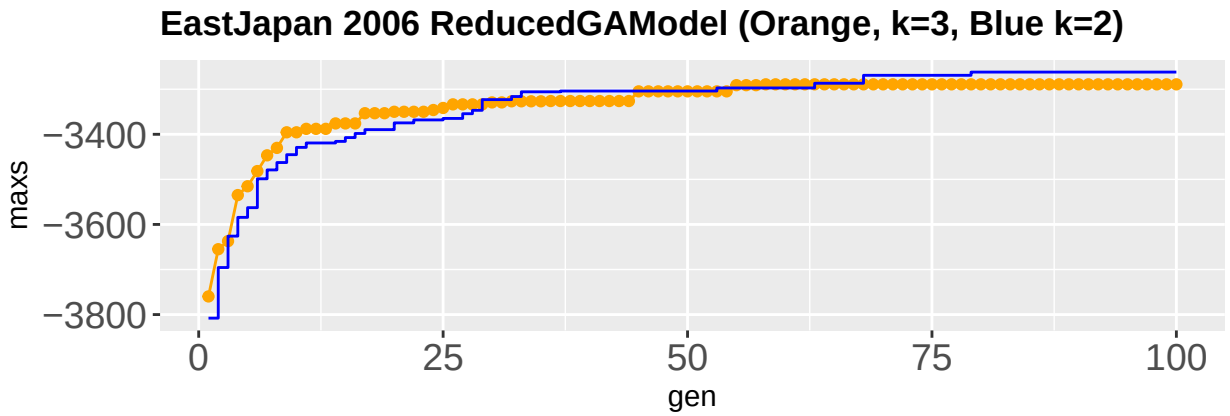

Tohoku 2010 GAModel (Orange, k=3, Blue k=2)
maxs
−1400
−1500
−1600
−1700
0
25
50
75
100
gen

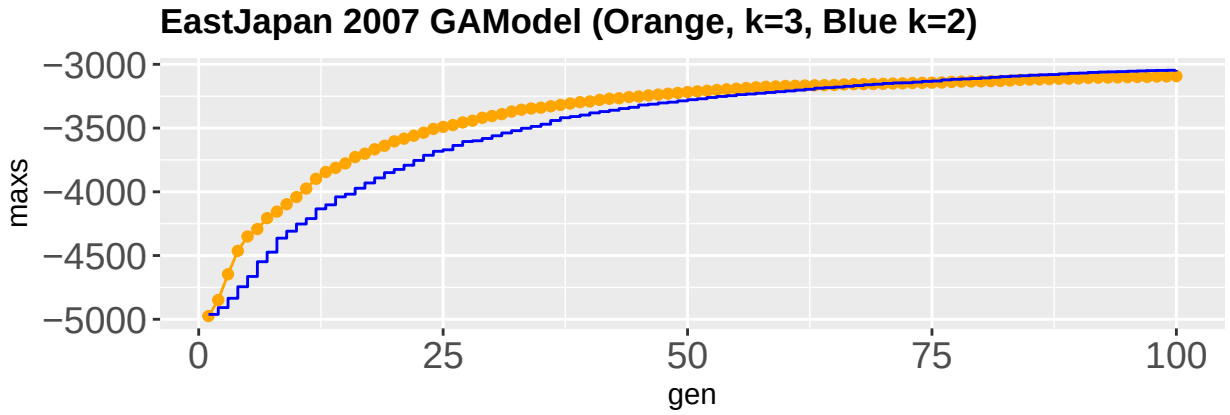

Tohoku 2010 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−1500
−1600
−1700
0
25
50
75
100
gen

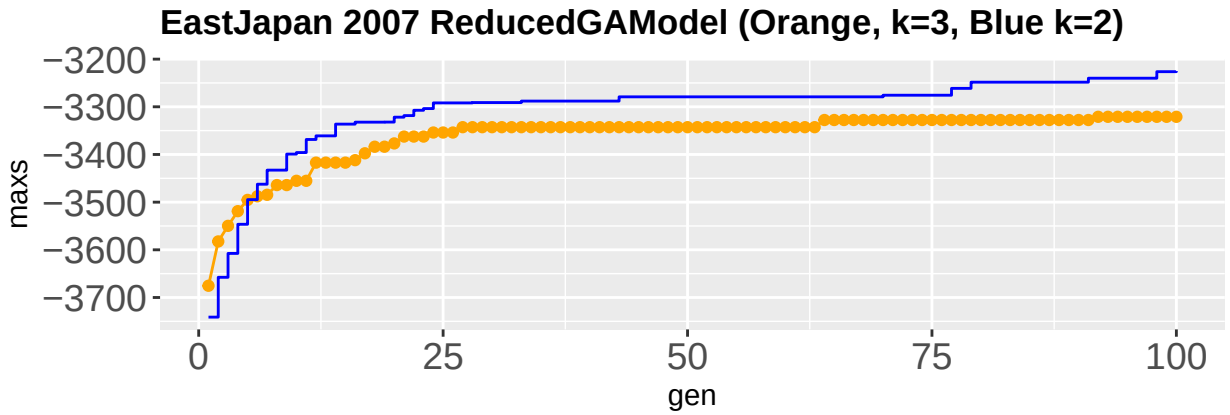

EastJapan 2005 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
−5000
0
25
50
75
100
gen

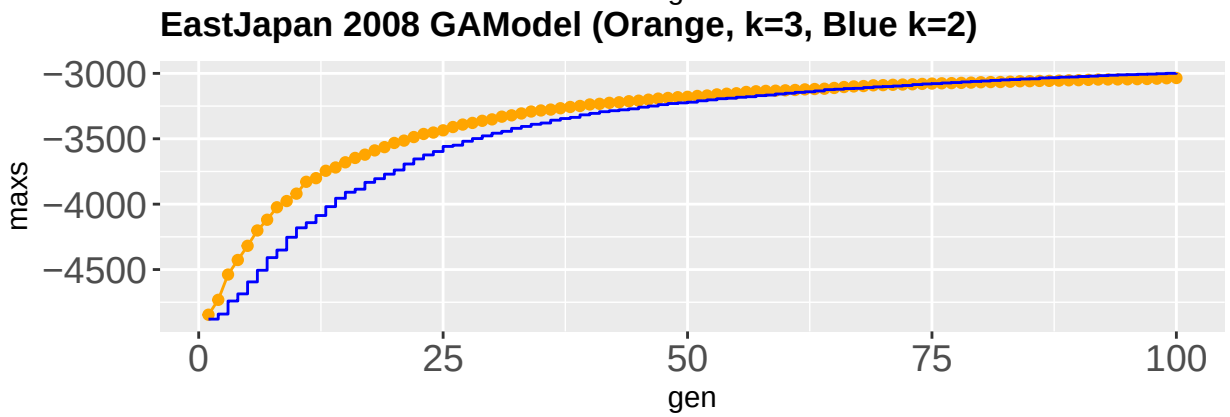

EastJapan 2005 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3300
−3400
−3500
−3600
−3700
0
25
50
75
100
gen

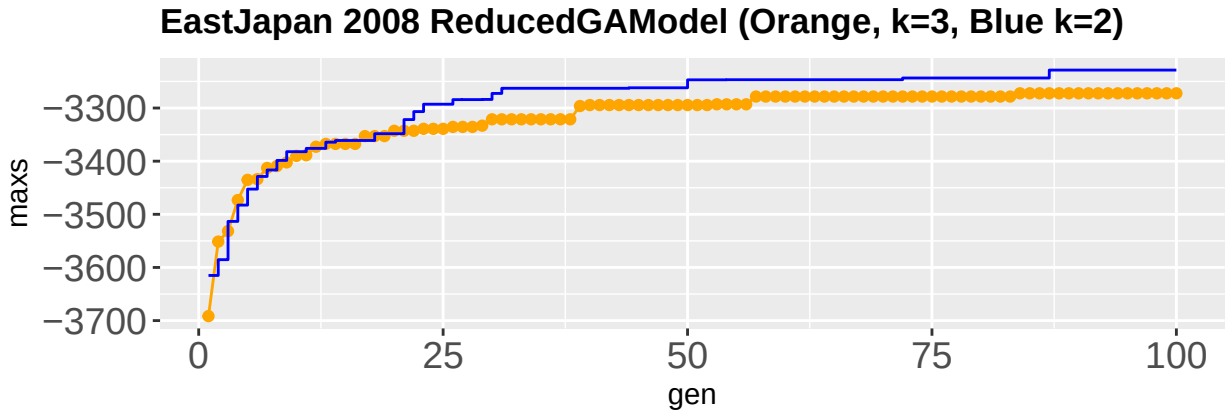

EastJapan 2006 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
−5000
0
25
50
75
100
gen

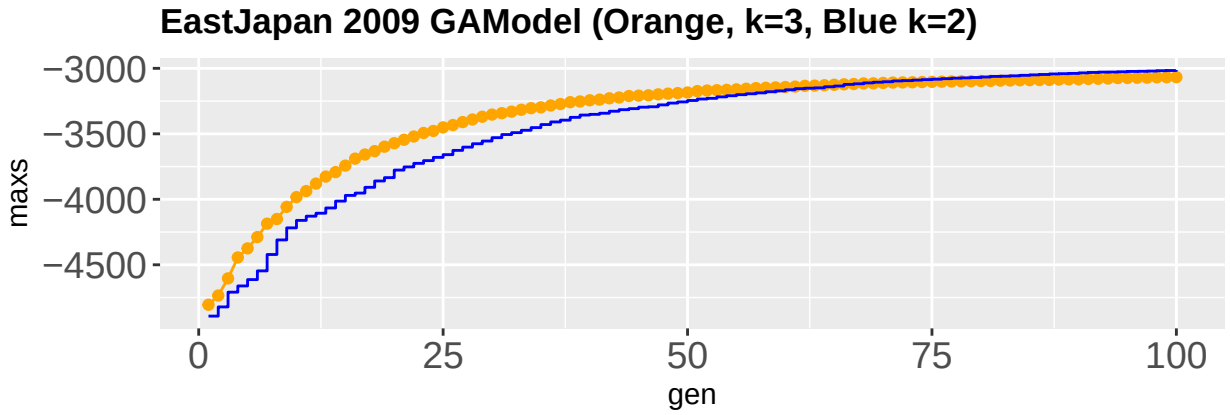

EastJapan 2006 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3400
−3600
−3800
0
25
50
75
100
gen

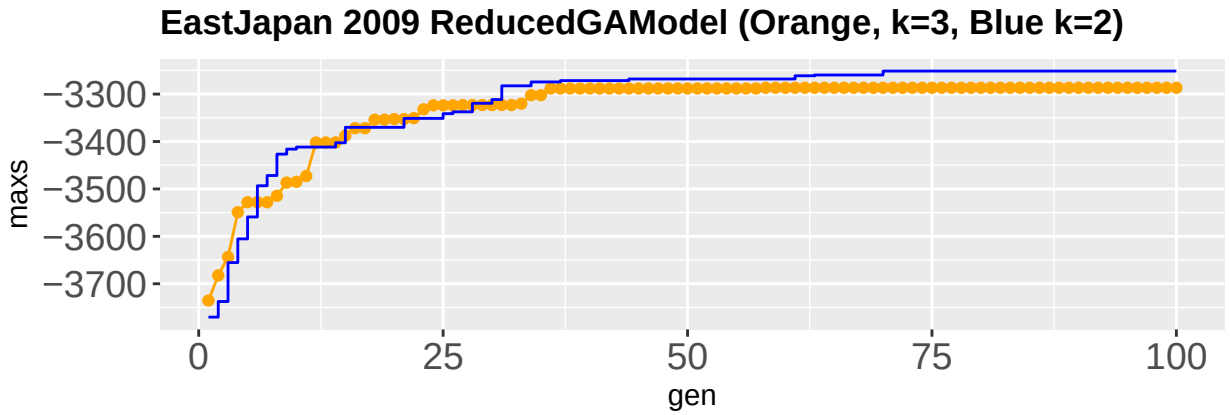

EastJapan 2007 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
−5000
0
25
50
75
100
gen

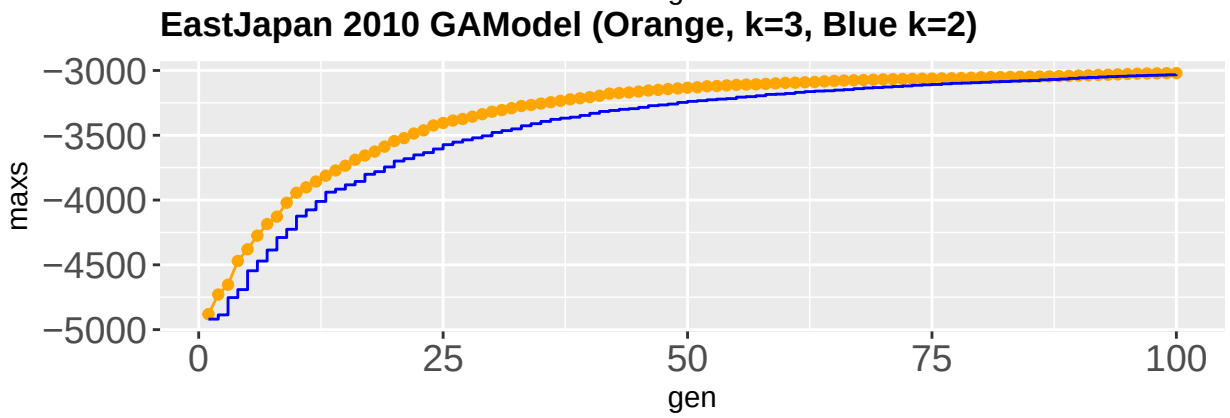

EastJapan 2007 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3200
−3300
−3400
−3500
−3600
−3700
0
25
50
75
100
gen

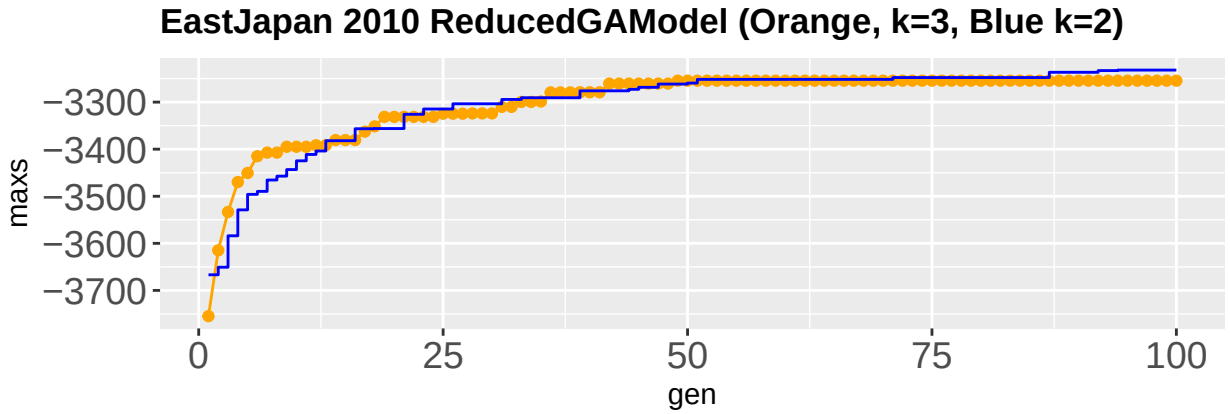

EastJapan 2008 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
0
25
50
75
100
gen


EastJapan 2008 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3300
−3400
−3500
−3600
−3700
0
25
50
75
100
gen


EastJapan 2009 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
0
25
50
75
100
gen


EastJapan 2009 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3300
−3400
−3500
−3600
−3700
0
25
50
75
100
gen


EastJapan 2010 GAModel (Orange, k=3, Blue k=2)
maxs
−3000
−3500
−4000
−4500
−5000
0
25
50
75
100
gen


EastJapan 2010 ReducedGAModel (Orange, k=3, Blue k=2)
maxs
−3300
−3400
−3500
−3600
−3700
0
25
50
75
100
gen

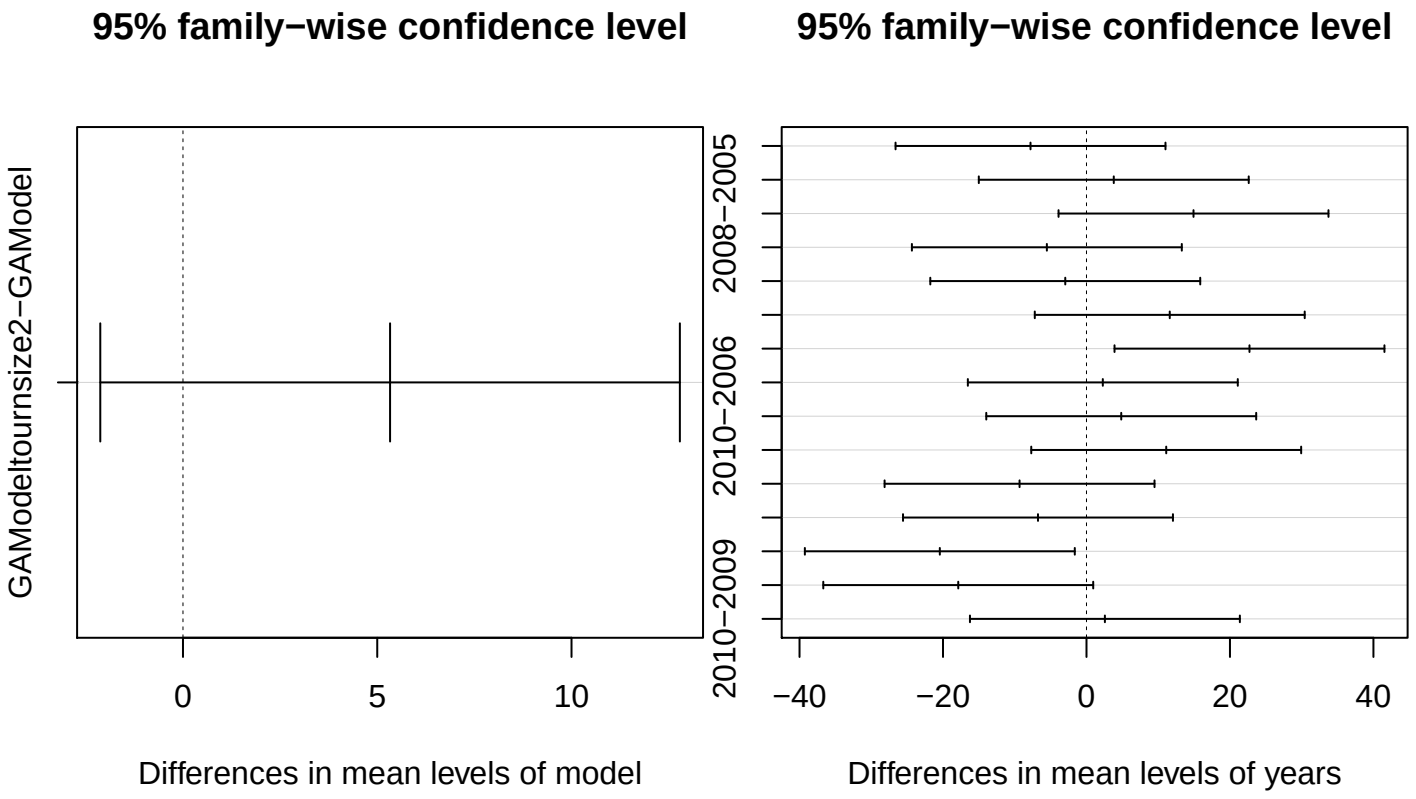
ANOVA test and HSD Tukey

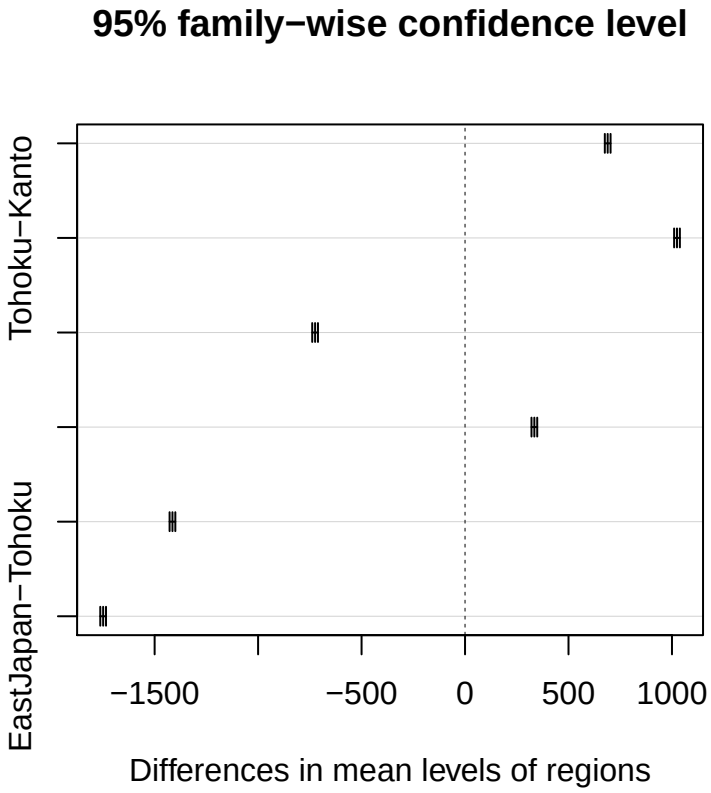
All regions

```
resultANOVA = aov(loglikeValues~model+years+regions, data = data)
summary(resultANOVA)
```

```
##              Df    Sum Sq  Mean Sq   F value  Pr(>F)
## model         1      3409     3409     1.972 0.16090
## years         5     26894     5379     3.111 0.00896 **
## regions       3 216542658 72180886 41751.046 < 2e-16 ***
## Residuals   470    812555     1729
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
tuk = TukeyHSD(resultANOVA)
op <- par(mar = c(5,14,4,2)+0.1)
plot(tuk,las=0)
```





KANTO

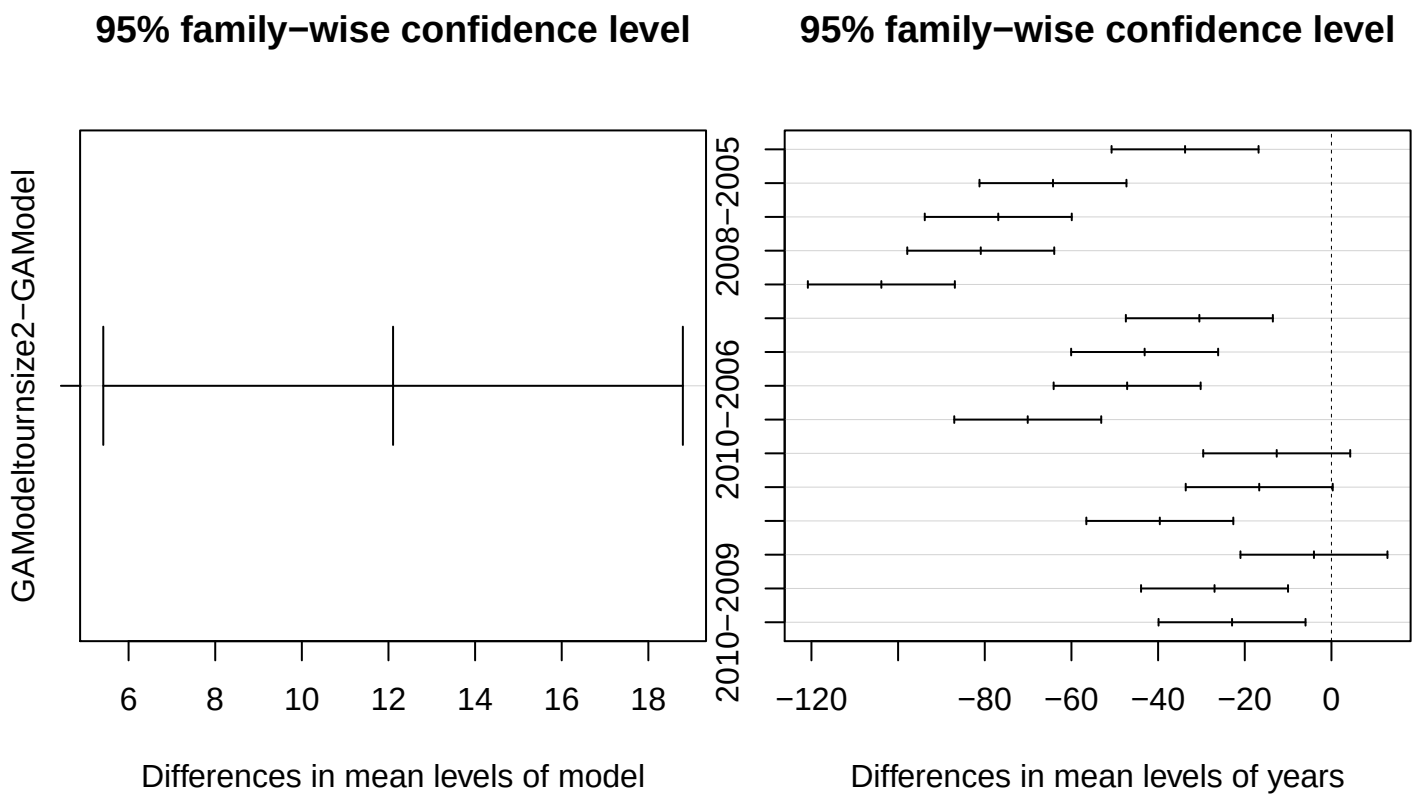
```
subTabela = data[data$regions=="Kanto",]
print("In Kanto")
```

```
## [1] "In Kanto"
```

```
resultANOVA = aov(loglikeValues~model+years, data = subTabela)
summary(resultANOVA)
```

```
##              Df Sum Sq Mean Sq F value   Pr(>F)
## model         1   4397    4397   12.85 0.000499 ***
## years         5 139054   27811   81.29  < 2e-16 ***
## Residuals   113  38661     342
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
tuk = TukeyHSD(resultANOVA)
op <- par(mar = c(5,14,4,2)+0.1)
plot(tuk,las=0)
```



EASTJAPAN

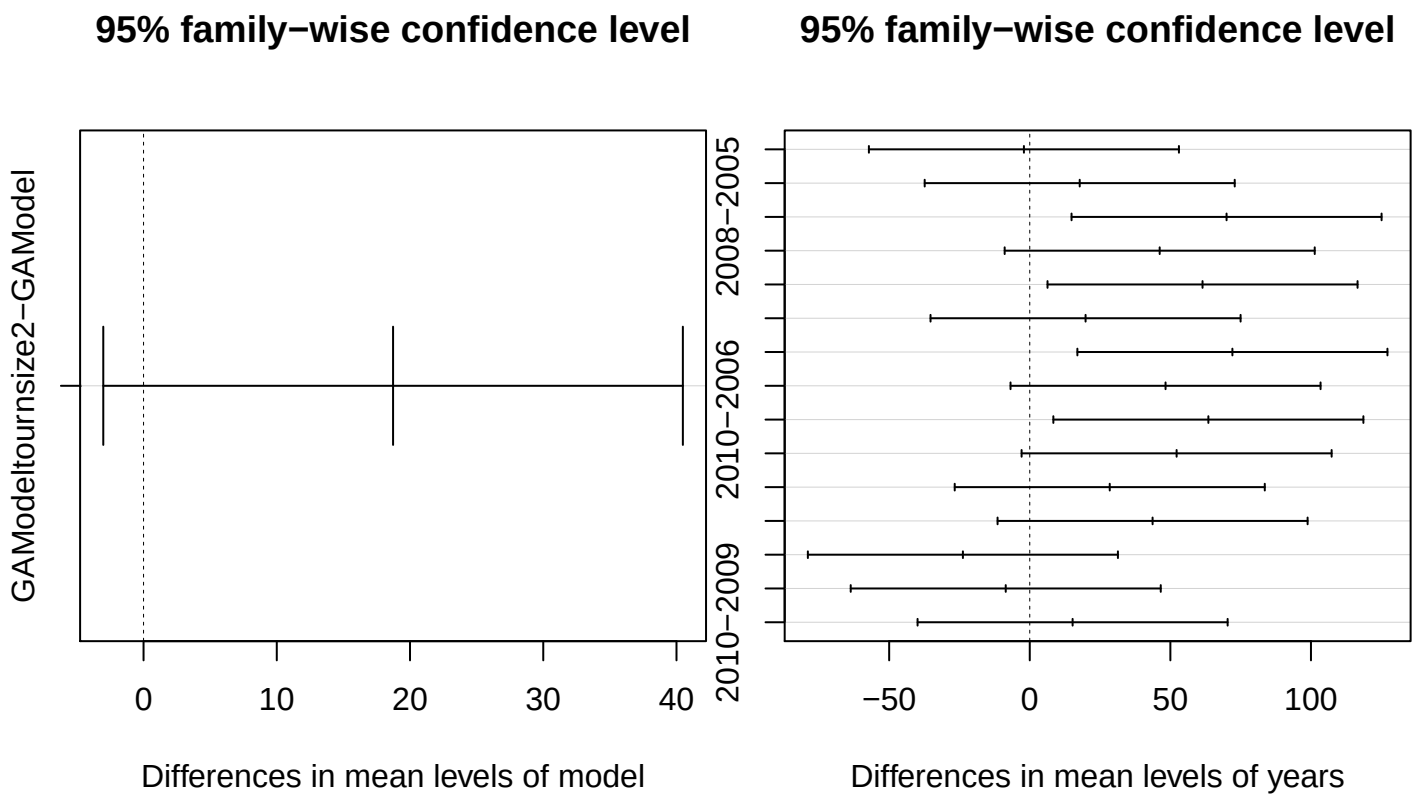
```
subTabela2 = data[data$regions=="EastJapan",]
print("In EastJapan")
```

```
## [1] "In EastJapan"
```

```
resultANOVA = aov(loglikeValues~model+years, data = subTabela2)
summary(resultANOVA)
```

```
##              Df Sum Sq Mean Sq F value   Pr(>F)
## model         1  10522   10522    2.91 0.090773 .
## years         5  97986   19597    5.42 0.000166 ***
## Residuals   113 408578    3616
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
tuk = TukeyHSD(resultANOVA)
op <- par(mar = c(5,14,4,2)+0.1)
plot(tuk,las=0)
```



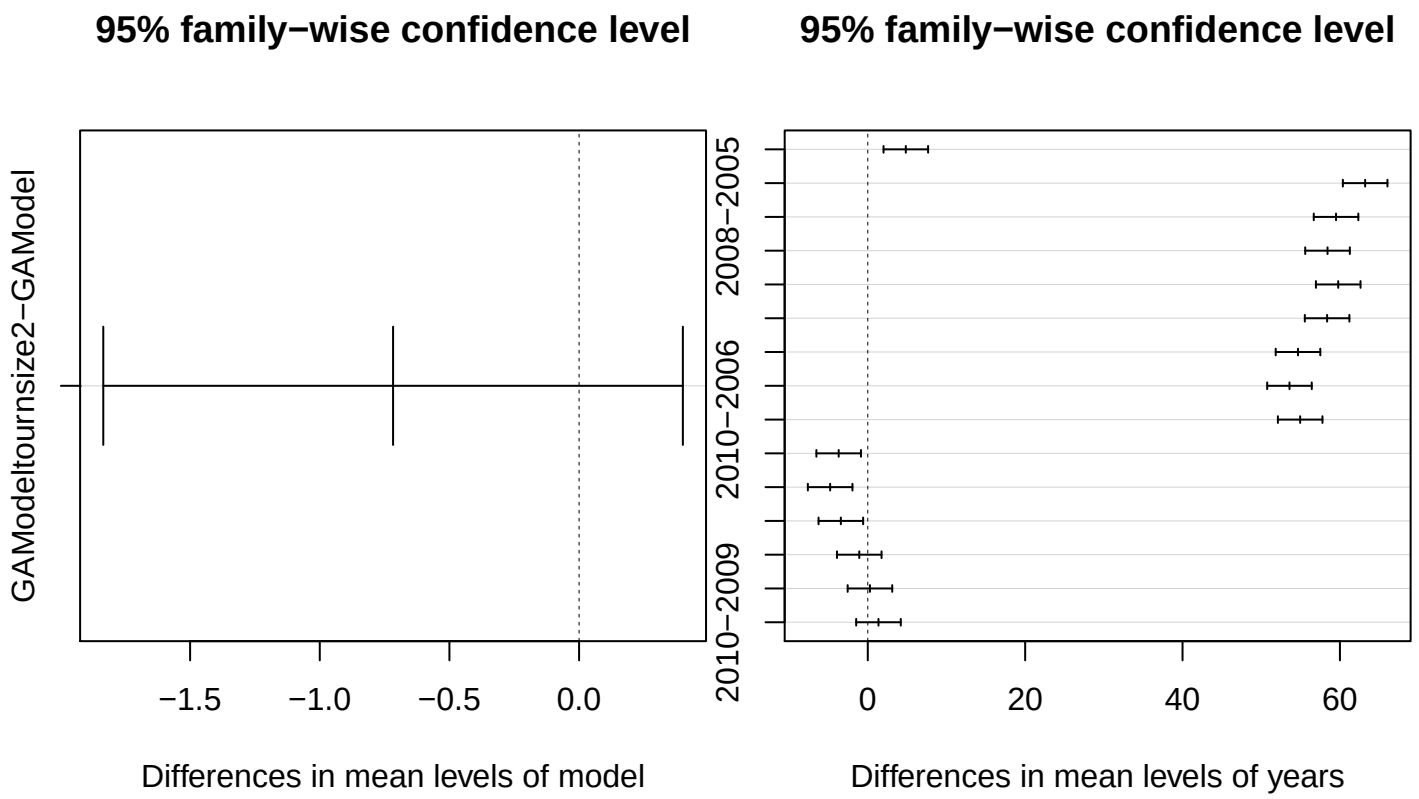

```
subTabela3 = data[data$regions=="Kansai",]
print("In Kansai")
```

```
## [1] "In Kansai"
```

```
resultANOVA = aov(loglikeValues~model+years, data = subTabela3)
summary(resultANOVA)
```

```
##              Df Sum Sq Mean Sq  F value Pr(>F)
## model         1     15      15    1.617  0.206
## years         5  89623   17925 1877.966 <2e-16 ***
## Residuals   113   1079      10
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
tuk = TukeyHSD(resultANOVA)
op <- par(mar = c(5,14,4,2)+0.1)
plot(tuk,las=0)
```



TOHOKU

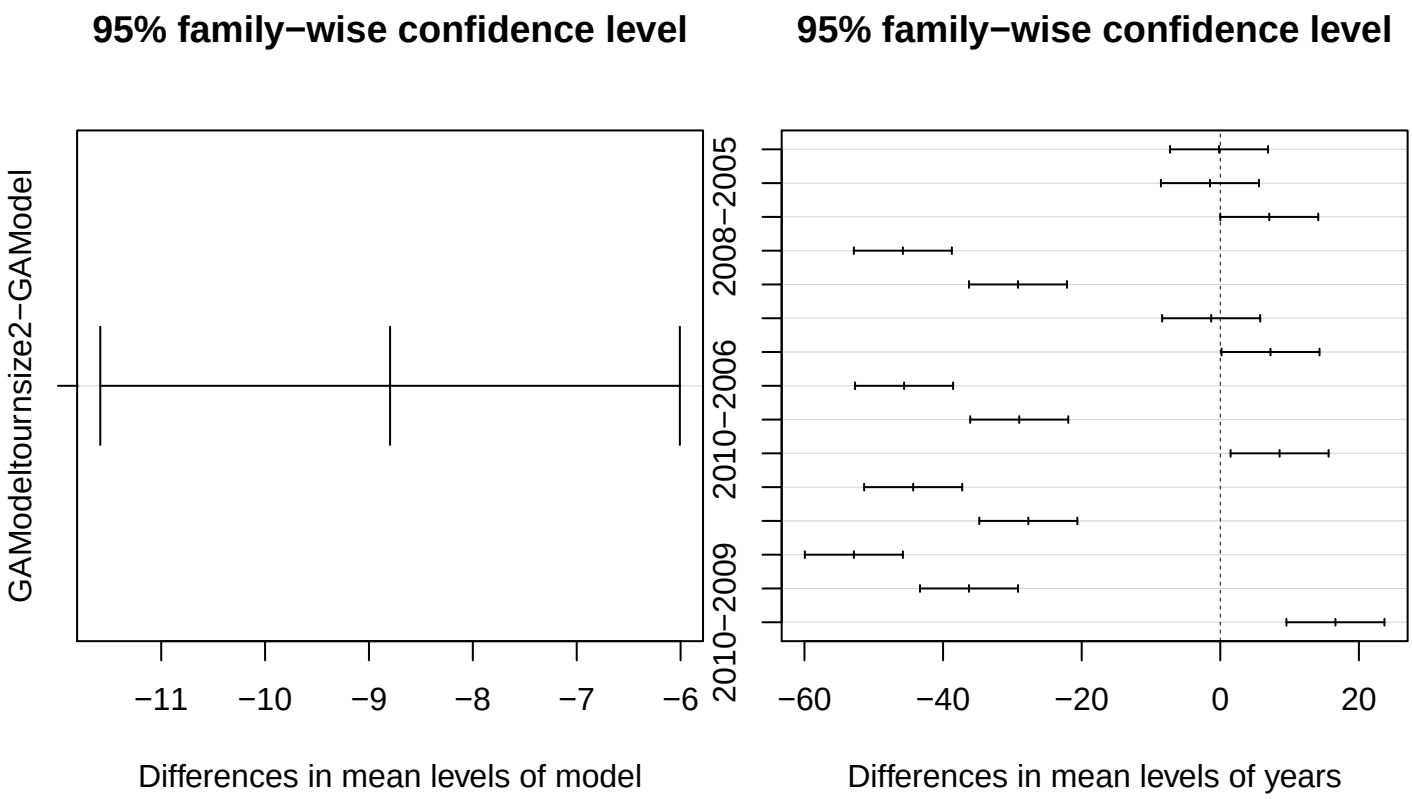
```
subTabela3 = data[data$regions=="Tohoku",]
print("In Tohoku")
```

```
## [1] "In Tohoku"
```

```
resultANOVA = aov(loglikeValues~model+years, data = subTabela3)
summary(resultANOVA)
```

```
##              Df Sum Sq Mean Sq F value   Pr(>F)
## model         1   2321    2321   39.02 7.59e-09 ***
## years         5  43900    8780  147.60  < 2e-16 ***
## Residuals   113   6722      59
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
tuk = TukeyHSD(resultANOVA)
op <- par(mar = c(5,14,4,2)+0.1)
plot(tuk,las=0)
```


95% family−wise confidence level
GAModeltournsize2−GAModel
−11
−10
−9
−8
−7
−6
Differences in mean levels of model
95% family−wise confidence level
2008−2005
2010−2006
2010−2009
−60
−40
−20
0
20
Differences in mean levels of years