probelm5

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2022-05-05

```
load("B_final.Rdata")
source("shared_code/data_cleaning.R")
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.6     v dplyr   1.0.7
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1
## Warning: package 'tidyr' was built under R version 4.1.2
## Warning: package 'readr' was built under R version 4.1.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
##
## Attaching package: 'lubridate'
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
## Rows: 22038 Columns: 8
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (4): ID, Month, Nature, time
## dbl (4): Season, Latitude, Longitude, Wind.kt
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
## New names:
## * id -> id...1
## * season -> season...2
## * nature -> nature...3
## * time -> time...4
## * latitude -> latitude...5
## * ...
## Warning: `add_rownames()` was deprecated in dplyr 1.0.0.
## Please use `tibble::rownames_to_column()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was generated.
## Joining, by = "id"
```

```
library(tidyverse)
##lm model:
working_dt <- dt_for5

#regress on beta_0:
y0 = B_final[ 1: 684 , 1]
month =
  working_dt %>%
  dplyr::select(id, month) %>%
  pull(month)
```

```
## Adding missing grouping variables: `i`
```

```
year =
  working_dt %>%
  dplyr::select(id, year) %>%
  pull(year)
```

```
## Adding missing grouping variables: `i`
```

```
type =
  working_dt %>%
  dplyr::select(id, type) %>%
  pull(type)
```

```
## Adding missing grouping variables: `i`
```

```
season =
  working_dt %>%
  dplyr::select(id, season) %>%
  pull(season)
```

```
## Adding missing grouping variables: `i`
```

```
# lm_b0_year = lm(y0 ~ month + year + type)
# lm_b0_season = lm(y0 ~ season + year + type)
# summary(lm_b0_year)
# summary(lm_b0_season)
```

B0

```
#regress on beta_0:
y0 = B_final[1: 684 ,1]
lm_b0 = lm(y0 ~ factor(month) + year + factor(type))
lm_b0_season = lm(y0~ factor(season) + year + factor(type))
summary(lm_b0)
```

```
##
## Call:
## lm(formula = y0 ~ factor(month) + year + factor(type))
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.000306 -0.000114 -0.000045  0.000042  0.032999
##
## Coefficients:
```

```
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)     -8.544e-03  5.780e-03  -1.478    0.140
## factor(month)4  -6.277e-05  1.581e-03  -0.040    0.968
## factor(month)5  -3.031e-05  1.334e-03  -0.023    0.982
## factor(month)6  -5.662e-05  1.310e-03  -0.043    0.966
## factor(month)7  -7.944e-05  1.304e-03  -0.061    0.951
## factor(month)8   1.055e-04  1.297e-03   0.081    0.935
## factor(month)9  -6.270e-05  1.296e-03  -0.048    0.961
## factor(month)10 -6.162e-05  1.298e-03  -0.047    0.962
## factor(month)11 -7.218e-05  1.313e-03  -0.055    0.956
## factor(month)12 -5.734e-05  1.374e-03  -0.042    0.967
## year             4.261e-06  2.812e-06   1.515    0.130
## factor(type)ET   7.524e-05  3.809e-04   0.198    0.843
## factor(type)NR   1.003e-04  6.095e-04   0.165    0.869
## factor(type)SS   1.159e-04  2.594e-04   0.447    0.655
## factor(type)TS   1.676e-04  2.003e-04   0.837    0.403
##
## Residual standard error: 0.001282 on 669 degrees of freedom
## Multiple R-squared:  0.007493,   Adjusted R-squared:  -0.01328
## F-statistic: 0.3608 on 14 and 669 DF,  p-value: 0.9847
```

```
summary(lm_b0_season)
```

```
##
## Call:
## lm(formula = y0 ~ factor(season) + year + factor(type))
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.000246 -0.000111 -0.000049  0.000027  0.033059
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)           -8.550e-03  5.621e-03  -1.521    0.129
## factor(season)spring   3.124e-05  3.204e-04   0.097    0.922
## factor(season)summer   1.078e-04  1.014e-04   1.063    0.288
## factor(season)winter   1.477e-05  4.631e-04   0.032    0.975
## year                   4.230e-06  2.797e-06   1.512    0.131
## factor(type)ET         6.784e-05  3.670e-04   0.185    0.853
## factor(type)NR         7.649e-05  5.994e-04   0.128    0.899
## factor(type)SS         1.162e-04  2.562e-04   0.453    0.650
## factor(type)TS         1.729e-04  1.985e-04   0.871    0.384
##
## Residual standard error: 0.001277 on 675 degrees of freedom
## Multiple R-squared:  0.005683,   Adjusted R-squared:  -0.006102
## F-statistic: 0.4822 on 8 and 675 DF,  p-value: 0.8692
```

B1

```
#regress on beta_1:
y1 = B_final[1: 684,2]
lm_b1 = lm(y1 ~ factor(month) + year + factor(type))
lm_b1_season = lm(y1~ factor(season) + year + factor(type))
```

```
summary(lm_b1)
```

```
##
## Call:
## lm(formula = y1 ~ factor(month) + year + factor(type))
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -1.100e-03 -1.410e-06  1.500e-06  3.810e-06  1.021e-05
##
## Coefficients:
##                   Estimate Std. Error  t value Pr(>|t|)
## (Intercept)      1.000e+00  1.927e-04 5191.680   <2e-16 ***
## factor(month)4   2.092e-06  5.270e-05    0.040    0.968
## factor(month)5   1.010e-06  4.446e-05    0.023    0.982
## factor(month)6   1.887e-06  4.368e-05    0.043    0.966
## factor(month)7   2.648e-06  4.347e-05    0.061    0.951
## factor(month)8  -3.517e-06  4.324e-05   -0.081    0.935
## factor(month)9   2.090e-06  4.321e-05    0.048    0.961
## factor(month)10  2.054e-06  4.326e-05    0.047    0.962
## factor(month)11  2.406e-06  4.376e-05    0.055    0.956
## factor(month)12  1.911e-06  4.582e-05    0.042    0.967
## year            -1.420e-07  9.375e-08   -1.515    0.130
## factor(type)ET  -2.508e-06  1.270e-05   -0.198    0.843
## factor(type)NR  -3.343e-06  2.032e-05   -0.165    0.869
## factor(type)SS  -3.863e-06  8.648e-06   -0.447    0.655
## factor(type)TS  -5.586e-06  6.676e-06   -0.837    0.403
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.272e-05 on 669 degrees of freedom
## Multiple R-squared:  0.007493,   Adjusted R-squared:  -0.01328
## F-statistic: 0.3608 on 14 and 669 DF,  p-value: 0.9847
```

```
summary(lm_b1_season)
```

```
##
## Call:
## lm(formula = y1 ~ factor(season) + year + factor(type))
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -1.102e-03 -9.100e-07  1.650e-06  3.710e-06  8.200e-06
##
## Coefficients:
##                         Estimate Std. Error  t value Pr(>|t|)
## (Intercept)            1.000e+00  1.874e-04 5338.565   <2e-16 ***
## factor(season)spring -1.041e-06  1.068e-05   -0.097    0.922
## factor(season)summer -3.592e-06  3.379e-06   -1.063    0.288
## factor(season)winter -4.923e-07  1.544e-05   -0.032    0.975
## year                 -1.410e-07  9.325e-08   -1.512    0.131
## factor(type)ET       -2.261e-06  1.223e-05   -0.185    0.853
## factor(type)NR       -2.550e-06  1.998e-05   -0.128    0.899
## factor(type)SS       -3.873e-06  8.540e-06   -0.453    0.650
```

```
## factor(type)TS       -5.763e-06  6.616e-06   -0.871    0.384
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.257e-05 on 675 degrees of freedom
## Multiple R-squared:  0.005683,   Adjusted R-squared:  -0.006102
## F-statistic: 0.4822 on 8 and 675 DF,  p-value: 0.8692
```

B2

```
#regress on beta_2:
y2 = B_final[1: 684,3]
lm_b2 = lm(y2 ~ factor(month) + year + factor(type))
lm_b2_season = lm(y2~ factor(season) + year + factor(type))
summary(lm_b2)
```

```
##
## Call:
## lm(formula = y2 ~ factor(month) + year + factor(type))
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -3.828e-11 -2.590e-13  3.700e-14  4.290e-13  2.725e-11
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.284e-12  1.223e-11   0.187    0.852
## factor(month)4  -9.056e-13  3.346e-12  -0.271    0.787
## factor(month)5   1.265e-12  2.823e-12   0.448    0.654
## factor(month)6  -6.016e-13  2.773e-12  -0.217    0.828
## factor(month)7  -1.147e-12  2.760e-12  -0.416    0.678
## factor(month)8  -7.036e-13  2.745e-12  -0.256    0.798
## factor(month)9  -5.590e-13  2.743e-12  -0.204    0.839
## factor(month)10 -5.841e-13  2.747e-12  -0.213    0.832
## factor(month)11 -6.256e-13  2.778e-12  -0.225    0.822
## factor(month)12 -6.716e-14  2.909e-12  -0.023    0.982
## year            -8.999e-16  5.952e-15  -0.151    0.880
## factor(type)ET  -2.108e-13  8.061e-13  -0.261    0.794
## factor(type)NR   2.004e-12  1.290e-12   1.553    0.121
## factor(type)SS  -5.260e-14  5.490e-13  -0.096    0.924
## factor(type)TS   1.115e-13  4.238e-13   0.263    0.792
##
## Residual standard error: 2.712e-12 on 669 degrees of freedom
## Multiple R-squared:  0.0184, Adjusted R-squared:  -0.002147
## F-statistic: 0.8955 on 14 and 669 DF,  p-value: 0.5637
```

```
summary(lm_b2_season)
```

```
##
## Call:
## lm(formula = y2 ~ factor(season) + year + factor(type))
##
## Residuals:
##        Min         1Q     Median         3Q        Max
```

```
## -3.864e-11 -2.430e-13  6.200e-14  4.030e-13  2.750e-11
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)             2.541e-12  1.191e-11   0.213   0.8311
## factor(season)spring    1.589e-12  6.788e-13   2.341   0.0195 *
## factor(season)summer -2.215e-13  2.147e-13  -1.031   0.3027
## factor(season)winter    5.162e-13  9.809e-13   0.526   0.5989
## year                   -1.294e-15  5.926e-15  -0.218   0.8273
## factor(type)ET         -3.973e-13  7.774e-13  -0.511   0.6095
## factor(type)NR          1.870e-12  1.270e-12   1.473   0.1413
## factor(type)SS         -1.184e-13  5.427e-13  -0.218   0.8274
## factor(type)TS          6.960e-14  4.204e-13   0.166   0.8686
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.705e-12 on 675 degrees of freedom
## Multiple R-squared:  0.01471,    Adjusted R-squared:  0.003033
## F-statistic:  1.26 on 8 and 675 DF,  p-value: 0.2617
```

B3

```
#regress on beta_3:
y3 = B_final[1: 684,4]
lm_b3 = lm(y3 ~ factor(month) + year + factor(type))
lm_b3_season = lm(y3~ factor(season) + year + factor(type))
summary(lm_b3)
```

```
##
## Call:
## lm(formula = y3 ~ factor(month) + year + factor(type))
##
## Residuals:
##        Min          1Q      Median          3Q         Max
## -3.319e-11 -5.320e-13 -1.210e-13  2.510e-13  1.178e-10
##
## Coefficients:
##                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)     -2.606e-11  2.340e-11  -1.114    0.266
## factor(month)4   2.824e-13  6.399e-12   0.044    0.965
## factor(month)5  -1.756e-12  5.399e-12  -0.325    0.745
## factor(month)6   4.005e-13  5.304e-12   0.076    0.940
## factor(month)7   5.635e-13  5.279e-12   0.107    0.915
## factor(month)8   5.287e-13  5.251e-12   0.101    0.920
## factor(month)9   4.924e-13  5.247e-12   0.094    0.925
## factor(month)10  1.453e-12  5.254e-12   0.277    0.782
## factor(month)11 -8.053e-13  5.313e-12  -0.152    0.880
## factor(month)12  7.468e-13  5.564e-12   0.134    0.893
## year             1.272e-14  1.138e-14   1.117    0.264
## factor(type)ET   4.116e-13  1.542e-12   0.267    0.790
## factor(type)NR  -1.893e-12  2.467e-12  -0.767    0.443
## factor(type)SS   3.162e-13  1.050e-12   0.301    0.763
## factor(type)TS   3.595e-13  8.107e-13   0.443    0.658
```

```
##
## Residual standard error: 5.187e-12 on 669 degrees of freedom
## Multiple R-squared:  0.01615,    Adjusted R-squared:  -0.004437
## F-statistic: 0.7845 on 14 and 669 DF,  p-value: 0.6868
```

```
summary(lm_b3_season)
```

```
##
## Call:
## lm(formula = y3 ~ factor(season) + year + factor(type))
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -3.343e-11 -4.290e-13 -1.720e-13  1.350e-13  1.185e-10
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -2.486e-11  2.283e-11  -1.089   0.2765
## factor(season)spring -2.195e-12  1.301e-12  -1.687   0.0921 .
## factor(season)summer -1.634e-13  4.117e-13  -0.397   0.6916
## factor(season)winter -3.157e-14  1.881e-12  -0.017   0.9866
## year                  1.248e-14  1.136e-14   1.099   0.2723
## factor(type)ET        2.816e-13  1.490e-12   0.189   0.8502
## factor(type)NR       -2.394e-12  2.434e-12  -0.984   0.3257
## factor(type)SS        2.792e-13  1.040e-12   0.268   0.7885
## factor(type)TS        3.266e-13  8.060e-13   0.405   0.6855
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 5.186e-12 on 675 degrees of freedom
## Multiple R-squared:  0.007856,   Adjusted R-squared:  -0.003903
## F-statistic: 0.6681 on 8 and 675 DF,  p-value: 0.7199
```

B4

```
#regress on beta_4:
y4 = B_final[1: 684,5]
lm_b4 = lm(y4 ~ factor(month) + year + factor(type))
lm_b4_season = lm(y4~ factor(season) + year + factor(type))
summary(lm_b4)
```

```
##
## Call:
## lm(formula = y4 ~ factor(month) + year + factor(type))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.99662  0.00056  0.00381  0.00628  0.07282
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1.162e+00  2.978e-01   3.901 0.000105 ***
## factor(month)4   5.457e-04  8.145e-02   0.007 0.994657
## factor(month)5  -6.387e-02  6.872e-02  -0.930 0.352953
```

```
## factor(month)6   4.621e-03  6.751e-02   0.068 0.945449
## factor(month)7   6.134e-03  6.719e-02   0.091 0.927286
## factor(month)8   6.966e-04  6.683e-02   0.010 0.991687
## factor(month)9   1.515e-03  6.678e-02   0.023 0.981908
## factor(month)10  5.135e-03  6.687e-02   0.077 0.938816
## factor(month)11  4.512e-03  6.763e-02   0.067 0.946828
## factor(month)12  3.106e-03  7.082e-02   0.044 0.965025
## year            -7.938e-05  1.449e-04  -0.548 0.583994
## factor(type)ET  -2.693e-03  1.962e-02  -0.137 0.890915
## factor(type)NR  -7.471e-03  3.140e-02  -0.238 0.812022
## factor(type)SS  -4.697e-03  1.337e-02  -0.351 0.725392
## factor(type)TS  -1.126e-02  1.032e-02  -1.091 0.275476
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.06603 on 669 degrees of freedom
## Multiple R-squared:  0.02355,    Adjusted R-squared:  0.003117
## F-statistic: 1.153 on 14 and 669 DF,  p-value: 0.3081
```

```
summary(lm_b4_season)
```

```
##
## Call:
## lm(formula = y4 ~ factor(season) + year + factor(type))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.99750  0.00250  0.00417  0.00564  0.06582
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)           1.150e+00  2.898e-01   3.969 7.99e-05 ***
## factor(season)spring -5.962e-02  1.652e-02  -3.609 0.000331 ***
## factor(season)summer -3.111e-04  5.227e-03  -0.060 0.952549
## factor(season)winter -5.371e-04  2.387e-02  -0.022 0.982058
## year                 -7.249e-05  1.442e-04  -0.503 0.615406
## factor(type)ET        2.358e-03  1.892e-02   0.125 0.900874
## factor(type)NR       -5.387e-03  3.091e-02  -0.174 0.861678
## factor(type)SS       -2.991e-03  1.321e-02  -0.226 0.820915
## factor(type)TS       -1.092e-02  1.023e-02  -1.067 0.286137
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.06584 on 675 degrees of freedom
## Multiple R-squared:  0.02036,    Adjusted R-squared:  0.008746
## F-statistic: 1.753 on 8 and 675 DF,  p-value: 0.08323
```

Tables for coefficients

```
b0 = summary(lm_b0)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rowname, Estimate
  rename(b0 = Estimate)
b1 = summary(lm_b1)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rowname, Estimate
  rename(b1 = Estimate)
b2 = summary(lm_b2)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rowname, Estimate
  rename(b2 = Estimate)
b3 = summary(lm_b3)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rowname, Estimate
```

```
  rename(b3 = Estimate)
b4 = summary(lm_b4)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rowname, Estimat
  rename(b4 = Estimate)
table_lm = list(b0,b1,b2,b3,b4) %>% reduce(full_join, by = "rowname")

b0_sea = summary(lm_b0_season)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rownar
  rename(b0 = Estimate)
b1_sea = summary(lm_b1_season)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rownar
  rename(b1 = Estimate)
b2_sea = summary(lm_b2_season)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rownar
  rename(b2 = Estimate)
b3_sea = summary(lm_b3_season)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rownar
  rename(b3 = Estimate)
b4_sea = summary(lm_b4_season)$coefficients %>% as.data.frame %>% rownames_to_column() %>% select(rownar
  rename(b4 = Estimate)
table_sealm = list(b0_sea,b1_sea,b2_sea,b3_sea,b4_sea) %>% reduce(full_join, by = "rowname")

table_lm
```

```
##            rowname            b0            b1            b2            b3
## 1      (Intercept) -8.544216e-03  1.000285e+00  2.284356e-12 -2.605571e-11
## 2   factor(month)4 -6.276737e-05  2.092246e-06 -9.055738e-13  2.824345e-13
## 3   factor(month)5 -3.031430e-05  1.010477e-06  1.265083e-12 -1.756122e-12
## 4   factor(month)6 -5.661897e-05  1.887299e-06 -6.016368e-13  4.005203e-13
## 5   factor(month)7 -7.944015e-05  2.648005e-06 -1.146768e-12  5.634589e-13
## 6   factor(month)8  1.055175e-04 -3.517250e-06 -7.036349e-13  5.287417e-13
## 7   factor(month)9 -6.269884e-05  2.089961e-06 -5.590408e-13  4.923610e-13
## 8  factor(month)10 -6.161664e-05  2.053888e-06 -5.841142e-13  1.453242e-12
## 9  factor(month)11 -7.217957e-05  2.405986e-06 -6.255668e-13 -8.053132e-13
## 10 factor(month)12 -5.733716e-05  1.911239e-06 -6.716282e-14  7.468189e-13
## 11            year  4.261038e-06 -1.420346e-07 -8.998816e-16  1.272154e-14
## 12  factor(type)ET  7.523747e-05 -2.507916e-06 -2.107560e-13  4.115925e-13
## 13  factor(type)NR  1.002854e-04 -3.342847e-06  2.003795e-12 -1.893146e-12
## 14  factor(type)SS  1.158832e-04 -3.862773e-06 -5.260397e-14  3.161945e-13
## 15  factor(type)TS  1.675682e-04 -5.585608e-06  1.115433e-13  3.595276e-13
##                b4
## 1   1.161711e+00
## 2   5.456601e-04
## 3  -6.387428e-02
## 4   4.620979e-03
## 5   6.134155e-03
## 6   6.966118e-04
## 7   1.515014e-03
## 8   5.134689e-03
## 9   4.512004e-03
## 10  3.106347e-03
## 11 -7.938004e-05
## 12 -2.692520e-03
## 13 -7.470993e-03
## 14 -4.697021e-03
## 15 -1.126174e-02
```

```
table_sealm
```

```
##                rowname            b0            b1            b2            b3
```

```
## 1          (Intercept) -8.549512e-03  1.000285e+00  2.541061e-12 -2.486117e-11
## 2 factor(season)spring  3.123814e-05 -1.041271e-06  1.589006e-12 -2.195045e-12
## 3 factor(season)summer  1.077581e-04 -3.591938e-06 -2.214843e-13 -1.633690e-13
## 4 factor(season)winter  1.476989e-05 -4.923296e-07  5.161631e-13 -3.156528e-14
## 5                 year  4.229965e-06 -1.409988e-07 -1.293631e-15  1.248084e-14
## 6       factor(type)ET  6.783860e-05 -2.261287e-06 -3.973267e-13  2.816400e-13
## 7       factor(type)NR  7.649021e-05 -2.549674e-06  1.869887e-12 -2.394404e-12
## 8       factor(type)SS  1.161772e-04 -3.872572e-06 -1.183766e-13  2.792108e-13
## 9       factor(type)TS  1.729048e-04 -5.763492e-06  6.960132e-14  3.265916e-13
##              b4
## 1  1.150287e+00
## 2 -5.961979e-02
## 3 -3.111422e-04
## 4 -5.371044e-04
## 5 -7.249119e-05
## 6  2.357786e-03
## 7 -5.387178e-03
## 8 -2.991390e-03
## 9 -1.092323e-02
```