

Assignment 8: Time Series Analysis

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OVERVIEW

This exercise accompanies the lessons in Environmental Data Analytics on generalized linear models.

Directions

1. Rename this file `<FirstLast>_A08_TimeSeries.Rmd` (replacing `<FirstLast>` with your first and last name).
2. Change “Student Name” on line 3 (above) with your name.
3. Work through the steps, **creating code and output** that fulfill each instruction.
4. Be sure to **answer the questions** in this assignment document.
5. When you have completed the assignment, **Knit** the text and code into a single PDF file.

Set up

1. Set up your session:
 - Check your working directory
 - Load the tidyverse, lubridate, zoo, and trend packages
 - Set your ggplot theme

```
#1  
getwd()
```

```
## [1] "/Users/cherry/Desktop/EDA/EDA-Spring2023"
```

```
#install.packages("zoo")  
#install.packages("trend")  
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.3.2 --  
## v ggplot2 3.4.1      v purrr   1.0.1  
## v tibble  3.1.8      v dplyr  1.1.0  
## v tidyr   1.3.0      v stringr 1.5.0  
## v readr   2.1.4      v forcats 1.0.0  
## -- Conflicts ----- tidyverse_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag()    masks stats::lag()
```

```
library(lubridate)
```

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

```
library(zoo)
```

```
##  
## Attaching package: 'zoo'  
##  
## The following objects are masked from 'package:base':  
##  
##    as.Date, as.Date.numeric
```

```
library(trend)  
defaulttheme <- theme_light(base_size = 20) + theme(axis.text = element_text(color = "purple"), legend.p  
theme_set(defaulttheme)
```

2. Import the ten datasets from the Ozone_TimeSeries folder in the Raw data folder. These contain ozone concentrations at Garinger High School in North Carolina from 2010-2019 (the EPA air database only allows downloads for one year at a time). Import these either individually or in bulk and then combine them into a single dataframe named **GaringerOzone** of 3589 observation and 20 variables.

```
#2  
GraingerNC10 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2010_raw.csv")  
GraingerNC11 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2011_raw.csv")  
GraingerNC12 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2012_raw.csv")  
GraingerNC13 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2013_raw.csv")  
GraingerNC14 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2014_raw.csv")  
GraingerNC15 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2015_raw.csv")  
GraingerNC16 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2016_raw.csv")  
GraingerNC17 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2017_raw.csv")  
GraingerNC18 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2018_raw.csv")  
GraingerNC19 <- read.csv("./Data/Raw/Ozone_TimeSeries/EPAair_03_GaringerNC2019_raw.csv")  
  
GraingerNC_combined <- rbind(GraingerNC10, GraingerNC11, GraingerNC12, GraingerNC13, GraingerNC14, GraingerNC15, GraingerNC16, GraingerNC17, GraingerNC18, GraingerNC19)
```

Wrangle

3. Set your date column as a date class.
4. Wrangle your dataset so that it only contains the columns Date, Daily.Max.8.hour.Ozone.Concentration, and DAILY_AQI_VALUE.
5. Notice there are a few days in each year that are missing ozone concentrations. We want to generate a daily dataset, so we will need to fill in any missing days with NA. Create a new data frame that contains a sequence of dates from 2010-01-01 to 2019-12-31 (hint: `as.data.frame(seq())`). Call this new data frame Days. Rename the column name in Days to "Date".

6. Use a `left_join` to combine the data frames. Specify the correct order of data frames within this function so that the final dimensions are 3652 rows and 3 columns. Call your combined data frame `GraingerOzone`.

```
#3
GraingerNC_combined$Date <- mdy(GraingerNC_combined$Date)
# class(GraingerNC_combined$Date)
#4
GraingerNC_wrangled <- select(GraingerNC_combined, Date, Daily.Max.8.hour.Ozone.Concentration, DAILY_AQI)

#5
Days <- as.data.frame(seq(as.Date("2010-01-01"), as.Date("2019-12-31"), by = 1))
colnames(Days) <- "Date"

#6
GraingerOzone <- left_join(Days, GraingerNC_wrangled, by = "Date")
```

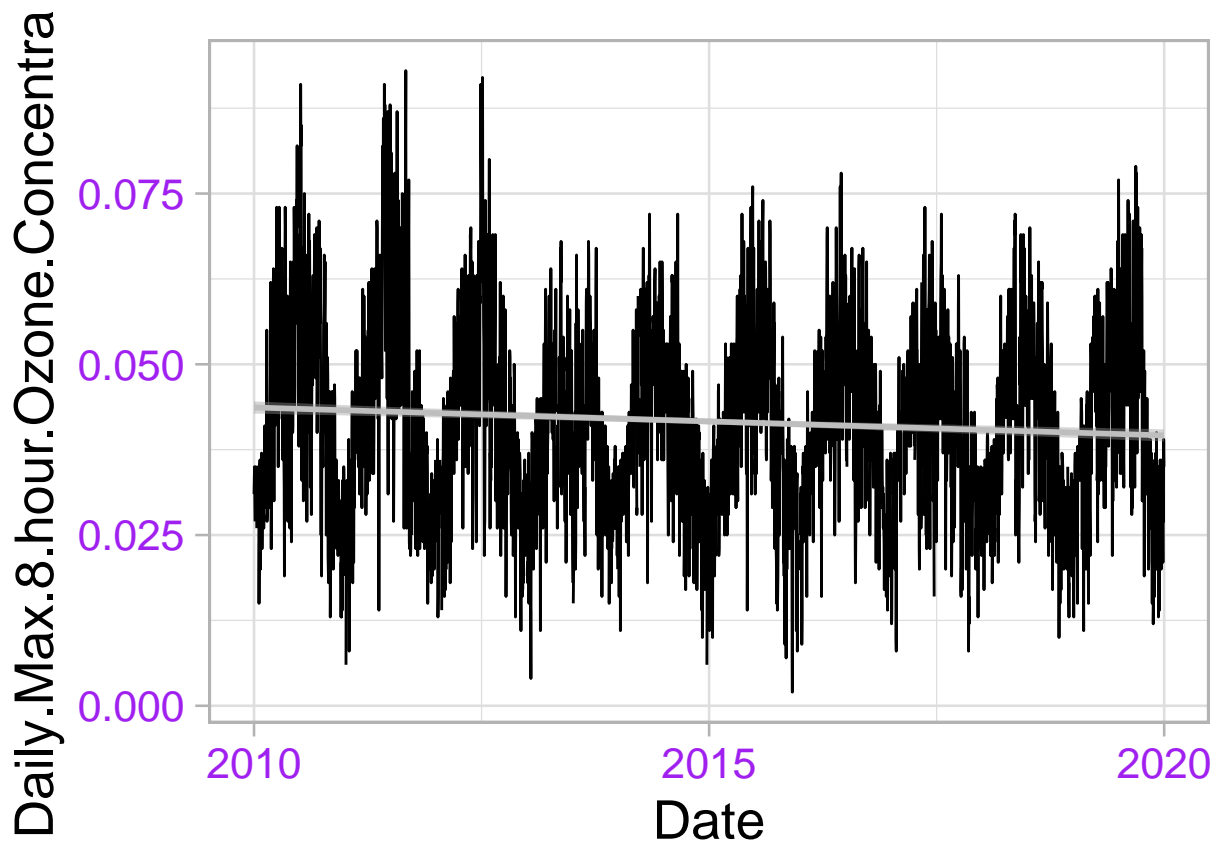
Visualize

7. Create a line plot depicting ozone concentrations over time. In this case, we will plot actual concentrations in ppm, not AQI values. Format your axes accordingly. Add a smoothed line showing any linear trend of your data. Does your plot suggest a trend in ozone concentration over time?

```
#7
Grainger_plot <- ggplot(data = GraingerOzone, mapping = aes(x = Date, y = Daily.Max.8.hour.Ozone.Concentration)) +
  geom_line() +
  geom_smooth(method = lm, color = "Grey")
print(Grainger_plot)
```

```
## 'geom_smooth()' using formula = 'y ~ x'
```

```
## Warning: Removed 63 rows containing non-finite values ('stat_smooth()').
```



Answer: The ozone concentration is declining over time

Time Series Analysis

Study question: Have ozone concentrations changed over the 2010s at this station?

8. Use a linear interpolation to fill in missing daily data for ozone concentration. Why didn't we use a piecewise constant or spline interpolation?

```
#8
# checking na values - summary(GraingerOzone)

GraingerNC_clean <- GraingerOzone %>%
  mutate(Daily.Max.8.hour.Ozone.Clean = zoo::na.approx(Daily.Max.8.hour.Ozone.Concentration,
  #checking na values - summary(GraingerNC_clean)
```

Answer: There is no observable pattern in data. Since the variation of the concentration increases and decreases a lot, a piecewise constant interpolation would have been a potentially lesser accurate representation of the missing data.

9. Create a new data frame called `GraingerOzone.monthly` that contains aggregated data: mean ozone concentrations for each month. In your pipe, you will need to first add columns for year and month to form the groupings. In a separate line of code, create a new Date column with each month-year combination being set as the first day of the month (this is for graphing purposes only)

```
#9
GaringerOzone.monthly <- GraingerNC_clean %>%
  mutate(year = year(Date), month = month(Date)) %>%
  group_by(year, month) %>%
  mutate(mean_Ozone = mean(Daily.Max.8.hour.Ozone.Concentration.clean), Date = floor_date(Date, unit =
select(-c(Daily.Max.8.hour.Ozone.Concentration.clean, Daily.Max.8.hour.Ozone.Concentration, DAILY_AQI
```

10. Generate two time series objects. Name the first `GaringerOzone.daily.ts` and base it on the dataframe of daily observations. Name the second `GaringerOzone.monthly.ts` and base it on the monthly average ozone values. Be sure that each specifies the correct start and end dates and the frequency of the time series.

```
#10
#Creating a daily time series object
GaringerOzone.daily.ts <- ts(GraingerNC_clean$Daily.Max.8.hour.Ozone.Concentration.clean,
                             start=c(2010,1,2019),
                             frequency=365)

#Creating a daily time series object
GaringerOzone.monthly.ts <- ts(GaringerOzone.monthly$mean_Ozone,
                               start=c(2010,1,2019),
                               frequency=12)
```

11. Decompose the daily and the monthly time series objects and plot the components using the `plot()` function.

```
#11

Ozone_daily_decomp <- stl(GaringerOzone.daily.ts,s.window = "periodic")
print(Ozone_daily_decomp)
```

```
## Call:
## stl(x = GaringerOzone.daily.ts, s.window = "periodic")
##
## Components
## Time Series:
## Start = c(2010, 1)
## End = c(2020, 2)
## Frequency = 365
##          seasonal      trend      remainder
## 2010.000 -1.277818e-02 0.04376456 1.362339e-05
## 2010.003 -1.282469e-02 0.04376967 2.055027e-03
## 2010.005 -1.611417e-02 0.04377478 7.339398e-03
## 2010.008 -1.841388e-02 0.04377989 5.633991e-03
## 2010.011 -1.841358e-02 0.04378500 1.628583e-03
## 2010.014 -1.351328e-02 0.04379011 -2.768239e-04
## 2010.016 -1.031314e-02 0.04379522 -4.820800e-04
## 2010.019 -1.151299e-02 0.04380033 2.712664e-03
## 2010.022 -1.641284e-02 0.04380544 4.607408e-03
## 2010.025 -1.511270e-02 0.04381054 3.302152e-03
## 2010.027 -1.361255e-02 0.04381565 -2.031042e-04
## 2010.030 -1.241239e-02 0.04382076 -5.408376e-03
```

```

## 2010.033 -1.438723e-02 0.04382587 -1.188648e-03
## 2010.036 -1.136206e-02 0.04383098 -1.968920e-03
## 2010.038 -1.233690e-02 0.04383609 1.250808e-03
## 2010.041 -1.486174e-02 0.04384120 6.020536e-03
## 2010.044 -1.601258e-02 0.04384631 1.662631e-04
## 2010.047 -1.351341e-02 0.04385142 4.661990e-03
## 2010.049 -1.198092e-02 0.04385653 -2.875616e-03
## 2010.052 -1.084842e-02 0.04386164 1.986778e-03
## 2010.055 -1.051592e-02 0.04386675 -1.835083e-02
## 2010.058 -1.298325e-02 0.04387186 -7.888612e-03
## 2010.060 -1.255058e-02 0.04387697 -5.326394e-03
## 2010.063 -1.185124e-02 0.04388208 2.969156e-03
## 2010.066 -8.985233e-03 0.04388719 1.098040e-03
## 2010.068 -1.146923e-02 0.04389230 -4.423076e-03
## 2010.071 -1.151832e-02 0.04389741 -1.237910e-02
## 2010.074 -7.217406e-03 0.04390252 -5.685116e-03
## 2010.077 -1.021650e-02 0.04390763 -6.911366e-04
## 2010.079 -4.615585e-03 0.04391274 -7.297157e-03
## 2010.082 -6.814675e-03 0.04391785 -1.031767e-04
## 2010.085 -7.013644e-03 0.04392296 -2.909318e-03
## 2010.088 -5.512613e-03 0.04392807 -1.541546e-02
## 2010.090 -5.711581e-03 0.04393318 -9.221600e-03
## 2010.093 -1.061055e-02 0.04393829 -3.327741e-03
## 2010.096 -1.090952e-02 0.04394340 -4.033883e-03
## 2010.099 -8.308487e-03 0.04394851 -9.640024e-03
## 2010.101 -6.807456e-03 0.04395362 -5.146165e-03
## 2010.104 -1.010642e-02 0.04395873 -3.852306e-03
## 2010.107 -7.605393e-03 0.04396384 -1.035845e-02
## 2010.110 -9.204362e-03 0.04396895 1.235412e-03
## 2010.112 -6.204067e-03 0.04397406 -7.699935e-04
## 2010.115 -9.753772e-03 0.04397917 -5.225398e-03
## 2010.118 -8.103477e-03 0.04398428 5.119197e-03
## 2010.121 -5.203182e-03 0.04398939 2.137915e-04
## 2010.123 -2.802886e-03 0.04399450 -7.191613e-03
## 2010.126 -4.102334e-03 0.04399961 -1.897276e-03
## 2010.129 -4.901782e-03 0.04400472 -2.102938e-03
## 2010.132 -1.601230e-03 0.04400983 -3.408600e-03
## 2010.134 -4.200678e-03 0.04401494 1.857384e-04
## 2010.137 -2.400126e-03 0.04402005 -6.199236e-04
## 2010.140 -3.398722e-03 0.04402516 1.437356e-02
## 2010.142 -5.997319e-03 0.04403027 -1.103295e-02
## 2010.145 -8.895915e-03 0.04403538 -7.139464e-03
## 2010.148 -1.099451e-02 0.04404049 -5.045977e-03
## 2010.151 -2.093108e-03 0.04404560 -5.952490e-03
## 2010.153 -2.791506e-03 0.04404873 -2.572261e-04
## 2010.156 -4.489904e-03 0.04405187 3.438038e-03
## 2010.159 -1.238302e-03 0.04405500 -5.816697e-03
## 2010.162 -2.186701e-03 0.04405813 -8.871433e-03
## 2010.164 -3.685099e-03 0.04406127 -1.137617e-02
## 2010.167 -4.384650e-03 0.04406440 -5.679751e-03
## 2010.170 -2.484201e-03 0.04406753 4.166658e-04
## 2010.173 -4.683752e-03 0.04407067 3.613083e-03
## 2010.175 -3.983303e-03 0.04407380 4.909500e-03
## 2010.178 3.171464e-04 0.04407694 4.605917e-03

```

```

## 2010.181 2.168143e-04 0.04408007 1.470312e-02
## 2010.184 3.316482e-03 0.04408320 1.460031e-02
## 2010.186 1.516150e-03 0.04408634 -5.602488e-03
## 2010.189 1.940818e-03 0.04408947 -2.303029e-02
## 2010.192 6.548619e-05 0.04409260 -7.158091e-03
## 2010.195 2.889635e-03 0.04409574 -2.985373e-03
## 2010.197 9.137831e-04 0.04409887 -8.012656e-03
## 2010.200 5.129316e-04 0.04410201 -5.614938e-03
## 2010.203 4.662080e-03 0.04410514 -1.376722e-02
## 2010.205 5.111229e-03 0.04410827 -2.195023e-04
## 2010.208 7.610694e-03 0.04411141 -7.221015e-04
## 2010.211 3.310159e-03 0.04411454 1.257530e-02
## 2010.214 6.384625e-03 0.04411768 1.349770e-02
## 2010.216 2.559090e-03 0.04412081 2.320101e-03
## 2010.219 1.333556e-03 0.04412394 -1.545750e-02
## 2010.222 6.208922e-03 0.04412708 -4.335998e-03
## 2010.225 2.809288e-03 0.04413021 5.060502e-03
## 2010.227 5.909654e-03 0.04413334 6.957002e-03
## 2010.230 3.310020e-03 0.04413648 -6.446498e-03
## 2010.233 2.410387e-03 0.04413961 -5.499981e-04
## 2010.236 1.773378e-04 0.04414275 -3.200831e-04
## 2010.238 1.744289e-03 0.04414588 -8.901681e-04
## 2010.241 6.611240e-03 0.04414901 -4.760253e-03
## 2010.244 9.411525e-03 0.04415215 -2.563671e-03
## 2010.247 7.461809e-03 0.04415528 9.382910e-03
## 2010.249 9.512094e-03 0.04415841 1.932949e-02
## 2010.252 9.612379e-03 0.04416155 1.122607e-02
## 2010.255 8.612663e-03 0.04416468 1.222266e-02
## 2010.258 6.112948e-03 0.04416782 6.719237e-03
## 2010.260 8.213232e-03 0.04417095 1.615819e-03
## 2010.263 8.412943e-03 0.04417408 3.412974e-03
## 2010.266 1.812654e-03 0.04417722 -1.098987e-02
## 2010.268 2.312365e-03 0.04418035 3.507285e-03
## 2010.271 5.912075e-03 0.04418348 7.904441e-03
## 2010.274 6.211786e-03 0.04418662 1.560160e-02
## 2010.277 1.231230e-02 0.04418975 1.649794e-02
## 2010.279 1.241282e-02 0.04419289 1.239429e-02
## 2010.282 7.513338e-03 0.04419602 -7.709357e-03
## 2010.285 9.413855e-03 0.04419915 5.386992e-03
## 2010.288 5.214372e-03 0.04420229 1.658334e-02
## 2010.290 6.215254e-03 0.04420542 4.579325e-03
## 2010.293 7.816136e-03 0.04420855 1.975310e-03
## 2010.296 6.117018e-03 0.04421169 -4.328706e-03
## 2010.299 4.817899e-03 0.04421482 2.967279e-03
## 2010.301 6.218781e-03 0.04421796 -2.436737e-03
## 2010.304 8.619837e-03 0.04421934 1.216082e-02
## 2010.307 9.820892e-03 0.04422073 1.295838e-02
## 2010.310 6.521948e-03 0.04422212 -8.744067e-03
## 2010.312 5.323004e-03 0.04422351 -5.546511e-03
## 2010.315 1.824059e-03 0.04422489 -2.048954e-03
## 2010.318 2.624398e-03 0.04422628 -1.085068e-02
## 2010.321 9.624736e-03 0.04422767 -8.852406e-03
## 2010.323 6.875074e-03 0.04422906 7.895868e-03
## 2010.326 4.725412e-03 0.04423045 1.204414e-02

```

```

## 2010.329 4.125750e-03 0.04423183 -1.235758e-02
## 2010.332 1.225862e-03 0.04423322 -1.345908e-02
## 2010.334 -6.740255e-04 0.04423461 -2.456058e-02
## 2010.337 8.726087e-03 0.04423600 4.037916e-03
## 2010.340 8.526199e-03 0.04423739 9.236416e-03
## 2010.342 1.017631e-02 0.04423877 1.858492e-02
## 2010.345 7.026707e-03 0.04424016 1.873313e-02
## 2010.348 1.022710e-02 0.04424155 5.313479e-04
## 2010.351 1.152750e-02 0.04424294 -1.177044e-02
## 2010.353 1.062790e-02 0.04424432 -3.872220e-03
## 2010.356 6.928291e-03 0.04424571 -1.917400e-02
## 2010.359 9.728781e-03 0.04424710 -1.297588e-02
## 2010.362 9.429270e-03 0.04424849 -3.677758e-03
## 2010.364 8.529759e-03 0.04424988 1.220365e-03
## 2010.367 7.630249e-03 0.04425126 8.118487e-03
## 2010.370 9.030738e-03 0.04425265 -5.283390e-03
## 2010.373 2.331056e-03 0.04425404 -1.958510e-02
## 2010.375 1.013137e-02 0.04425543 -1.238680e-02
## 2010.378 7.831691e-03 0.04425682 -9.088506e-03
## 2010.381 5.832008e-03 0.04425820 3.909789e-03
## 2010.384 1.033233e-02 0.04425959 -4.591917e-03
## 2010.386 7.932192e-03 0.04426098 -6.193170e-03
## 2010.389 7.232057e-03 0.04426237 -2.494424e-03
## 2010.392 6.331923e-03 0.04426375 -8.595677e-03
## 2010.395 3.331789e-03 0.04426514 -2.159693e-02
## 2010.397 1.133165e-02 0.04426653 -5.981843e-04
## 2010.400 9.531520e-03 0.04426792 1.120056e-02
## 2010.403 5.831385e-03 0.04426931 7.899309e-03
## 2010.405 4.731251e-03 0.04427069 -4.001945e-03
## 2010.408 5.531117e-03 0.04427208 -1.480320e-02
## 2010.411 4.030982e-03 0.04427347 -2.430445e-02
## 2010.414 4.830793e-03 0.04427486 8.943503e-04
## 2010.416 7.730603e-03 0.04427625 -4.006848e-03
## 2010.419 1.083041e-02 0.04427763 -2.108046e-03
## 2010.422 1.023022e-02 0.04427902 -1.050924e-02
## 2010.425 9.830033e-03 0.04428041 -1.411044e-02
## 2010.427 8.829993e-03 0.04428180 -1.211179e-02
## 2010.430 6.829954e-03 0.04428318 1.886862e-03
## 2010.433 1.092991e-02 0.04428457 9.785514e-03
## 2010.436 7.229874e-03 0.04428596 4.841661e-04
## 2010.438 1.452983e-02 0.04428735 -1.281718e-02
## 2010.441 1.142953e-02 0.04428874 1.728173e-02
## 2010.444 8.229232e-03 0.04429012 1.648064e-02
## 2010.447 9.728931e-03 0.04429151 -1.002044e-02
## 2010.449 7.028629e-03 0.04429290 -4.321529e-03
## 2010.452 1.402833e-02 0.04429429 7.677385e-03
## 2010.455 1.882812e-02 0.04429472 4.877163e-03
## 2010.458 1.632791e-02 0.04429514 -4.623058e-03
## 2010.460 1.422771e-02 0.04429557 2.476721e-03
## 2010.463 1.162750e-02 0.04429600 8.076500e-03
## 2010.466 1.112729e-02 0.04429643 1.576279e-03
## 2010.468 1.092649e-02 0.04429685 1.877666e-02
## 2010.471 1.242568e-02 0.04429728 1.327703e-02
## 2010.474 9.524879e-03 0.04429771 2.817741e-02

```



```

## 2010.477 9.024073e-03 0.04429814 8.677788e-03
## 2010.479 6.373268e-03 0.04429857 1.032817e-02
## 2010.482 8.322602e-03 0.04429899 1.537840e-02
## 2010.485 1.332194e-02 0.04429942 4.378641e-03
## 2010.488 9.121269e-03 0.04429985 -1.421120e-03
## 2010.490 1.472060e-02 0.04430028 1.979118e-03
## 2010.493 1.581994e-02 0.04430071 -2.212064e-02
## 2010.496 1.841928e-02 0.04430113 2.795837e-04
## 2010.499 9.318626e-03 0.04430156 3.379811e-03
## 2010.501 8.117970e-03 0.04430199 1.158004e-02
## 2010.504 1.071731e-02 0.04430242 1.398027e-02
## 2010.507 1.046666e-02 0.04430285 3.230494e-03
## 2010.510 4.016512e-03 0.04430327 1.168021e-02
## 2010.512 1.091636e-02 0.04430370 3.577993e-02
## 2010.515 6.016216e-03 0.04430413 3.167965e-02
## 2010.518 6.616068e-03 0.04430456 3.407937e-02
## 2010.521 9.315921e-03 0.04430499 3.790926e-04
## 2010.523 5.815775e-03 0.04430541 1.187881e-02
## 2010.526 7.315629e-03 0.04430584 -1.862147e-02
## 2010.529 1.016548e-02 0.04430627 -1.347175e-02
## 2010.532 6.415338e-03 0.04430670 4.277964e-03
## 2010.534 2.315192e-03 0.04430713 2.037768e-02
## 2010.537 1.914739e-03 0.04430755 6.777706e-03
## 2010.540 7.014287e-03 0.04430798 -1.132227e-02
## 2010.542 1.021383e-02 0.04430841 -2.452224e-02
## 2010.545 8.313381e-03 0.04430884 -5.622220e-03
## 2010.548 1.051293e-02 0.04430927 -8.221951e-04
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## 2019.351 1.152750e-02 0.04117089 -6.698389e-03

```

```

## 2019.353 1.062790e-02 0.04118405 -6.811947e-03
## 2019.356 6.928291e-03 0.04119721 -7.125506e-03
## 2019.359 9.728781e-03 0.04121038 -2.193916e-02
## 2019.362 9.429270e-03 0.04122354 -1.565281e-02
## 2019.364 8.529759e-03 0.04123670 -1.476646e-02
## 2019.367 7.630249e-03 0.04124986 -7.880113e-03
## 2019.370 9.030738e-03 0.04126303 -3.293765e-03
## 2019.373 2.331056e-03 0.04127619 6.392755e-03
## 2019.375 1.013137e-02 0.04128935 5.579275e-03
## 2019.378 7.831691e-03 0.04130251 1.286579e-02
## 2019.381 5.832008e-03 0.04131568 1.185231e-02
## 2019.384 1.033233e-02 0.04132884 -1.661166e-03
## 2019.386 7.932192e-03 0.04134200 -2.274194e-03
## 2019.389 7.232057e-03 0.04135516 1.341278e-02
## 2019.392 6.331923e-03 0.04136833 -2.700250e-03
## 2019.395 3.331789e-03 0.04138149 -6.713278e-03
## 2019.397 1.133165e-02 0.04139465 -7.263066e-04
## 2019.400 9.531520e-03 0.04140781 6.060665e-03
## 2019.403 5.831385e-03 0.04142098 -2.523629e-04
## 2019.405 4.731251e-03 0.04143414 -1.653911e-04
## 2019.408 5.531117e-03 0.04144730 8.021581e-03
## 2019.411 4.030982e-03 0.04146047 7.508553e-03
## 2019.414 4.830793e-03 0.04147363 4.695580e-03
## 2019.416 7.730603e-03 0.04148679 8.782607e-03
## 2019.419 1.083041e-02 0.04149995 5.669634e-03
## 2019.422 1.023022e-02 0.04151312 1.225666e-02
## 2019.425 9.830033e-03 0.04152628 9.643689e-03
## 2019.427 8.829993e-03 0.04153944 8.630566e-03
## 2019.430 6.829954e-03 0.04155260 -4.382556e-03
## 2019.433 1.092991e-02 0.04156577 -1.049568e-02
## 2019.436 7.229874e-03 0.04157893 -2.680880e-02
## 2019.438 1.452983e-02 0.04159209 -8.121925e-03
## 2019.441 1.142953e-02 0.04160525 -2.303479e-02
## 2019.444 8.229232e-03 0.04161842 -1.384765e-02
## 2019.447 9.728931e-03 0.04163158 -3.605087e-04
## 2019.449 7.028629e-03 0.04164474 -9.673370e-03
## 2019.452 1.402833e-02 0.04165790 -1.068623e-02
## 2019.455 1.882812e-02 0.04167107 5.008128e-04
## 2019.458 1.632791e-02 0.04168423 -4.012143e-03
## 2019.460 1.422771e-02 0.04169739 -1.192510e-02
## 2019.463 1.162750e-02 0.04171055 -1.033805e-02
## 2019.466 1.112729e-02 0.04172372 -1.985101e-02
## 2019.468 1.092649e-02 0.04173688 -1.966337e-02
## 2019.471 1.242568e-02 0.04175004 -9.175725e-03
## 2019.474 9.524879e-03 0.04176320 -3.288082e-03
## 2019.477 9.024073e-03 0.04177637 1.199561e-03
## 2019.479 6.373268e-03 0.04178953 -1.162796e-03
## 2019.482 8.322602e-03 0.04180269 -1.812529e-02
## 2019.485 1.332194e-02 0.04181585 -1.013779e-02
## 2019.488 9.121269e-03 0.04182902 2.049715e-03
## 2019.490 1.472060e-02 0.04184218 2.437218e-03
## 2019.493 1.581994e-02 0.04185534 1.032472e-02
## 2019.496 1.841928e-02 0.04186841 7.123068e-04
## 2019.499 9.318626e-03 0.04188148 -2.001084e-04

```

##	2019.501	8.117970e-03	0.04189455	1.198748e-02
##	2019.504	1.071731e-02	0.04190762	2.437506e-02
##	2019.507	1.046666e-02	0.04192069	1.461265e-02
##	2019.510	4.016512e-03	0.04193377	7.049723e-03
##	2019.512	1.091636e-02	0.04194684	-1.863200e-03
##	2019.515	6.016216e-03	0.04195991	-1.097612e-02
##	2019.518	6.616068e-03	0.04197298	-5.589046e-03
##	2019.521	9.315921e-03	0.04198605	1.269803e-02
##	2019.523	5.815775e-03	0.04199912	-1.381489e-02
##	2019.526	7.315629e-03	0.04201219	-8.327818e-03
##	2019.529	1.016548e-02	0.04202526	-1.219074e-02
##	2019.532	6.415338e-03	0.04203833	-7.453668e-03
##	2019.534	2.315192e-03	0.04205140	8.633407e-03
##	2019.537	1.914739e-03	0.04206447	1.020789e-03
##	2019.540	7.014287e-03	0.04207754	8.908171e-03
##	2019.542	1.021383e-02	0.04209061	1.695553e-03
##	2019.545	8.313381e-03	0.04210368	-1.641707e-02
##	2019.548	1.051293e-02	0.04211675	-9.629683e-03
##	2019.551	1.311248e-02	0.04212983	1.375770e-02
##	2019.553	8.112023e-03	0.04214290	-8.254919e-03
##	2019.556	8.411570e-03	0.04215597	-1.456754e-02
##	2019.559	6.211118e-03	0.04216904	-1.238016e-02
##	2019.562	4.510665e-03	0.04218211	-1.469277e-02
##	2019.564	1.261038e-02	0.04219518	-6.805562e-03
##	2019.567	1.461010e-02	0.04220825	-2.818351e-03
##	2019.570	1.140982e-02	0.04222132	-6.311406e-04
##	2019.573	1.490954e-02	0.04223439	1.856070e-03
##	2019.575	1.230926e-02	0.04224746	1.444328e-02
##	2019.578	1.280874e-02	0.04226053	8.930729e-03
##	2019.581	7.508220e-03	0.04227360	1.021818e-02
##	2019.584	9.607701e-03	0.04228667	-1.894375e-03
##	2019.586	1.130718e-02	0.04229974	9.393073e-03
##	2019.589	8.206664e-03	0.04231281	-4.519479e-03
##	2019.592	4.405794e-03	0.04232589	3.268321e-03
##	2019.595	7.604923e-03	0.04233896	-5.943880e-03
##	2019.597	7.804053e-03	0.04235203	8.843920e-03
##	2019.600	1.190318e-02	0.04236510	2.731720e-03
##	2019.603	4.602312e-03	0.04237817	1.301952e-02
##	2019.605	4.701454e-03	0.04239124	9.073070e-04
##	2019.608	1.900596e-03	0.04240431	2.969509e-02
##	2019.611	3.299737e-03	0.04241738	1.282882e-03
##	2019.614	2.598879e-03	0.04243045	-2.933038e-05
##	2019.616	4.198021e-03	0.04244352	4.358457e-03
##	2019.619	6.096424e-03	0.04245659	-4.553017e-03
##	2019.622	7.294828e-03	0.04246966	3.235509e-03
##	2019.625	1.239323e-02	0.04248273	1.712404e-02
##	2019.627	8.791634e-03	0.04249580	1.871256e-02
##	2019.630	1.390038e-03	0.04250888	2.101087e-03
##	2019.633	1.888159e-04	0.04252195	1.328924e-02
##	2019.636	4.887594e-03	0.04253502	2.577389e-03
##	2019.638	4.986373e-03	0.04254809	-1.553446e-02
##	2019.641	3.185151e-03	0.04256116	-1.746309e-03
##	2019.644	4.783930e-03	0.04257423	-3.358158e-03
##	2019.647	8.782604e-03	0.04258837	-4.370976e-03

```

## 2019.649 7.981278e-03 0.04260252 -2.258379e-02
## 2019.652 1.407995e-02 0.04261666 -2.369661e-02
## 2019.655 7.878626e-03 0.04263080 -2.150943e-02
## 2019.658 1.017730e-02 0.04264495 -2.282225e-02
## 2019.660 8.876798e-03 0.04265909 -8.535888e-03
## 2019.663 8.276297e-03 0.04267323 3.050471e-03
## 2019.666 1.337579e-02 0.04268738 1.493683e-02
## 2019.668 9.875293e-03 0.04270152 1.423188e-03
## 2019.671 4.974791e-03 0.04271566 -7.690454e-03
## 2019.674 2.674096e-03 0.04272981 -7.403902e-03
## 2019.677 1.673400e-03 0.04274395 7.582650e-03
## 2019.679 4.472705e-03 0.04275809 -7.230798e-03
## 2019.682 2.872010e-03 0.04277224 -1.364425e-02
## 2019.685 4.271314e-03 0.04278638 8.942306e-03
## 2019.688 8.170048e-03 0.04280052 1.502943e-02
## 2019.690 8.268781e-03 0.04281467 1.191655e-02
## 2019.693 8.667515e-03 0.04282881 2.750367e-02
## 2019.696 4.866248e-03 0.04284295 5.290798e-03
## 2019.699 8.514982e-03 0.04285710 2.662792e-02
## 2019.701 5.792287e-03 0.04287124 1.133647e-02
## 2019.704 4.919592e-03 0.04288538 1.950243e-04
## 2019.707 1.646897e-03 0.04289953 -7.546424e-03
## 2019.710 2.574201e-03 0.04291367 5.121276e-04
## 2019.712 1.301506e-03 0.04292781 1.177068e-02
## 2019.715 5.129712e-03 0.04294196 2.492833e-02
## 2019.718 2.557918e-03 0.04295610 -5.140196e-04
## 2019.721 5.557553e-03 0.04297024 -1.527798e-03
## 2019.723 9.571875e-04 0.04298439 6.058424e-03
## 2019.726 3.056822e-03 0.04299853 8.944646e-03
## 2019.729 1.256573e-03 0.04301267 4.730752e-03
## 2019.732 5.563248e-04 0.04302682 1.741686e-02
## 2019.734 -2.143924e-03 0.04304096 1.410296e-02
## 2019.737 1.555828e-03 0.04305511 2.538907e-02
## 2019.740 1.655579e-03 0.04306925 1.927517e-02
## 2019.742 -1.244624e-03 0.04308339 1.216123e-02
## 2019.745 -6.044828e-03 0.04309754 8.947292e-03
## 2019.748 -7.450312e-04 0.04311168 1.263335e-02
## 2019.751 -2.452346e-04 0.04312582 5.119412e-03
## 2019.753 -4.454380e-04 0.04313997 2.630547e-02
## 2019.756 -2.455731e-04 0.04315411 2.009146e-02
## 2019.759 2.954292e-03 0.04316825 2.087746e-02
## 2019.762 6.454157e-03 0.04318240 1.036345e-02
## 2019.764 3.454022e-03 0.04319654 -1.665056e-02
## 2019.767 -8.461132e-04 0.04321068 -4.364570e-03
## 2019.770 -6.047072e-03 0.04322483 8.222453e-04
## 2019.773 -4.848030e-03 0.04323897 -8.390940e-03
## 2019.775 -6.248989e-03 0.04325311 6.995876e-03
## 2019.778 -6.849947e-03 0.04326726 9.582691e-03
## 2019.781 -4.650906e-03 0.04328140 1.336951e-02
## 2019.784 -4.551177e-03 0.04329554 7.255633e-03
## 2019.786 -7.051448e-03 0.04330969 -1.725824e-02
## 2019.789 -3.551719e-03 0.04332383 5.227888e-03
## 2019.792 -3.251990e-03 0.04333797 8.914016e-03
## 2019.795 -6.152260e-03 0.04335212 -6.199857e-03

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## 2019.797 -5.252595e-03 0.04336694 -4.114340e-03
## 2019.800 -6.852930e-03 0.04338175 2.471177e-03
## 2019.803 -2.253264e-03 0.04339657 -9.143306e-03
## 2019.805 -2.153599e-03 0.04341139 -7.257789e-03
## 2019.808 -3.053934e-03 0.04342621 -6.372273e-03
## 2019.811 -1.253964e-03 0.04344102 -1.118706e-02
## 2019.814 -5.453994e-03 0.04345584 9.981520e-04
## 2019.816 -2.154024e-03 0.04347066 3.683364e-03
## 2019.819 -5.654054e-03 0.04348548 -1.831423e-03
## 2019.822 -7.054084e-03 0.04350030 5.537888e-04
## 2019.825 -9.554845e-03 0.04351511 -9.602679e-04
## 2019.827 -4.855606e-03 0.04352993 3.256753e-04
## 2019.830 -5.456367e-03 0.04354475 -6.088381e-03
## 2019.833 -8.157128e-03 0.04355957 -1.540244e-02
## 2019.836 -1.175789e-02 0.04357438 -1.081649e-02
## 2019.838 -7.759109e-03 0.04358920 -5.830092e-03
## 2019.841 -9.860330e-03 0.04360402 2.563102e-04
## 2019.844 -7.661550e-03 0.04361884 4.271269e-05
## 2019.847 -9.562770e-03 0.04363365 -7.088479e-05
## 2019.849 -1.566399e-02 0.04364847 -1.984482e-03
## 2019.852 -1.116521e-02 0.04366329 6.501920e-03
## 2019.855 -7.566431e-03 0.04367811 -1.111677e-03
## 2019.858 -1.116765e-02 0.04369293 4.747253e-04
## 2019.860 -8.768872e-03 0.04370774 -9.388722e-04
## 2019.863 -3.970092e-03 0.04372256 -2.752470e-03
## 2019.866 -7.270029e-03 0.04373738 5.326501e-04
## 2019.868 -1.116997e-02 0.04375220 -3.582230e-03
## 2019.871 -1.436990e-02 0.04376701 3.602890e-03
## 2019.874 -1.536984e-02 0.04378183 -1.341199e-02
## 2019.877 -1.076978e-02 0.04379665 9.731290e-04
## 2019.879 -9.969338e-03 0.04381147 1.578699e-04
## 2019.882 -6.968897e-03 0.04382629 -1.857389e-03
## 2019.885 -7.568456e-03 0.04384110 -2.427265e-02
## 2019.888 -9.168014e-03 0.04385592 -1.968791e-02
## 2019.890 -8.567573e-03 0.04387074 -2.303166e-03
## 2019.893 -1.026746e-02 0.04388556 -1.618099e-03
## 2019.896 -7.767343e-03 0.04390037 -1.133031e-03
## 2019.899 -1.056723e-02 0.04391519 -1.734796e-02
## 2019.901 -9.167114e-03 0.04393001 1.237104e-03
## 2019.904 -9.266999e-03 0.04394483 -1.677829e-03
## 2019.907 -1.156760e-02 0.04395965 -3.920492e-04
## 2019.910 -1.476819e-02 0.04397446 -5.206269e-03
## 2019.912 -9.368792e-03 0.04398928 2.379510e-03
## 2019.915 -1.376939e-02 0.04400410 -4.234710e-03
## 2019.918 -1.396999e-02 0.04401892 -6.048930e-03
## 2019.921 -1.147030e-02 0.04403373 7.436568e-03
## 2019.923 -1.577062e-02 0.04404855 -8.277934e-03
## 2019.926 -1.387094e-02 0.04406337 -5.192435e-03
## 2019.929 -1.607125e-02 0.04407819 6.993063e-03
## 2019.932 -1.497157e-02 0.04409301 4.878562e-03
## 2019.934 -1.787136e-02 0.04410782 -4.236464e-03
## 2019.937 -1.517115e-02 0.04412264 5.048509e-03
## 2019.940 -1.412094e-02 0.04413746 2.983483e-03
## 2019.942 -1.487073e-02 0.04415228 -1.628154e-02

```



```
## 2019.945 -1.527053e-02 0.04416709 1.103431e-03
## 2019.948 -1.477032e-02 0.04418194 5.588380e-03
## 2019.951 -1.267011e-02 0.04419678 4.733296e-04
## 2019.953 -1.686990e-02 0.04421162 -1.334172e-02
## 2019.956 -1.596969e-02 0.04422646 -2.567717e-04
## 2019.959 -1.916948e-02 0.04424131 5.928178e-03
## 2019.962 -1.576949e-02 0.04425615 7.513346e-03
## 2019.964 -1.376950e-02 0.04427099 -1.501485e-03
## 2019.967 -1.226951e-02 0.04428583 2.983683e-03
## 2019.970 -1.576952e-02 0.04430067 1.468851e-03
## 2019.973 -1.746954e-02 0.04431552 -6.845980e-03
## 2019.975 -1.537063e-02 0.04433036 -3.959723e-03
## 2019.978 -1.657173e-02 0.04434520 -7.734654e-04
## 2019.981 -1.667283e-02 0.04436004 3.127921e-04
## 2019.984 -1.187393e-02 0.04437488 3.499050e-03
## 2019.986 -1.247503e-02 0.04438973 2.085307e-03
## 2019.989 -1.187570e-02 0.04440457 -6.528870e-03
## 2019.992 -1.787636e-02 0.04441941 -5.543048e-03
## 2019.995 -1.427703e-02 0.04443425 8.427751e-04
## 2019.997 -1.547769e-02 0.04444909 -1.971402e-03
## 2020.000 -1.277818e-02 0.04446394 7.314244e-03
## 2020.003 -1.282469e-02 0.04447878 3.345915e-03
```

#Decomposition of monthly time series object

```
Ozone_monthly_decomp <- stl(GaringerOzone.monthly.ts,s.window = "periodic")
print(Ozone_monthly_decomp)
```

```
## Call:
## stl(x = GaringerOzone.monthly.ts, s.window = "periodic")
##
## Components
##          seasonal      trend      remainder
## Jan 2010 -9.282542e-06 0.03043087 4.615908e-05
## Feb 2010 -2.454101e-06 0.03043609 3.410737e-05
## Mar 2010 5.334617e-05 0.03044131 -2.691617e-05
## Apr 2010 7.236922e-05 0.03044647 -5.109695e-05
## May 2010 2.091880e-05 0.03045163 -4.804267e-06
## Jun 2010 3.663970e-05 0.03045610 -2.499961e-05
## Jul 2010 3.626270e-05 0.03046058 -2.909704e-05
## Aug 2010 7.181413e-05 0.03046425 -6.832386e-05
## Sep 2010 -1.755466e-05 0.03046793 1.736955e-05
## Oct 2010 -1.154663e-04 0.03047083 1.123828e-04
## Nov 2010 -1.053287e-04 0.03047372 9.934696e-05
## Dec 2010 -4.126442e-05 0.03047246 3.655026e-05
## Jan 2011 -9.282542e-06 0.03047119 5.835975e-06
## Feb 2011 -2.454101e-06 0.03046791 2.282049e-06
## Mar 2011 5.334617e-05 0.03046464 -5.024370e-05
## Apr 2011 7.236922e-05 0.03046277 -6.739932e-05
## May 2011 2.091880e-05 0.03046090 -1.408146e-05
## Jun 2011 3.663970e-05 0.03046286 -3.176218e-05
## Jul 2011 3.626270e-05 0.03046482 -3.334498e-05
## Aug 2011 7.181413e-05 0.03046799 -7.206012e-05
## Sep 2011 -1.755466e-05 0.03047115 1.414497e-05
## Oct 2011 -1.154663e-04 0.03047244 1.107706e-04
```

```

## Nov 2011 -1.053287e-04 0.03047372 9.934696e-05
## Dec 2011 -4.126442e-05 0.03050600 3.006922e-06
## Jan 2012 -9.282542e-06 0.03053828 -6.125069e-05
## Feb 2012 -2.454101e-06 0.03071099 -2.407922e-04
## Mar 2012 5.334617e-05 0.03088370 -4.693056e-04
## Apr 2012 7.236922e-05 0.03119880 -8.034320e-04
## May 2012 2.091880e-05 0.03151391 -1.067085e-03
## Jun 2012 3.663970e-05 0.03189257 -1.461466e-03
## Jul 2012 3.626270e-05 0.03227123 -1.839749e-03
## Aug 2012 7.181413e-05 0.03265734 1.735132e-03
## Sep 2012 -1.755466e-05 0.03304345 1.438390e-03
## Oct 2012 -1.154663e-04 0.03340169 1.178065e-03
## Nov 2012 -1.053287e-04 0.03375992 8.096919e-04
## Dec 2012 -4.126442e-05 0.03401342 4.921270e-04
## Jan 2013 -9.282542e-06 0.03426692 2.066445e-04
## Feb 2013 -2.454101e-06 0.03435899 1.077469e-04
## Mar 2013 5.334617e-05 0.03445106 -4.012256e-05
## Apr 2013 7.236922e-05 0.03445426 -6.233875e-05
## May 2013 2.091880e-05 0.03445745 -1.408146e-05
## Jun 2013 3.663970e-05 0.03445941 -3.176218e-05
## Jul 2013 3.626270e-05 0.03446137 -3.334498e-05
## Aug 2013 7.181413e-05 0.03446453 -7.206012e-05
## Sep 2013 -1.755466e-05 0.03446770 1.414497e-05
## Oct 2013 -1.154663e-04 0.03446898 1.107706e-04
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## Jul 2015 3.626270e-05 0.04455211 -7.725573e-06
## Aug 2015 7.181413e-05 0.04456808 -5.925041e-05
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## Apr 2016 7.236922e-05 0.04457568 -6.739932e-05

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## Jul 2016 3.626270e-05 0.04457773 -3.334498e-05
## Aug 2016 7.181413e-05 0.04458089 -7.206012e-05
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## Mar 2018 5.334617e-05 0.05563023 -5.024370e-05
## Apr 2018 7.236922e-05 0.05562836 -6.739932e-05
## May 2018 2.091880e-05 0.05562650 -1.408146e-05
## Jun 2018 3.663970e-05 0.05562846 -3.176218e-05
## Jul 2018 3.626270e-05 0.05563042 -3.334498e-05
## Aug 2018 7.181413e-05 0.05563358 -7.206012e-05
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## Oct 2020 -1.154663e-04 0.04661760 1.107706e-04

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## Mar 2021 5.334617e-05 0.04660980 -5.024370e-05
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## Aug 2021 7.181413e-05 0.04661315 -7.206012e-05
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## Oct 2021 -1.154663e-04 0.04661760 1.107706e-04
## Nov 2021 -1.053287e-04 0.04661888 9.934696e-05
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## May 2022 2.091880e-05 0.04949215 -2.900163e-03
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## Jun 2023 3.663970e-05 0.05756179 -3.176218e-05
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## Jan 2024 -9.282542e-06 0.05757011 5.835975e-06
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## Mar 2024 5.334617e-05 0.05756356 -5.024370e-05
## Apr 2024 7.236922e-05 0.05756170 -6.739932e-05
## May 2024 2.091880e-05 0.05755983 -1.408146e-05
## Jun 2024 3.663970e-05 0.05756353 -3.350397e-05
## Jul 2024 3.626270e-05 0.05756723 -3.682856e-05
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## May 2025 2.091880e-05 0.05773047 2.280433e-05
## Jun 2025 3.663970e-05 0.05774566 -8.105631e-06
## Jul 2025 3.626270e-05 0.05776085 -2.291768e-05
## Aug 2025 7.181413e-05 0.05776896 -6.658369e-05
## Sep 2025 -1.755466e-05 0.05777708 1.467052e-05
## Oct 2025 -1.154663e-04 0.05777863 1.110333e-04
## Nov 2025 -1.053287e-04 0.05778018 9.934696e-05
## Dec 2025 -4.126442e-05 0.05777891 3.655026e-05
## Jan 2026 -9.282542e-06 0.05777764 5.835974e-06
## Feb 2026 -2.454101e-06 0.05777437 2.282050e-06
## Mar 2026 5.334617e-05 0.05777109 -5.024370e-05
## Apr 2026 7.236922e-05 0.05776922 -6.739932e-05
## May 2026 2.091880e-05 0.05776736 -1.408146e-05
## Jun 2026 3.663970e-05 0.05776932 -3.176217e-05
## Jul 2026 3.626270e-05 0.05777128 -3.334498e-05
## Aug 2026 7.181413e-05 0.05777444 -7.206012e-05
## Sep 2026 -1.755466e-05 0.05777760 1.414497e-05
## Oct 2026 -1.154663e-04 0.05777889 1.107706e-04
## Nov 2026 -1.053287e-04 0.05778018 9.934696e-05
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## Jun 2028 3.663970e-05 0.04976932 -3.176217e-05
## Jul 2028 3.626270e-05 0.04977128 -3.334498e-05
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## Jan 2029 -9.282542e-06 0.04977764 5.835974e-06
## Feb 2029 -2.454101e-06 0.04977437 2.282050e-06
## Mar 2029 5.334617e-05 0.04977109 -5.024370e-05
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## Jul 2029 3.626270e-05 0.04977128 -3.334498e-05
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## Oct 2029 -1.154663e-04 0.05008254 -1.928773e-04

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## Aug 2030 7.181413e-05 0.05419781 4.970452e-04
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## Jun 2033 3.663970e-05 0.04355771 -4.596717e-05
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## May 2034 2.091880e-05 0.04354155 -1.408146e-05
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## Feb 2035 -2.454101e-06 0.04051792 3.032919e-03
## Mar 2035 5.334617e-05 0.03950107 3.993970e-03
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## Oct 2037 -1.154663e-04 0.02937195 2.943514e-03
## Nov 2037 -1.053287e-04 0.02877297 -2.732161e-03
## Dec 2037 -4.126442e-05 0.02818123 -2.204486e-03
## Jan 2038 -9.282542e-06 0.02758950 -1.644730e-03
## Feb 2038 -2.454101e-06 0.02708937 -1.151437e-03
## Mar 2038 5.334617e-05 0.02658925 -7.071163e-04
## Apr 2038 7.236922e-05 0.02631153 -4.484142e-04
## May 2038 2.091880e-05 0.02603380 -1.192387e-04
## Jun 2038 3.663970e-05 0.02598318 -8.434080e-05
## Jul 2038 3.626270e-05 0.02593257 -3.334498e-05
## Aug 2038 7.181413e-05 0.02593573 -7.206012e-05
## Sep 2038 -1.755466e-05 0.02593889 1.414497e-05
## Oct 2038 -1.154663e-04 0.02594018 1.107706e-04

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## Nov 2038 -1.053287e-04 0.02594147 9.934696e-05
## Dec 2038 -4.126442e-05 0.02594020 3.655025e-05
## Jan 2039 -9.282542e-06 0.02593893 5.835974e-06
## Feb 2039 -2.454101e-06 0.02593566 2.282050e-06
## Mar 2039 5.334617e-05 0.02593238 -5.024370e-05
## Apr 2039 7.236922e-05 0.02593051 -6.739931e-05
## May 2039 2.091880e-05 0.02592865 -1.408146e-05
## Jun 2039 3.663970e-05 0.02593061 -3.176217e-05
## Jul 2039 3.626270e-05 0.02593257 -3.334498e-05
## Aug 2039 7.181413e-05 0.02593573 -7.206012e-05
## Sep 2039 -1.755466e-05 0.02593889 1.414497e-05
## Oct 2039 -1.154663e-04 0.02594587 1.050849e-04
## Nov 2039 -1.053287e-04 0.02595284 8.797568e-05
## Dec 2039 -4.126442e-05 0.02598140 -4.651153e-06
## Jan 2040 -9.282542e-06 0.02600996 -6.519556e-05
## Feb 2040 -2.454101e-06 0.02606041 -1.224764e-04
## Mar 2040 5.334617e-05 0.02611087 -2.287292e-04
## Apr 2040 7.236922e-05 0.02617285 -3.097359e-04
## May 2040 2.091880e-05 0.02623483 -3.202692e-04
## Jun 2040 3.663970e-05 0.02630170 2.745593e-04
## Jul 2040 3.626270e-05 0.02636857 2.080663e-04
## Aug 2040 7.181413e-05 0.02643224 1.088477e-04
## Sep 2040 -1.755466e-05 0.02649591 1.345494e-04
## Oct 2040 -1.154663e-04 0.02654038 1.879914e-04
## Nov 2040 -1.053287e-04 0.02658485 1.333843e-04
## Dec 2040 -4.126442e-05 0.02659974 5.442668e-05
## Jan 2041 -9.282542e-06 0.02661463 7.551520e-06
## Feb 2041 -2.454101e-06 0.02661222 3.139823e-06
## Mar 2041 5.334617e-05 0.02660980 -5.024370e-05
## Apr 2041 7.236922e-05 0.02660793 -6.739931e-05
## May 2041 2.091880e-05 0.02660607 -1.408146e-05
## Jun 2041 3.663970e-05 0.02660803 -3.176217e-05
## Jul 2041 3.626270e-05 0.02660999 -3.334498e-05
## Aug 2041 7.181413e-05 0.02661315 -7.206012e-05
## Sep 2041 -1.755466e-05 0.02661631 1.414497e-05
## Oct 2041 -1.154663e-04 0.02661760 1.107706e-04
## Nov 2041 -1.053287e-04 0.02661888 9.934696e-05
## Dec 2041 -4.126442e-05 0.02661762 3.655025e-05
## Jan 2042 -9.282542e-06 0.02661635 5.835974e-06
## Feb 2042 -2.454101e-06 0.02661308 2.282050e-06
## Mar 2042 5.334617e-05 0.02660980 -5.024370e-05
## Apr 2042 7.236922e-05 0.02662249 -8.195374e-05
## May 2042 2.091880e-05 0.02663517 -4.319031e-05
## Jun 2042 3.663970e-05 0.02691135 -3.350837e-04
## Jul 2042 3.626270e-05 0.02718752 -6.108793e-04
## Aug 2042 7.181413e-05 0.02792341 -1.382319e-03
## Sep 2042 -1.755466e-05 0.02865930 -2.028839e-03
## Oct 2042 -1.154663e-04 0.02968719 -2.958817e-03
## Nov 2042 -1.053287e-04 0.03071508 -3.996844e-03
## Dec 2042 -4.126442e-05 0.03181518 -5.161016e-03
## Jan 2043 -9.282542e-06 0.03291529 5.201134e-03
## Feb 2043 -2.454101e-06 0.03399542 4.114174e-03
## Mar 2043 5.334617e-05 0.03507556 2.978242e-03
## Apr 2043 7.236922e-05 0.03598531 2.049464e-03

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## May 2043 2.091880e-05 0.03689506 1.191159e-03
## Jun 2043 3.663970e-05 0.03740317 6.673304e-04
## Jul 2043 3.626270e-05 0.03791128 1.595993e-04
## Aug 2043 7.181413e-05 0.03801092 2.441202e-05
## Sep 2043 -1.755466e-05 0.03811055 1.414497e-05
## Oct 2043 -1.154663e-04 0.03811184 1.107706e-04
## Nov 2043 -1.053287e-04 0.03811312 9.934696e-05
## Dec 2043 -4.126442e-05 0.03811186 3.655025e-05
## Jan 2044 -9.282542e-06 0.03811059 5.835974e-06
## Feb 2044 -2.454101e-06 0.03810731 2.282050e-06
## Mar 2044 5.334617e-05 0.03810404 -5.024370e-05
## Apr 2044 7.236922e-05 0.03810217 -6.739931e-05
## May 2044 2.091880e-05 0.03810031 -1.408146e-05
## Jun 2044 3.663970e-05 0.03810227 -3.176217e-05
## Jul 2044 3.626270e-05 0.03810423 -3.334498e-05
## Aug 2044 7.181413e-05 0.03811403 -7.870494e-05
## Sep 2044 -1.755466e-05 0.03812384 8.553182e-07
## Oct 2044 -1.154663e-04 0.03825032 -2.771092e-05
## Nov 2044 -1.053287e-04 0.03837680 -1.643264e-04
## Dec 2044 -4.126442e-05 0.03871006 -5.616486e-04
## Jan 2045 -9.282542e-06 0.03904331 -9.268885e-04
## Feb 2045 -2.454101e-06 0.03950874 -1.399138e-03
## Mar 2045 5.334617e-05 0.03997416 -1.920360e-03
## Apr 2045 7.236922e-05 0.04047512 -2.440349e-03
## May 2045 2.091880e-05 0.04097609 2.357832e-03
## Jun 2045 3.663970e-05 0.04147268 1.845522e-03
## Jul 2045 3.626270e-05 0.04196927 1.349310e-03
## Aug 2045 7.181413e-05 0.04238863 8.943939e-04
## Sep 2045 -1.755466e-05 0.04280800 5.643978e-04
## Oct 2045 -1.154663e-04 0.04304036 4.299413e-04
## Nov 2045 -1.053287e-04 0.04327273 1.874357e-04
## Dec 2045 -4.126442e-05 0.04331551 8.059462e-05
## Jan 2046 -9.282542e-06 0.04335829 5.835974e-06
## Feb 2046 -2.454101e-06 0.04335501 2.282050e-06
## Mar 2046 5.334617e-05 0.04335174 -5.024370e-05
## Apr 2046 7.236922e-05 0.04334987 -6.739931e-05
## May 2046 2.091880e-05 0.04334800 -1.408146e-05
## Jun 2046 3.663970e-05 0.04334996 -3.176217e-05
## Jul 2046 3.626270e-05 0.04335192 -3.334498e-05
## Aug 2046 7.181413e-05 0.04335508 -7.206012e-05
## Sep 2046 -1.755466e-05 0.04335825 1.414497e-05
## Oct 2046 -1.154663e-04 0.04335953 1.107706e-04
## Nov 2046 -1.053287e-04 0.04336082 9.934696e-05
## Dec 2046 -4.126442e-05 0.04335955 3.655025e-05
## Jan 2047 -9.282542e-06 0.04335829 5.835974e-06
## Feb 2047 -2.454101e-06 0.04335501 2.282050e-06
## Mar 2047 5.334617e-05 0.04335174 -5.024370e-05
## Apr 2047 7.236922e-05 0.04339837 -1.158987e-04
## May 2047 2.091880e-05 0.04344500 -1.110803e-04
## Jun 2047 3.663970e-05 0.04370142 -3.832167e-04
## Jul 2047 3.626270e-05 0.04395783 -6.392553e-04
## Aug 2047 7.181413e-05 0.04441929 -1.136270e-03
## Sep 2047 -1.755466e-05 0.04488076 -1.508364e-03
## Oct 2047 -1.154663e-04 0.04542670 -1.956399e-03

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## Nov 2047 -1.053287e-04 0.04597265 -2.512483e-03
## Dec 2047 -4.126442e-05 0.04652508 2.649521e-03
## Jan 2048 -9.282542e-06 0.04707750 2.065113e-03
## Feb 2048 -2.454101e-06 0.04759033 1.545455e-03
## Mar 2048 5.334617e-05 0.04810316 9.768248e-04
## Apr 2048 7.236922e-05 0.04846966 5.913067e-04
## May 2048 2.091880e-05 0.04883615 2.762621e-04
## Jun 2048 3.663970e-05 0.04897597 1.207266e-04
## Jul 2048 3.626270e-05 0.04911578 -1.871110e-05
## Aug 2048 7.181413e-05 0.04912626 -6.474318e-05
## Sep 2048 -1.755466e-05 0.04913674 1.414497e-05
## Oct 2048 -1.154663e-04 0.04913803 1.107706e-04
## Nov 2048 -1.053287e-04 0.04913932 9.934696e-05
## Dec 2048 -4.126442e-05 0.04913805 3.655025e-05
## Jan 2049 -9.282542e-06 0.04913678 5.835974e-06
## Feb 2049 -2.454101e-06 0.04913351 2.282050e-06
## Mar 2049 5.334617e-05 0.04913023 -5.024370e-05
## Apr 2049 7.236922e-05 0.04912836 -6.739931e-05
## May 2049 2.091880e-05 0.04912650 -1.408146e-05
## Jun 2049 3.663970e-05 0.04912846 -3.176217e-05
## Jul 2049 3.626270e-05 0.04913042 -3.334498e-05
## Aug 2049 7.181413e-05 0.04913358 -7.206012e-05
## Sep 2049 -1.755466e-05 0.04913674 1.414497e-05
## Oct 2049 -1.154663e-04 0.04916859 8.021251e-05
## Nov 2049 -1.053287e-04 0.04920043 3.823086e-05
## Dec 2049 -4.126442e-05 0.04935949 -1.848910e-04
## Jan 2050 -9.282542e-06 0.04951855 -3.759304e-04
## Feb 2050 -2.454101e-06 0.04980403 -6.682454e-04
## Mar 2050 5.334617e-05 0.05008952 -1.009532e-03
## Apr 2050 7.236922e-05 0.05043083 -1.369862e-03
## May 2050 2.091880e-05 0.05077213 -1.659719e-03
## Jun 2050 3.663970e-05 0.05112296 1.614594e-03
## Jul 2050 3.626270e-05 0.05147379 1.264145e-03
## Aug 2050 7.181413e-05 0.05180213 9.002477e-04
## Sep 2050 -1.755466e-05 0.05213048 6.612708e-04
## Oct 2050 -1.154663e-04 0.05236386 5.258019e-04
## Nov 2050 -1.053287e-04 0.05259724 2.822839e-04
## Dec 2050 -4.126442e-05 0.05268283 1.326289e-04
## Jan 2051 -9.282542e-06 0.05276842 1.505635e-05
## Feb 2051 -2.454101e-06 0.05276976 6.892240e-06
## Mar 2051 5.334617e-05 0.05277109 -5.024370e-05
## Apr 2051 7.236922e-05 0.05276922 -6.739931e-05
## May 2051 2.091880e-05 0.05276736 -1.408146e-05
## Jun 2051 3.663970e-05 0.05276932 -3.176217e-05
## Jul 2051 3.626270e-05 0.05277128 -3.334498e-05
## Aug 2051 7.181413e-05 0.05277444 -7.206012e-05
## Sep 2051 -1.755466e-05 0.05277760 1.414497e-05
## Oct 2051 -1.154663e-04 0.05277889 1.107706e-04
## Nov 2051 -1.053287e-04 0.05278018 9.934696e-05
## Dec 2051 -4.126442e-05 0.05277891 3.655025e-05
## Jan 2052 -9.282542e-06 0.05277764 5.835974e-06
## Feb 2052 -2.454101e-06 0.05277437 2.282050e-06
## Mar 2052 5.334617e-05 0.05277109 -5.024370e-05
## Apr 2052 7.236922e-05 0.05278627 -8.444177e-05

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## May 2052 2.091880e-05 0.05280144 -4.816637e-05
## Jun 2052 3.663970e-05 0.05312449 -3.869355e-04
## Jul 2052 3.626270e-05 0.05344754 -7.096067e-04
## Aug 2052 7.181413e-05 0.05430868 -1.606303e-03
## Sep 2052 -1.755466e-05 0.05516983 -2.378080e-03
## Oct 2052 -1.154663e-04 0.05637321 -3.483552e-03
## Nov 2052 -1.053287e-04 0.05757660 -4.697074e-03
## Dec 2052 -4.126442e-05 0.05886498 -6.049522e-03
## Jan 2053 -9.282542e-06 0.06015336 6.089253e-03
## Feb 2053 -2.454101e-06 0.06141870 4.817088e-03
## Mar 2053 5.334617e-05 0.06268404 3.495951e-03
## Apr 2053 7.236922e-05 0.06374963 2.411334e-03
## May 2053 2.091880e-05 0.06481522 1.397191e-03
## Jun 2053 3.663970e-05 0.06540986 7.868379e-04
## Jul 2053 3.626270e-05 0.06600449 1.925824e-04
## Aug 2053 7.181413e-05 0.06612062 4.090360e-05
## Sep 2053 -1.755466e-05 0.06623674 1.414497e-05
## Oct 2053 -1.154663e-04 0.06623803 1.107706e-04
## Nov 2053 -1.053287e-04 0.06623932 9.934696e-05
## Dec 2053 -4.126442e-05 0.06623805 3.655025e-05
## Jan 2054 -9.282542e-06 0.06623678 5.835974e-06
## Feb 2054 -2.454101e-06 0.06623351 2.282050e-06
## Mar 2054 5.334617e-05 0.06623023 -5.024370e-05
## Apr 2054 7.236922e-05 0.06622836 -6.739931e-05
## May 2054 2.091880e-05 0.06622650 -1.408146e-05
## Jun 2054 3.663970e-05 0.06622846 -3.176217e-05
## Jul 2054 3.626270e-05 0.06623042 -3.334498e-05
## Aug 2054 7.181413e-05 0.06623358 -7.206012e-05
## Sep 2054 -1.755466e-05 0.06623674 1.414497e-05
## Oct 2054 -1.154663e-04 0.06622928 1.195212e-04
## Nov 2054 -1.053287e-04 0.06622181 1.168483e-04
## Dec 2054 -4.126442e-05 0.06605568 2.189182e-04
## Jan 2055 -9.282542e-06 0.06588955 3.530705e-04
## Feb 2055 -2.454101e-06 0.06544573 7.900572e-04
## Mar 2055 5.334617e-05 0.06500192 1.178072e-03
## Apr 2055 7.236922e-05 0.06438282 1.778148e-03
## May 2055 2.091880e-05 0.06376372 2.448697e-03
## Jun 2055 3.663970e-05 0.06310349 3.093203e-03
## Jul 2055 3.626270e-05 0.06244326 -3.156946e-03
## Aug 2055 7.181413e-05 0.06179504 -2.544278e-03
## Sep 2055 -1.755466e-05 0.06114683 -1.806690e-03
## Oct 2055 -1.154663e-04 0.06060001 -1.161964e-03
## Nov 2055 -1.053287e-04 0.06005320 -6.252875e-04
## Dec 2055 -4.126442e-05 0.05974761 -3.837695e-04
## Jan 2056 -9.282542e-06 0.05944203 -1.101691e-04
## Feb 2056 -2.454101e-06 0.05938076 -5.572049e-05
## Mar 2056 5.334617e-05 0.05931948 -5.024370e-05
## Apr 2056 7.236922e-05 0.05931761 -6.739931e-05
## May 2056 2.091880e-05 0.05931574 -1.408146e-05
## Jun 2056 3.663970e-05 0.05931770 -3.176217e-05
## Jul 2056 3.626270e-05 0.05931966 -3.334498e-05
## Aug 2056 7.181413e-05 0.05932283 -7.206012e-05
## Sep 2056 -1.755466e-05 0.05932599 1.414497e-05
## Oct 2056 -1.154663e-04 0.05932728 1.107706e-04

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## Nov 2056 -1.053287e-04 0.05932856 9.934696e-05
## Dec 2056 -4.126442e-05 0.05932729 3.655025e-05
## Jan 2057 -9.282542e-06 0.05932603 5.835974e-06
## Feb 2057 -2.454101e-06 0.05932275 2.282050e-06
## Mar 2057 5.334617e-05 0.05931948 -5.024370e-05
## Apr 2057 7.236922e-05 0.05931761 -6.739931e-05
## May 2057 2.091880e-05 0.05931574 -1.408146e-05
## Jun 2057 3.663970e-05 0.05929631 -1.037334e-05
## Jul 2057 3.626270e-05 0.05927689 9.432683e-06
## Aug 2057 7.181413e-05 0.05916783 8.293565e-05
## Sep 2057 -1.755466e-05 0.05905878 2.813588e-04
## Oct 2057 -1.154663e-04 0.05885795 5.801001e-04
## Nov 2057 -1.053287e-04 0.05865712 7.707922e-04
## Dec 2057 -4.126442e-05 0.05841565 9.481975e-04
## Jan 2058 -9.282542e-06 0.05817418 1.157685e-03
## Feb 2058 -2.454101e-06 0.05792672 -1.150070e-03
## Mar 2058 5.334617e-05 0.05767926 -9.584100e-04
## Apr 2058 7.236922e-05 0.05744978 -7.479574e-04
## May 2058 2.091880e-05 0.05722031 -4.670313e-04
## Jun 2058 3.663970e-05 0.05705981 -3.222596e-04
## Jul 2058 3.626270e-05 0.05689932 -1.613901e-04
## Aug 2058 7.181413e-05 0.05684169 -1.393095e-04
## Sep 2058 -1.755466e-05 0.05678406 7.691244e-06
## Oct 2058 -1.154663e-04 0.05678212 1.075437e-04
## Nov 2058 -1.053287e-04 0.05678018 9.934696e-05
## Dec 2058 -4.126442e-05 0.05677891 3.655025e-05
## Jan 2059 -9.282542e-06 0.05677764 5.835974e-06
## Feb 2059 -2.454101e-06 0.05677437 2.282050e-06
## Mar 2059 5.334617e-05 0.05677109 -5.024370e-05
## Apr 2059 7.236922e-05 0.05676922 -6.739931e-05
## May 2059 2.091880e-05 0.05676736 -1.408146e-05
## Jun 2059 3.663970e-05 0.05676932 -3.176217e-05
## Jul 2059 3.626270e-05 0.05677128 -3.334498e-05
## Aug 2059 7.181413e-05 0.05677444 -7.206012e-05
## Sep 2059 -1.755466e-05 0.05677760 1.414497e-05
## Oct 2059 -1.154663e-04 0.05677889 1.107706e-04
## Nov 2059 -1.053287e-04 0.05678018 9.934696e-05
## Dec 2059 -4.126442e-05 0.05676375 5.171241e-05
## Jan 2060 -9.282542e-06 0.05674732 3.616030e-05
## Feb 2060 -2.454101e-06 0.05645838 3.182691e-04
## Mar 2060 5.334617e-05 0.05616944 5.514061e-04
## Apr 2060 7.236922e-05 0.05540425 1.297571e-03
## May 2060 2.091880e-05 0.05463907 2.114209e-03
## Jun 2060 3.663970e-05 0.05357155 3.165999e-03
## Jul 2060 3.626270e-05 0.05250404 4.233887e-03
## Aug 2060 7.181413e-05 0.05135984 5.342536e-03
## Sep 2060 -1.755466e-05 0.05021564 -5.398089e-03
## Oct 2060 -1.154663e-04 0.04908828 -4.172818e-03
## Nov 2060 -1.053287e-04 0.04796092 -3.055596e-03
## Dec 2060 -4.126442e-05 0.04700997 -2.168705e-03
## Jan 2061 -9.282542e-06 0.04605901 -1.249731e-03
## Feb 2061 -2.454101e-06 0.04552846 -7.260019e-04
## Mar 2061 5.334617e-05 0.04499790 -2.512446e-04
## Apr 2061 7.236922e-05 0.04489553 -1.678997e-04

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## May 2061 2.091880e-05 0.04479316 -1.408146e-05
## Jun 2061 3.663970e-05 0.04479512 -3.176217e-05
## Jul 2061 3.626270e-05 0.04479708 -3.334498e-05
## Aug 2061 7.181413e-05 0.04480025 -7.206012e-05
## Sep 2061 -1.755466e-05 0.04480341 1.414497e-05
## Oct 2061 -1.154663e-04 0.04480470 1.107706e-04
## Nov 2061 -1.053287e-04 0.04480598 9.934696e-05
## Dec 2061 -4.126442e-05 0.04480471 3.655025e-05
## Jan 2062 -9.282542e-06 0.04480345 5.835974e-06
## Feb 2062 -2.454101e-06 0.04480017 2.282050e-06
## Mar 2062 5.334617e-05 0.04479690 -5.024370e-05
## Apr 2062 7.236922e-05 0.04479503 -6.739931e-05
## May 2062 2.091880e-05 0.04479316 -1.408146e-05
## Jun 2062 3.663970e-05 0.04478704 -2.368277e-05
## Jul 2062 3.626270e-05 0.04478092 -1.718617e-05
## Aug 2062 7.181413e-05 0.04463187 9.631877e-05
## Sep 2062 -1.755466e-05 0.04448281 3.347439e-04
## Oct 2062 -1.154663e-04 0.04407735 8.381174e-04
## Nov 2062 -1.053287e-04 0.04367189 1.233442e-03
## Dec 2062 -4.126442e-05 0.04310073 1.740530e-03
## Jan 2063 -9.282542e-06 0.04252958 2.279700e-03
## Feb 2063 -2.454101e-06 0.04191492 2.887538e-03
## Mar 2063 5.334617e-05 0.04130025 -2.934241e-03
## Apr 2063 7.236922e-05 0.04069697 -2.349979e-03
## May 2063 2.091880e-05 0.04009368 -1.695244e-03
## Jun 2063 3.663970e-05 0.03958958 -1.206868e-03
## Jul 2063 3.626270e-05 0.03908549 -7.023944e-04
## Aug 2063 7.181413e-05 0.03880768 -4.601381e-04
## Sep 2063 -1.755466e-05 0.03852987 -9.296164e-05
## Oct 2063 -1.154663e-04 0.03847760 5.721725e-05
## Nov 2063 -1.053287e-04 0.03842534 9.934696e-05
## Dec 2063 -4.126442e-05 0.03842407 3.655025e-05
## Jan 2064 -9.282542e-06 0.03842280 5.835974e-06
## Feb 2064 -2.454101e-06 0.03841953 2.282050e-06
## Mar 2064 5.334617e-05 0.03841625 -5.024370e-05
## Apr 2064 7.236922e-05 0.03841438 -6.739931e-05
## May 2064 2.091880e-05 0.03841252 -1.408146e-05
## Jun 2064 3.663970e-05 0.03841448 -3.176217e-05
## Jul 2064 3.626270e-05 0.03841644 -3.334498e-05
## Aug 2064 7.181413e-05 0.03841960 -7.206012e-05
## Sep 2064 -1.755466e-05 0.03842276 1.414497e-05
## Oct 2064 -1.154663e-04 0.03842405 1.107706e-04
## Nov 2064 -1.053287e-04 0.03842534 9.934696e-05
## Dec 2064 -4.126442e-05 0.03842407 3.655025e-05
## Jan 2065 -9.282542e-06 0.03842280 5.835973e-06
## Feb 2065 -2.454101e-06 0.03837908 4.273131e-05
## Mar 2065 5.334617e-05 0.03833535 3.065481e-05
## Apr 2065 7.236922e-05 0.03812127 2.257193e-04
## May 2065 2.091880e-05 0.03790718 4.912572e-04
## Jun 2065 3.663970e-05 0.03752691 8.558054e-04
## Jul 2065 3.626270e-05 0.03714664 1.236452e-03
## Aug 2065 7.181413e-05 0.03669555 1.651992e-03
## Sep 2065 -1.755466e-05 0.03624446 2.192452e-03
## Oct 2065 -1.154663e-04 0.03578395 -2.068488e-03

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## Nov 2065 -1.053287e-04 0.03532345 -1.618122e-03
## Dec 2065 -4.126442e-05 0.03489174 -1.250480e-03
## Jan 2066 -9.282542e-06 0.03446004 -8.507552e-04
## Feb 2066 -2.454101e-06 0.03414954 -5.470891e-04
## Mar 2066 5.334617e-05 0.03383905 -2.923948e-04
## Apr 2066 7.236922e-05 0.03372221 -1.945773e-04
## May 2066 2.091880e-05 0.03360537 -2.628634e-05
## Jun 2066 3.663970e-05 0.03360122 -3.786462e-05
## Jul 2066 3.626270e-05 0.03359708 -3.334498e-05
## Aug 2066 7.181413e-05 0.03360025 -7.206012e-05
## Sep 2066 -1.755466e-05 0.03360341 1.414497e-05
## Oct 2066 -1.154663e-04 0.03360470 1.107706e-04
## Nov 2066 -1.053287e-04 0.03360598 9.934696e-05
## Dec 2066 -4.126442e-05 0.03360471 3.655025e-05
## Jan 2067 -9.282542e-06 0.03360345 5.835973e-06
## Feb 2067 -2.454101e-06 0.03360017 2.282050e-06
## Mar 2067 5.334617e-05 0.03359690 -5.024370e-05
## Apr 2067 7.236922e-05 0.03359503 -6.739931e-05
## May 2067 2.091880e-05 0.03359316 -1.408146e-05
## Jun 2067 3.663970e-05 0.03359512 -3.176217e-05
## Jul 2067 3.626270e-05 0.03359708 -3.334498e-05
## Aug 2067 7.181413e-05 0.03354025 -1.206309e-05
## Sep 2067 -1.755466e-05 0.03348342 1.341390e-04
## Oct 2067 -1.154663e-04 0.03316992 5.455435e-04
## Nov 2067 -1.053287e-04 0.03285643 8.488988e-04
## Dec 2067 -4.126442e-05 0.03228821 1.353049e-03
## Jan 2068 -9.282542e-06 0.03172000 1.889282e-03
## Feb 2068 -2.454101e-06 0.03104294 2.559510e-03
## Mar 2068 5.334617e-05 0.03036589 3.180766e-03
## Apr 2068 7.236922e-05 0.02967906 -3.299820e-03
## May 2068 2.091880e-05 0.02899224 -2.561545e-03
## Jun 2068 3.663970e-05 0.02835574 -1.940771e-03
## Jul 2068 3.626270e-05 0.02771925 -1.303898e-03
## Aug 2068 7.181413e-05 0.02726672 -8.869239e-04
## Sep 2068 -1.755466e-05 0.02681420 -3.450296e-04
## Oct 2068 -1.154663e-04 0.02664495 -7.786828e-05
## Nov 2068 -1.053287e-04 0.02647570 8.124386e-05
## Dec 2068 -4.126442e-05 0.02646538 2.749870e-05
## Jan 2069 -9.282542e-06 0.02645506 5.835973e-06
## Feb 2069 -2.454101e-06 0.02645178 2.282050e-06
## Mar 2069 5.334617e-05 0.02644851 -5.024370e-05
## Apr 2069 7.236922e-05 0.02644664 -6.739931e-05
## May 2069 2.091880e-05 0.02644478 -1.408146e-05
## Jun 2069 3.663970e-05 0.02644674 -3.176217e-05
## Jul 2069 3.626270e-05 0.02644870 -3.334498e-05
## Aug 2069 7.181413e-05 0.02645186 -7.206012e-05
## Sep 2069 -1.755466e-05 0.02645502 1.414497e-05
## Oct 2069 -1.154663e-04 0.02645631 1.107706e-04
## Nov 2069 -1.053287e-04 0.02645759 9.934696e-05
## Dec 2069 -4.126442e-05 0.02645633 3.655025e-05
## Jan 2070 -9.282542e-06 0.02645506 5.835973e-06
## Feb 2070 -2.454101e-06 0.02645479 -7.201561e-07
## Mar 2070 5.334617e-05 0.02645451 -5.624811e-05
## Apr 2070 7.236922e-05 0.02650921 -1.299668e-04

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## May 2070 2.091880e-05 0.02656391 -1.332120e-04
## Jun 2070 3.663970e-05 0.02671701 -3.020351e-04
## Jul 2070 3.626270e-05 0.02687011 -4.547603e-04
## Aug 2070 7.181413e-05 0.02708504 -7.052376e-04
## Sep 2070 -1.755466e-05 0.02729996 -8.307946e-04
## Oct 2070 -1.154663e-04 0.02752843 -9.613545e-04
## Nov 2070 -1.053287e-04 0.02775691 1.171004e-03
## Dec 2070 -4.126442e-05 0.02797912 8.847284e-04
## Jan 2071 -9.282542e-06 0.02820133 6.305351e-04
## Feb 2071 -2.454101e-06 0.02838610 4.389368e-04
## Mar 2071 5.334617e-05 0.02857087 1.983667e-04
## Apr 2071 7.236922e-05 0.02867341 7.680561e-05
## May 2071 2.091880e-05 0.02877594 2.571801e-05
## Jun 2071 3.663970e-05 0.02879780 -1.186244e-05
## Jul 2071 3.626270e-05 0.02881966 -3.334498e-05
## Aug 2071 7.181413e-05 0.02882283 -7.206012e-05
## Sep 2071 -1.755466e-05 0.02882599 1.414497e-05
## Oct 2071 -1.154663e-04 0.02882728 1.107706e-04
## Nov 2071 -1.053287e-04 0.02882856 9.934696e-05
## Dec 2071 -4.126442e-05 0.02882729 3.655025e-05
## Jan 2072 -9.282542e-06 0.02882603 5.835973e-06
## Feb 2072 -2.454101e-06 0.02882275 2.282050e-06
## Mar 2072 5.334617e-05 0.02881948 -5.024370e-05
## Apr 2072 7.236922e-05 0.02881761 -6.739931e-05
## May 2072 2.091880e-05 0.02881574 -1.408146e-05
## Jun 2072 3.663970e-05 0.02881770 -3.176217e-05
## Jul 2072 3.626270e-05 0.02881966 -3.334498e-05
## Aug 2072 7.181413e-05 0.02882283 -7.206012e-05
## Sep 2072 -1.755466e-05 0.02882599 1.414497e-05
## Oct 2072 -1.154663e-04 0.02886089 7.715620e-05
## Nov 2072 -1.053287e-04 0.02889579 3.211825e-05
## Dec 2072 -4.126442e-05 0.02907088 -2.070387e-04
## Jan 2073 -9.282542e-06 0.02924598 -4.141132e-04
## Feb 2073 -2.454101e-06 0.02956034 -7.353090e-04
## Mar 2073 5.334617e-05 0.02987471 -1.105477e-03
## Apr 2073 7.236922e-05 0.03025034 -1.500130e-03
## May 2073 2.091880e-05 0.03062597 -1.824310e-03
## Jun 2073 3.663970e-05 0.03101169 1.779256e-03
## Jul 2073 3.626270e-05 0.03139741 1.393915e-03
## Aug 2073 7.181413e-05 0.03175828 9.974944e-04
## Sep 2073 -1.755466e-05 0.03211915 7.259939e-04
## Oct 2073 -1.154663e-04 0.03237574 5.673118e-04
## Nov 2073 -1.053287e-04 0.03263233 3.005806e-04
## Dec 2073 -4.126442e-05 0.03272661 1.422384e-04
## Jan 2074 -9.282542e-06 0.03282089 1.597854e-05
## Feb 2074 -2.454101e-06 0.03282269 7.353335e-06
## Mar 2074 5.334617e-05 0.03282448 -5.024370e-05
## Apr 2074 7.236922e-05 0.03282262 -6.739931e-05
## May 2074 2.091880e-05 0.03282075 -1.408146e-05
## Jun 2074 3.663970e-05 0.03282271 -3.176217e-05
## Jul 2074 3.626270e-05 0.03282467 -3.334498e-05
## Aug 2074 7.181413e-05 0.03282783 -7.206012e-05
## Sep 2074 -1.755466e-05 0.03283100 1.414497e-05
## Oct 2074 -1.154663e-04 0.03283228 1.107706e-04

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## Nov 2074 -1.053287e-04 0.03283357 9.934696e-05
## Dec 2074 -4.126442e-05 0.03283230 3.655025e-05
## Jan 2075 -9.282542e-06 0.03283103 5.835973e-06
## Feb 2075 -2.454101e-06 0.03284293 -1.288603e-05
## Mar 2075 5.334617e-05 0.03285482 -8.057986e-05
## Apr 2075 7.236922e-05 0.03313873 -3.835097e-04
## May 2075 2.091880e-05 0.03342263 -6.159660e-04
## Jun 2075 3.663970e-05 0.03418821 -1.397265e-03
## Jul 2075 3.626270e-05 0.03495379 -2.162466e-03
## Aug 2075 7.181413e-05 0.03602684 -3.271069e-03
## Sep 2075 -1.755466e-05 0.03709989 -4.254752e-03
## Oct 2075 -1.154663e-04 0.03824899 -5.305938e-03
## Nov 2075 -1.053287e-04 0.03939809 5.513692e-03
## Dec 2075 -4.126442e-05 0.04052591 4.321810e-03
## Jan 2076 -9.282542e-06 0.04165372 3.162010e-03
## Feb 2076 -2.454101e-06 0.04260051 2.208397e-03
## Mar 2076 5.334617e-05 0.04354729 1.205813e-03
## Apr 2076 7.236922e-05 0.04407291 6.611688e-04
## May 2076 2.091880e-05 0.04459853 1.869978e-04
## Jun 2076 3.663970e-05 0.04470103 6.877747e-05
## Jul 2076 3.626270e-05 0.04480353 -3.334498e-05
## Aug 2076 7.181413e-05 0.04480670 -7.206012e-05
## Sep 2076 -1.755466e-05 0.04480986 1.414497e-05
## Oct 2076 -1.154663e-04 0.04481115 1.107706e-04
## Nov 2076 -1.053287e-04 0.04481243 9.934696e-05
## Dec 2076 -4.126442e-05 0.04481117 3.655025e-05
## Jan 2077 -9.282542e-06 0.04480990 5.835973e-06
## Feb 2077 -2.454101e-06 0.04480662 2.282050e-06
## Mar 2077 5.334617e-05 0.04480335 -5.024370e-05
## Apr 2077 7.236922e-05 0.04480148 -6.739931e-05
## May 2077 2.091880e-05 0.04479961 -1.408146e-05
## Jun 2077 3.663970e-05 0.04480157 -3.176217e-05
## Jul 2077 3.626270e-05 0.04480353 -3.334498e-05
## Aug 2077 7.181413e-05 0.04480670 -7.206012e-05
## Sep 2077 -1.755466e-05 0.04480986 1.414497e-05
## Oct 2077 -1.154663e-04 0.04483823 8.368706e-05
## Nov 2077 -1.053287e-04 0.04486660 4.517997e-05
## Dec 2077 -4.126442e-05 0.04500743 -1.597123e-04
## Jan 2078 -9.282542e-06 0.04514826 -3.325222e-04
## Feb 2078 -2.454101e-06 0.04540091 -5.920041e-04
## Mar 2078 5.334617e-05 0.04565356 -9.004577e-04
## Apr 2078 7.236922e-05 0.04595585 -1.221768e-03
## May 2078 2.091880e-05 0.04625814 -1.472605e-03
## Jun 2078 3.663970e-05 0.04656930 1.427398e-03
## Jul 2078 3.626270e-05 0.04688045 1.116616e-03
## Aug 2078 7.181413e-05 0.04717183 7.896929e-04
## Sep 2078 -1.755466e-05 0.04746320 5.876903e-04
## Oct 2078 -1.154663e-04 0.04767019 4.786114e-04
## Nov 2078 -1.053287e-04 0.04787718 2.614834e-04
## Dec 2078 -4.126442e-05 0.04795289 1.217045e-04
## Jan 2079 -9.282542e-06 0.04802861 1.400796e-05
## Feb 2079 -2.454101e-06 0.04802942 6.368046e-06
## Mar 2079 5.334617e-05 0.04803023 -5.024370e-05
## Apr 2079 7.236922e-05 0.04802836 -6.739931e-05

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## May 2079 2.091880e-05 0.04802650 -1.408146e-05
## Jun 2079 3.663970e-05 0.04802846 -3.176217e-05
## Jul 2079 3.626270e-05 0.04803042 -3.334498e-05
## Aug 2079 7.181413e-05 0.04803358 -7.206012e-05
## Sep 2079 -1.755466e-05 0.04803674 1.414497e-05
## Oct 2079 -1.154663e-04 0.04803803 1.107706e-04
## Nov 2079 -1.053287e-04 0.04803932 9.934696e-05
## Dec 2079 -4.126442e-05 0.04803805 3.655025e-05
## Jan 2080 -9.282542e-06 0.04803678 5.835973e-06
## Feb 2080 -2.454101e-06 0.04803351 2.282050e-06
## Mar 2080 5.334617e-05 0.04803023 -5.024370e-05
## Apr 2080 7.236922e-05 0.04805326 -9.229880e-05
## May 2080 2.091880e-05 0.04807629 -6.388043e-05
## Jun 2080 3.663970e-05 0.04820889 -2.121982e-04
## Jul 2080 3.626270e-05 0.04834149 -3.444180e-04
## Aug 2080 7.181413e-05 0.04857994 -6.184231e-04
## Sep 2080 -1.755466e-05 0.04881840 -7.675080e-04
## Oct 2080 -1.154663e-04 0.04909931 -9.505100e-04
## Nov 2080 -1.053287e-04 0.04938022 -1.241561e-03
## Dec 2080 -4.126442e-05 0.04966322 1.378044e-03
## Jan 2081 -9.282542e-06 0.04994622 1.063064e-03
## Feb 2081 -2.454101e-06 0.05020791 7.945435e-04
## Mar 2081 5.334617e-05 0.05046960 4.770511e-04
## Apr 2081 7.236922e-05 0.05065685 2.707790e-04
## May 2081 2.091880e-05 0.05084410 1.349803e-04
## Jun 2081 3.663970e-05 0.05091684 4.652522e-05
## Jul 2081 3.626270e-05 0.05098957 -2.583198e-05
## Aug 2081 7.181413e-05 0.05099649 -6.830362e-05
## Sep 2081 -1.755466e-05 0.05100341 1.414497e-05
## Oct 2081 -1.154663e-04 0.05100470 1.107706e-04
## Nov 2081 -1.053287e-04 0.05100598 9.934696e-05
## Dec 2081 -4.126442e-05 0.05100471 3.655025e-05
## Jan 2082 -9.282542e-06 0.05100345 5.835973e-06
## Feb 2082 -2.454101e-06 0.05100017 2.282050e-06
## Mar 2082 5.334617e-05 0.05099690 -5.024370e-05
## Apr 2082 7.236922e-05 0.05099503 -6.739931e-05
## May 2082 2.091880e-05 0.05099316 -1.408146e-05
## Jun 2082 3.663970e-05 0.05099512 -3.176217e-05
## Jul 2082 3.626270e-05 0.05099708 -3.334498e-05
## Aug 2082 7.181413e-05 0.05100025 -7.206012e-05
## Sep 2082 -1.755466e-05 0.05100341 1.414497e-05
## Oct 2082 -1.154663e-04 0.05101141 1.040595e-04
## Nov 2082 -1.053287e-04 0.05101940 8.592485e-05
## Dec 2082 -4.126442e-05 0.05114458 -1.033115e-04
## Jan 2083 -9.282542e-06 0.05126975 -2.604654e-04
## Feb 2083 -2.454101e-06 0.05160433 -6.018791e-04
## Mar 2083 5.334617e-05 0.05193892 -9.922647e-04
## Apr 2083 7.236922e-05 0.05241042 -1.482788e-03
## May 2083 2.091880e-05 0.05288192 -1.902837e-03
## Jun 2083 3.663970e-05 0.05339172 -2.428363e-03
## Jul 2083 3.626270e-05 0.05390153 2.362210e-03
## Aug 2083 7.181413e-05 0.05440425 1.823935e-03
## Sep 2083 -1.755466e-05 0.05490697 1.410581e-03
## Oct 2083 -1.154663e-04 0.05532861 1.086857e-03

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## Nov 2083 -1.053287e-04 0.05575024 6.550842e-04
## Dec 2083 -4.126442e-05 0.05598236 3.589022e-04
## Jan 2084 -9.282542e-06 0.05621448 9.480268e-05
## Feb 2084 -2.454101e-06 0.05625569 4.676540e-05
## Mar 2084 5.334617e-05 0.05629690 -5.024370e-05
## Apr 2084 7.236922e-05 0.05629503 -6.739931e-05
## May 2084 2.091880e-05 0.05629316 -1.408146e-05
## Jun 2084 3.663970e-05 0.05629512 -3.176217e-05
## Jul 2084 3.626270e-05 0.05629708 -3.334498e-05
## Aug 2084 7.181413e-05 0.05630025 -7.206012e-05
## Sep 2084 -1.755466e-05 0.05630341 1.414497e-05
## Oct 2084 -1.154663e-04 0.05630470 1.107706e-04
## Nov 2084 -1.053287e-04 0.05630598 9.934696e-05
## Dec 2084 -4.126442e-05 0.05630471 3.655025e-05
## Jan 2085 -9.282542e-06 0.05630345 5.835973e-06
## Feb 2085 -2.454101e-06 0.05630017 2.282050e-06
## Mar 2085 5.334617e-05 0.05629690 -5.024370e-05
## Apr 2085 7.236922e-05 0.05629404 -6.640675e-05
## May 2085 2.091880e-05 0.05629118 -1.209632e-05
## Jun 2085 3.663970e-05 0.05627444 -1.107659e-05
## Jul 2085 3.626270e-05 0.05625770 6.041041e-06
## Aug 2085 7.181413e-05 0.05621089 1.729543e-05
## Sep 2085 -1.755466e-05 0.05616408 1.534700e-04
## Oct 2085 -1.154663e-04 0.05609536 3.201068e-04
## Nov 2085 -1.053287e-04 0.05602663 3.786943e-04
## Dec 2085 -4.126442e-05 0.05595026 3.910079e-04
## Jan 2086 -9.282542e-06 0.05587388 -3.484670e-04
## Feb 2086 -2.454101e-06 0.05579672 -2.781360e-04
## Mar 2086 5.334617e-05 0.05571956 -2.567769e-04
## Apr 2086 7.236922e-05 0.05565552 -2.117627e-04
## May 2086 2.091880e-05 0.05559149 -9.627509e-05
## Jun 2086 3.663970e-05 0.05555893 -7.943809e-05
## Jul 2086 3.626270e-05 0.05552637 -4.650317e-05
## Aug 2086 7.181413e-05 0.05552295 -7.863921e-05
## Sep 2086 -1.755466e-05 0.05551954 1.414496e-05
## Oct 2086 -1.154663e-04 0.05552082 1.107706e-04
## Nov 2086 -1.053287e-04 0.05552211 9.934696e-05
## Dec 2086 -4.126442e-05 0.05552084 3.655025e-05
## Jan 2087 -9.282542e-06 0.05551958 5.835973e-06
## Feb 2087 -2.454101e-06 0.05551630 2.282050e-06
## Mar 2087 5.334617e-05 0.05551303 -5.024370e-05
## Apr 2087 7.236922e-05 0.05551116 -6.739931e-05
## May 2087 2.091880e-05 0.05550929 -1.408146e-05
## Jun 2087 3.663970e-05 0.05551125 -3.176217e-05
## Jul 2087 3.626270e-05 0.05551321 -3.334498e-05
## Aug 2087 7.181413e-05 0.05551638 -7.206012e-05
## Sep 2087 -1.755466e-05 0.05551954 1.414496e-05
## Oct 2087 -1.154663e-04 0.05552082 1.107706e-04
## Nov 2087 -1.053287e-04 0.05552211 9.934696e-05
## Dec 2087 -4.126442e-05 0.05545857 9.882153e-05
## Jan 2088 -9.282542e-06 0.05539503 1.303785e-04
## Feb 2088 -2.454101e-06 0.05506505 4.535356e-04
## Mar 2088 5.334617e-05 0.05473506 7.277208e-04
## Apr 2088 7.236922e-05 0.05414476 1.299003e-03

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## May 2088 2.091880e-05 0.05355445 1.940759e-03
## Jun 2088 3.663970e-05 0.05285709 2.622401e-03
## Jul 2088 3.626270e-05 0.05215973 3.320140e-03
## Aug 2088 7.181413e-05 0.05145197 -3.427009e-03
## Sep 2088 -1.755466e-05 0.05074421 -2.629884e-03
## Oct 2088 -1.154663e-04 0.05008284 -1.870601e-03
## Nov 2088 -1.053287e-04 0.04942147 -1.219368e-03
## Dec 2088 -4.126442e-05 0.04894724 -8.092018e-04
## Jan 2089 -9.282542e-06 0.04847301 -3.669535e-04
## Feb 2089 -2.454101e-06 0.04829274 -1.935074e-04
## Mar 2089 5.334617e-05 0.04811246 -6.903302e-05
## Apr 2089 7.236922e-05 0.04810120 -7.679397e-05
## May 2089 2.091880e-05 0.04808994 -1.408145e-05
## Jun 2089 3.663970e-05 0.04809190 -3.176217e-05
## Jul 2089 3.626270e-05 0.04809386 -3.334498e-05
## Aug 2089 7.181413e-05 0.04809702 -7.206012e-05
## Sep 2089 -1.755466e-05 0.04810018 1.414496e-05
## Oct 2089 -1.154663e-04 0.04810147 1.107706e-04
## Nov 2089 -1.053287e-04 0.04810276 9.934696e-05
## Dec 2089 -4.126442e-05 0.04810149 3.655025e-05
## Jan 2090 -9.282542e-06 0.04810022 5.835973e-06
## Feb 2090 -2.454101e-06 0.04809695 2.282050e-06
## Mar 2090 5.334617e-05 0.04809367 -5.024370e-05
## Apr 2090 7.236922e-05 0.04809180 -6.739931e-05
## May 2090 2.091880e-05 0.04808994 -1.408145e-05
## Jun 2090 3.663970e-05 0.04808422 -2.408442e-05
## Jul 2090 3.626270e-05 0.04807850 -1.798948e-05
## Aug 2090 7.181413e-05 0.04793701 8.794806e-05
## Sep 2090 -1.755466e-05 0.04779552 3.188058e-04
## Oct 2090 -1.154663e-04 0.04741028 8.019584e-04
## Nov 2090 -1.053287e-04 0.04702504 1.177062e-03
## Dec 2090 -4.126442e-05 0.04648222 1.655819e-03
## Jan 2091 -9.282542e-06 0.04593940 2.166659e-03
## Feb 2091 -2.454101e-06 0.04535513 2.744102e-03
## Mar 2091 5.334617e-05 0.04477085 -2.790867e-03
## Apr 2091 7.236922e-05 0.04419747 -2.236504e-03
## May 2091 2.091880e-05 0.04362408 -1.611668e-03
## Jun 2091 3.663970e-05 0.04314514 -1.148450e-03
## Jul 2091 3.626270e-05 0.04266620 -6.691336e-04
## Aug 2091 7.181413e-05 0.04240236 -4.408454e-04
## Sep 2091 -1.755466e-05 0.04213852 -8.763699e-05
## Oct 2091 -1.154663e-04 0.04208892 5.987958e-05
## Nov 2091 -1.053287e-04 0.04203932 9.934696e-05
## Dec 2091 -4.126442e-05 0.04203805 3.655025e-05
## Jan 2092 -9.282542e-06 0.04203678 5.835973e-06
## Feb 2092 -2.454101e-06 0.04203351 2.282050e-06
## Mar 2092 5.334617e-05 0.04203023 -5.024370e-05
## Apr 2092 7.236922e-05 0.04202836 -6.739931e-05
## May 2092 2.091880e-05 0.04202650 -1.408145e-05
## Jun 2092 3.663970e-05 0.04202846 -3.176217e-05
## Jul 2092 3.626270e-05 0.04203042 -3.334498e-05
## Aug 2092 7.181413e-05 0.04203358 -7.206012e-05
## Sep 2092 -1.755466e-05 0.04203674 1.414496e-05
## Oct 2092 -1.154663e-04 0.04203803 1.107706e-04

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## Nov 2092 -1.053287e-04 0.04203932 9.934696e-05
## Dec 2092 -4.126442e-05 0.04203139 4.320957e-05
## Jan 2093 -9.282542e-06 0.04202346 1.915460e-05
## Feb 2093 -2.454101e-06 0.04189472 1.410655e-04
## Mar 2093 5.334617e-05 0.04176598 2.140046e-04
## Apr 2093 7.236922e-05 0.04142886 5.321041e-04
## May 2093 2.091880e-05 0.04109174 9.206770e-04
## Jun 2093 3.663970e-05 0.04062398 1.372714e-03
## Jul 2093 3.626270e-05 0.04015622 1.840850e-03
## Aug 2093 7.181413e-05 0.03965546 2.306064e-03
## Sep 2093 -1.755466e-05 0.03915469 -2.362941e-03
## Oct 2093 -1.154663e-04 0.03866027 -1.770608e-03
## Nov 2093 -1.053287e-04 0.03816585 -1.286323e-03
## Dec 2093 -4.126442e-05 0.03774747 -9.320113e-04
## Jan 2094 -9.282542e-06 0.03732909 -5.456168e-04
## Feb 2094 -2.454101e-06 0.03709423 -3.175848e-04
## Mar 2094 5.334617e-05 0.03685937 -1.385245e-04
## Apr 2094 7.236922e-05 0.03681336 -1.115397e-04
## May 2094 2.091880e-05 0.03676736 -1.408145e-05
## Jun 2094 3.663970e-05 0.03676932 -3.176217e-05
## Jul 2094 3.626270e-05 0.03677128 -3.334498e-05
## Aug 2094 7.181413e-05 0.03677444 -7.206012e-05
## Sep 2094 -1.755466e-05 0.03677760 1.414496e-05
## Oct 2094 -1.154663e-04 0.03677889 1.107706e-04
## Nov 2094 -1.053287e-04 0.03678018 9.934696e-05
## Dec 2094 -4.126442e-05 0.03677891 3.655025e-05
## Jan 2095 -9.282542e-06 0.03677764 5.835973e-06
## Feb 2095 -2.454101e-06 0.03677437 2.282050e-06
## Mar 2095 5.334617e-05 0.03677109 -5.024370e-05
## Apr 2095 7.236922e-05 0.03676922 -6.739931e-05
## May 2095 2.091880e-05 0.03676736 -1.408145e-05
## Jun 2095 3.663970e-05 0.03676932 -3.176217e-05
## Jul 2095 3.626270e-05 0.03677128 -3.334498e-05
## Aug 2095 7.181413e-05 0.03675004 -4.765699e-05
## Sep 2095 -1.755466e-05 0.03672880 6.295121e-05
## Oct 2095 -1.154663e-04 0.03660205 2.876096e-04
## Nov 2095 -1.053287e-04 0.03647530 4.042188e-04
## Dec 2095 -4.126442e-05 0.03624344 5.720216e-04
## Jan 2096 -9.282542e-06 0.03601157 7.719069e-04
## Feb 2096 -2.454101e-06 0.03573424 1.042406e-03
## Mar 2096 5.334617e-05 0.03545691 1.263934e-03
## Apr 2096 7.236922e-05 0.03517645 -1.382150e-03
## May 2096 2.091880e-05 0.03489598 -1.050234e-03
## Jun 2096 3.663970e-05 0.03463826 -8.082301e-04
## Jul 2096 3.626270e-05 0.03438053 -5.501282e-04
## Aug 2096 7.181413e-05 0.03419835 -4.034969e-04
## Sep 2096 -1.755466e-05 0.03401617 -1.319453e-04
## Oct 2096 -1.154663e-04 0.03394809 3.404381e-05
## Nov 2096 -1.053287e-04 0.03388001 9.198372e-05
## Dec 2096 -4.126442e-05 0.03387506 3.286863e-05
## Jan 2097 -9.282542e-06 0.03387011 5.835973e-06
## Feb 2097 -2.454101e-06 0.03386684 2.282050e-06
## Mar 2097 5.334617e-05 0.03386356 -5.024370e-05
## Apr 2097 7.236922e-05 0.03386170 -6.739931e-05

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## May 2097 2.091880e-05 0.03385983 -1.408145e-05
## Jun 2097 3.663970e-05 0.03386179 -3.176217e-05
## Jul 2097 3.626270e-05 0.03386375 -3.334498e-05
## Aug 2097 7.181413e-05 0.03386691 -7.206012e-05
## Sep 2097 -1.755466e-05 0.03387008 1.414496e-05
## Oct 2097 -1.154663e-04 0.03387136 1.107706e-04
## Nov 2097 -1.053287e-04 0.03387265 9.934696e-05
## Dec 2097 -4.126442e-05 0.03387138 3.655025e-05
## Jan 2098 -9.282542e-06 0.03387011 5.835973e-06
## Feb 2098 -2.454101e-06 0.03380988 5.923771e-05
## Mar 2098 5.334617e-05 0.03374965 6.366762e-05
## Apr 2098 7.236922e-05 0.03344896 3.453342e-04
## May 2098 2.091880e-05 0.03314827 6.974742e-04
## Jun 2098 3.663970e-05 0.03261203 1.218001e-03
## Jul 2098 3.626270e-05 0.03207578 1.754626e-03
## Aug 2098 7.181413e-05 0.03143932 2.355537e-03
## Sep 2098 -1.755466e-05 0.03080285 3.081369e-03
## Oct 2098 -1.154663e-04 0.03015390 -2.957792e-03
## Nov 2098 -1.053287e-04 0.02950496 -2.318981e-03
## Dec 2098 -4.126442e-05 0.02889760 -1.775687e-03
## Jan 2099 -9.282542e-06 0.02829024 -1.200310e-03
## Feb 2099 -2.454101e-06 0.02785437 -7.712747e-04
## Mar 2099 5.334617e-05 0.02741851 -3.912110e-04
## Apr 2099 7.236922e-05 0.02725475 -2.464757e-04
## May 2099 2.091880e-05 0.02709099 -3.126687e-05
## Jun 2099 3.663970e-05 0.02708436 -4.035488e-05
## Jul 2099 3.626270e-05 0.02707773 -3.334498e-05
## Aug 2099 7.181413e-05 0.02708089 -7.206012e-05
## Sep 2099 -1.755466e-05 0.02708405 1.414496e-05
## Oct 2099 -1.154663e-04 0.02708534 1.107706e-04
## Nov 2099 -1.053287e-04 0.02708663 9.934696e-05
## Dec 2099 -4.126442e-05 0.02708536 3.655025e-05
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## Feb 2100 -2.454101e-06 0.02708082 2.282050e-06
## Mar 2100 5.334617e-05 0.02707754 -5.024370e-05
## Apr 2100 7.236922e-05 0.02707568 -6.739931e-05
## May 2100 2.091880e-05 0.02707381 -1.408145e-05
## Jun 2100 3.663970e-05 0.02707577 -3.176217e-05
## Jul 2100 3.626270e-05 0.02707773 -3.334498e-05
## Aug 2100 7.181413e-05 0.02708095 -7.212139e-05
## Sep 2100 -1.755466e-05 0.02708418 1.402243e-05
## Oct 2100 -1.154663e-04 0.02708662 1.094937e-04
## Nov 2100 -1.053287e-04 0.02708906 9.691572e-05
## Dec 2100 -4.126442e-05 0.02709088 3.103448e-05
## Jan 2101 -9.282542e-06 0.02709269 -2.764341e-06
## Feb 2101 -2.454101e-06 0.02709374 -1.063994e-05
## Mar 2101 5.334617e-05 0.02709479 -6.748736e-05
## Apr 2101 7.236922e-05 0.02709756 -8.927941e-05
## May 2101 2.091880e-05 0.02710032 7.789102e-06
## Jun 2101 3.663970e-05 0.02710684 -1.445241e-05
## Jul 2101 3.626270e-05 0.02711337 -2.059602e-05
## Aug 2101 7.181413e-05 0.02712037 -6.314880e-05
## Sep 2101 -1.755466e-05 0.02712737 1.921865e-05
## Oct 2101 -1.154663e-04 0.02713079 1.137135e-04

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## Nov 2101 -1.053287e-04 0.02713420 1.001592e-04
## Dec 2101 -4.126442e-05 0.02713334 3.695637e-05
## Jan 2102 -9.282542e-06 0.02713248 5.835973e-06
## Feb 2102 -2.454101e-06 0.02712920 2.282050e-06
## Mar 2102 5.334617e-05 0.02712593 -5.024370e-05
## Apr 2102 7.236922e-05 0.02712406 -6.739931e-05
## May 2102 2.091880e-05 0.02712219 -1.408145e-05
## Jun 2102 3.663970e-05 0.02712415 -3.176217e-05
## Jul 2102 3.626270e-05 0.02712611 -3.334498e-05
## Aug 2102 7.181413e-05 0.02712928 -7.206012e-05
## Sep 2102 -1.755466e-05 0.02713244 1.414496e-05
## Oct 2102 -1.154663e-04 0.02713373 1.107706e-04
## Nov 2102 -1.053287e-04 0.02713501 9.934696e-05
## Dec 2102 -4.126442e-05 0.02713375 3.655025e-05
## Jan 2103 -9.282542e-06 0.02713248 5.835973e-06
## Feb 2103 -2.454101e-06 0.02712920 2.282050e-06
## Mar 2103 5.334617e-05 0.02712593 -5.024370e-05
## Apr 2103 7.236922e-05 0.02719282 -1.361588e-04
## May 2103 2.091880e-05 0.02725971 -1.516004e-04
## Jun 2103 3.663970e-05 0.02762243 -5.300329e-04
## Jul 2103 3.626270e-05 0.02798514 -8.923675e-04
## Aug 2103 7.181413e-05 0.02863805 -1.580832e-03
## Sep 2103 -1.755466e-05 0.02929096 -2.144376e-03
## Oct 2103 -1.154663e-04 0.03006443 -2.819936e-03
## Nov 2103 -1.053287e-04 0.03083791 -3.603546e-03
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## Jan 2104 -9.282542e-06 0.03240536 2.925353e-03
## Feb 2104 -2.454101e-06 0.03313378 2.190098e-03
## Mar 2104 5.334617e-05 0.03386221 1.405871e-03
## Apr 2104 7.236922e-05 0.03438259 8.664739e-04
## May 2104 2.091880e-05 0.03490296 3.975499e-04
## Jun 2104 3.663970e-05 0.03510036 1.844270e-04
## Jul 2104 3.626270e-05 0.03529776 -1.259795e-05
## Aug 2104 7.181413e-05 0.03531130 -6.168661e-05
## Sep 2104 -1.755466e-05 0.03532484 1.414496e-05
## Oct 2104 -1.154663e-04 0.03532612 1.107706e-04
## Nov 2104 -1.053287e-04 0.03532741 9.934696e-05
## Dec 2104 -4.126442e-05 0.03532614 3.655025e-05
## Jan 2105 -9.282542e-06 0.03532488 5.835972e-06
## Feb 2105 -2.454101e-06 0.03532160 2.282050e-06
## Mar 2105 5.334617e-05 0.03531833 -5.024370e-05
## Apr 2105 7.236922e-05 0.03531646 -6.739931e-05
## May 2105 2.091880e-05 0.03531459 -1.408145e-05
## Jun 2105 3.663970e-05 0.03531655 -3.176217e-05
## Jul 2105 3.626270e-05 0.03531851 -3.334498e-05
## Aug 2105 7.181413e-05 0.03539289 -1.432756e-04
## Sep 2105 -1.755466e-05 0.03546727 -1.282861e-04
## Oct 2105 -1.154663e-04 0.03584219 -4.052981e-04
## Nov 2105 -1.053287e-04 0.03621712 -7.903593e-04
## Dec 2105 -4.126442e-05 0.03688881 -1.526114e-03
## Jan 2106 -9.282542e-06 0.03756050 -2.229785e-03
## Feb 2106 -2.454101e-06 0.03835699 -3.033108e-03
## Mar 2106 5.334617e-05 0.03915348 -3.885402e-03
## Apr 2106 7.236922e-05 0.03996465 3.769433e-03

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## May 2106 2.091880e-05 0.04077581 3.009718e-03
## Jun 2106 3.663970e-05 0.04153561 2.234201e-03
## Jul 2106 3.626270e-05 0.04229541 1.474781e-03
## Aug 2106 7.181413e-05 0.04283947 8.951704e-04
## Sep 2106 -1.755466e-05 0.04338353 4.404795e-04
## Oct 2106 -1.154663e-04 0.04358724 3.346819e-04
## Nov 2106 -1.053287e-04 0.04379095 1.208350e-04
## Dec 2106 -4.126442e-05 0.04380042 4.729430e-05
## Jan 2107 -9.282542e-06 0.04380990 5.835972e-06
## Feb 2107 -2.454101e-06 0.04380662 2.282050e-06
## Mar 2107 5.334617e-05 0.04380335 -5.024370e-05
## Apr 2107 7.236922e-05 0.04380148 -6.739931e-05
## May 2107 2.091880e-05 0.04379961 -1.408145e-05
## Jun 2107 3.663970e-05 0.04380157 -3.176217e-05
## Jul 2107 3.626270e-05 0.04380353 -3.334498e-05
## Aug 2107 7.181413e-05 0.04380670 -7.206012e-05
## Sep 2107 -1.755466e-05 0.04380986 1.414496e-05
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## Dec 2107 -4.126442e-05 0.04381117 3.655025e-05
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## Mar 2108 5.334617e-05 0.04381308 -5.997738e-05
## Apr 2108 7.236922e-05 0.04390291 -1.688267e-04
## May 2108 2.091880e-05 0.04399274 -2.072026e-04
## Jun 2108 3.663970e-05 0.04423971 -4.698985e-04
## Jul 2108 3.626270e-05 0.04448669 -7.164965e-04
## Aug 2108 7.181413e-05 0.04483313 -1.098497e-03
## Sep 2108 -1.755466e-05 0.04517958 -1.355577e-03
## Oct 2108 -1.154663e-04 0.04554916 -1.627239e-03
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## Dec 2108 -4.126442e-05 0.04627974 1.411522e-03
## Jan 2109 -9.282542e-06 0.04664075 1.018528e-03
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## Mar 2109 5.334617e-05 0.04724388 3.527757e-04
## Apr 2109 7.236922e-05 0.04741126 1.663696e-04
## May 2109 2.091880e-05 0.04757864 5.043701e-05
## Jun 2109 3.663970e-05 0.04761286 4.970617e-07
## Jul 2109 3.626270e-05 0.04764708 -3.334498e-05
## Aug 2109 7.181413e-05 0.04765025 -7.206012e-05
## Sep 2109 -1.755466e-05 0.04765341 1.414496e-05
## Oct 2109 -1.154663e-04 0.04765470 1.107706e-04
## Nov 2109 -1.053287e-04 0.04765598 9.934695e-05
## Dec 2109 -4.126442e-05 0.04765471 3.655025e-05
## Jan 2110 -9.282542e-06 0.04765345 5.835972e-06
## Feb 2110 -2.454101e-06 0.04765017 2.282050e-06
## Mar 2110 5.334617e-05 0.04764690 -5.024370e-05
## Apr 2110 7.236922e-05 0.04764503 -6.739931e-05
## May 2110 2.091880e-05 0.04764316 -1.408145e-05
## Jun 2110 3.663970e-05 0.04764512 -3.176217e-05
## Jul 2110 3.626270e-05 0.04764708 -3.334498e-05
## Aug 2110 7.181413e-05 0.04764869 -7.050183e-05
## Sep 2110 -1.755466e-05 0.04765029 1.726154e-05
## Oct 2110 -1.154663e-04 0.04762222 1.432461e-04

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## Nov 2110 -1.053287e-04 0.04759415 1.611814e-04
## Dec 2110 -4.126442e-05 0.04751443 1.768348e-04
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## Feb 2111 -2.454101e-06 0.04732152 3.309313e-04
## Mar 2111 5.334617e-05 0.04720833 3.883202e-04
## Apr 2111 7.236922e-05 0.04708855 4.890846e-04
## May 2111 2.091880e-05 0.04696876 -5.703226e-04
## Jun 2111 3.663970e-05 0.04685472 -4.720070e-04
## Jul 2111 3.626270e-05 0.04674069 -3.575936e-04
## Aug 2111 7.181413e-05 0.04664625 -2.987047e-04
## Sep 2111 -1.755466e-05 0.04655181 -1.148957e-04
## Oct 2111 -1.154663e-04 0.04649890 3.592133e-05
## Nov 2111 -1.053287e-04 0.04644599 7.868913e-05
## Dec 2111 -4.126442e-05 0.04643440 2.622134e-05
## Jan 2112 -9.282542e-06 0.04642280 5.835972e-06
## Feb 2112 -2.454101e-06 0.04641953 2.282050e-06
## Mar 2112 5.334617e-05 0.04641625 -5.024370e-05
## Apr 2112 7.236922e-05 0.04641438 -6.739931e-05
## May 2112 2.091880e-05 0.04641252 -1.408145e-05
## Jun 2112 3.663970e-05 0.04641448 -3.176217e-05
## Jul 2112 3.626270e-05 0.04641644 -3.334498e-05
## Aug 2112 7.181413e-05 0.04641960 -7.206012e-05
## Sep 2112 -1.755466e-05 0.04642276 1.414496e-05
## Oct 2112 -1.154663e-04 0.04642405 1.107706e-04
## Nov 2112 -1.053287e-04 0.04642534 9.934695e-05
## Dec 2112 -4.126442e-05 0.04642407 3.655025e-05
## Jan 2113 -9.282542e-06 0.04642280 5.835972e-06
## Feb 2113 -2.454101e-06 0.04641953 2.282050e-06
## Mar 2113 5.334617e-05 0.04641625 -5.024370e-05
## Apr 2113 7.236922e-05 0.04637617 -2.918821e-05
## May 2113 2.091880e-05 0.04633610 6.234075e-05
## Jun 2113 3.663970e-05 0.04613758 2.451374e-04
## Jul 2113 3.626270e-05 0.04593906 4.440321e-04
## Aug 2113 7.181413e-05 0.04558114 7.663962e-04
## Sep 2113 -1.755466e-05 0.04522323 1.213681e-03
## Oct 2113 -1.154663e-04 0.04479539 1.739426e-03
## Nov 2113 -1.053287e-04 0.04436756 2.157123e-03
## Dec 2113 -4.126442e-05 0.04393006 -2.022124e-03
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## Feb 2114 -2.454101e-06 0.04308265 -1.213534e-03
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## Jun 2114 3.663970e-05 0.04198193 -1.519031e-04
## Jul 2114 3.626270e-05 0.04187528 -4.487454e-05
## Aug 2114 7.181413e-05 0.04187268 -7.782490e-05
## Sep 2114 -1.755466e-05 0.04187008 1.414496e-05
## Oct 2114 -1.154663e-04 0.04187136 1.107706e-04
## Nov 2114 -1.053287e-04 0.04187265 9.934695e-05
## Dec 2114 -4.126442e-05 0.04187138 3.655025e-05
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## Feb 2115 -2.454101e-06 0.04186684 2.282050e-06
## Mar 2115 5.334617e-05 0.04186356 -5.024370e-05
## Apr 2115 7.236922e-05 0.04186170 -6.739931e-05

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## May 2115 2.091880e-05 0.04185983 -1.408145e-05
## Jun 2115 3.663970e-05 0.04186179 -3.176217e-05
## Jul 2115 3.626270e-05 0.04186375 -3.334498e-05
## Aug 2115 7.181413e-05 0.04186691 -7.206012e-05
## Sep 2115 -1.755466e-05 0.04187008 1.414496e-05
## Oct 2115 -1.154663e-04 0.04182659 1.555427e-04
## Nov 2115 -1.053287e-04 0.04178310 1.888913e-04
## Dec 2115 -4.126442e-05 0.04154694 3.609950e-04
## Jan 2116 -9.282542e-06 0.04131077 5.651811e-04
## Feb 2116 -2.454101e-06 0.04088442 9.847057e-04
## Mar 2116 5.334617e-05 0.04045806 1.355258e-03
## Apr 2116 7.236922e-05 0.03995339 1.840905e-03
## May 2116 2.091880e-05 0.03944872 2.397026e-03
## Jun 2116 3.663970e-05 0.03893954 -2.443922e-03
## Jul 2116 3.626270e-05 0.03843036 -1.934363e-03
## Aug 2116 7.181413e-05 0.03795708 -1.496638e-03
## Sep 2116 -1.755466e-05 0.03748380 -9.339918e-04
## Oct 2116 -1.154663e-04 0.03714504 -4.973130e-04
## Nov 2116 -1.053287e-04 0.03680627 -1.686833e-04
## Dec 2116 -4.126442e-05 0.03667774 -1.042195e-04
## Jan 2117 -9.282542e-06 0.03654921 -7.673274e-06
## Feb 2117 -2.454101e-06 0.03653918 -4.472573e-06
## Mar 2117 5.334617e-05 0.03652916 -5.024370e-05
## Apr 2117 7.236922e-05 0.03652729 -6.739931e-05
## May 2117 2.091880e-05 0.03652542 -1.408145e-05
## Jun 2117 3.663970e-05 0.03652738 -3.176217e-05
## Jul 2117 3.626270e-05 0.03652934 -3.334498e-05
## Aug 2117 7.181413e-05 0.03653250 -7.206012e-05
## Sep 2117 -1.755466e-05 0.03653567 1.414496e-05
## Oct 2117 -1.154663e-04 0.03653695 1.107706e-04
## Nov 2117 -1.053287e-04 0.03653824 9.934695e-05
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## Feb 2118 -2.454101e-06 0.03653243 2.282050e-06
## Mar 2118 5.334617e-05 0.03652916 -5.024370e-05
## Apr 2118 7.236922e-05 0.03653376 -7.387345e-05
## May 2118 2.091880e-05 0.03653837 -2.702974e-05
## Jun 2118 3.663970e-05 0.03666230 -1.666866e-04
## Jul 2118 3.626270e-05 0.03678624 -2.902456e-04
## Aug 2118 7.181413e-05 0.03711534 -6.548936e-04
## Sep 2118 -1.755466e-05 0.03744443 -8.946215e-04
## Oct 2118 -1.154663e-04 0.03790238 -1.254653e-03
## Nov 2118 -1.053287e-04 0.03836032 -1.722734e-03
## Dec 2118 -4.126442e-05 0.03884897 -2.275447e-03
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## Feb 2119 -2.454101e-06 0.03981627 1.831347e-03
## Mar 2119 5.334617e-05 0.04029492 1.296897e-03
## Apr 2119 7.236922e-05 0.04069856 8.742303e-04
## May 2119 2.091880e-05 0.04110220 5.220375e-04
## Jun 2119 3.663970e-05 0.04132931 2.792104e-04
## Jul 2119 3.626270e-05 0.04155642 5.248109e-05
## Aug 2119 7.181413e-05 0.04160249 -2.914708e-05
## Sep 2119 -1.755466e-05 0.04164857 1.414496e-05
## Oct 2119 -1.154663e-04 0.04164986 1.107706e-04

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## Nov 2119 -1.053287e-04 0.04165114 9.934695e-05
## Dec 2119 -4.126442e-05 0.04164988 3.655025e-05
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## Feb 2120 -2.454101e-06 0.04164533 2.282050e-06
## Mar 2120 5.334617e-05 0.04164206 -5.024370e-05
## Apr 2120 7.236922e-05 0.04164019 -6.739931e-05
## May 2120 2.091880e-05 0.04163832 -1.408145e-05
## Jun 2120 3.663970e-05 0.04164028 -3.176217e-05
## Jul 2120 3.626270e-05 0.04164224 -3.334498e-05
## Aug 2120 7.181413e-05 0.04164541 -7.206012e-05
## Sep 2120 -1.755466e-05 0.04164857 1.414496e-05
## Oct 2120 -1.154663e-04 0.04164986 1.107706e-04
## Nov 2120 -1.053287e-04 0.04165114 9.934695e-05
## Dec 2120 -4.126442e-05 0.04171524 -2.881655e-05
## Jan 2121 -9.282542e-06 0.04177934 -1.248976e-04
## Feb 2121 -2.454101e-06 0.04211902 -4.714033e-04
## Mar 2121 5.334617e-05 0.04245870 -8.668809e-04
## Apr 2121 7.236922e-05 0.04307452 -1.501726e-03
## May 2121 2.091880e-05 0.04369034 -2.066098e-03
## Jun 2121 3.663970e-05 0.04442639 -2.817864e-03
## Jul 2121 3.626270e-05 0.04516243 -3.553532e-03
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## Dec 2121 -4.126442e-05 0.04855025 9.243448e-04
## Jan 2122 -9.282542e-06 0.04904546 3.971569e-04
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## Mar 2122 5.334617e-05 0.04941051 -3.052036e-05
## Apr 2122 7.236922e-05 0.04941850 -5.753764e-05
## May 2122 2.091880e-05 0.04942650 -1.408145e-05
## Jun 2122 3.663970e-05 0.04942846 -3.176217e-05
## Jul 2122 3.626270e-05 0.04943042 -3.334498e-05
## Aug 2122 7.181413e-05 0.04943358 -7.206012e-05
## Sep 2122 -1.755466e-05 0.04943674 1.414496e-05
## Oct 2122 -1.154663e-04 0.04943803 1.107706e-04
## Nov 2122 -1.053287e-04 0.04943932 9.934695e-05
## Dec 2122 -4.126442e-05 0.04943805 3.655025e-05
## Jan 2123 -9.282542e-06 0.04943678 5.835972e-06
## Feb 2123 -2.454101e-06 0.04943351 2.282050e-06
## Mar 2123 5.334617e-05 0.04943023 -5.024370e-05
## Apr 2123 7.236922e-05 0.04942836 -6.739931e-05
## May 2123 2.091880e-05 0.04942650 -1.408145e-05
## Jun 2123 3.663970e-05 0.04931273 8.396314e-05
## Jul 2123 3.626270e-05 0.04919896 1.981056e-04
## Aug 2123 7.181413e-05 0.04859497 7.665520e-04
## Sep 2123 -1.755466e-05 0.04799097 1.459919e-03
## Oct 2123 -1.154663e-04 0.04689870 2.650101e-03
## Nov 2123 -1.053287e-04 0.04580643 3.732234e-03
## Dec 2123 -4.126442e-05 0.04450554 4.969062e-03
## Jan 2124 -9.282542e-06 0.04320464 6.237972e-03
## Feb 2124 -2.454101e-06 0.04188019 -6.232575e-03
## Mar 2124 5.334617e-05 0.04055574 -4.963922e-03
## Apr 2124 7.236922e-05 0.03932238 -3.749592e-03

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## May 2124 2.091880e-05 0.03808903 -2.464789e-03
## Jun 2124 3.663970e-05 0.03721203 -1.603513e-03
## Jul 2124 3.626270e-05 0.03633504 -7.261391e-04
## Aug 2124 7.181413e-05 0.03600926 -4.359163e-04
## Sep 2124 -1.755466e-05 0.03568349 -2.077321e-05
## Oct 2124 -1.154663e-04 0.03566732 9.331146e-05
## Nov 2124 -1.053287e-04 0.03565114 9.934695e-05
## Dec 2124 -4.126442e-05 0.03564988 3.655025e-05
## Jan 2125 -9.282542e-06 0.03564861 5.835972e-06
## Feb 2125 -2.454101e-06 0.03564533 2.282050e-06
## Mar 2125 5.334617e-05 0.03564206 -5.024370e-05
## Apr 2125 7.236922e-05 0.03564019 -6.739931e-05
## May 2125 2.091880e-05 0.03563832 -1.408145e-05
## Jun 2125 3.663970e-05 0.03564028 -3.176217e-05
## Jul 2125 3.626270e-05 0.03564224 -3.334498e-05
## Aug 2125 7.181413e-05 0.03564541 -7.206012e-05
## Sep 2125 -1.755466e-05 0.03564857 1.414496e-05
## Oct 2125 -1.154663e-04 0.03564986 1.107706e-04
## Nov 2125 -1.053287e-04 0.03565114 9.934695e-05
## Dec 2125 -4.126442e-05 0.03564273 4.369836e-05
## Jan 2126 -9.282542e-06 0.03563431 2.013219e-05
## Feb 2126 -2.454101e-06 0.03549636 1.512522e-04
## Mar 2126 5.334617e-05 0.03535841 2.334005e-04
## Apr 2126 7.236922e-05 0.03499668 5.761077e-04
## May 2126 2.091880e-05 0.03463495 9.892884e-04
## Jun 2126 3.663970e-05 0.03413272 1.475803e-03
## Jul 2126 3.626270e-05 0.03363048 1.978416e-03
## Aug 2126 7.181413e-05 0.03309273 2.480619e-03
## Sep 2126 -1.755466e-05 0.03255497 -2.537420e-03
## Oct 2126 -1.154663e-04 0.03202417 -1.908701e-03
## Nov 2126 -1.053287e-04 0.03149336 -1.388032e-03
## Dec 2126 -4.126442e-05 0.03104437 -1.003104e-03
## Jan 2127 -9.282542e-06 0.03059538 -5.860935e-04
## Feb 2127 -2.454101e-06 0.03034352 -3.410630e-04
## Mar 2127 5.334617e-05 0.03009166 -1.450043e-04
## Apr 2127 7.236922e-05 0.03004241 -1.147796e-04
## May 2127 2.091880e-05 0.02999316 -1.408145e-05
## Jun 2127 3.663970e-05 0.02999512 -3.176217e-05
## Jul 2127 3.626270e-05 0.02999708 -3.334498e-05
## Aug 2127 7.181413e-05 0.03000025 -7.206012e-05
## Sep 2127 -1.755466e-05 0.03000341 1.414496e-05
## Oct 2127 -1.154663e-04 0.03000470 1.107706e-04
## Nov 2127 -1.053287e-04 0.03000598 9.934695e-05
## Dec 2127 -4.126442e-05 0.03000471 3.655025e-05
## Jan 2128 -9.282542e-06 0.03000345 5.835972e-06
## Feb 2128 -2.454101e-06 0.03000017 2.282050e-06
## Mar 2128 5.334617e-05 0.02999690 -5.024370e-05
## Apr 2128 7.236922e-05 0.02999503 -6.739931e-05
## May 2128 2.091880e-05 0.02999316 -1.408145e-05
## Jun 2128 3.663970e-05 0.02999281 -2.945435e-05
## Jul 2128 3.626270e-05 0.02999247 -2.872934e-05
## Aug 2128 7.181413e-05 0.02995215 -2.396402e-05
## Sep 2128 -1.755466e-05 0.02991183 1.057215e-04
## Oct 2128 -1.154663e-04 0.02979693 3.185314e-04

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## Nov 2128 -1.053287e-04 0.02968204 4.232921e-04
## Dec 2128 -4.126442e-05 0.02951799 5.232785e-04
## Jan 2129 -9.282542e-06 0.02935394 6.553473e-04
## Feb 2129 -2.454101e-06 0.02917602 8.264326e-04
## Mar 2129 5.334617e-05 0.02899811 -8.740346e-04
## Apr 2129 7.236922e-05 0.02882445 -7.194002e-04
## May 2129 2.091880e-05 0.02865079 -4.942923e-04
## Jun 2129 3.663970e-05 0.02850820 -3.674219e-04
## Jul 2129 3.626270e-05 0.02836561 -2.244536e-04
## Aug 2129 7.181413e-05 0.02828852 -1.829115e-04
## Sep 2129 -1.755466e-05 0.02821142 -1.644919e-05
## Oct 2129 -1.154663e-04 0.02819741 9.547348e-05
## Nov 2129 -1.053287e-04 0.02818340 9.934695e-05
## Dec 2129 -4.126442e-05 0.02818213 3.655025e-05
## Jan 2130 -9.282542e-06 0.02818087 5.835972e-06
## Feb 2130 -2.454101e-06 0.02817759 2.282050e-06
## Mar 2130 5.334617e-05 0.02817432 -5.024370e-05
## Apr 2130 7.236922e-05 0.02817245 -6.739931e-05
## May 2130 2.091880e-05 0.02817058 -1.408145e-05
## Jun 2130 3.663970e-05 0.02817254 -3.176217e-05
## Jul 2130 3.626270e-05 0.02817450 -3.334498e-05
## Aug 2130 7.181413e-05 0.02817767 -7.206012e-05
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## Feb 2131 -2.454101e-06 0.02820101 -2.113737e-05
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## Apr 2131 7.236922e-05 0.02834216 -2.371099e-04
## May 2131 2.091880e-05 0.02846316 -3.066637e-04
## Jun 2131 3.663970e-05 0.02868643 -5.456484e-04
## Jul 2131 3.626270e-05 0.02890969 -7.685351e-04
## Aug 2131 7.181413e-05 0.02917586 -1.070256e-03
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## Oct 2131 -1.154663e-04 0.02971069 1.372523e-03
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## Dec 2131 -4.126442e-05 0.03022729 7.817183e-04
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## Feb 2132 -2.454101e-06 0.03064984 3.203584e-04
## Mar 2132 5.334617e-05 0.03082444 8.995757e-05
## Apr 2132 7.236922e-05 0.03088914 6.234533e-06
## May 2132 2.091880e-05 0.03095384 -7.015034e-06
## Jun 2132 3.663970e-05 0.03095933 -2.822896e-05
## Jul 2132 3.626270e-05 0.03096482 -3.334498e-05
## Aug 2132 7.181413e-05 0.03096799 -7.206012e-05
## Sep 2132 -1.755466e-05 0.03097115 1.414496e-05
## Oct 2132 -1.154663e-04 0.03097244 1.107706e-04
## Nov 2132 -1.053287e-04 0.03097372 9.934695e-05
## Dec 2132 -4.126442e-05 0.03097246 3.655025e-05
## Jan 2133 -9.282542e-06 0.03097119 5.835972e-06
## Feb 2133 -2.454101e-06 0.03096791 2.282050e-06
## Mar 2133 5.334617e-05 0.03096464 -5.024370e-05
## Apr 2133 7.236922e-05 0.03096277 -6.739931e-05

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## May 2133 2.091880e-05 0.03096090 -1.408145e-05
## Jun 2133 3.663970e-05 0.03096286 -3.176217e-05
## Jul 2133 3.626270e-05 0.03096482 -3.334498e-05
## Aug 2133 7.181413e-05 0.03097395 -7.802514e-05
## Sep 2133 -1.755466e-05 0.03098308 2.214913e-06
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## Nov 2133 -1.053287e-04 0.03121042 -1.373512e-04
## Dec 2133 -4.126442e-05 0.03150946 -5.004498e-04
## Jan 2134 -9.282542e-06 0.03180849 -8.314660e-04
## Feb 2134 -2.454101e-06 0.03222596 -1.255766e-03
## Mar 2134 5.334617e-05 0.03264343 -1.729038e-03
## Apr 2134 7.236922e-05 0.03309296 -2.197584e-03
## May 2134 2.091880e-05 0.03354248 2.115173e-03
## Jun 2134 3.663970e-05 0.03398847 1.653466e-03
## Jul 2134 3.626270e-05 0.03443445 1.207857e-03
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## Sep 2134 -1.755466e-05 0.03518802 5.081041e-04
## Oct 2134 -1.154663e-04 0.03539675 3.972885e-04
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## Jul 2135 3.626270e-05 0.03567565 -3.334498e-05
## Aug 2135 7.181413e-05 0.03567882 -7.206012e-05
## Sep 2135 -1.755466e-05 0.03568198 1.414496e-05
## Oct 2135 -1.154663e-04 0.03568327 1.107706e-04
## Nov 2135 -1.053287e-04 0.03568455 9.934695e-05
## Dec 2135 -4.126442e-05 0.03569225 2.758594e-05
## Jan 2136 -9.282542e-06 0.03569995 -1.209265e-05
## Feb 2136 -2.454101e-06 0.03586556 -1.845387e-04
## Mar 2136 5.334617e-05 0.03603118 -4.059567e-04
## Apr 2136 7.236922e-05 0.03648061 -8.744097e-04
## May 2136 2.091880e-05 0.03693004 -1.272389e-03
## Jun 2136 3.663970e-05 0.03756430 -1.922372e-03
## Jul 2136 3.626270e-05 0.03819857 -2.556257e-03
## Aug 2136 7.181413e-05 0.03888008 -3.273327e-03
## Sep 2136 -1.755466e-05 0.03956160 3.214016e-03
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## Jan 2137 -9.282542e-06 0.04201918 7.481639e-04
## Feb 2137 -2.454101e-06 0.04232765 4.328648e-04
## Mar 2137 5.334617e-05 0.04263612 6.859389e-05
## Apr 2137 7.236922e-05 0.04269368 -7.980516e-06
## May 2137 2.091880e-05 0.04275123 -1.408145e-05
## Jun 2137 3.663970e-05 0.04275319 -3.176217e-05
## Jul 2137 3.626270e-05 0.04275515 -3.334498e-05
## Aug 2137 7.181413e-05 0.04275831 -7.206012e-05
## Sep 2137 -1.755466e-05 0.04276147 1.414496e-05
## Oct 2137 -1.154663e-04 0.04276276 1.107706e-04

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## Nov 2137 -1.053287e-04 0.04276405 9.934695e-05
## Dec 2137 -4.126442e-05 0.04276278 3.655025e-05
## Jan 2138 -9.282542e-06 0.04276151 5.835972e-06
## Feb 2138 -2.454101e-06 0.04275824 2.282050e-06
## Mar 2138 5.334617e-05 0.04275496 -5.024370e-05
## Apr 2138 7.236922e-05 0.04275309 -6.739931e-05
## May 2138 2.091880e-05 0.04275123 -1.408145e-05
## Jun 2138 3.663970e-05 0.04275319 -3.176217e-05
## Jul 2138 3.626270e-05 0.04275515 -3.334498e-05
## Aug 2138 7.181413e-05 0.04282105 -1.348007e-04
## Sep 2138 -1.755466e-05 0.04288696 -1.113362e-04
## Oct 2138 -1.154663e-04 0.04321741 -3.438837e-04
## Nov 2138 -1.053287e-04 0.04354787 -6.844804e-04
## Dec 2138 -4.126442e-05 0.04413948 -1.340150e-03
## Jan 2139 -9.282542e-06 0.04473108 -1.963737e-03
## Feb 2139 -2.454101e-06 0.04543240 -2.671883e-03
## Mar 2139 5.334617e-05 0.04613372 -3.429002e-03
## Apr 2139 7.236922e-05 0.04684813 3.312833e-03
## May 2139 2.091880e-05 0.04756254 2.649873e-03
## Jun 2139 3.663970e-05 0.04823215 1.964542e-03
## Jul 2139 3.626270e-05 0.04890176 1.295308e-03
## Aug 2139 7.181413e-05 0.04938145 7.800658e-04
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## Dec 2139 -4.126442e-05 0.05022858 4.601571e-05
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## Feb 2140 -2.454101e-06 0.05023351 2.282051e-06
## Mar 2140 5.334617e-05 0.05023023 -5.024370e-05
## Apr 2140 7.236922e-05 0.05022836 -6.739931e-05
## May 2140 2.091880e-05 0.05022650 -1.408145e-05
## Jun 2140 3.663970e-05 0.05022846 -3.176217e-05
## Jul 2140 3.626270e-05 0.05023042 -3.334498e-05
## Aug 2140 7.181413e-05 0.05023358 -7.206012e-05
## Sep 2140 -1.755466e-05 0.05023674 1.414496e-05
## Oct 2140 -1.154663e-04 0.05023803 1.107706e-04
## Nov 2140 -1.053287e-04 0.05023932 9.934695e-05
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## Mar 2141 5.334617e-05 0.05026422 -8.423118e-05
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## Jul 2141 3.626270e-05 0.05076389 -5.668182e-04
## Aug 2141 7.181413e-05 0.05095790 -7.963773e-04
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## Jan 2142 -9.282542e-06 0.05190164 3.657113e-04
## Feb 2142 -2.454101e-06 0.05202743 2.330866e-04
## Mar 2142 5.334617e-05 0.05215323 5.149001e-05
## Apr 2142 7.236922e-05 0.05219966 -1.396866e-05

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## May 2142 2.091880e-05 0.05224610 -8.953873e-06
## Jun 2142 3.663970e-05 0.05225062 -2.919838e-05
## Jul 2142 3.626270e-05 0.05225515 -3.334498e-05
## Aug 2142 7.181413e-05 0.05225831 -7.206012e-05
## Sep 2142 -1.755466e-05 0.05226147 1.414496e-05
## Oct 2142 -1.154663e-04 0.05226276 1.107706e-04
## Nov 2142 -1.053287e-04 0.05226405 9.934695e-05
## Dec 2142 -4.126442e-05 0.05226278 3.655025e-05
## Jan 2143 -9.282542e-06 0.05226151 5.835971e-06
## Feb 2143 -2.454101e-06 0.05225824 2.282051e-06
## Mar 2143 5.334617e-05 0.05225496 -5.024370e-05
## Apr 2143 7.236922e-05 0.05225309 -6.739931e-05
## May 2143 2.091880e-05 0.05225123 -1.408145e-05
## Jun 2143 3.663970e-05 0.05225319 -3.176217e-05
## Jul 2143 3.626270e-05 0.05225515 -3.334498e-05
## Aug 2143 7.181413e-05 0.05225575 -6.949633e-05
## Sep 2143 -1.755466e-05 0.05225635 1.927254e-05
## Oct 2143 -1.154663e-04 0.05220933 1.642012e-04
## Nov 2143 -1.053287e-04 0.05216231 2.010807e-04
## Dec 2143 -4.126442e-05 0.05203197 2.673548e-04
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## Mar 2144 5.334617e-05 0.05153341 6.713078e-04
## Apr 2144 7.236922e-05 0.05133753 8.481614e-04
## May 2144 2.091880e-05 0.05114166 -9.292427e-04
## Jun 2144 3.663970e-05 0.05095277 -7.560794e-04
## Jul 2144 3.626270e-05 0.05076389 -5.668182e-04
## Aug 2144 7.181413e-05 0.05060647 -4.449494e-04
## Sep 2144 -1.755466e-05 0.05044905 -1.981604e-04
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## Jan 2145 -9.282542e-06 0.05023678 5.835971e-06
## Feb 2145 -2.454101e-06 0.05023351 2.282051e-06
## Mar 2145 5.334617e-05 0.05023023 -5.024370e-05
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## Jul 2145 3.626270e-05 0.05023042 -3.334498e-05
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## Nov 2145 -1.053287e-04 0.05023932 9.934695e-05
## Dec 2145 -4.126442e-05 0.05023805 3.655025e-05
## Jan 2146 -9.282542e-06 0.05023678 5.835971e-06
## Feb 2146 -2.454101e-06 0.05022627 9.521384e-06
## Mar 2146 5.334617e-05 0.05021575 -3.576503e-05
## Apr 2146 7.236922e-05 0.05007749 8.347204e-05
## May 2146 2.091880e-05 0.04993923 2.731826e-04
## Jun 2146 3.663970e-05 0.04957674 6.199572e-04
## Jul 2146 3.626270e-05 0.04921424 9.828298e-04
## Aug 2146 7.181413e-05 0.04870677 1.454745e-03
## Sep 2146 -1.755466e-05 0.04819931 2.051580e-03
## Oct 2146 -1.154663e-04 0.04765277 2.696026e-03

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## Nov 2146 -1.053287e-04 0.04710624 -2.484781e-03
## Dec 2146 -4.126442e-05 0.04656609 -2.008694e-03
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## Feb 2147 -2.454101e-06 0.04556922 -1.050640e-03
## Mar 2147 5.334617e-05 0.04511251 -6.497273e-04
## Apr 2147 7.236922e-05 0.04485889 -4.151261e-04
## May 2147 2.091880e-05 0.04460526 -1.100514e-04
## Jun 2147 3.663970e-05 0.04455924 -7.974715e-05
## Jul 2147 3.626270e-05 0.04451321 -3.334498e-05
## Aug 2147 7.181413e-05 0.04451638 -7.206012e-05
## Sep 2147 -1.755466e-05 0.04451954 1.414496e-05
## Oct 2147 -1.154663e-04 0.04452082 1.107705e-04
## Nov 2147 -1.053287e-04 0.04452211 9.934695e-05
## Dec 2147 -4.126442e-05 0.04452084 3.655025e-05
## Jan 2148 -9.282542e-06 0.04451958 5.835971e-06
## Feb 2148 -2.454101e-06 0.04451630 2.282051e-06
## Mar 2148 5.334617e-05 0.04451303 -5.024370e-05
## Apr 2148 7.236922e-05 0.04451116 -6.739931e-05
## May 2148 2.091880e-05 0.04450929 -1.408145e-05
## Jun 2148 3.663970e-05 0.04451125 -3.176217e-05
## Jul 2148 3.626270e-05 0.04451321 -3.334498e-05
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## May 2149 2.091880e-05 0.04585069 -1.355476e-03
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## Aug 2149 7.181413e-05 0.04669157 7.204885e-04
## Sep 2149 -1.755466e-05 0.04695979 5.416308e-04
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## Nov 2149 -1.053287e-04 0.04734074 2.484627e-04
## Dec 2149 -4.126442e-05 0.04741027 1.148660e-04
## Jan 2150 -9.282542e-06 0.04747980 1.335170e-05
## Feb 2150 -2.454101e-06 0.04748029 6.039914e-06
## Mar 2150 5.334617e-05 0.04748077 -5.024370e-05
## Apr 2150 7.236922e-05 0.04747890 -6.739931e-05
## May 2150 2.091880e-05 0.04747703 -1.408145e-05
## Jun 2150 3.663970e-05 0.04747899 -3.176217e-05
## Jul 2150 3.626270e-05 0.04748095 -3.334498e-05
## Aug 2150 7.181413e-05 0.04748412 -7.206012e-05
## Sep 2150 -1.755466e-05 0.04748728 1.414496e-05
## Oct 2150 -1.154663e-04 0.04748857 1.107705e-04
## Nov 2150 -1.053287e-04 0.04748985 9.934695e-05
## Dec 2150 -4.126442e-05 0.04748859 3.655025e-05
## Jan 2151 -9.282542e-06 0.04748732 5.835971e-06
## Feb 2151 -2.454101e-06 0.04748404 2.282051e-06
## Mar 2151 5.334617e-05 0.04748077 -5.024370e-05
## Apr 2151 7.236922e-05 0.04746373 -5.222489e-05

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## May 2151 2.091880e-05 0.04744668 1.626738e-05
## Jun 2151 3.663970e-05 0.04716275 2.844803e-04
## Jul 2151 3.626270e-05 0.04687882 5.687911e-04
## Aug 2151 7.181413e-05 0.04611804 1.294013e-03
## Sep 2151 -1.755466e-05 0.04535727 2.144156e-03
## Oct 2151 -1.154663e-04 0.04428822 3.311116e-03
## Nov 2151 -1.053287e-04 0.04321917 4.370028e-03
## Dec 2151 -4.126442e-05 0.04206961 5.455522e-03
## Jan 2152 -9.282542e-06 0.04092005 -5.410772e-03
## Feb 2152 -2.454101e-06 0.03978722 -4.284768e-03
## Mar 2152 5.334617e-05 0.03865439 -3.207736e-03
## Apr 2152 7.236922e-05 0.03770207 -2.274437e-03
## May 2152 2.091880e-05 0.03674974 -1.270663e-03
## Jun 2152 3.663970e-05 0.03622399 -7.606347e-04
## Jul 2152 3.626270e-05 0.03569825 -2.345083e-04
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## Mar 2153 5.334617e-05 0.03549690 -5.024370e-05
## Apr 2153 7.236922e-05 0.03549503 -6.739931e-05
## May 2153 2.091880e-05 0.03549316 -1.408145e-05
## Jun 2153 3.663970e-05 0.03549512 -3.176217e-05
## Jul 2153 3.626270e-05 0.03549708 -3.334498e-05
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## Feb 2154 -2.454101e-06 0.03564174 -1.392895e-04
## Mar 2154 5.334617e-05 0.03571764 -2.709851e-04
## Apr 2154 7.236922e-05 0.03582669 -3.990637e-04
## May 2154 2.091880e-05 0.03593575 -4.566688e-04
## Jun 2154 3.663970e-05 0.03605671 -5.933515e-04
## Jul 2154 3.626270e-05 0.03617767 5.279993e-04
## Aug 2154 7.181413e-05 0.03629790 3.722237e-04
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## Oct 2154 -1.154663e-04 0.03651791 3.394945e-04
## Nov 2154 -1.053287e-04 0.03661769 2.295714e-04
## Dec 2154 -4.126442e-05 0.03667111 1.120862e-04
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## Feb 2155 -2.454101e-06 0.03673168 1.270572e-05
## Mar 2155 5.334617e-05 0.03673883 -5.024370e-05
## Apr 2155 7.236922e-05 0.03673697 -6.739931e-05
## May 2155 2.091880e-05 0.03673510 -1.408145e-05
## Jun 2155 3.663970e-05 0.03673706 -3.176217e-05
## Jul 2155 3.626270e-05 0.03673902 -3.334498e-05
## Aug 2155 7.181413e-05 0.03674218 -7.206012e-05
## Sep 2155 -1.755466e-05 0.03674535 1.414496e-05
## Oct 2155 -1.154663e-04 0.03674663 1.107705e-04

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## Nov 2155 -1.053287e-04 0.03674792 9.934695e-05
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## Mar 2156 5.334617e-05 0.03673883 -5.024370e-05
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## Oct 2159 -1.154663e-04 0.02585798 -2.323158e-03
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## Dec 2159 -4.126442e-05 0.02446300 -1.002377e-03
## Jan 2160 -9.282542e-06 0.02388074 -4.521008e-04
## Feb 2160 -2.454101e-06 0.02366004 -2.382268e-04
## Mar 2160 5.334617e-05 0.02343933 -7.332460e-05
## Apr 2160 7.236922e-05 0.02342593 -7.893976e-05

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## May 2160 2.091880e-05 0.02341252 -1.408145e-05
## Jun 2160 3.663970e-05 0.02341448 -3.176217e-05
## Jul 2160 3.626270e-05 0.02341644 -3.334498e-05
## Aug 2160 7.181413e-05 0.02341960 -7.206012e-05
## Sep 2160 -1.755466e-05 0.02342276 1.414496e-05
## Oct 2160 -1.154663e-04 0.02342405 1.107705e-04
## Nov 2160 -1.053287e-04 0.02342534 9.934695e-05
## Dec 2160 -4.126442e-05 0.02342407 3.655025e-05
## Jan 2161 -9.282542e-06 0.02342280 5.835971e-06
## Feb 2161 -2.454101e-06 0.02341953 2.282051e-06
## Mar 2161 5.334617e-05 0.02341625 -5.024370e-05
## Apr 2161 7.236922e-05 0.02341438 -6.739931e-05
## May 2161 2.091880e-05 0.02341252 -1.408145e-05
## Jun 2161 3.663970e-05 0.02342109 -3.837927e-05
## Jul 2161 3.626270e-05 0.02342967 -4.657919e-05
## Aug 2161 7.181413e-05 0.02355750 -2.099640e-04
## Sep 2161 -1.755466e-05 0.02368534 -2.484285e-04
## Oct 2161 -1.154663e-04 0.02401975 -4.849331e-04
## Nov 2161 -1.053287e-04 0.02435417 -8.294869e-04
## Dec 2161 -4.126442e-05 0.02481964 -1.359025e-03
## Jan 2162 -9.282542e-06 0.02528512 -1.856480e-03
## Feb 2162 -2.454101e-06 0.02578258 -2.360769e-03
## Mar 2162 5.334617e-05 0.02628004 2.311776e-03
## Apr 2162 7.236922e-05 0.02677074 1.802055e-03
## May 2162 2.091880e-05 0.02726144 1.362806e-03
## Jun 2162 3.663970e-05 0.02767786 9.306605e-04
## Jul 2162 3.626270e-05 0.02809429 5.146126e-04
## Aug 2162 7.181413e-05 0.02832757 2.457793e-04
## Sep 2162 -1.755466e-05 0.02856085 1.018662e-04
## Oct 2162 -1.154663e-04 0.02860600 1.546312e-04
## Nov 2162 -1.053287e-04 0.02865114 9.934695e-05
## Dec 2162 -4.126442e-05 0.02864988 3.655025e-05
## Jan 2163 -9.282542e-06 0.02864861 5.835971e-06
## Feb 2163 -2.454101e-06 0.02864533 2.282051e-06
## Mar 2163 5.334617e-05 0.02864206 -5.024370e-05
## Apr 2163 7.236922e-05 0.02864019 -6.739931e-05
## May 2163 2.091880e-05 0.02863832 -1.408145e-05
## Jun 2163 3.663970e-05 0.02864028 -3.176217e-05
## Jul 2163 3.626270e-05 0.02864224 -3.334498e-05
## Aug 2163 7.181413e-05 0.02864541 -7.206012e-05
## Sep 2163 -1.755466e-05 0.02864857 1.414496e-05
## Oct 2163 -1.154663e-04 0.02864986 1.107705e-04
## Nov 2163 -1.053287e-04 0.02865114 9.934695e-05
## Dec 2163 -4.126442e-05 0.02864988 3.655025e-05
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## Feb 2164 -2.454101e-06 0.02869867 -5.105466e-05
## Mar 2164 5.334617e-05 0.02874873 -1.569171e-04
## Apr 2164 7.236922e-05 0.02902670 -4.539077e-04
## May 2164 2.091880e-05 0.02930467 -6.804249e-04
## Jun 2164 3.663970e-05 0.02981064 -1.202116e-03
## Jul 2164 3.626270e-05 0.03031661 -1.707709e-03
## Aug 2164 7.181413e-05 0.03091876 -2.345408e-03
## Sep 2164 -1.755466e-05 0.03152090 -2.858188e-03
## Oct 2164 -1.154663e-04 0.03213111 2.984357e-03

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## Nov 2164 -1.053287e-04 0.03274131 2.364015e-03
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## Jan 2165 -9.282542e-06 0.03387394 1.135344e-03
## Feb 2165 -2.454101e-06 0.03427577 7.266871e-04
## Mar 2165 5.334617e-05 0.03467760 2.690586e-04
## Apr 2165 7.236922e-05 0.03482733 1.002986e-04
## May 2165 2.091880e-05 0.03497707 2.012010e-06
## Jun 2165 3.663970e-05 0.03498708 -2.371544e-05
## Jul 2165 3.626270e-05 0.03499708 -3.334498e-05
## Aug 2165 7.181413e-05 0.03500025 -7.206012e-05
## Sep 2165 -1.755466e-05 0.03500341 1.414496e-05
## Oct 2165 -1.154663e-04 0.03500470 1.107705e-04
## Nov 2165 -1.053287e-04 0.03500598 9.934695e-05
## Dec 2165 -4.126442e-05 0.03500471 3.655025e-05
## Jan 2166 -9.282542e-06 0.03500345 5.835971e-06
## Feb 2166 -2.454101e-06 0.03500017 2.282051e-06
## Mar 2166 5.334617e-05 0.03499690 -5.024370e-05
## Apr 2166 7.236922e-05 0.03499503 -6.739931e-05
## May 2166 2.091880e-05 0.03499316 -1.408145e-05
## Jun 2166 3.663970e-05 0.03504765 -8.428664e-05
## Jul 2166 3.626270e-05 0.03510213 -1.383939e-04
## Aug 2166 7.181413e-05 0.03538087 -4.526826e-04
## Sep 2166 -1.755466e-05 0.03565961 -6.420511e-04
## Oct 2166 -1.154663e-04 0.03615723 -1.041760e-03
## Nov 2166 -1.053287e-04 0.03665485 -1.549519e-03
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## Feb 2167 -2.454101e-06 0.03842841 2.832109e-03
## Mar 2167 5.334617e-05 0.03902478 2.179937e-03
## Apr 2167 7.236922e-05 0.03958185 1.603845e-03
## May 2167 2.091880e-05 0.04013892 1.098226e-03
## Jun 2167 3.663970e-05 0.04053981 6.816113e-04
## Jul 2167 3.626270e-05 0.04094071 2.810949e-04
## Aug 2167 7.181413e-05 0.04109317 9.308399e-05
## Sep 2167 -1.755466e-05 0.04124563 2.999334e-05
## Oct 2167 -1.154663e-04 0.04125484 1.186947e-04
## Nov 2167 -1.053287e-04 0.04126405 9.934695e-05
## Dec 2167 -4.126442e-05 0.04126278 3.655025e-05
## Jan 2168 -9.282542e-06 0.04126151 5.835971e-06
## Feb 2168 -2.454101e-06 0.04125824 2.282051e-06
## Mar 2168 5.334617e-05 0.04125496 -5.024370e-05
## Apr 2168 7.236922e-05 0.04125309 -6.739931e-05
## May 2168 2.091880e-05 0.04125123 -1.408145e-05
## Jun 2168 3.663970e-05 0.04125319 -3.176217e-05
## Jul 2168 3.626270e-05 0.04125515 -3.334497e-05
## Aug 2168 7.181413e-05 0.04125831 -7.206012e-05
## Sep 2168 -1.755466e-05 0.04126147 1.414496e-05
## Oct 2168 -1.154663e-04 0.04126276 1.107705e-04
## Nov 2168 -1.053287e-04 0.04126405 9.934695e-05
## Dec 2168 -4.126442e-05 0.04126625 3.307831e-05
## Jan 2169 -9.282542e-06 0.04126845 -1.107907e-06
## Feb 2169 -2.454101e-06 0.04133059 -7.007490e-05
## Mar 2169 5.334617e-05 0.04139273 -1.880137e-04
## Apr 2169 7.236922e-05 0.04156566 -3.799599e-04

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## May 2169 2.091880e-05 0.04173858 -5.014325e-04
## Jun 2169 3.663970e-05 0.04198543 -7.640082e-04
## Jul 2169 3.626270e-05 0.04223229 -1.010486e-03
## Aug 2169 7.181413e-05 0.04249818 -1.311933e-03
## Sep 2169 -1.755466e-05 0.04276408 1.253476e-03
## Oct 2169 -1.154663e-04 0.04302381 1.091657e-03
## Nov 2169 -1.053287e-04 0.04328354 8.217881e-04
## Dec 2169 -4.126442e-05 0.04349974 5.415251e-04
## Jan 2170 -9.282542e-06 0.04371594 2.933446e-04
## Feb 2170 -2.454101e-06 0.04383340 1.690497e-04
## Mar 2170 5.334617e-05 0.04395087 -4.217098e-06
## Apr 2170 7.236922e-05 0.04397202 -4.438601e-05
## May 2170 2.091880e-05 0.04399316 -1.408145e-05
## Jun 2170 3.663970e-05 0.04399512 -3.176217e-05
## Jul 2170 3.626270e-05 0.04399708 -3.334497e-05
## Aug 2170 7.181413e-05 0.04400025 -7.206012e-05
## Sep 2170 -1.755466e-05 0.04400341 1.414496e-05
## Oct 2170 -1.154663e-04 0.04400470 1.107705e-04
## Nov 2170 -1.053287e-04 0.04400598 9.934695e-05
## Dec 2170 -4.126442e-05 0.04400471 3.655025e-05
## Jan 2171 -9.282542e-06 0.04400345 5.835971e-06
## Feb 2171 -2.454101e-06 0.04400017 2.282051e-06
## Mar 2171 5.334617e-05 0.04399690 -5.024370e-05
## Apr 2171 7.236922e-05 0.04399503 -6.739931e-05
## May 2171 2.091880e-05 0.04399316 -1.408145e-05
## Jun 2171 3.663970e-05 0.04400529 -4.193290e-05
## Jul 2171 3.626270e-05 0.04401742 -5.368645e-05
## Aug 2171 7.181413e-05 0.04421221 -2.840234e-04
## Sep 2171 -1.755466e-05 0.04440699 -3.894402e-04
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## Nov 2171 -1.053287e-04 0.04543363 -1.328305e-03
## Dec 2171 -4.126442e-05 0.04614976 -2.108500e-03
## Jan 2172 -9.282542e-06 0.04686589 -2.856612e-03
## Feb 2172 -2.454101e-06 0.04763227 -3.629815e-03
## Mar 2172 5.334617e-05 0.04839864 3.580269e-03
## Apr 2172 7.236922e-05 0.04915387 2.806021e-03
## May 2172 2.091880e-05 0.04990909 2.102246e-03
## Jun 2172 3.663970e-05 0.05054810 1.447517e-03
## Jul 2172 3.626270e-05 0.05118711 8.088861e-04
## Aug 2172 7.181413e-05 0.05154397 4.164709e-04
## Sep 2172 -1.755466e-05 0.05190084 1.489758e-04
## Oct 2172 -1.154663e-04 0.05196954 1.781860e-04
## Nov 2172 -1.053287e-04 0.05203824 9.934695e-05
## Dec 2172 -4.126442e-05 0.05203697 3.655025e-05
## Jan 2173 -9.282542e-06 0.05203570 5.835971e-06
## Feb 2173 -2.454101e-06 0.05203243 2.282051e-06
## Mar 2173 5.334617e-05 0.05202916 -5.024370e-05
## Apr 2173 7.236922e-05 0.05202729 -6.739931e-05
## May 2173 2.091880e-05 0.05202542 -1.408145e-05
## Jun 2173 3.663970e-05 0.05202738 -3.176217e-05
## Jul 2173 3.626270e-05 0.05202934 -3.334497e-05
## Aug 2173 7.181413e-05 0.05203250 -7.206012e-05
## Sep 2173 -1.755466e-05 0.05203567 1.414496e-05
## Oct 2173 -1.154663e-04 0.05203695 1.107705e-04

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## Nov 2173 -1.053287e-04 0.05203824 9.934695e-05
## Dec 2173 -4.126442e-05 0.05203697 3.655025e-05
## Jan 2174 -9.282542e-06 0.05203570 5.835971e-06
## Feb 2174 -2.454101e-06 0.05202852 6.189799e-06
## Mar 2174 5.334617e-05 0.05202134 -4.242820e-05
## Apr 2174 7.236922e-05 0.05199897 -3.908151e-05
## May 2174 2.091880e-05 0.05197660 3.473864e-05
## Jun 2174 3.663970e-05 0.05194163 5.398455e-05
## Jul 2174 3.626270e-05 0.05190667 8.932836e-05
## Aug 2174 7.181413e-05 0.05186595 9.449822e-05
## Sep 2174 -1.755466e-05 0.05182522 2.245883e-04
## Oct 2174 -1.154663e-04 0.05178190 -9.976466e-05
## Nov 2174 -1.053287e-04 0.05173857 -6.657542e-05
## Dec 2174 -4.126442e-05 0.05169572 -8.778800e-05
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## Feb 2175 -2.454101e-06 0.05161991 -5.079196e-05
## Mar 2175 5.334617e-05 0.05158696 -7.363759e-05
## Apr 2175 7.236922e-05 0.05157398 -7.968580e-05
## May 2175 2.091880e-05 0.05156101 -1.526055e-05
## Jun 2175 3.663970e-05 0.05156238 -3.235171e-05
## Jul 2175 3.626270e-05 0.05156375 -3.334497e-05
## Aug 2175 7.181413e-05 0.05156691 -7.206012e-05
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## Apr 2176 7.236922e-05 0.05156170 -6.739931e-05
## May 2176 2.091880e-05 0.05155983 -1.408145e-05
## Jun 2176 3.663970e-05 0.05156179 -3.176217e-05
## Jul 2176 3.626270e-05 0.05156375 -3.334497e-05
## Aug 2176 7.181413e-05 0.05155701 -6.215989e-05
## Sep 2176 -1.755466e-05 0.05155028 3.394542e-05
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## Feb 2177 -2.454101e-06 0.05114487 4.242555e-04
## Mar 2177 5.334617e-05 0.05103041 4.829119e-04
## Apr 2177 7.236922e-05 0.05091552 -6.007876e-04
## May 2177 2.091880e-05 0.05080062 -4.344437e-04
## Jun 2177 3.663970e-05 0.05069723 -3.467715e-04
## Jul 2177 3.626270e-05 0.05059384 -2.430015e-04
## Aug 2177 7.181413e-05 0.05052181 -2.065224e-04
## Sep 2177 -1.755466e-05 0.05044977 -4.512317e-05
## Oct 2177 -1.154663e-04 0.05042292 7.964287e-05
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## Jan 2178 -9.282542e-06 0.05039054 5.835971e-06
## Feb 2178 -2.454101e-06 0.05038727 2.282051e-06
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## Apr 2178 7.236922e-05 0.05038213 -6.739931e-05

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## May 2178 2.091880e-05 0.05038026 -1.408145e-05
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## Jul 2178 3.626270e-05 0.05038418 -3.334497e-05
## Aug 2178 7.181413e-05 0.05038734 -7.206012e-05
## Sep 2178 -1.755466e-05 0.05039051 1.414496e-05
## Oct 2178 -1.154663e-04 0.05039179 1.107705e-04
## Nov 2178 -1.053287e-04 0.05039308 9.934695e-05
## Dec 2178 -4.126442e-05 0.05039181 3.655025e-05
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## Feb 2179 -2.454101e-06 0.05039229 -2.742049e-06
## Mar 2179 5.334617e-05 0.05039404 -6.029190e-05
## Apr 2179 7.236922e-05 0.05048683 -1.721041e-04
## May 2179 2.091880e-05 0.05057962 -2.134428e-04
## Jun 2179 3.663970e-05 0.05083451 -4.840557e-04
## Jul 2179 3.626270e-05 0.05108940 -7.385707e-04
## Aug 2179 7.181413e-05 0.05144695 -1.131663e-03
## Sep 2179 -1.755466e-05 0.05180449 -1.399835e-03
## Oct 2179 -1.154663e-04 0.05218596 -1.683398e-03
## Nov 2179 -1.053287e-04 0.05256743 1.892733e-03
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## Feb 2180 -2.454101e-06 0.05362428 7.330104e-04
## Mar 2180 5.334617e-05 0.05393569 3.657982e-04
## Apr 2180 7.236922e-05 0.05410855 1.739232e-04
## May 2180 2.091880e-05 0.05428140 5.252175e-05
## Jun 2180 3.663970e-05 0.05431666 1.539433e-06
## Jul 2180 3.626270e-05 0.05435192 -3.334497e-05
## Aug 2180 7.181413e-05 0.05435508 -7.206012e-05
## Sep 2180 -1.755466e-05 0.05435825 1.414496e-05
## Oct 2180 -1.154663e-04 0.05435953 1.107705e-04
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## Dec 2180 -4.126442e-05 0.05435955 3.655025e-05
## Jan 2181 -9.282542e-06 0.05435829 5.835971e-06
## Feb 2181 -2.454101e-06 0.05435501 2.282051e-06
## Mar 2181 5.334617e-05 0.05435174 -5.024370e-05
## Apr 2181 7.236922e-05 0.05434987 -6.739931e-05
## May 2181 2.091880e-05 0.05434800 -1.408145e-05
## Jun 2181 3.663970e-05 0.05434996 -3.176216e-05
## Jul 2181 3.626270e-05 0.05435192 -3.334497e-05
## Aug 2181 7.181413e-05 0.05435508 -7.206012e-05
## Sep 2181 -1.755466e-05 0.05435825 1.414496e-05
## Oct 2181 -1.154663e-04 0.05426227 2.080311e-04
## Nov 2181 -1.053287e-04 0.05416630 2.938680e-04
## Dec 2181 -4.126442e-05 0.05365475 7.413559e-04
## Jan 2182 -9.282542e-06 0.05314319 1.220926e-03
## Feb 2182 -2.454101e-06 0.05222085 2.136444e-03
## Mar 2182 5.334617e-05 0.05129850 3.002991e-03
## Apr 2182 7.236922e-05 0.05020437 4.078096e-03
## May 2182 2.091880e-05 0.04911025 5.223674e-03
## Jun 2182 3.663970e-05 0.04800183 -5.271804e-03
## Jul 2182 3.626270e-05 0.04689341 -4.163011e-03
## Aug 2182 7.181413e-05 0.04586159 -3.166733e-03
## Sep 2182 -1.755466e-05 0.04482976 -2.045535e-03
## Oct 2182 -1.154663e-04 0.04409233 -1.210196e-03

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## Nov 2182 -1.053287e-04 0.04335490 -4.829070e-04
## Dec 2182 -4.126442e-05 0.04307718 -2.692501e-04
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## Feb 2183 -2.454101e-06 0.04278151 -1.239132e-05
## Mar 2183 5.334617e-05 0.04276356 -5.024370e-05
## Apr 2183 7.236922e-05 0.04276170 -6.739930e-05
## May 2183 2.091880e-05 0.04275983 -1.408145e-05
## Jun 2183 3.663970e-05 0.04276179 -3.176216e-05
## Jul 2183 3.626270e-05 0.04276375 -3.334497e-05
## Aug 2183 7.181413e-05 0.04276691 -7.206012e-05
## Sep 2183 -1.755466e-05 0.04277008 1.414496e-05
## Oct 2183 -1.154663e-04 0.04277136 1.107705e-04
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## Jan 2184 -9.282542e-06 0.04277011 5.835970e-06
## Feb 2184 -2.454101e-06 0.04276684 2.282051e-06
## Mar 2184 5.334617e-05 0.04276356 -5.024370e-05
## Apr 2184 7.236922e-05 0.04268947 4.826356e-06
## May 2184 2.091880e-05 0.04261538 1.303699e-04
## Jun 2184 3.663970e-05 0.04223840 4.916265e-04
## Jul 2184 3.626270e-05 0.04186142 8.689811e-04
## Aug 2184 7.181413e-05 0.04118208 1.512769e-03
## Sep 2184 -1.755466e-05 0.04050274 2.281477e-03
## Oct 2184 -1.154663e-04 0.03969292 3.189215e-03
## Nov 2184 -1.053287e-04 0.03888309 3.988904e-03
## Dec 2184 -4.126442e-05 0.03805726 -3.854704e-03
## Jan 2185 -9.282542e-06 0.03723143 -3.060854e-03
## Feb 2185 -2.454101e-06 0.03645957 -2.295822e-03
## Mar 2185 5.334617e-05 0.03568771 -1.579762e-03
## Apr 2185 7.236922e-05 0.03513727 -1.048349e-03
## May 2185 2.091880e-05 0.03458683 -4.464632e-04
## Jun 2185 3.663970e-05 0.03438350 -2.588495e-04
## Jul 2185 3.626270e-05 0.03418017 -5.513786e-05
## Aug 2185 7.181413e-05 0.03417243 -8.295656e-05
## Sep 2185 -1.755466e-05 0.03416470 1.414496e-05
## Oct 2185 -1.154663e-04 0.03416599 1.107705e-04
## Nov 2185 -1.053287e-04 0.03416727 9.934695e-05
## Dec 2185 -4.126442e-05 0.03416600 3.655025e-05
## Jan 2186 -9.282542e-06 0.03416474 5.835970e-06
## Feb 2186 -2.454101e-06 0.03416146 2.282051e-06
## Mar 2186 5.334617e-05 0.03415819 -5.024370e-05
## Apr 2186 7.236922e-05 0.03415632 -6.739930e-05
## May 2186 2.091880e-05 0.03415445 -1.408145e-05
## Jun 2186 3.663970e-05 0.03415641 -3.176216e-05
## Jul 2186 3.626270e-05 0.03415837 -3.334497e-05
## Aug 2186 7.181413e-05 0.03416154 -7.206012e-05
## Sep 2186 -1.755466e-05 0.03416470 1.414496e-05
## Oct 2186 -1.154663e-04 0.03415907 1.176858e-04
## Nov 2186 -1.053287e-04 0.03415344 1.131775e-04
## Dec 2186 -4.126442e-05 0.03402189 1.806683e-04
## Jan 2187 -9.282542e-06 0.03389033 2.802415e-04
## Feb 2187 -2.454101e-06 0.03353892 6.248291e-04
## Mar 2187 5.334617e-05 0.03318750 9.204450e-04
## Apr 2187 7.236922e-05 0.03269786 1.391062e-03

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## May 2187 2.091880e-05 0.03220822 1.932153e-03
## Jun 2187 3.663970e-05 0.03168688 2.437772e-03
## Jul 2187 3.626270e-05 0.03116554 -2.501802e-03
## Aug 2187 7.181413e-05 0.03065394 -2.025755e-03
## Sep 2187 -1.755466e-05 0.03014234 -1.424788e-03
## Oct 2187 -1.154663e-04 0.02971049 -8.950206e-04
## Nov 2187 -1.053287e-04 0.02927863 -4.733025e-04
## Dec 2187 -4.126442e-05 0.02903688 -2.956116e-04
## Jan 2188 -9.282542e-06 0.02879512 -8.583819e-05
## Feb 2188 -2.454101e-06 0.02874601 -4.355503e-05
## Mar 2188 5.334617e-05 0.02869690 -5.024370e-05
## Apr 2188 7.236922e-05 0.02869503 -6.739930e-05
## May 2188 2.091880e-05 0.02869316 -1.408145e-05
## Jun 2188 3.663970e-05 0.02869512 -3.176216e-05
## Jul 2188 3.626270e-05 0.02869708 -3.334497e-05
## Aug 2188 7.181413e-05 0.02870025 -7.206012e-05
## Sep 2188 -1.755466e-05 0.02870341 1.414496e-05
## Oct 2188 -1.154663e-04 0.02870470 1.107705e-04
## Nov 2188 -1.053287e-04 0.02870598 9.934695e-05
## Dec 2188 -4.126442e-05 0.02870471 3.655025e-05
## Jan 2189 -9.282542e-06 0.02870345 5.835970e-06
## Feb 2189 -2.454101e-06 0.02870017 2.282051e-06
## Mar 2189 5.334617e-05 0.02869690 -5.024370e-05
## Apr 2189 7.236922e-05 0.02869090 -6.326565e-05
## May 2189 2.091880e-05 0.02868490 -5.814147e-06
## Jun 2189 3.663970e-05 0.02860898 5.438517e-05
## Jul 2189 3.626270e-05 0.02853305 1.306824e-04
## Aug 2189 7.181413e-05 0.02832812 3.000708e-04
## Sep 2189 -1.755466e-05 0.02812318 5.943794e-04
## Oct 2189 -1.154663e-04 0.02783289 9.825740e-04
## Nov 2189 -1.053287e-04 0.02754261 1.262719e-03
## Dec 2189 -4.126442e-05 0.02722854 1.512728e-03
## Jan 2190 -9.282542e-06 0.02691446 -1.469698e-03
## Feb 2190 -2.454101e-06 0.02660349 -1.165550e-03
## Mar 2190 5.334617e-05 0.02629251 -9.103736e-04
## Apr 2190 7.236922e-05 0.02603173 -6.686164e-04
## May 2190 2.091880e-05 0.02577095 -3.563858e-04
## Jun 2190 3.663970e-05 0.02562916 -2.303137e-04
## Jul 2190 3.626270e-05 0.02548736 -8.814370e-05
## Aug 2190 7.181413e-05 0.02546313 -9.945948e-05
## Sep 2190 -1.755466e-05 0.02543889 1.414496e-05
## Oct 2190 -1.154663e-04 0.02544018 1.107705e-04
## Nov 2190 -1.053287e-04 0.02544147 9.934695e-05
## Dec 2190 -4.126442e-05 0.02544020 3.655024e-05
## Jan 2191 -9.282542e-06 0.02543893 5.835970e-06
## Feb 2191 -2.454101e-06 0.02543566 2.282051e-06
## Mar 2191 5.334617e-05 0.02543238 -5.024370e-05
## Apr 2191 7.236922e-05 0.02543051 -6.739930e-05
## May 2191 2.091880e-05 0.02542865 -1.408145e-05
## Jun 2191 3.663970e-05 0.02543061 -3.176216e-05
## Jul 2191 3.626270e-05 0.02543257 -3.334497e-05
## Aug 2191 7.181413e-05 0.02543573 -7.206012e-05
## Sep 2191 -1.755466e-05 0.02543889 1.414496e-05
## Oct 2191 -1.154663e-04 0.02544018 1.107705e-04

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## Nov 2191 -1.053287e-04 0.02544147 9.934695e-05
## Dec 2191 -4.126442e-05 0.02547580 9.473166e-07
## Jan 2192 -9.282542e-06 0.02551014 -6.536989e-05
## Feb 2192 -2.454101e-06 0.02569366 -2.557172e-04
## Mar 2192 5.334617e-05 0.02587717 -4.950364e-04
## Apr 2192 7.236922e-05 0.02621174 -8.486251e-04
## May 2192 2.091880e-05 0.02654631 -1.131740e-03
## Jun 2192 3.663970e-05 0.02694810 -1.549251e-03
## Jul 2192 3.626270e-05 0.02734988 -1.950664e-03
## Aug 2192 7.181413e-05 0.02775951 1.846096e-03
## Sep 2192 -1.755466e-05 0.02816913 1.525840e-03
## Oct 2192 -1.154663e-04 0.02854929 1.243598e-03
## Nov 2192 -1.053287e-04 0.02892944 8.533077e-04
## Dec 2192 -4.126442e-05 0.02919858 5.200998e-04
## Jan 2193 -9.282542e-06 0.02946773 2.189743e-04
## Feb 2193 -2.454101e-06 0.02956565 1.142225e-04
## Mar 2193 5.334617e-05 0.02966357 -3.950111e-05
## Apr 2193 7.236922e-05 0.02966708 -6.202801e-05
## May 2193 2.091880e-05 0.02967058 -1.408145e-05
## Jun 2193 3.663970e-05 0.02967254 -3.176216e-05
## Jul 2193 3.626270e-05 0.02967450 -3.334497e-05
## Aug 2193 7.181413e-05 0.02967767 -7.206012e-05
## Sep 2193 -1.755466e-05 0.02968083 1.414496e-05
## Oct 2193 -1.154663e-04 0.02968212 1.107705e-04
## Nov 2193 -1.053287e-04 0.02968340 9.934695e-05
## Dec 2193 -4.126442e-05 0.02968213 3.655024e-05
## Jan 2194 -9.282542e-06 0.02968087 5.835970e-06
## Feb 2194 -2.454101e-06 0.02967759 2.282051e-06
## Mar 2194 5.334617e-05 0.02967432 -5.024370e-05
## Apr 2194 7.236922e-05 0.02967245 -6.739930e-05
## May 2194 2.091880e-05 0.02967058 -1.408145e-05
## Jun 2194 3.663970e-05 0.02968064 -3.985537e-05
## Jul 2194 3.626270e-05 0.02969069 -4.953139e-05
## Aug 2194 7.181413e-05 0.02984633 -2.407267e-04
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## Oct 2194 -1.154663e-04 0.03041070 -6.178189e-04
## Nov 2194 -1.053287e-04 0.03081943 -1.036685e-03
## Dec 2194 -4.126442e-05 0.03138902 -1.670340e-03
## Jan 2195 -9.282542e-06 0.03195862 -2.271913e-03
## Feb 2195 -2.454101e-06 0.03256778 -2.887903e-03
## Mar 2195 5.334617e-05 0.03317694 2.838681e-03
## Apr 2195 7.236922e-05 0.03377752 2.219081e-03
## May 2195 2.091880e-05 0.03437809 1.669954e-03
## Jun 2195 3.663970e-05 0.03488697 1.145352e-03
## Jul 2195 3.626270e-05 0.03539586 6.368475e-04
## Aug 2195 7.181413e-05 0.03568047 3.166809e-04
## Sep 2195 -1.755466e-05 0.03596509 1.214345e-04
## Oct 2195 -1.154663e-04 0.03602002 1.644153e-04
## Nov 2195 -1.053287e-04 0.03607495 9.934695e-05
## Dec 2195 -4.126442e-05 0.03607368 3.655024e-05
## Jan 2196 -9.282542e-06 0.03607241 5.835970e-06
## Feb 2196 -2.454101e-06 0.03606914 2.282051e-06
## Mar 2196 5.334617e-05 0.03606586 -5.024370e-05
## Apr 2196 7.236922e-05 0.03606400 -6.739930e-05

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## May 2196 2.091880e-05 0.03606213 -1.408145e-05
## Jun 2196 3.663970e-05 0.03606409 -3.176216e-05
## Jul 2196 3.626270e-05 0.03606605 -3.334497e-05
## Aug 2196 7.181413e-05 0.03606921 -7.206012e-05
## Sep 2196 -1.755466e-05 0.03607238 1.414496e-05
## Oct 2196 -1.154663e-04 0.03607366 1.107705e-04
## Nov 2196 -1.053287e-04 0.03607495 9.934695e-05
## Dec 2196 -4.126442e-05 0.03613903 -2.879726e-05
## Jan 2197 -9.282542e-06 0.03620311 -1.248590e-04
## Feb 2197 -2.454101e-06 0.03654268 -4.712635e-04
## Mar 2197 5.334617e-05 0.03688226 -8.666398e-04
## Apr 2197 7.236922e-05 0.03749790 -1.501303e-03
## May 2197 2.091880e-05 0.03811354 -2.065492e-03
## Jun 2197 3.663970e-05 0.03884937 -2.817042e-03
## Jul 2197 3.626270e-05 0.03958520 -3.552493e-03
## Aug 2197 7.181413e-05 0.04033440 3.448624e-03
## Sep 2197 -1.755466e-05 0.04108360 2.788789e-03
## Oct 2197 -1.154663e-04 0.04178028 2.190022e-03
## Nov 2197 -1.053287e-04 0.04247696 1.483207e-03
## Dec 2197 -4.126442e-05 0.04297202 9.240828e-04
## Jan 2198 -9.282542e-06 0.04346708 3.970414e-04
## Feb 2198 -2.454101e-06 0.04364955 2.077435e-04
## Mar 2198 5.334617e-05 0.04383202 -3.052618e-05
## Apr 2198 7.236922e-05 0.04384001 -5.754055e-05
## May 2198 2.091880e-05 0.04384800 -1.408145e-05
## Jun 2198 3.663970e-05 0.04384996 -3.176216e-05
## Jul 2198 3.626270e-05 0.04385192 -3.334497e-05
## Aug 2198 7.181413e-05 0.04385508 -7.206012e-05
## Sep 2198 -1.755466e-05 0.04385825 1.414496e-05
## Oct 2198 -1.154663e-04 0.04385953 1.107705e-04
## Nov 2198 -1.053287e-04 0.04386082 9.934695e-05
## Dec 2198 -4.126442e-05 0.04385955 3.655024e-05
## Jan 2199 -9.282542e-06 0.04385829 5.835970e-06
## Feb 2199 -2.454101e-06 0.04385501 2.282051e-06
## Mar 2199 5.334617e-05 0.04385174 -5.024370e-05
## Apr 2199 7.236922e-05 0.04384987 -6.739930e-05
## May 2199 2.091880e-05 0.04384800 -1.408145e-05
## Jun 2199 3.663970e-05 0.04385762 -3.941677e-05
## Jul 2199 3.626270e-05 0.04386723 -4.865418e-05
## Aug 2199 7.181413e-05 0.04401461 -2.315859e-04
## Sep 2199 -1.755466e-05 0.04416199 -2.895974e-04
## Oct 2199 -1.154663e-04 0.04454864 -5.783336e-04
## Nov 2199 -1.053287e-04 0.04493529 -9.751189e-04
## Dec 2199 -4.126442e-05 0.04547394 -1.577837e-03
## Jan 2200 -9.282542e-06 0.04601259 -2.148472e-03
## Feb 2200 -2.454101e-06 0.04658856 -2.731272e-03
## Mar 2200 5.334617e-05 0.04716454 2.682118e-03
## Apr 2200 7.236922e-05 0.04773246 2.095167e-03
## May 2200 2.091880e-05 0.04830039 1.578689e-03
## Jun 2200 3.663970e-05 0.04878180 1.081559e-03
## Jul 2200 3.626270e-05 0.04926321 6.005269e-04
## Aug 2200 7.181413e-05 0.04953257 2.956134e-04
## Sep 2200 -1.755466e-05 0.04980193 1.156201e-04
## Oct 2200 -1.154663e-04 0.04985396 1.615081e-04

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## Nov 2200 -1.053287e-04 0.04990598 9.934695e-05
## Dec 2200 -4.126442e-05 0.04990471 3.655024e-05
## Jan 2201 -9.282542e-06 0.04990345 5.835970e-06
## Feb 2201 -2.454101e-06 0.04990017 2.282051e-06
## Mar 2201 5.334617e-05 0.04989690 -5.024370e-05
## Apr 2201 7.236922e-05 0.04989503 -6.739930e-05
## May 2201 2.091880e-05 0.04989316 -1.408145e-05
## Jun 2201 3.663970e-05 0.04989512 -3.176216e-05
## Jul 2201 3.626270e-05 0.04989708 -3.334497e-05
## Aug 2201 7.181413e-05 0.04990025 -7.206012e-05
## Sep 2201 -1.755466e-05 0.04990341 1.414496e-05
## Oct 2201 -1.154663e-04 0.04990470 1.107705e-04
## Nov 2201 -1.053287e-04 0.04990598 9.934695e-05
## Dec 2201 -4.126442e-05 0.04990092 4.034487e-05
## Jan 2202 -9.282542e-06 0.04989586 1.342522e-05
## Feb 2202 -2.454101e-06 0.04982109 8.136395e-05
## Mar 2202 5.334617e-05 0.04974632 1.003308e-04
## Apr 2202 7.236922e-05 0.04955342 2.742110e-04
## May 2202 2.091880e-05 0.04936052 5.185646e-04
## Jun 2202 3.663970e-05 0.04909482 7.685397e-04
## Jul 2202 3.626270e-05 0.04882912 1.034613e-03
## Aug 2202 7.181413e-05 0.04854514 1.283048e-03
## Sep 2202 -1.755466e-05 0.04826115 -1.340371e-03
## Oct 2202 -1.154663e-04 0.04797997 -9.612805e-04
## Nov 2202 -1.053287e-04 0.04769879 -6.902387e-04
## Dec 2202 -4.126442e-05 0.04745985 -5.153576e-04
## Jan 2203 -9.282542e-06 0.04722090 -3.083940e-04
## Feb 2203 -2.454101e-06 0.04708567 -1.799851e-04
## Mar 2203 5.334617e-05 0.04695043 -1.005481e-04
## Apr 2203 7.236922e-05 0.04692341 -9.255149e-05
## May 2203 2.091880e-05 0.04689639 -1.408145e-05
## Jun 2203 3.663970e-05 0.04689835 -3.176216e-05
## Jul 2203 3.626270e-05 0.04690031 -3.334497e-05
## Aug 2203 7.181413e-05 0.04690347 -7.206012e-05
## Sep 2203 -1.755466e-05 0.04690664 1.414496e-05
## Oct 2203 -1.154663e-04 0.04690792 1.107705e-04
## Nov 2203 -1.053287e-04 0.04690921 9.934695e-05
## Dec 2203 -4.126442e-05 0.04690794 3.655024e-05
## Jan 2204 -9.282542e-06 0.04690667 5.835970e-06
## Feb 2204 -2.454101e-06 0.04690340 2.282051e-06
## Mar 2204 5.334617e-05 0.04690012 -5.024370e-05
## Apr 2204 7.236922e-05 0.04689826 -6.739930e-05
## May 2204 2.091880e-05 0.04689639 -1.408145e-05
## Jun 2204 3.663970e-05 0.04689835 -3.176216e-05
## Jul 2204 3.626270e-05 0.04690031 -3.334497e-05
## Aug 2204 7.181413e-05 0.04696975 -1.383384e-04
## Sep 2204 -1.755466e-05 0.04703919 -1.184116e-04
## Oct 2204 -1.154663e-04 0.04738821 -3.695201e-04
## Nov 2204 -1.053287e-04 0.04773723 -7.286778e-04
## Dec 2204 -4.126442e-05 0.04836227 -1.417777e-03
## Jan 2205 -9.282542e-06 0.04898730 -2.074794e-03
## Feb 2205 -2.454101e-06 0.04972835 -2.822671e-03
## Mar 2205 5.334617e-05 0.05046940 -3.619518e-03
## Apr 2205 7.236922e-05 0.05122420 3.503433e-03

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##	May	2205	2.091880e-05	0.05197900	2.800085e-03
##	Jun	2205	3.663970e-05	0.05268625	2.077106e-03
##	Jul	2205	3.626270e-05	0.05339351	1.370226e-03
##	Aug	2205	7.181413e-05	0.05390007	8.281143e-04
##	Sep	2205	-1.755466e-05	0.05440663	4.109226e-04
##	Oct	2205	-1.154663e-04	0.05459631	3.191586e-04
##	Nov	2205	-1.053287e-04	0.05478598	1.193453e-04
##	Dec	2205	-4.126442e-05	0.05479471	4.654943e-05
##	Jan	2206	-9.282542e-06	0.05480345	5.835970e-06
##	Feb	2206	-2.454101e-06	0.05480017	2.282051e-06
##	Mar	2206	5.334617e-05	0.05479690	-5.024370e-05
##	Apr	2206	7.236922e-05	0.05479503	-6.739930e-05
##	May	2206	2.091880e-05	0.05479316	-1.408144e-05
##	Jun	2206	3.663970e-05	0.05479512	-3.176216e-05
##	Jul	2206	3.626270e-05	0.05479708	-3.334497e-05
##	Aug	2206	7.181413e-05	0.05480025	-7.206012e-05
##	Sep	2206	-1.755466e-05	0.05480341	1.414496e-05
##	Oct	2206	-1.154663e-04	0.05480470	1.107705e-04
##	Nov	2206	-1.053287e-04	0.05480598	9.934694e-05
##	Dec	2206	-4.126442e-05	0.05480471	3.655024e-05
##	Jan	2207	-9.282542e-06	0.05480345	5.835970e-06
##	Feb	2207	-2.454101e-06	0.05476950	3.295743e-05
##	Mar	2207	5.334617e-05	0.05473555	1.110705e-05
##	Apr	2207	7.236922e-05	0.05457274	1.548921e-04
##	May	2207	2.091880e-05	0.05440993	3.691506e-04
##	Jun	2207	3.663970e-05	0.05412202	6.413396e-04
##	Jul	2207	3.626270e-05	0.05383411	9.296265e-04
##	Aug	2207	7.181413e-05	0.05349278	1.235404e-03
##	Sep	2207	-1.755466e-05	0.05315145	1.666101e-03
##	Oct	2207	-1.154663e-04	0.05280253	-1.541907e-03
##	Nov	2207	-1.053287e-04	0.05245361	-1.203124e-03
##	Dec	2207	-4.126442e-05	0.05212592	-9.394906e-04
##	Jan	2208	-9.282542e-06	0.05179822	-6.437744e-04
##	Feb	2208	-2.454101e-06	0.05156196	-4.143428e-04
##	Mar	2208	5.334617e-05	0.05132570	-2.338830e-04
##	Apr	2208	7.236922e-05	0.05123664	-1.638469e-04
##	May	2208	2.091880e-05	0.05114758	-2.333723e-05
##	Jun	2208	3.663970e-05	0.05114491	-3.639005e-05
##	Jul	2208	3.626270e-05	0.05114224	-3.334497e-05
##	Aug	2208	7.181413e-05	0.05114541	-7.206012e-05
##	Sep	2208	-1.755466e-05	0.05114857	1.414496e-05
##	Oct	2208	-1.154663e-04	0.05114986	1.107705e-04
##	Nov	2208	-1.053287e-04	0.05115114	9.934694e-05
##	Dec	2208	-4.126442e-05	0.05114988	3.655024e-05
##	Jan	2209	-9.282542e-06	0.05114861	5.835970e-06
##	Feb	2209	-2.454101e-06	0.05114533	2.282051e-06
##	Mar	2209	5.334617e-05	0.05114206	-5.024370e-05
##	Apr	2209	7.236922e-05	0.05114019	-6.739930e-05
##	May	2209	2.091880e-05	0.05113832	-1.408144e-05
##	Jun	2209	3.663970e-05	0.05114028	-3.176216e-05
##	Jul	2209	3.626270e-05	0.05114224	-3.334497e-05
##	Aug	2209	7.181413e-05	0.05113424	-6.088864e-05
##	Sep	2209	-1.755466e-05	0.05112623	3.648791e-05
##	Oct	2209	-1.154663e-04	0.05091704	3.435897e-04

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## Nov 2209 -1.053287e-04 0.05070785 5.426423e-04
## Dec 2209 -4.126442e-05 0.05014417 1.042260e-03
## Jan 2210 -9.282542e-06 0.04958048 1.573960e-03
## Feb 2210 -2.454101e-06 0.04878922 2.358391e-03
## Mar 2210 5.334617e-05 0.04799796 3.093851e-03
## Apr 2210 7.236922e-05 0.04715072 3.922073e-03
## May 2210 2.091880e-05 0.04630347 -4.001813e-03
## Jun 2210 3.663970e-05 0.04547385 -3.187908e-03
## Jul 2210 3.626270e-05 0.04464422 -2.357906e-03
## Aug 2210 7.181413e-05 0.04394766 -1.696891e-03
## Sep 2210 -1.755466e-05 0.04325109 -9.109563e-04
## Oct 2210 -1.154663e-04 0.04286388 -4.258287e-04
## Nov 2210 -1.053287e-04 0.04247666 -4.875041e-05
## Dec 2210 -4.126442e-05 0.04240134 -3.749843e-05
## Jan 2211 -9.282542e-06 0.04232603 5.835970e-06
## Feb 2211 -2.454101e-06 0.04232275 2.282051e-06
## Mar 2211 5.334617e-05 0.04231948 -5.024370e-05
## Apr 2211 7.236922e-05 0.04231761 -6.739930e-05
## May 2211 2.091880e-05 0.04231574 -1.408144e-05
## Jun 2211 3.663970e-05 0.04231770 -3.176216e-05
## Jul 2211 3.626270e-05 0.04231966 -3.334497e-05
## Aug 2211 7.181413e-05 0.04232283 -7.206012e-05
## Sep 2211 -1.755466e-05 0.04232599 1.414496e-05
## Oct 2211 -1.154663e-04 0.04232728 1.107705e-04
## Nov 2211 -1.053287e-04 0.04232856 9.934694e-05
## Dec 2211 -4.126442e-05 0.04232729 3.655024e-05
## Jan 2212 -9.282542e-06 0.04232603 5.835970e-06
## Feb 2212 -2.454101e-06 0.04232275 2.282051e-06
## Mar 2212 5.334617e-05 0.04231948 -5.024370e-05
## Apr 2212 7.236922e-05 0.04234232 -9.210927e-05
## May 2212 2.091880e-05 0.04236516 -6.350138e-05
## Jun 2212 3.663970e-05 0.04249677 -2.108248e-04
## Jul 2212 3.626270e-05 0.04262837 -3.420503e-04
## Aug 2212 7.181413e-05 0.04286503 -6.142645e-04
## Sep 2212 -1.755466e-05 0.04310169 -7.615585e-04
## Oct 2212 -1.154663e-04 0.04338048 -9.424321e-04
## Nov 2212 -1.053287e-04 0.04365926 -1.231355e-03
## Dec 2212 -4.126442e-05 0.04394010 1.367833e-03
## Jan 2213 -9.282542e-06 0.04422093 1.055017e-03
## Feb 2213 -2.454101e-06 0.04448061 7.885133e-04
## Mar 2213 5.334617e-05 0.04474028 4.730376e-04
## Apr 2213 7.236922e-05 0.04492609 2.682049e-04
## May 2213 2.091880e-05 0.04511190 1.338457e-04
## Jun 2213 3.663970e-05 0.04518410 4.592934e-05
## Jul 2213 3.626270e-05 0.04525629 -2.588915e-05
## Aug 2213 7.181413e-05 0.04526318 -6.833221e-05
## Sep 2213 -1.755466e-05 0.04527008 1.414496e-05
## Oct 2213 -1.154663e-04 0.04527136 1.107705e-04
## Nov 2213 -1.053287e-04 0.04527265 9.934694e-05
## Dec 2213 -4.126442e-05 0.04527138 3.655024e-05
## Jan 2214 -9.282542e-06 0.04527011 5.835970e-06
## Feb 2214 -2.454101e-06 0.04526684 2.282051e-06
## Mar 2214 5.334617e-05 0.04526356 -5.024370e-05
## Apr 2214 7.236922e-05 0.04526170 -6.739930e-05

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## May 2214 2.091880e-05 0.04525983 -1.408144e-05
## Jun 2214 3.663970e-05 0.04526179 -3.176216e-05
## Jul 2214 3.626270e-05 0.04526375 -3.334497e-05
## Aug 2214 7.181413e-05 0.04526691 -7.206012e-05
## Sep 2214 -1.755466e-05 0.04527008 1.414496e-05
## Oct 2214 -1.154663e-04 0.04524503 1.371050e-04
## Nov 2214 -1.053287e-04 0.04521998 1.520158e-04
## Dec 2214 -4.126442e-05 0.04508055 2.273847e-04
## Jan 2215 -9.282542e-06 0.04494111 3.348360e-04
## Feb 2215 -2.454101e-06 0.04468899 5.801317e-04
## Mar 2215 5.334617e-05 0.04443686 7.764556e-04
## Apr 2215 7.236922e-05 0.04413926 1.055042e-03
## May 2215 2.091880e-05 0.04384165 1.404103e-03
## Jun 2215 3.663970e-05 0.04354296 -1.450565e-03
## Jul 2215 3.626270e-05 0.04324427 -1.151501e-03
## Aug 2215 7.181413e-05 0.04296720 -9.099793e-04
## Sep 2215 -1.755466e-05 0.04269012 -5.435376e-04
## Oct 2215 -1.154663e-04 0.04249140 -2.468968e-04
## Nov 2215 -1.053287e-04 0.04229267 -5.830519e-05
## Dec 2215 -4.126442e-05 0.04221655 -4.624881e-05
## Jan 2216 -9.282542e-06 0.04214042 -2.110005e-06
## Feb 2216 -2.454101e-06 0.04213318 -1.690936e-06
## Mar 2216 5.334617e-05 0.04212593 -5.024370e-05
## Apr 2216 7.236922e-05 0.04212406 -6.739930e-05
## May 2216 2.091880e-05 0.04212219 -1.408144e-05
## Jun 2216 3.663970e-05 0.04212415 -3.176216e-05
## Jul 2216 3.626270e-05 0.04212611 -3.334497e-05
## Aug 2216 7.181413e-05 0.04212928 -7.206012e-05
## Sep 2216 -1.755466e-05 0.04213244 1.414496e-05
## Oct 2216 -1.154663e-04 0.04213373 1.107705e-04
## Nov 2216 -1.053287e-04 0.04213501 9.934694e-05
## Dec 2216 -4.126442e-05 0.04213375 3.655024e-05
## Jan 2217 -9.282542e-06 0.04213248 5.835970e-06
## Feb 2217 -2.454101e-06 0.04212920 2.282051e-06
## Mar 2217 5.334617e-05 0.04212593 -5.024370e-05
## Apr 2217 7.236922e-05 0.04211550 -5.883655e-05
## May 2217 2.091880e-05 0.04210507 3.044065e-06
## Jun 2217 3.663970e-05 0.04194570 1.466899e-04
## Jul 2217 3.626270e-05 0.04178634 3.064337e-04
## Aug 2217 7.181413e-05 0.04135842 6.988000e-04
## Sep 2217 -1.755466e-05 0.04093050 1.216087e-03
## Oct 2217 -1.154663e-04 0.04032781 1.916690e-03
## Nov 2217 -1.053287e-04 0.03972512 2.509245e-03
## Dec 2217 -4.126442e-05 0.03907588 3.094416e-03
## Jan 2218 -9.282542e-06 0.03842664 -3.050696e-03
## Feb 2218 -2.454101e-06 0.03778597 -2.416853e-03
## Mar 2218 5.334617e-05 0.03714530 -1.831982e-03
## Apr 2218 7.236922e-05 0.03660710 -1.312806e-03
## May 2218 2.091880e-05 0.03606890 -7.231566e-04
## Jun 2218 3.663970e-05 0.03577308 -4.430568e-04
## Jul 2218 3.626270e-05 0.03547726 -1.468592e-04
## Aug 2218 7.181413e-05 0.03542367 -1.288172e-04
## Sep 2218 -1.755466e-05 0.03537008 1.414496e-05
## Oct 2218 -1.154663e-04 0.03537136 1.107705e-04

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## Nov 2218 -1.053287e-04 0.03537265 9.934694e-05
## Dec 2218 -4.126442e-05 0.03537138 3.655024e-05
## Jan 2219 -9.282542e-06 0.03537011 5.835970e-06
## Feb 2219 -2.454101e-06 0.03536684 2.282051e-06
## Mar 2219 5.334617e-05 0.03536356 -5.024370e-05
## Apr 2219 7.236922e-05 0.03536170 -6.739930e-05
## May 2219 2.091880e-05 0.03535983 -1.408144e-05
## Jun 2219 3.663970e-05 0.03536179 -3.176216e-05
## Jul 2219 3.626270e-05 0.03536375 -3.334497e-05
## Aug 2219 7.181413e-05 0.03536691 -7.206012e-05
## Sep 2219 -1.755466e-05 0.03537008 1.414496e-05
## Oct 2219 -1.154663e-04 0.03535901 1.231211e-04
## Nov 2219 -1.053287e-04 0.03534795 1.240481e-04
## Dec 2219 -4.126442e-05 0.03511399 2.939424e-04
## Jan 2220 -9.282542e-06 0.03488003 4.959191e-04
## Feb 2220 -2.454101e-06 0.03425498 1.114140e-03
## Mar 2220 5.334617e-05 0.03362993 1.683388e-03
## Apr 2220 7.236922e-05 0.03275691 2.537386e-03
## May 2220 2.091880e-05 0.03188389 3.461858e-03
## Jun 2220 3.663970e-05 0.03095125 4.378780e-03
## Jul 2220 3.626270e-05 0.03001860 -4.441963e-03
## Aug 2220 7.181413e-05 0.02910241 -3.561323e-03
## Sep 2220 -1.755466e-05 0.02818622 -2.555762e-03
## Oct 2220 -1.154663e-04 0.02741392 -1.685554e-03
## Nov 2220 -1.053287e-04 0.02664163 -9.233945e-04
## Dec 2220 -4.126442e-05 0.02621085 -5.566846e-04
## Jan 2221 -9.282542e-06 0.02578008 -1.578924e-04
## Feb 2221 -2.454101e-06 0.02569494 -7.958212e-05
## Mar 2221 5.334617e-05 0.02560980 -5.024370e-05
## Apr 2221 7.236922e-05 0.02560793 -6.739930e-05
## May 2221 2.091880e-05 0.02560607 -1.408144e-05
## Jun 2221 3.663970e-05 0.02560803 -3.176216e-05
## Jul 2221 3.626270e-05 0.02560999 -3.334497e-05
## Aug 2221 7.181413e-05 0.02561315 -7.206012e-05
## Sep 2221 -1.755466e-05 0.02561631 1.414496e-05
## Oct 2221 -1.154663e-04 0.02561760 1.107705e-04
## Nov 2221 -1.053287e-04 0.02561888 9.934694e-05
## Dec 2221 -4.126442e-05 0.02561762 3.655024e-05
## Jan 2222 -9.282542e-06 0.02561635 5.835969e-06
## Feb 2222 -2.454101e-06 0.02561308 2.282051e-06
## Mar 2222 5.334617e-05 0.02560980 -5.024370e-05
## Apr 2222 7.236922e-05 0.02560793 -6.739930e-05
## May 2222 2.091880e-05 0.02560607 -1.408144e-05
## Jun 2222 3.663970e-05 0.02563645 -6.019036e-05
## Jul 2222 3.626270e-05 0.02566684 -9.020136e-05
## Aug 2222 7.181413e-05 0.02581916 -2.780672e-04
## Sep 2222 -1.755466e-05 0.02597147 -3.410127e-04
## Oct 2222 -1.154663e-04 0.02624139 -5.130219e-04
## Nov 2222 -1.053287e-04 0.02651131 -7.930803e-04
## Dec 2222 -4.126442e-05 0.02682930 -1.175133e-03
## Jan 2223 -9.282542e-06 0.02714729 -1.525103e-03
## Feb 2223 -2.454101e-06 0.02746856 1.533889e-03
## Mar 2223 5.334617e-05 0.02778984 1.156813e-03
## Apr 2223 7.236922e-05 0.02809049 8.371399e-04

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## May 2223 2.091880e-05 0.02839114 5.879405e-04
## Jun 2223 3.663970e-05 0.02860902 3.543421e-04
## Jul 2223 3.626270e-05 0.02882690 1.368415e-04
## Aug 2223 7.181413e-05 0.02891086 1.732200e-05
## Sep 2223 -1.755466e-05 0.02899483 2.272269e-05
## Oct 2223 -1.154663e-04 0.02900041 1.150594e-04
## Nov 2223 -1.053287e-04 0.02900598 9.934694e-05
## Dec 2223 -4.126442e-05 0.02900471 3.655024e-05
## Jan 2224 -9.282542e-06 0.02900345 5.835969e-06
## Feb 2224 -2.454101e-06 0.02900017 2.282051e-06
## Mar 2224 5.334617e-05 0.02899690 -5.024370e-05
## Apr 2224 7.236922e-05 0.02899503 -6.739930e-05
## May 2224 2.091880e-05 0.02899316 -1.408144e-05
## Jun 2224 3.663970e-05 0.02899512 -3.176216e-05
## Jul 2224 3.626270e-05 0.02899708 -3.334497e-05
## Aug 2224 7.181413e-05 0.02900025 -7.206012e-05
## Sep 2224 -1.755466e-05 0.02900341 1.414496e-05
## Oct 2224 -1.154663e-04 0.02900470 1.107705e-04
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## Dec 2224 -4.126442e-05 0.02902206 1.920732e-05
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## Feb 2225 -2.454101e-06 0.02936161 -3.591531e-04
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## May 2225 2.091880e-05 0.03142756 -2.448482e-03
## Jun 2225 3.663970e-05 0.03265281 -3.689454e-03
## Jul 2225 3.626270e-05 0.03387807 -4.914328e-03
## Aug 2225 7.181413e-05 0.03519362 -6.265431e-03
## Sep 2225 -1.755466e-05 0.03650917 6.204814e-03
## Oct 2225 -1.154663e-04 0.03780143 5.010463e-03
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## Feb 2226 -2.454101e-06 0.04186357 8.353143e-04
## Mar 2226 5.334617e-05 0.04246342 1.796669e-04
## Apr 2226 7.236922e-05 0.04257650 4.755600e-05
## May 2226 2.091880e-05 0.04268959 -1.408144e-05
## Jun 2226 3.663970e-05 0.04269155 -3.176216e-05
## Jul 2226 3.626270e-05 0.04269351 -3.334497e-05
## Aug 2226 7.181413e-05 0.04269667 -7.206012e-05
## Sep 2226 -1.755466e-05 0.04269984 1.414496e-05
## Oct 2226 -1.154663e-04 0.04270112 1.107705e-04
## Nov 2226 -1.053287e-04 0.04270241 9.934694e-05
## Dec 2226 -4.126442e-05 0.04270114 3.655024e-05
## Jan 2227 -9.282542e-06 0.04269988 5.835969e-06
## Feb 2227 -2.454101e-06 0.04269660 2.282051e-06
## Mar 2227 5.334617e-05 0.04269333 -5.024370e-05
## Apr 2227 7.236922e-05 0.04269495 -7.088802e-05
## May 2227 2.091880e-05 0.04269657 -2.105887e-05
## Jun 2227 3.663970e-05 0.04276426 -1.044687e-04
## Jul 2227 3.626270e-05 0.04283195 -1.717807e-04
## Aug 2227 7.181413e-05 0.04301075 -3.861309e-04
## Sep 2227 -1.755466e-05 0.04318954 -4.755610e-04
## Oct 2227 -1.154663e-04 0.04343691 -6.250136e-04

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## Nov 2227 -1.053287e-04 0.04368427 -8.825155e-04
## Dec 2227 -4.126442e-05 0.04394701 -1.209313e-03
## Jan 2228 -9.282542e-06 0.04420974 1.251156e-03
## Feb 2228 -2.454101e-06 0.04446616 9.879079e-04
## Mar 2228 5.334617e-05 0.04472258 6.756882e-04
## Apr 2228 7.236922e-05 0.04493923 4.400156e-04
## May 2228 2.091880e-05 0.04515588 2.748164e-04
## Jun 2228 3.663970e-05 0.04527916 1.358113e-04
## Jul 2228 3.626270e-05 0.04540245 1.290402e-05
## Aug 2228 7.181413e-05 0.04542873 -4.893562e-05
## Sep 2228 -1.755466e-05 0.04545502 1.414496e-05
## Oct 2228 -1.154663e-04 0.04545631 1.107705e-04
## Nov 2228 -1.053287e-04 0.04545759 9.934694e-05
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## Jan 2229 -9.282542e-06 0.04545506 5.835969e-06
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## Mar 2229 5.334617e-05 0.04544851 -5.024369e-05
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## Jul 2229 3.626270e-05 0.04544870 -3.334497e-05
## Aug 2229 7.181413e-05 0.04545186 -7.206012e-05
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## Oct 2229 -1.154663e-04 0.04545631 1.107705e-04
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## Feb 2230 -2.454101e-06 0.04532498 1.290908e-04
## Mar 2230 5.334617e-05 0.04522989 1.683756e-04
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## Jun 2230 3.663970e-05 0.04470088 7.140961e-04
## Jul 2230 3.626270e-05 0.04450632 9.090330e-04
## Aug 2230 7.181413e-05 0.04430970 -1.014849e-03
## Sep 2230 -1.755466e-05 0.04411309 -7.288654e-04
## Oct 2230 -1.154663e-04 0.04392816 -4.460236e-04
## Nov 2230 -1.053287e-04 0.04374323 -2.712310e-04
## Dec 2230 -4.126442e-05 0.04360905 -2.011184e-04
## Jan 2231 -9.282542e-06 0.04347487 -9.892328e-05
## Feb 2231 -2.454101e-06 0.04342186 -5.273761e-05
## Mar 2231 5.334617e-05 0.04336884 -5.552377e-05
## Apr 2231 7.236922e-05 0.04336434 -7.003934e-05
## May 2231 2.091880e-05 0.04335983 -1.408144e-05
## Jun 2231 3.663970e-05 0.04336179 -3.176216e-05
## Jul 2231 3.626270e-05 0.04336375 -3.334497e-05
## Aug 2231 7.181413e-05 0.04336691 -7.206012e-05
## Sep 2231 -1.755466e-05 0.04337008 1.414496e-05
## Oct 2231 -1.154663e-04 0.04337136 1.107705e-04
## Nov 2231 -1.053287e-04 0.04337265 9.934694e-05
## Dec 2231 -4.126442e-05 0.04337138 3.655024e-05
## Jan 2232 -9.282542e-06 0.04337011 5.835969e-06
## Feb 2232 -2.454101e-06 0.04336684 2.282051e-06
## Mar 2232 5.334617e-05 0.04336356 -5.024369e-05
## Apr 2232 7.236922e-05 0.04336170 -6.739930e-05

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## May 2232 2.091880e-05 0.04335983 -1.408144e-05
## Jun 2232 3.663970e-05 0.04339675 -6.672433e-05
## Jul 2232 3.626270e-05 0.04343367 -1.032693e-04
## Aug 2232 7.181413e-05 0.04362027 -3.254161e-04
## Sep 2232 -1.755466e-05 0.04380686 -4.226426e-04
## Oct 2232 -1.154663e-04 0.04413853 -6.563952e-04
## Nov 2232 -1.053287e-04 0.04447019 -9.981969e-04
## Dec 2232 -4.126442e-05 0.04486156 -1.453628e-03
## Jan 2233 -9.282542e-06 0.04525293 -1.876976e-03
## Feb 2233 -2.454101e-06 0.04564880 1.885916e-03
## Mar 2233 5.334617e-05 0.04604467 1.434244e-03
## Apr 2233 7.236922e-05 0.04641485 1.045040e-03
## May 2233 2.091880e-05 0.04678503 7.263100e-04
## Jun 2233 3.663970e-05 0.04705253 4.430847e-04
## Jul 2233 3.626270e-05 0.04732004 1.759574e-04
## Aug 2233 7.181413e-05 0.04742258 3.786570e-05
## Sep 2233 -1.755466e-05 0.04752512 2.469421e-05
## Oct 2233 -1.154663e-04 0.04753168 1.160452e-04
## Nov 2233 -1.053287e-04 0.04753824 9.934694e-05
## Dec 2233 -4.126442e-05 0.04753697 3.655024e-05
## Jan 2234 -9.282542e-06 0.04753570 5.835969e-06
## Feb 2234 -2.454101e-06 0.04753243 2.282051e-06
## Mar 2234 5.334617e-05 0.04752916 -5.024369e-05
## Apr 2234 7.236922e-05 0.04752729 -6.739930e-05
## May 2234 2.091880e-05 0.04752542 -1.408144e-05
## Jun 2234 3.663970e-05 0.04752738 -3.176216e-05
## Jul 2234 3.626270e-05 0.04752934 -3.334497e-05
## Aug 2234 7.181413e-05 0.04753250 -7.206012e-05
## Sep 2234 -1.755466e-05 0.04753567 1.414496e-05
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## Nov 2234 -1.053287e-04 0.04753824 9.934694e-05
## Dec 2234 -4.126442e-05 0.04753328 4.024207e-05
## Jan 2235 -9.282542e-06 0.04752832 1.321963e-05
## Feb 2235 -2.454101e-06 0.04745549 7.922161e-05
## Mar 2235 5.334617e-05 0.04738266 9.625177e-05
## Apr 2235 7.236922e-05 0.04719493 2.649568e-04
## May 2235 2.091880e-05 0.04700720 5.041352e-04
## Jun 2235 3.663970e-05 0.04674876 7.468594e-04
## Jul 2235 3.626270e-05 0.04649031 1.005682e-03
## Aug 2235 7.181413e-05 0.04621411 1.246338e-03
## Sep 2235 -1.755466e-05 0.04593790 -1.303678e-03
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## Nov 2235 -1.053287e-04 0.04539084 -6.688488e-04
## Dec 2235 -4.126442e-05 0.04515834 -5.004064e-04
## Jan 2236 -9.282542e-06 0.04492583 -2.998815e-04
## Feb 2236 -2.454101e-06 0.04479417 -1.750475e-04
## Mar 2236 5.334617e-05 0.04466251 -9.918531e-05
## Apr 2236 7.236922e-05 0.04463617 -9.187011e-05
## May 2236 2.091880e-05 0.04460983 -1.408144e-05
## Jun 2236 3.663970e-05 0.04461179 -3.176216e-05
## Jul 2236 3.626270e-05 0.04461375 -3.334497e-05
## Aug 2236 7.181413e-05 0.04461691 -7.206012e-05
## Sep 2236 -1.755466e-05 0.04462008 1.414496e-05
## Oct 2236 -1.154663e-04 0.04462136 1.107705e-04

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## Nov 2236 -1.053287e-04 0.04462265 9.934694e-05
## Dec 2236 -4.126442e-05 0.04462138 3.655024e-05
## Jan 2237 -9.282542e-06 0.04462011 5.835969e-06
## Feb 2237 -2.454101e-06 0.04461684 2.282051e-06
## Mar 2237 5.334617e-05 0.04461356 -5.024369e-05
## Apr 2237 7.236922e-05 0.04461170 -6.739930e-05
## May 2237 2.091880e-05 0.04460983 -1.408144e-05
## Jun 2237 3.663970e-05 0.04461795 -3.792519e-05
## Jul 2237 3.626270e-05 0.04462608 -4.567104e-05
## Aug 2237 7.181413e-05 0.04474535 -2.005008e-04
## Sep 2237 -1.755466e-05 0.04486463 -2.304104e-04
## Oct 2237 -1.154663e-04 0.04517619 -4.440551e-04
## Nov 2237 -1.053287e-04 0.04548774 -7.657490e-04
## Dec 2237 -4.126442e-05 0.04592119 -1.263258e-03
## Jan 2238 -9.282542e-06 0.04635463 -1.728685e-03
## Feb 2238 -2.454101e-06 0.04681773 -2.198613e-03
## Mar 2238 5.334617e-05 0.04728083 2.149691e-03
## Apr 2238 7.236922e-05 0.04773773 1.673770e-03
## May 2238 2.091880e-05 0.04819463 1.268322e-03
## Jun 2238 3.663970e-05 0.04858261 8.646177e-04
## Jul 2238 3.626270e-05 0.04897060 4.770110e-04
## Aug 2238 7.181413e-05 0.04918809 2.239687e-04
## Sep 2238 -1.755466e-05 0.04940558 9.584668e-05
## Oct 2238 -1.154663e-04 0.04944772 1.516214e-04
## Nov 2238 -1.053287e-04 0.04948985 9.934694e-05
## Dec 2238 -4.126442e-05 0.04948859 3.655024e-05
## Jan 2239 -9.282542e-06 0.04948732 5.835969e-06
## Feb 2239 -2.454101e-06 0.04948404 2.282051e-06
## Mar 2239 5.334617e-05 0.04948077 -5.024369e-05
## Apr 2239 7.236922e-05 0.04947890 -6.739930e-05
## May 2239 2.091880e-05 0.04947703 -1.408144e-05
## Jun 2239 3.663970e-05 0.04947899 -3.176216e-05
## Jul 2239 3.626270e-05 0.04948095 -3.334497e-05
## Aug 2239 7.181413e-05 0.04948412 -7.206012e-05
## Sep 2239 -1.755466e-05 0.04948728 1.414496e-05
## Oct 2239 -1.154663e-04 0.04948857 1.107705e-04
## Nov 2239 -1.053287e-04 0.04948985 9.934694e-05
## Dec 2239 -4.126442e-05 0.04948859 3.655024e-05
## Jan 2240 -9.282542e-06 0.04948732 5.835969e-06
## Feb 2240 -2.454101e-06 0.04944695 3.937408e-05
## Mar 2240 5.334617e-05 0.04940658 2.394035e-05
## Apr 2240 7.236922e-05 0.04921011 2.013908e-04
## May 2240 2.091880e-05 0.04901364 4.493148e-04
## Jun 2240 3.663970e-05 0.04866509 7.821385e-04
## Jul 2240 3.626270e-05 0.04831655 1.131060e-03
## Aug 2240 7.181413e-05 0.04790316 1.508898e-03
## Sep 2240 -1.755466e-05 0.04748977 2.011656e-03
## Oct 2240 -1.154663e-04 0.04706759 -1.887612e-03
## Nov 2240 -1.053287e-04 0.04664542 -1.475574e-03
## Dec 2240 -4.126442e-05 0.04624944 -1.143658e-03
## Jan 2241 -9.282542e-06 0.04585346 -7.796593e-04
## Feb 2241 -2.454101e-06 0.04556846 -5.014920e-04
## Mar 2241 5.334617e-05 0.04528347 -2.722966e-04
## Apr 2241 7.236922e-05 0.04517617 -1.840217e-04

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## May 2241 2.091880e-05 0.04506887 -2.527334e-05
## Jun 2241 3.663970e-05 0.04506523 -3.735811e-05
## Jul 2241 3.626270e-05 0.04506160 -3.334497e-05
## Aug 2241 7.181413e-05 0.04506476 -7.206012e-05
## Sep 2241 -1.755466e-05 0.04506793 1.414496e-05
## Oct 2241 -1.154663e-04 0.04506921 1.107705e-04
## Nov 2241 -1.053287e-04 0.04507050 9.934694e-05
## Dec 2241 -4.126442e-05 0.04506923 3.655024e-05
## Jan 2242 -9.282542e-06 0.04506796 5.835969e-06
## Feb 2242 -2.454101e-06 0.04506469 2.282051e-06
## Mar 2242 5.334617e-05 0.04506141 -5.024369e-05
## Apr 2242 7.236922e-05 0.04505955 -6.739930e-05
## May 2242 2.091880e-05 0.04505768 -1.408144e-05
## Jun 2242 3.663970e-05 0.04505964 -3.176216e-05
## Jul 2242 3.626270e-05 0.04506160 -3.334497e-05
## Aug 2242 7.181413e-05 0.04506356 -7.085992e-05
## Sep 2242 -1.755466e-05 0.04506553 1.654536e-05
## Oct 2242 -1.154663e-04 0.04504420 1.357833e-04
## Nov 2242 -1.053287e-04 0.04502287 1.469721e-04
## Dec 2242 -4.126442e-05 0.04496118 1.445981e-04
## Jan 2243 -9.282542e-06 0.04489949 1.743066e-04
## Feb 2243 -2.454101e-06 0.04481156 2.554095e-04
## Mar 2243 5.334617e-05 0.04472363 2.875405e-04
## Apr 2243 7.236922e-05 0.04463094 3.612076e-04
## May 2243 2.091880e-05 0.04453825 -4.425013e-04
## Jun 2243 3.663970e-05 0.04445087 -3.708411e-04
## Jul 2243 3.626270e-05 0.04436349 -2.830830e-04
## Aug 2243 7.181413e-05 0.04429148 -2.466230e-04
## Sep 2243 -1.755466e-05 0.04421946 -8.524282e-05
## Oct 2243 -1.154663e-04 0.04417901 5.312127e-05
## Nov 2243 -1.053287e-04 0.04413856 8.343618e-05
## Dec 2243 -4.126442e-05 0.04412934 2.859486e-05
## Jan 2244 -9.282542e-06 0.04412011 5.835969e-06
## Feb 2244 -2.454101e-06 0.04411684 2.282051e-06
## Mar 2244 5.334617e-05 0.04411356 -5.024369e-05
## Apr 2244 7.236922e-05 0.04411170 -6.739930e-05
## May 2244 2.091880e-05 0.04410983 -1.408144e-05
## Jun 2244 3.663970e-05 0.04411179 -3.176216e-05
## Jul 2244 3.626270e-05 0.04411375 -3.334497e-05
## Aug 2244 7.181413e-05 0.04411691 -7.206012e-05
## Sep 2244 -1.755466e-05 0.04412008 1.414496e-05
## Oct 2244 -1.154663e-04 0.04412136 1.107705e-04
## Nov 2244 -1.053287e-04 0.04412265 9.934694e-05
## Dec 2244 -4.126442e-05 0.04412138 3.655024e-05
## Jan 2245 -9.282542e-06 0.04412011 5.835969e-06
## Feb 2245 -2.454101e-06 0.04410599 1.313152e-05
## Mar 2245 5.334617e-05 0.04409187 -2.854476e-05
## Apr 2245 7.236922e-05 0.04388559 1.587091e-04
## May 2245 2.091880e-05 0.04367931 4.164364e-04
## Jun 2245 3.663970e-05 0.04313507 9.449589e-04
## Jul 2245 3.626270e-05 0.04259082 1.489579e-03
## Aug 2245 7.181413e-05 0.04182872 2.216137e-03
## Sep 2245 -1.755466e-05 0.04106661 3.067615e-03
## Oct 2245 -1.154663e-04 0.04024688 3.985250e-03

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## Nov 2245 -1.053287e-04 0.03942716 -3.773442e-03
## Dec 2245 -4.126442e-05 0.03861827 -3.028623e-03
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## Feb 2246 -2.454101e-06 0.03712656 -1.575715e-03
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## Apr 2246 7.236922e-05 0.03606455 -5.885317e-04
## May 2246 2.091880e-05 0.03568538 -1.579101e-04
## Jun 2246 3.663970e-05 0.03561542 -1.036765e-04
## Jul 2246 3.626270e-05 0.03554547 -3.334497e-05
## Aug 2246 7.181413e-05 0.03554863 -7.206012e-05
## Sep 2246 -1.755466e-05 0.03555180 1.414496e-05
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## Nov 2246 -1.053287e-04 0.03555437 9.934694e-05
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## Apr 2247 7.236922e-05 0.03554342 -6.739930e-05
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## Jul 2247 3.626270e-05 0.03554547 -3.334497e-05
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## Jul 2248 3.626270e-05 0.03244635 -1.749281e-03
## Aug 2248 7.181413e-05 0.03201946 -1.357942e-03
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## Jan 2249 -9.282542e-06 0.03074897 -6.358026e-06
## Feb 2249 -2.454101e-06 0.03073960 -3.814946e-06
## Mar 2249 5.334617e-05 0.03073023 -5.024369e-05
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## May 2249 2.091880e-05 0.03072650 -1.408144e-05
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## Jul 2249 3.626270e-05 0.03073042 -3.334497e-05
## Aug 2249 7.181413e-05 0.03073358 -7.206012e-05
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## Oct 2249 -1.154663e-04 0.03073803 1.107705e-04
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## Feb 2250 -2.454101e-06 0.03073351 2.282051e-06
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## Apr 2250 7.236922e-05 0.03071436 -5.339277e-05

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## May 2250 2.091880e-05 0.03069848 1.393161e-05
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## Apr 2251 7.236922e-05 0.02924978 -2.576322e-04
## May 2251 2.091880e-05 0.02914153 -9.793206e-05
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## Aug 2251 7.181413e-05 0.02906688 -7.417323e-05
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## Oct 2251 -1.154663e-04 0.02906921 1.107705e-04
## Nov 2251 -1.053287e-04 0.02907050 9.934694e-05
## Dec 2251 -4.126442e-05 0.02906923 3.655024e-05
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## Feb 2252 -2.454101e-06 0.02906469 2.282051e-06
## Mar 2252 5.334617e-05 0.02906141 -5.024369e-05
## Apr 2252 7.236922e-05 0.02905955 -6.739930e-05
## May 2252 2.091880e-05 0.02905768 -1.408144e-05
## Jun 2252 3.663970e-05 0.02905964 -3.176216e-05
## Jul 2252 3.626270e-05 0.02906160 -3.334497e-05
## Aug 2252 7.181413e-05 0.02906476 -7.206012e-05
## Sep 2252 -1.755466e-05 0.02906793 1.414496e-05
## Oct 2252 -1.154663e-04 0.02907264 1.073394e-04
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## Feb 2253 -2.454101e-06 0.02937357 -3.066013e-04
## Mar 2253 5.334617e-05 0.02954303 -5.318612e-04
## Apr 2253 7.236922e-05 0.02978318 -7.910307e-04
## May 2253 2.091880e-05 0.03002332 -9.797266e-04
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## Jul 2253 3.626270e-05 0.03054652 1.191406e-03
## Aug 2253 7.181413e-05 0.03080509 8.972864e-04
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## Nov 2253 -1.053287e-04 0.03149605 3.834731e-04
## Dec 2253 -4.126442e-05 0.03161410 2.013559e-04
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## Feb 2254 -2.454101e-06 0.03175162 2.502461e-05
## Mar 2254 5.334617e-05 0.03177109 -5.024369e-05
## Apr 2254 7.236922e-05 0.03176922 -6.739930e-05
## May 2254 2.091880e-05 0.03176736 -1.408144e-05
## Jun 2254 3.663970e-05 0.03176932 -3.176216e-05
## Jul 2254 3.626270e-05 0.03177128 -3.334497e-05
## Aug 2254 7.181413e-05 0.03177444 -7.206012e-05
## Sep 2254 -1.755466e-05 0.03177760 1.414496e-05
## Oct 2254 -1.154663e-04 0.03177889 1.107705e-04

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## Nov 2254 -1.053287e-04 0.03178018 9.934694e-05
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## Feb 2255 -2.454101e-06 0.03177437 2.282051e-06
## Mar 2255 5.334617e-05 0.03177109 -5.024369e-05
## Apr 2255 7.236922e-05 0.03176922 -6.739930e-05
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## Sep 2255 -1.755466e-05 0.03170204 8.970657e-05
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## Dec 2255 -4.126442e-05 0.03152112 2.943420e-04
## Jan 2256 -9.282542e-06 0.03145193 3.315510e-04
## Feb 2256 -2.454101e-06 0.03137960 -3.235752e-04
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## Oct 2256 -1.154663e-04 0.03105918 1.098581e-04
## Nov 2256 -1.053287e-04 0.03105955 9.934694e-05
## Dec 2256 -4.126442e-05 0.03105829 3.655024e-05
## Jan 2257 -9.282542e-06 0.03105702 5.835969e-06
## Feb 2257 -2.454101e-06 0.03105374 2.282051e-06
## Mar 2257 5.334617e-05 0.03105047 -5.024369e-05
## Apr 2257 7.236922e-05 0.03104860 -6.739930e-05
## May 2257 2.091880e-05 0.03104673 -1.408144e-05
## Jun 2257 3.663970e-05 0.03104869 -3.176216e-05
## Jul 2257 3.626270e-05 0.03105065 -3.334497e-05
## Aug 2257 7.181413e-05 0.03105382 -7.206012e-05
## Sep 2257 -1.755466e-05 0.03105698 1.414496e-05
## Oct 2257 -1.154663e-04 0.03116151 7.524951e-06
## Nov 2257 -1.053287e-04 0.03126604 -1.071442e-04
## Dec 2257 -4.126442e-05 0.03180646 -7.116267e-04
## Jan 2258 -9.282542e-06 0.03234688 -1.284027e-03
## Feb 2258 -2.454101e-06 0.03331923 -2.263209e-03
## Mar 2258 5.334617e-05 0.03429159 -3.291363e-03
## Apr 2258 7.236922e-05 0.03544920 -4.467993e-03
## May 2258 2.091880e-05 0.03660680 -5.574150e-03
## Jun 2258 3.663970e-05 0.03778747 5.530733e-03
## Jul 2258 3.626270e-05 0.03896813 4.350446e-03
## Aug 2258 7.181413e-05 0.04006998 3.213048e-03
## Sep 2258 -1.755466e-05 0.04117182 2.200570e-03
## Oct 2258 -1.154663e-04 0.04195728 1.513025e-03
## Nov 2258 -1.053287e-04 0.04274274 7.174308e-04
## Dec 2258 -4.126442e-05 0.04303493 3.611685e-04
## Jan 2259 -9.282542e-06 0.04332713 3.698860e-05
## Feb 2259 -2.454101e-06 0.04333943 1.785837e-05
## Mar 2259 5.334617e-05 0.04335174 -5.024369e-05
## Apr 2259 7.236922e-05 0.04334987 -6.739930e-05

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## May 2259 2.091880e-05 0.04334800 -1.408144e-05
## Jun 2259 3.663970e-05 0.04334996 -3.176216e-05
## Jul 2259 3.626270e-05 0.04335192 -3.334497e-05
## Aug 2259 7.181413e-05 0.04335508 -7.206012e-05
## Sep 2259 -1.755466e-05 0.04335825 1.414496e-05
## Oct 2259 -1.154663e-04 0.04335953 1.107705e-04
## Nov 2259 -1.053287e-04 0.04336082 9.934694e-05
## Dec 2259 -4.126442e-05 0.04335955 3.655024e-05
## Jan 2260 -9.282542e-06 0.04335829 5.835968e-06
## Feb 2260 -2.454101e-06 0.04335501 2.282051e-06
## Mar 2260 5.334617e-05 0.04335174 -5.024369e-05
## Apr 2260 7.236922e-05 0.04335727 -7.480066e-05
## May 2260 2.091880e-05 0.04336280 -2.888415e-05
## Jun 2260 3.663970e-05 0.04350421 -1.860102e-04
## Jul 2260 3.626270e-05 0.04364561 -3.270383e-04
## Aug 2260 7.181413e-05 0.04402139 -7.383657e-04
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## Oct 2260 -1.154663e-04 0.04492051 -1.450206e-03
## Nov 2260 -1.053287e-04 0.04544386 -1.983688e-03
## Dec 2260 -4.126442e-05 0.04600267 -2.606566e-03
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## Feb 2261 -2.454101e-06 0.04710915 2.093301e-03
## Mar 2261 5.334617e-05 0.04765682 1.489831e-03
## Apr 2261 7.236922e-05 0.04811854 1.009088e-03
## May 2261 2.091880e-05 0.04858026 5.988193e-04
## Jun 2261 3.663970e-05 0.04883961 3.237471e-04
## Jul 2261 3.626270e-05 0.04909896 6.477291e-05
## Aug 2261 7.181413e-05 0.04915119 -2.300118e-05
## Sep 2261 -1.755466e-05 0.04920341 1.414496e-05
## Oct 2261 -1.154663e-04 0.04920470 1.107705e-04
## Nov 2261 -1.053287e-04 0.04920598 9.934694e-05
## Dec 2261 -4.126442e-05 0.04920471 3.655024e-05
## Jan 2262 -9.282542e-06 0.04920345 5.835968e-06
## Feb 2262 -2.454101e-06 0.04920017 2.282051e-06
## Mar 2262 5.334617e-05 0.04919690 -5.024369e-05
## Apr 2262 7.236922e-05 0.04919503 -6.739930e-05
## May 2262 2.091880e-05 0.04919316 -1.408144e-05
## Jun 2262 3.663970e-05 0.04919512 -3.176216e-05
## Jul 2262 3.626270e-05 0.04919708 -3.334497e-05
## Aug 2262 7.181413e-05 0.04920025 -7.206012e-05
## Sep 2262 -1.755466e-05 0.04920341 1.414496e-05
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## Dec 2262 -4.126442e-05 0.04910410 1.371690e-04
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## Feb 2263 -2.454101e-06 0.04876553 4.369251e-04
## Mar 2263 5.334617e-05 0.04851919 6.274610e-04
## Apr 2263 7.236922e-05 0.04817678 9.508534e-04
## May 2263 2.091880e-05 0.04783436 1.344719e-03
## Jun 2263 3.663970e-05 0.04747097 1.692390e-03
## Jul 2263 3.626270e-05 0.04710758 -1.756745e-03
## Aug 2263 7.181413e-05 0.04675135 -1.436069e-03
## Sep 2263 -1.755466e-05 0.04639512 -9.904732e-04
## Oct 2263 -1.154663e-04 0.04609400 -5.914416e-04

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## Nov 2263 -1.053287e-04 0.04579288 -3.004591e-04
## Dec 2263 -4.126442e-05 0.04562372 -1.953548e-04
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## Feb 2264 -2.454101e-06 0.04541927 -2.971997e-05
## Mar 2264 5.334617e-05 0.04538399 -5.024369e-05
## Apr 2264 7.236922e-05 0.04538213 -6.739930e-05
## May 2264 2.091880e-05 0.04538026 -1.408144e-05
## Jun 2264 3.663970e-05 0.04538222 -3.176216e-05
## Jul 2264 3.626270e-05 0.04538418 -3.334497e-05
## Aug 2264 7.181413e-05 0.04538734 -7.206012e-05
## Sep 2264 -1.755466e-05 0.04539051 1.414496e-05
## Oct 2264 -1.154663e-04 0.04539179 1.107705e-04
## Nov 2264 -1.053287e-04 0.04539308 9.934694e-05
## Dec 2264 -4.126442e-05 0.04539181 3.655024e-05
## Jan 2265 -9.282542e-06 0.04539054 5.835968e-06
## Feb 2265 -2.454101e-06 0.04538727 2.282052e-06
## Mar 2265 5.334617e-05 0.04538399 -5.024369e-05
## Apr 2265 7.236922e-05 0.04538213 -6.739930e-05
## May 2265 2.091880e-05 0.04538026 -1.408144e-05
## Jun 2265 3.663970e-05 0.04546010 -1.096464e-04
## Jul 2265 3.626270e-05 0.04553995 -1.891134e-04
## Aug 2265 7.181413e-05 0.04595174 -6.364540e-04
## Sep 2265 -1.755466e-05 0.04636353 -9.588744e-04
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## Nov 2265 -1.053287e-04 0.04783805 -2.345620e-03
## Dec 2265 -4.126442e-05 0.04871144 -3.283077e-03
## Jan 2266 -9.282542e-06 0.04958483 -4.188451e-03
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## Jan 2267 -9.282542e-06 0.05467011 5.835968e-06
## Feb 2267 -2.454101e-06 0.05466684 2.282052e-06
## Mar 2267 5.334617e-05 0.05466356 -5.024369e-05
## Apr 2267 7.236922e-05 0.05466170 -6.739930e-05
## May 2267 2.091880e-05 0.05465983 -1.408144e-05
## Jun 2267 3.663970e-05 0.05466179 -3.176216e-05
## Jul 2267 3.626270e-05 0.05466375 -3.334497e-05
## Aug 2267 7.181413e-05 0.05466691 -7.206012e-05
## Sep 2267 -1.755466e-05 0.05467008 1.414496e-05
## Oct 2267 -1.154663e-04 0.05467136 1.107705e-04
## Nov 2267 -1.053287e-04 0.05467265 9.934694e-05
## Dec 2267 -4.126442e-05 0.05463167 7.625946e-05
## Jan 2268 -9.282542e-06 0.05459069 8.525441e-05
## Feb 2268 -2.454101e-06 0.05437908 2.900379e-04
## Mar 2268 5.334617e-05 0.05416747 4.458496e-04
## Apr 2268 7.236922e-05 0.05379037 8.039299e-04

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## May 2268 2.091880e-05 0.05341326 1.232484e-03
## Jun 2268 3.663970e-05 0.05296928 1.660748e-03
## Jul 2268 3.626270e-05 0.05252529 2.105109e-03
## Aug 2268 7.181413e-05 0.05207512 -2.211448e-03
## Sep 2268 -1.755466e-05 0.05162494 -1.671902e-03
## Oct 2268 -1.154663e-04 0.05120366 -1.152713e-03
## Nov 2268 -1.053287e-04 0.05078239 -7.415726e-04
## Dec 2268 -4.126442e-05 0.05047952 -5.027699e-04
## Jan 2269 -9.282542e-06 0.05017665 -2.318849e-04
## Feb 2269 -2.454101e-06 0.05006051 -1.225692e-04
## Mar 2269 5.334617e-05 0.04994436 -6.222529e-05
## Apr 2269 7.236922e-05 0.04993650 -7.339010e-05
## May 2269 2.091880e-05 0.04992865 -1.408144e-05
## Jun 2269 3.663970e-05 0.04993061 -3.176216e-05
## Jul 2269 3.626270e-05 0.04993257 -3.334497e-05
## Aug 2269 7.181413e-05 0.04993573 -7.206012e-05
## Sep 2269 -1.755466e-05 0.04993889 1.414496e-05
## Oct 2269 -1.154663e-04 0.04994018 1.107705e-04
## Nov 2269 -1.053287e-04 0.04994147 9.934694e-05
## Dec 2269 -4.126442e-05 0.04994020 3.655024e-05
## Jan 2270 -9.282542e-06 0.04993893 5.835968e-06
## Feb 2270 -2.454101e-06 0.04993566 2.282052e-06
## Mar 2270 5.334617e-05 0.04993238 -5.024369e-05
## Apr 2270 7.236922e-05 0.04993051 -6.739930e-05
## May 2270 2.091880e-05 0.04992865 -1.408144e-05
## Jun 2270 3.663970e-05 0.04992632 -2.747329e-05
## Jul 2270 3.626270e-05 0.04992399 -2.476724e-05
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## Sep 2270 -1.755466e-05 0.04976871 1.843315e-04
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## Jan 2271 -9.282542e-06 0.04873187 1.212892e-03
## Feb 2271 -2.454101e-06 0.04840405 1.533889e-03
## Mar 2271 5.334617e-05 0.04807622 -1.581183e-03
## Apr 2271 7.236922e-05 0.04775510 -1.279082e-03
## May 2271 2.091880e-05 0.04743398 -9.065087e-04
## Jun 2271 3.663970e-05 0.04716730 -6.555546e-04
## Jul 2271 3.626270e-05 0.04690063 -3.885027e-04
## Aug 2271 7.181413e-05 0.04675464 -2.780672e-04
## Sep 2271 -1.755466e-05 0.04660865 -4.271143e-05
## Oct 2271 -1.154663e-04 0.04658151 8.234235e-05
## Nov 2271 -1.053287e-04 0.04655437 9.934694e-05
## Dec 2271 -4.126442e-05 0.04655310 3.655024e-05
## Jan 2272 -9.282542e-06 0.04655183 5.835968e-06
## Feb 2272 -2.454101e-06 0.04654856 2.282052e-06
## Mar 2272 5.334617e-05 0.04654528 -5.024369e-05
## Apr 2272 7.236922e-05 0.04654342 -6.739930e-05
## May 2272 2.091880e-05 0.04654155 -1.408144e-05
## Jun 2272 3.663970e-05 0.04654351 -3.176216e-05
## Jul 2272 3.626270e-05 0.04654547 -3.334497e-05
## Aug 2272 7.181413e-05 0.04654863 -7.206012e-05
## Sep 2272 -1.755466e-05 0.04655180 1.414496e-05
## Oct 2272 -1.154663e-04 0.04655308 1.107705e-04

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## Dec 2272 -4.126442e-05 0.04655310 3.655024e-05
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## Feb 2273 -2.454101e-06 0.04647905 7.179124e-05
## Mar 2273 5.334617e-05 0.04640627 8.877469e-05
## Apr 2273 7.236922e-05 0.04603971 4.363043e-04
## May 2273 2.091880e-05 0.04567316 8.543073e-04
## Jun 2273 3.663970e-05 0.04501829 1.493460e-03
## Jul 2273 3.626270e-05 0.04436341 2.148711e-03
## Aug 2273 7.181413e-05 0.04358597 2.890601e-03
## Sep 2273 -1.755466e-05 0.04280853 3.757412e-03
## Oct 2273 -1.154663e-04 0.04201626 -3.634131e-03
## Nov 2273 -1.053287e-04 0.04122400 -2.852002e-03
## Dec 2273 -4.126442e-05 0.04048305 -2.175120e-03
## Jan 2274 -9.282542e-06 0.03974210 -1.466155e-03
## Feb 2274 -2.454101e-06 0.03921089 -9.417734e-04
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## Apr 2274 7.236922e-05 0.03848024 -2.859457e-04
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## Jun 2274 3.663970e-05 0.03827228 -4.224878e-05
## Jul 2274 3.626270e-05 0.03826375 -3.334497e-05
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## Jan 2275 -9.282542e-06 0.03827011 5.835968e-06
## Feb 2275 -2.454101e-06 0.03826684 2.282052e-06
## Mar 2275 5.334617e-05 0.03826356 -5.024369e-05
## Apr 2275 7.236922e-05 0.03826170 -6.739930e-05
## May 2275 2.091880e-05 0.03825983 -1.408144e-05
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## May 2276 2.091880e-05 0.03655179 -9.598006e-04
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## Jul 2276 3.626270e-05 0.03608166 -5.050244e-04
## Aug 2276 7.181413e-05 0.03591566 -3.745697e-04
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## Oct 2276 -1.154663e-04 0.03568763 4.074036e-05
## Nov 2276 -1.053287e-04 0.03562561 9.262635e-05
## Dec 2276 -4.126442e-05 0.03562098 3.318995e-05
## Jan 2277 -9.282542e-06 0.03561635 5.835968e-06
## Feb 2277 -2.454101e-06 0.03561308 2.282052e-06
## Mar 2277 5.334617e-05 0.03560980 -5.024369e-05
## Apr 2277 7.236922e-05 0.03560793 -6.739930e-05

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## May 2277 2.091880e-05 0.03560607 -1.408144e-05
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## Jul 2277 3.626270e-05 0.03560999 -3.334497e-05
## Aug 2277 7.181413e-05 0.03561315 -7.206012e-05
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## Oct 2277 -1.154663e-04 0.03561760 1.107705e-04
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## Dec 2277 -4.126442e-05 0.03561762 3.655024e-05
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## Dec 2278 -4.126442e-05 0.03044980 -2.841870e-03
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## Feb 2279 -2.454101e-06 0.02904869 -1.479572e-03
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## Jun 2279 3.663970e-05 0.02762932 -9.929491e-05
## Jul 2279 3.626270e-05 0.02756375 -3.334497e-05
## Aug 2279 7.181413e-05 0.02756691 -7.206012e-05
## Sep 2279 -1.755466e-05 0.02757008 1.414496e-05
## Oct 2279 -1.154663e-04 0.02757136 1.107705e-04
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## Dec 2279 -4.126442e-05 0.02757138 3.655024e-05
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## Apr 2280 7.236922e-05 0.02756170 -6.739930e-05
## May 2280 2.091880e-05 0.02755983 -1.408144e-05
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## Oct 2280 -1.154663e-04 0.02752789 1.542415e-04
## Nov 2280 -1.053287e-04 0.02748988 1.821170e-04
## Dec 2280 -4.126442e-05 0.02738360 2.243317e-04
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## Feb 2281 -2.454101e-06 0.02712692 4.422040e-04
## Mar 2281 5.334617e-05 0.02697651 5.368073e-04
## Apr 2281 7.236922e-05 0.02681680 6.774966e-04
## May 2281 2.091880e-05 0.02665709 -7.586524e-04
## Jun 2281 3.663970e-05 0.02650378 -6.210633e-04
## Jul 2281 3.626270e-05 0.02635047 -4.673763e-04
## Aug 2281 7.181413e-05 0.02622298 -3.754411e-04
## Sep 2281 -1.755466e-05 0.02609550 -1.585857e-04
## Oct 2281 -1.154663e-04 0.02602424 1.057918e-05

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## Nov 2281 -1.053287e-04 0.02595299 7.169488e-05
## Dec 2281 -4.126442e-05 0.02593790 2.272421e-05
## Jan 2282 -9.282542e-06 0.02592280 5.835968e-06
## Feb 2282 -2.454101e-06 0.02591953 2.282052e-06
## Mar 2282 5.334617e-05 0.02591625 -5.024369e-05
## Apr 2282 7.236922e-05 0.02591438 -6.739930e-05
## May 2282 2.091880e-05 0.02591252 -1.408144e-05
## Jun 2282 3.663970e-05 0.02591448 -3.176216e-05
## Jul 2282 3.626270e-05 0.02591644 -3.334497e-05
## Aug 2282 7.181413e-05 0.02591960 -7.206012e-05
## Sep 2282 -1.755466e-05 0.02592276 1.414496e-05
## Oct 2282 -1.154663e-04 0.02592405 1.107705e-04
## Nov 2282 -1.053287e-04 0.02592534 9.934694e-05
## Dec 2282 -4.126442e-05 0.02592407 3.655024e-05
## Jan 2283 -9.282542e-06 0.02592280 5.835968e-06
## Feb 2283 -2.454101e-06 0.02591953 2.282052e-06
## Mar 2283 5.334617e-05 0.02591625 -5.024369e-05
## Apr 2283 7.236922e-05 0.02594985 -1.028669e-04
## May 2283 2.091880e-05 0.02598345 -8.501655e-05
## Jun 2283 3.663970e-05 0.02617150 -2.887805e-04
## Jul 2283 3.626270e-05 0.02635954 -4.764465e-04
## Aug 2283 7.181413e-05 0.02669786 -8.503155e-04
## Sep 2283 -1.755466e-05 0.02703617 -1.099264e-03
## Oct 2283 -1.154663e-04 0.02743577 -1.400948e-03
## Nov 2283 -1.053287e-04 0.02783537 -1.810682e-03
## Dec 2283 -4.126442e-05 0.02823901 1.947413e-03
## Jan 2284 -9.282542e-06 0.02864266 1.511783e-03
## Feb 2284 -2.454101e-06 0.02901681 1.130802e-03
## Mar 2284 5.334617e-05 0.02939096 7.008503e-04
## Apr 2284 7.236922e-05 0.02965848 4.143117e-04
## May 2284 2.091880e-05 0.02992600 1.982465e-04
## Jun 2284 3.663970e-05 0.03002877 7.975268e-05
## Jul 2284 3.626270e-05 0.03013154 -2.264323e-05
## Aug 2284 7.181413e-05 0.03014006 -6.670925e-05
## Sep 2284 -1.755466e-05 0.03014857 1.414496e-05
## Oct 2284 -1.154663e-04 0.03014986 1.107705e-04
## Nov 2284 -1.053287e-04 0.03015114 9.934694e-05
## Dec 2284 -4.126442e-05 0.03014988 3.655024e-05
## Jan 2285 -9.282542e-06 0.03014861 5.835968e-06
## Feb 2285 -2.454101e-06 0.03014533 2.282052e-06
## Mar 2285 5.334617e-05 0.03014206 -5.024369e-05
## Apr 2285 7.236922e-05 0.03014019 -6.739930e-05
## May 2285 2.091880e-05 0.03013832 -1.408144e-05
## Jun 2285 3.663970e-05 0.03014028 -3.176216e-05
## Jul 2285 3.626270e-05 0.03014224 -3.334497e-05
## Aug 2285 7.181413e-05 0.03014541 -7.206012e-05
## Sep 2285 -1.755466e-05 0.03014857 1.414496e-05
## Oct 2285 -1.154663e-04 0.03015487 1.057537e-04
## Nov 2285 -1.053287e-04 0.03016118 8.931333e-05
## Dec 2285 -4.126442e-05 0.03025443 -6.800252e-05
## Jan 2286 -9.282542e-06 0.03034768 -1.932359e-04
## Feb 2286 -2.454101e-06 0.03059697 -4.493548e-04
## Mar 2286 5.334617e-05 0.03084626 -7.544455e-04
## Apr 2286 7.236922e-05 0.03119826 -1.125464e-03

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## May 2286 2.091880e-05 0.03155025 -1.426009e-03
## Jun 2286 3.663970e-05 0.03193185 -1.823326e-03
## Jul 2286 3.626270e-05 0.03231344 1.757437e-03
## Aug 2286 7.181413e-05 0.03269005 1.345279e-03
## Sep 2286 -1.755466e-05 0.03306666 1.058042e-03
## Oct 2286 -1.154663e-04 0.03338217 8.404380e-04
## Nov 2286 -1.053287e-04 0.03369769 5.147848e-04
## Dec 2286 -4.126442e-05 0.03387088 2.775224e-04
## Jan 2287 -9.282542e-06 0.03404408 7.234247e-05
## Feb 2287 -2.454101e-06 0.03407406 3.553530e-05
## Mar 2287 5.334617e-05 0.03410404 -5.024369e-05
## Apr 2287 7.236922e-05 0.03410217 -6.739930e-05
## May 2287 2.091880e-05 0.03410031 -1.408144e-05
## Jun 2287 3.663970e-05 0.03410227 -3.176216e-05
## Jul 2287 3.626270e-05 0.03410423 -3.334497e-05
## Aug 2287 7.181413e-05 0.03410739 -7.206012e-05
## Sep 2287 -1.755466e-05 0.03411055 1.414495e-05
## Oct 2287 -1.154663e-04 0.03411184 1.107705e-04
## Nov 2287 -1.053287e-04 0.03411312 9.934694e-05
## Dec 2287 -4.126442e-05 0.03411186 3.655024e-05
## Jan 2288 -9.282542e-06 0.03411059 5.835968e-06
## Feb 2288 -2.454101e-06 0.03411956 -9.958721e-06
## Mar 2288 5.334617e-05 0.03412852 -7.472524e-05
## Apr 2288 7.236922e-05 0.03435728 -3.225032e-04
## May 2288 2.091880e-05 0.03458603 -4.998076e-04
## Jun 2288 3.663970e-05 0.03520424 -1.133735e-03
## Jul 2288 3.626270e-05 0.03582244 -1.751565e-03
## Aug 2288 7.181413e-05 0.03668902 -2.653689e-03
## Sep 2288 -1.755466e-05 0.03755559 -3.430893e-03
## Oct 2288 -1.154663e-04 0.03848317 -4.260561e-03
## Nov 2288 -1.053287e-04 0.03941075 4.468772e-03
## Dec 2288 -4.126442e-05 0.04032067 3.494793e-03
## Jan 2289 -9.282542e-06 0.04123058 2.552896e-03
## Feb 2289 -2.454101e-06 0.04199401 1.782637e-03
## Mar 2289 5.334617e-05 0.04275744 9.634053e-04
## Apr 2289 7.236922e-05 0.04318126 5.205616e-04
## May 2289 2.091880e-05 0.04360508 1.481913e-04
## Jun 2289 3.663970e-05 0.04368818 4.937423e-05
## Jul 2289 3.626270e-05 0.04377128 -3.334497e-05
## Aug 2289 7.181413e-05 0.04377444 -7.206012e-05
## Sep 2289 -1.755466e-05 0.04377760 1.414495e-05
## Oct 2289 -1.154663e-04 0.04377889 1.107705e-04
## Nov 2289 -1.053287e-04 0.04378018 9.934694e-05
## Dec 2289 -4.126442e-05 0.04377891 3.655024e-05
## Jan 2290 -9.282542e-06 0.04377764 5.835968e-06
## Feb 2290 -2.454101e-06 0.04377437 2.282052e-06
## Mar 2290 5.334617e-05 0.04377109 -5.024369e-05
## Apr 2290 7.236922e-05 0.04376922 -6.739930e-05
## May 2290 2.091880e-05 0.04376736 -1.408144e-05
## Jun 2290 3.663970e-05 0.04376932 -3.176216e-05
## Jul 2290 3.626270e-05 0.04377128 -3.334497e-05
## Aug 2290 7.181413e-05 0.04377444 -7.206012e-05
## Sep 2290 -1.755466e-05 0.04377760 1.414495e-05
## Oct 2290 -1.154663e-04 0.04379925 9.041054e-05

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## Nov 2290 -1.053287e-04 0.04382090 5.862693e-05
## Dec 2290 -4.126442e-05 0.04392645 -1.109900e-04
## Jan 2291 -9.282542e-06 0.04403200 -2.485246e-04
## Feb 2291 -2.454101e-06 0.04422112 -4.444722e-04
## Mar 2291 5.334617e-05 0.04441024 -6.893916e-04
## Apr 2291 7.236922e-05 0.04463702 -9.351952e-04
## May 2291 2.091880e-05 0.04486380 -1.110525e-03
## Jun 2291 3.663970e-05 0.04509820 1.065160e-03
## Jul 2291 3.626270e-05 0.04533260 8.311374e-04
## Aug 2291 7.181413e-05 0.04555242 5.757622e-04
## Sep 2291 -1.755466e-05 0.04577225 4.453073e-04
## Oct 2291 -1.154663e-04 0.04592817 3.872947e-04
## Nov 2291 -1.053287e-04 0.04608410 2.212329e-04
## Dec 2291 -4.126442e-05 0.04614070 1.005649e-04
## Jan 2292 -9.282542e-06 0.04619730 1.197926e-05
## Feb 2292 -2.454101e-06 0.04619710 5.353697e-06
## Mar 2292 5.334617e-05 0.04619690 -5.024369e-05
## Apr 2292 7.236922e-05 0.04619503 -6.739930e-05
## May 2292 2.091880e-05 0.04619316 -1.408144e-05
## Jun 2292 3.663970e-05 0.04619512 -3.176216e-05
## Jul 2292 3.626270e-05 0.04619708 -3.334497e-05
## Aug 2292 7.181413e-05 0.04620025 -7.206012e-05
## Sep 2292 -1.755466e-05 0.04620341 1.414495e-05
## Oct 2292 -1.154663e-04 0.04620470 1.107705e-04
## Nov 2292 -1.053287e-04 0.04620598 9.934694e-05
## Dec 2292 -4.126442e-05 0.04620471 3.655024e-05
## Jan 2293 -9.282542e-06 0.04620345 5.835968e-06
## Feb 2293 -2.454101e-06 0.04620017 2.282052e-06
## Mar 2293 5.334617e-05 0.04619690 -5.024369e-05
## Apr 2293 7.236922e-05 0.04619714 -6.951111e-05
## May 2293 2.091880e-05 0.04619739 -1.830505e-05
## Jun 2293 3.663970e-05 0.04621043 -4.706554e-05
## Jul 2293 3.626270e-05 0.04622347 -5.972811e-05
## Aug 2293 7.181413e-05 0.04624658 -1.183990e-04
## Sep 2293 -1.755466e-05 0.04626970 -5.214964e-05
## Oct 2293 -1.154663e-04 0.04629471 2.075980e-05
## Nov 2293 -1.053287e-04 0.04631971 -1.437995e-05
## Dec 2293 -4.126442e-05 0.04634255 1.503268e-04
## Jan 2294 -9.282542e-06 0.04636539 9.550302e-05
## Feb 2294 -2.454101e-06 0.04638459 6.947639e-05
## Mar 2294 5.334617e-05 0.04640379 -5.522063e-06
## Apr 2294 7.236922e-05 0.04641796 -3.871727e-05
## May 2294 2.091880e-05 0.04643213 -1.439011e-06
## Jun 2294 3.663970e-05 0.04644010 -2.512234e-05
## Jul 2294 3.626270e-05 0.04644806 -3.270777e-05
## Aug 2294 7.181413e-05 0.04645154 -7.174152e-05
## Sep 2294 -1.755466e-05 0.04645502 1.414495e-05
## Oct 2294 -1.154663e-04 0.04645631 1.107705e-04
## Nov 2294 -1.053287e-04 0.04645759 9.934694e-05
## Dec 2294 -4.126442e-05 0.04645633 3.655024e-05
## Jan 2295 -9.282542e-06 0.04645506 5.835968e-06
## Feb 2295 -2.454101e-06 0.04645178 2.282052e-06
## Mar 2295 5.334617e-05 0.04644851 -5.024369e-05
## Apr 2295 7.236922e-05 0.04644664 -6.739930e-05

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## May 2295 2.091880e-05 0.04644478 -1.408144e-05
## Jun 2295 3.663970e-05 0.04644674 -3.176216e-05
## Jul 2295 3.626270e-05 0.04644870 -3.334497e-05
## Aug 2295 7.181413e-05 0.04645186 -7.206012e-05
## Sep 2295 -1.755466e-05 0.04645502 1.414495e-05
## Oct 2295 -1.154663e-04 0.04645776 1.093164e-04
## Nov 2295 -1.053287e-04 0.04646050 9.643868e-05
## Dec 2295 -4.126442e-05 0.04648663 6.245444e-06
## Jan 2296 -9.282542e-06 0.04651276 -5.186536e-05
## Feb 2296 -2.454101e-06 0.04658269 -1.286257e-04
## Mar 2296 5.334617e-05 0.04665262 -2.543578e-04
## Apr 2296 7.236922e-05 0.04675332 -3.740812e-04
## May 2296 2.091880e-05 0.04685403 -4.233311e-04
## Jun 2296 3.663970e-05 0.04696602 -5.510499e-04
## Jul 2296 3.626270e-05 0.04707802 4.857162e-04
## Aug 2296 7.181413e-05 0.04718943 3.387581e-04
## Sep 2296 -1.755466e-05 0.04730083 3.167203e-04
## Oct 2296 -1.154663e-04 0.04739320 3.222659e-04
## Nov 2296 -1.053287e-04 0.04748557 2.197623e-04
## Dec 2296 -4.126442e-05 0.04753487 1.063964e-04
## Jan 2297 -9.282542e-06 0.04758417 2.511299e-05
## Feb 2297 -2.454101e-06 0.04759053 1.192056e-05
## Mar 2297 5.334617e-05 0.04759690 -5.024369e-05
## Apr 2297 7.236922e-05 0.04759503 -6.739930e-05
## May 2297 2.091880e-05 0.04759316 -1.408144e-05
## Jun 2297 3.663970e-05 0.04759512 -3.176216e-05
## Jul 2297 3.626270e-05 0.04759708 -3.334497e-05
## Aug 2297 7.181413e-05 0.04760025 -7.206012e-05
## Sep 2297 -1.755466e-05 0.04760341 1.414495e-05
## Oct 2297 -1.154663e-04 0.04760470 1.107705e-04
## Nov 2297 -1.053287e-04 0.04760598 9.934694e-05
## Dec 2297 -4.126442e-05 0.04760471 3.655024e-05
## Jan 2298 -9.282542e-06 0.04760345 5.835968e-06
## Feb 2298 -2.454101e-06 0.04760017 2.282052e-06
## Mar 2298 5.334617e-05 0.04759690 -5.024369e-05
## Apr 2298 7.236922e-05 0.04759885 -7.121435e-05
## May 2298 2.091880e-05 0.04760079 -2.171153e-05
## Jun 2298 3.663970e-05 0.04767463 -1.112697e-04
## Jul 2298 3.626270e-05 0.04774847 -1.847299e-04
## Aug 2298 7.181413e-05 0.04794369 -4.155090e-04
## Sep 2298 -1.755466e-05 0.04813892 -5.213679e-04
## Oct 2298 -1.154663e-04 0.04840930 -6.938386e-04
## Nov 2298 -1.053287e-04 0.04867969 -9.743585e-04
## Dec 2298 -4.126442e-05 0.04896712 -1.325851e-03
## Jan 2299 -9.282542e-06 0.04925454 1.367643e-03
## Feb 2299 -2.454101e-06 0.04953525 1.080103e-03
## Mar 2299 5.334617e-05 0.04981597 7.435916e-04
## Apr 2299 7.236922e-05 0.05005306 4.874790e-04
## May 2299 2.091880e-05 0.05029014 3.018398e-04
## Jun 2299 3.663970e-05 0.05042478 1.514860e-04
## Jul 2299 3.626270e-05 0.05055941 1.723014e-05
## Aug 2299 7.181413e-05 0.05058786 -4.677256e-05
## Sep 2299 -1.755466e-05 0.05061631 1.414495e-05
## Oct 2299 -1.154663e-04 0.05061760 1.107705e-04

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## Nov 2299 -1.053287e-04 0.05061889 9.934694e-05
## Dec 2299 -4.126442e-05 0.05061762 3.655024e-05
## Jan 2300 -9.282542e-06 0.05061635 5.835967e-06
## Feb 2300 -2.454101e-06 0.05061308 2.282052e-06
## Mar 2300 5.334617e-05 0.05060980 -5.024369e-05
## Apr 2300 7.236922e-05 0.05060793 -6.739930e-05
## May 2300 2.091880e-05 0.05060607 -1.408144e-05
## Jun 2300 3.663970e-05 0.05060803 -3.176216e-05
## Jul 2300 3.626270e-05 0.05060999 -3.334497e-05
## Aug 2300 7.181413e-05 0.05061315 -7.206012e-05
## Sep 2300 -1.755466e-05 0.05061631 1.414495e-05
## Oct 2300 -1.154663e-04 0.05061760 1.107705e-04
## Nov 2300 -1.053287e-04 0.05061889 9.934694e-05
## Dec 2300 -4.126442e-05 0.05061085 4.331886e-05
## Jan 2301 -9.282542e-06 0.05060281 1.937320e-05
## Feb 2301 -2.454101e-06 0.05056403 5.133135e-05
## Mar 2301 5.334617e-05 0.05052524 3.431766e-05
## Apr 2301 7.236922e-05 0.05045941 8.112272e-05
## May 2301 2.091880e-05 0.05039358 1.984012e-04
## Jun 2301 3.663970e-05 0.05031953 2.567338e-04
## Jul 2301 3.626270e-05 0.05024548 3.311643e-04
## Aug 2301 7.181413e-05 0.05017137 -4.367285e-04
## Sep 2301 -1.755466e-05 0.05009726 -2.732494e-04
## Oct 2301 -1.154663e-04 0.05002651 -1.045959e-04
## Nov 2301 -1.053287e-04 0.04995577 -4.399162e-05
## Dec 2301 -4.126442e-05 0.04990310 -5.537934e-05
## Jan 2302 -9.282542e-06 0.04985042 -3.468463e-05
## Feb 2302 -2.454101e-06 0.04982791 -1.899941e-05
## Mar 2302 5.334617e-05 0.04980539 -5.228601e-05
## Apr 2302 7.236922e-05 0.04980250 -6.842046e-05
## May 2302 2.091880e-05 0.04979961 -1.408144e-05
## Jun 2302 3.663970e-05 0.04980157 -3.176216e-05
## Jul 2302 3.626270e-05 0.04980353 -3.334497e-05
## Aug 2302 7.181413e-05 0.04980670 -7.206012e-05
## Sep 2302 -1.755466e-05 0.04980986 1.414495e-05
## Oct 2302 -1.154663e-04 0.04981115 1.107705e-04
## Nov 2302 -1.053287e-04 0.04981243 9.934694e-05
## Dec 2302 -4.126442e-05 0.04981117 3.655024e-05
## Jan 2303 -9.282542e-06 0.04980990 5.835967e-06
## Feb 2303 -2.454101e-06 0.04980662 2.282052e-06
## Mar 2303 5.334617e-05 0.04980335 -5.024369e-05
## Apr 2303 7.236922e-05 0.04980148 -6.739930e-05
## May 2303 2.091880e-05 0.04979961 -1.408144e-05
## Jun 2303 3.663970e-05 0.04980672 -3.690335e-05
## Jul 2303 3.626270e-05 0.04981382 -4.362735e-05
## Aug 2303 7.181413e-05 0.04991384 -1.792052e-04
## Sep 2303 -1.755466e-05 0.05001387 -1.898627e-04
## Oct 2303 -1.154663e-04 0.05027398 -3.520642e-04
## Nov 2303 -1.053287e-04 0.05053410 -6.223149e-04
## Dec 2303 -4.126442e-05 0.05089546 -1.047748e-03
## Jan 2304 -9.282542e-06 0.05125683 -1.441099e-03
## Feb 2304 -2.454101e-06 0.05164261 -1.833702e-03
## Mar 2304 5.334617e-05 0.05202838 1.784939e-03
## Apr 2304 7.236922e-05 0.05240922 1.385082e-03

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## May 2304 2.091880e-05 0.05279005 1.055698e-03
## Jun 2304 3.663970e-05 0.05311403 7.159967e-04
## Jul 2304 3.626270e-05 0.05343801 3.923933e-04
## Aug 2304 7.181413e-05 0.05361997 1.748867e-04
## Sep 2304 -1.755466e-05 0.05380192 8.230042e-05
## Oct 2304 -1.154663e-04 0.05383728 1.448483e-04
## Nov 2304 -1.053287e-04 0.05387265 9.934694e-05
## Dec 2304 -4.126442e-05 0.05387138 3.655024e-05
## Jan 2305 -9.282542e-06 0.05387011 5.835967e-06
## Feb 2305 -2.454101e-06 0.05386684 2.282052e-06
## Mar 2305 5.334617e-05 0.05386356 -5.024369e-05
## Apr 2305 7.236922e-05 0.05386170 -6.739930e-05
## May 2305 2.091880e-05 0.05385983 -1.408144e-05
## Jun 2305 3.663970e-05 0.05386179 -3.176216e-05
## Jul 2305 3.626270e-05 0.05386375 -3.334497e-05
## Aug 2305 7.181413e-05 0.05386691 -7.206012e-05
## Sep 2305 -1.755466e-05 0.05387008 1.414495e-05
## Oct 2305 -1.154663e-04 0.05387136 1.107705e-04
## Nov 2305 -1.053287e-04 0.05387265 9.934694e-05
## Dec 2305 -4.126442e-05 0.05385354 5.439464e-05
## Jan 2306 -9.282542e-06 0.05383442 4.152478e-05
## Feb 2306 -2.454101e-06 0.05349495 3.741684e-04
## Mar 2306 5.334617e-05 0.05315548 6.578402e-04
## Apr 2306 7.236922e-05 0.05225526 1.539039e-03
## May 2306 2.091880e-05 0.05135504 2.490712e-03
## Jun 2306 3.663970e-05 0.05009833 3.731695e-03
## Jul 2306 3.626270e-05 0.04884163 4.988776e-03
## Aug 2306 7.181413e-05 0.04749445 6.300398e-03
## Sep 2306 -1.755466e-05 0.04614728 -6.355533e-03
## Oct 2306 -1.154663e-04 0.04482026 -4.930600e-03
## Nov 2306 -1.053287e-04 0.04349324 -3.613717e-03
## Dec 2306 -4.126442e-05 0.04237428 -2.558823e-03
## Jan 2307 -9.282542e-06 0.04125532 -1.471846e-03
## Feb 2307 -2.454101e-06 0.04063149 -8.548380e-04
## Mar 2307 5.334617e-05 0.04000765 -2.868024e-04
## Apr 2307 7.236922e-05 0.03988750 -1.856786e-04
## May 2307 2.091880e-05 0.03976736 -1.408144e-05
## Jun 2307 3.663970e-05 0.03976932 -3.176216e-05
## Jul 2307 3.626270e-05 0.03977128 -3.334497e-05
## Aug 2307 7.181413e-05 0.03977444 -7.206012e-05
## Sep 2307 -1.755466e-05 0.03977760 1.414495e-05
## Oct 2307 -1.154663e-04 0.03977889 1.107705e-04
## Nov 2307 -1.053287e-04 0.03978018 9.934693e-05
## Dec 2307 -4.126442e-05 0.03977891 3.655024e-05
## Jan 2308 -9.282542e-06 0.03977764 5.835967e-06
## Feb 2308 -2.454101e-06 0.03977437 2.282052e-06
## Mar 2308 5.334617e-05 0.03977109 -5.024369e-05
## Apr 2308 7.236922e-05 0.03976922 -6.739930e-05
## May 2308 2.091880e-05 0.03976736 -1.408144e-05
## Jun 2308 3.663970e-05 0.03976932 -3.176216e-05
## Jul 2308 3.626270e-05 0.03977128 -3.334497e-05
## Aug 2308 7.181413e-05 0.03969520 7.177832e-06
## Sep 2308 -1.755466e-05 0.03961913 1.726209e-04
## Oct 2308 -1.154663e-04 0.03920469 6.849743e-04

```

```

## Nov 2308 -1.053287e-04 0.03879024 1.089279e-03
## Dec 2308 -4.126442e-05 0.03804021 1.775248e-03
## Jan 2309 -9.282542e-06 0.03729018 2.493300e-03
## Feb 2309 -2.454101e-06 0.03639704 3.379608e-03
## Mar 2309 5.334617e-05 0.03550390 4.216945e-03
## Apr 2309 7.236922e-05 0.03459741 -4.336450e-03
## May 2309 2.091880e-05 0.03369093 -3.378512e-03
## Jun 2309 3.663970e-05 0.03284968 -2.552986e-03
## Jul 2309 3.626270e-05 0.03200843 -1.711362e-03
## Aug 2309 7.181413e-05 0.03140977 -1.148249e-03
## Sep 2309 -1.755466e-05 0.03081110 -4.602162e-04
## Oct 2309 -1.154663e-04 0.03058716 -1.383644e-04
## Nov 2309 -1.053287e-04 0.03036322 7.543821e-05
## Dec 2309 -4.126442e-05 0.03035000 2.459587e-05
## Jan 2310 -9.282542e-06 0.03033678 5.835967e-06
## Feb 2310 -2.454101e-06 0.03033351 2.282052e-06
## Mar 2310 5.334617e-05 0.03033023 -5.024369e-05
## Apr 2310 7.236922e-05 0.03032836 -6.739930e-05
## May 2310 2.091880e-05 0.03032650 -1.408144e-05
## Jun 2310 3.663970e-05 0.03032846 -3.176216e-05
## Jul 2310 3.626270e-05 0.03033042 -3.334497e-05
## Aug 2310 7.181413e-05 0.03033358 -7.206012e-05
## Sep 2310 -1.755466e-05 0.03033674 1.414495e-05
## Oct 2310 -1.154663e-04 0.03033803 1.107705e-04
## Nov 2310 -1.053287e-04 0.03033932 9.934693e-05
## Dec 2310 -4.126442e-05 0.03033805 3.655024e-05
## Jan 2311 -9.282542e-06 0.03033678 5.835967e-06
## Feb 2311 -2.454101e-06 0.03032394 1.184836e-05
## Mar 2311 5.334617e-05 0.03031110 -3.111107e-05
## Apr 2311 7.236922e-05 0.03025904 1.923706e-06
## May 2311 2.091880e-05 0.03020698 1.054319e-04
## Jun 2311 3.663970e-05 0.03011854 1.781490e-04
## Jul 2311 3.626270e-05 0.03003011 2.669639e-04
## Aug 2311 7.181413e-05 0.02992584 3.356809e-04
## Sep 2311 -1.755466e-05 0.02982157 5.293180e-04
## Oct 2311 -1.154663e-04 0.02971364 -4.046274e-04
## Nov 2311 -1.053287e-04 0.02960571 -3.068372e-04
## Dec 2311 -4.126442e-05 0.02950265 -2.678344e-04
## Jan 2312 -9.282542e-06 0.02939958 -1.967492e-04
## Feb 2312 -2.454101e-06 0.02932365 -1.276451e-04
## Mar 2312 5.334617e-05 0.02924772 -1.075128e-04
## Apr 2312 7.236922e-05 0.02921866 -9.747709e-05
## May 2312 2.091880e-05 0.02918960 -1.696791e-05
## Jun 2312 3.663970e-05 0.02919011 -3.320539e-05
## Jul 2312 3.626270e-05 0.02919063 -3.334497e-05
## Aug 2312 7.181413e-05 0.02919379 -7.206012e-05
## Sep 2312 -1.755466e-05 0.02919696 1.414495e-05
## Oct 2312 -1.154663e-04 0.02919824 1.107705e-04
## Nov 2312 -1.053287e-04 0.02919953 9.934693e-05
## Dec 2312 -4.126442e-05 0.02919826 3.655024e-05
## Jan 2313 -9.282542e-06 0.02919699 5.835967e-06
## Feb 2313 -2.454101e-06 0.02919372 2.282052e-06
## Mar 2313 5.334617e-05 0.02919045 -5.024369e-05
## Apr 2313 7.236922e-05 0.02918858 -6.739930e-05

```

```
## May 2313 2.091880e-05 0.02918671 -1.408144e-05
## Jun 2313 3.663970e-05 0.02918867 -3.176216e-05
## Jul 2313 3.626270e-05 0.02919063 -3.334497e-05
## Aug 2313 7.181413e-05 0.02919204 -7.030781e-05
## Sep 2313 -1.755466e-05 0.02919345 1.764956e-05
## Oct 2313 -1.154663e-04 0.02919366 1.153514e-04
## Nov 2313 -1.053287e-04 0.02919387 1.050040e-04
## Dec 2313 -4.126442e-05 0.02919450 4.031149e-05
## Jan 2314 -9.282542e-06 0.02919513 7.701441e-06
## Feb 2314 -2.454101e-06 0.02919520 8.062860e-07
## Mar 2314 5.334617e-05 0.02919526 -5.506070e-05
## Apr 2314 7.236922e-05 0.02919441 -7.322676e-05
```

12. Run a monotonic trend analysis for the monthly Ozone series. In this case the seasonal Mann-Kendall is most appropriate; why is this?

```
#12
Ozone_monthly.trend1 <- Kendall::SeasonalMannKendall(GaringerOzone.monthly.ts)

summary(Ozone_monthly.trend1)
```

```
## Score = -33095 , Var(Score) = 37763299
## denominator = 552314.2
## tau = -0.0599, 2-sided pvalue =7.2237e-08
```

```
Ozone_monthly.trend2 <- trend::smk.test(GaringerOzone.monthly.ts)
```

Answer:

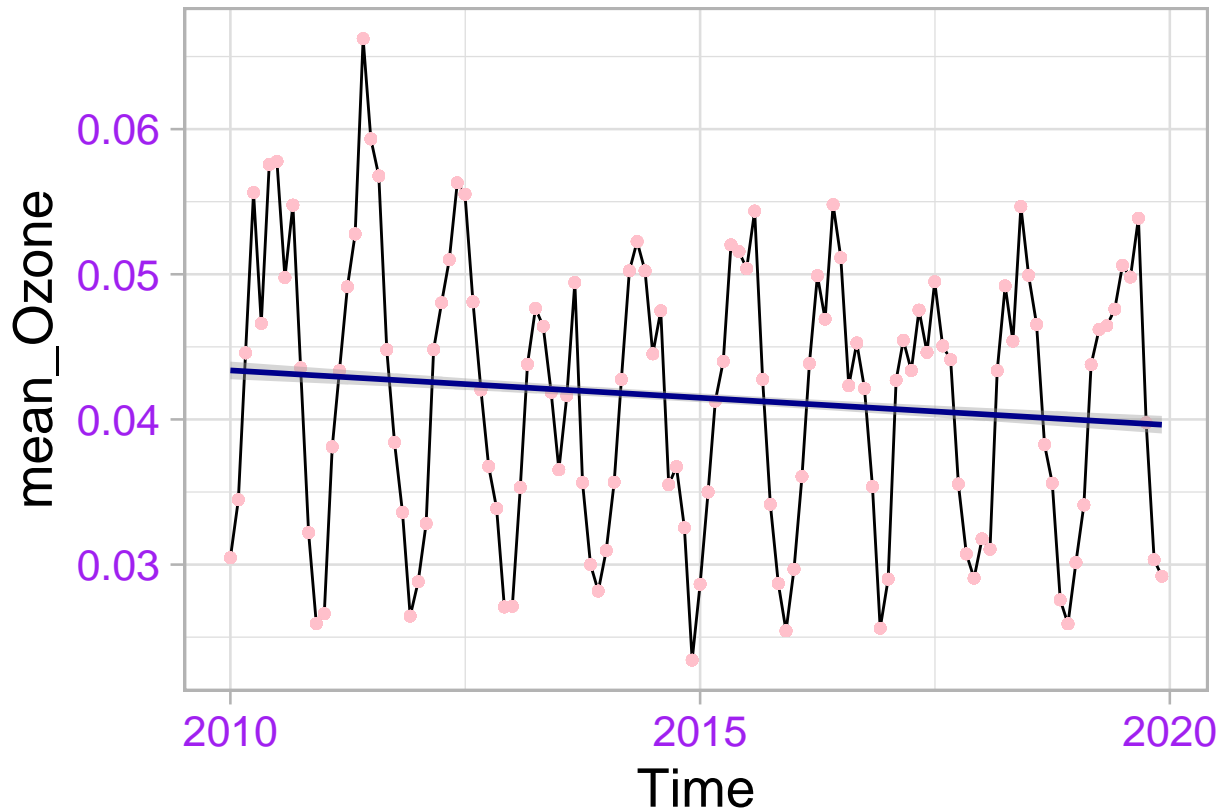
13. Create a plot depicting mean monthly ozone concentrations over time, with both a `geom_point` and a `geom_line` layer. Edit your axis labels accordingly.

```
#13
Ozone_mean_plot <- ggplot(GaringerOzone.monthly, aes(x= Date, y= mean_Ozone)) +
  geom_line() +
  geom_point(color="pink")+
  geom_smooth(method=lm, color= "darkblue")+
  xlab("Time")
ylab("Mean Ozone Conc (ppm)")
```

```
## $y
## [1] "Mean Ozone Conc (ppm)"
##
## attr(,"class")
## [1] "labels"
```

```
print(Ozone_mean_plot)
```

```
## 'geom_smooth()' using formula = 'y ~ x'
```



14. To accompany your graph, summarize your results in context of the research question. Include output from the statistical test in parentheses at the end of your sentence. Feel free to use multiple sentences in your interpretation.

Answer:

15. Subtract the seasonal component from the `GaringerOzone.monthly.ts`. Hint: Look at how we extracted the series components for the `EnoDischarge` on the lesson Rmd file.
16. Run the Mann Kendall test on the non-seasonal Ozone monthly series. Compare the results with the ones obtained with the Seasonal Mann Kendall on the complete series.

#15

```
Ozone.monthly_components <- as.data.frame(Ozone_monthly_decomp$time.series[,1:3])
#To remove seasonal component
Ozone.monthly_components <- select(Ozone.monthly_components, trend, remainder)
Ozone.monthly_components <- mutate(Ozone.monthly_components,
  Observed = GaringerOzone.monthly$mean_Ozone,
  date = GaringerOzone.monthly$date)
```

#16

```
Ozone.monthly_components_ts <- ts(Ozone.monthly_components$Observed, start = c(2010,1),
  frequency = 12)
```

```
Ozone.monthly_components_trend1 <- Kendall::MannKendall(Ozone.monthly_components_ts)
Ozone.monthly_components_trend2 <- trend::smk.test(Ozone.monthly_components_ts)
```

Answer: Both the seasonal and non-seasonal test shows slight trend over time.