Practice Heat Shocks

Contents

Libraries

```
library(lubridate)
```

```
##
## Attaching package: 'lubridate'
```

```
## The following object is masked from 'package:base':
##
##     date
```

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:lubridate':
##
##     intersect, setdiff, union
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)
library(tidyr)
```

Changing MIN:SEC to minutes

```
temp<- c(37, 38, 38.5, 39)
t37 <- c("35:54", "87:22", "95:41", "94:19", "06:03", "92:51", "79:30", "69:38", "63:40", "85:45", "91:1
t38 <- c("39:44", "58:32", "41:07", "60:00", "27:02", "61:50", "28:21", "44:10", "47:07", "29:38", "32:3
t38.5 <- c("24:33", "11:36", "06:27", "30:36", "16:32", "11:05", "06:47", "28:16", "15:22", "25:19", "2
t39 <- c("09:20", "00:00", "10:00", "11:00", "09:06", "14:10", "11:40", "14:31", "10:30", "09:40", "12:0
```

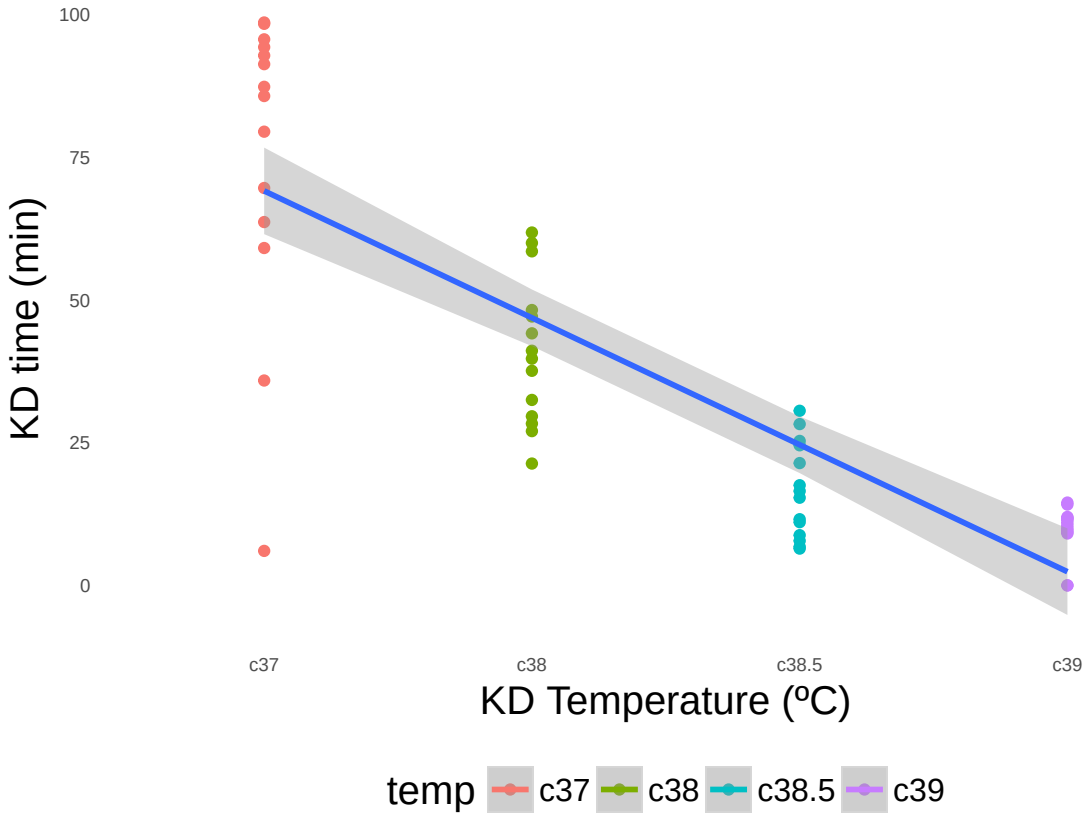
```
c37 <-lubridate::minute(ms(t37))+lubridate::second(ms(t37))/60
c38 <-lubridate::minute(ms(t38))+lubridate::second(ms(t38))/60
c38.5 <-lubridate::minute(ms(t38.5))+lubridate::second(ms(t38.5))/60
c39 <- lubridate::minute(ms(t39))+lubridate::second(ms(t39))/60
```

Creating the Data Frams

```
y <- c(c37,c38, c38.5, c39)
df<-data.frame(c37,c38, c38.5, c39)
df.long <- gather(df, temp, y)
```

Figures

```
line<- ggplot(df.long,aes(x=temp,y=y, colour=temp))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=7),text=element_text(size=15))+geom_smooth(aes(gr
line
```




```
ex<-ggplot(df.long,aes(x=temp,y=y, colour=temp))+geom_point()+
  labs(x = "KD Temperature (ºC)", y = "KD time (min)") + theme(
```

```
        axis.ticks.x=element_blank(),legend.position="bottom",
        axis.ticks.y=element_blank(),panel.background = element_blank(),
        panel.grid.major = element_blank(),panel.grid.minor =
          element_blank(),axis.text=element_text(size=7),text=element_text(size=15))+geom_smooth(aes(gr
ex
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 0.985
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 2.015
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 1.324e-16
```

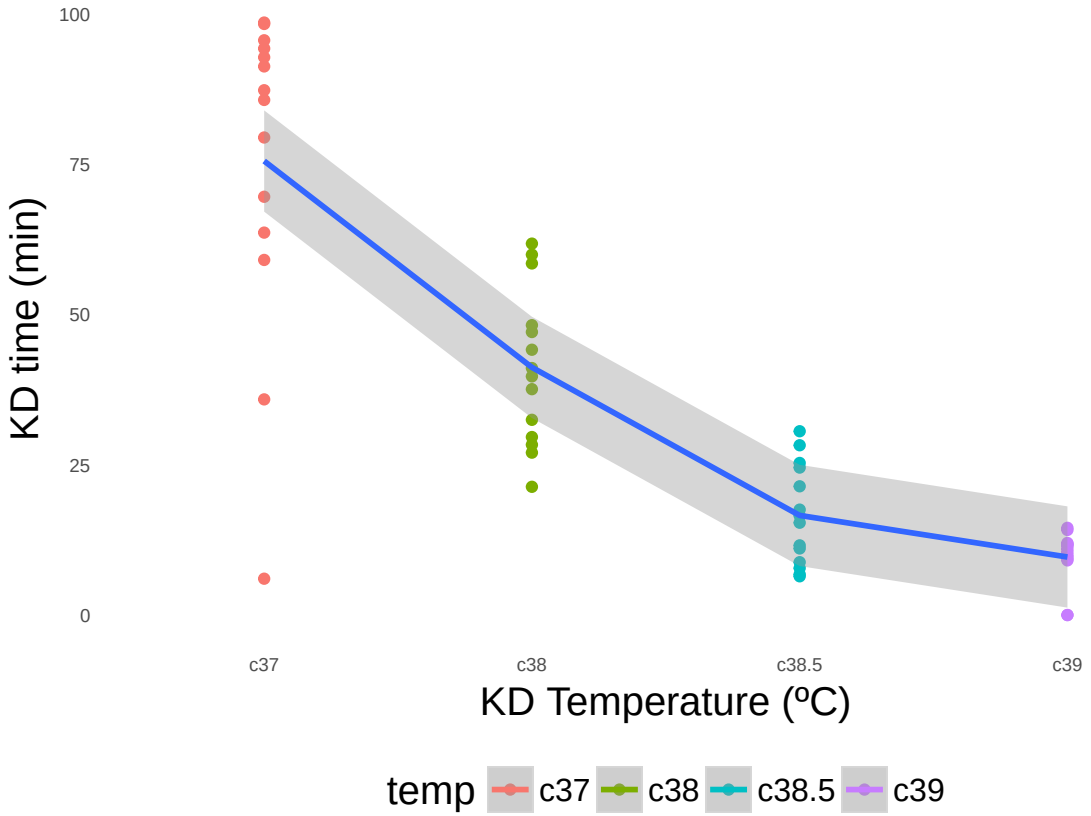
```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 4.0602
```

```
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used
## at 0.985
```

```
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius
## 2.015
```

```
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal
## condition number 1.324e-16
```

```
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : There are other
## near singularities as well. 4.0602
```



Session Info

```
sessionInfo()
```

```
## R version 3.5.0 (2018-04-23)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS High Sierra 10.13.5
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] tidyr_0.8.1     ggplot2_2.2.1   dplyr_0.7.5     lubridate_1.7.4
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.17     knitr_1.20       bindr_0.1.1      magrittr_1.5
##  [5] munsell_0.4.3    tidyselect_0.2.4 colorspace_1.3-2 R6_2.2.2
##  [9] rlang_0.2.0      plyr_1.8.4       stringr_1.3.1    tools_3.5.0
## [13] grid_3.5.0       gtable_0.2.0     htmltools_0.3.6  lazyeval_0.2.1
```

```
## [17] yaml_2.1.19      rprojroot_1.3-2  digest_0.6.15    assertthat_0.2.0
## [21] tibble_1.4.2     bindrcpp_0.2.2   purrr_0.2.5      glue_1.2.0
## [25] evaluate_0.10.1  rmarkdown_1.9    labeling_0.3     stringi_1.2.2
## [29] compiler_3.5.0   pillar_1.2.3     scales_0.5.0     backports_1.1.2
## [33] pkgconfig_2.0.1
```