

L_n, L_x curves

ALQ Pos. 1

T_n, T_x curves



Cutheat – TL curves



IRSLT

IRSL/BOSL = 0.88%



IRSL curve (10 s)



help("Analyse_SAR OSLdata")

unkown measurement





Fig. 4 – Bos & Wallinga (2012)





`help("CW2pLM")`



Fig. 4 – Bos & Wallinga (2012)





Fig. 4 – Bos & Wallinga (2012)





Histogram



Histogram

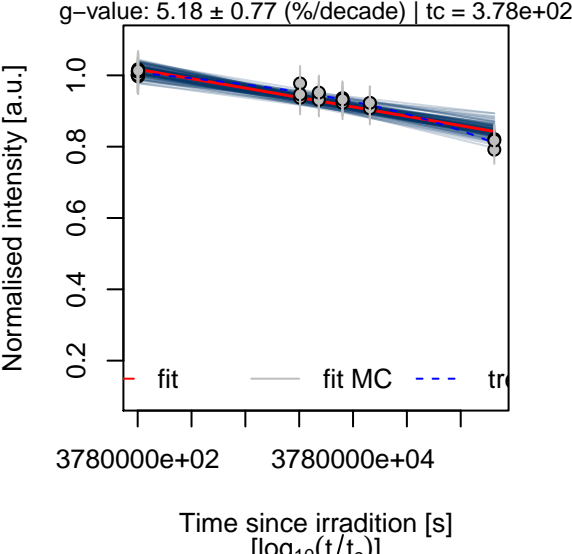


No L_x curves detected

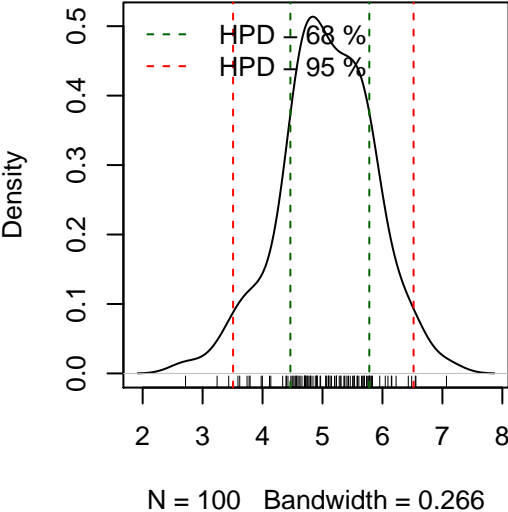
No T_x curves detected

help("ExampleData.Fading")

Signal Fading

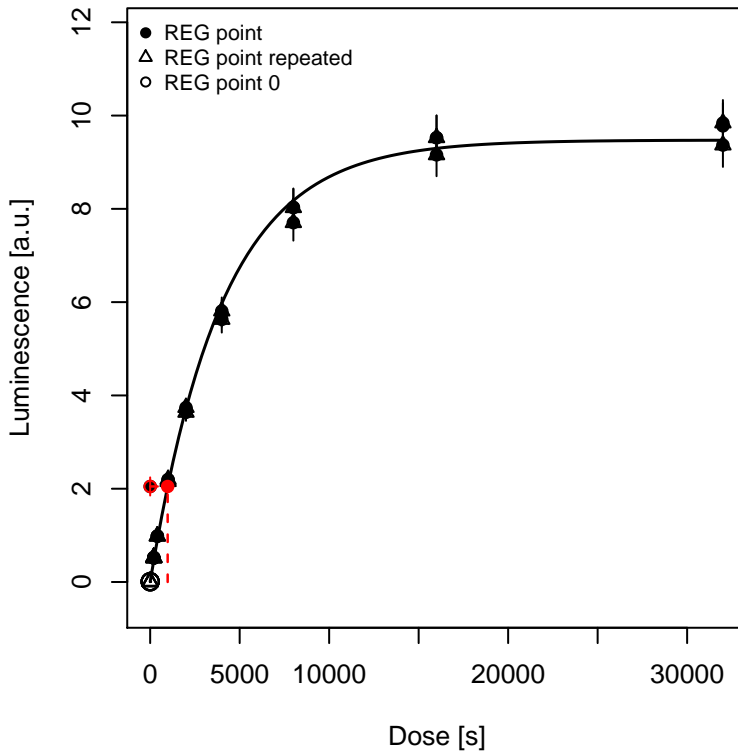


Density: g-values (%/decade)



Growth curve

$D_e = 977.38 \pm 105.65$ | fit: EXP

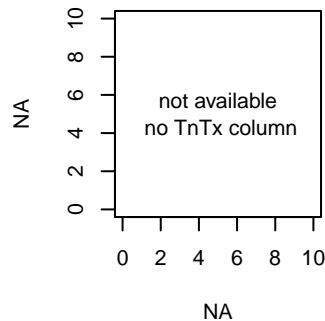


D_e from MC simulation

$D_{eMC} = 984.66 \pm 105.65$ | quality = 99.3 %



Test dose response





`help("ExampleData.FittingLM")`



`help("ExampleData.LxTxData")`



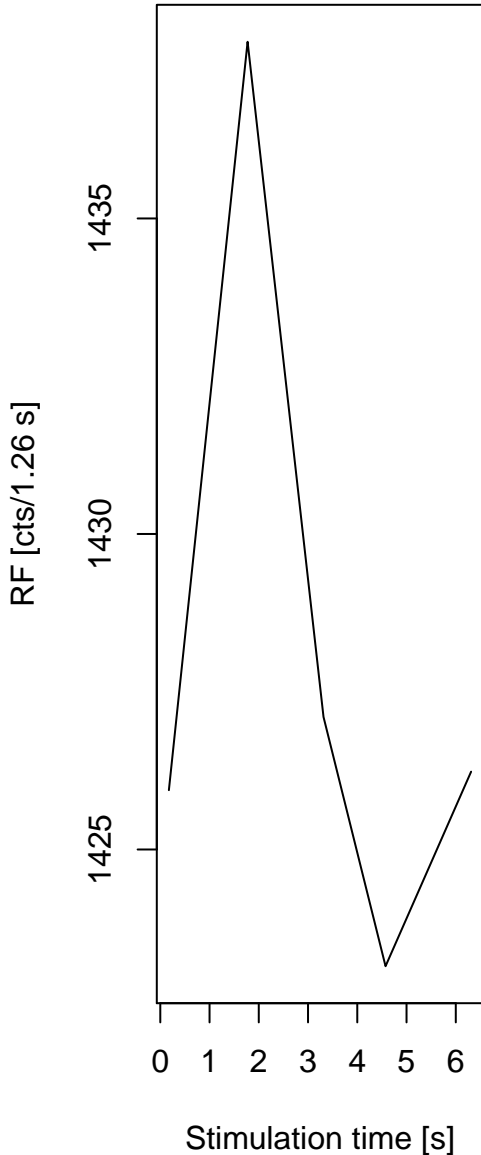
help("ExampleData.LxTxOSLData")



`help("ExampleData.LxTxOSLData")`

RF

#1



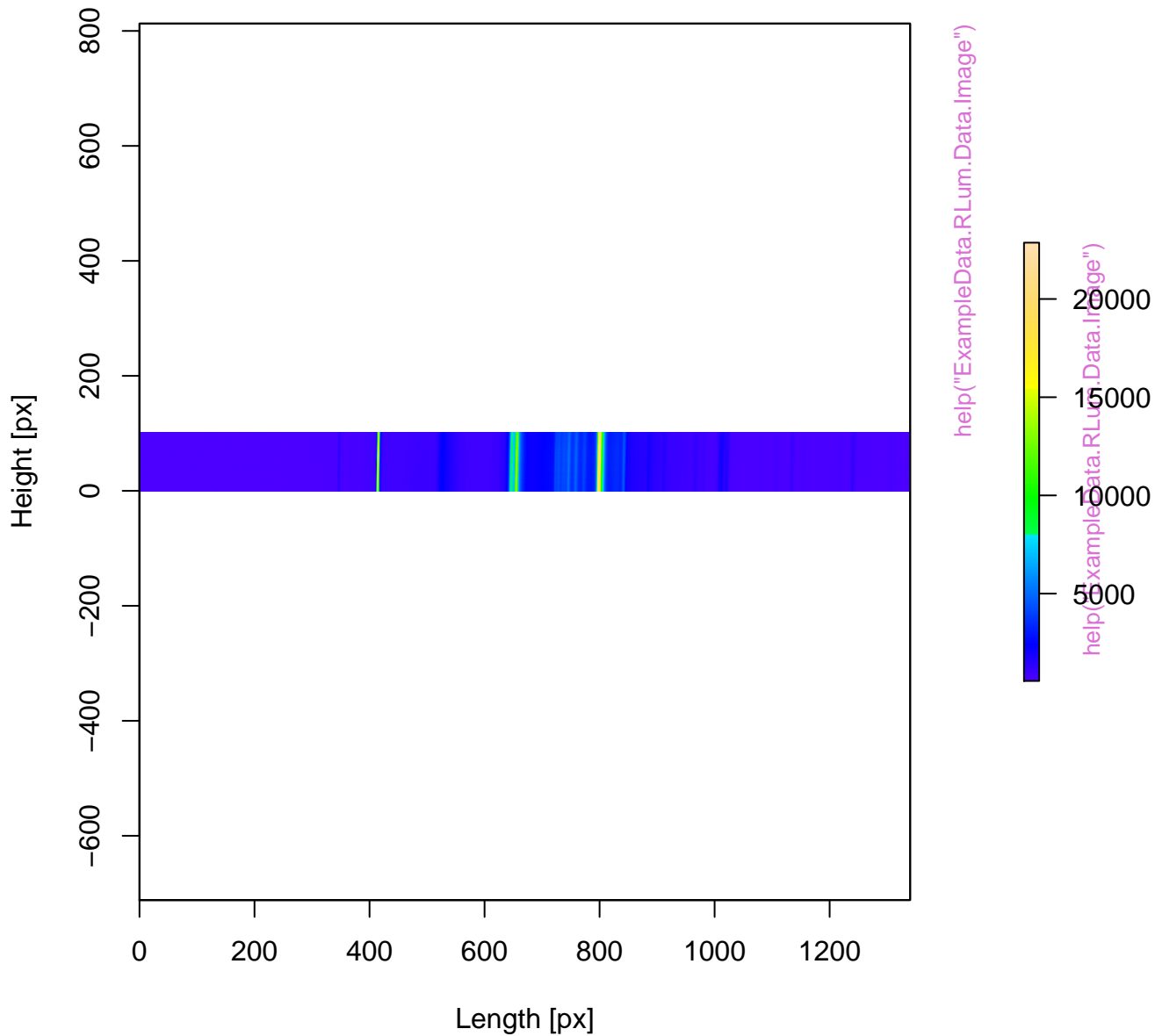
RF

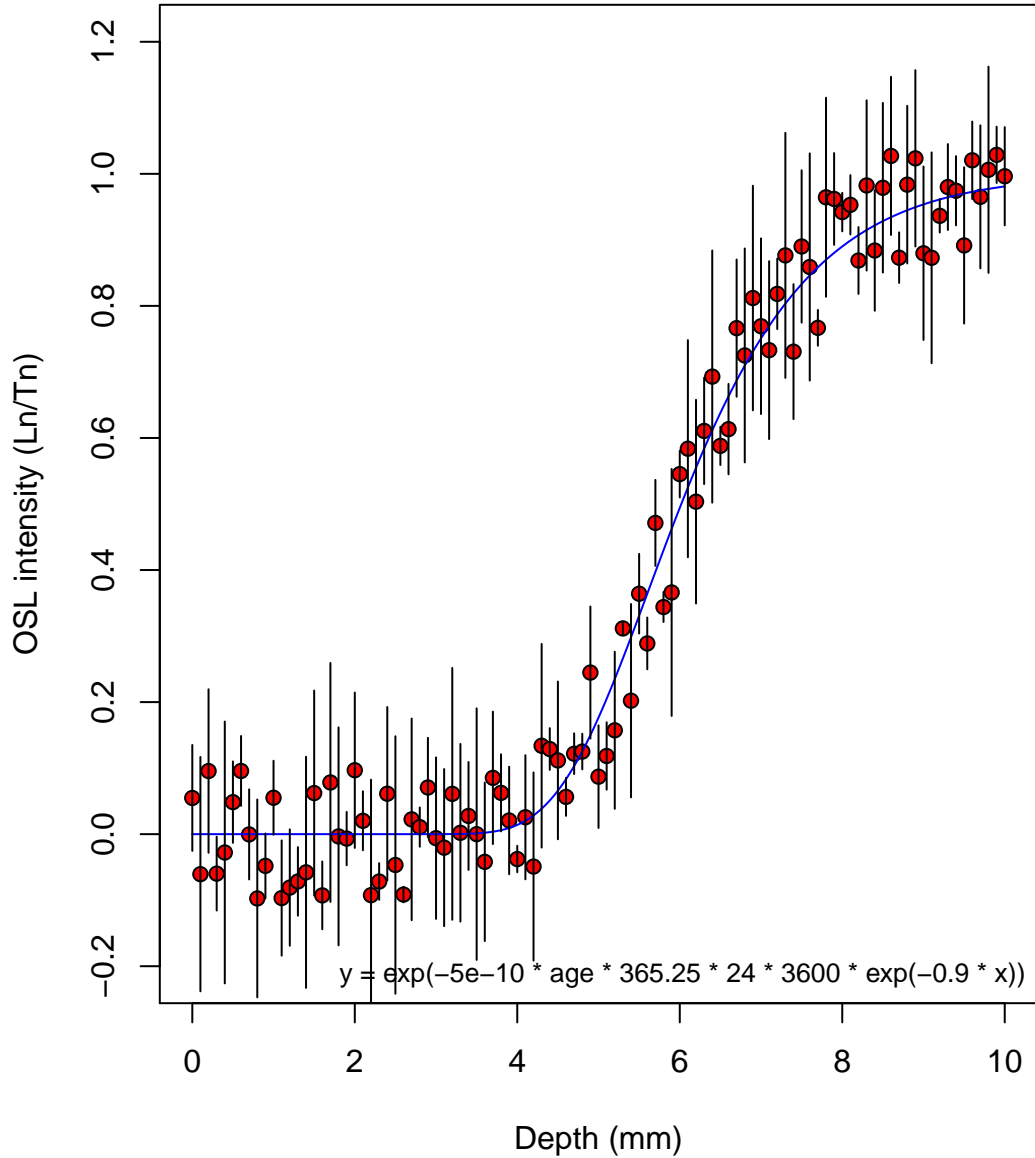
#2



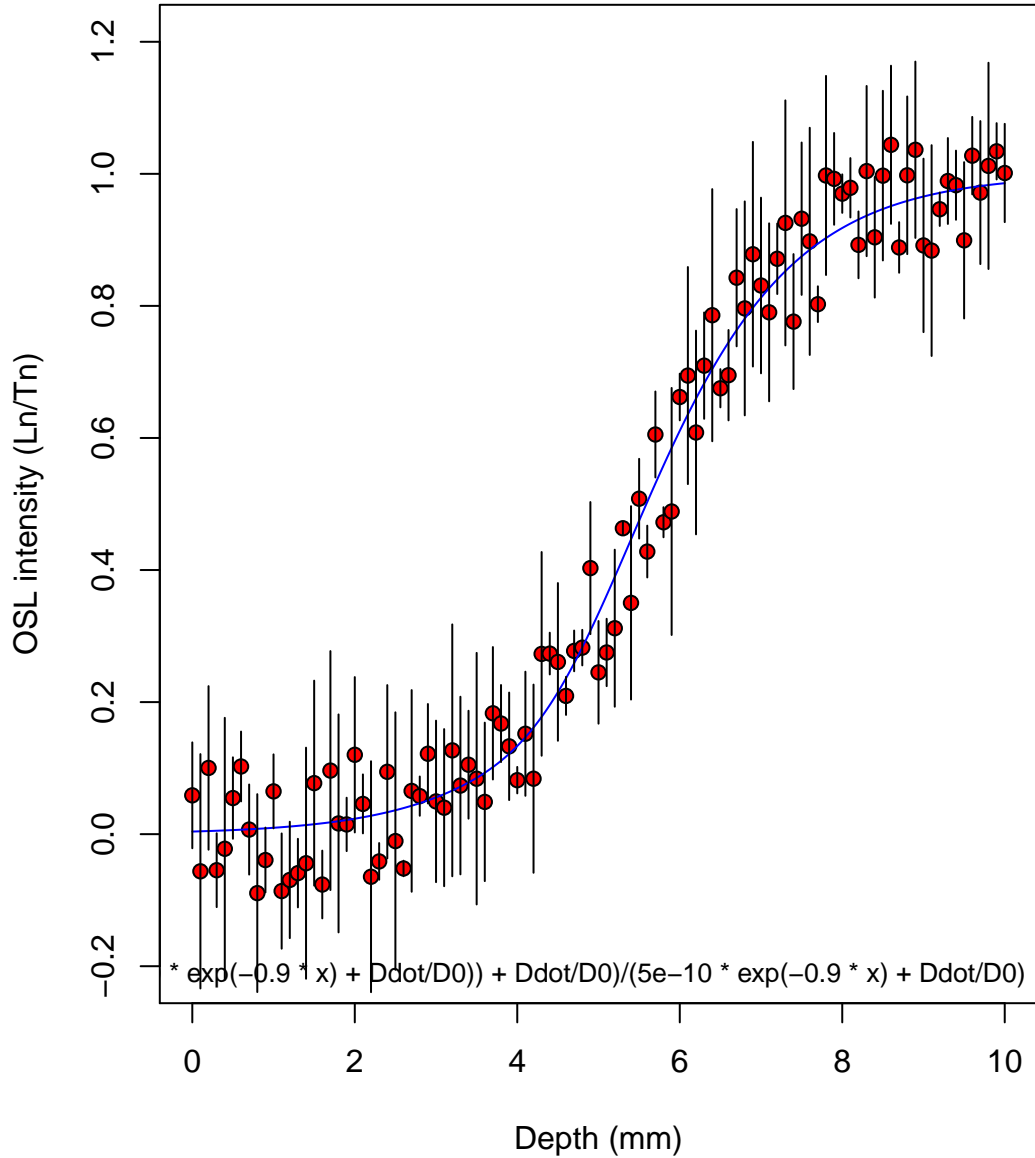
[help\("ExampleData.RLum.Analysis"\)](#)

RLum.Data.Image

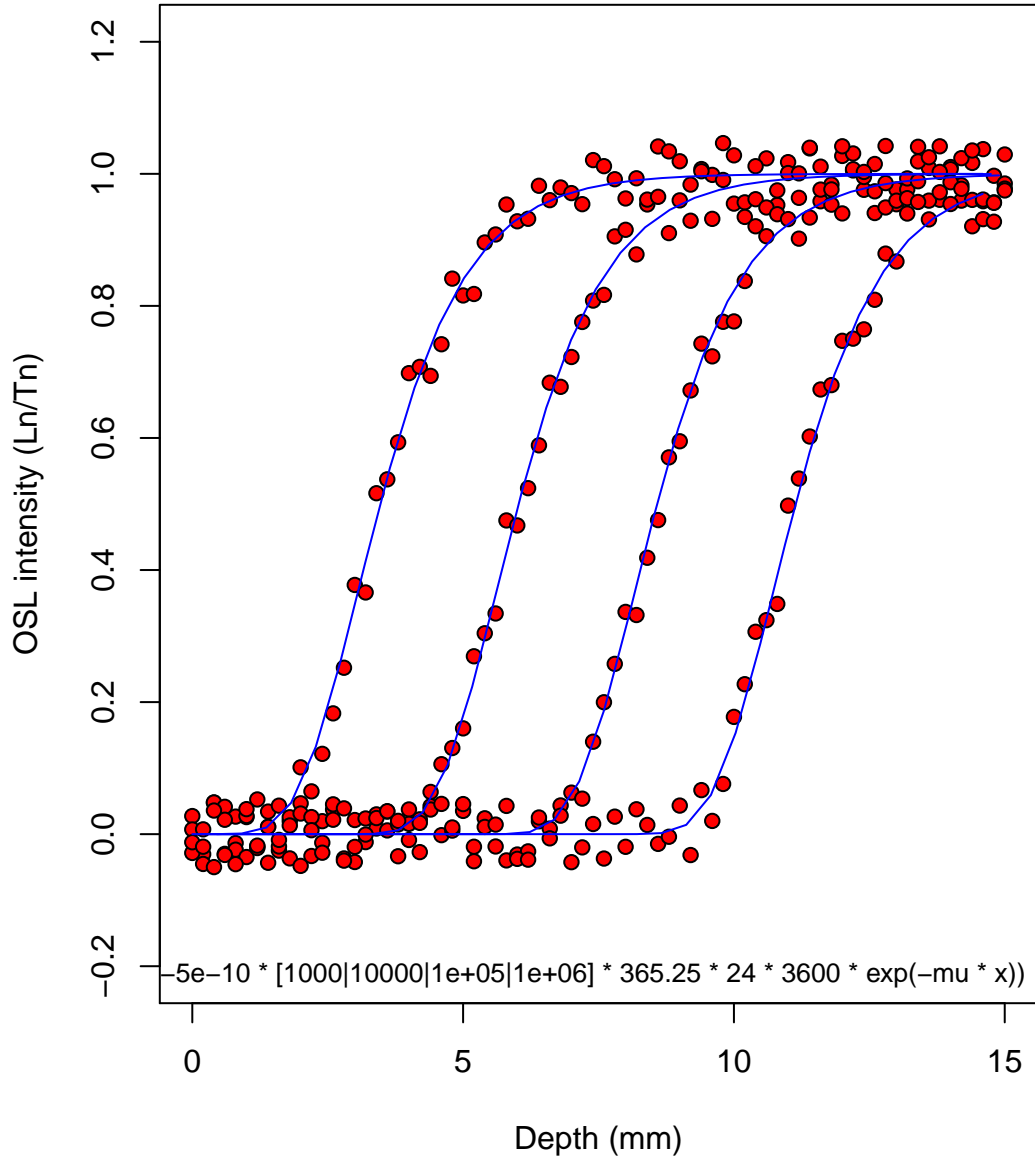




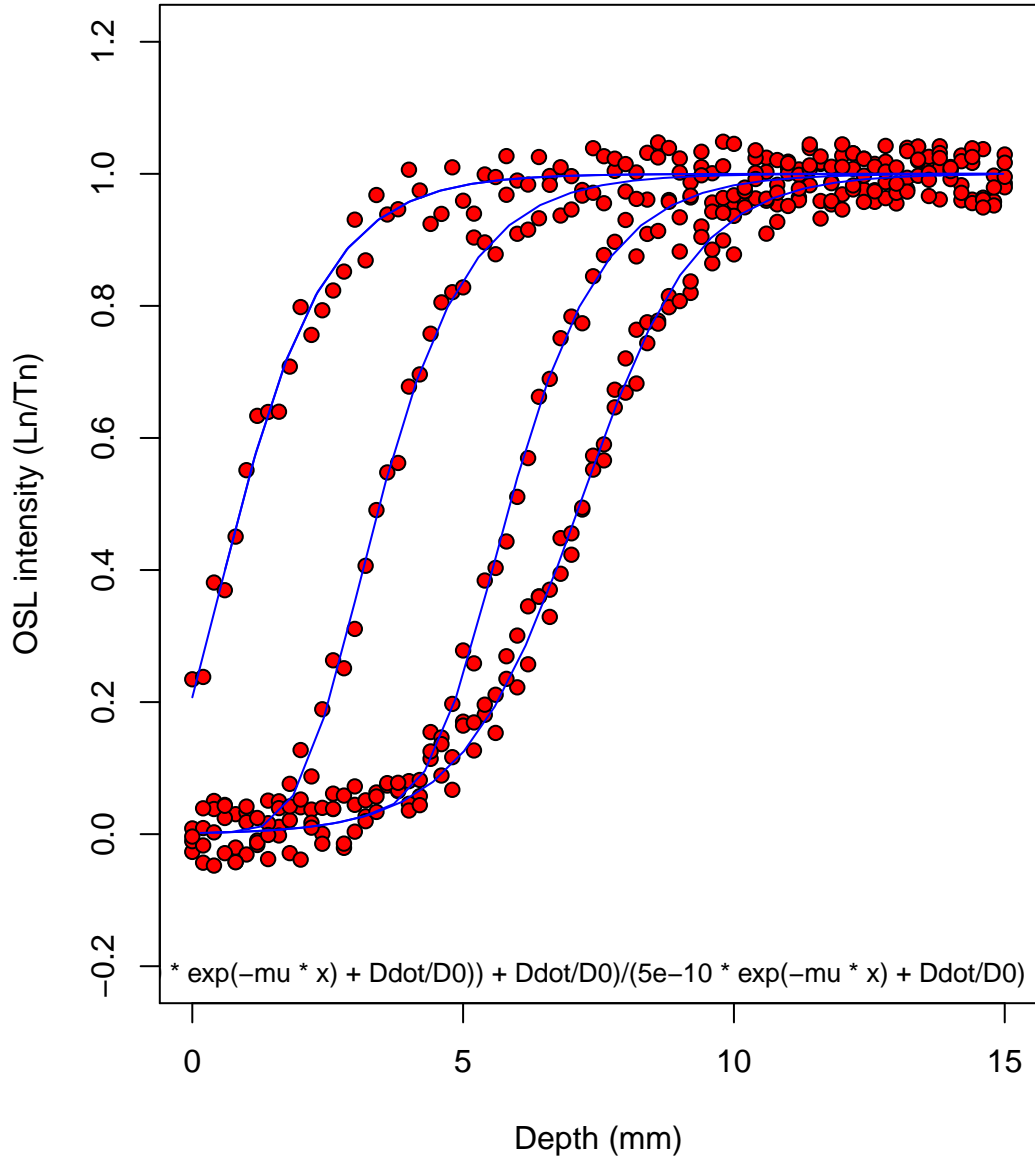
`help("ExampleData.SurfaceExposure")`



help("ExampleData.SurfaceExposure")

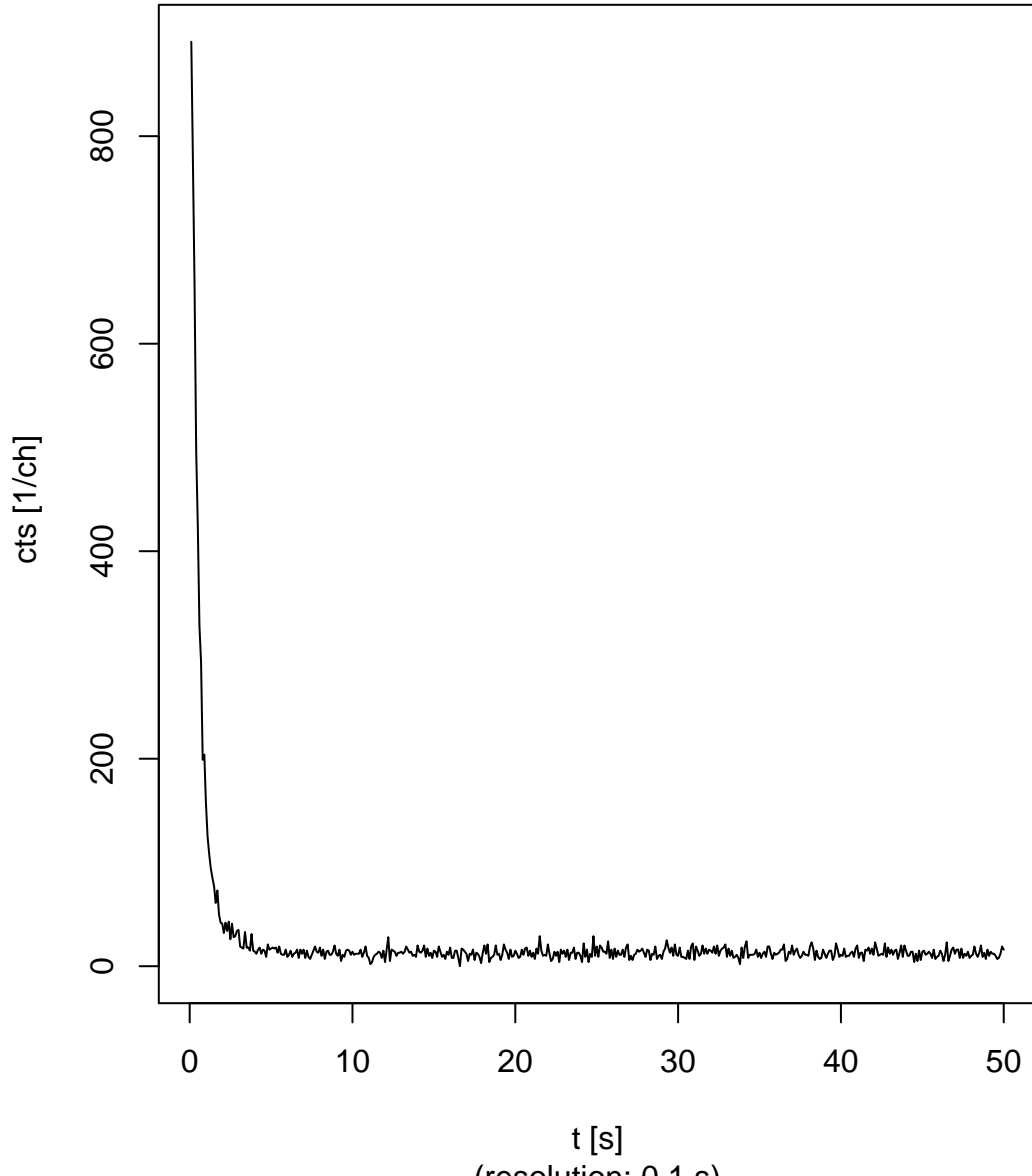


help("ExampleData.SurfaceExposure")



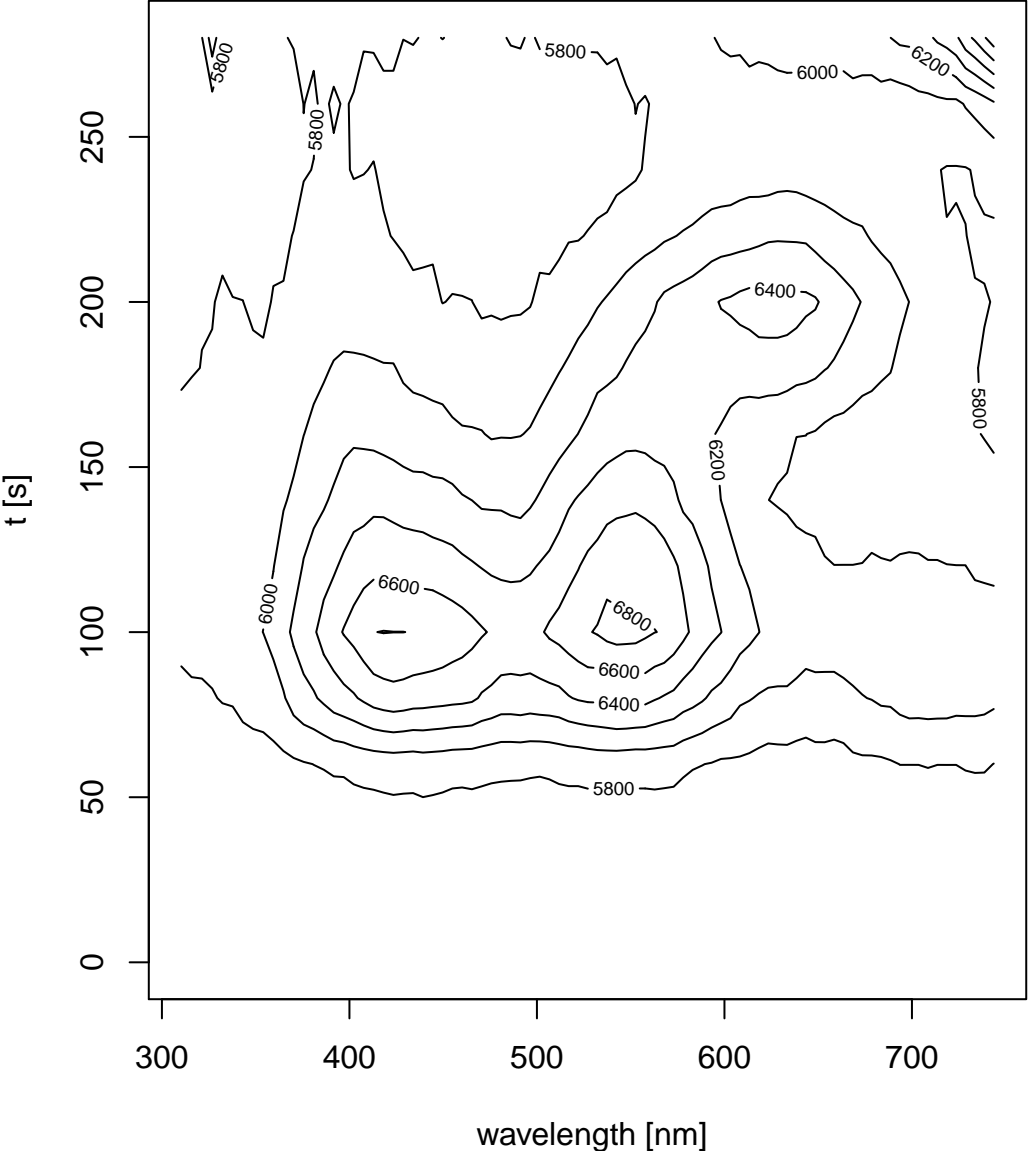
help("ExampleData.SurfaceExposure")

OSL (UVVIS)



help("ExampleData.XSYG")

RLum.Data.Spectrum



help("ExampleData.XSYG")

USER

Record: 1



IRSL

Record: 1

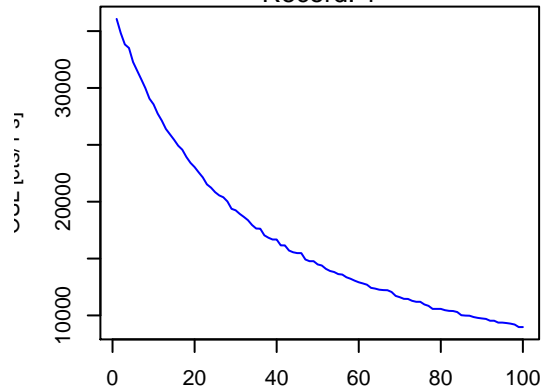


help("ExampleData.portableOSL")

Record: 1

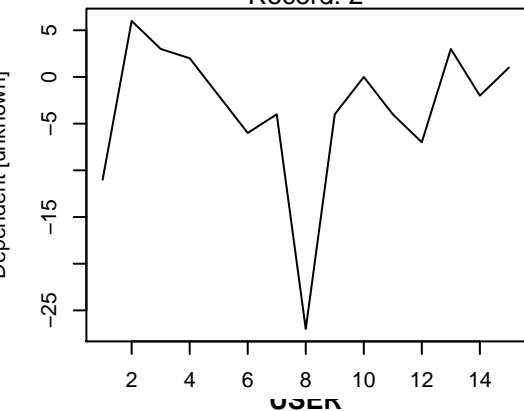


Record: 1



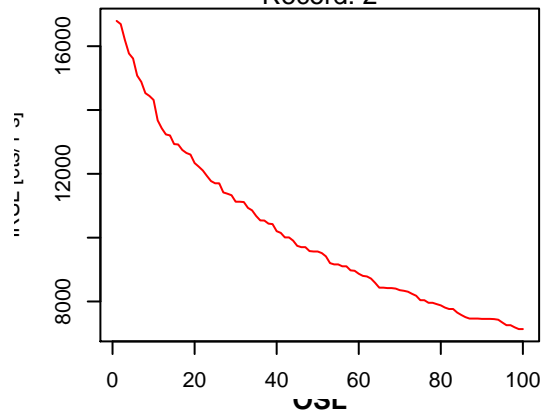
USER

Record: 2



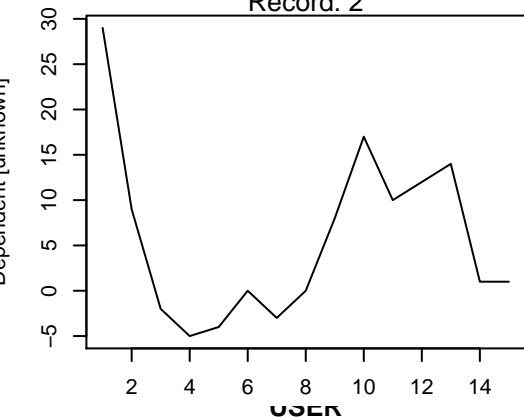
IRSL

Record: 2

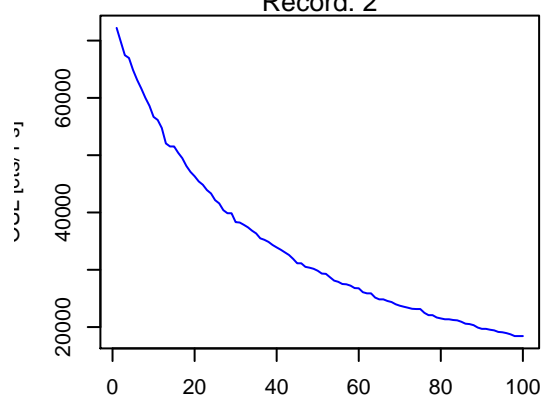


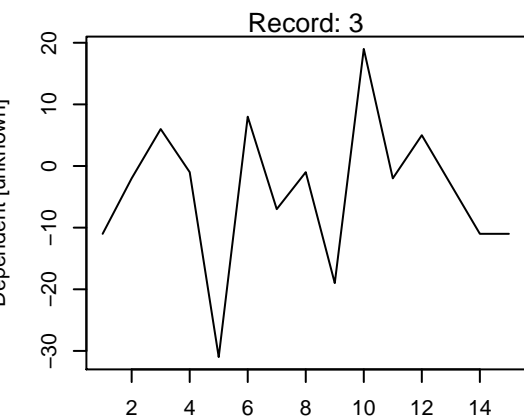
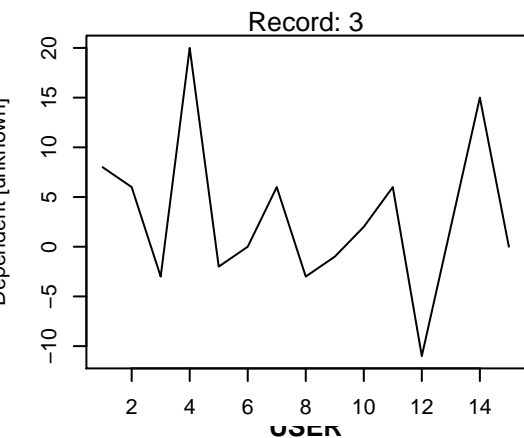
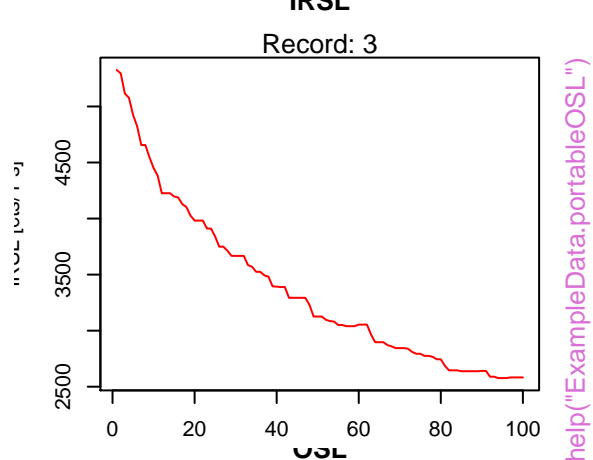
help("ExampleData.portableOSL")

Record: 2



Record: 2





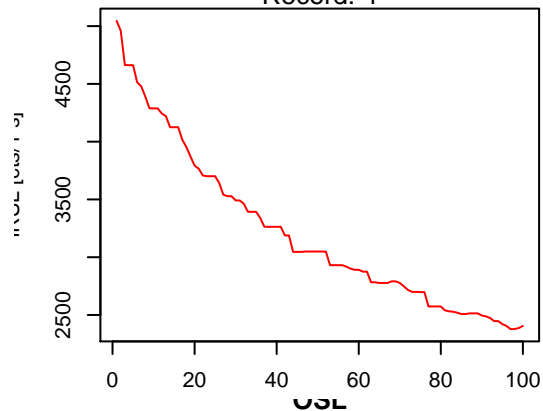
USER

Record: 4



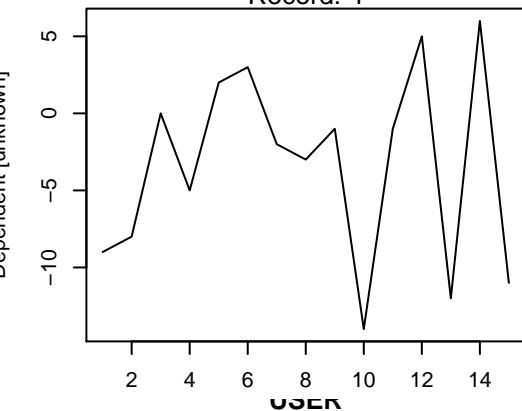
IRSL

Record: 4

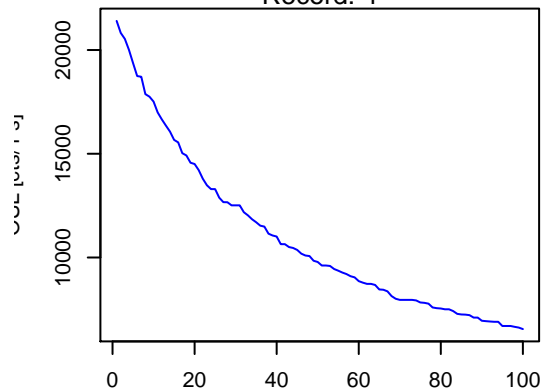


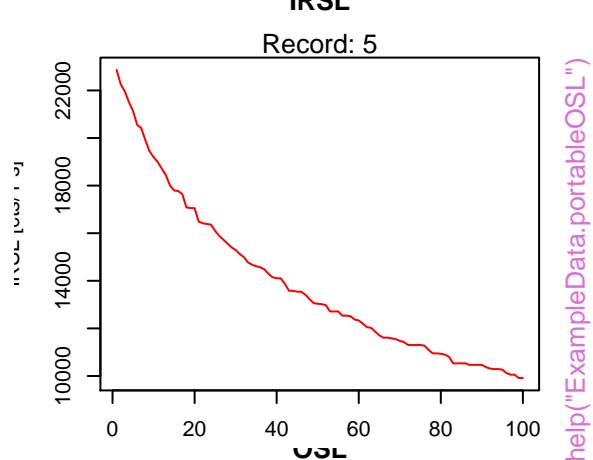
help("ExampleData.portableOSL")

Record: 4



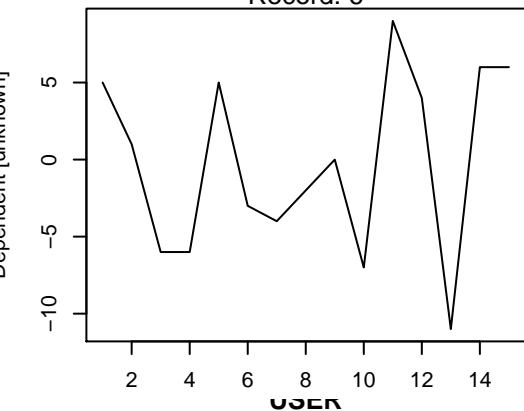
Record: 4





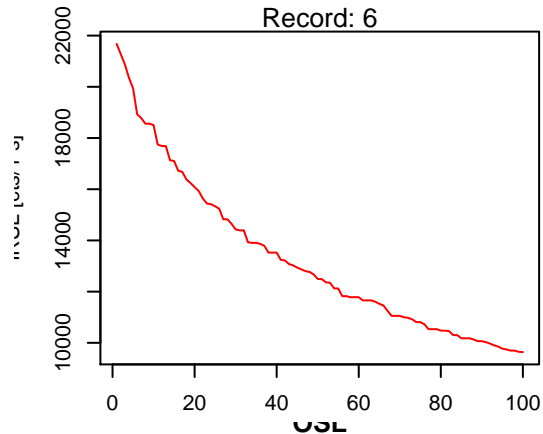
USER

Record: 6



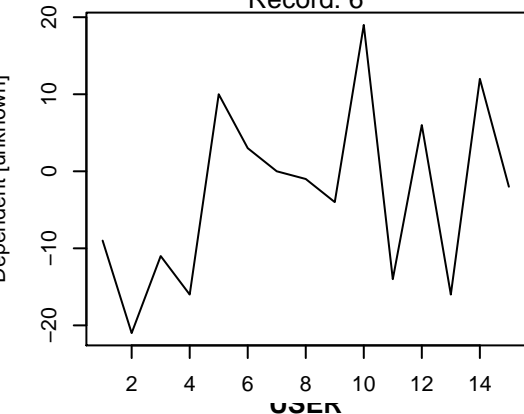
IRSL

Record: 6

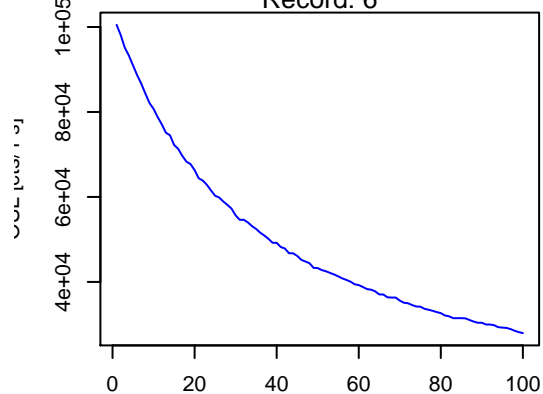


help("ExampleData.portableOSL")

Record: 6



Record: 6



USER

Record: 7



IRSL

Record: 7

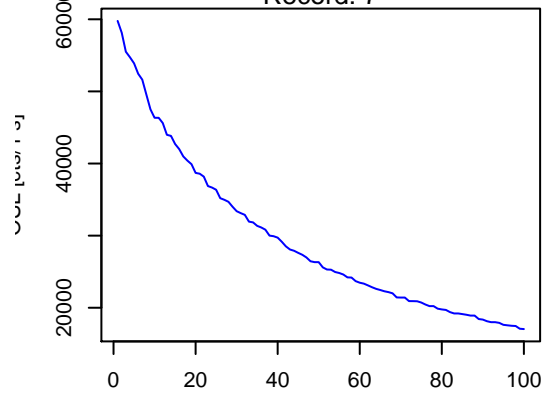


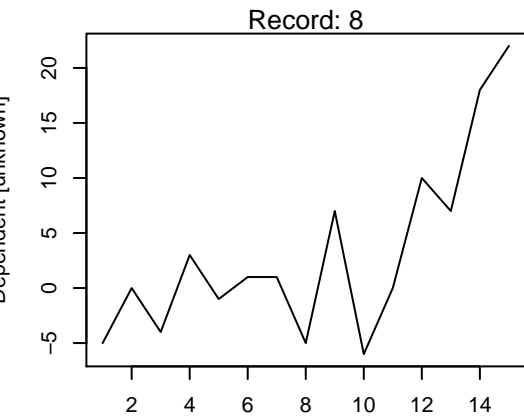
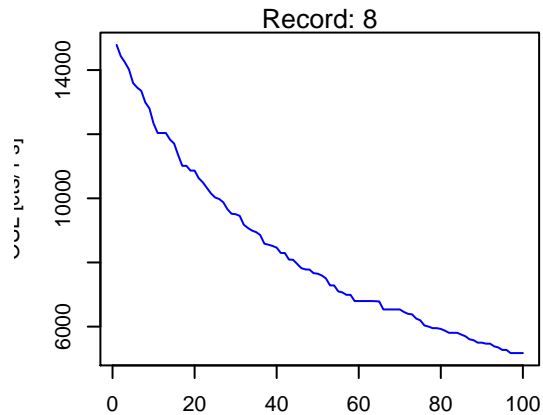
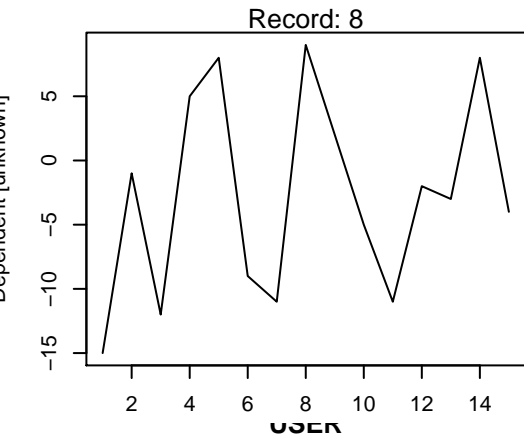
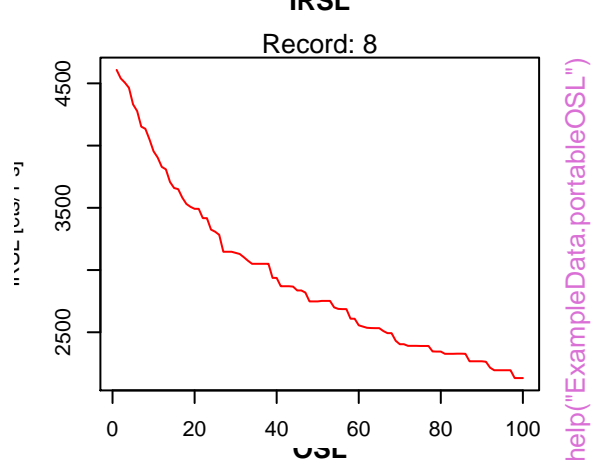
help("ExampleData.portableOSL")

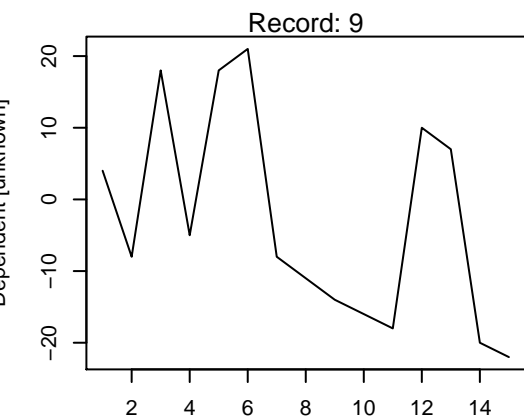
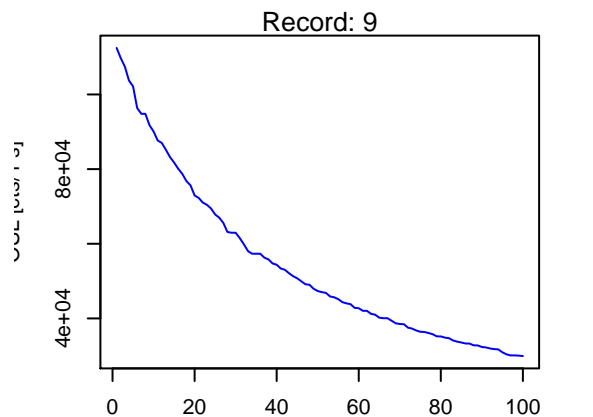
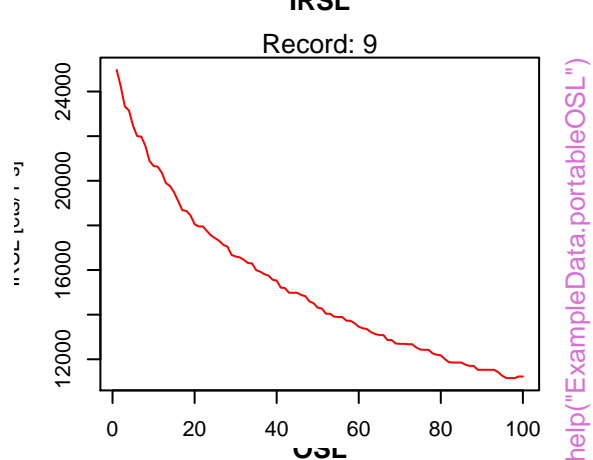
Record: 7



Record: 7

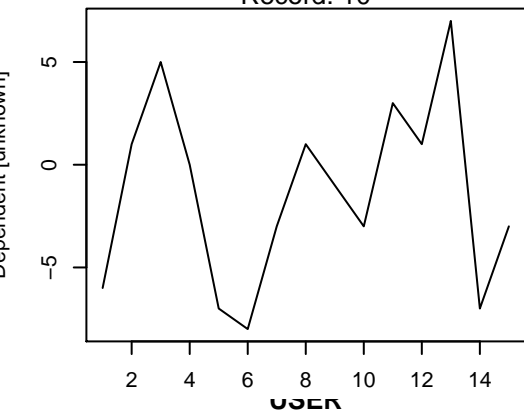




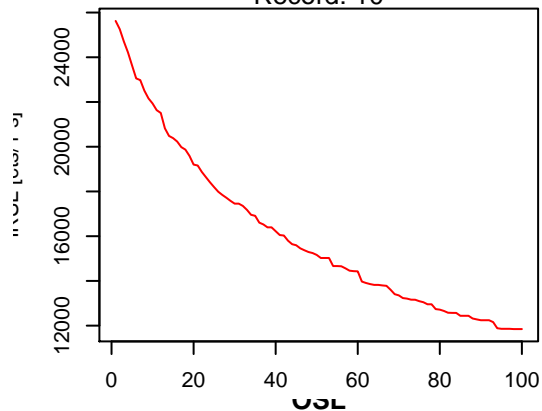


USER

Record: 10

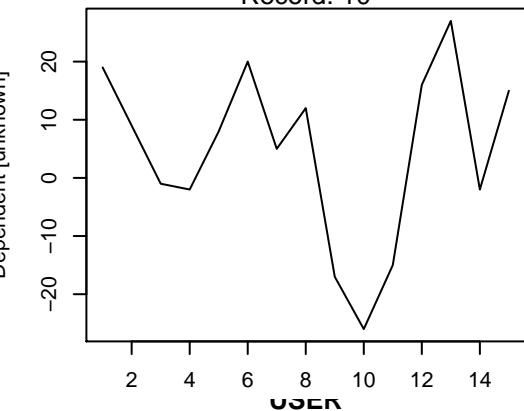


Record: 10

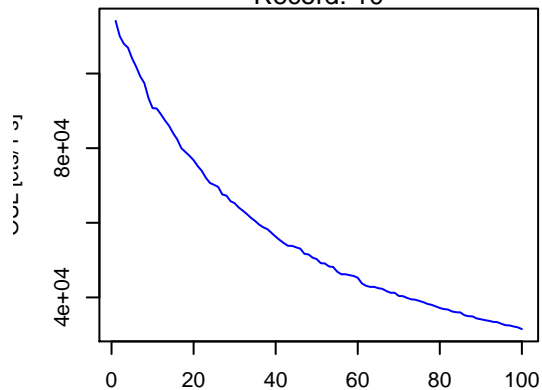


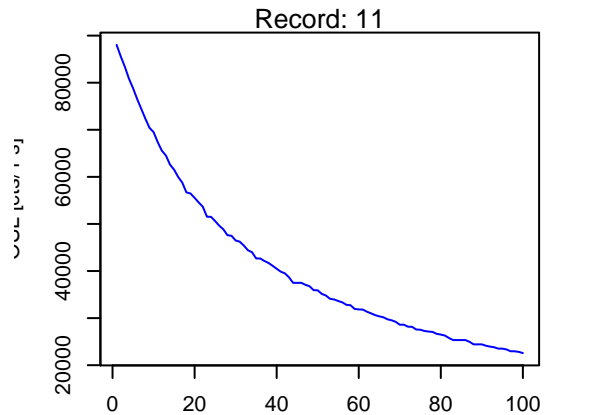
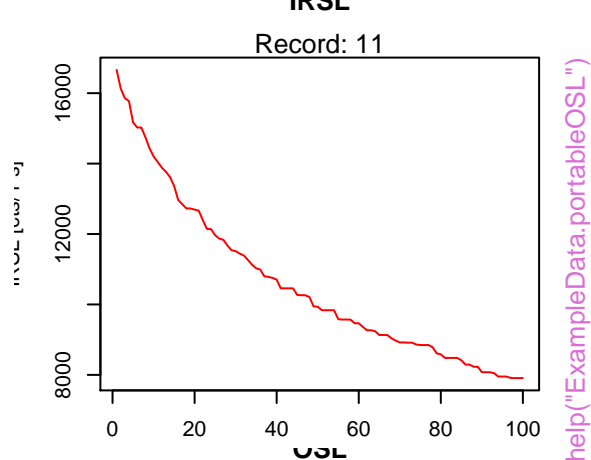
help("ExampleData.portableOSL")

Record: 10



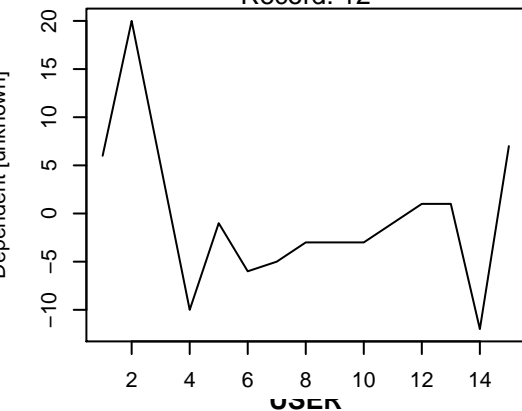
Record: 10





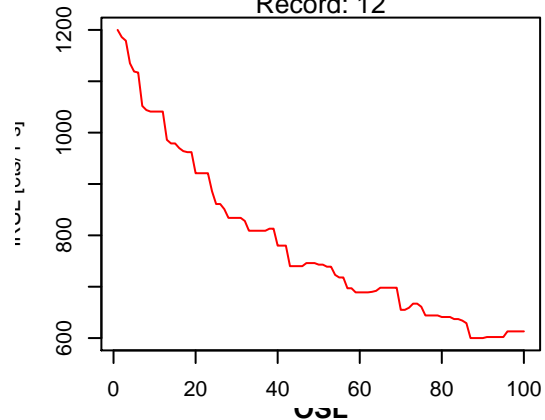
USER

Record: 12



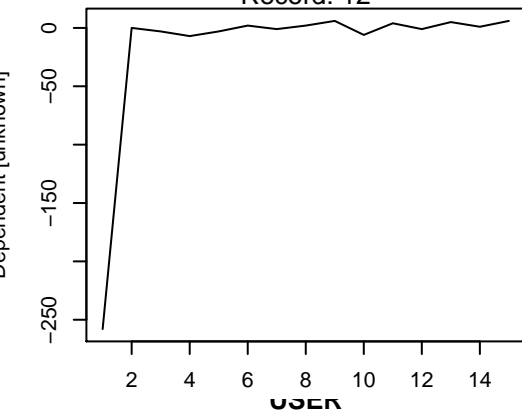
IRSL

Record: 12

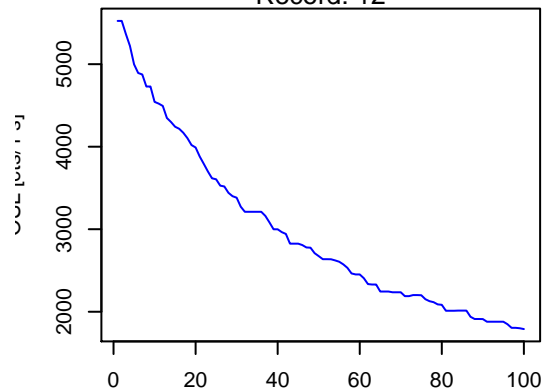


help("ExampleData.portableOSL")

Record: 12



Record: 12

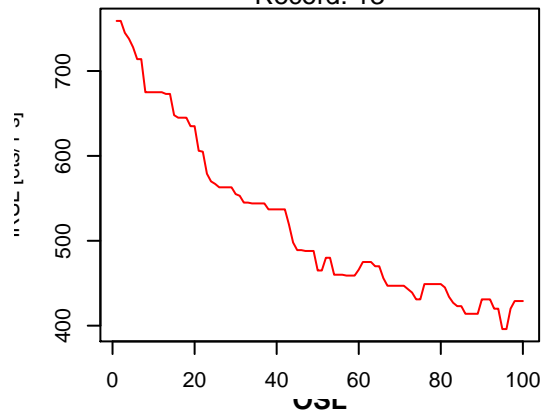


USER

Record: 13

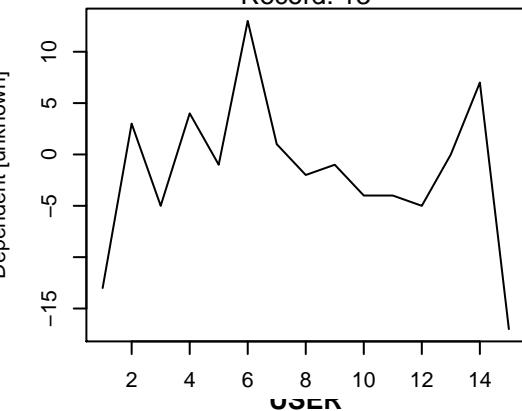


Record: 13

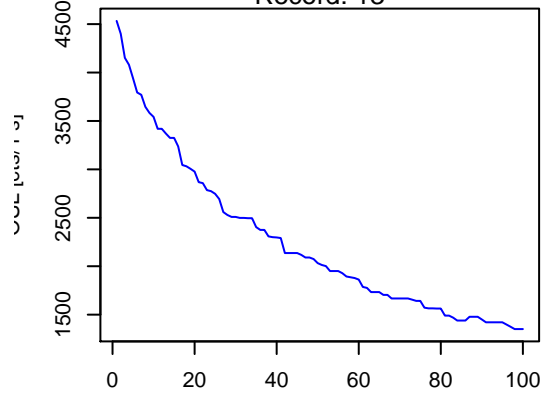


help("ExampleData.portableOSL")

Record: 13

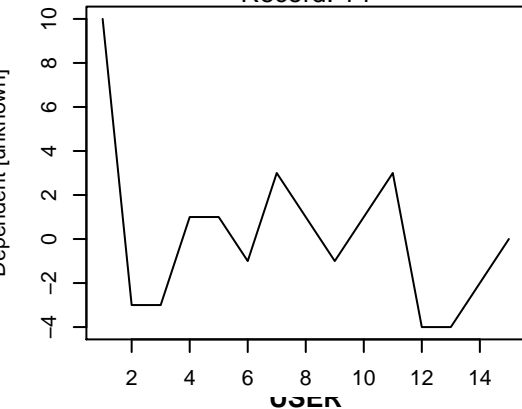


Record: 13



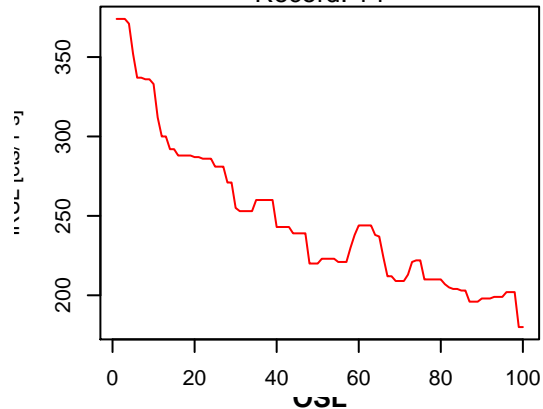
USER

Record: 14



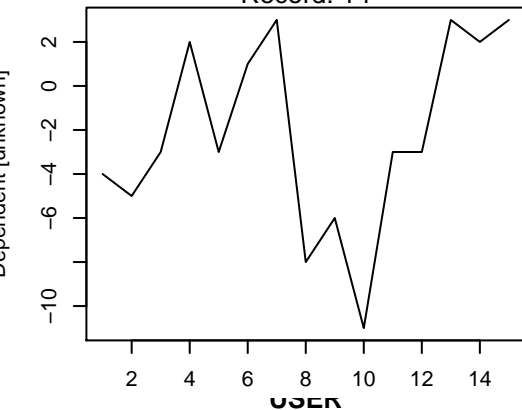
IRSL

Record: 14

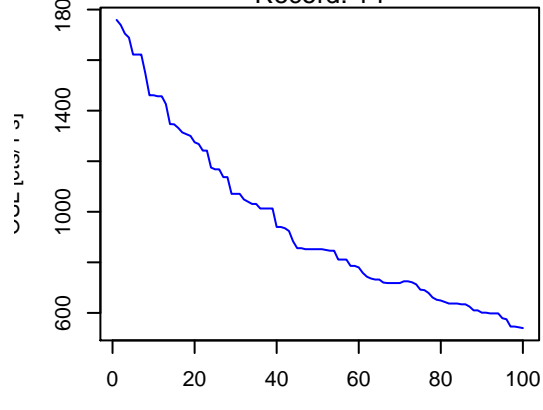


help("ExampleData.portableOSL")

Record: 14

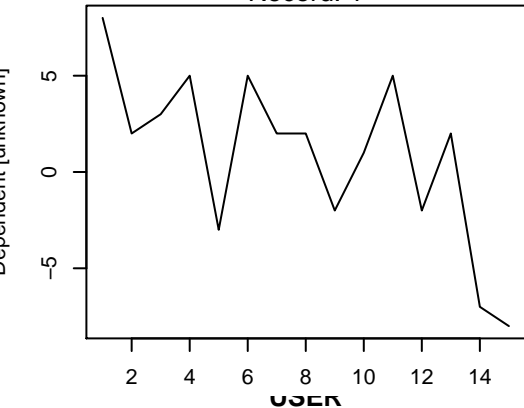


Record: 14



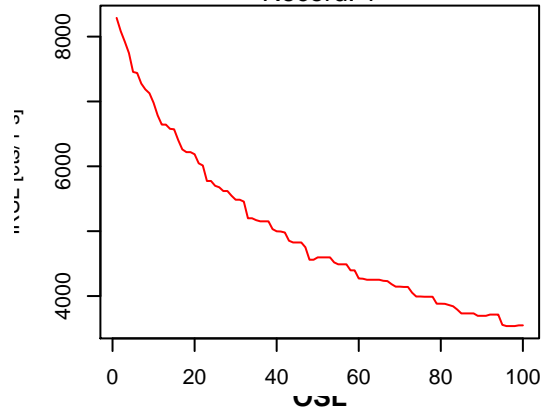
USER

Record: 1



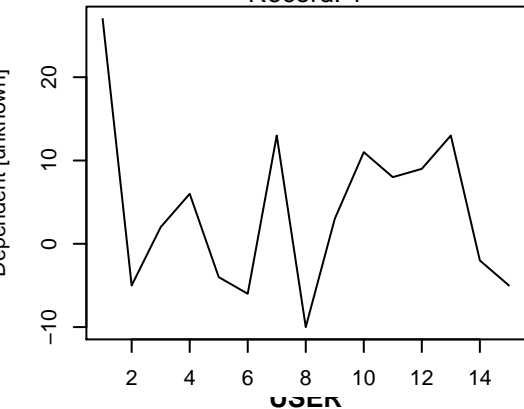
IRSL

Record: 1

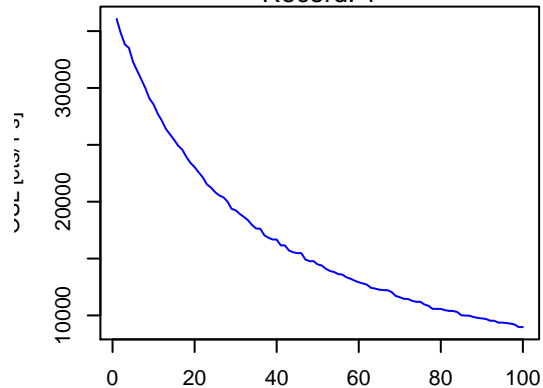


help("PSL2Riseo.BinfileData")

Record: 1

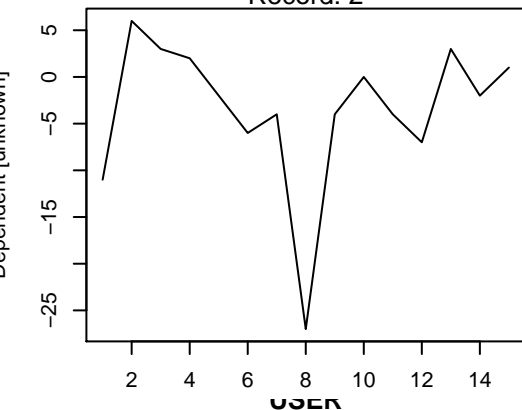


Record: 1



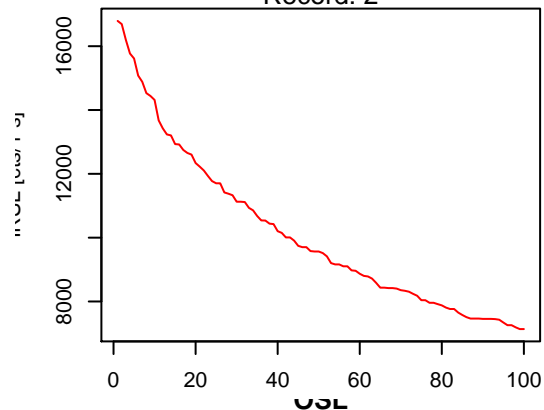
USER

Record: 2



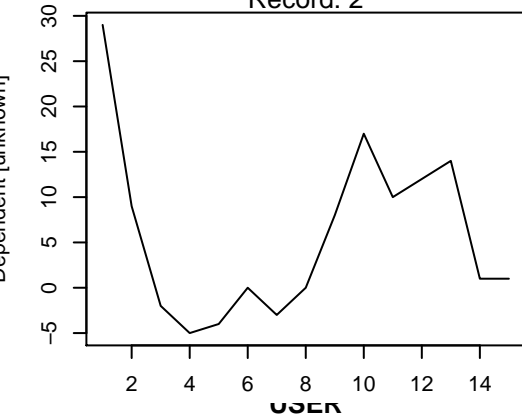
IRSL

Record: 2

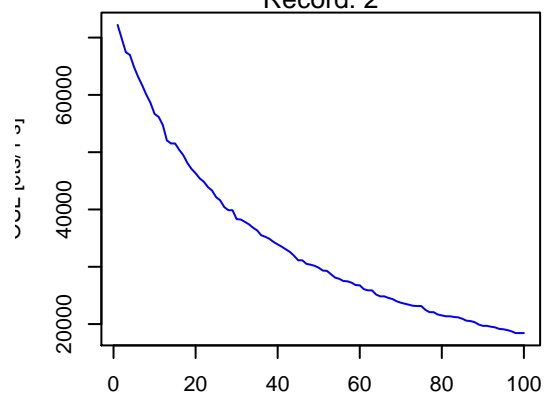


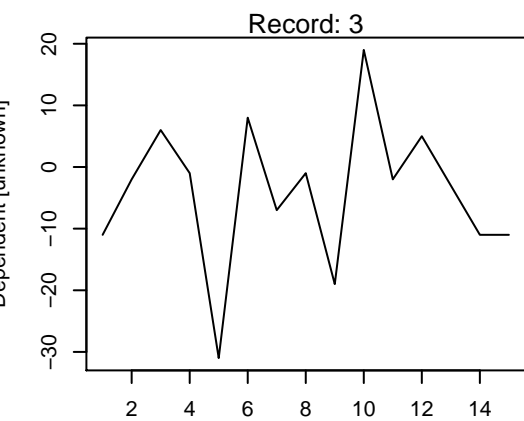
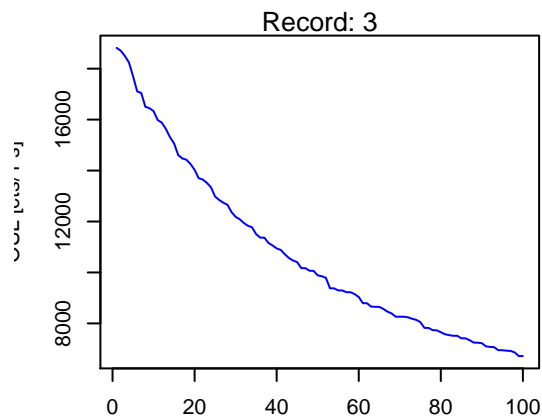
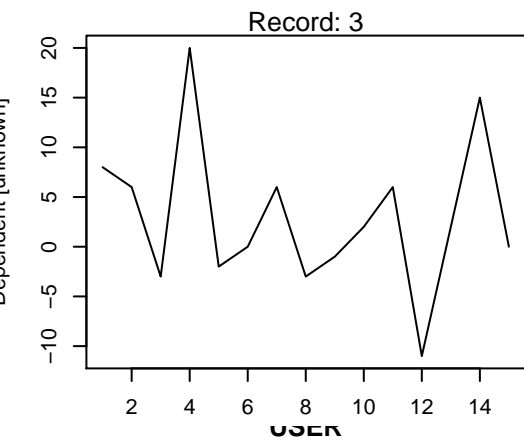
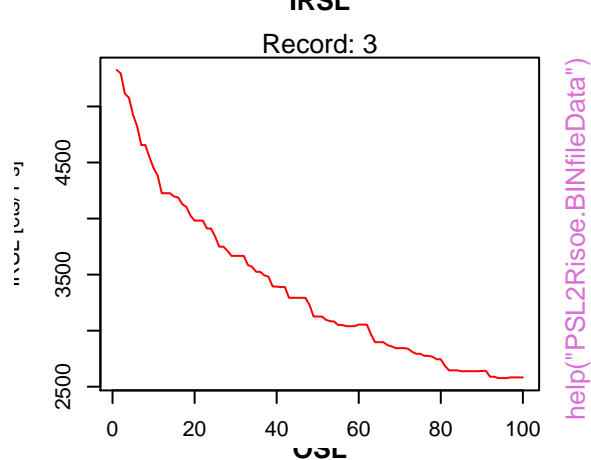
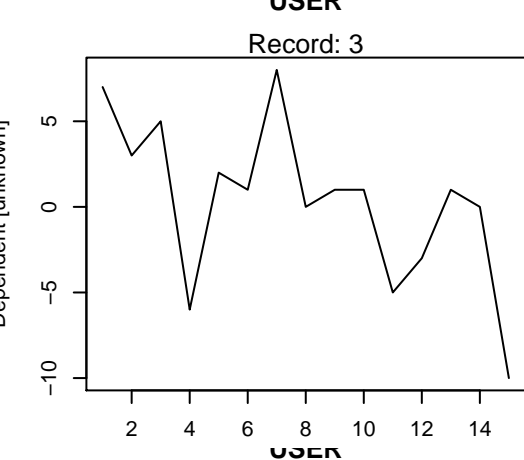
help("PSL2Riseo.BinfileData")

Record: 2



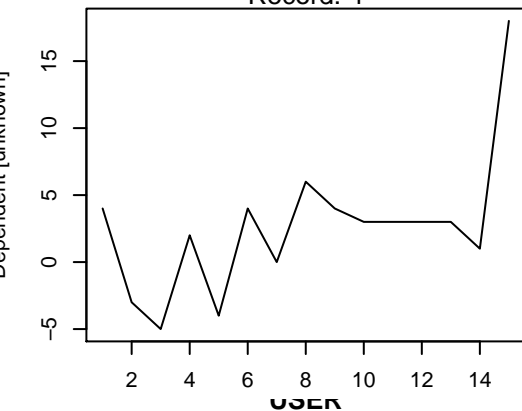
Record: 2



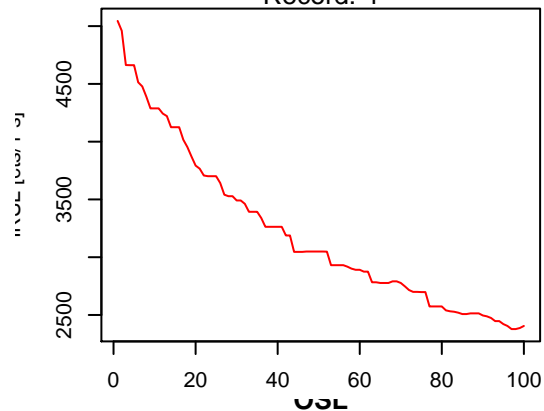


USER

Record: 4

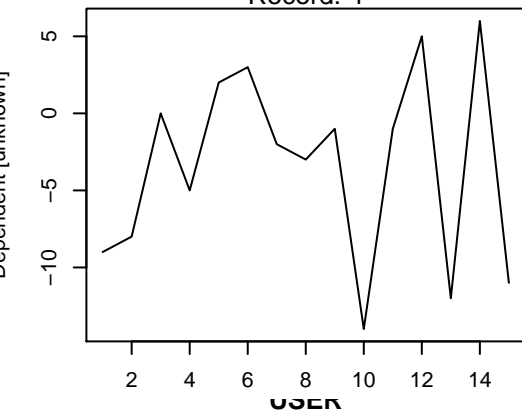


Record: 4

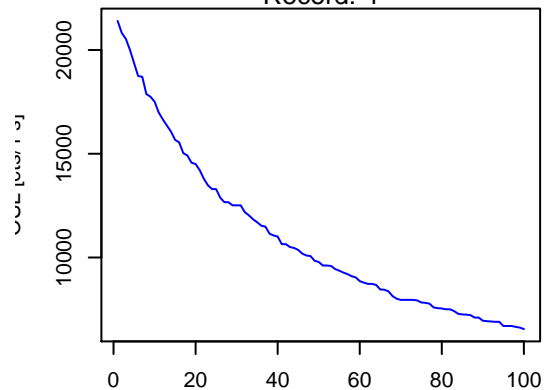


help("PSL2Risee.BINfileData")

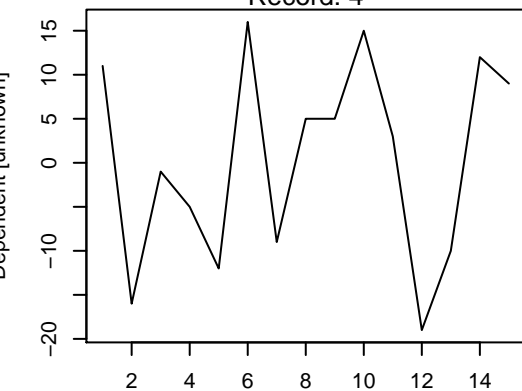
Record: 4

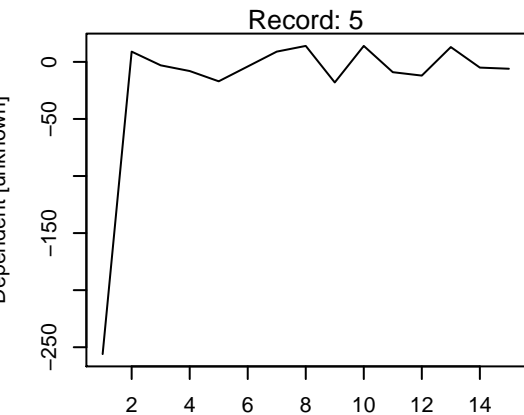
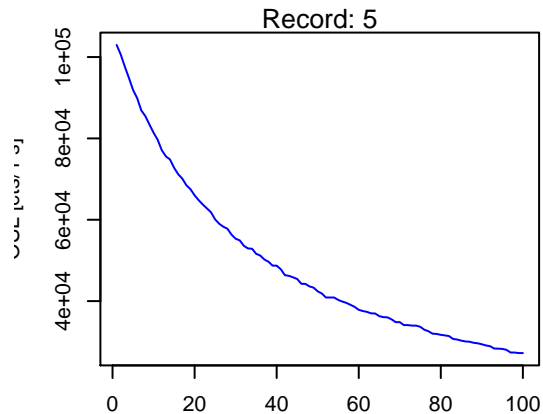
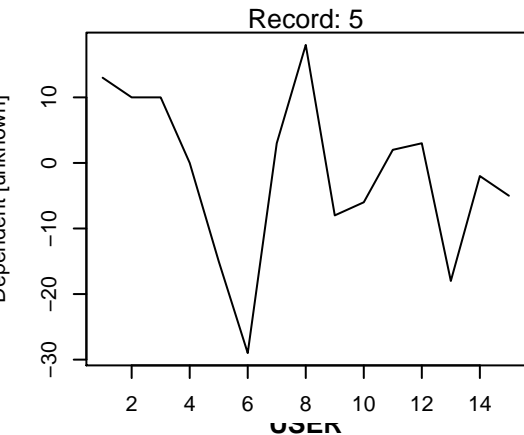
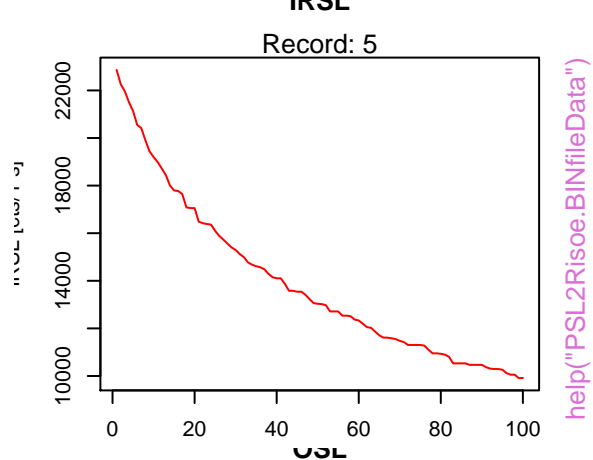
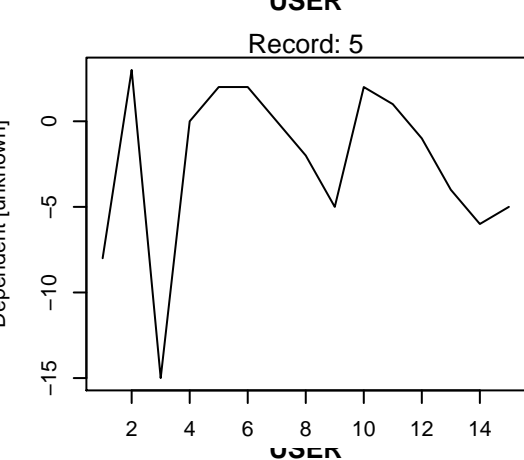


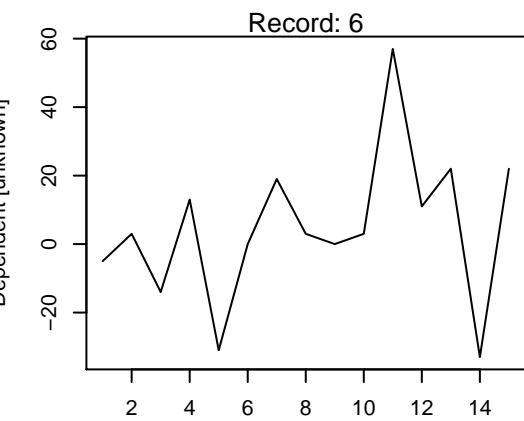
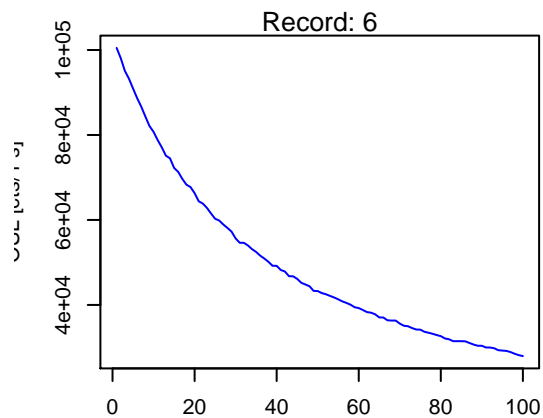
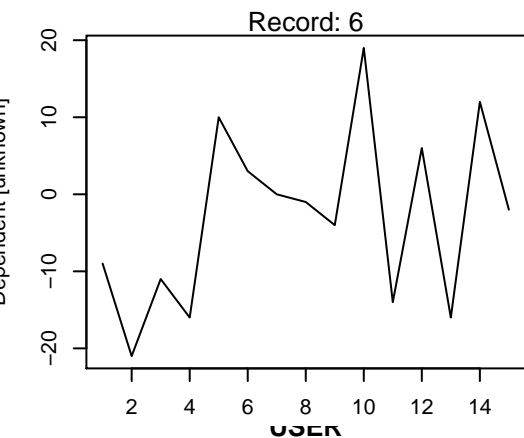
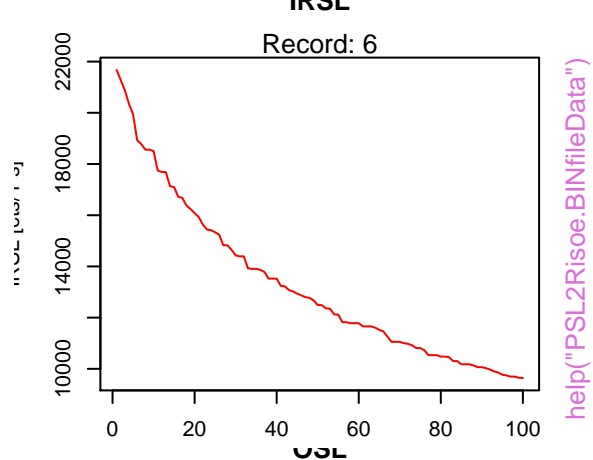
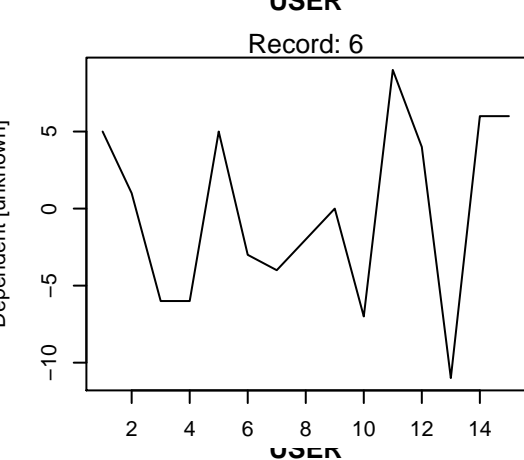
Record: 4



Record: 4

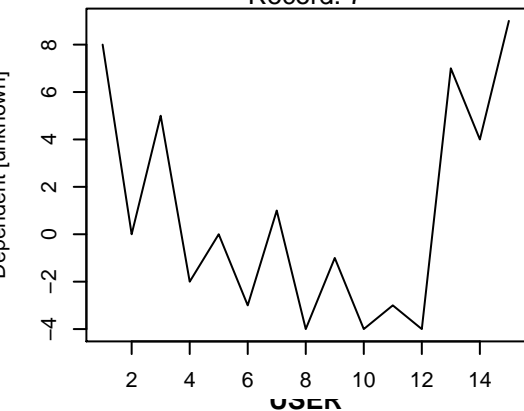






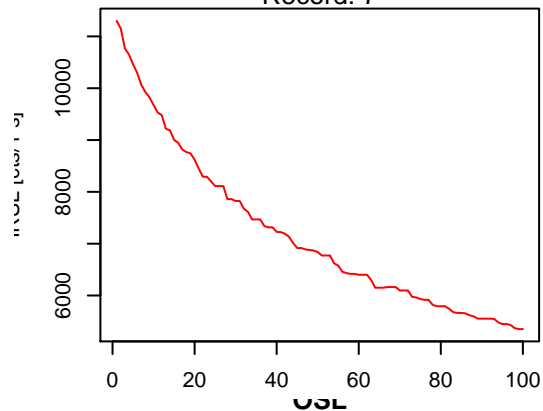
USER

Record: 7



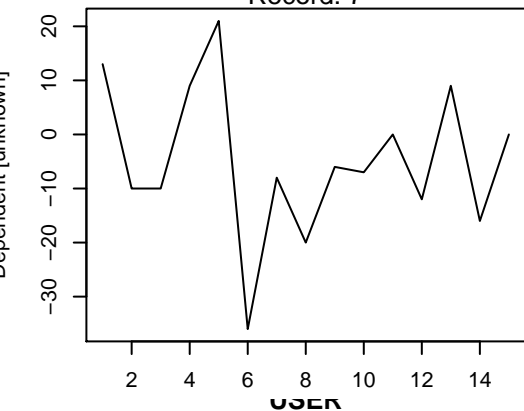
IRSL

Record: 7

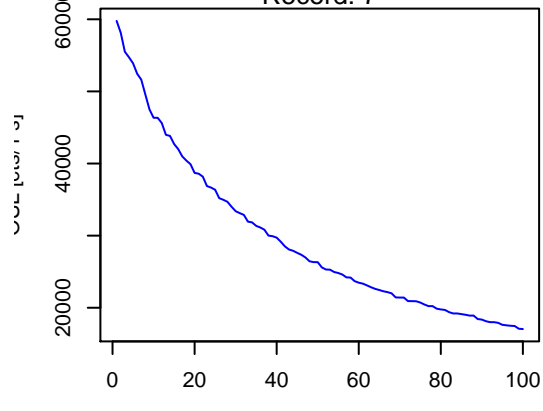


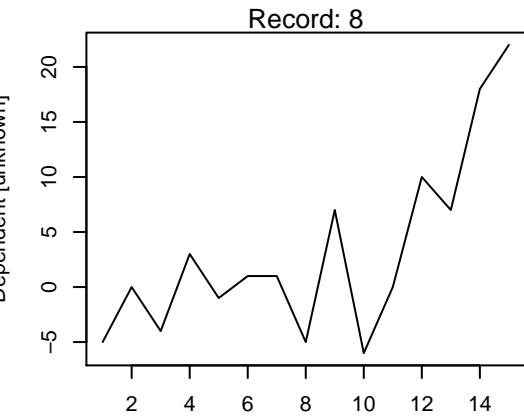
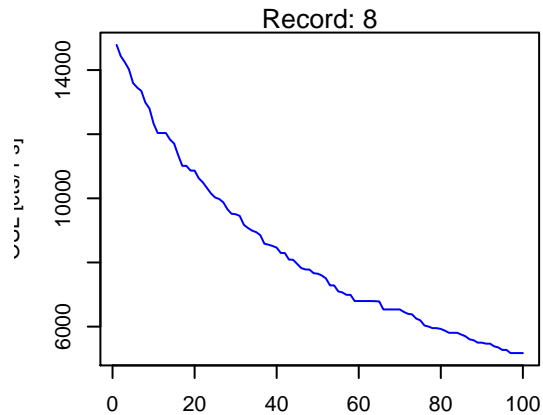
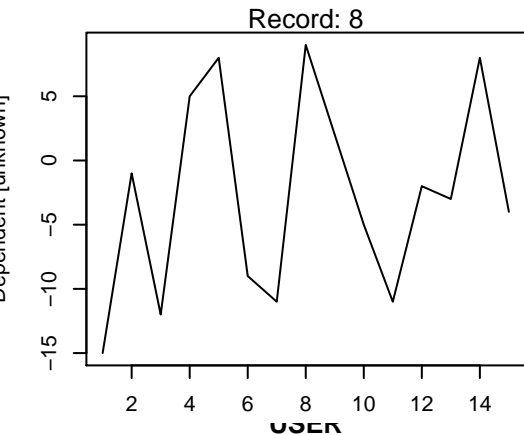
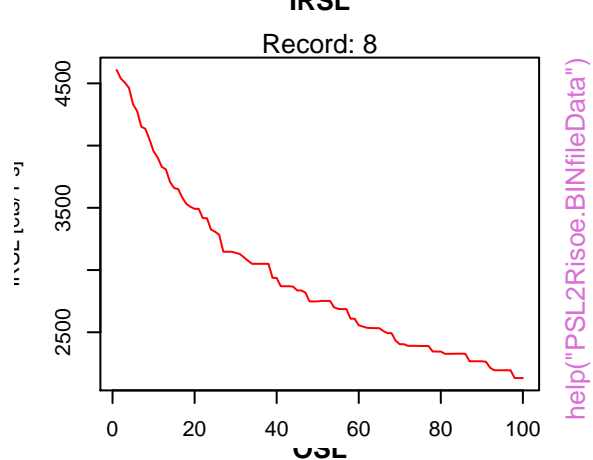
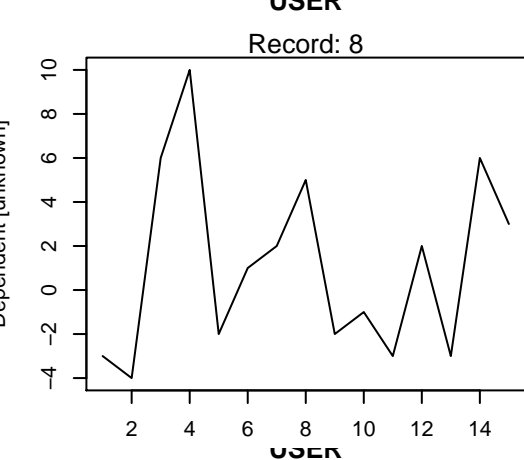
help("PSL2Riseo.BinfileData")

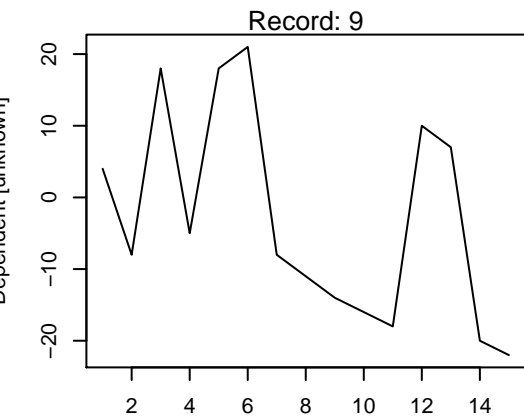
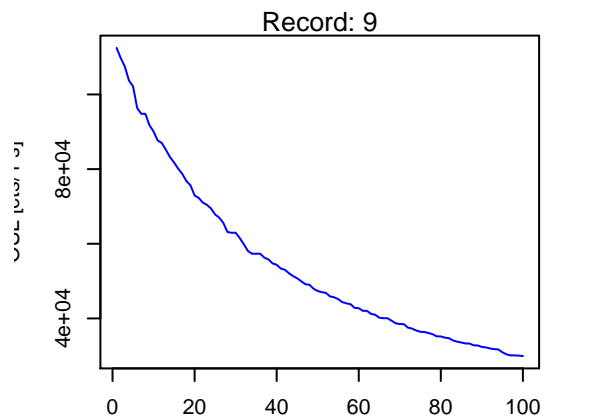
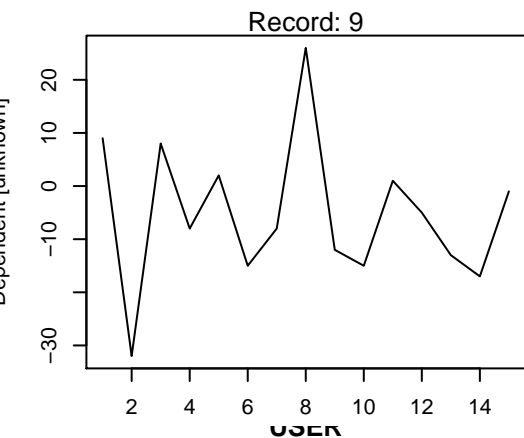
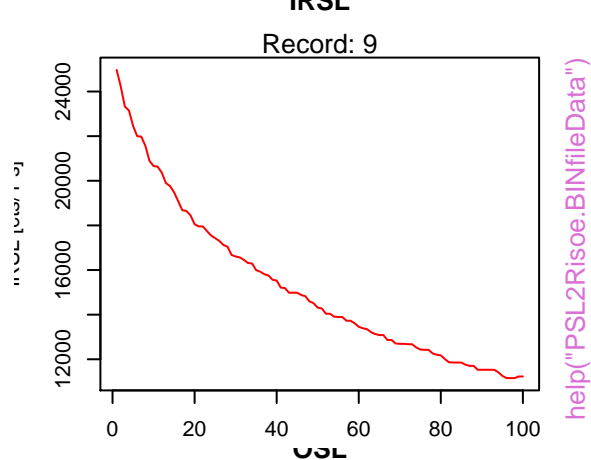
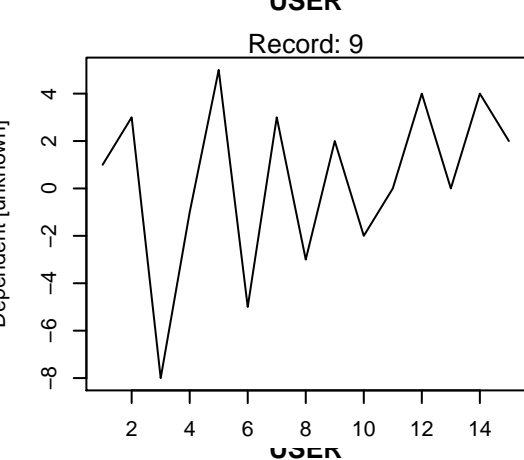
Record: 7

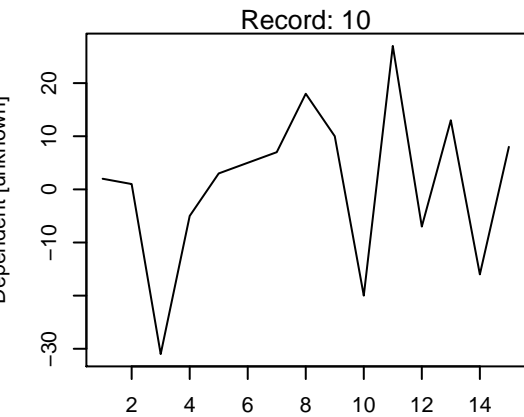
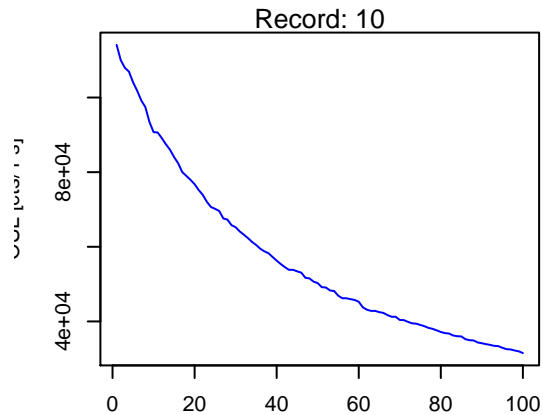
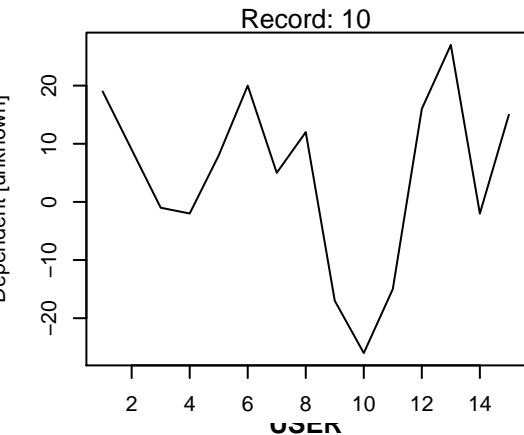
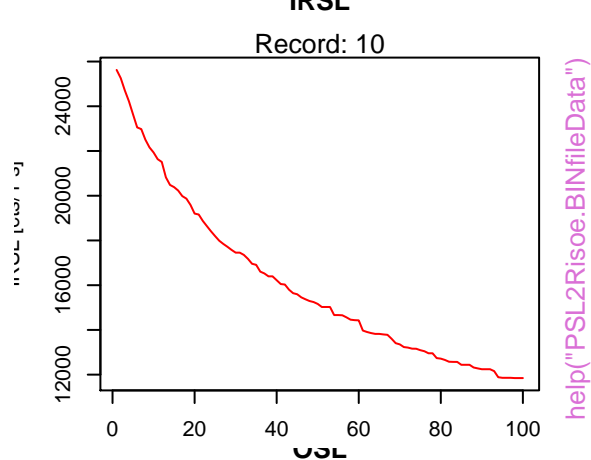
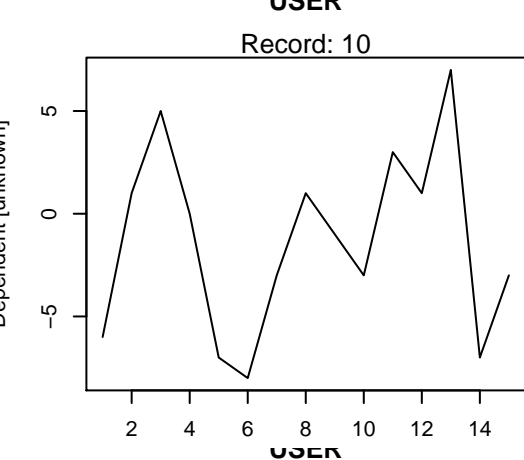


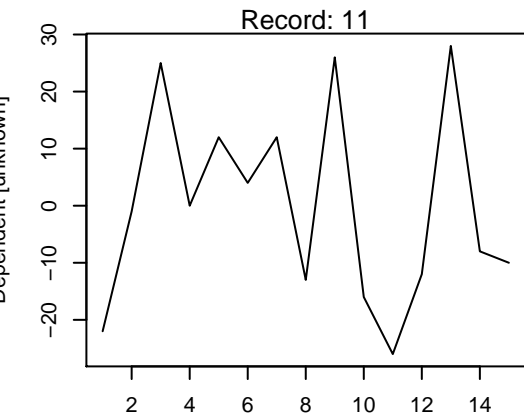
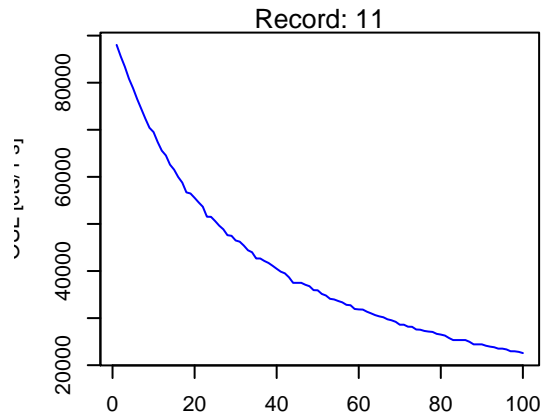
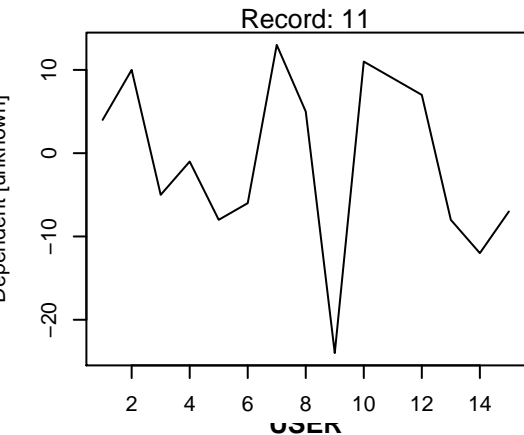
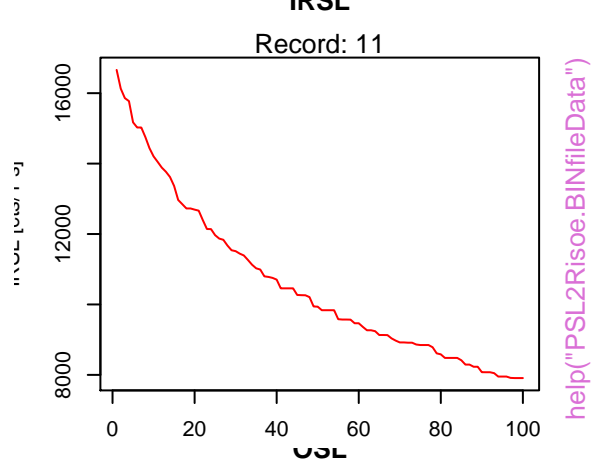
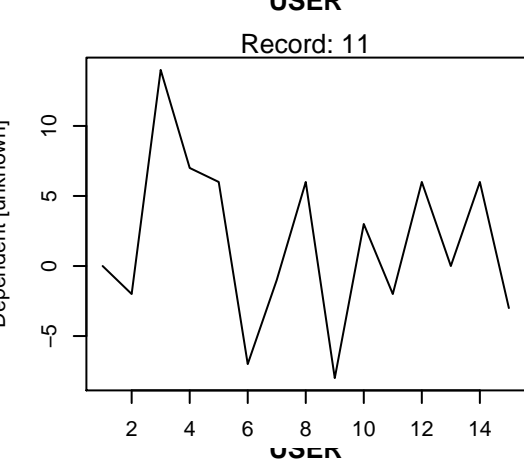
Record: 7





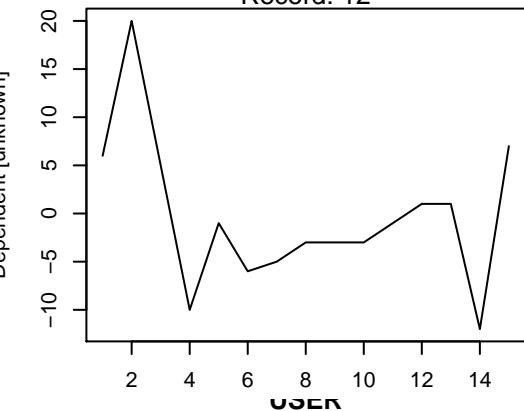






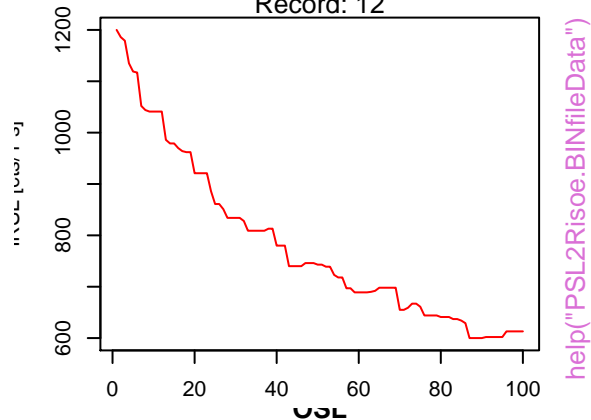
USER

Record: 12

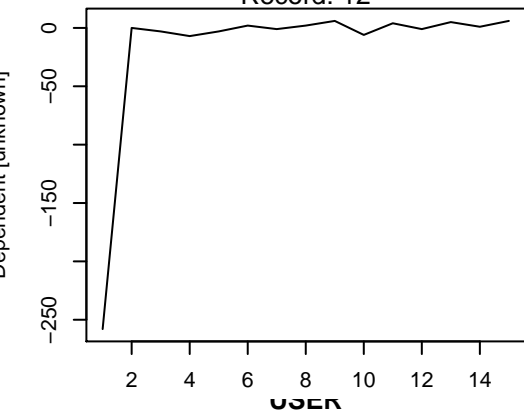


IRSL

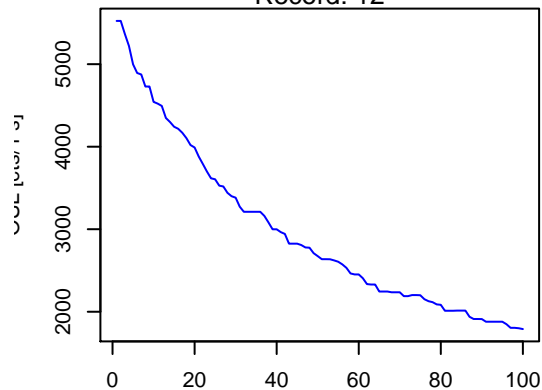
Record: 12



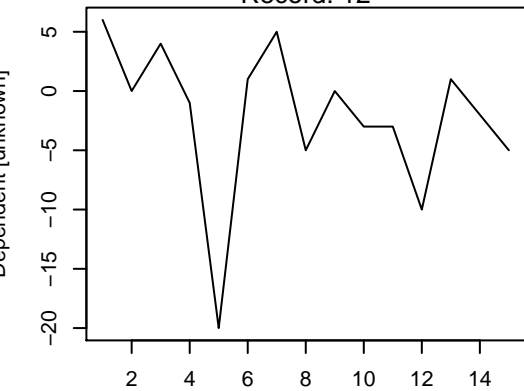
Record: 12



Record: 12

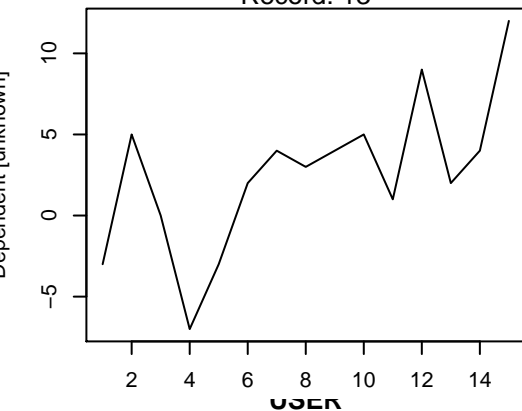


Record: 12

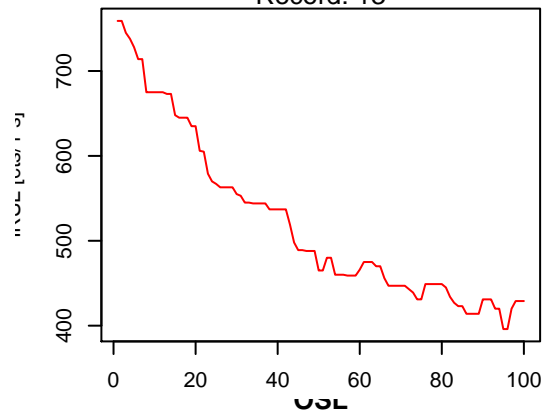


USER

Record: 13

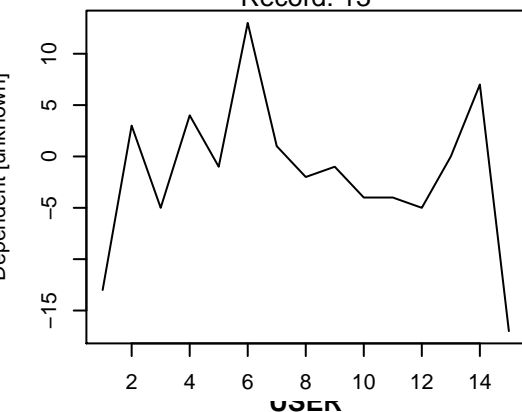


Record: 13

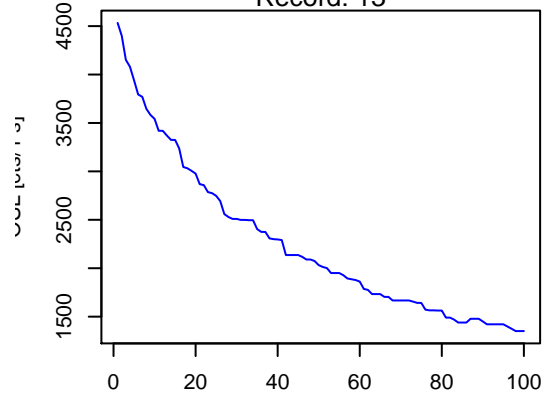


help("PSL2Riseo.BinfileData")

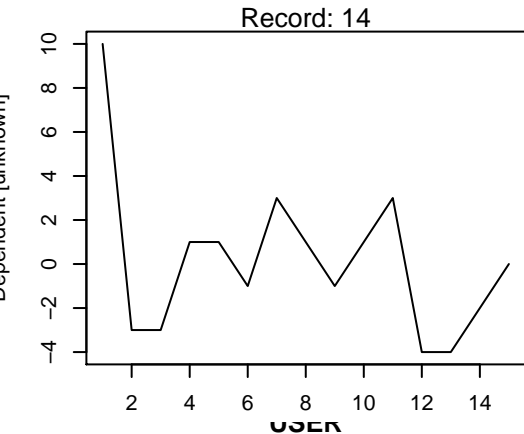
Record: 13



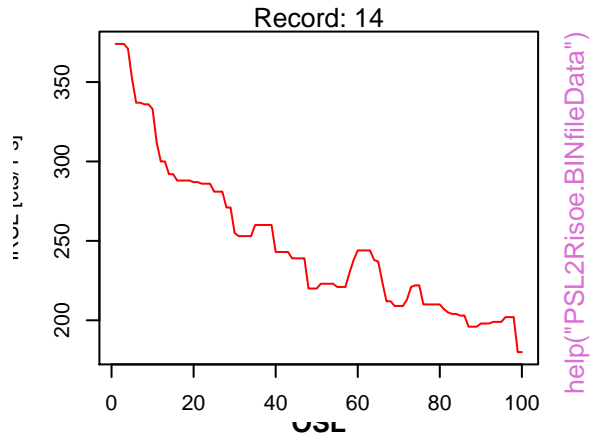
Record: 13



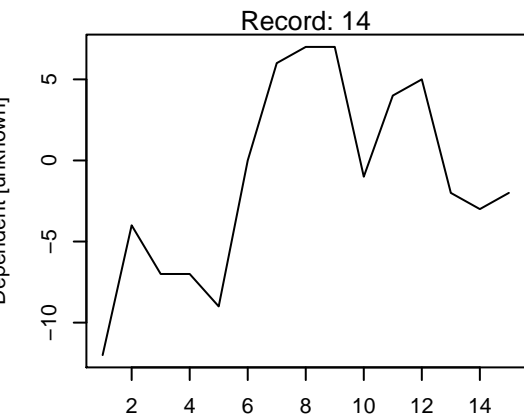
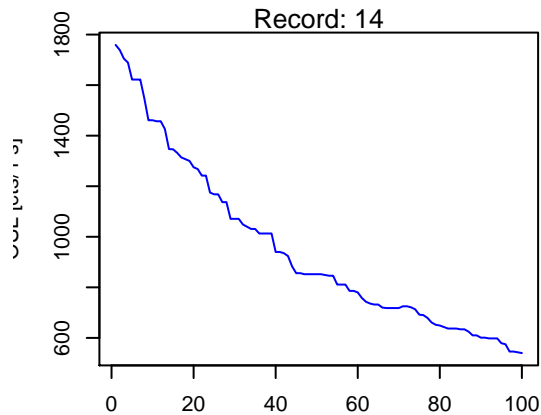
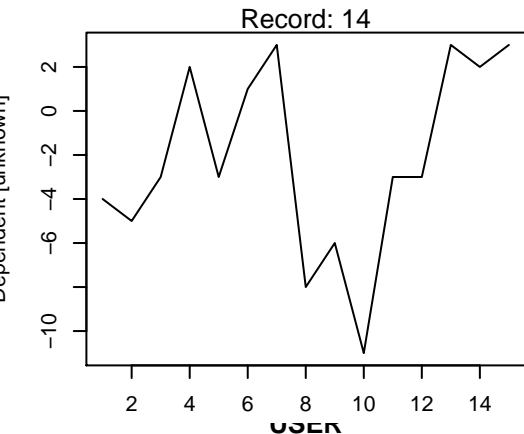
USER



IRSL



help("PSL2Riseo.BINfileData")

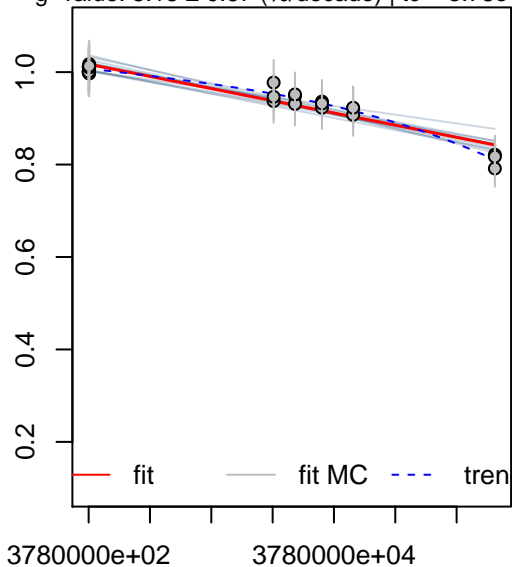


No L_x curves detected

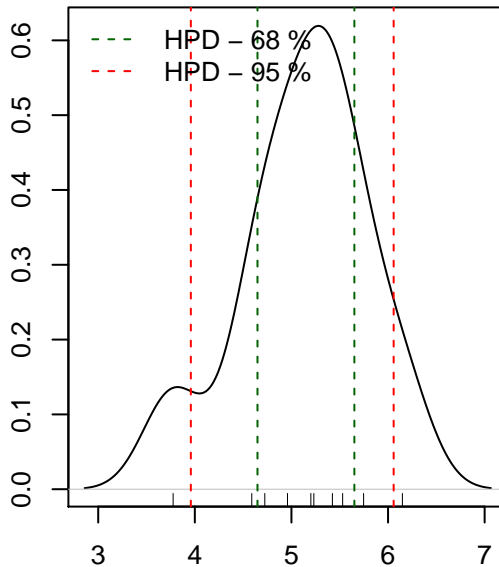
No T_x curves detected

Signal Fading

g-value: 5.18 ± 0.67 (%/decade) | $t_c = 3.78e+02$

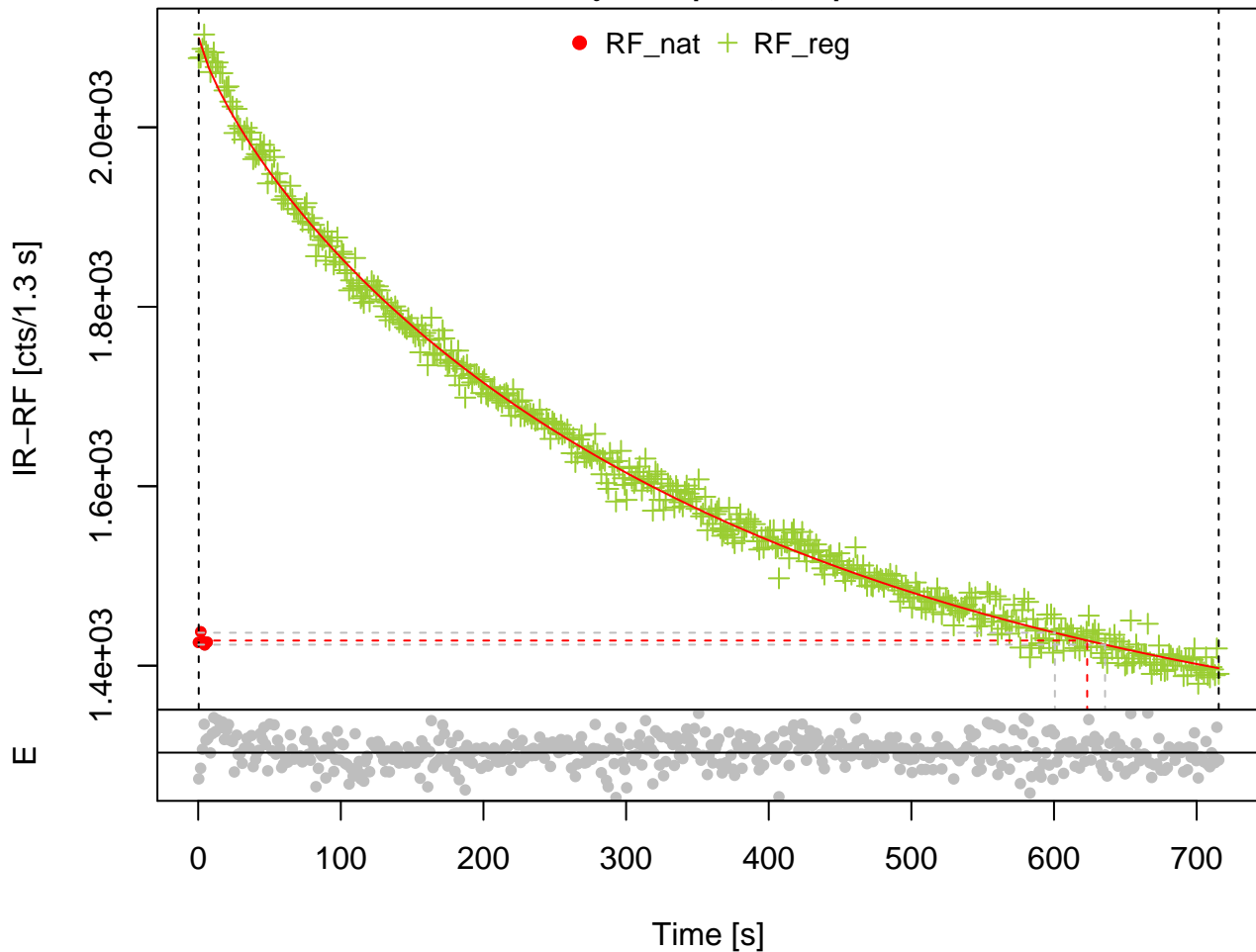


Density: g-values (%/decade)



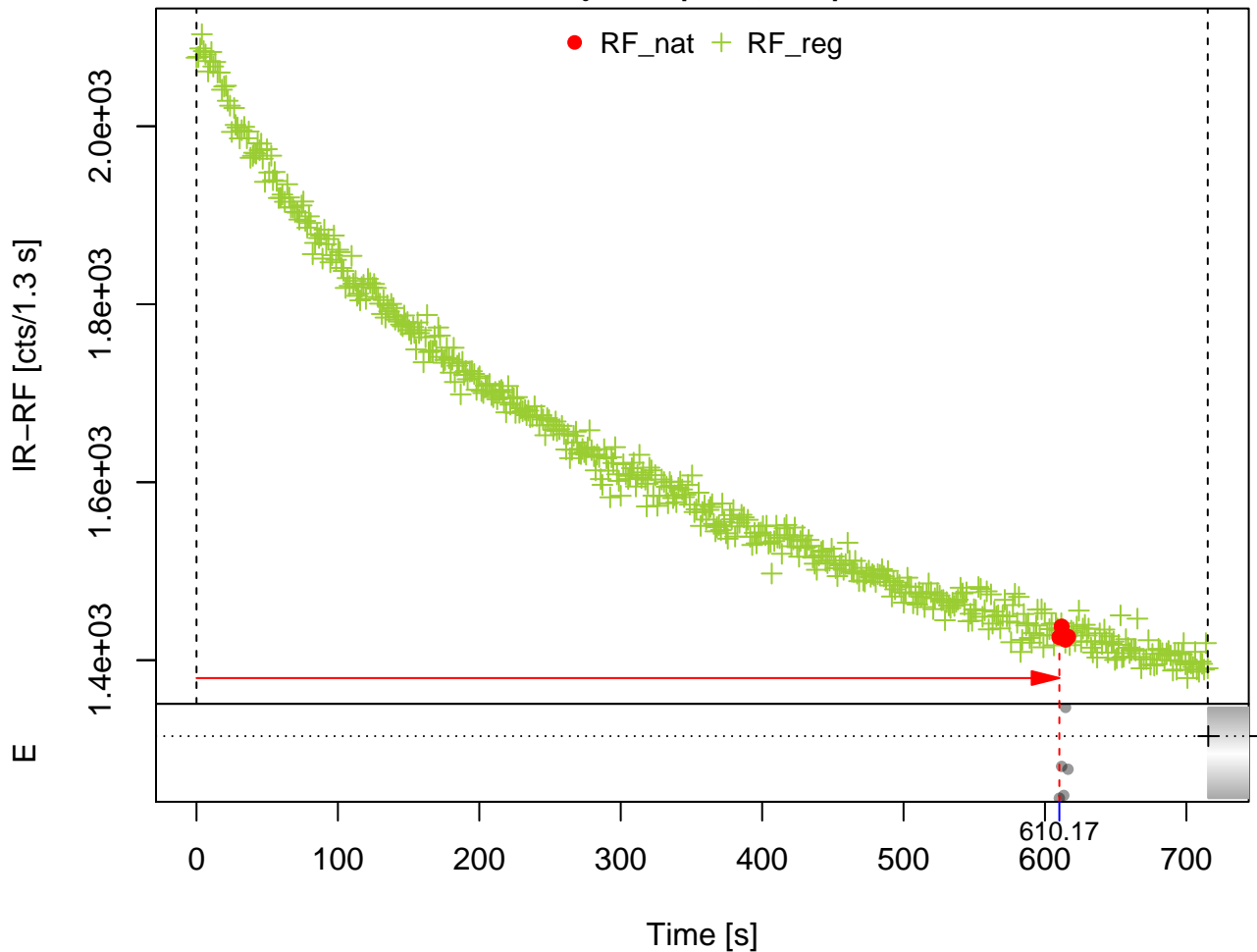
IR-RF

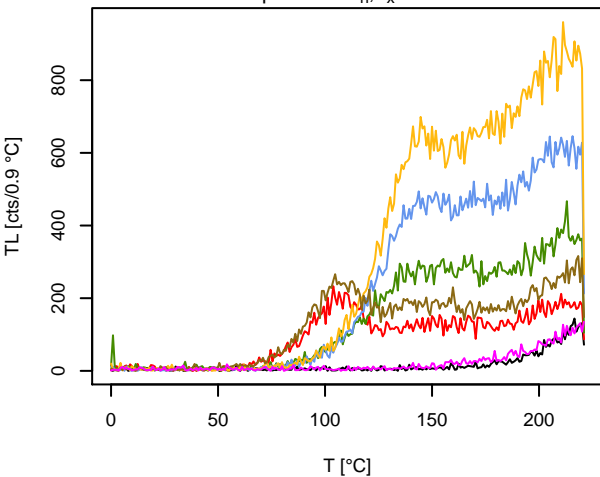
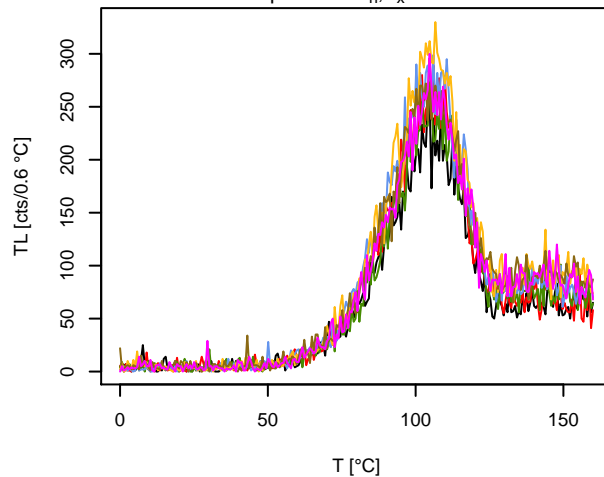
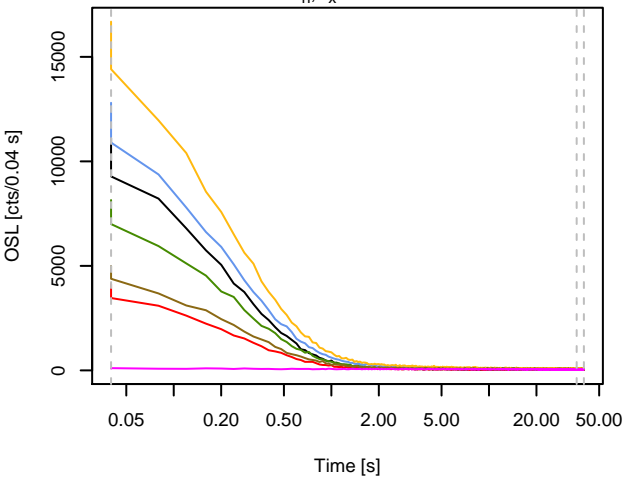
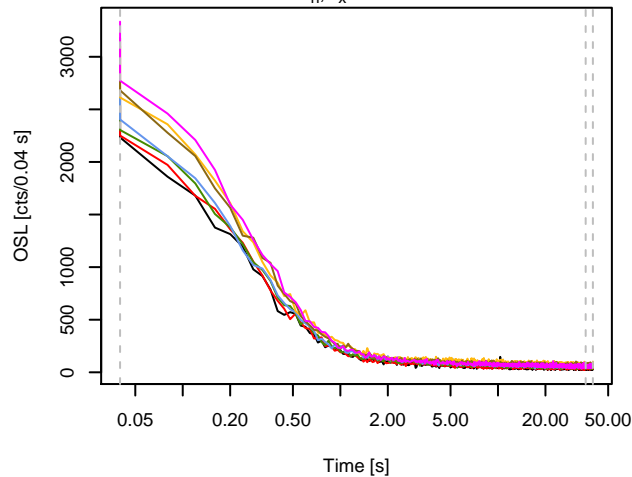
$D_e = 623.25$ [600.63 ; 635.8]



IR-RF

$D_e = 610.17$ [567.19 ; 653.15]



TL previous L_n, L_x curvesTL previous T_n, T_x curves L_n, L_x curves T_n, T_x curves

●
Natural
(0)

●
R1
(450)

●
R2
(1050)

●
R3
(2000)

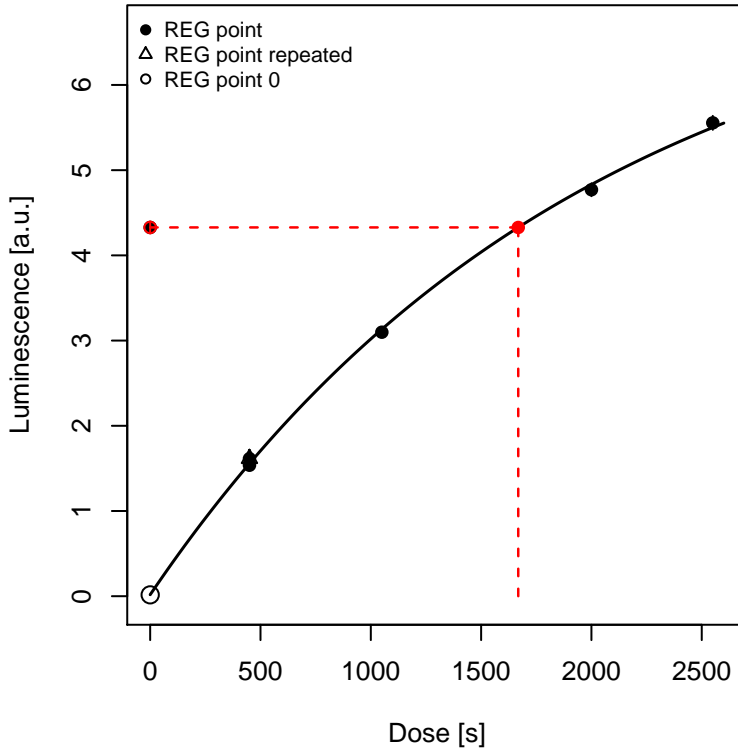
●
R4
(2550)

●
R5
(450)

●
R0
(0)

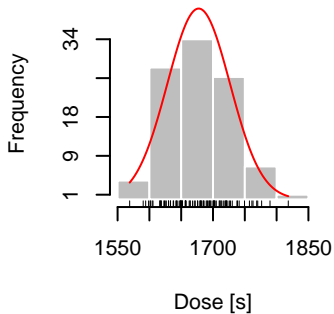
Growth curve

$D_e = 1668.25 \pm 49.22$ | fit: EXP

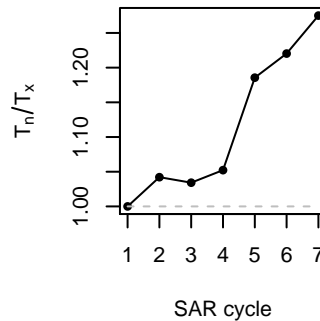


D_e from MC simulation

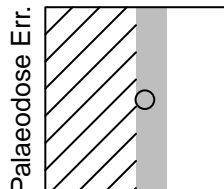
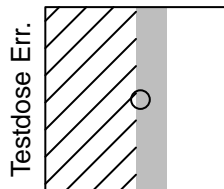
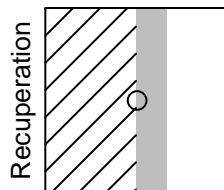
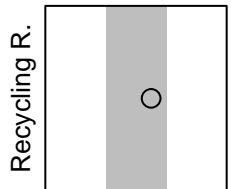
$D_{eMC} = 1677.48 \pm 49.22$ | quality = 99.4 %



Test dose response

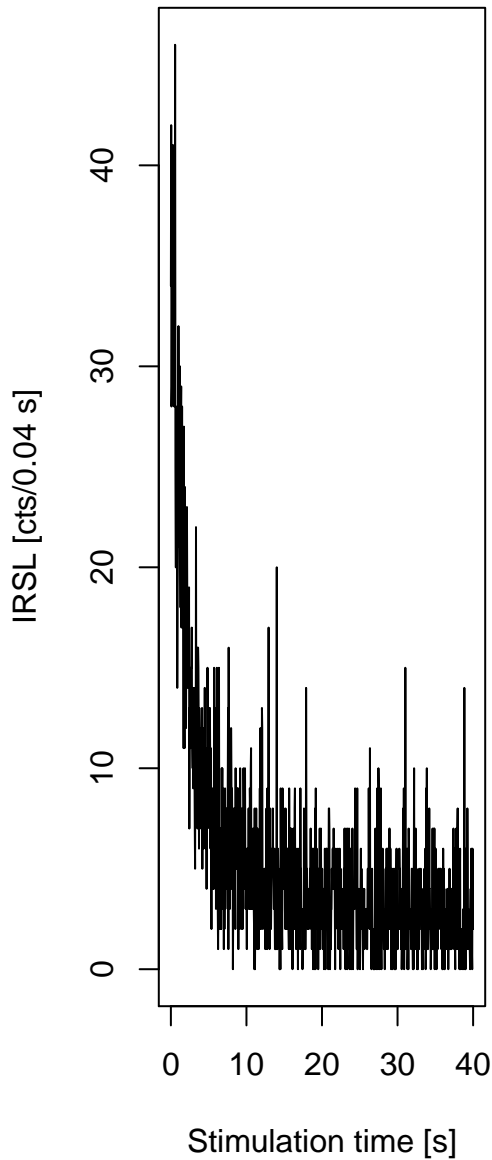


Rejection criteria



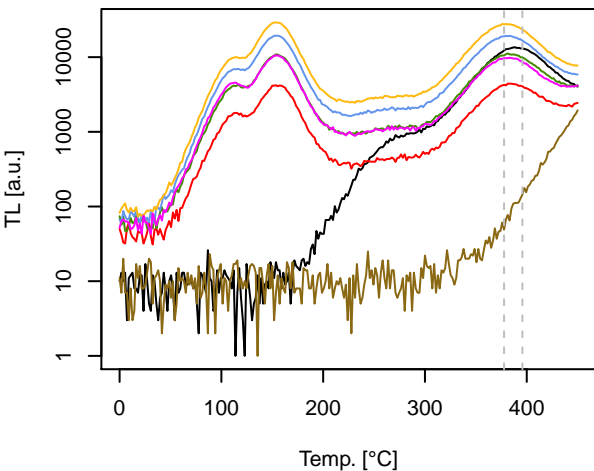
- 0.2 + 0.2

IRSL

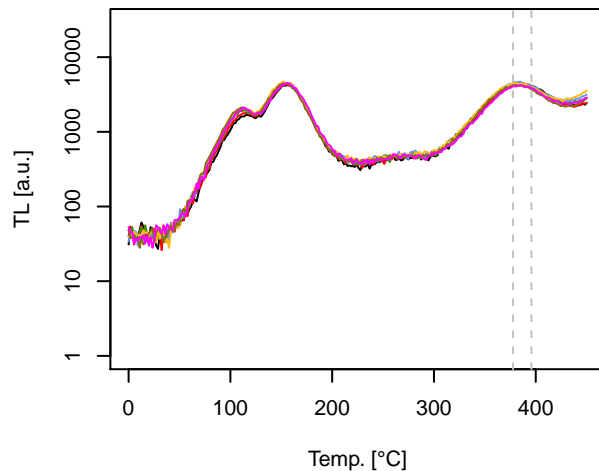


[help\("analyse_SAR.CWOSL"\)](#)

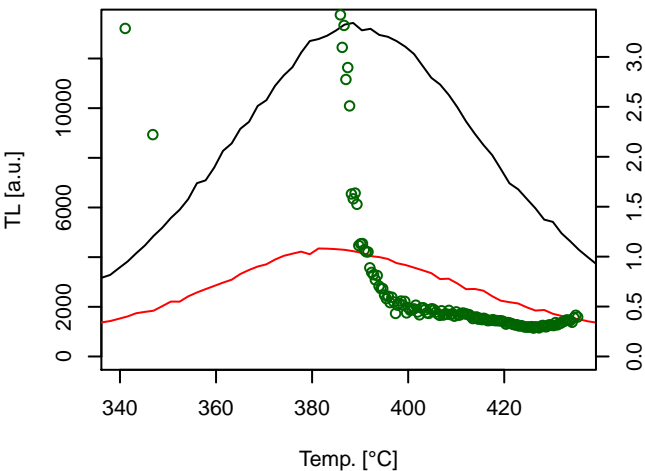
L_n, L_x curves



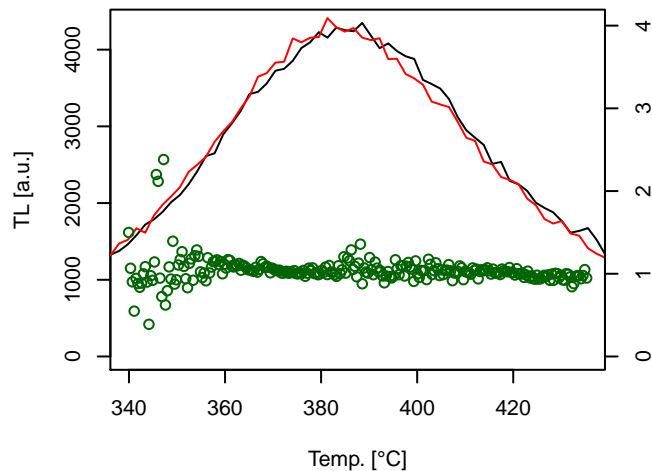
T_n, T_x curves



Plateau test L_n, L_x curves



plateau Test T_n, T_x curves



Natural
(0)

Natural
(136)

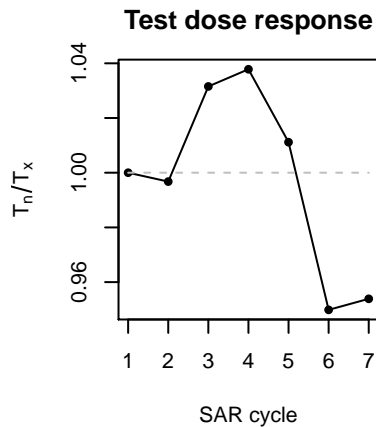
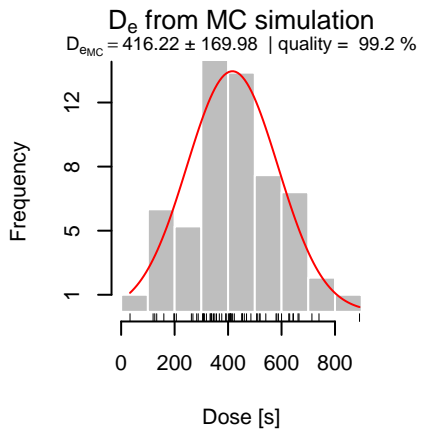
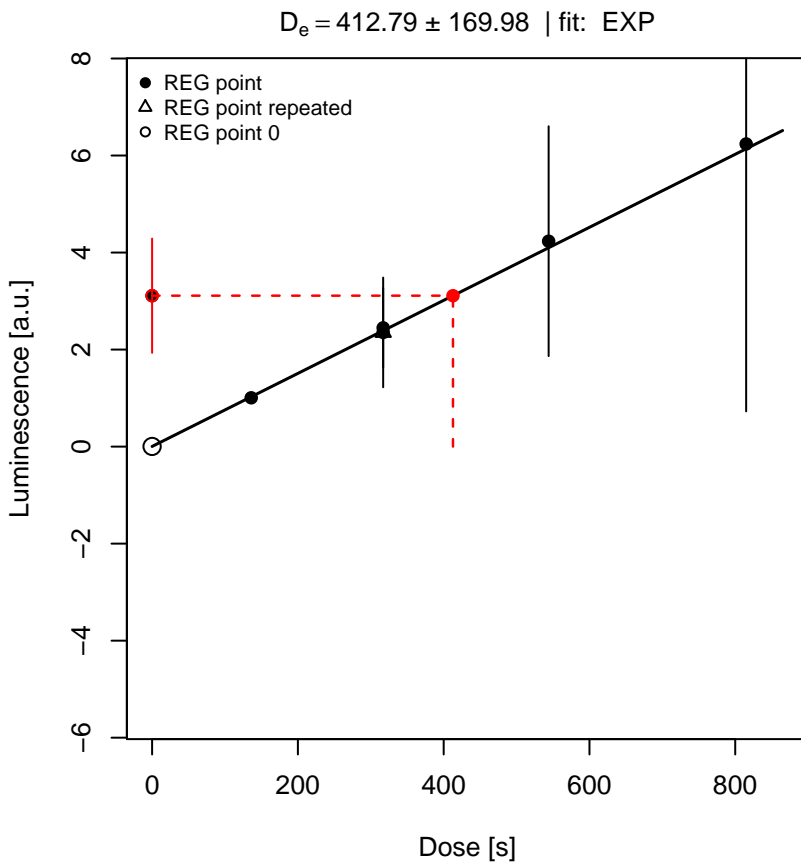
Natural
(317)

Natural
(544)

Natural
(815)

Natural
(0)

Natural
(317)

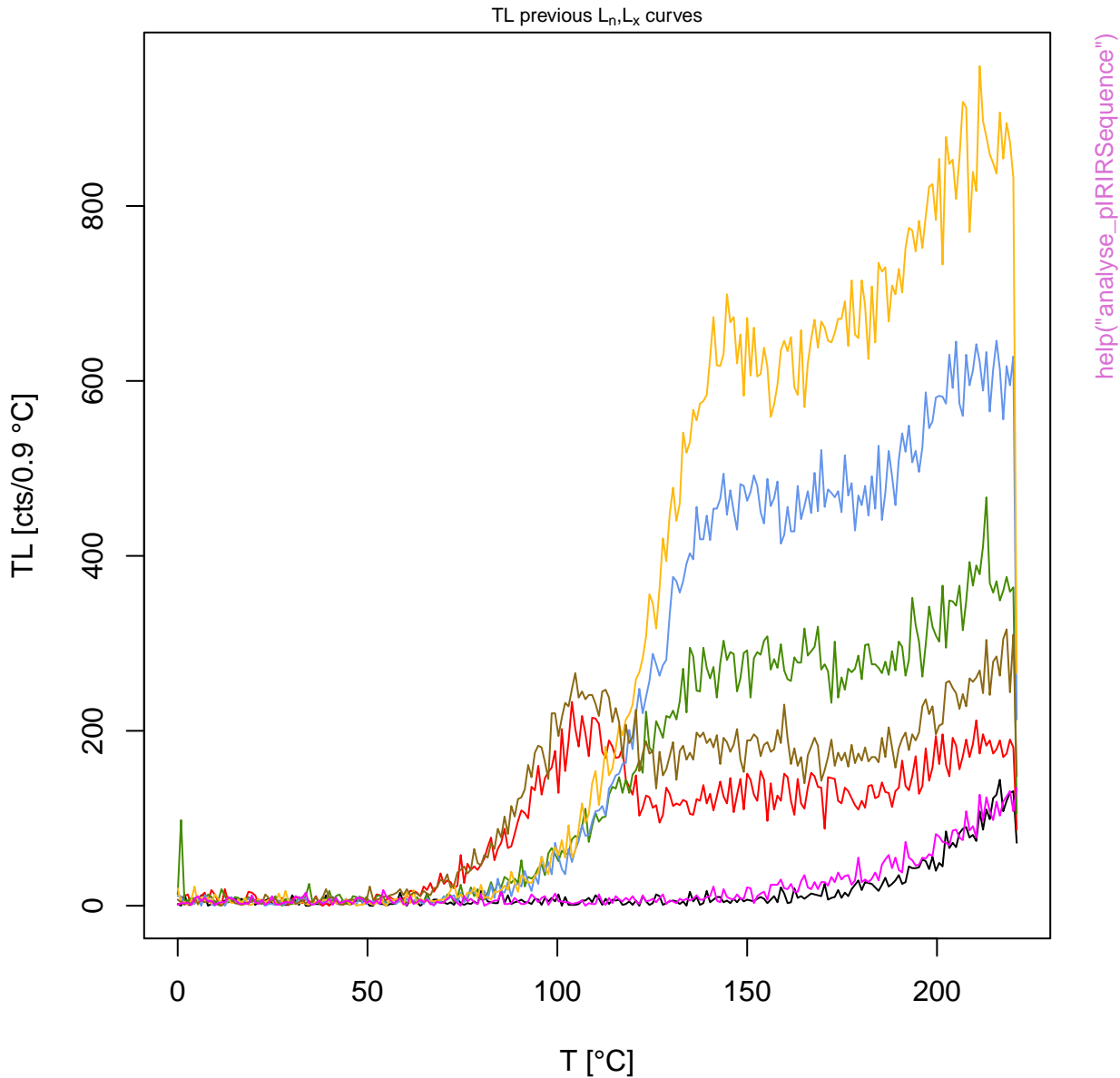


Pseudo pIRIR data set based on quartz OSL

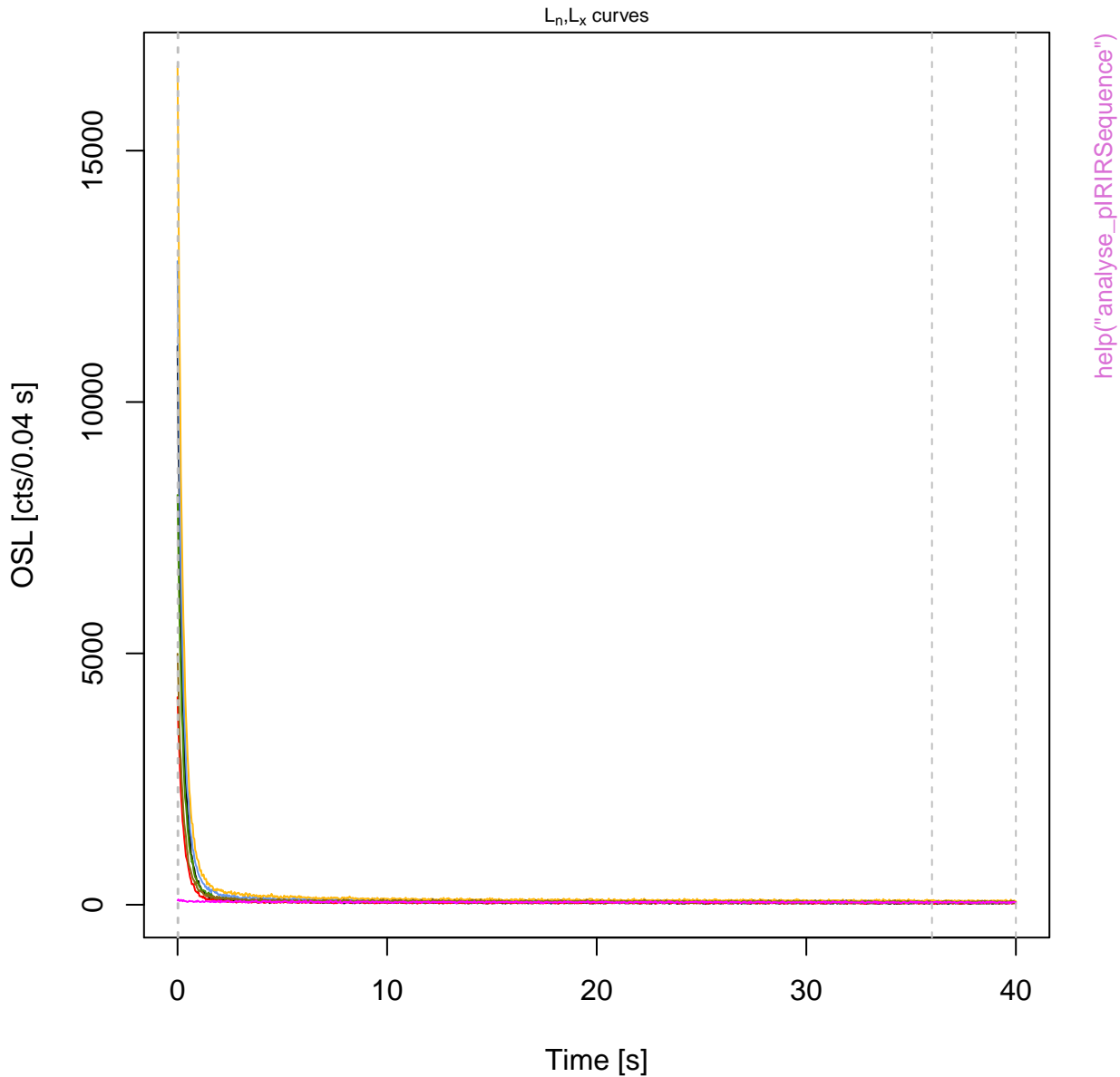
TL
pseudolRSL1
pseudolRSL2

help("analyse_pIRIRSequence")

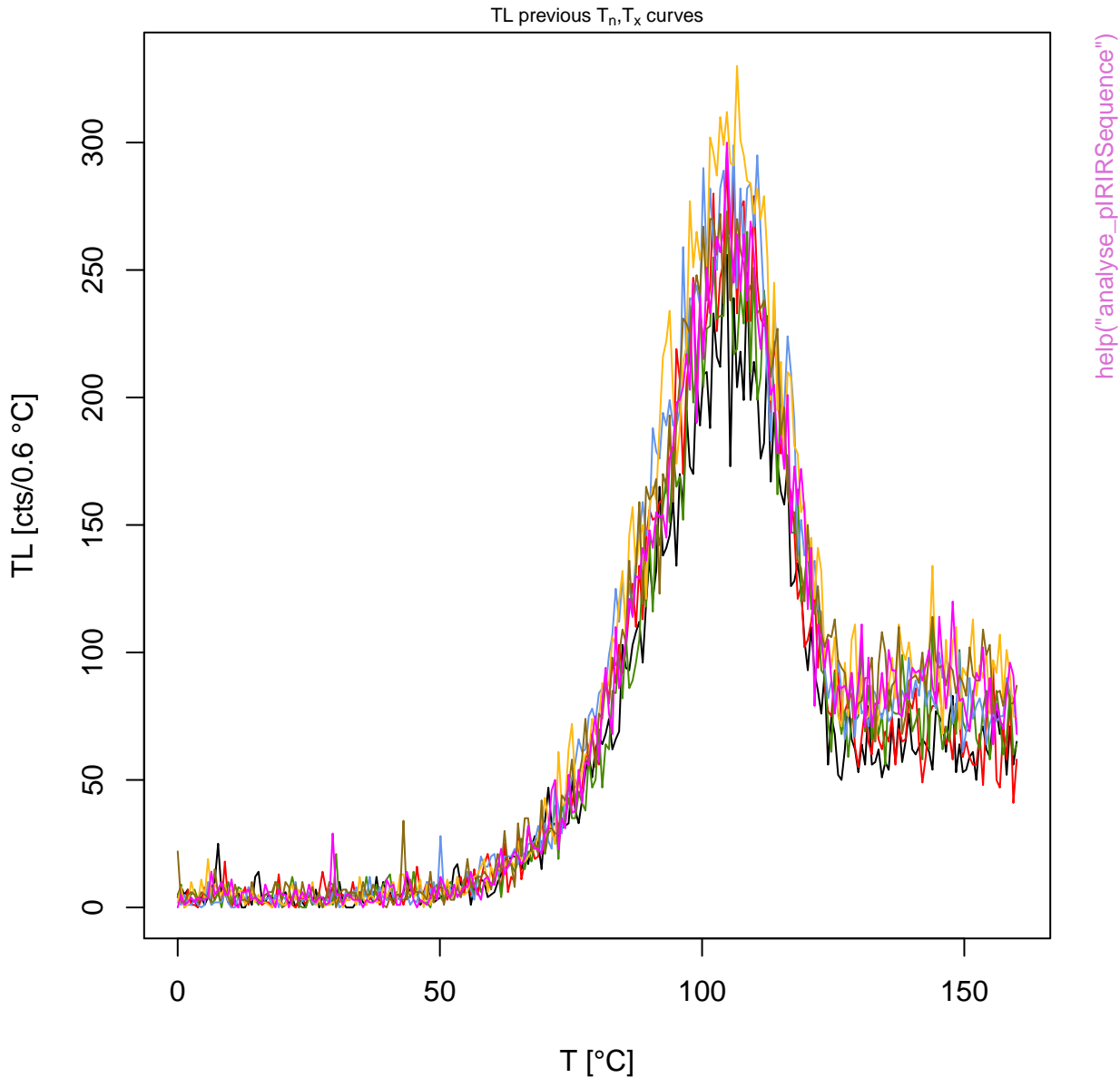
Pseudo pIRIR data set based on quartz OSL



Pseudo pIRIR data set based on quartz OSL



Pseudo pIRIR data set based on quartz OSL

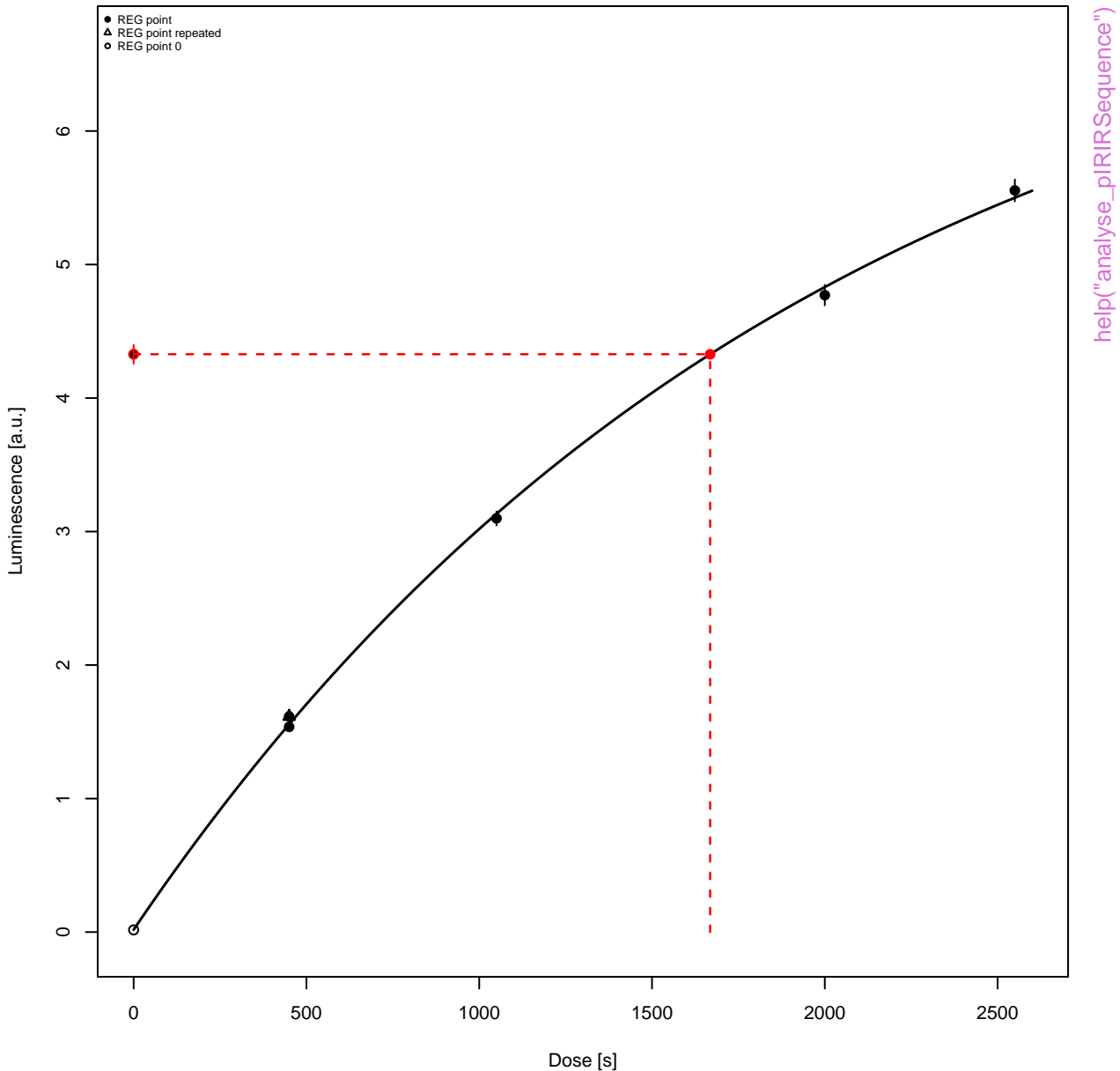


Pseudo pIRIR data set based on quartz OSL



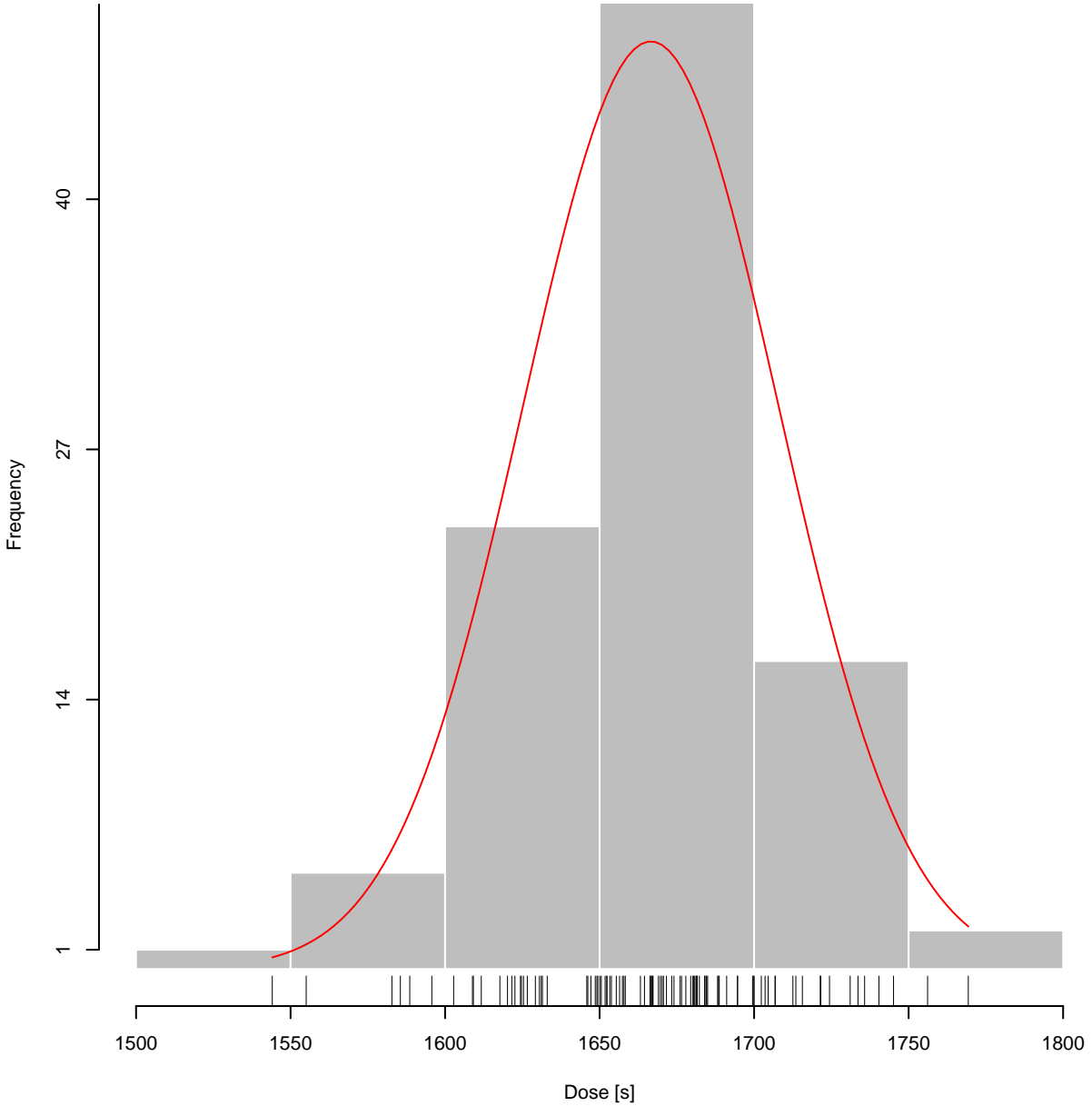
Pseudo pIRIR data set based on quartz OSL

$D_e = 1668.25 \pm 41.38$ | fit: EXP



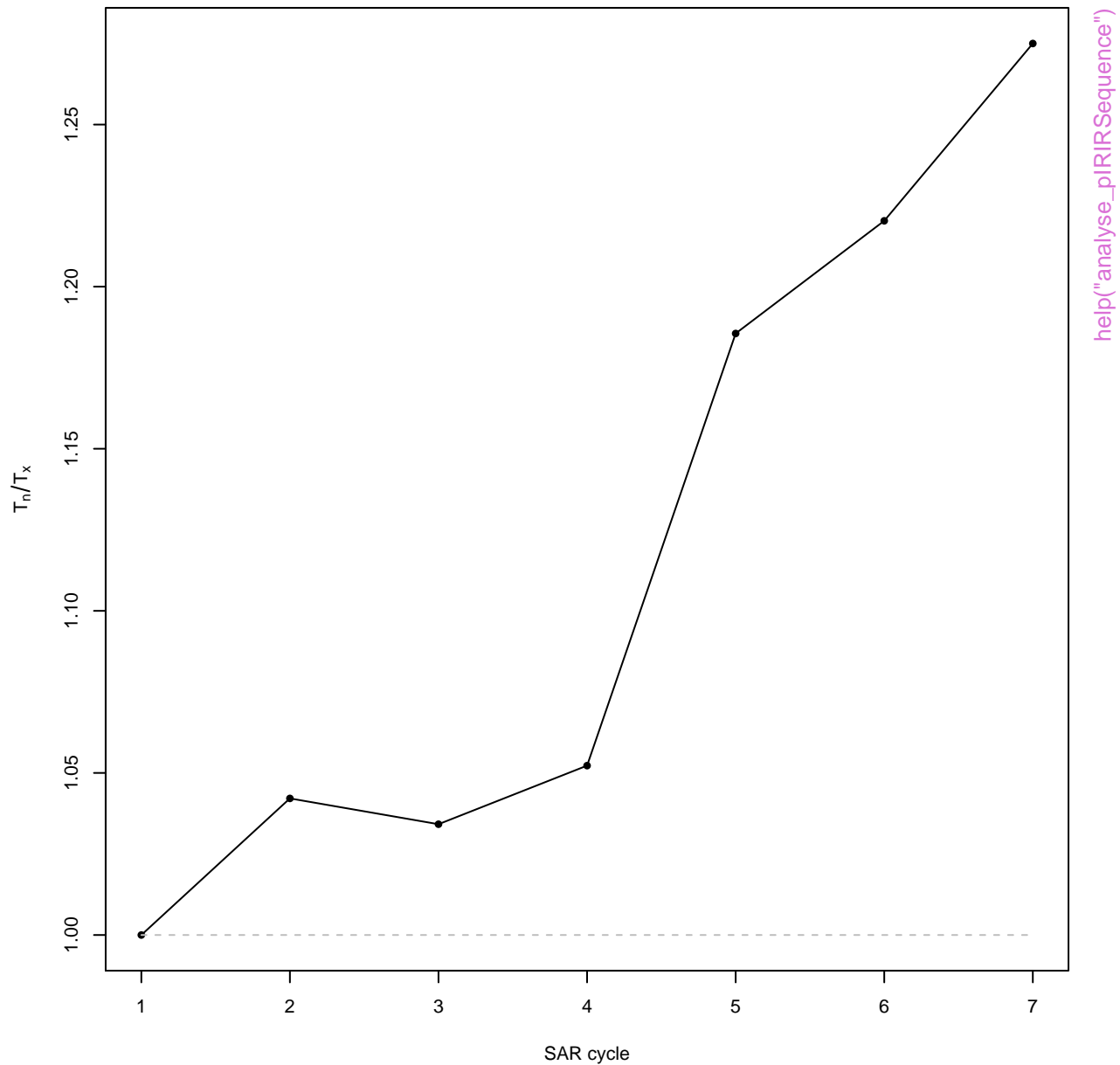
D_e from MC simulation

D_{eMC} = 1666.57 ± 41.38 | quality = 99.9 %



help("analyse_pIRIRSequence")

Test dose response

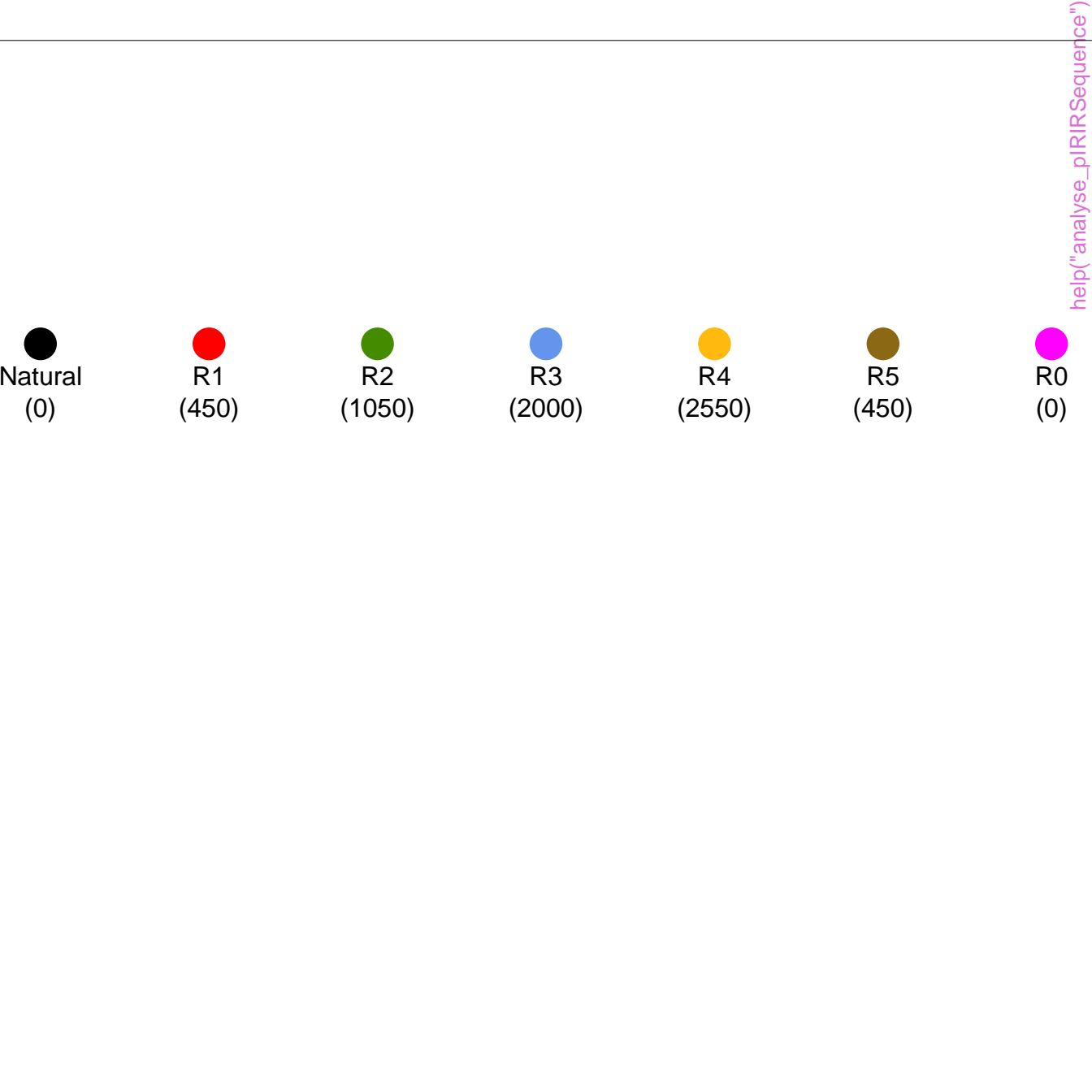


Pseudo pIRIR data set based on quartz OSL



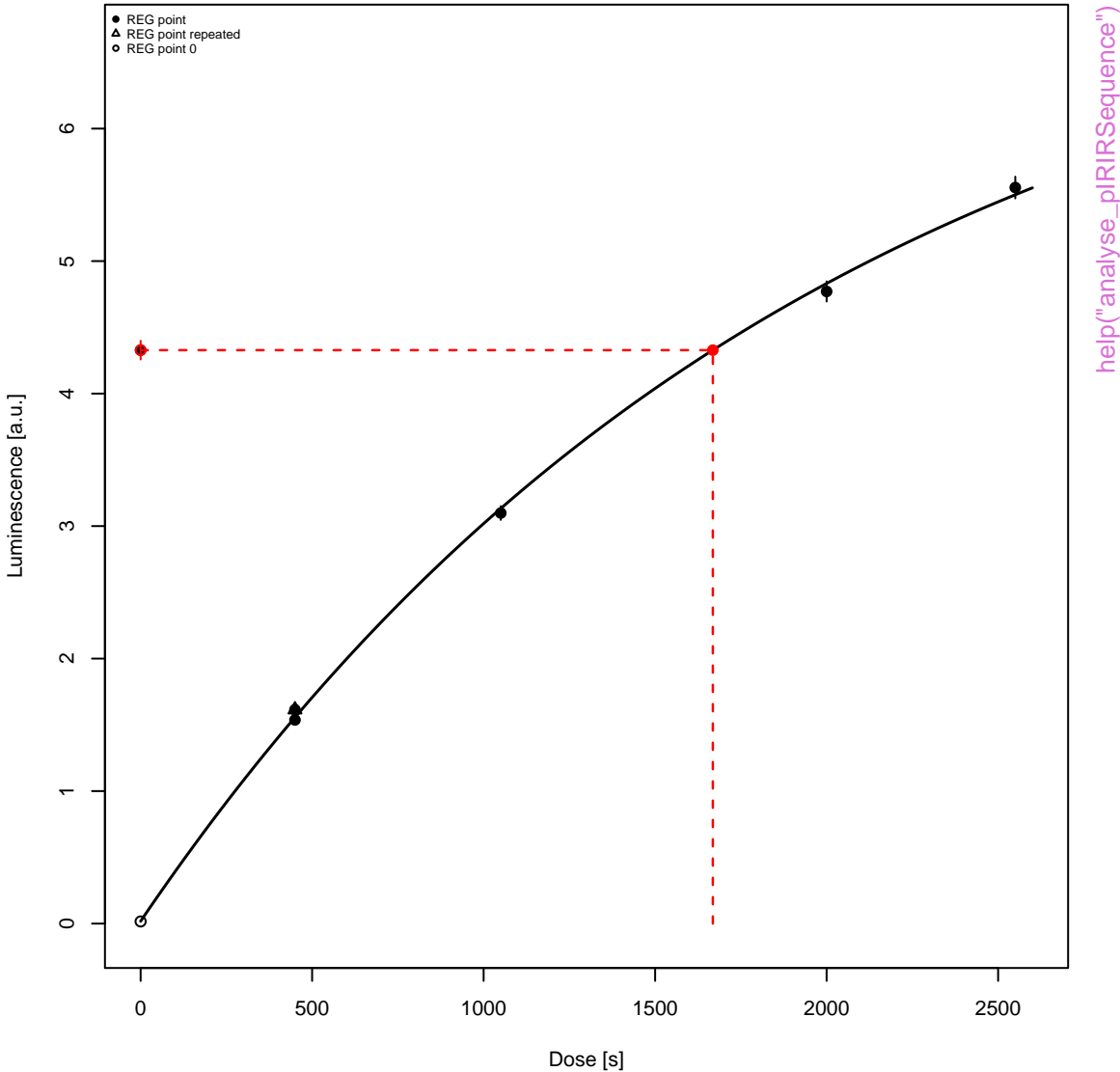
Pseudo pIRIR data set based on quartz OSL





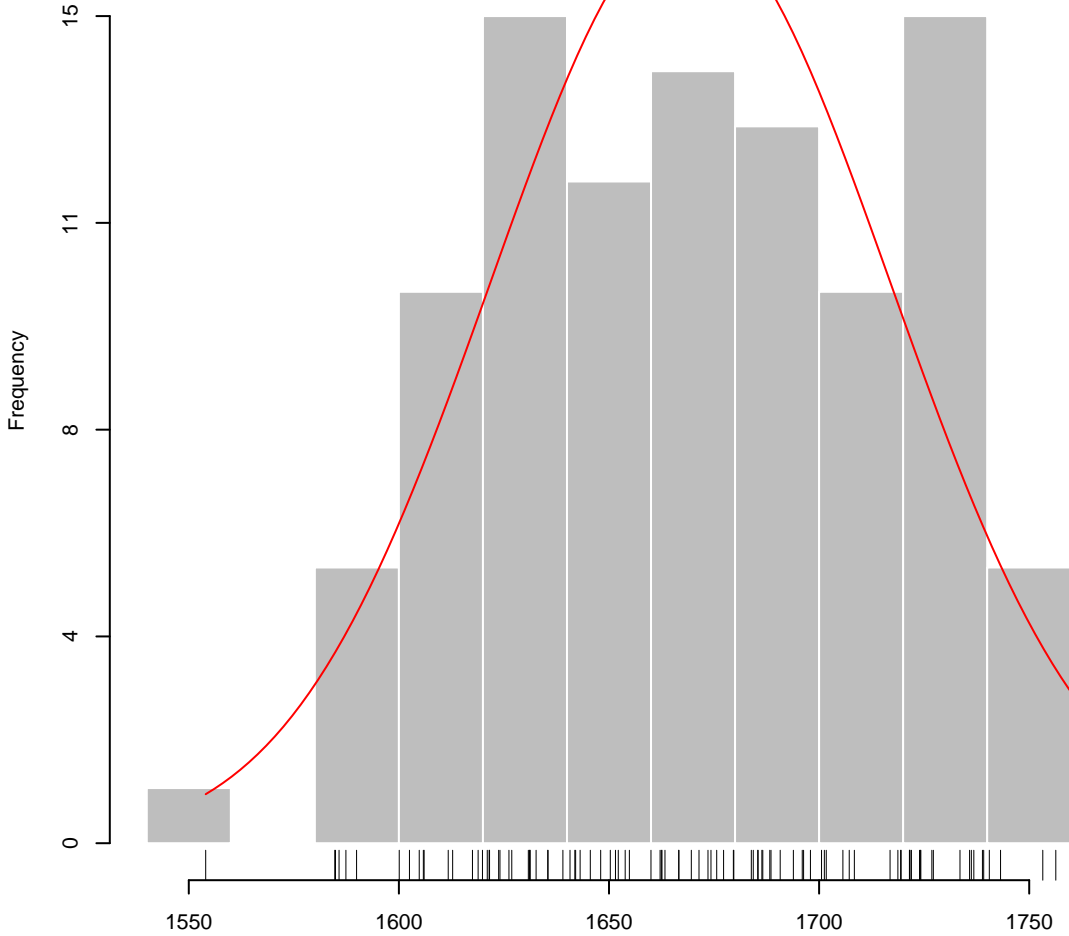
Pseudo pIRIR data set based on quartz OSL

$D_e = 1668.25 \pm 47.59$ | fit: EXP



D_e from MC simulation

D_{e,MC} = 1669.37 ± 47.59 | quality = 99.9 %

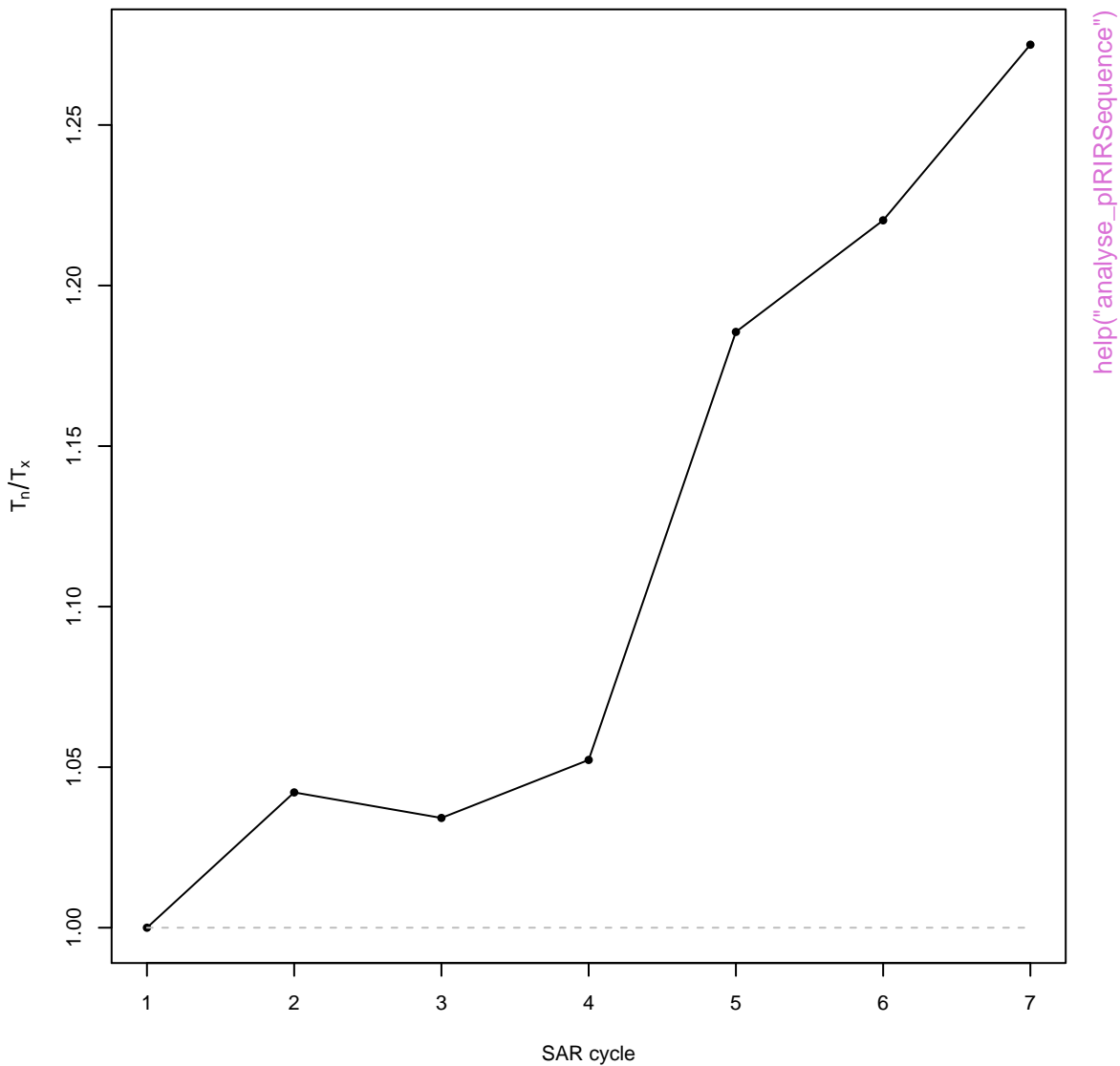


Dose [s]

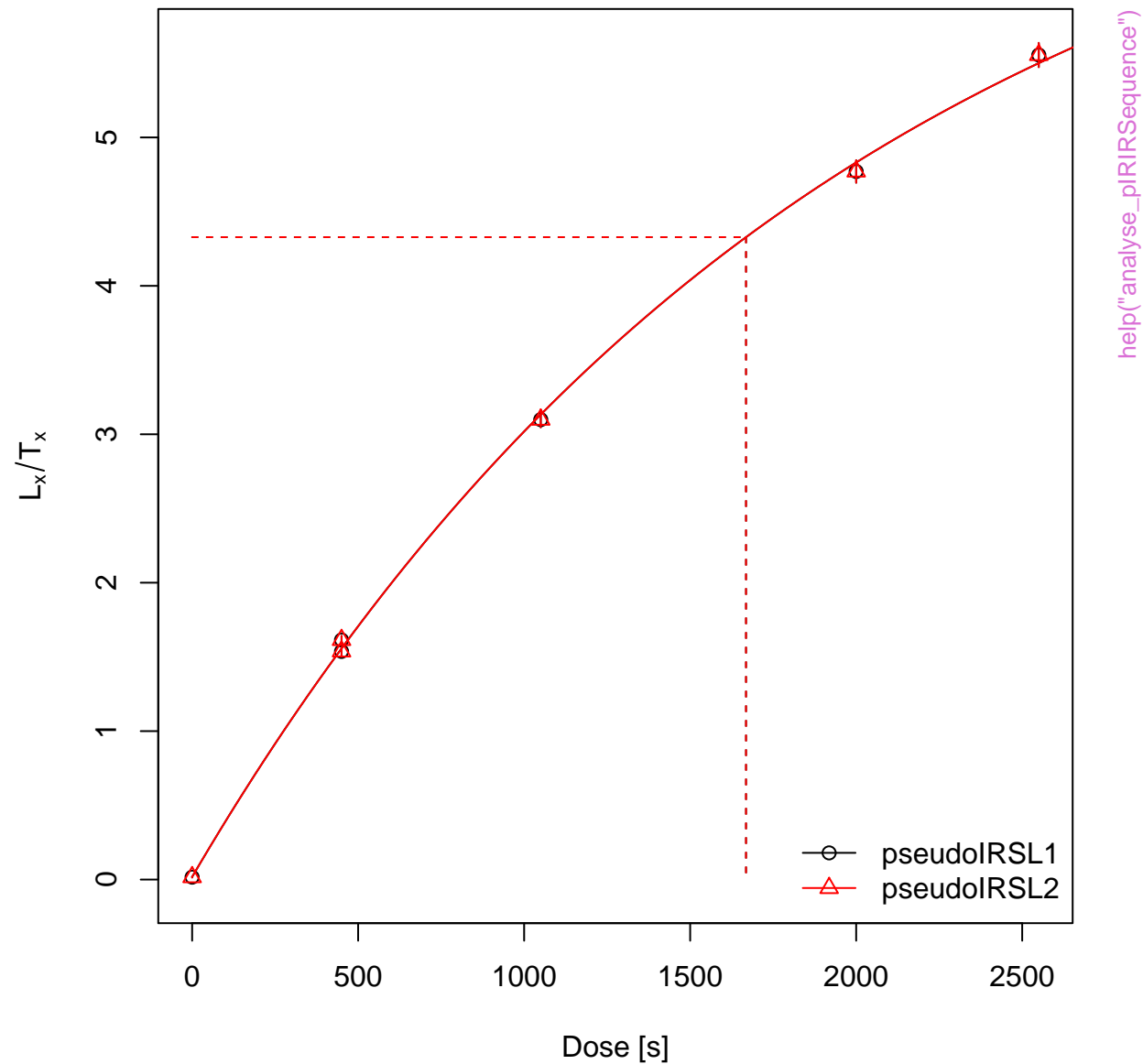
n = 100 , valid fits = 100

help("analyse_pIRSequence")

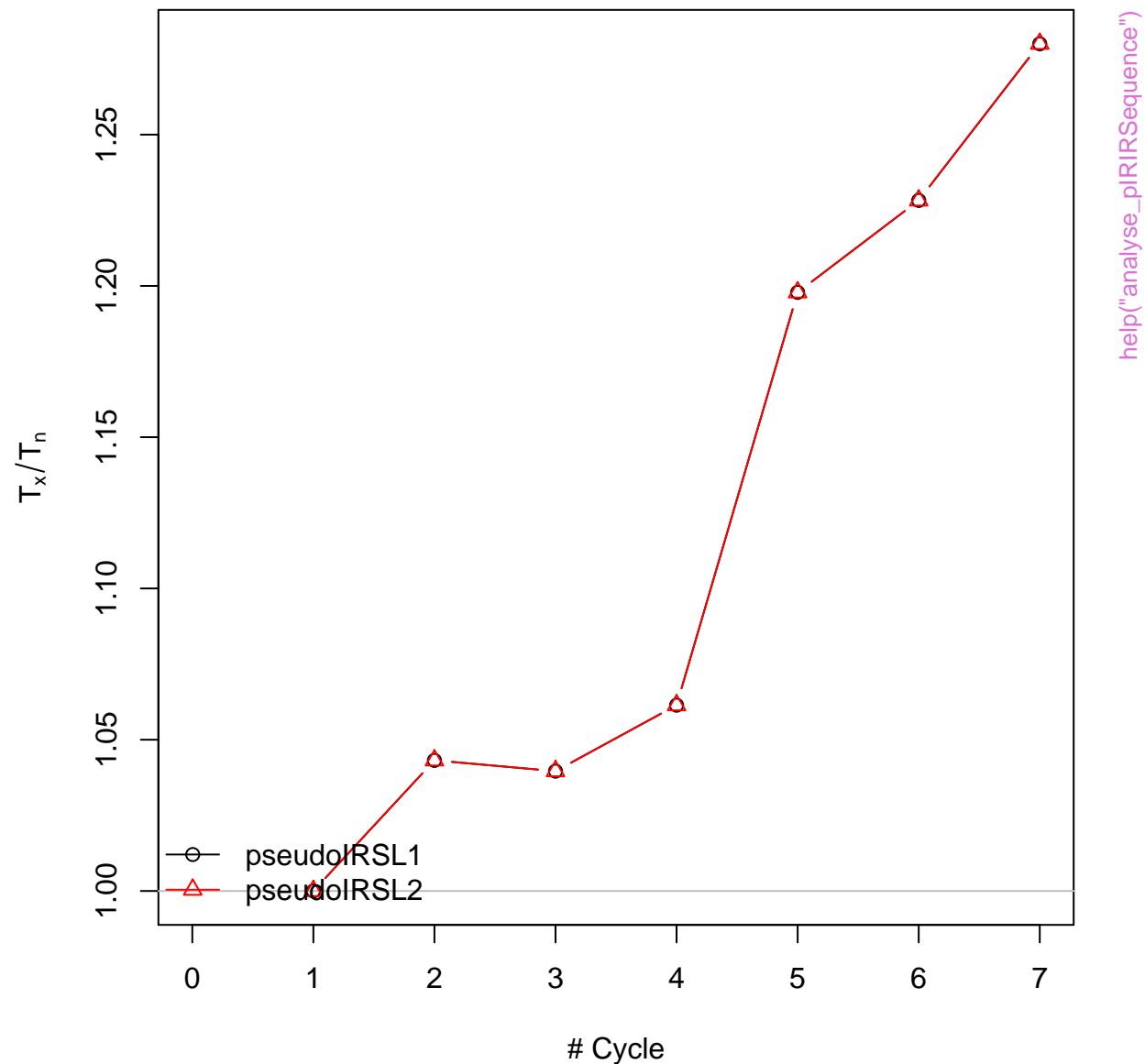
Test dose response



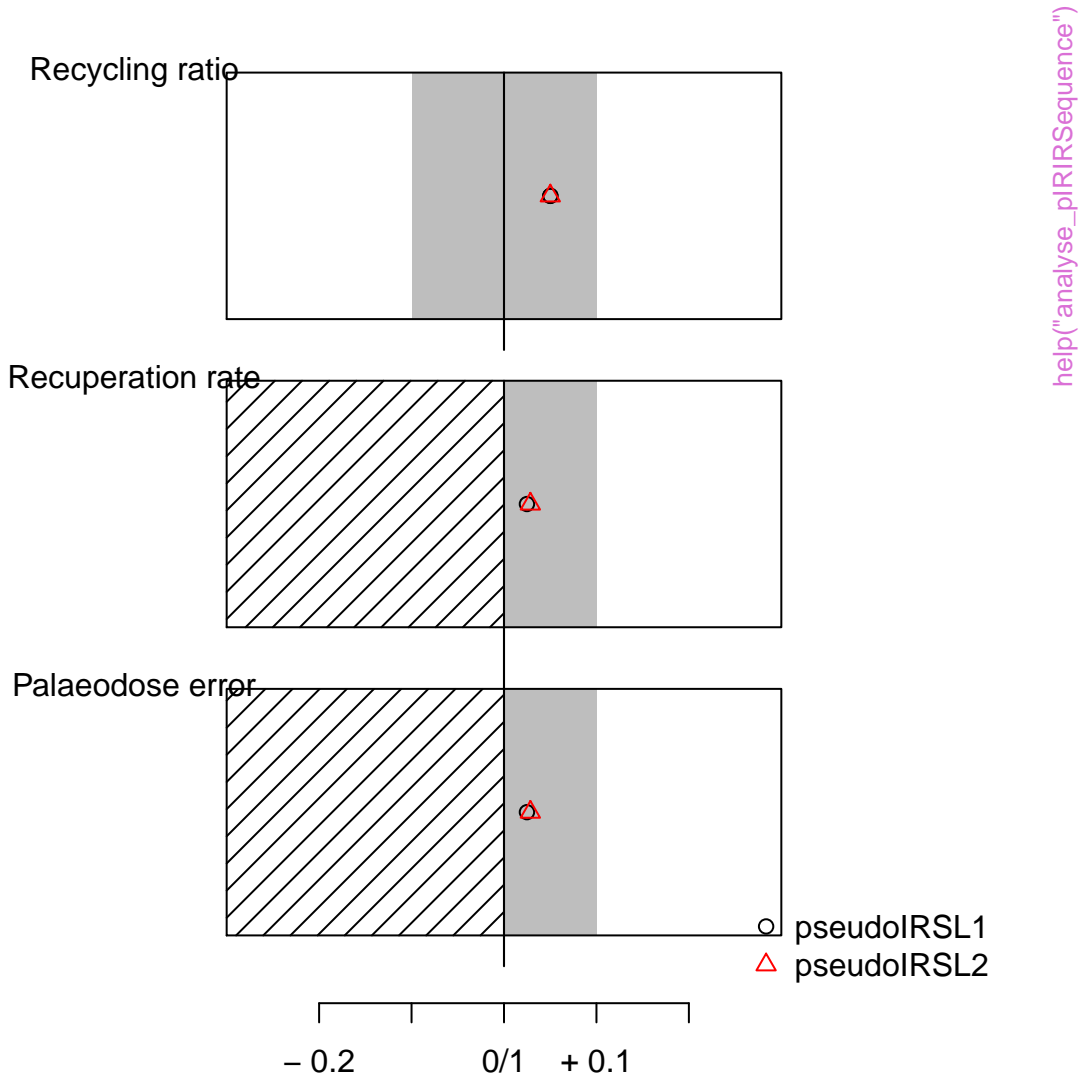
Summarised Dose Response Curves



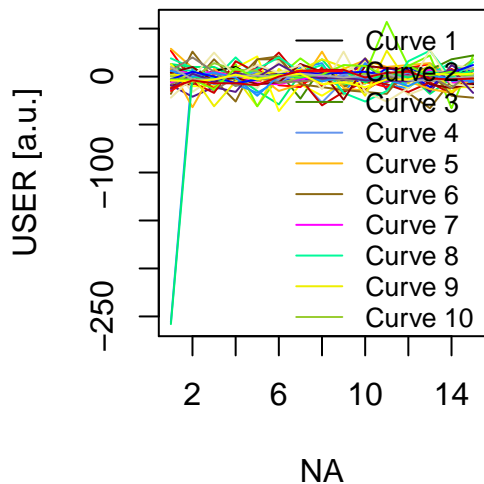
Sensitivity change



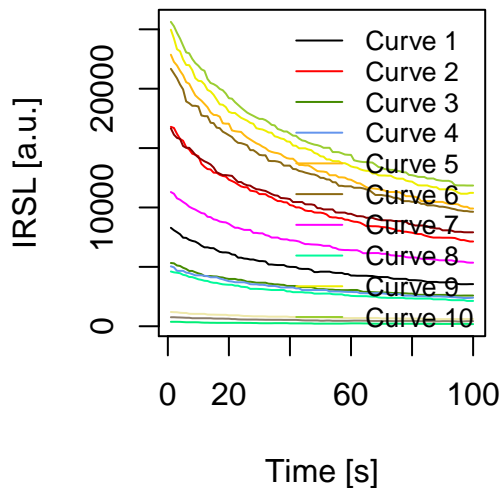
Rejection criteria



USER combined

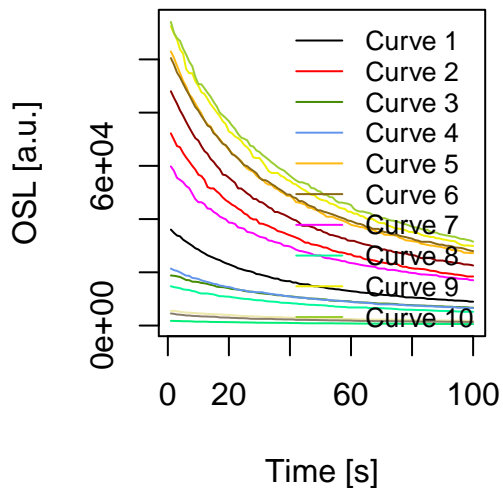


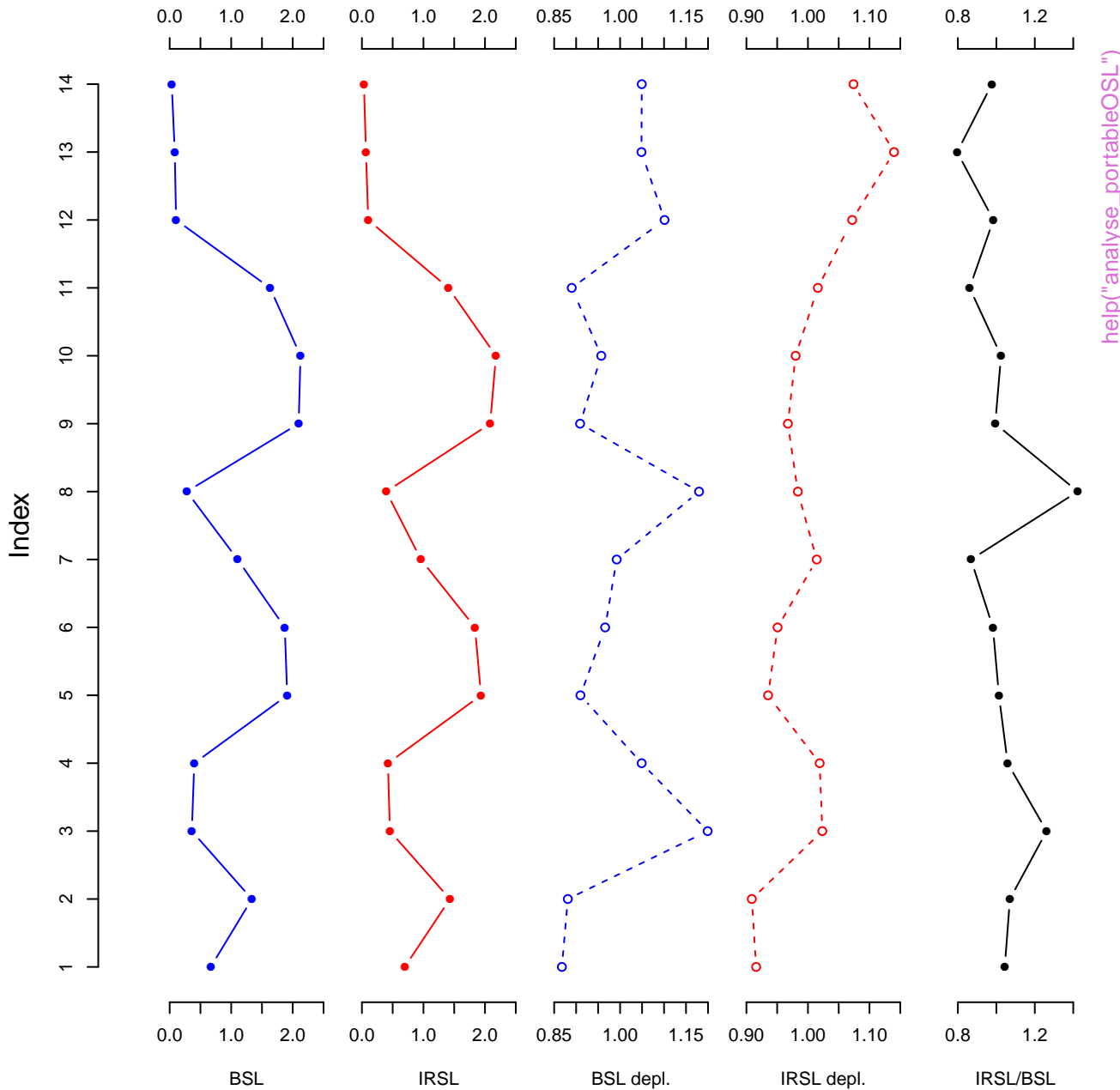
IRSL combined



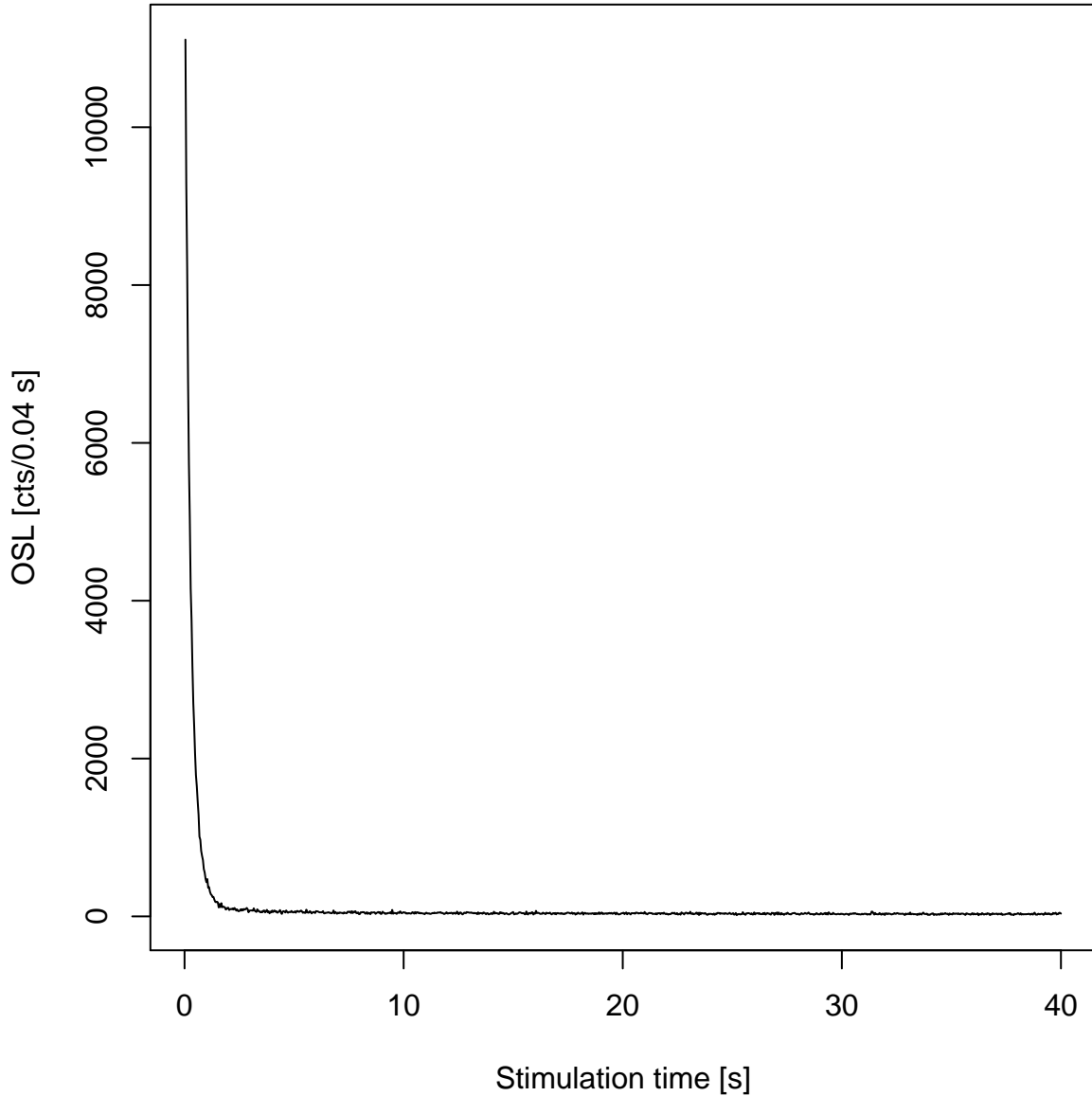
help("analyse_portableOSL")

OSL combined



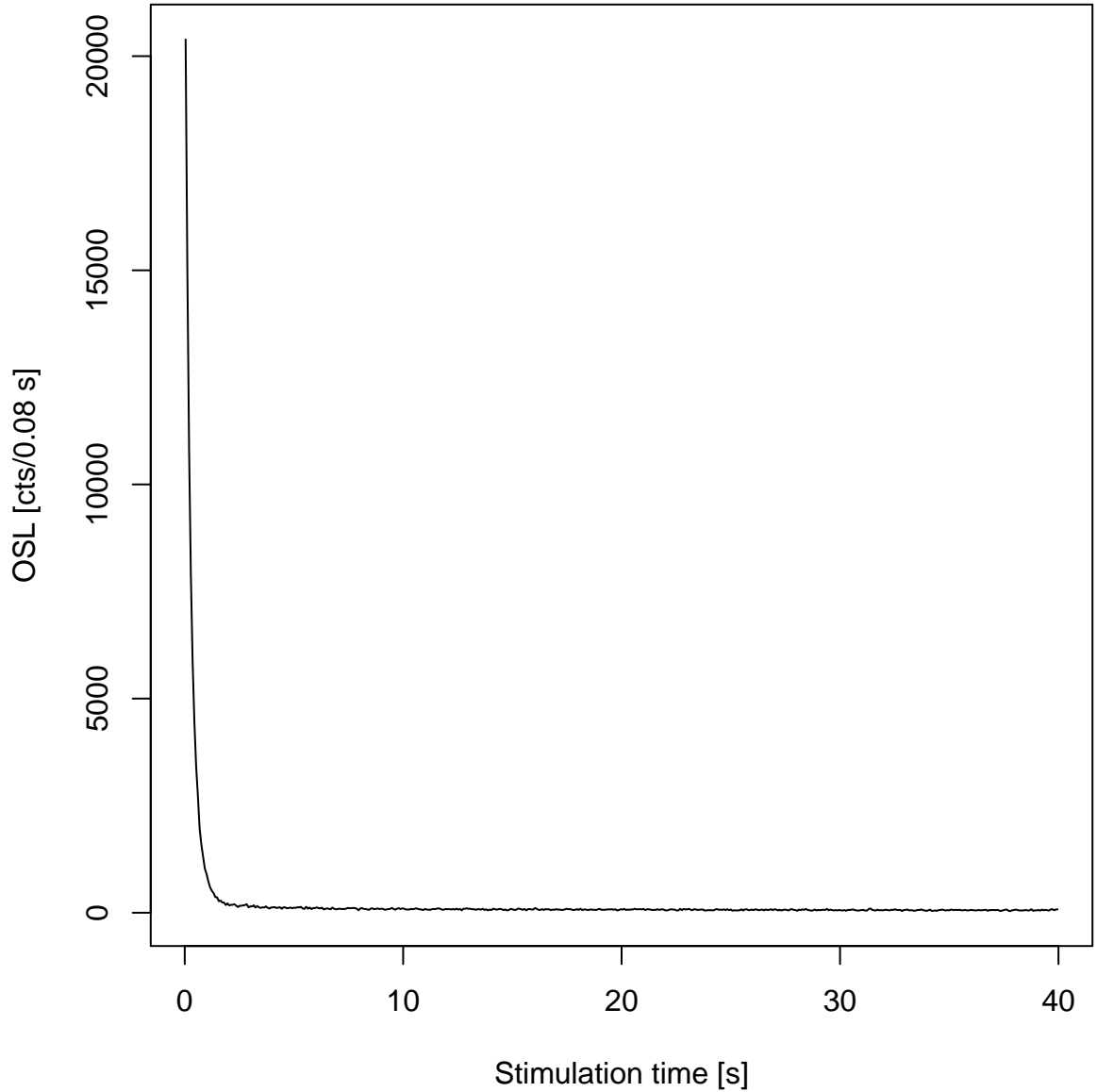


OSL



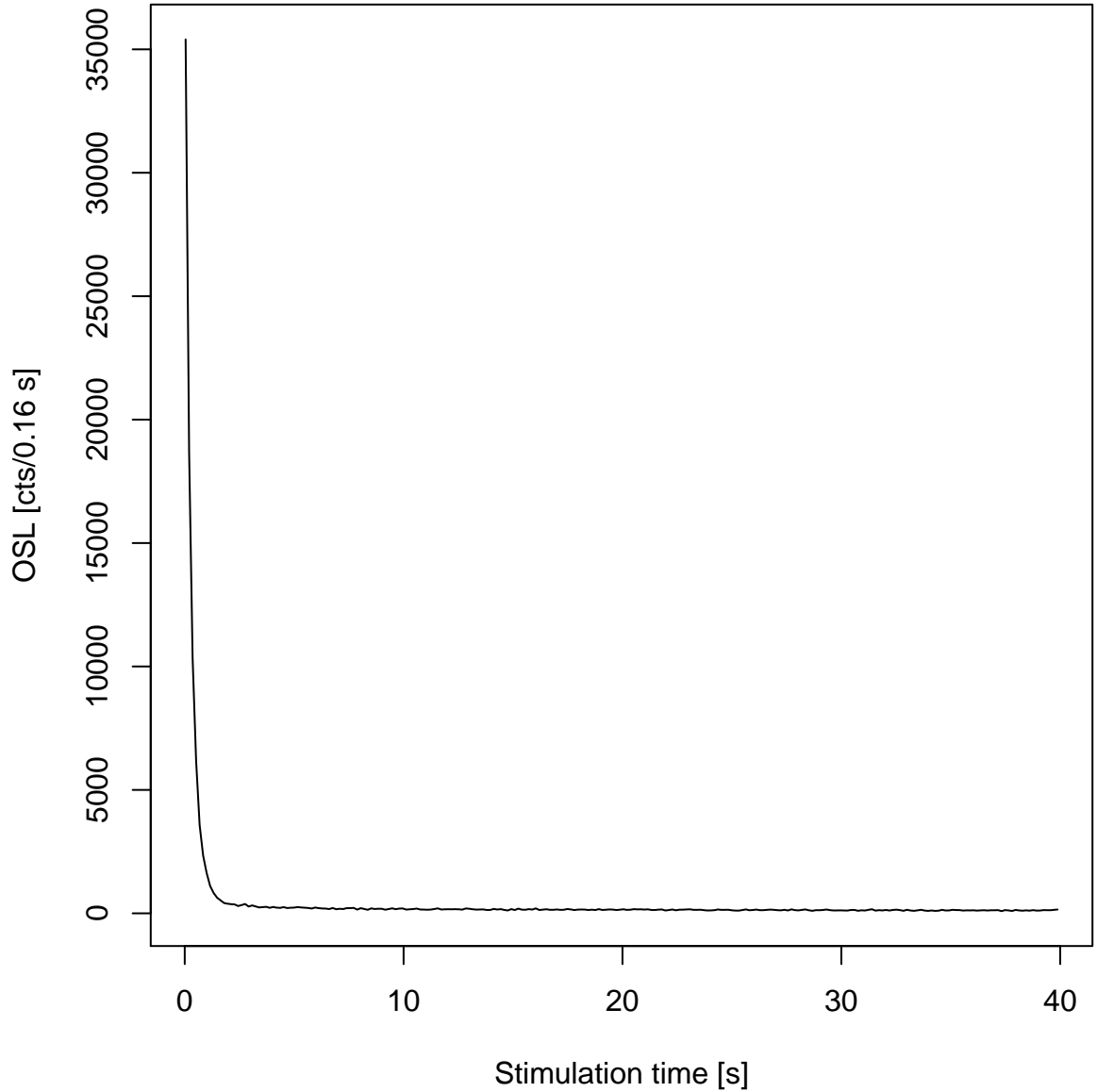
`help("bin_RLum.Data")`

OSL



help("bin_RLum.Data")

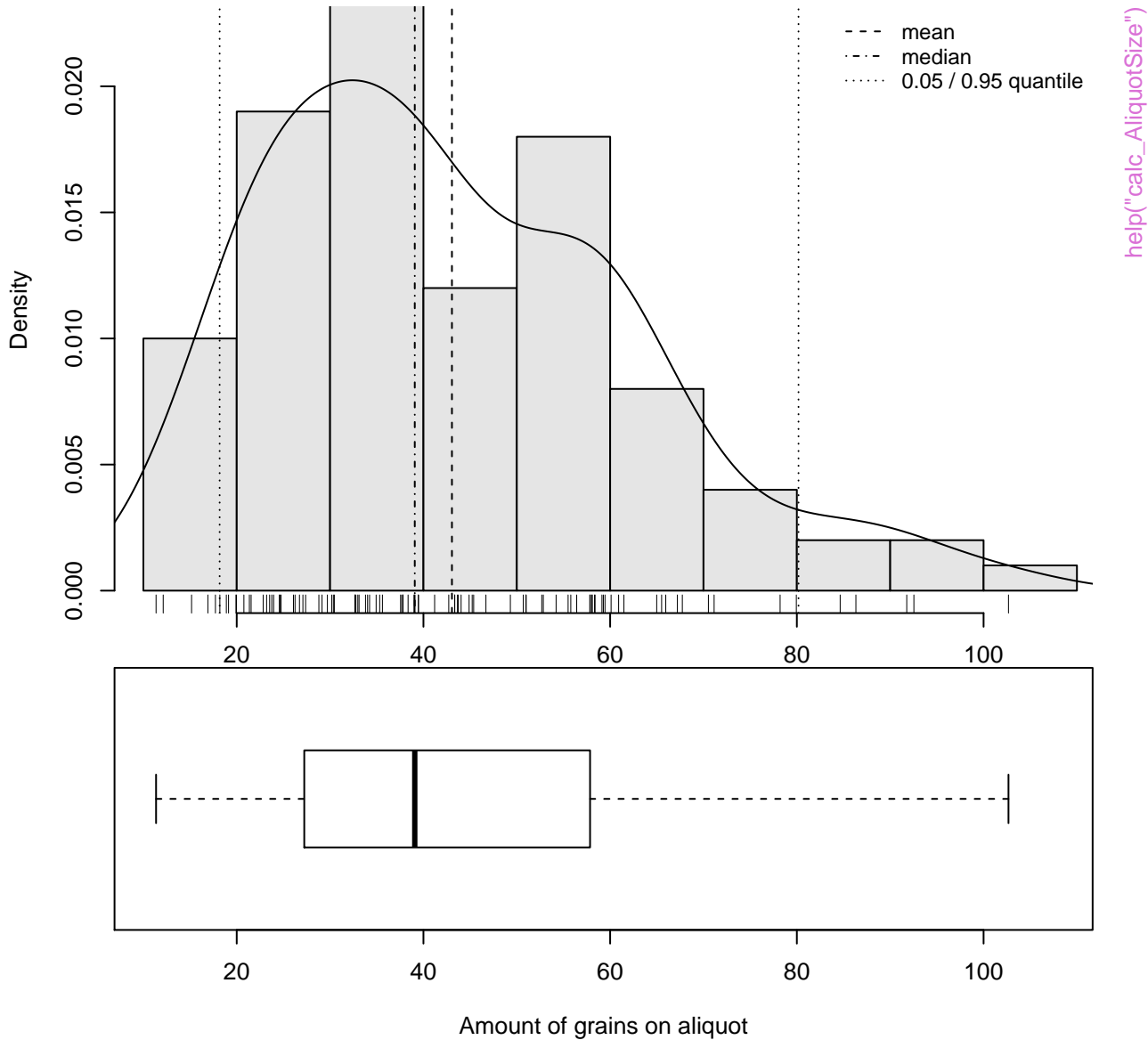
OSL



help("bin_RLum.Data")

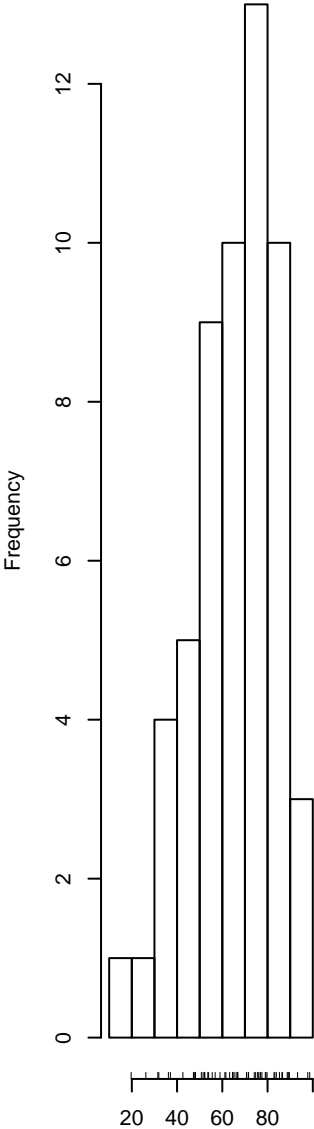
Monte Carlo Simulation

$$n = \left| \hat{\mu} = 43 \mid \hat{\sigma} = 20 \mid \frac{\hat{\sigma}}{\sqrt{n}} = 2 \mid v = 0.73 \right|$$



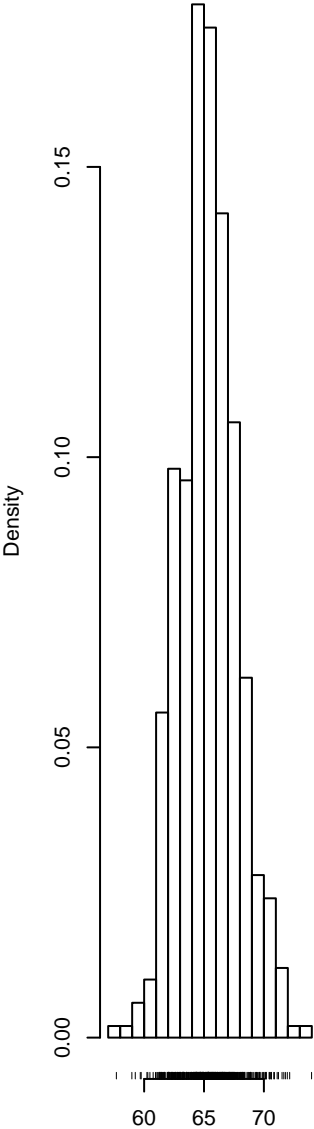
Observed: Equivalent dose

n = 56



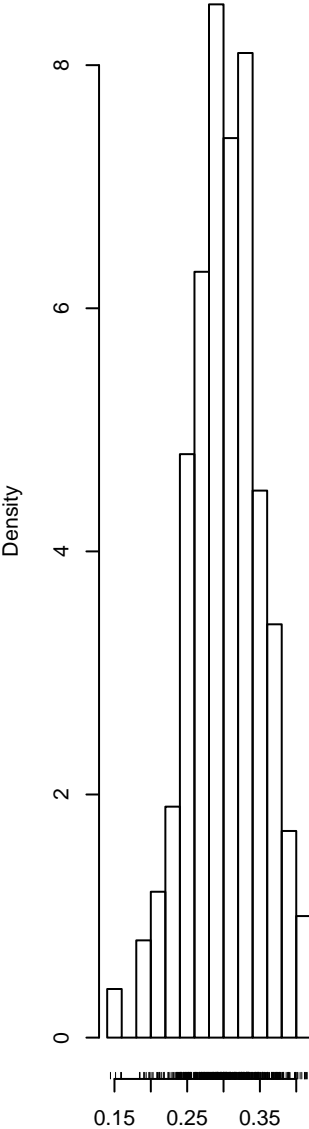
Bootstrapping: Average Dose

n = 500



Bootstrapping: Sigma_d

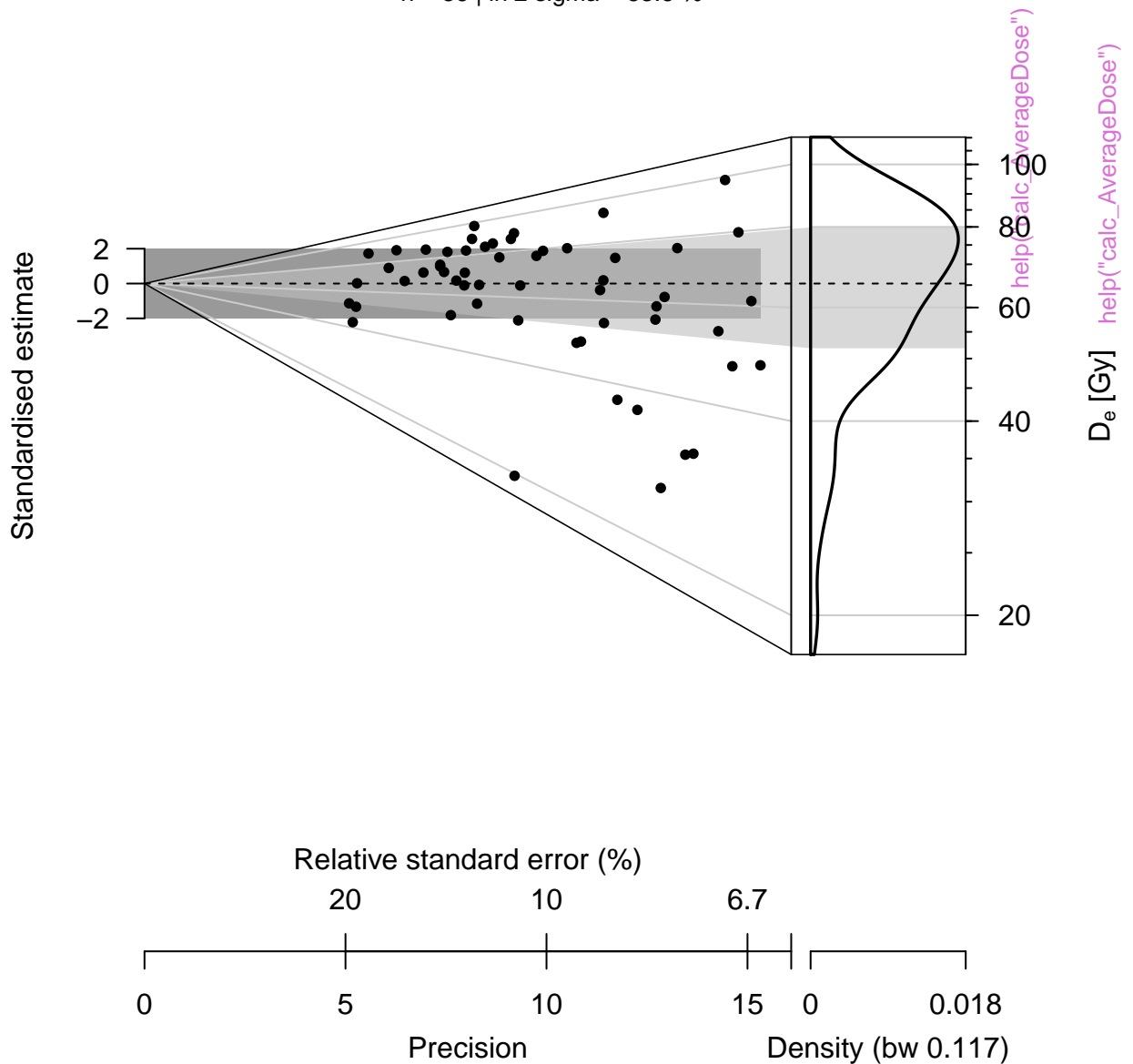
n = 500



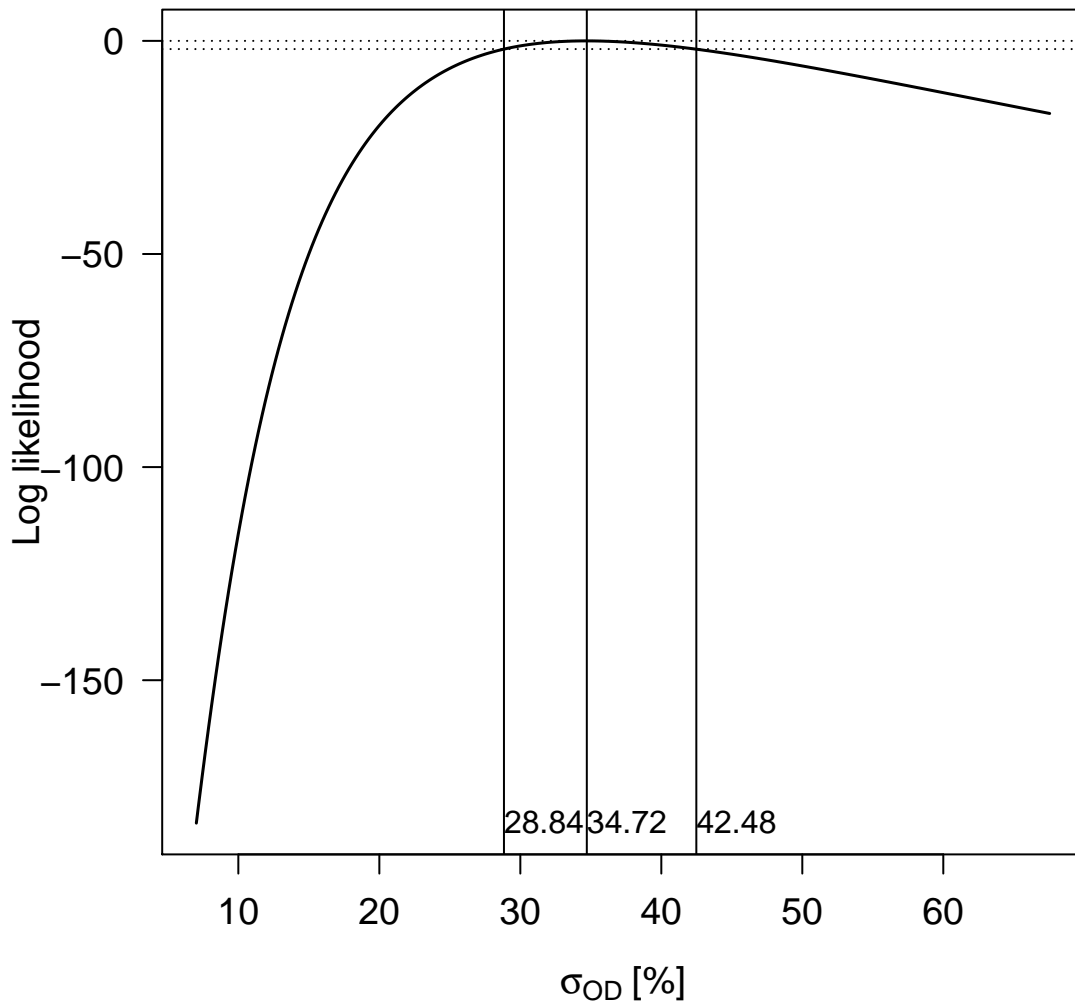
help("calc_AverageDose")

D_e distribution

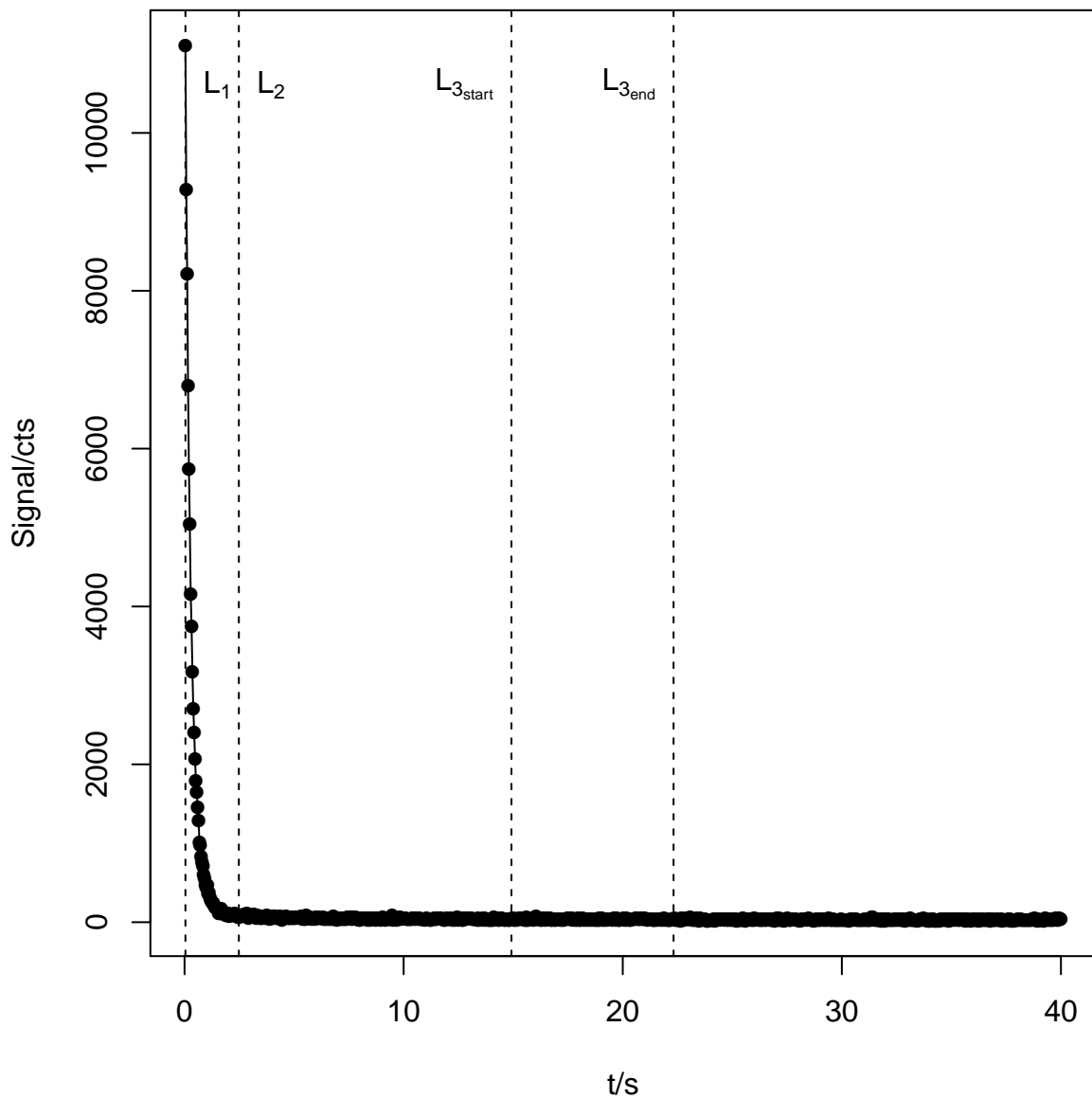
n = 56 | in 2 sigma = 53.6 %



Profile log likelihood for σ_{OD}



Fast Ratio

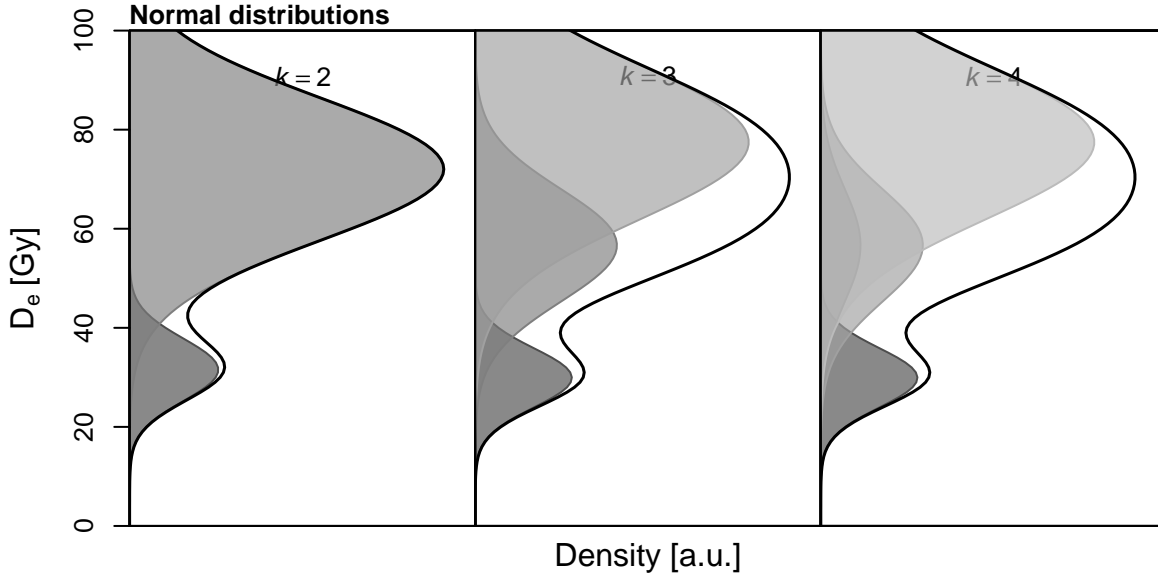


help("calc_FastRatio")

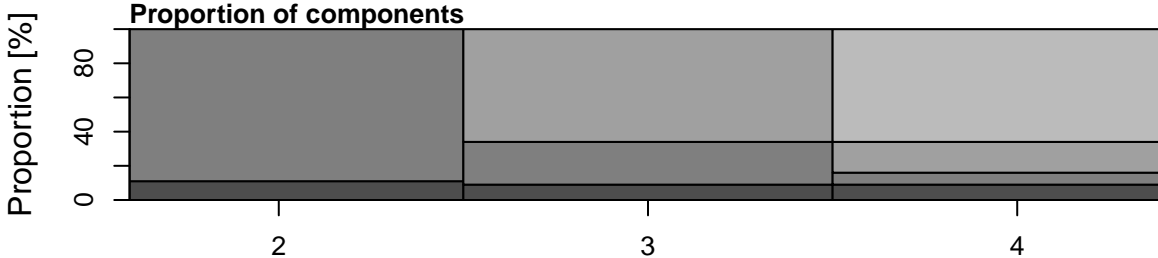
Finite Mixture Model

$\sigma_b = 0.2 \mid n = 62$

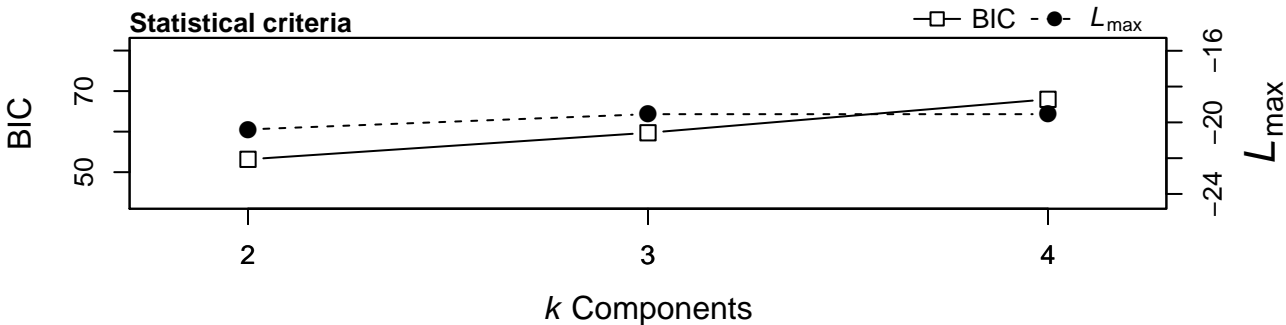
Normal distributions



Proportion of components

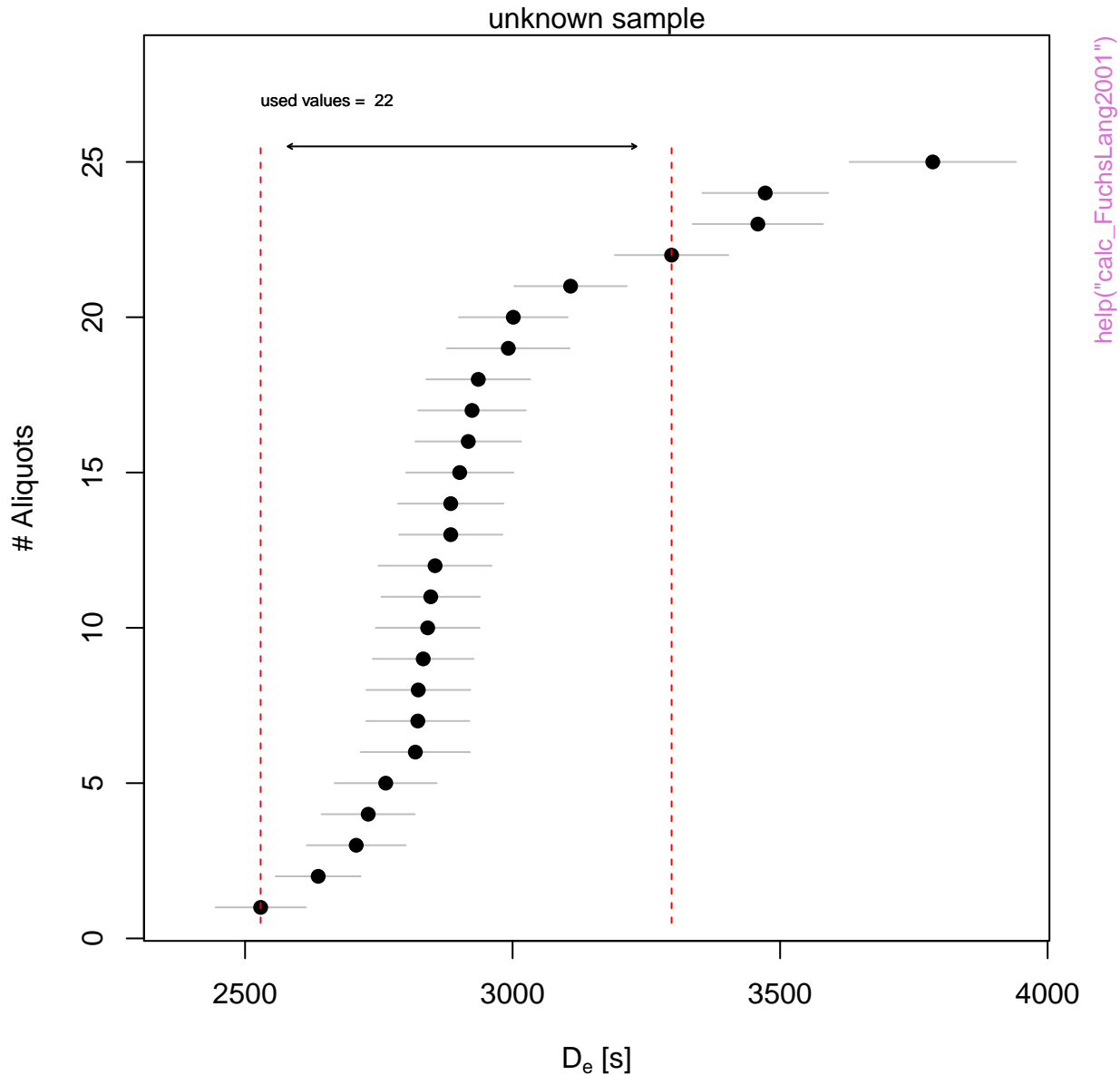


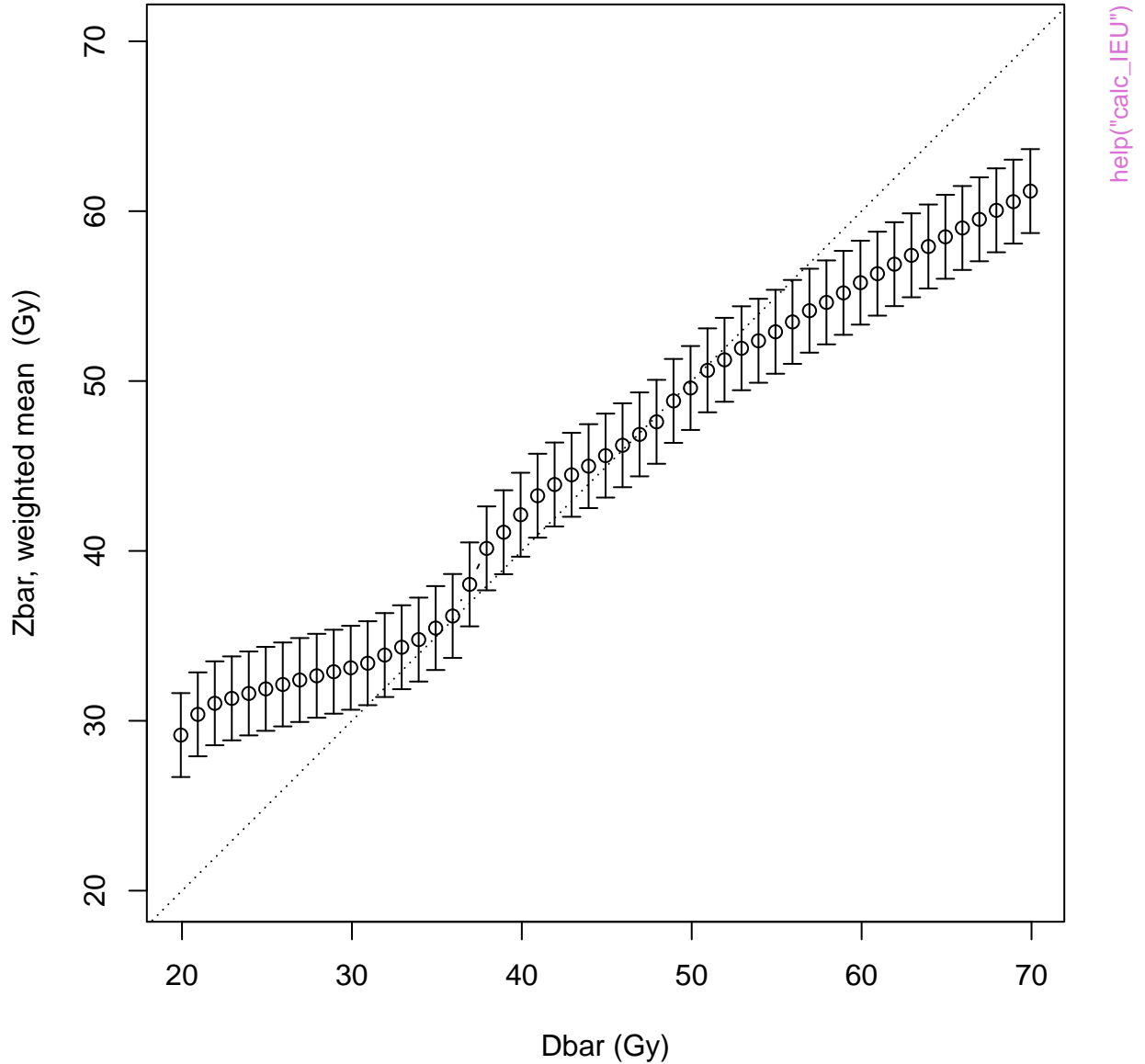
Statistical criteria

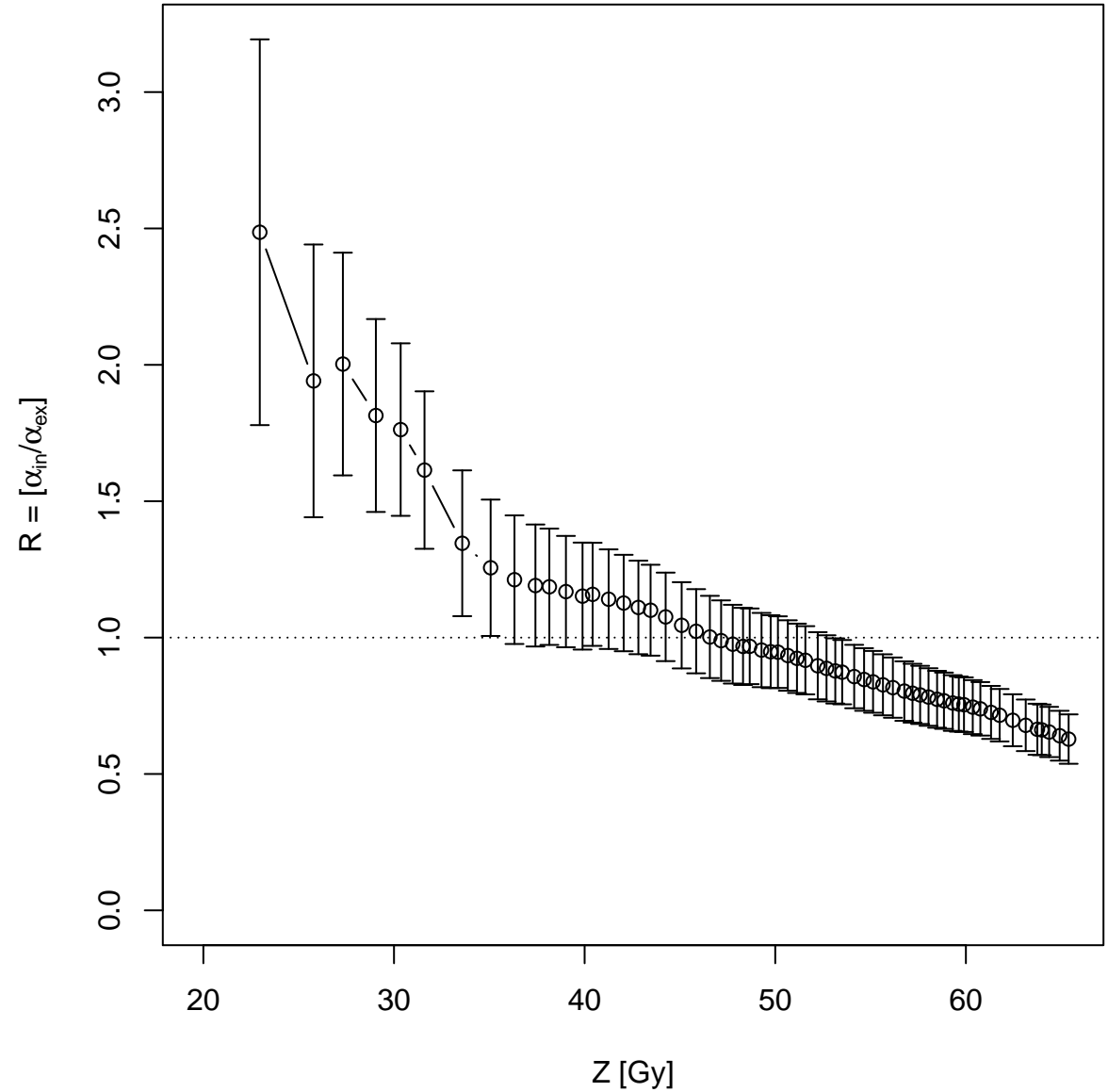


help("calc_FiniteMixture")

Fuchs & Lang (2001)







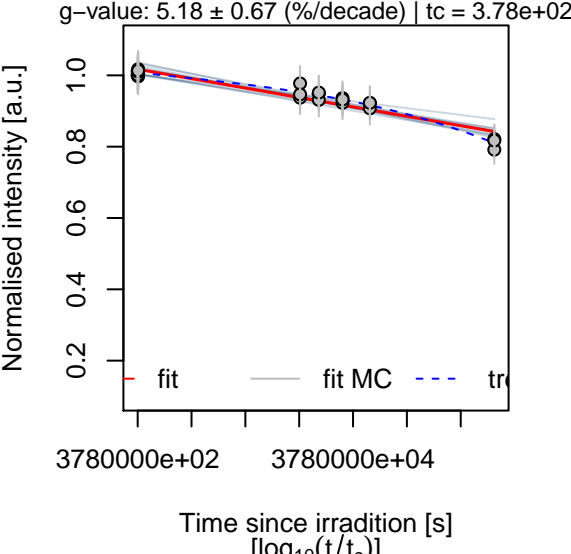
help("calc_I EU")

No L_x curves detected

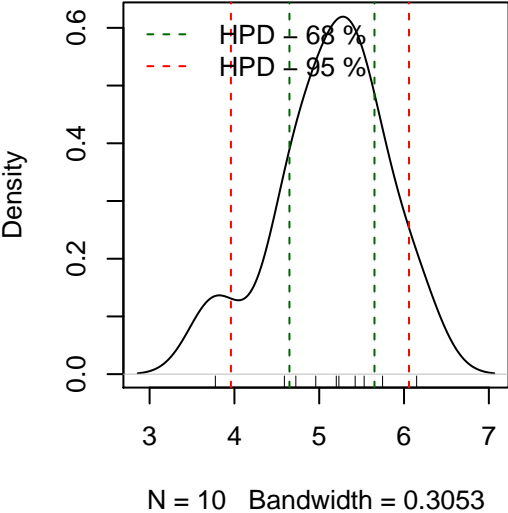
No T_x curves detected

help("calc_Kars2008")

Signal Fading

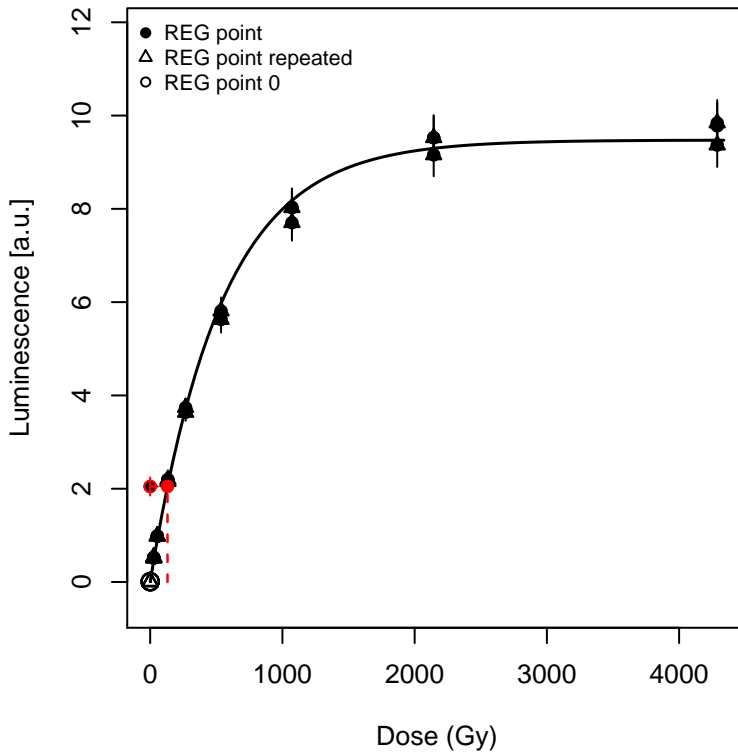


Density: g-values (%/decade)



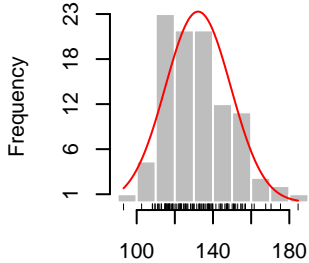
Measured dose response curve

$D_e = 130.97 \pm 17.12$ | fit: EXP



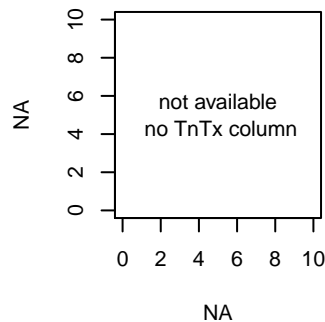
D_e from MC simulation

$D_{eMC} = 132.17 \pm 17.12$ | quality = 99.1 %



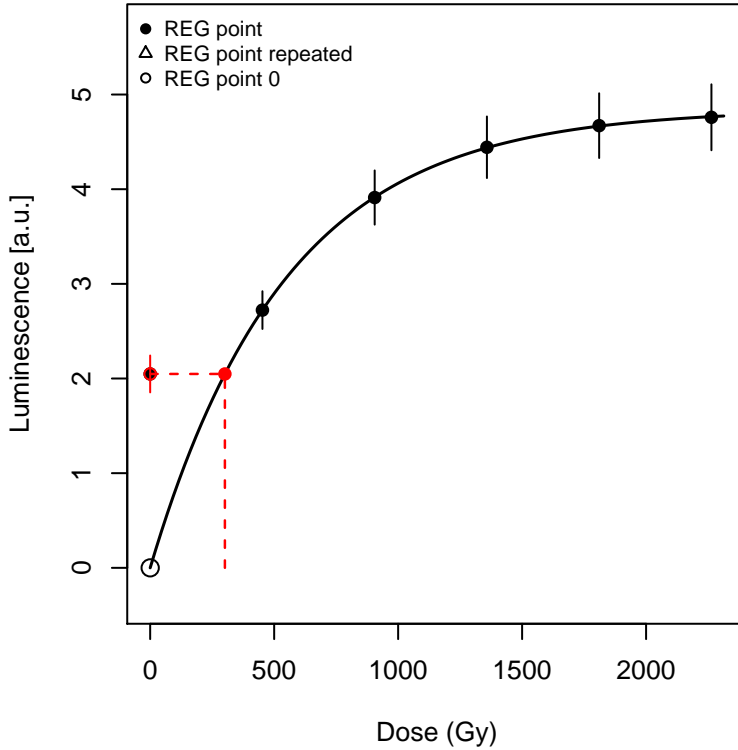
Dose (Gy)
n = 100, valid fits = 100

Test dose response



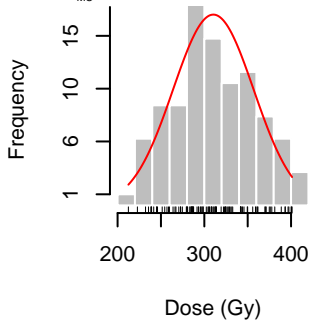
Simulated dose response curve

$D_e = 301.32 \pm 46.49$ | fit: EXP

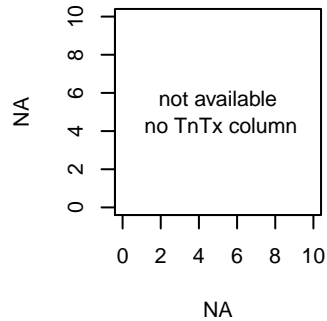


D_e from MC simulation

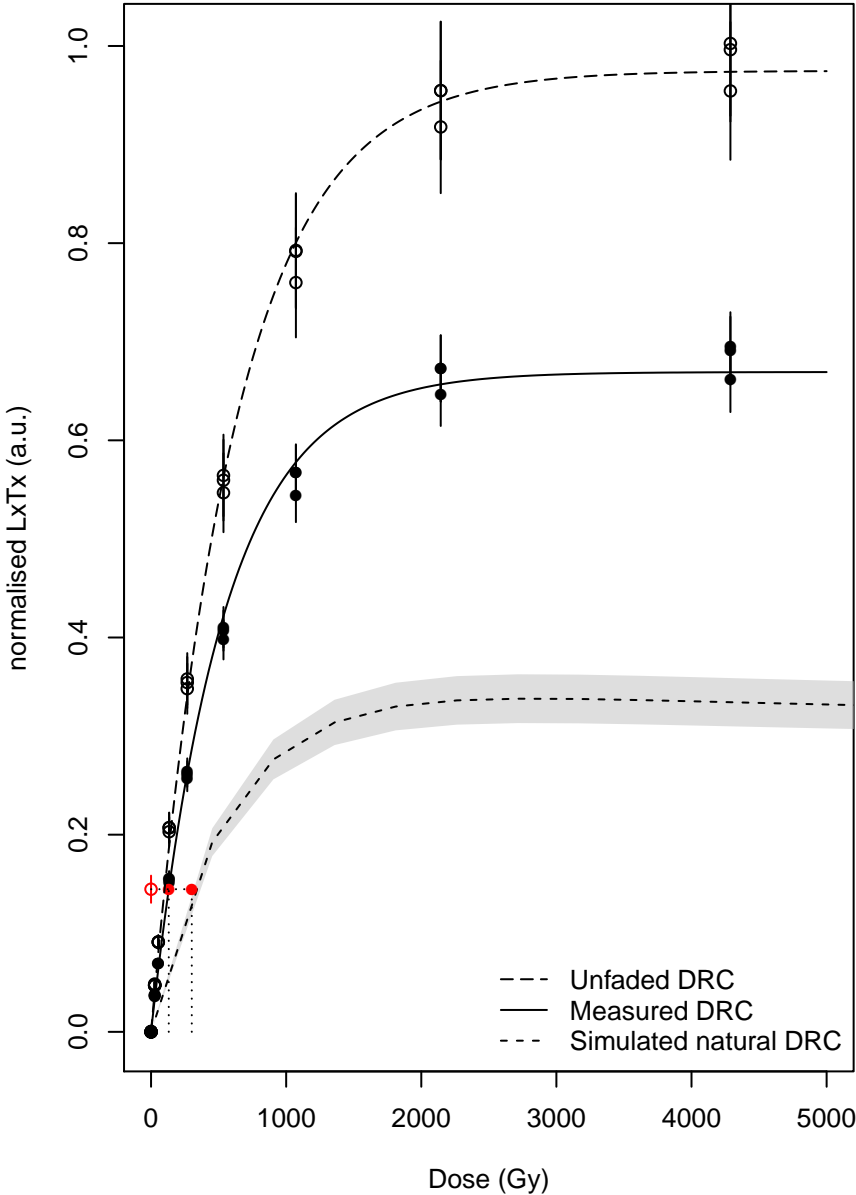
$D_{eMC} = 310.4 \pm 46.49$ | quality = 97 %



Test dose response



Dose response curves



$$\dot{D} = 7 \pm 0 \frac{\text{Gy}}{\text{ka}}$$

$$\dot{D}_{\text{Reader}} = 0.134 \pm 0.007 \frac{\text{Gy}}{\text{s}}$$

$$\log_{10}(\rho') = -5.42 \pm 0.09$$

$$\left(\frac{n}{N}\right) = 0.14 \pm 0.02$$

$$\left(\frac{n}{N}\right)_{\text{SS}} = 0.35 \pm 0.06$$

$$D_{\text{E,sim}} = 301.32 \pm 46.49 \text{ Gy}$$

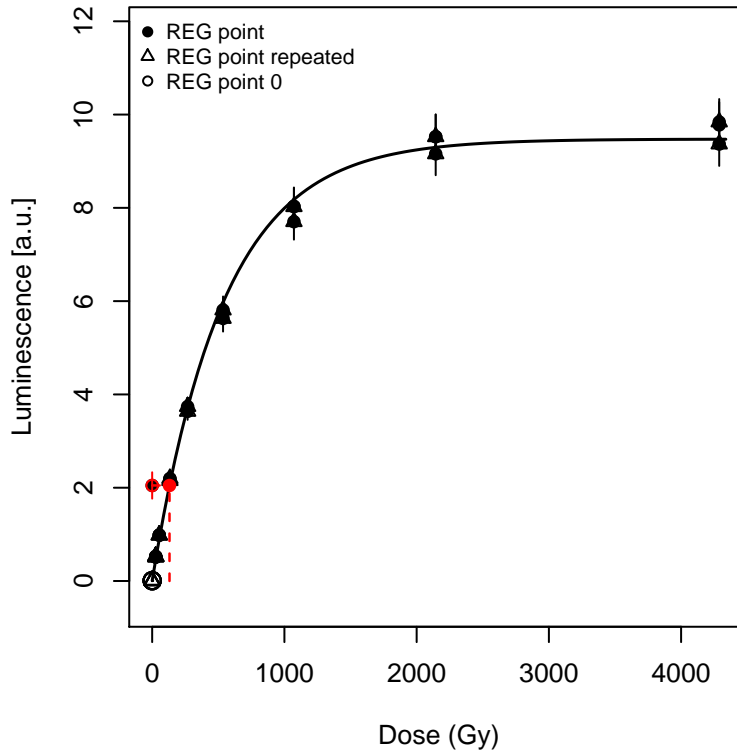
$$D_{0,\text{sim}} = 548.27 \pm 74.3 \text{ Gy}$$

$$\text{Age}_{\text{sim}} = 43.05 \pm 6.98 \text{ ka}$$

calc_Kars2008"

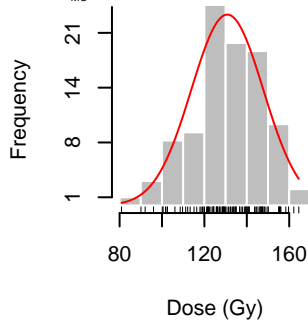
Measured dose response curve

$D_e = 130.97 \pm 16.98$ | fit: EXP

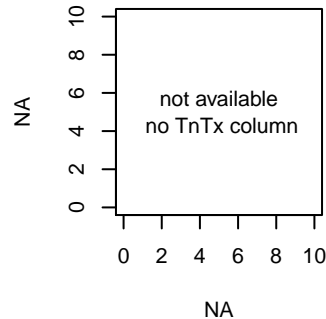


D_e from MC simulation

$D_{EMC} = 130.8 \pm 16.98$ | quality = 99.9 %

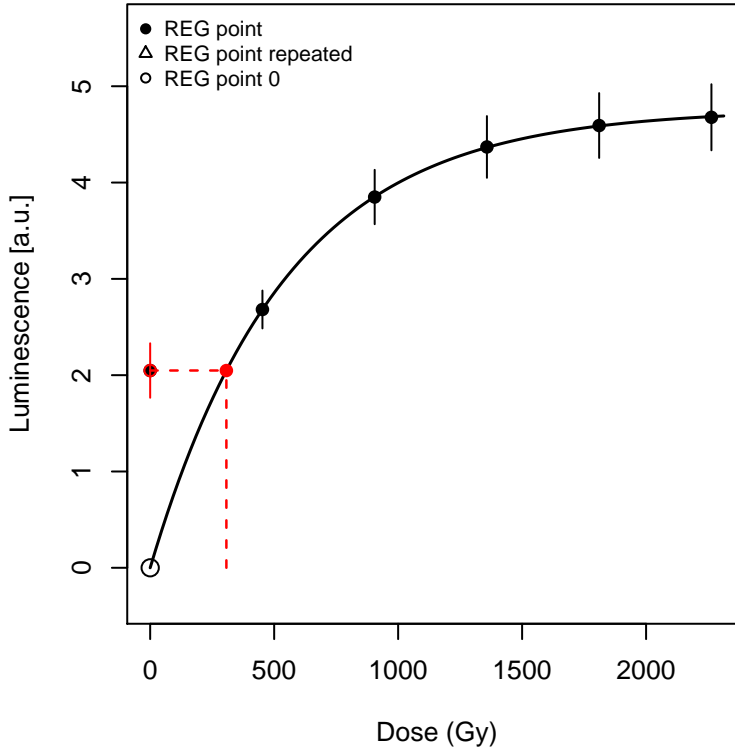


Test dose response



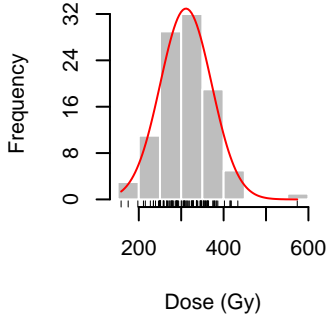
Simulated dose response curve

$D_e = 307.28 \pm 60.56$ | fit: EXP

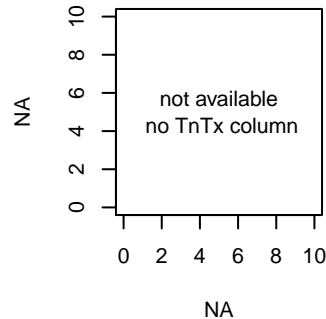


D_e from MC simulation

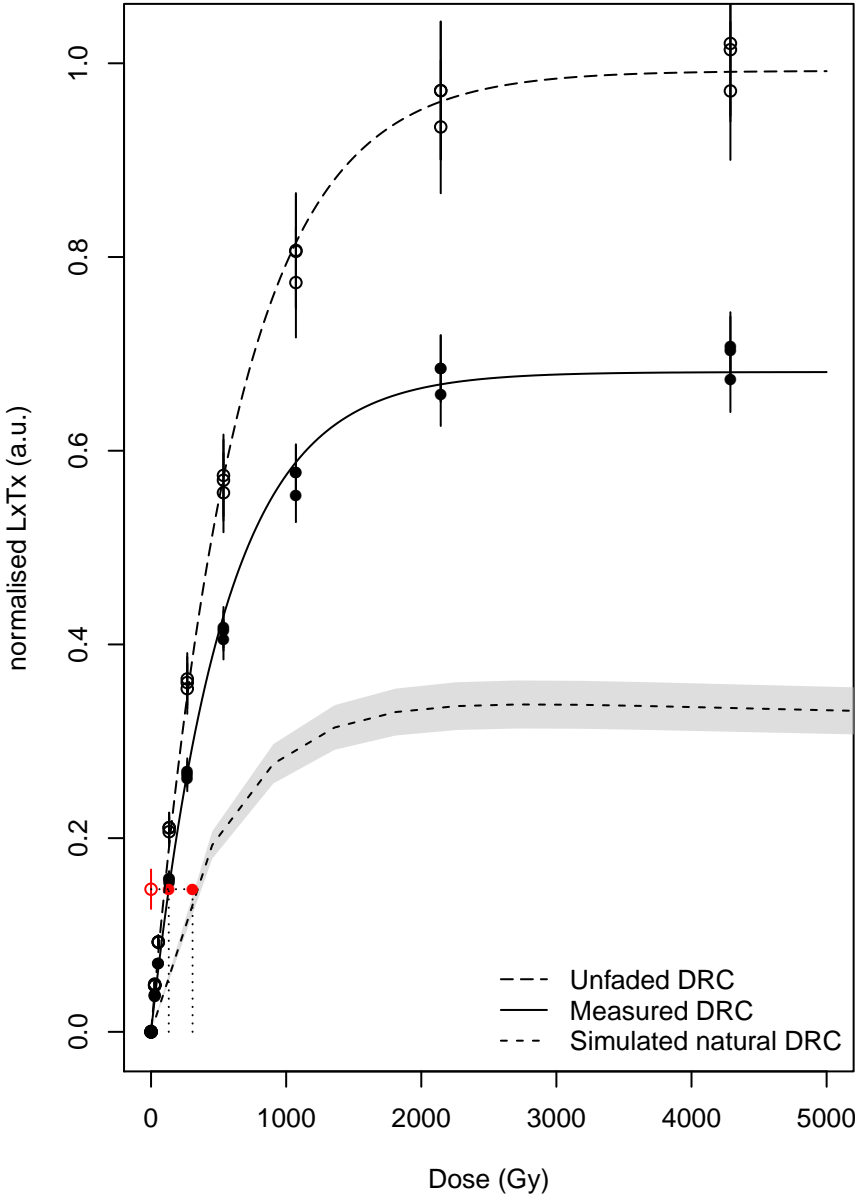
$D_{EMC} = 311.2 \pm 60.56$ | quality = 98.7 %



Test dose response



Dose response curves



$$\dot{D} = 7 \pm 0 \frac{\text{Gy}}{\text{ka}}$$

$$\dot{D}_{\text{Reader}} = 0.134 \pm 0.007 \frac{\text{Gy}}{\text{s}}$$

$$\log_{10}(\rho') = -5.42 \pm 0.09$$

$$\left(\frac{n}{N}\right) = 0.15 \pm 0.02$$

$$\left(\frac{n}{N}\right)_{\text{SS}} = 0.36 \pm 0.07$$

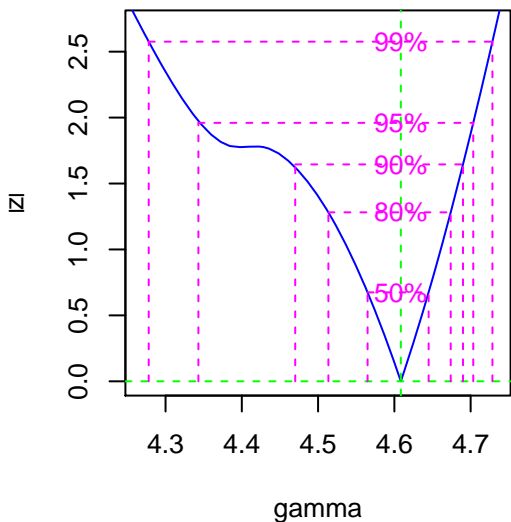
$$D_{\text{E,sim}} = 307.28 \pm 60.56 \text{ Gy}$$

$$D_{0,\text{sim}} = 546.15 \pm 90.11 \text{ Gy}$$

$$\text{Age}_{\text{sim}} = 43.9 \pm 8.93 \text{ ka}$$

calc_Kars2008"

Likelihood profile: gamma



Likelihood profile: sigma



help("calc_MaxDose")

Likelihood profile: p0



Likelihood profile: gamma



Likelihood profile: sigma



help("calc_MinDose")

Likelihood profile: p0



Source Dose Rate Prediction

source type: Sr-90 | half-life: 28.9 a



help("calc_SourceDoseRate")

D_e distribution



Thermal Lifetime Contour Plot

(values quoted in Ma)



help("calc_ThermalLifetime")

Thermal Lifetime Density Plot



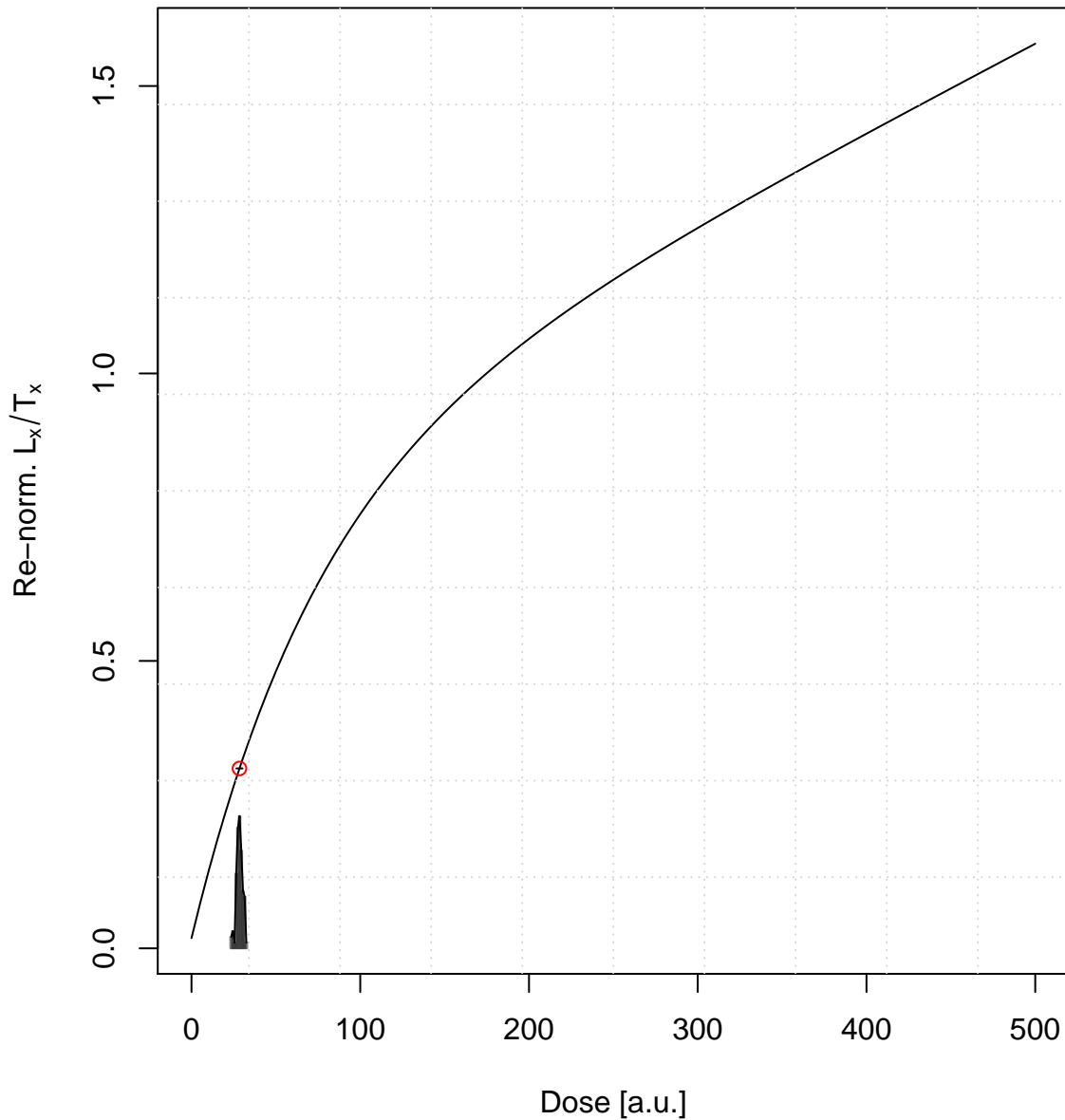
`help("calc_ThermalLifetime")`

D_e estimation applying Woda and Fuchs (2008)



help("calc_WodaFuchs2008")

gSGC and resulting De



help("calc_gSGC")

CW Curve Fit

Default



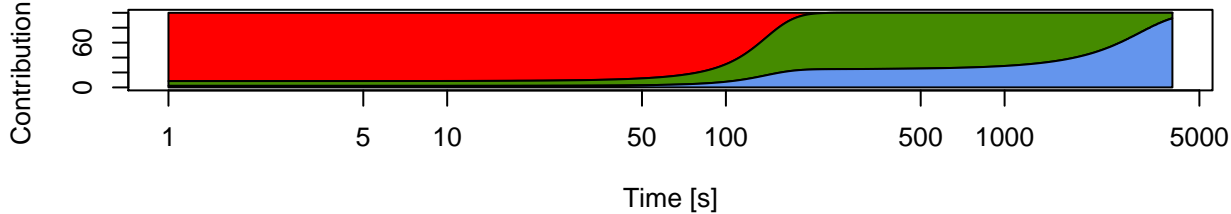
Component contribution to sum curve



Default



Component contribution to sum curve



Background



Default



Component contribution to sum curve

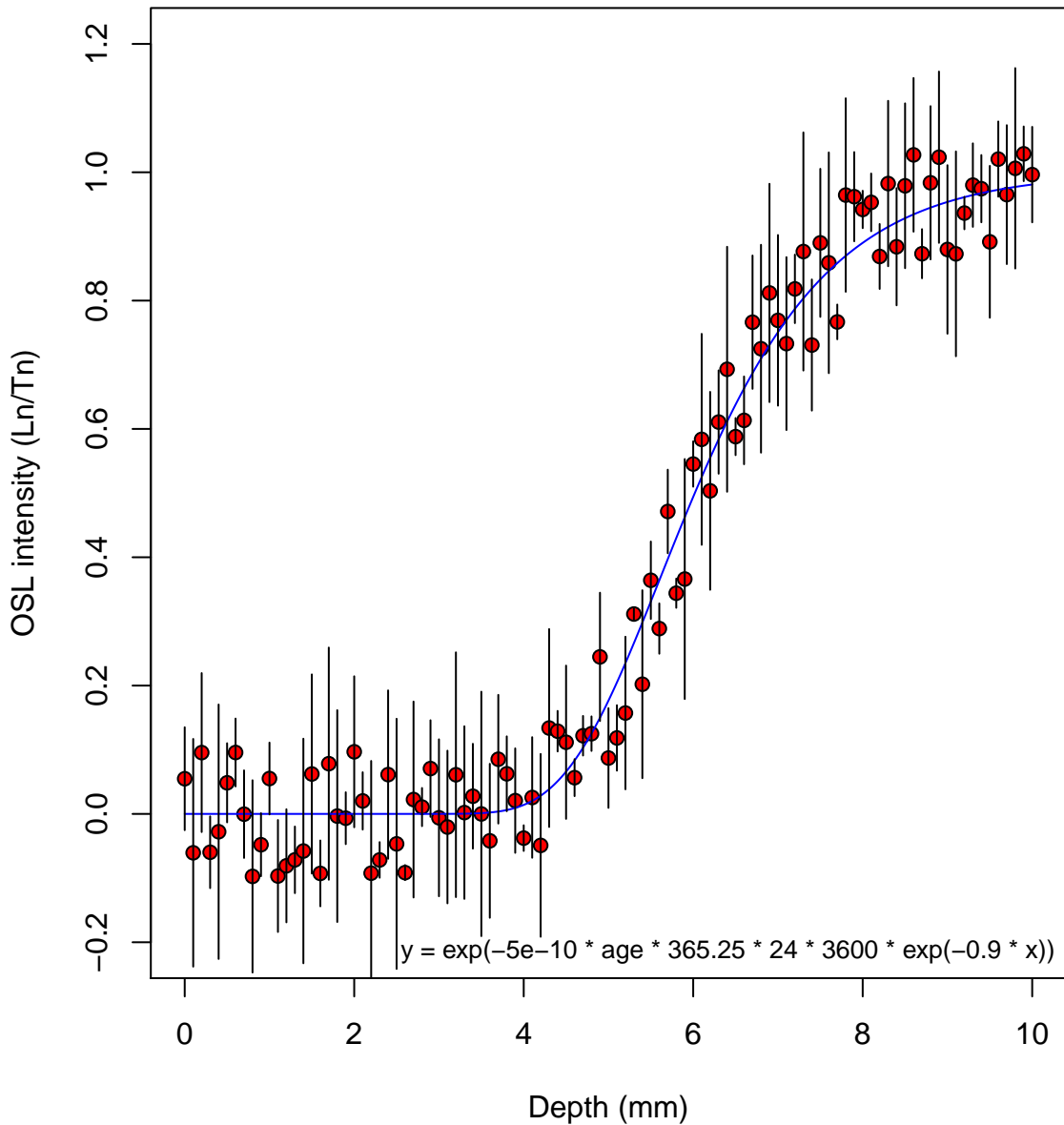


Default

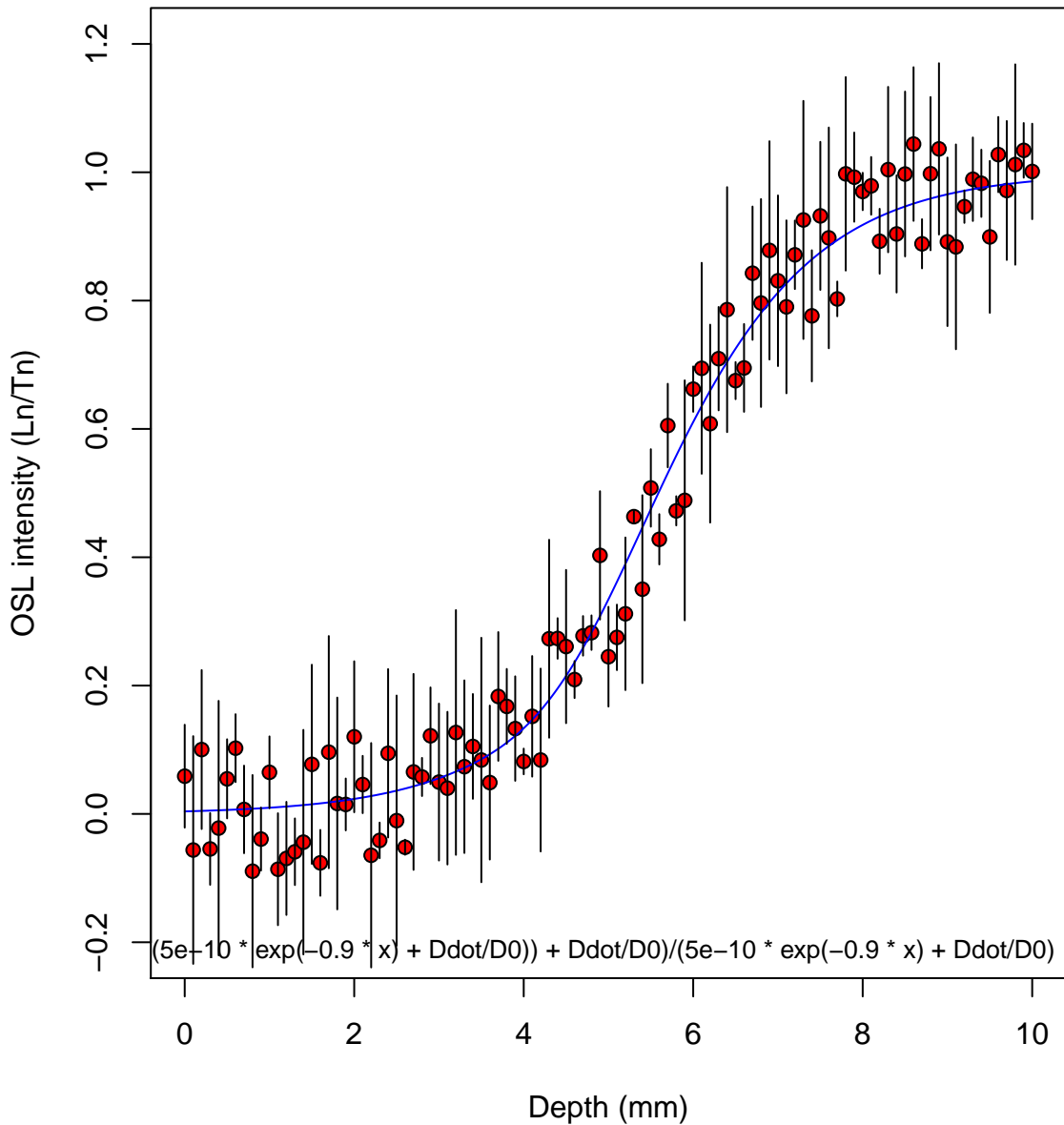


Component contribution to sum curve

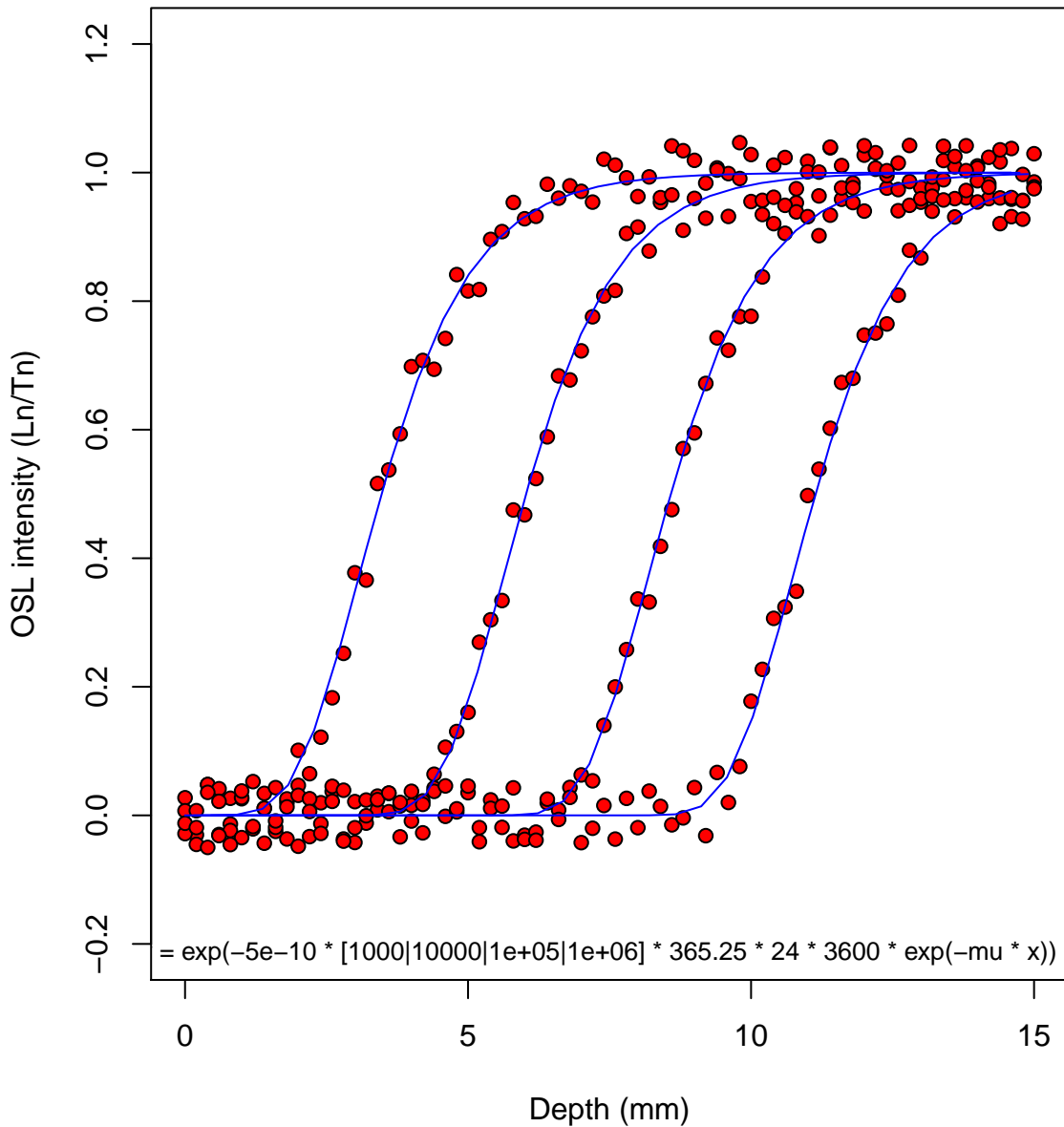




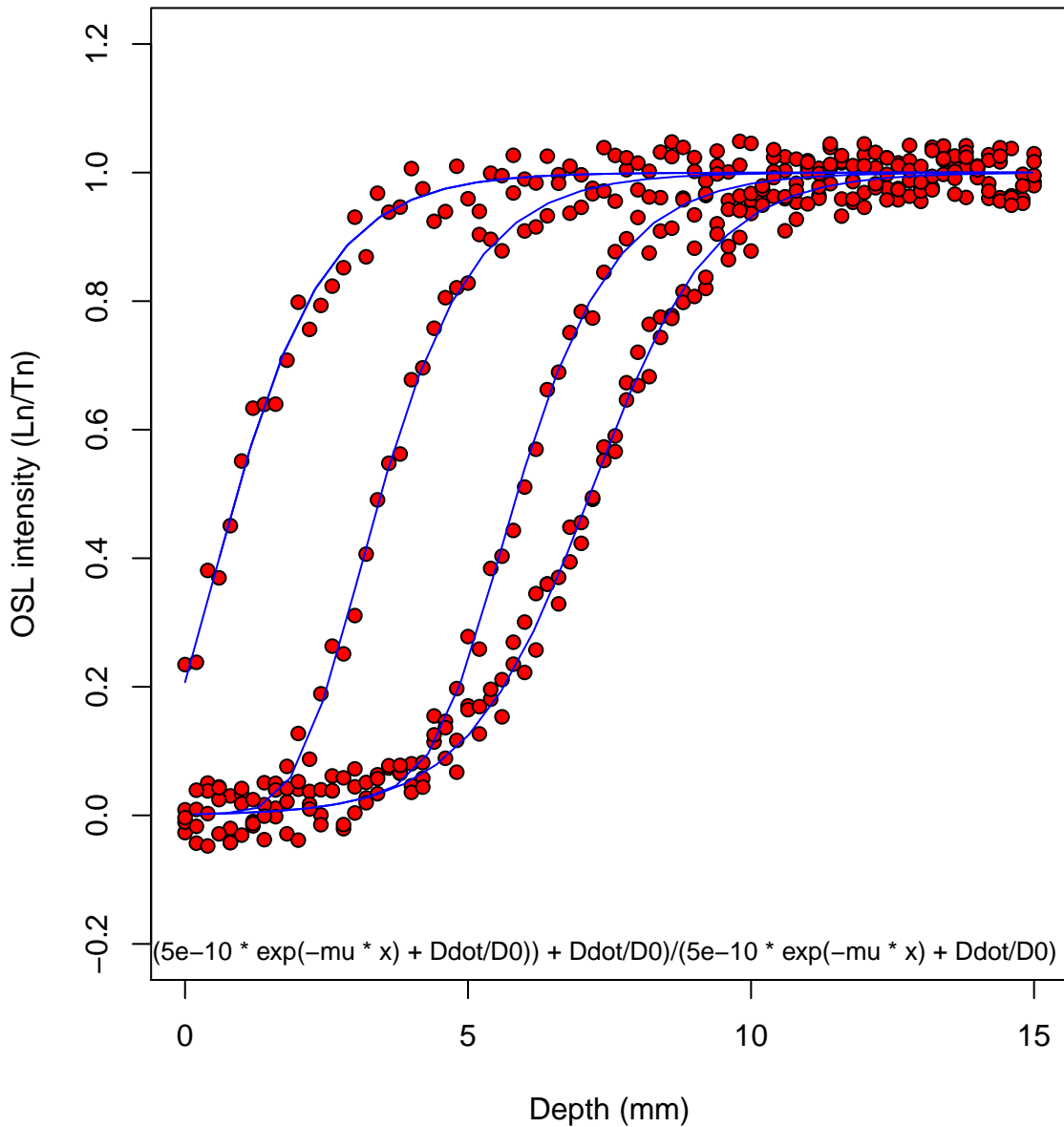
help("fit_SurfaceExposure")



help("fit_SurfaceExposure")



help("fit_SurfaceExposure")



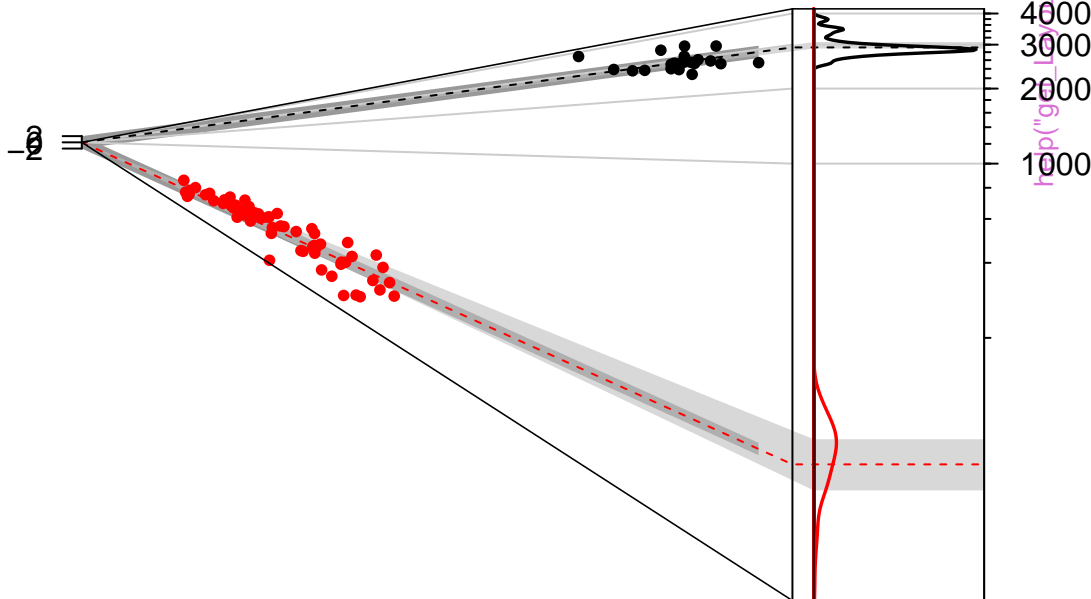
help("fit_SurfaceExposure")

D_e distribution

n = 25 | in 2 sigma = 68 %

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

10

5

3.3

0

10

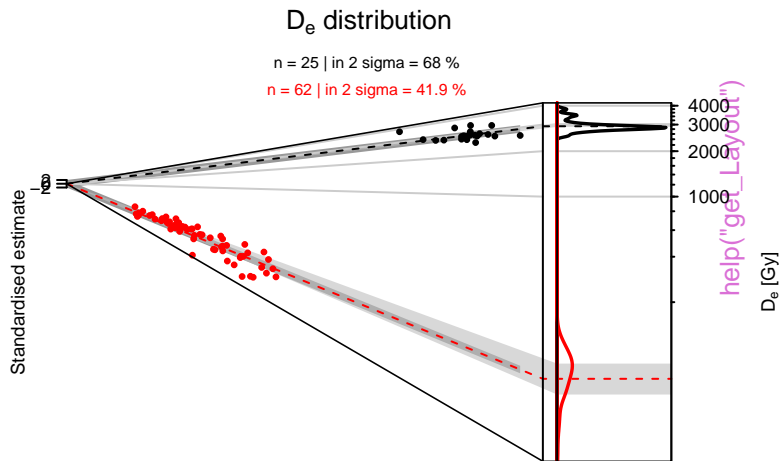
20

30

0.015

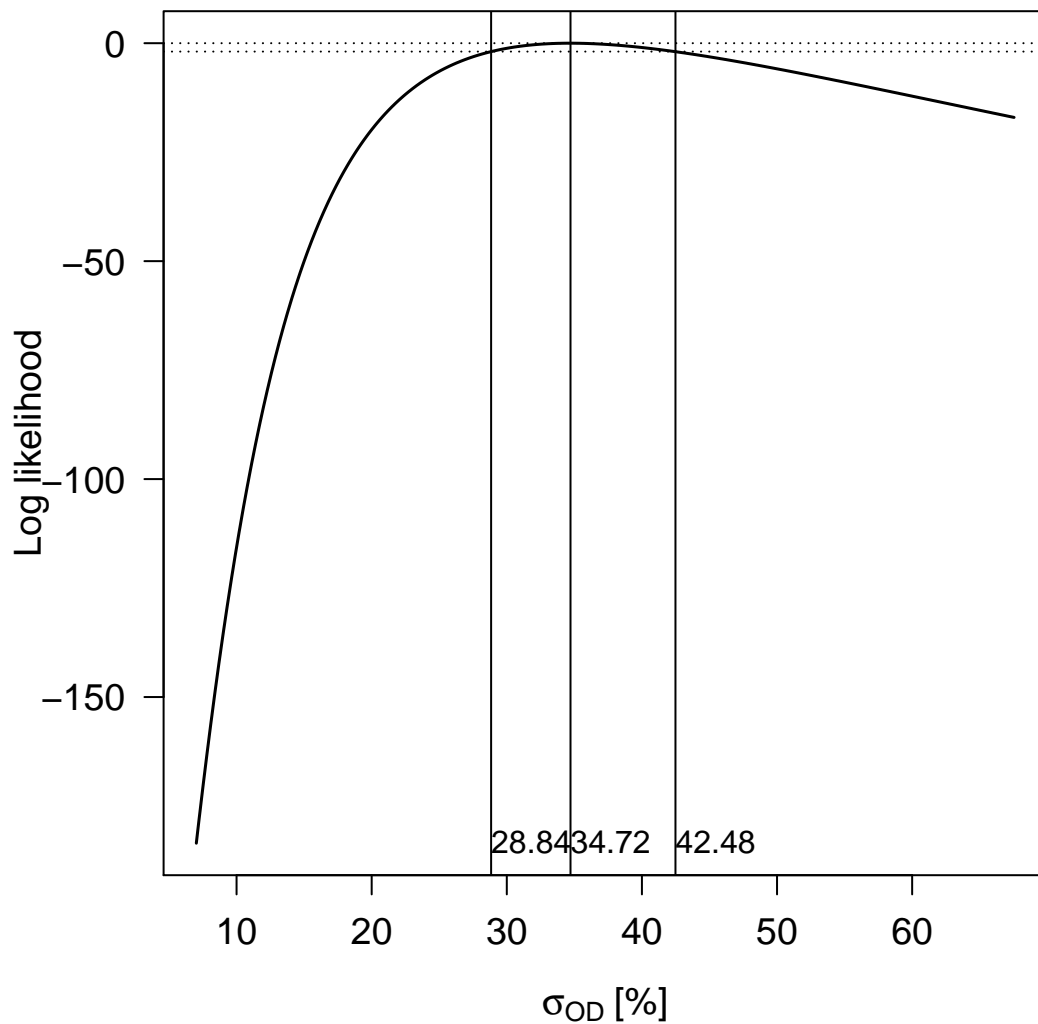
Precision

Density (bw 0.085)



help("get_Layout")

Profile log likelihood for σ_{OD}



TL (UVVIS)



help("merge_RLum.Data.Curve")

TL (UVVIS)



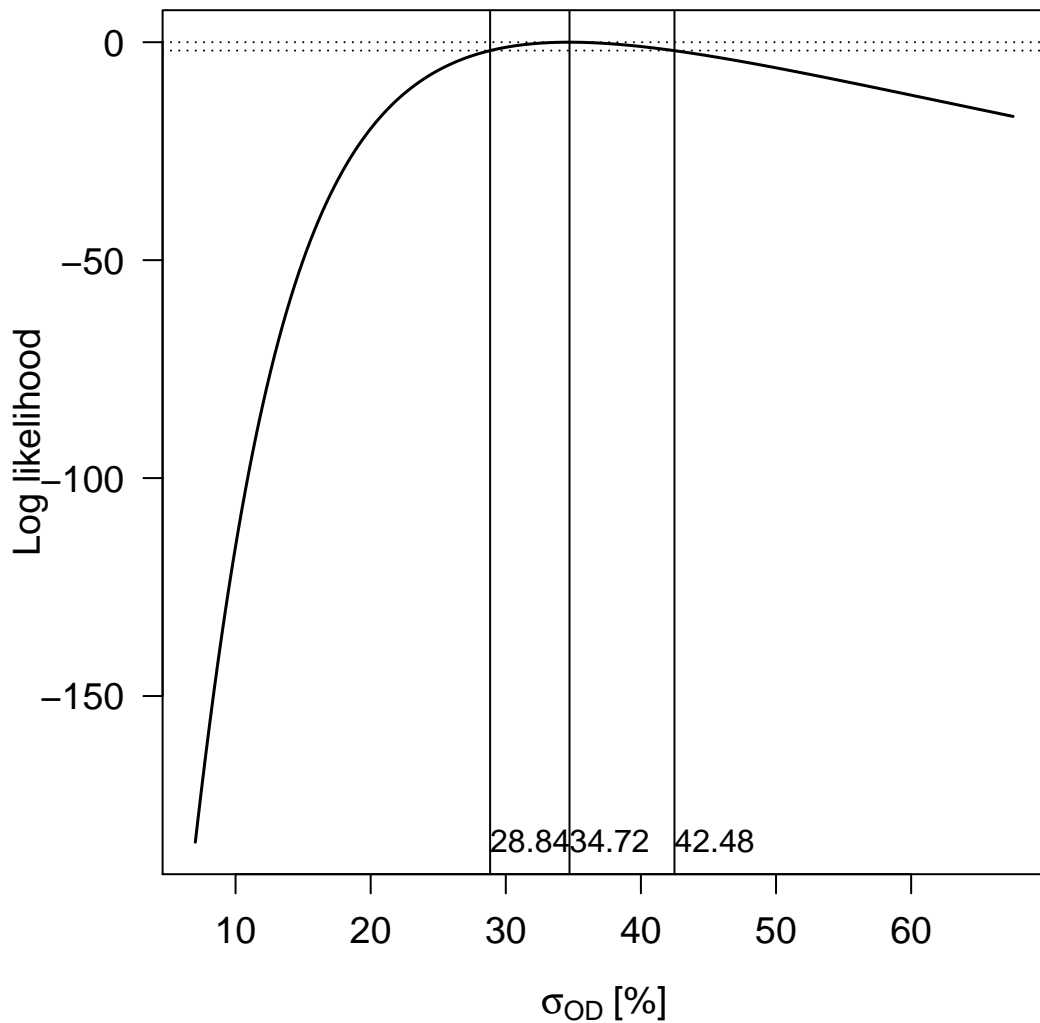
help("merge_RLum.Data.Curve")

TL (UVVIS)

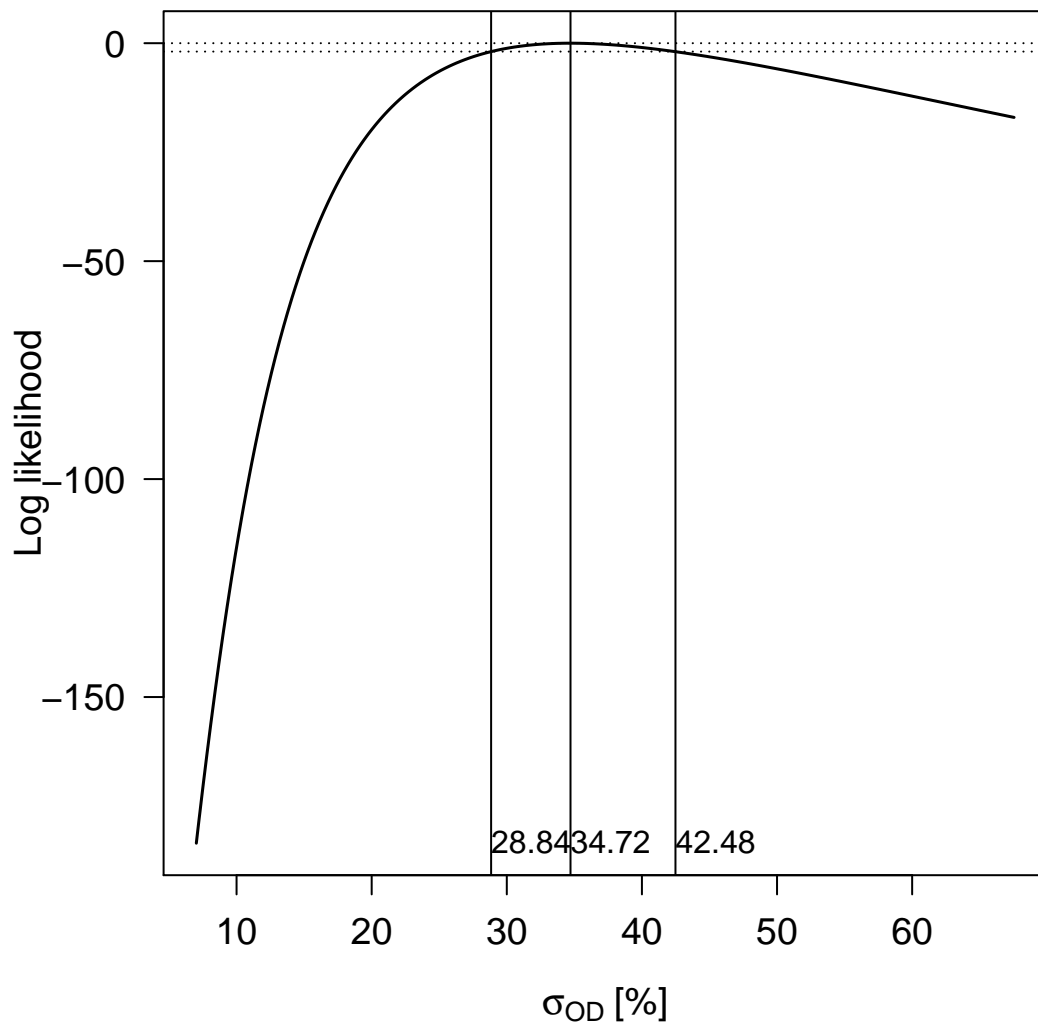


help("merge_RLum.Data.Curve")

Profile log likelihood for σ_{OD}



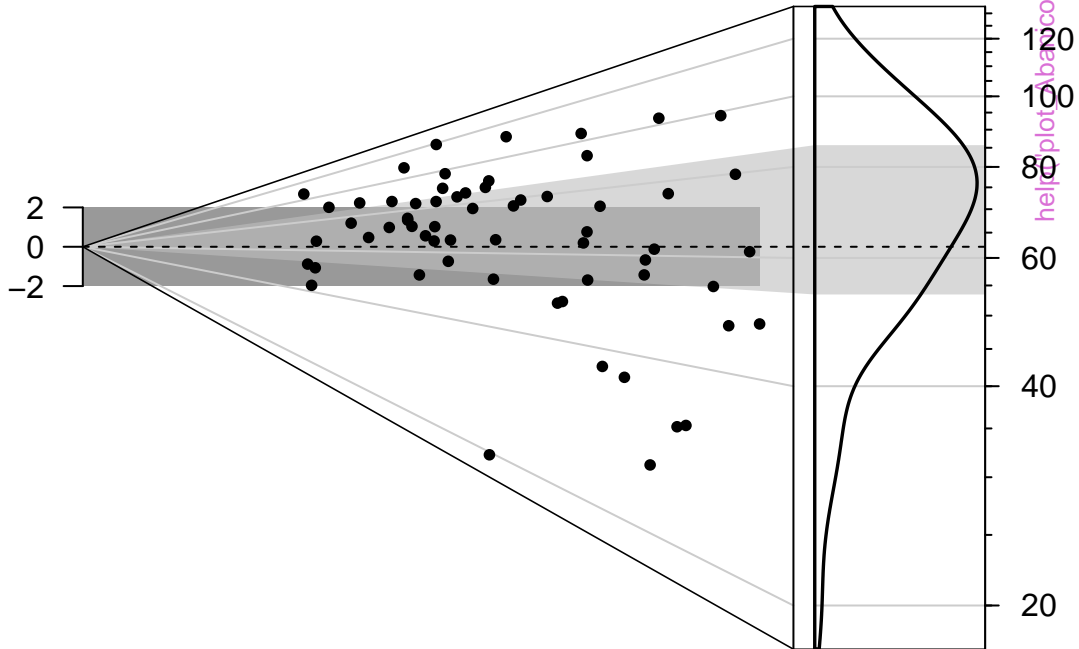
Profile log likelihood for σ_{OD}



D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

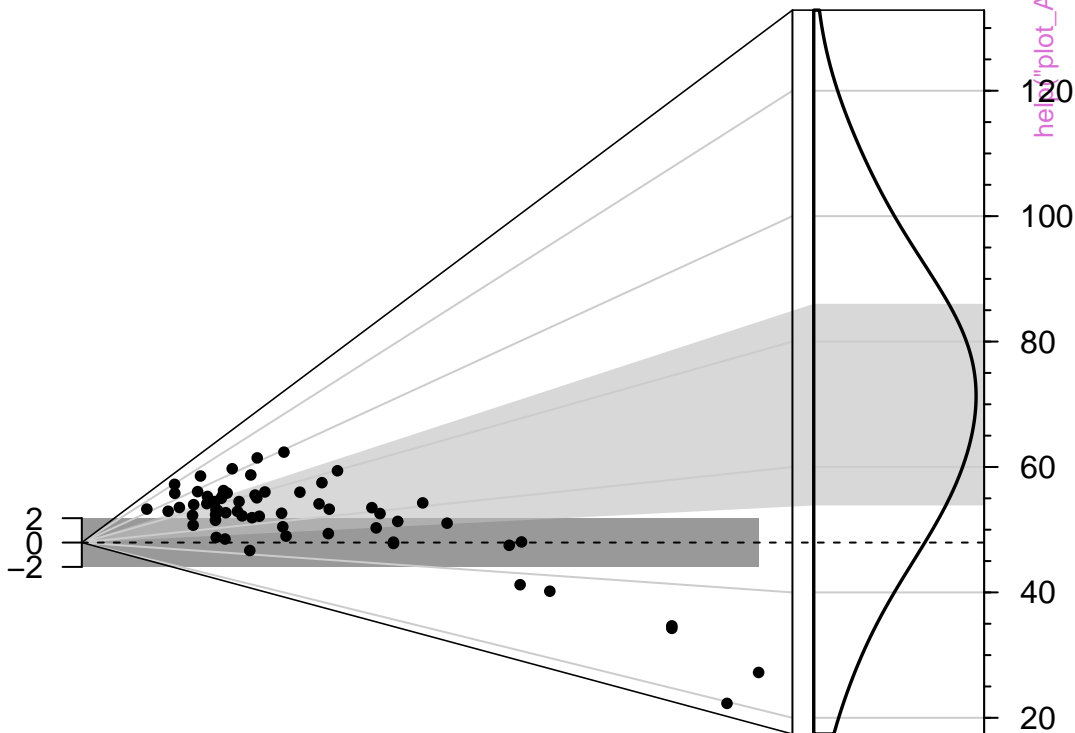
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 24.2 %

Standardised estimate



help("plot_AbanicoPlot")

help("plot_AbanicoPlot")

D_e [Gy]

Standard error

10

5

3.3

2.5

2

0.0

0.1

0.2

0.3

0.4

0.5

0.016

Precision

Density (bw 11.795)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

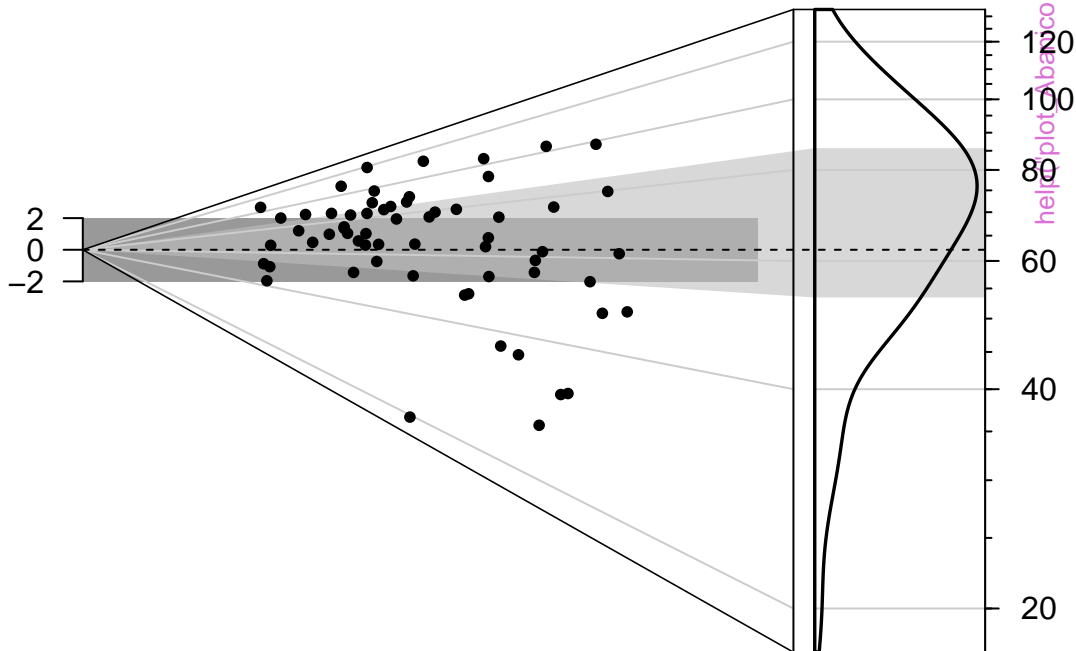
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

5

0

5

10

15

200

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0

0.264

Precision

Density (bw 0.04)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



help("plot_AbanicoPlot")

help("plot_AbanicoPlot")

Relative standard error (%)

n

20

10

6.7

0

15

0

5

10

15

Precision

D_e distribution

n = 62 | in 2 sigma = 41.9 %

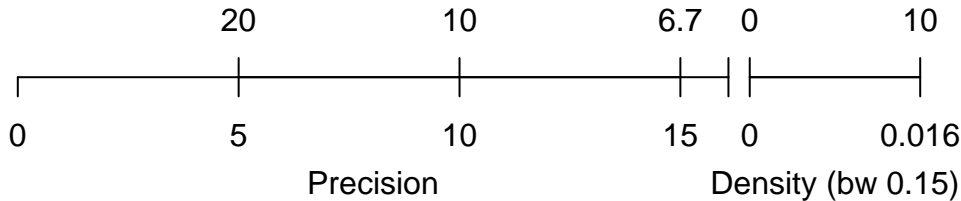
Standardised estimate



D_e [Gy]

Relative standard error (%)

n



D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

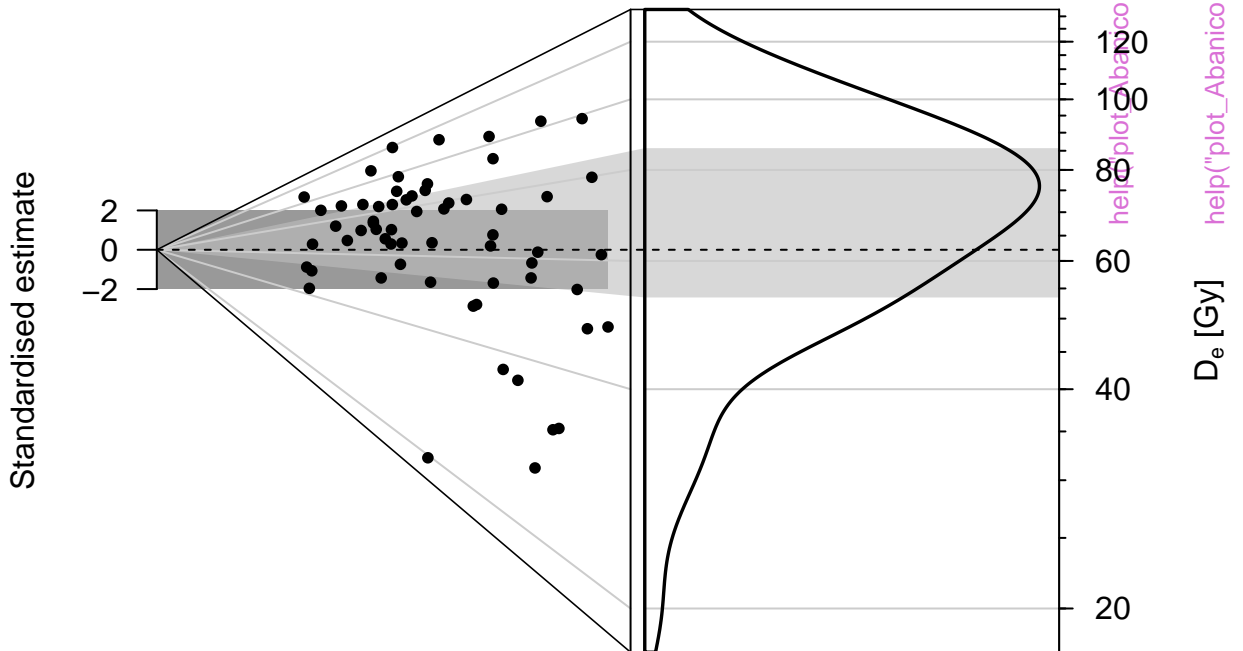
0.016

Precision

Density (bw 0.15)

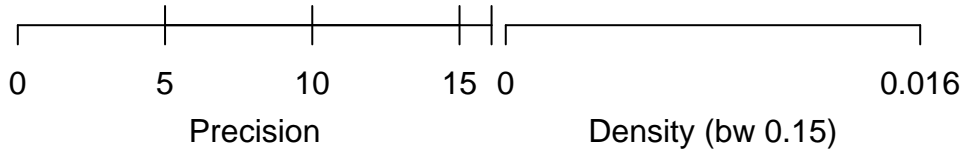
D_e distribution

n = 62 | in 2 sigma = 41.9 %



Relative standard error (%)

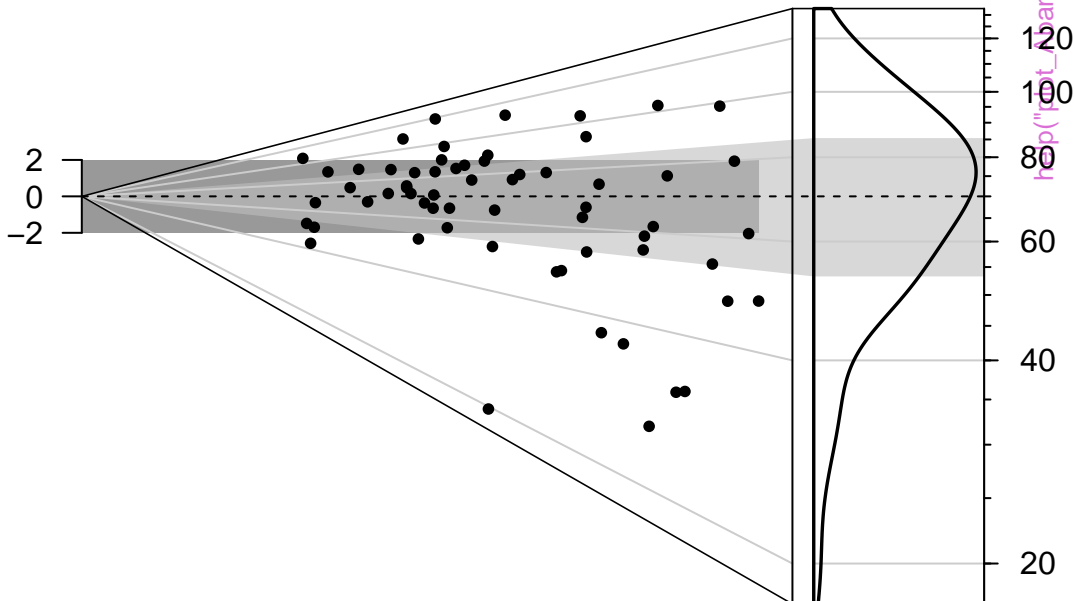
20 10 6.7



D_e distribution

n = 62 | in 2 sigma = 53.2 %

Standardised estimate



help("plot_AbanicoPlot")

help("plot_AbanicoPlot")

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

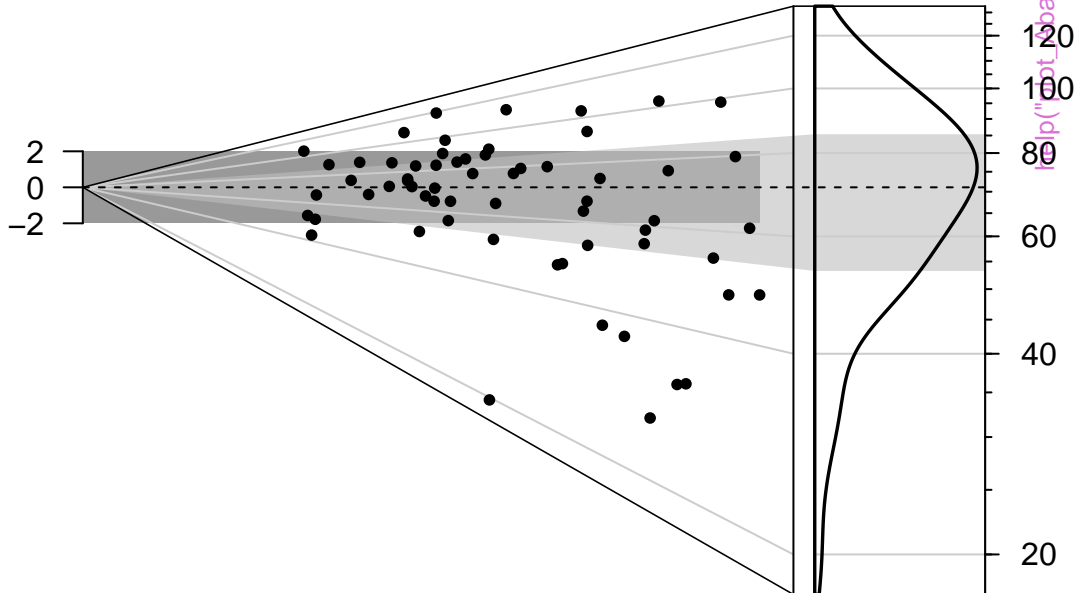
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 54.8 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 54.8 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

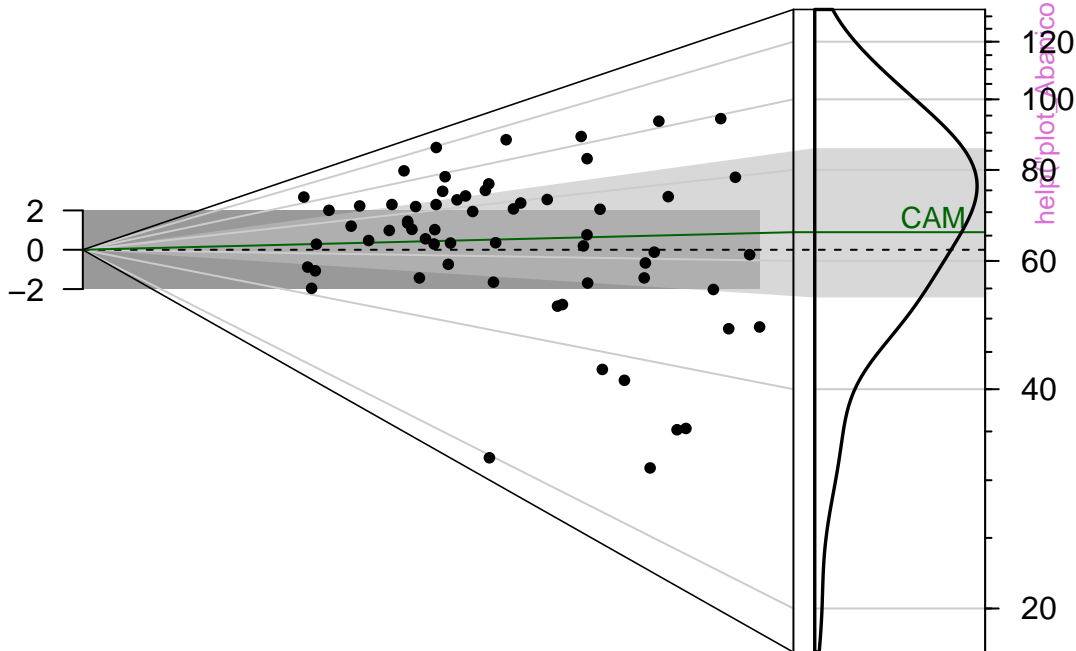
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

R Sample 1

Standardised estimate



D_e [Gy]

help("plot_AbanicoPlot")

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate

0

120
100
80
60
40
20

D_e [Gy]

help("plot_AbanicoPlot")

help("plot_AbanicoPlot")

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

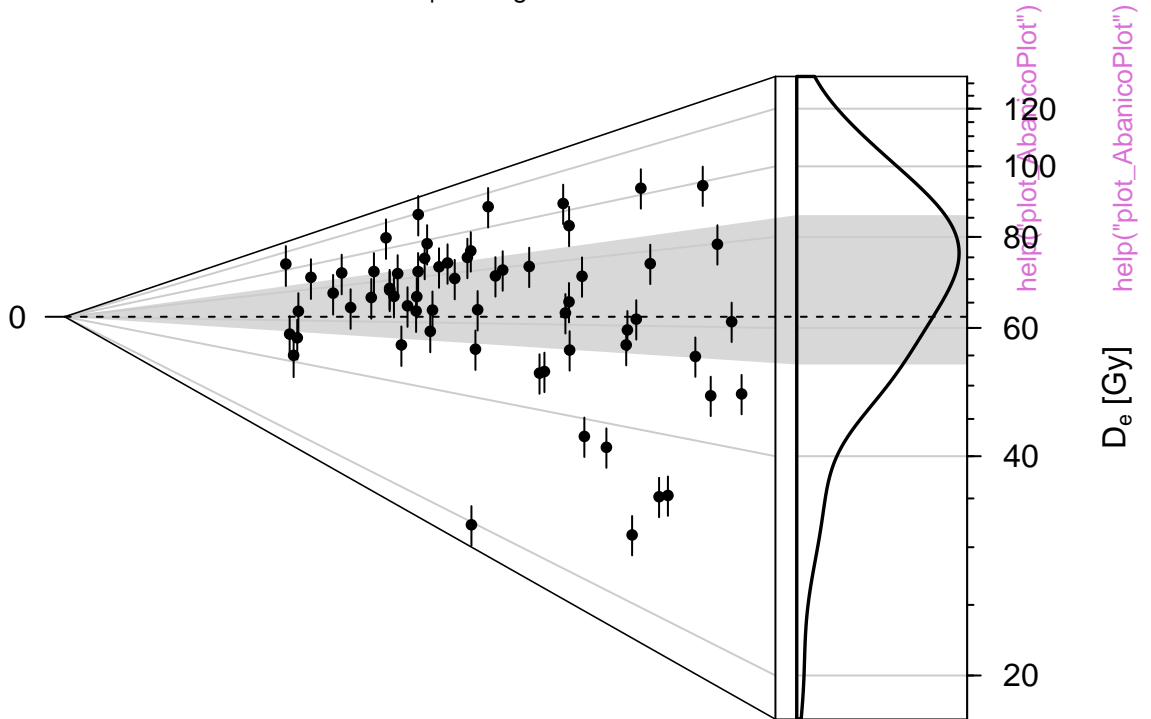
Precision

Density (bw 0.15)



D_e distribution

n = 62 | in 2 sigma = 41.9 %



Relative standard error (%)

20

10

6.7

0

5

10

15

0

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %



D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

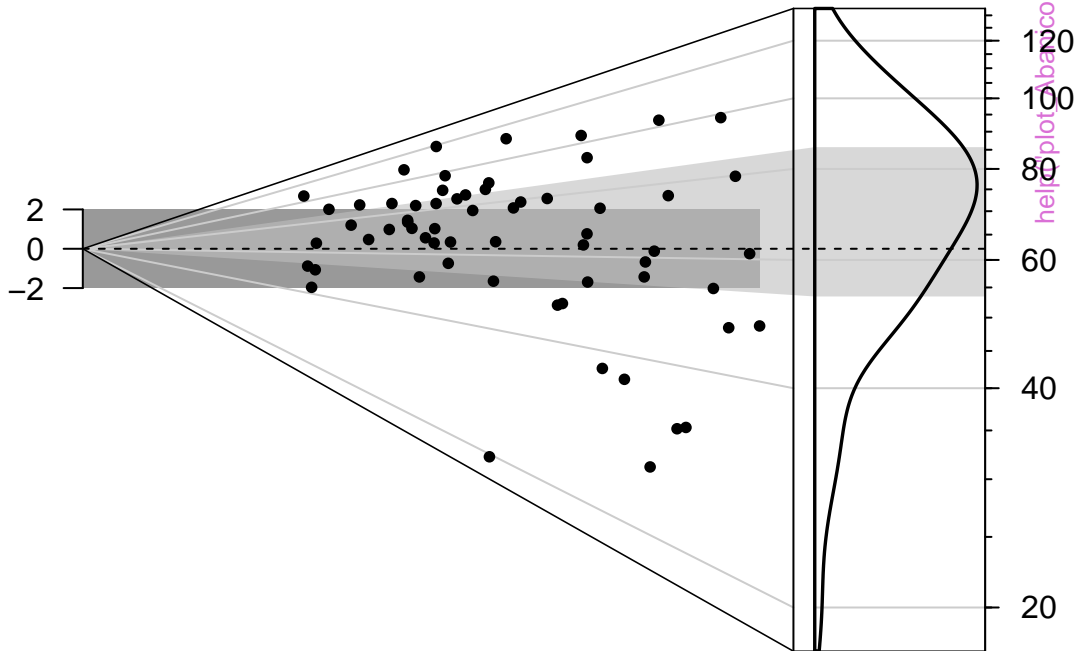
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

median = 71.07

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

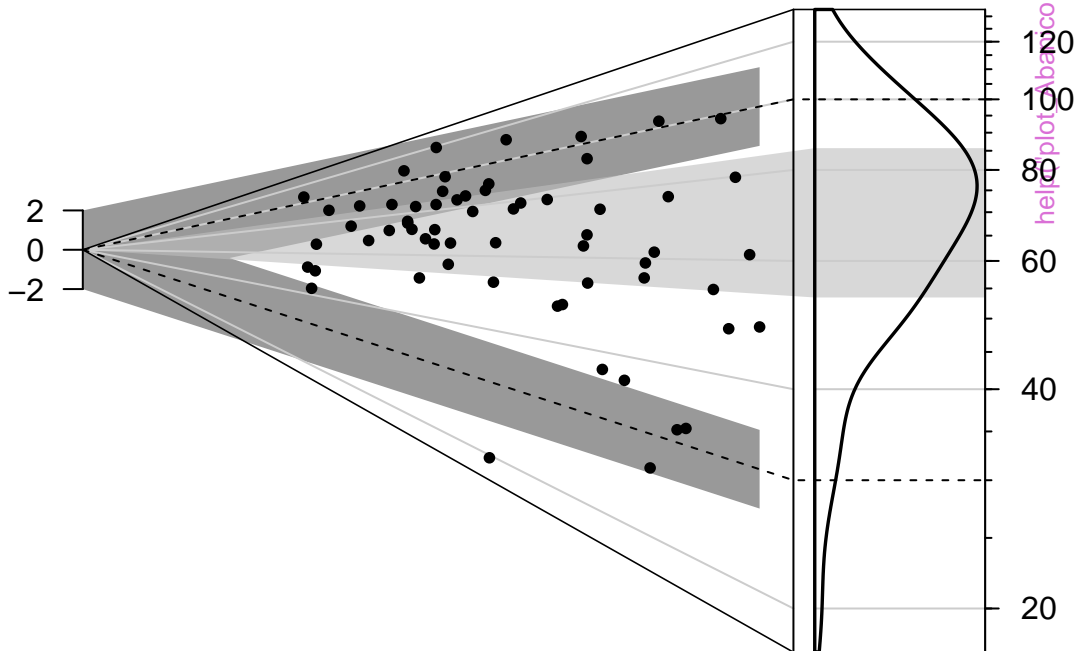
Precision

Density (bw 0.15)

D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

Density (bw 0.15)

D_e distribution

n = 30 | in 2 sigma = 46.7 %

n = 32 | in 2 sigma = 87.5 %

Standardised estimate



help(plot_AbanicoPlot")

help("plot_AbanicoPlot")

D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0.032

Precision

Density (bw 0.074)

D_e distribution

n = 30 | in 2 sigma = 70 % | median = 52.94

n = 32 | in 2 sigma = 84.4 % | median = 109.93





help("plot_AbanicoPlot")



D_e distribution

n = 62 | in 2 sigma = 41.9 %

Standardised estimate



D_e [Gy]

Relative standard error (%)

20

10

6.7

0

5

10

15

0.016

Precision

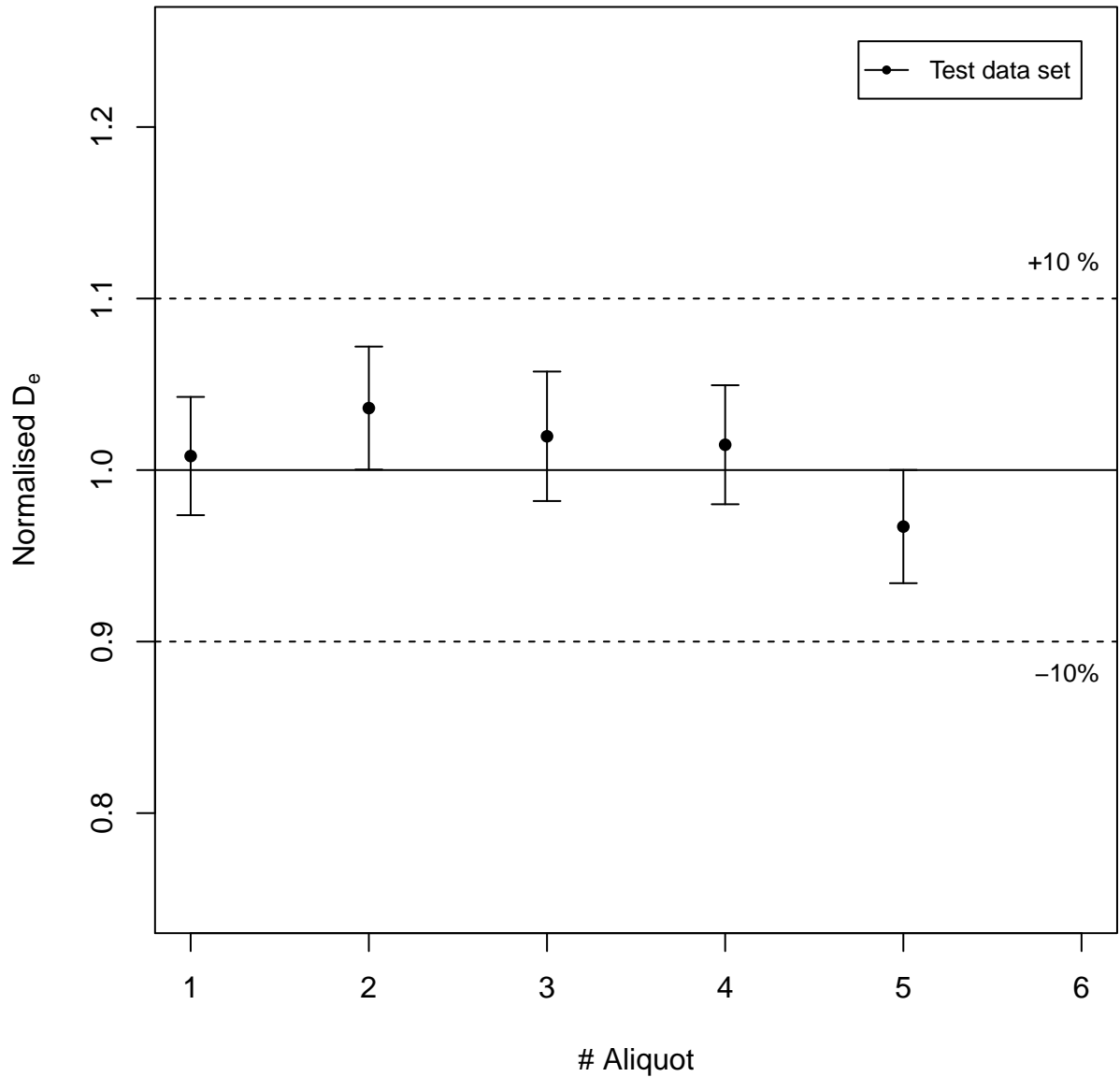
Density (bw 0.15)

Dose recovery test

Example data



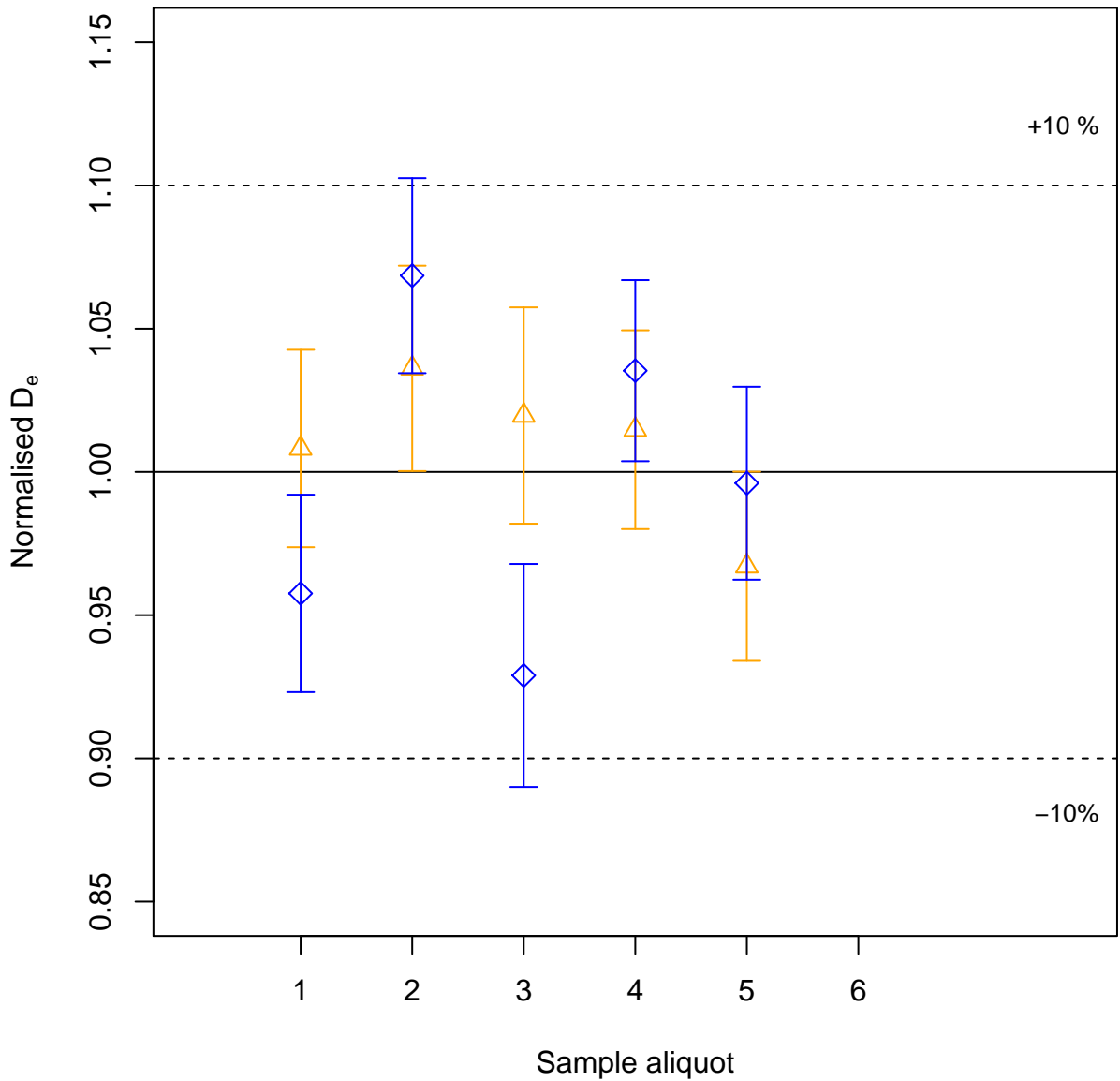
Dose recovery test



Dose recovery test



Dose recovery test



Dose recovery test



Dose recovery test

n = 5

n = 5



Dose recovery test

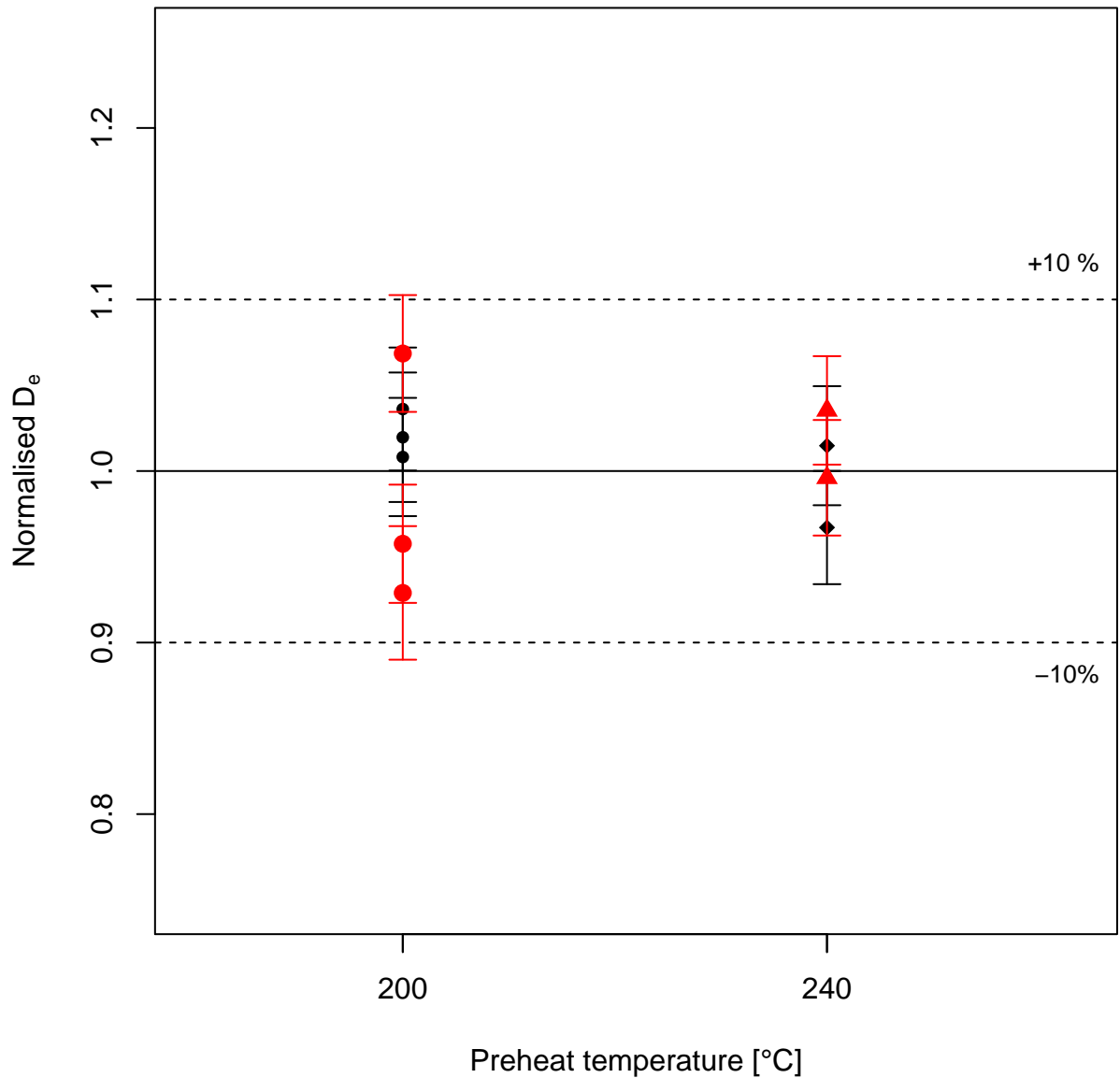


Dose recovery test

Example data



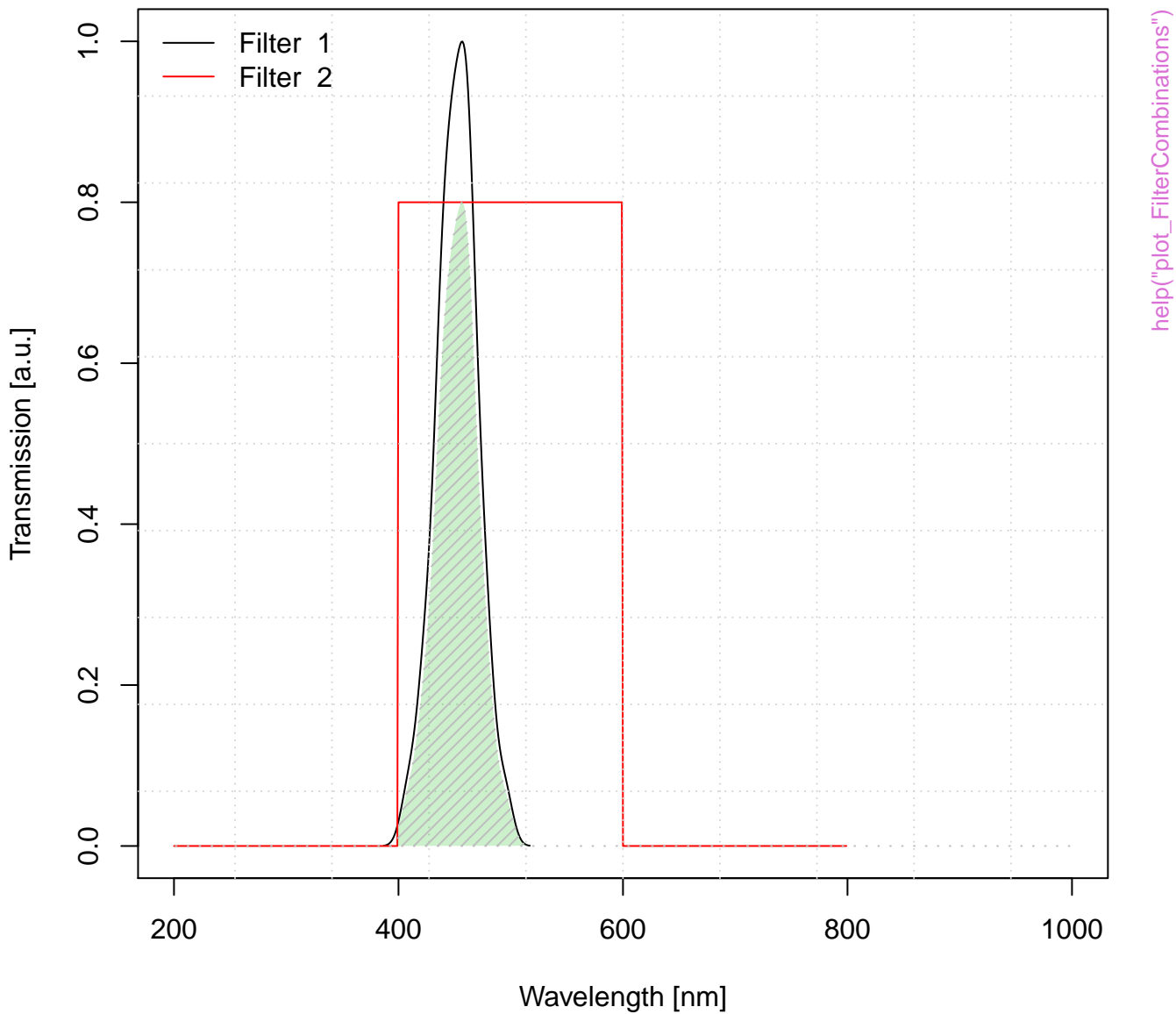
Dose recovery test



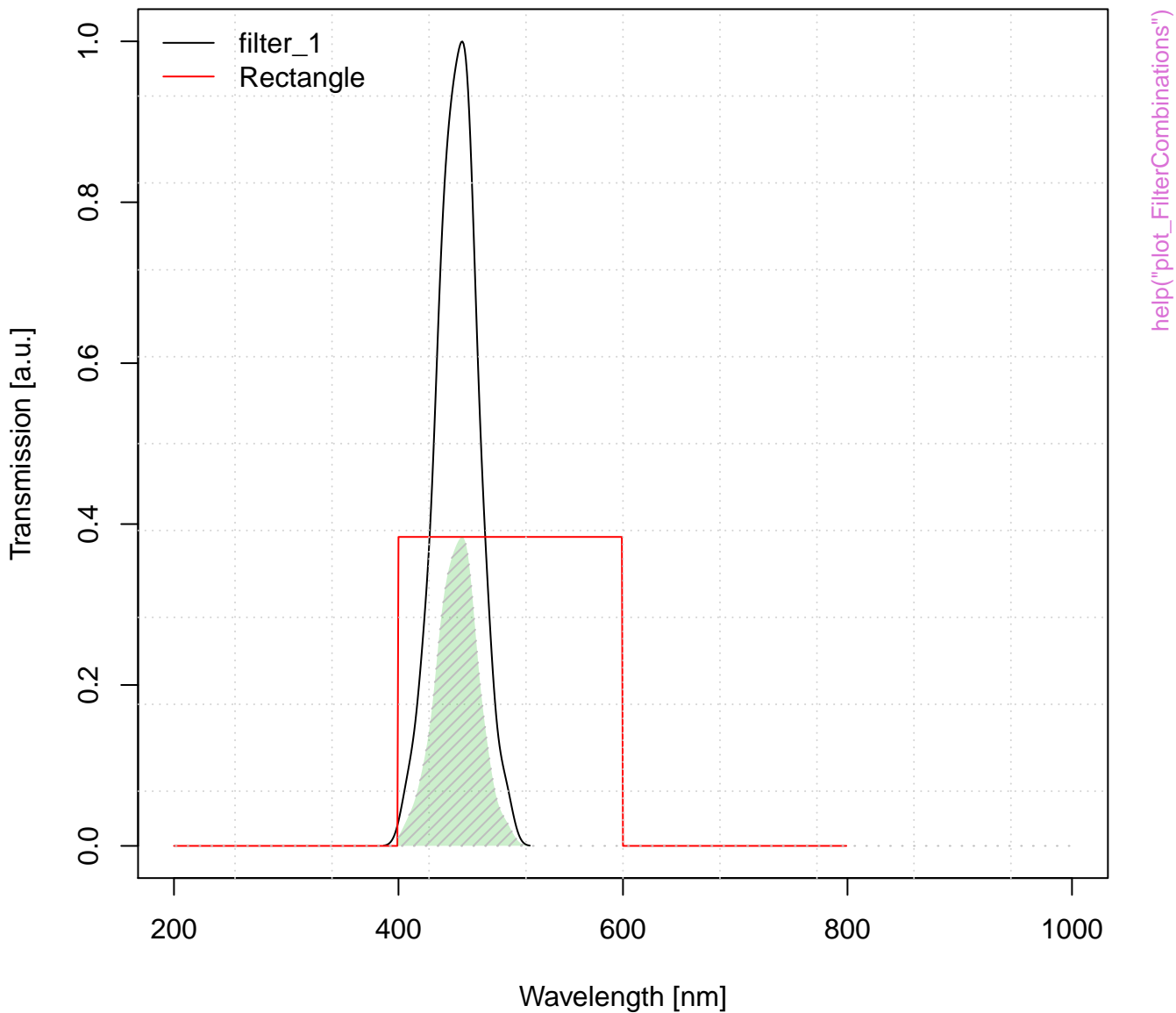
Dose recovery test



Filter Combination



Filter Combination

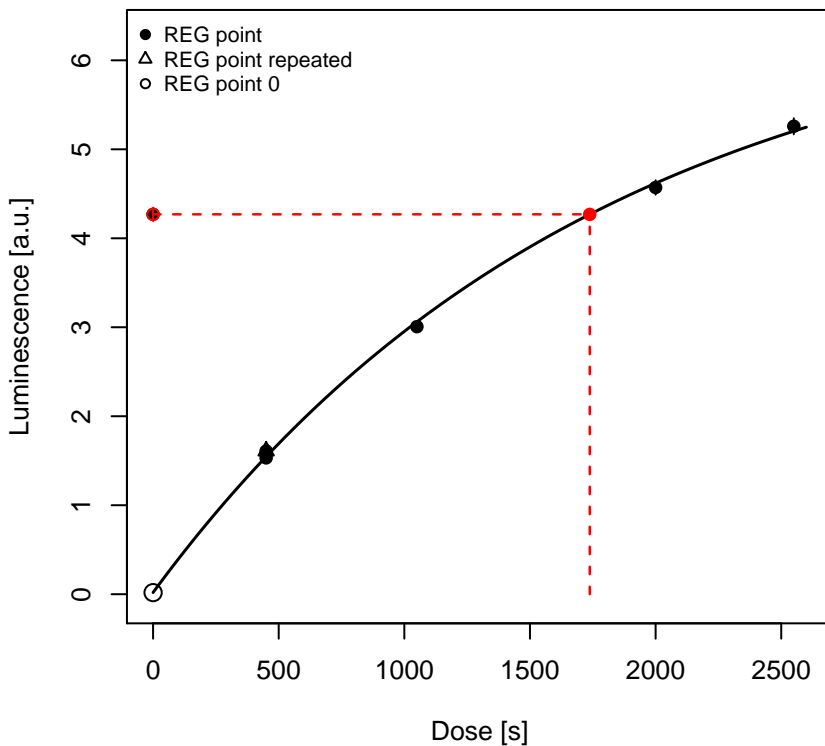




help("plot_FilterCombinations")

Growth curve

$D_e = 1737.88 \pm 57.45$ | fit: EXP



D_e from MC simulation

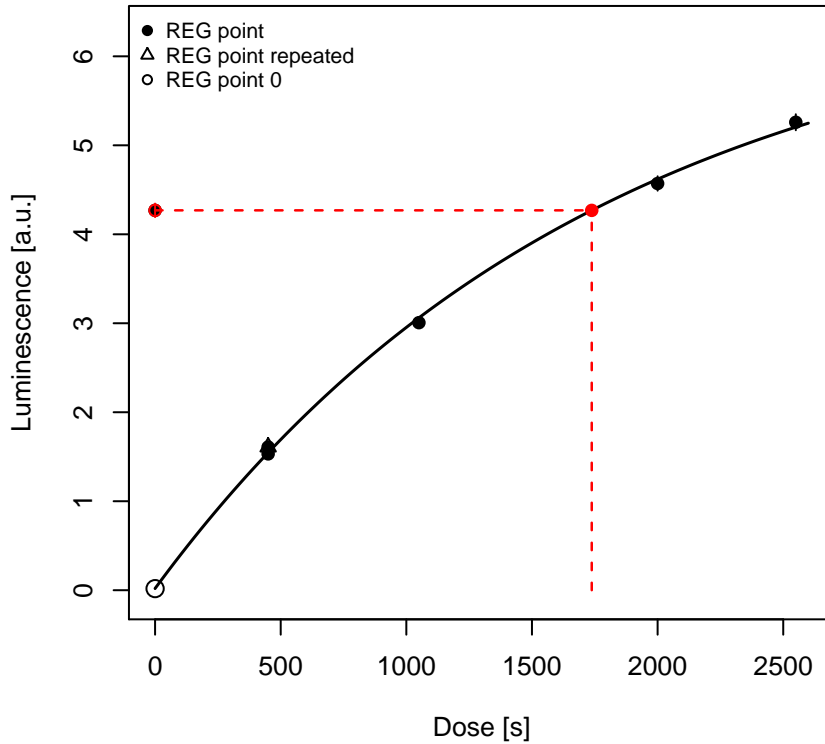


Test dose response



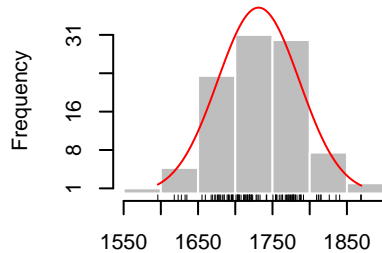
Growth curve

$D_e = 1737.88 \pm 54.9$ | fit: EXP



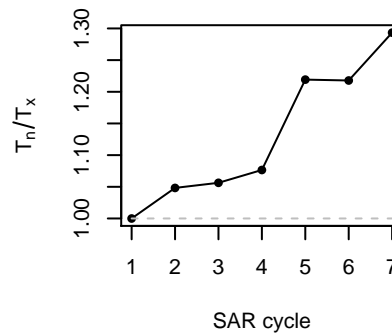
D_e from MC simulation

$D_{eMC} = 1731.23 \pm 54.9$ | quality = 99.6 %



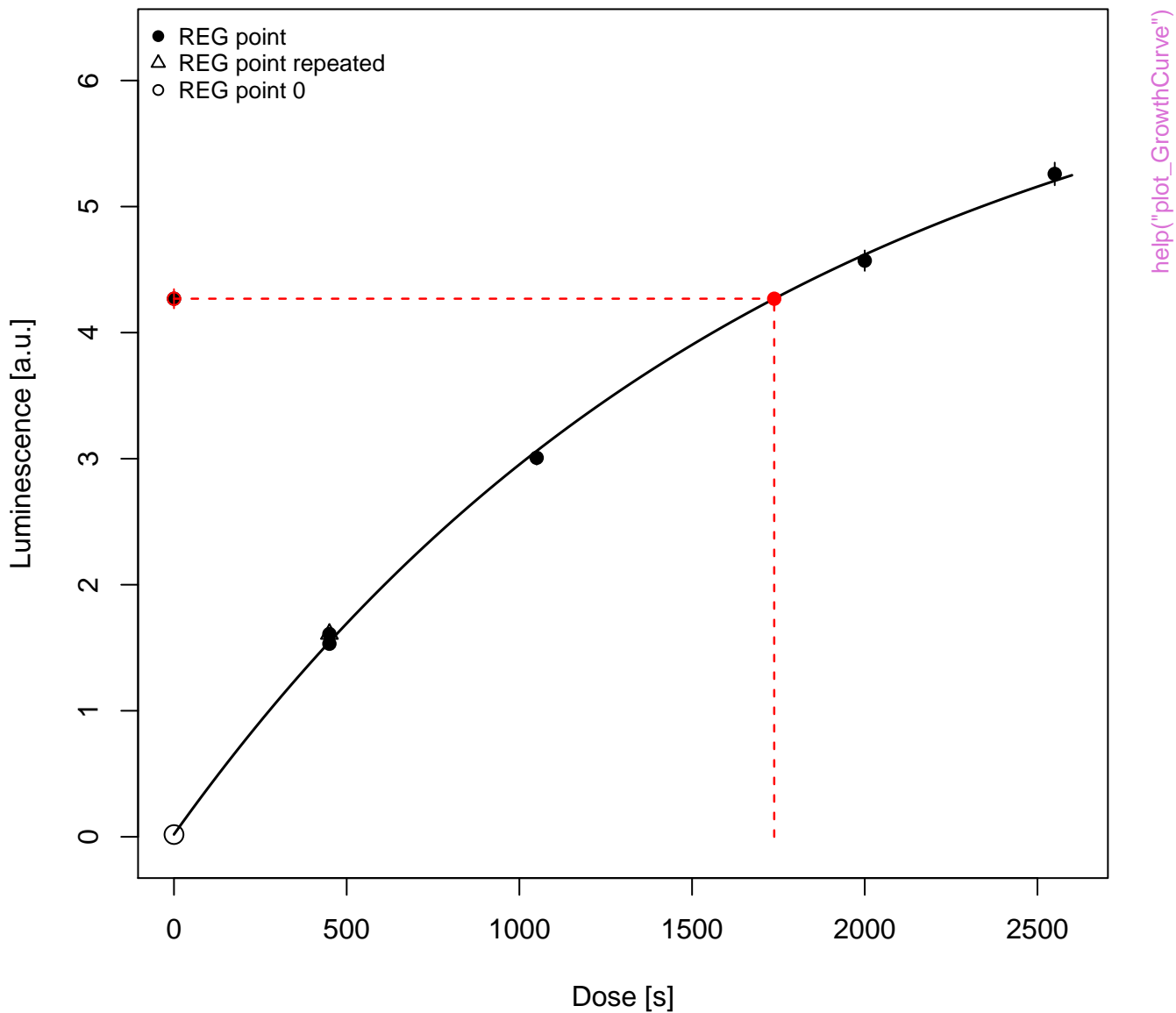
Dose [s]
n = 100 , valid fits = 100

Test dose response



Growth curve

$D_e = 1737.88 \pm 64.53$ | fit: EXP



D_e from MC simulation

D_{eMC} = 1745.42 ± 64.53 | quality = 99.6 %



Test dose response

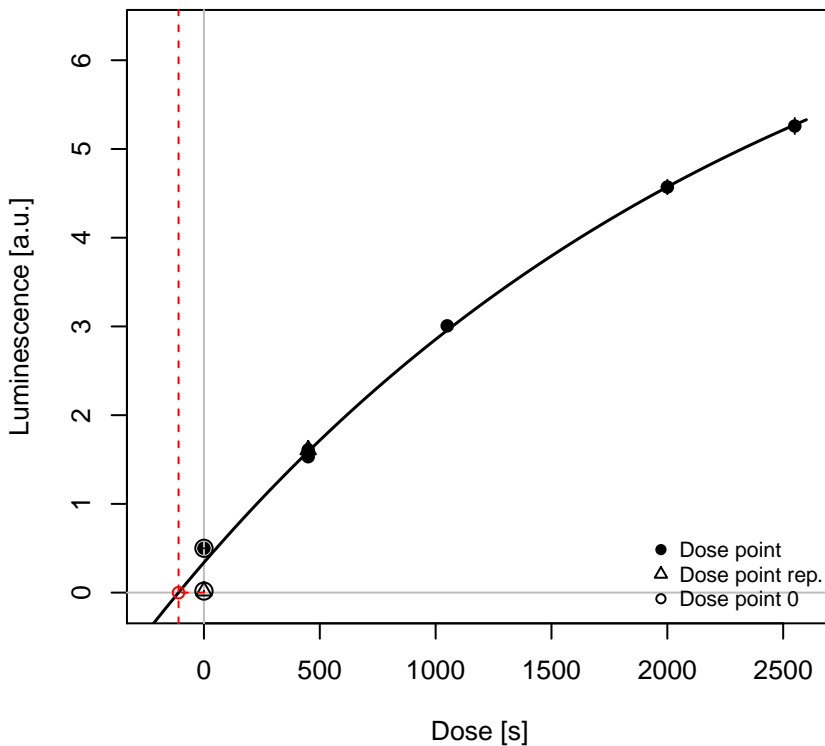




help("plot_GrowthCurve")

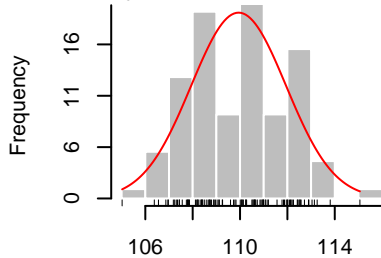
Growth curve

$D_e = 109.74 \pm 2$ | fit: EXP



D_e from MC simulation

$D_{eMC} = 109.94 \pm 2$ | quality = 300.2 %

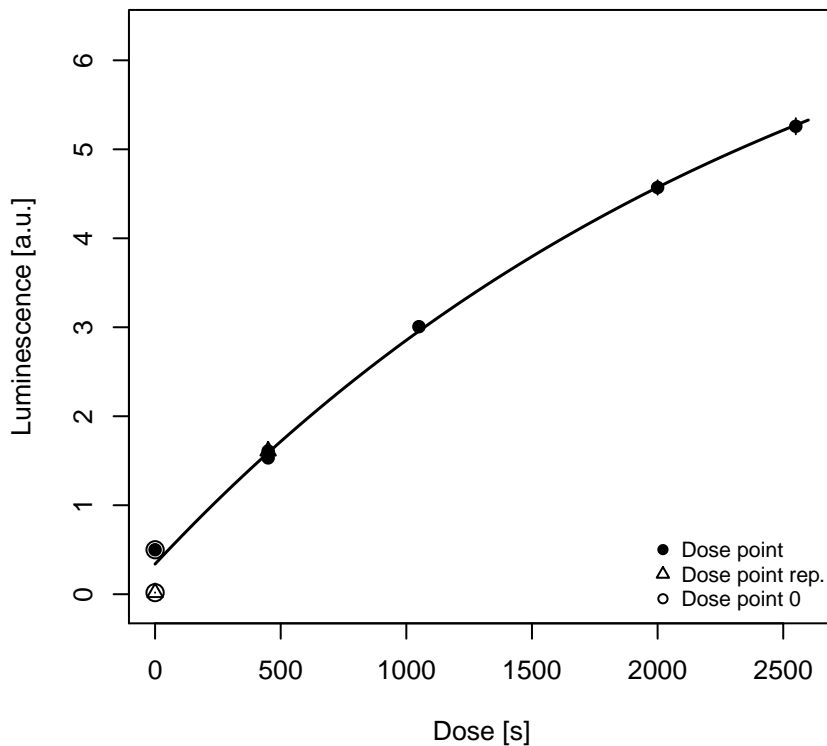


$n = 100$, valid fits = 100

Test dose response



Growth curve



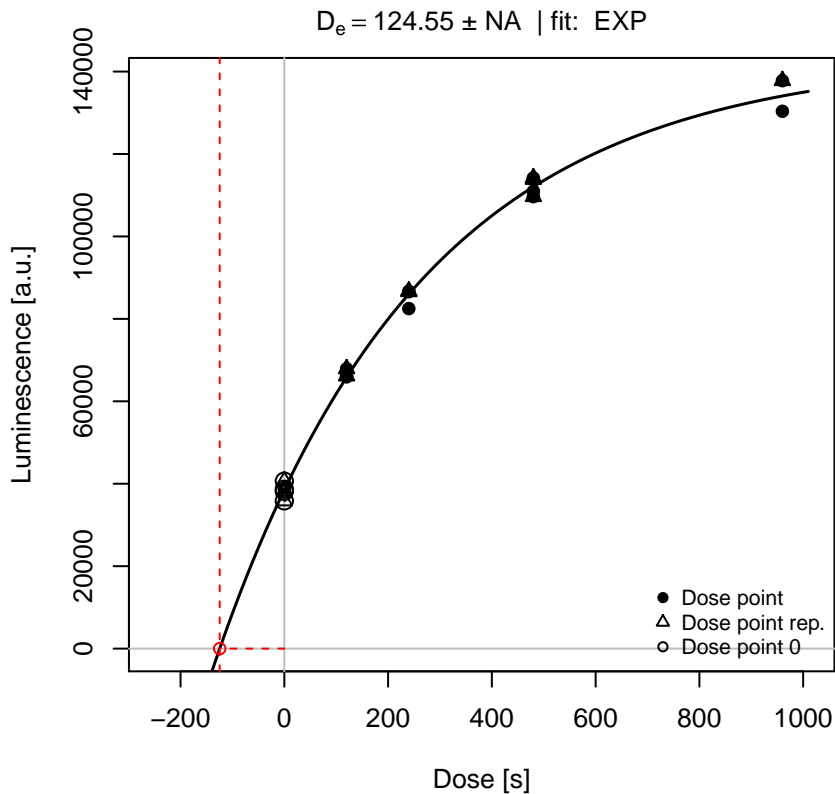
D_e from Monte Carlo simulation



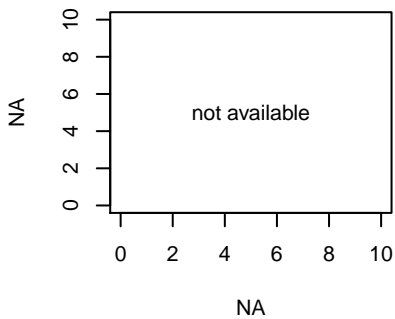
Test dose response



Growth curve



D_e from Monte Carlo simulation



Test dose response



Histogram



Histogram of De-values

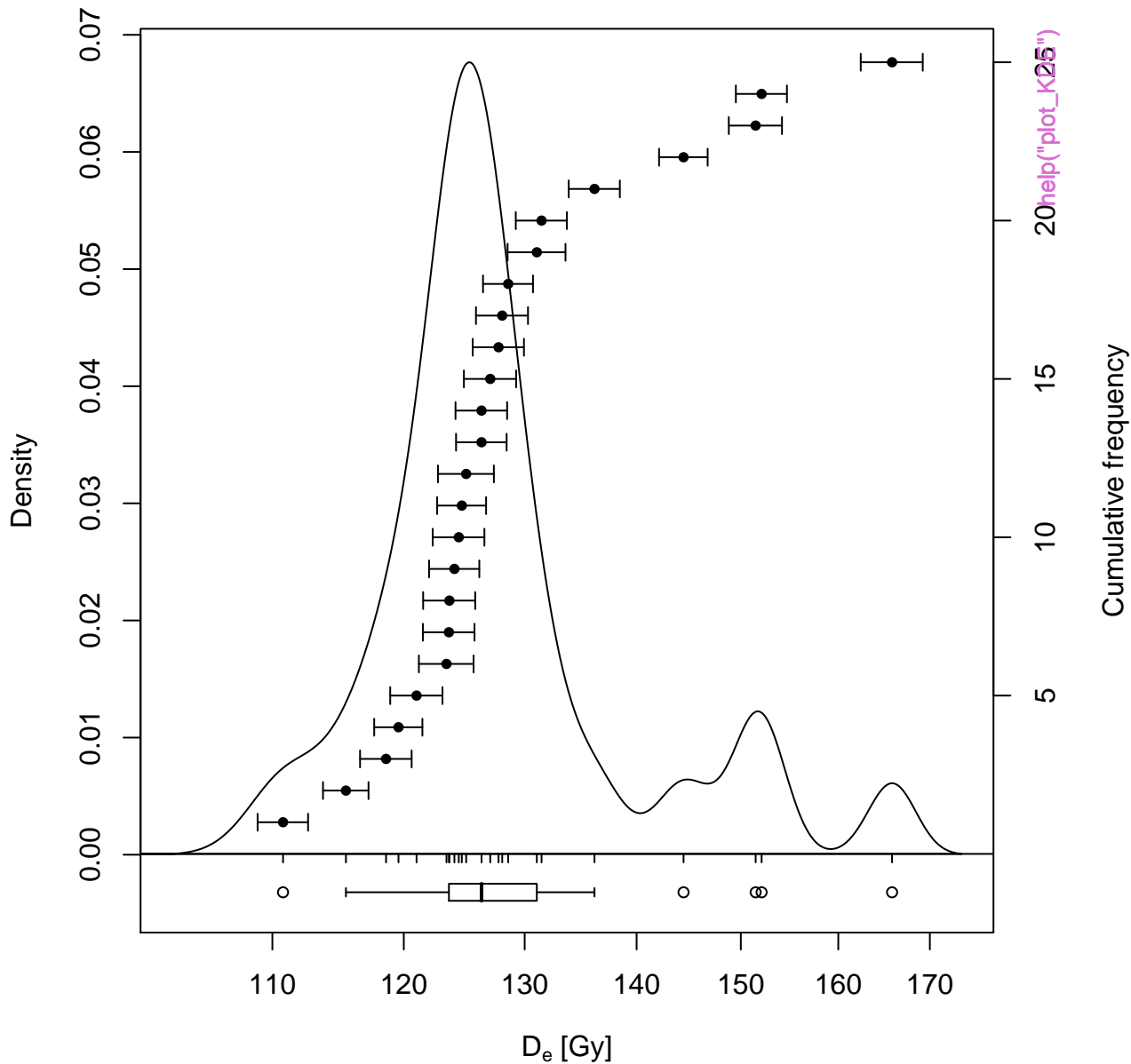
Example data set



D_e distribution



D_e distribution



Dose distribution



D_e distribution



D_e distribution

n = 25 | median = 126.34 | skewness = 1.34 | in 2 sigma = 96 %



D_e distribution



D_e distribution



D_e distribution



D_e distribution



NR(t) Plot



NR(t) Plot



help("plot_NRt")

NR(t) Plot



NR(t) Plot



NR(t) Plot



TnTx(t) Plot

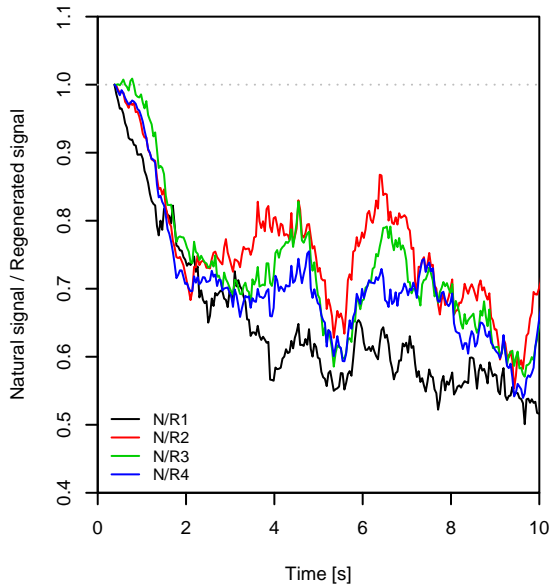
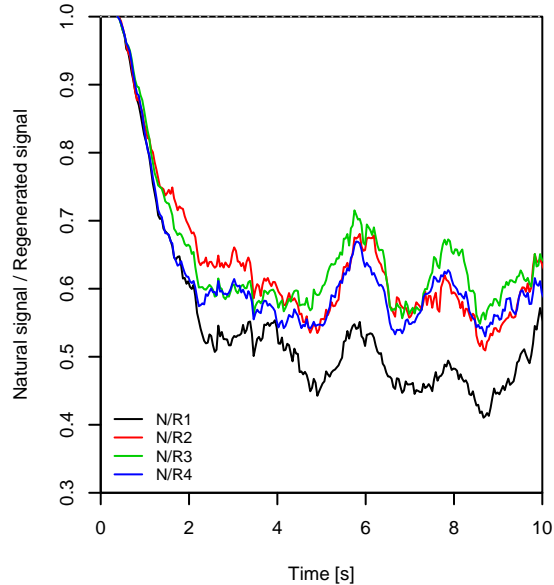


Aliquot #1**Aliquot #2**

help("plot_NRt")

Aliquot #3**Aliquot #4**

Aliquot #5**Aliquot #6****Aliquot #7****Aliquot #8**

Aliquot #9**Aliquot #10**

help("plot_NRt")

Aliquot #11**Aliquot #12**

Aliquot #13**Aliquot #14****Aliquot #15****Aliquot #16**

Aliquot #17**Aliquot #18**

help("plot_NRt")

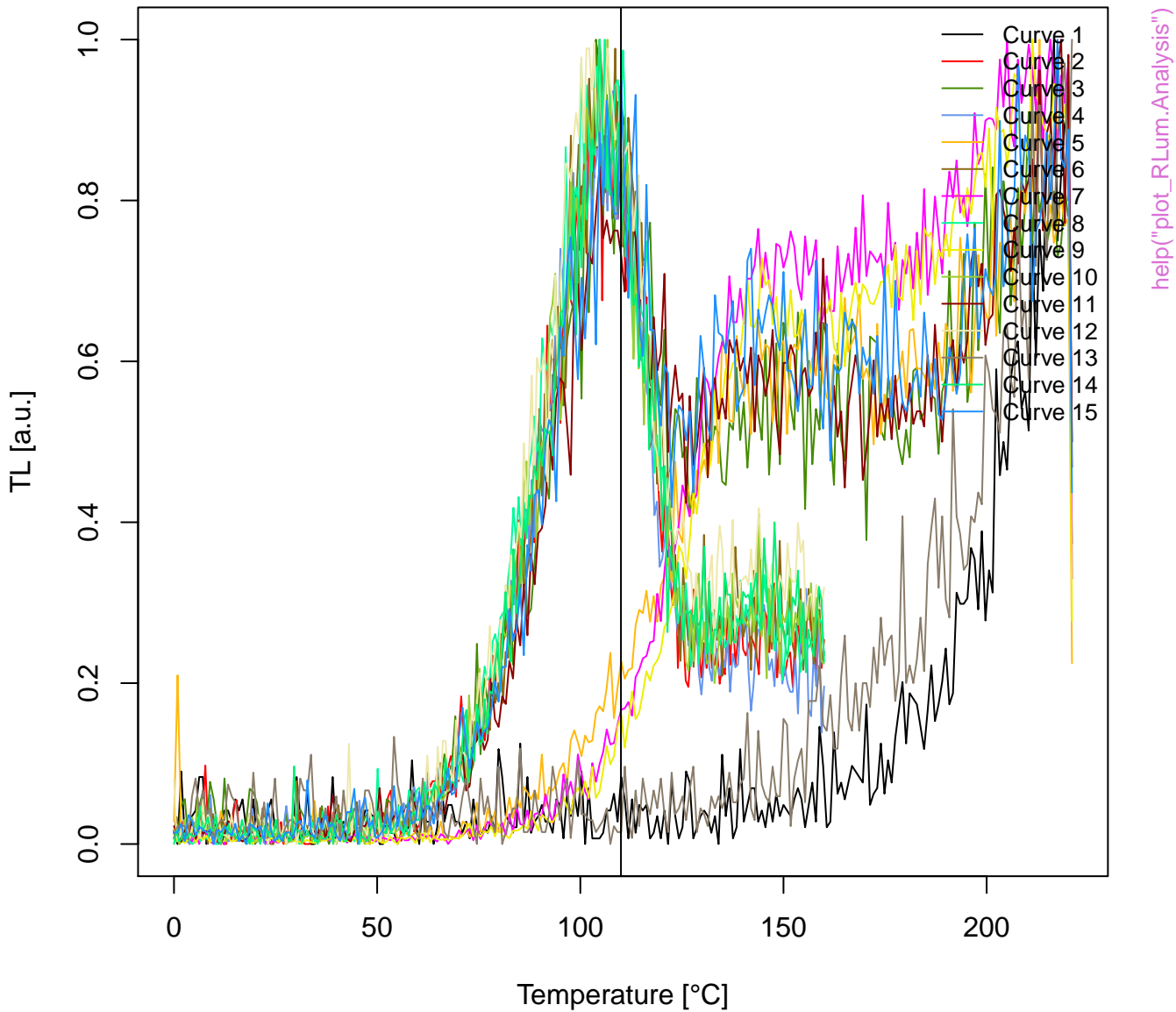
Aliquot #19**Aliquot #20**

Aliquot #21**Aliquot #22**

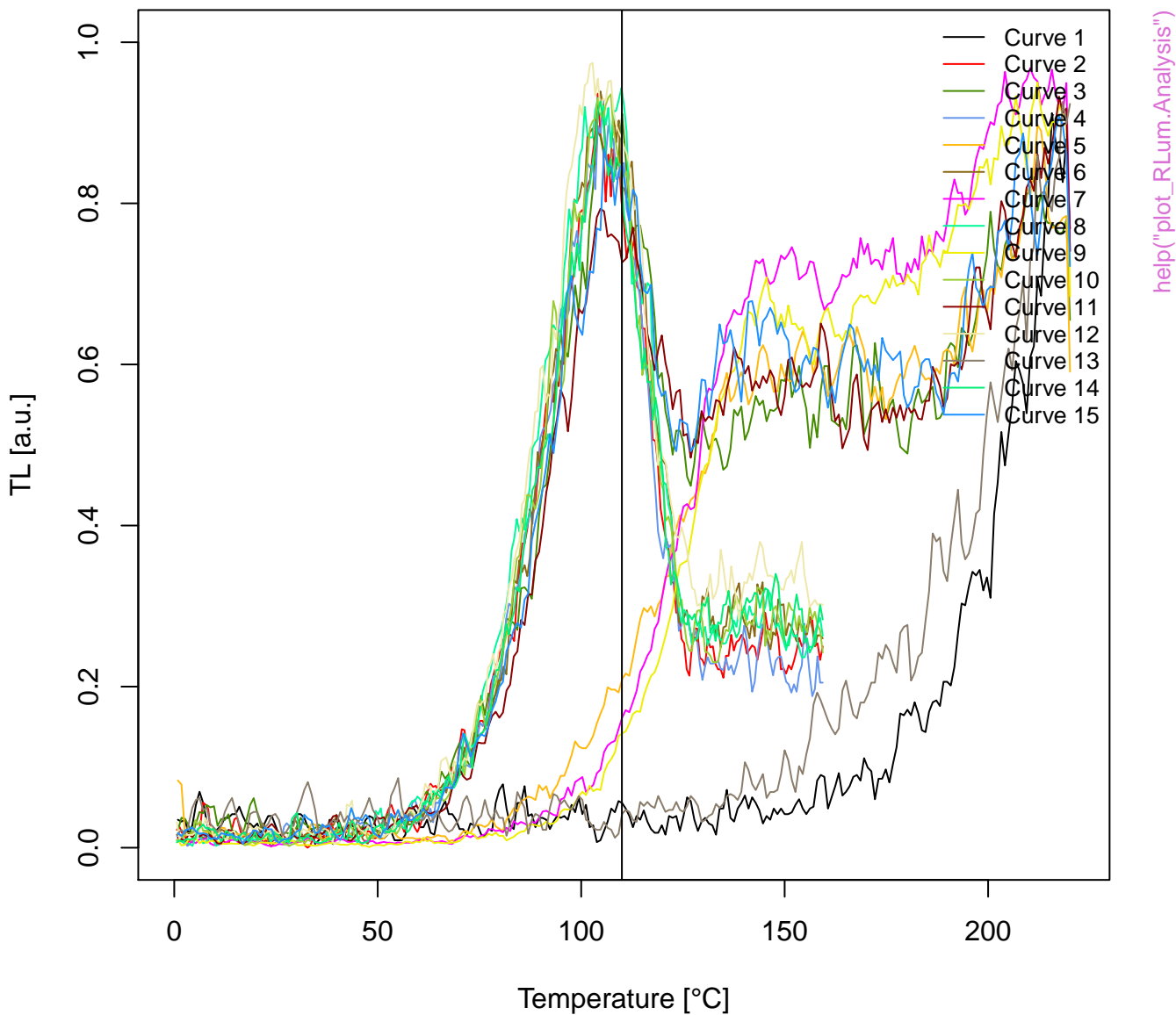
help("plot_NRt")

Aliquot #23**Aliquot #24**

TL combined



TL combined



unkown curve type



RLum.Data.Image



RLum.Data.Spectrum



[help\("plot_RLum.Data.Spectrum"\)](#)

RLum.Data.Spectrum



`help("plot_RLum.Data.Spectrum")`

RLum.Data.Spectrum



unkown curve type



Likelihood profile: gamma



Likelihood profile: sigma



Likelihood profile: p0



Monte Carlo Simulation

$$n = \mid \hat{\mu} = 45 \mid \hat{\sigma} = 21 \mid \frac{\hat{\sigma}}{\sqrt{n}} = 2 \mid v = 0.84$$



D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

n = 25 | in 2 sigma = 68 %



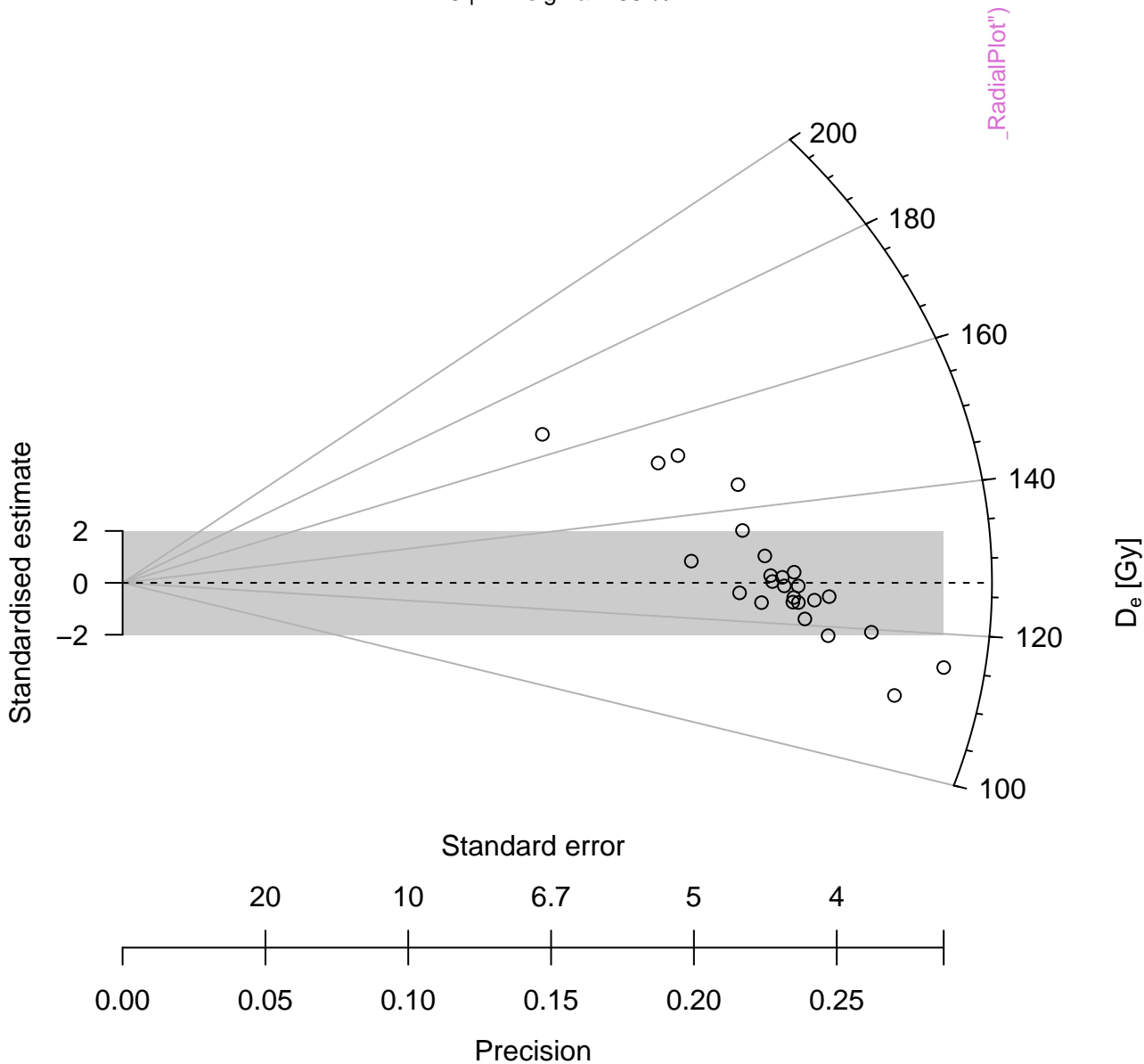
D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

n = 25 | in 2 sigma = 68 %



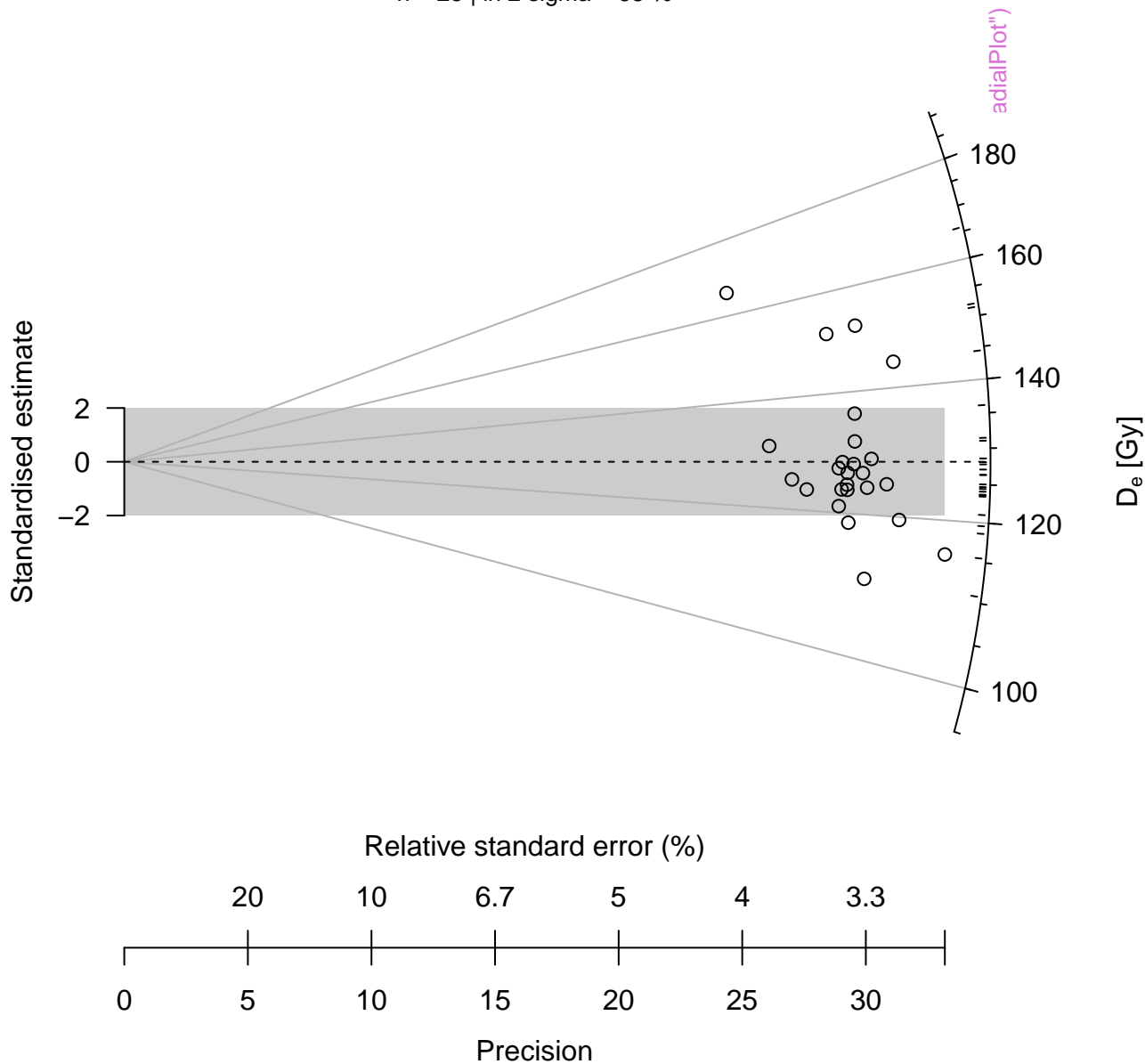
D_e distribution

n = 25 | in 2 sigma = 68 %



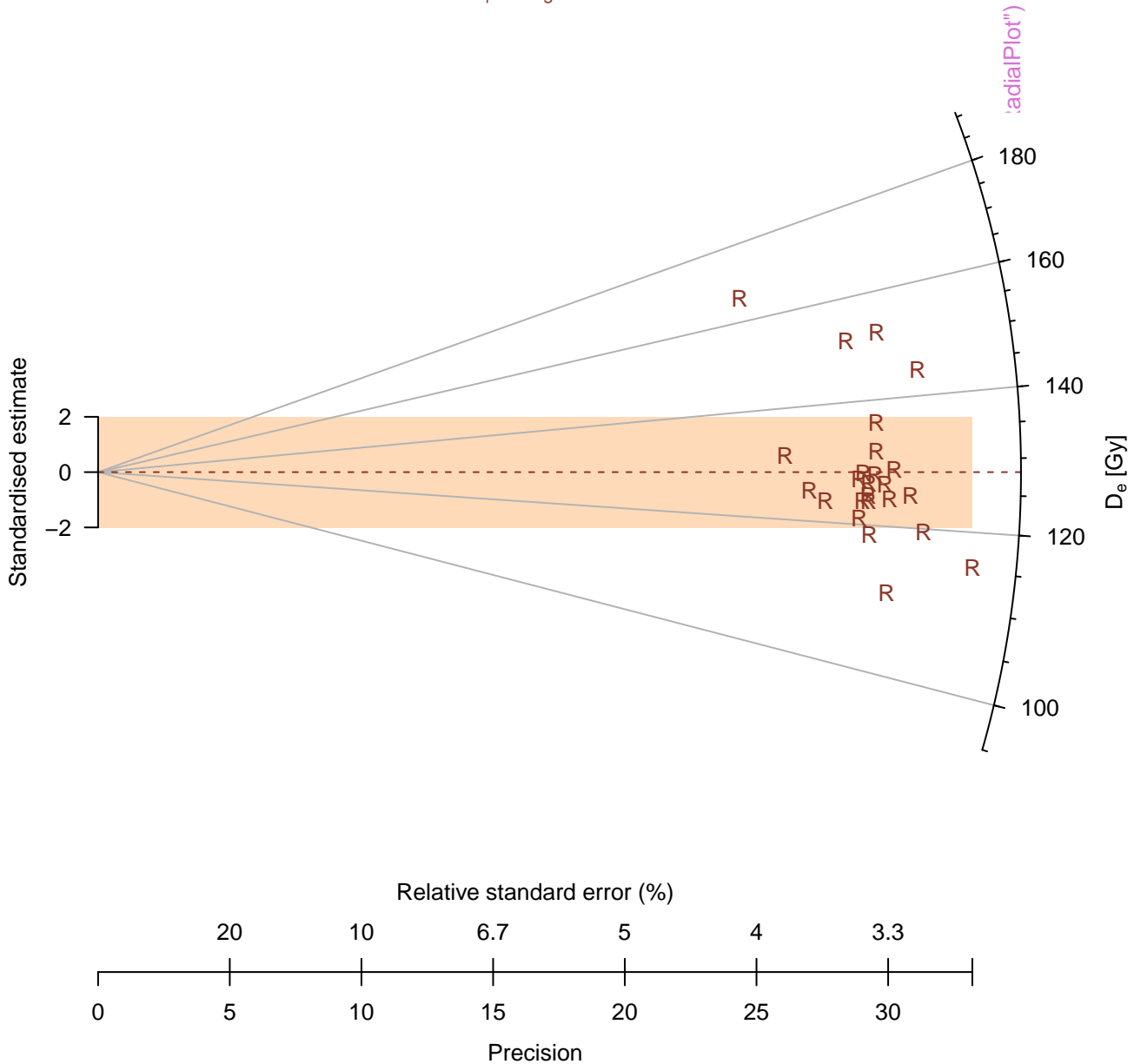
D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

n = 25 | in 2 sigma = 68 %

Standardised estimate

0

0

20

5

10

10

6.7

15

5

20

4

25

3.3

30

Precision

Relative standard error (%)

adialPlot")

180

160

140

120

100

D_e [Gy]

D_e distribution

n = 25 | in 2 sigma = 68 %



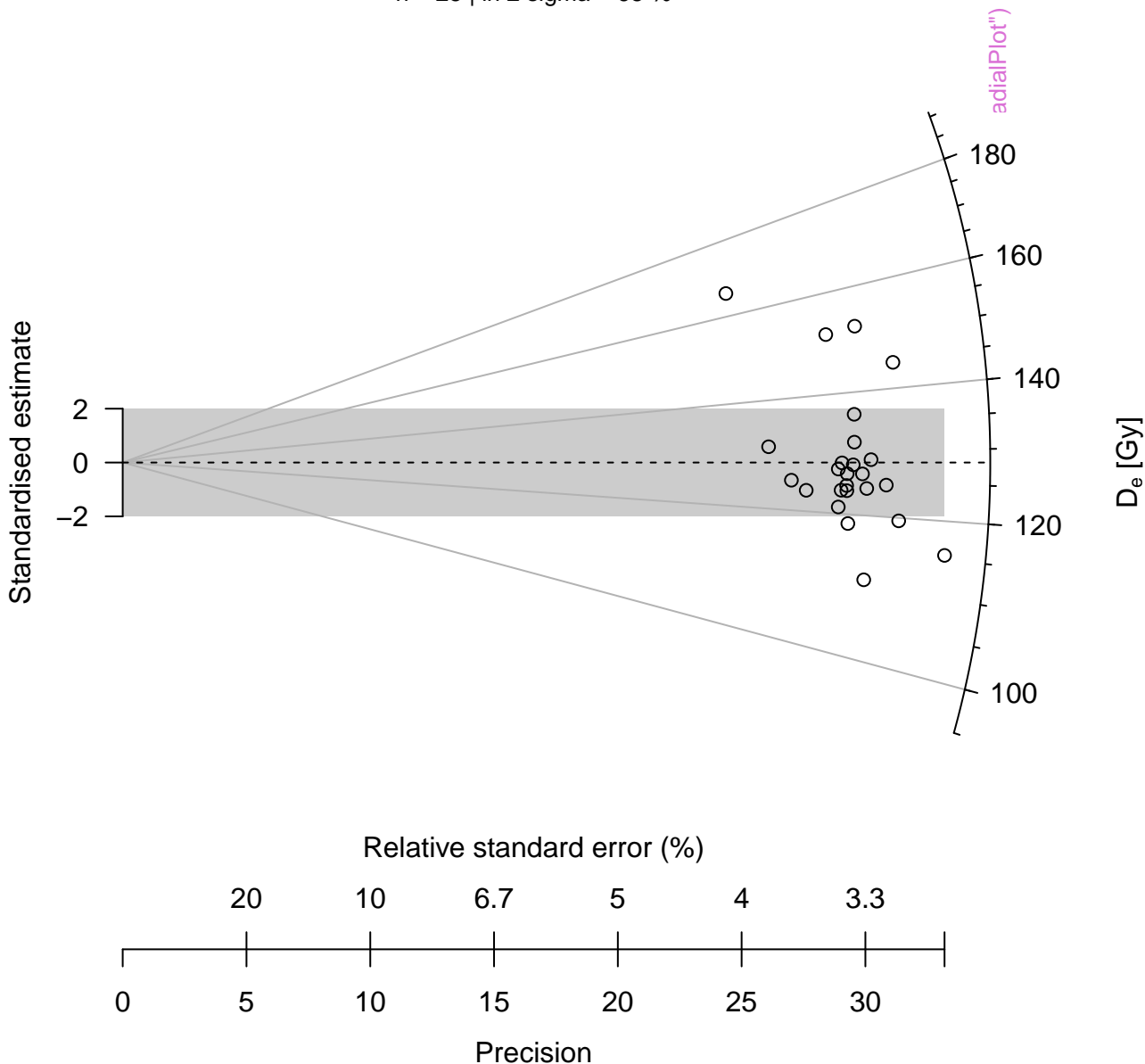
D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

n = 25 | in 2 sigma = 68 %



D_e distribution

weighted mean = 126.85 | median = 126.34



D_e distribution

n = 15 | in 2 sigma = 53.3 %

n = 10 | in 2 sigma = 90 %



D_e distribution

n = 15 | in 2 sigma = 53.3 %

n = 10 | in 2 sigma = 90 %

△ Sample 1

▽ Sample 2



Violin Plot

n = 25 | median = 126.34

Density



[help\("plot_ViolinPlot"\)](#)

USER combined



IRSL combined



`help("read_PSL2R")`

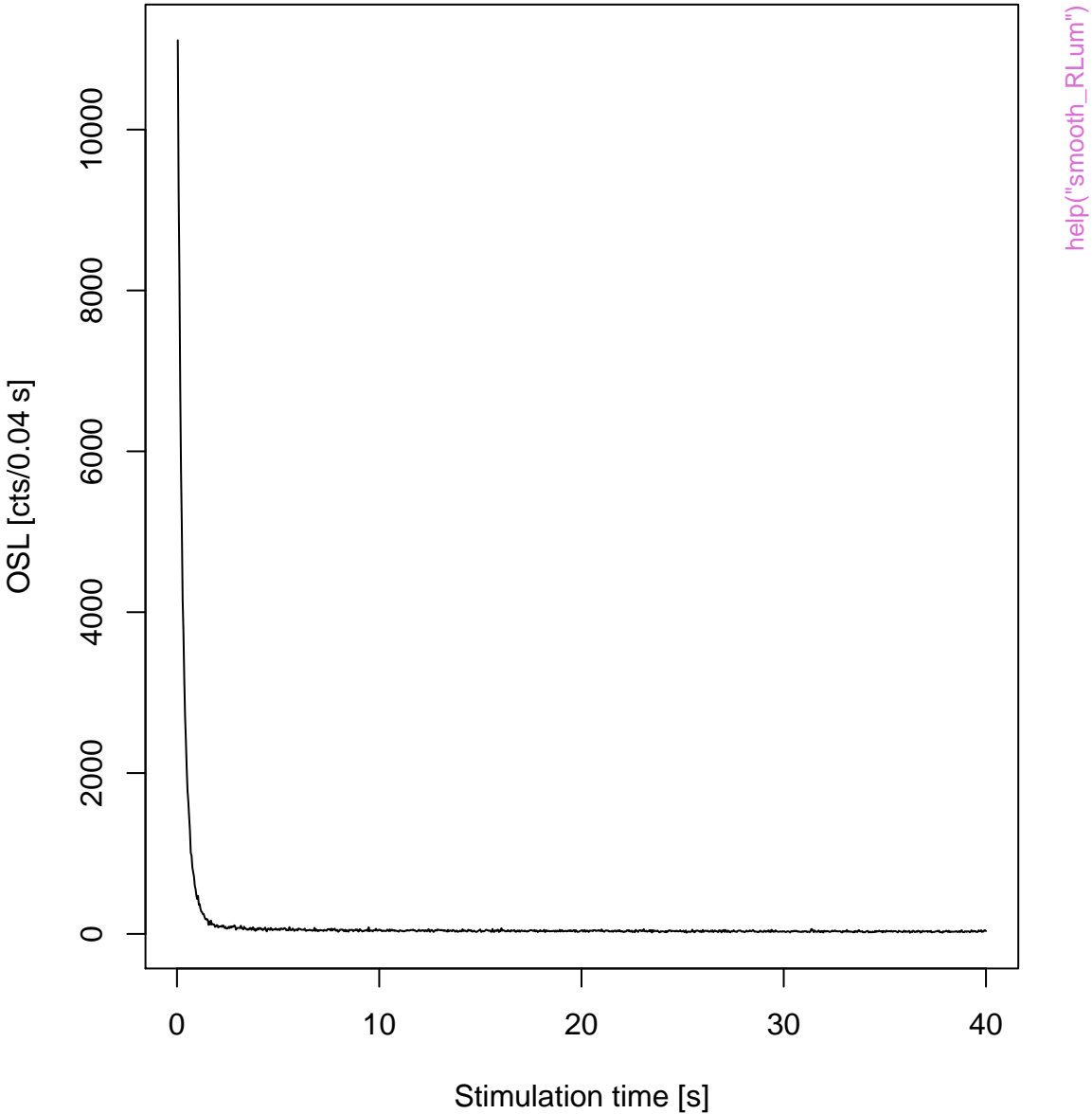
OSL combined



OSL



OSL



OSL



D_e distribution

n = 62 | mean = 66.01



D_e distribution

n = 62 | mean = 66.01

