

Final Project - Wind Energy Forecasting

Load Libraries

```
options(warn = -1)
options(scipen = 999)
library(tidyverse)
library(tidymodels)
library(janitor)
library(skimr)
library(lubridate)
library(kableExtra)
library(GGally)
library(vip)
library(fastshap)
library(MASS)
library(ISLR)
library(tree)
library(ggplot2)
library(corrplot)
library(reshape2)
library(PerformanceAnalytics)
library(dplyr)
library(lubridate)
library(imputeTS)
library(forecast)
library(urca)
library(pracma)
library(astsa)
library(fpp2)
```

Load Data

Import your data with read_csv()

```
row_data <- read_csv("Turbine_Data.csv") %>% clean_names()

row_data <- row_data %>% filter(year >= 2018)

head(row_data)
```

```
## # A tibble: 6 x 8
##   year month   day date          active_power ambient_t~1 wind_~2 wind_~3
##   <dbl> <dbl> <dbl> <dtm>          <dbl>         <dbl>   <dbl>   <dbl>
## 1  2018     1     1 2018-01-01 00:00:00      -5.36         23.1     8     2.28
```

```
## 2 2018 1 1 2018-01-01 00:10:00 -5.82 23.0 300. 2.34
## 3 2018 1 1 2018-01-01 00:20:00 -5.28 22.9 340 2.46
## 4 2018 1 1 2018-01-01 00:30:00 -4.65 23.0 345 2.03
## 5 2018 1 1 2018-01-01 00:40:00 -4.68 22.9 345 1.83
## 6 2018 1 1 2018-01-01 00:50:00 -4.76 22.9 345 1.65
## # ... with abbreviated variable names 1: ambient_temperature,
## # 2: wind_direction, 3: wind_speed
```

```
tail(row_data)
```

```
## # A tibble: 6 x 8
##   year month   day date                active_power ambient_t~1 wind_~2 wind_~3
##   <dbl> <dbl> <dbl> <dtm>                <dbl>         <dbl>   <dbl>   <dbl>
## 1 2020     3    30 2020-03-30 23:00:00         90.3          27.6    178     3.61
## 2 2020     3    30 2020-03-30 23:10:00         70.0          27.5    178     3.53
## 3 2020     3    30 2020-03-30 23:20:00         40.8          27.6    178     3.26
## 4 2020     3    30 2020-03-30 23:30:00         20.8          27.6    178     3.33
## 5 2020     3    30 2020-03-30 23:40:00         62.1          27.8    190     3.28
## 6 2020     3    30 2020-03-30 23:50:00         68.7          27.9    203     3.48
## # ... with abbreviated variable names 1: ambient_temperature,
## # 2: wind_direction, 3: wind_speed
```

Missing values Interpolation

```
row_data$active_power <- na_interpolation(row_data$active_power)
row_data$ambient_temperature <- na_interpolation(row_data$ambient_temperature)
row_data$wind_direction <- na_interpolation(row_data$wind_direction)
row_data$wind_speed <- na_interpolation(row_data$wind_speed)
```

```
head(row_data)
```

```
## # A tibble: 6 x 8
##   year month   day date                active_power ambient_t~1 wind_~2 wind_~3
##   <dbl> <dbl> <dbl> <dtm>                <dbl>         <dbl>   <dbl>   <dbl>
## 1 2018     1     1 2018-01-01 00:00:00        -5.36          23.1     8       2.28
## 2 2018     1     1 2018-01-01 00:10:00        -5.82          23.0    300.     2.34
## 3 2018     1     1 2018-01-01 00:20:00        -5.28          22.9    340     2.46
## 4 2018     1     1 2018-01-01 00:30:00        -4.65          23.0    345     2.03
## 5 2018     1     1 2018-01-01 00:40:00        -4.68          22.9    345     1.83
## 6 2018     1     1 2018-01-01 00:50:00        -4.76          22.9    345     1.65
## # ... with abbreviated variable names 1: ambient_temperature,
## # 2: wind_direction, 3: wind_speed
```

Time Index: Daily

Create a ts object for the aggregated data Create a time plot of the aggregated data

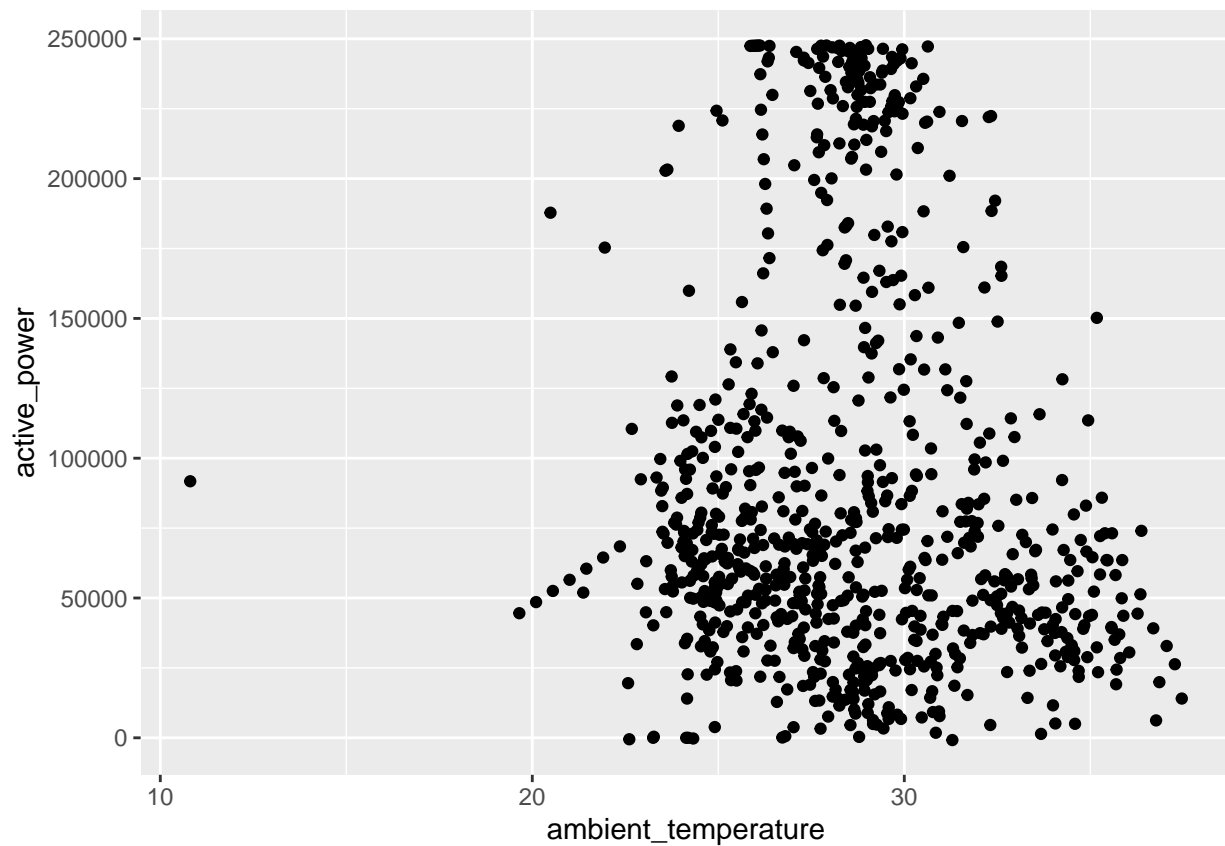
```
turbine_data <- row_data %>%
  group_by(year, month, day) %>%
  summarize(active_power = sum(active_power), ambient_temperature = mean(ambient_temperature), wind_dir
```

```
head(turbine_data)
```

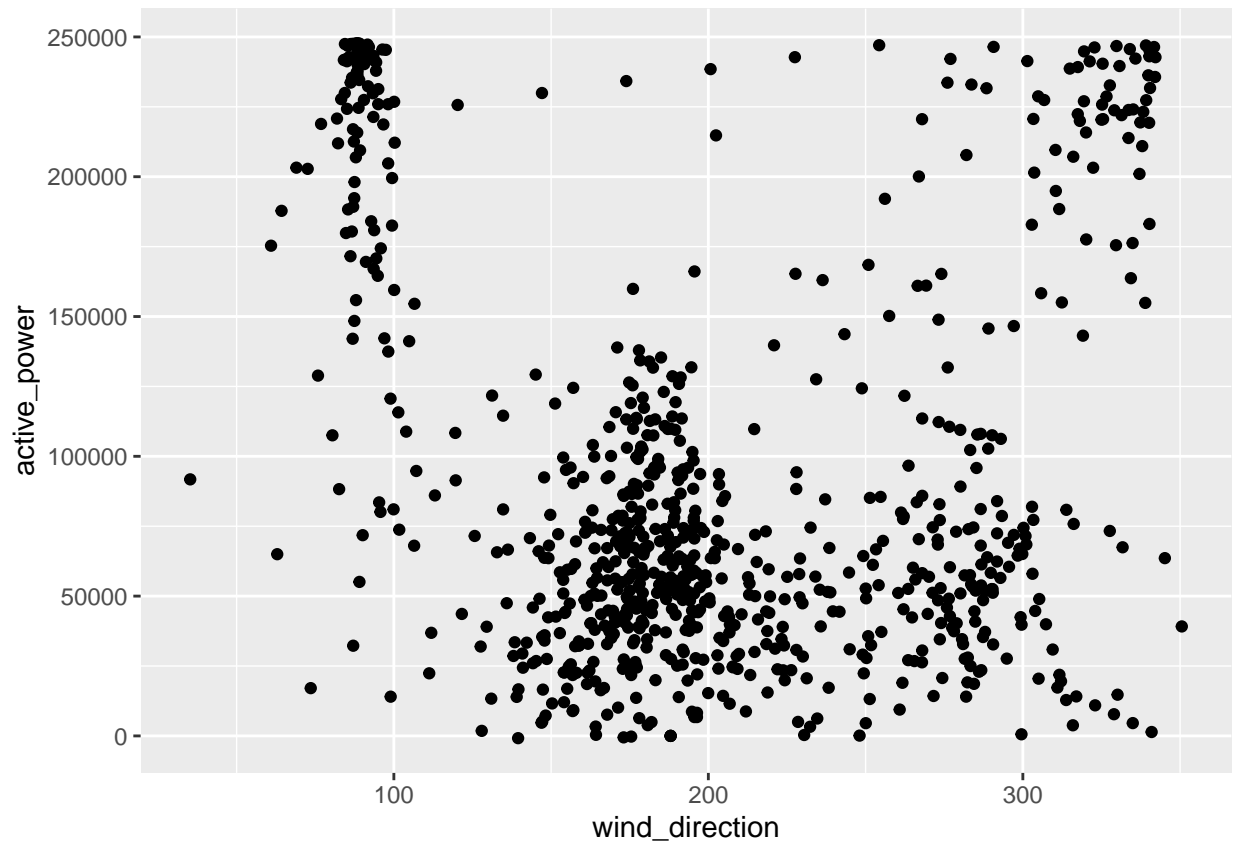
```
## # A tibble: 6 x 7
## # Groups:   year, month [1]
##   year month   day active_power ambient_temperature wind_direction wind_speed
##   <dbl> <dbl> <dbl>         <dbl>          <dbl>         <dbl>    <dbl>
## 1  2018     1     1      27571.           26.5           282.      3.88
## 2  2018     1     2      48502.           25.6           273.      4.67
## 3  2018     1     3      45905.           25.5           276.      4.53
## 4  2018     1     4      51965.           24.9           285.      5.06
## 5  2018     1     5      34609.           24.6           281.      4.42
## 6  2018     1     6      19548.           22.6           312.      3.81
```

Exploratory Analysis (scatterplot)

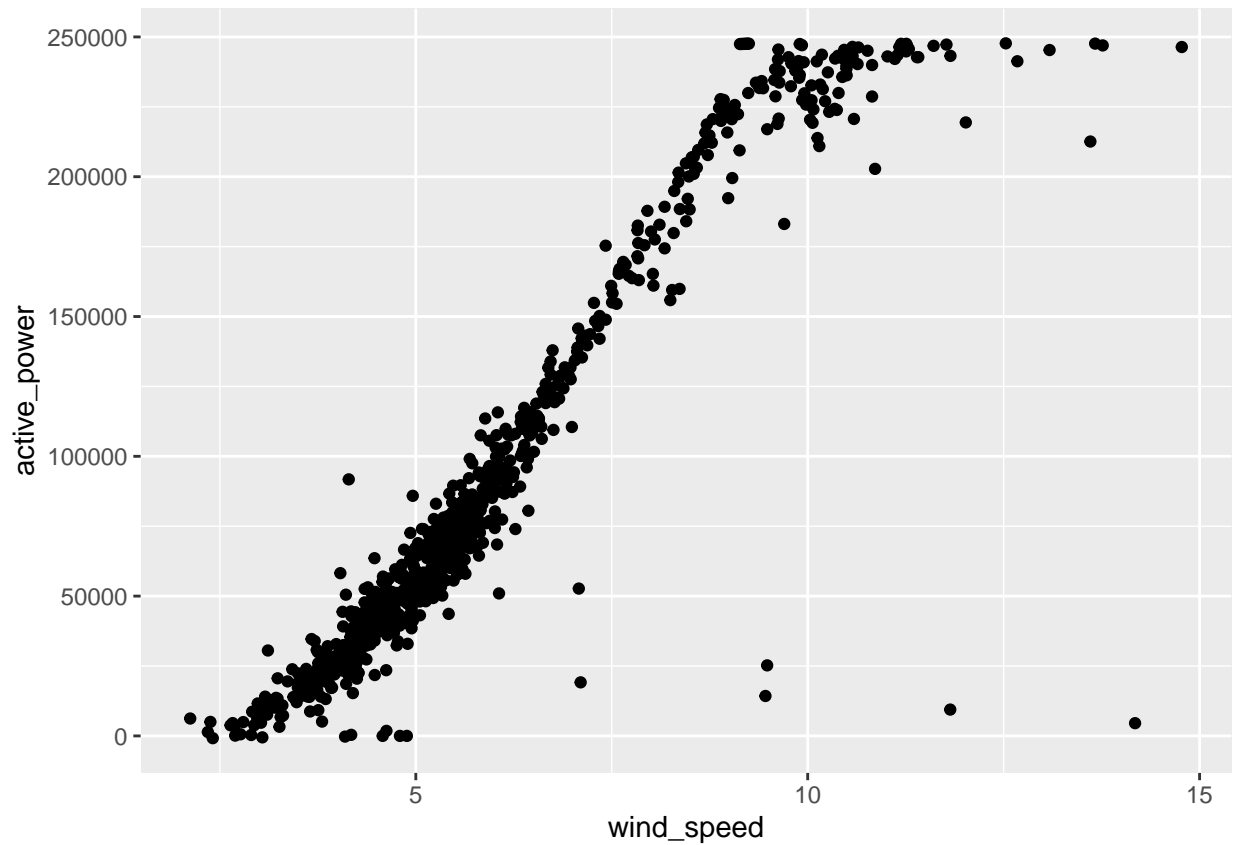
```
turbine_data %>%
  ggplot(aes(x=ambient_temperature,y=active_power))+
  geom_point()
```



```
turbine_data %>%
  ggplot(aes(x=wind_direction,y=active_power))+
  geom_point()
```

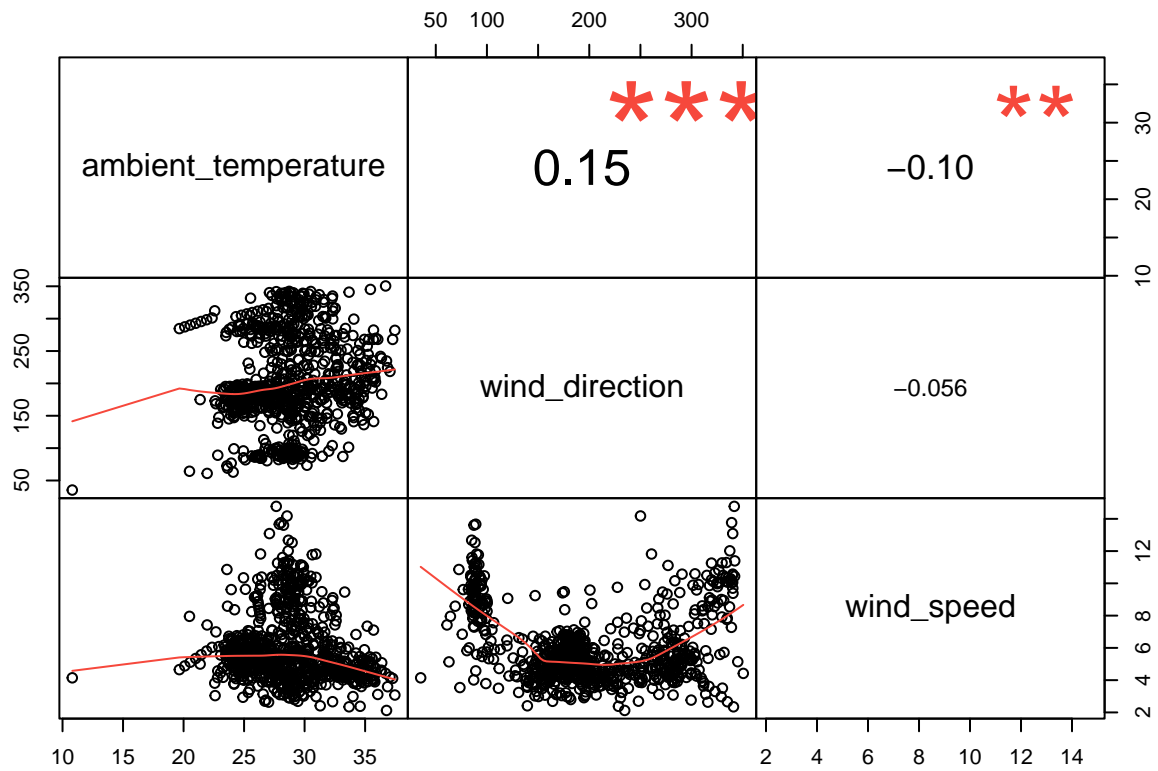


```
turbine_data %>%  
  ggplot(aes(x=wind_speed,y=active_power))+  
  geom_point()
```



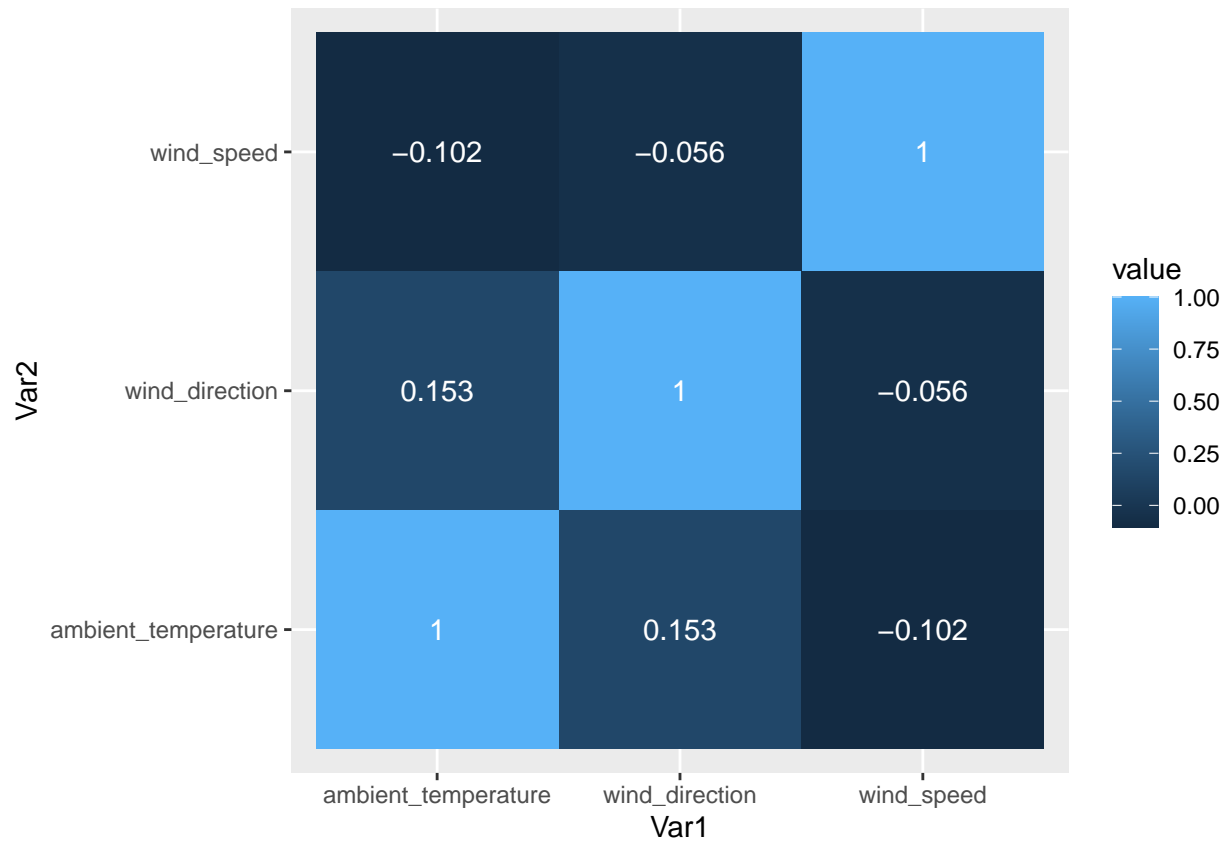
Explotary Analysis (correlation)

```
cor <- turbine_data %>%  
  ungroup() %>%  
  na.omit() %>%  
  dplyr::select(ambient_temperature, wind_direction, wind_speed)  
  
chart.Correlation(cor, histogram=FALSE, pch=4)
```



```
cor_analysis <- cor %>%
  cor() %>%
  melt() %>% #turn it into a dataframe
  arrange(desc(value))

cor_analysis %>%
  ggplot(aes(x=Var1, y=Var2, fill=value))+
  geom_tile()+
  geom_text(aes(label=round(value,3)), color="white")
```



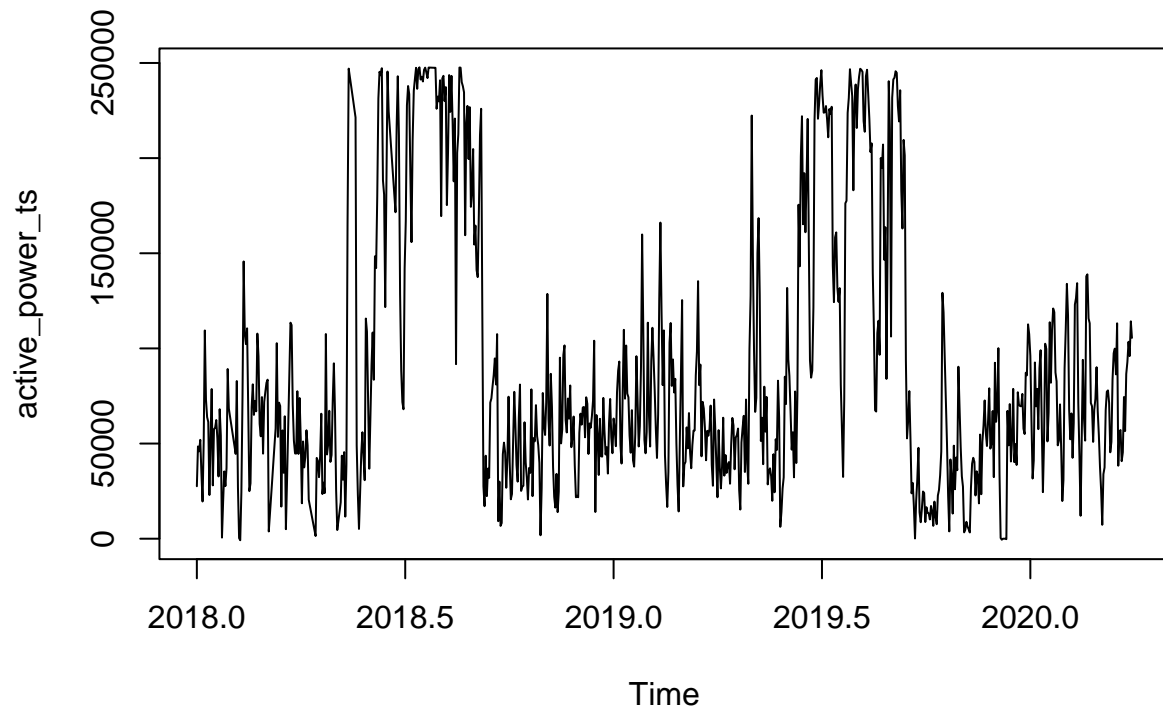
Create time series object and plot time series

```
active_power_daily <- subset(turbine_data, select=c(active_power))
active_power_daily
```

```
## # A tibble: 820 x 1
##   active_power
##   <dbl>
## 1    27571.
## 2    48502.
## 3    45905.
## 4    51965.
## 5    34609.
## 6    19548.
## 7    51213.
## 8   109448.
## 9    73036.
## 10   63902.
## # ... with 810 more rows
```

```
# Create time series object and plot time series
```

```
active_power_ts <- ts(active_power_daily, start=c(2018,1,1), frequency = 365)
ts.plot(active_power_ts)
```



Is this series white noise?

```
Box.test(active_power_ts, lag=8, fitdf=0, type="Lj")
```

```
##
## Box-Ljung test
##
## data: active_power_ts
## X-squared = 3437, df = 8, p-value < 0.000000000000000022
```

ADF test for stationarity

Use the Single Mean Version of the Test

```
active_power_df <- ur.df(active_power_ts, type = "drift")
summary(active_power_df)
```

```
##
## #####
## # Augmented Dickey-Fuller Test Unit Root Test #
## #####
```

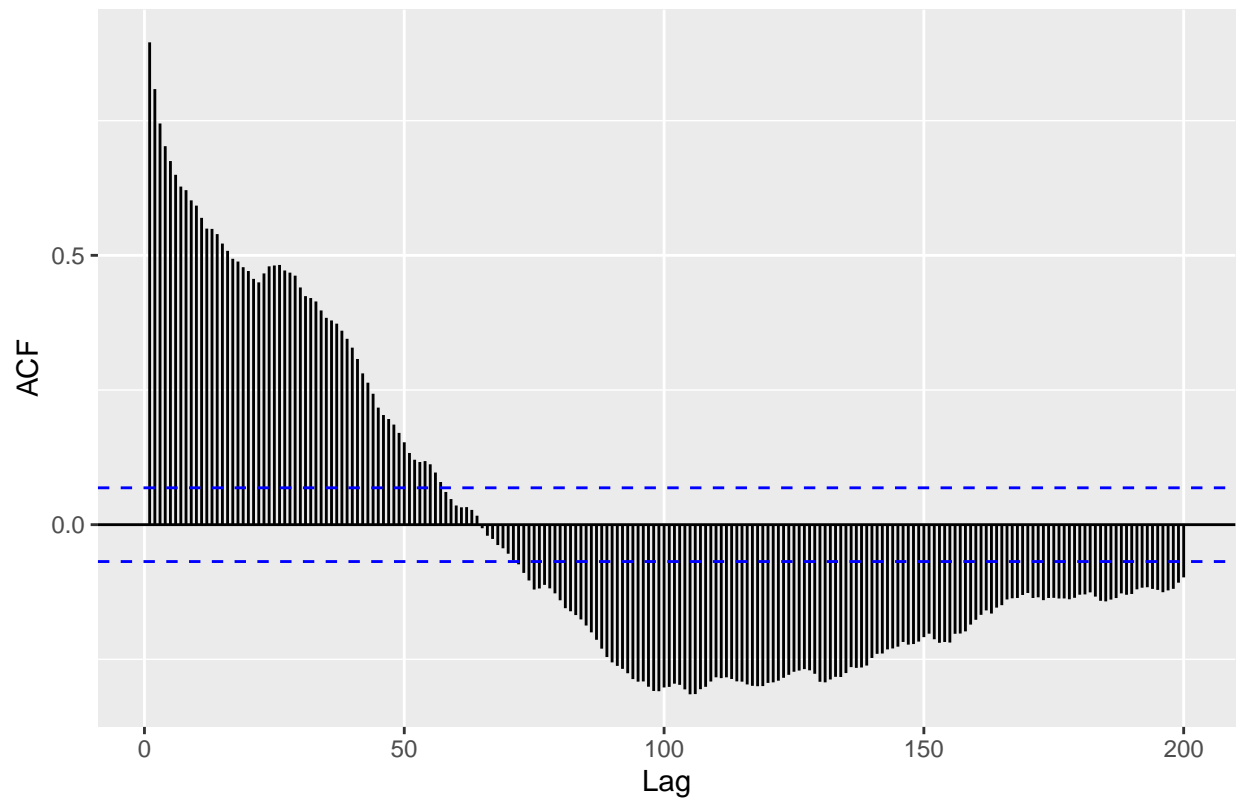


```
##
## Test regression drift
##
##
## Call:
## lm(formula = z.diff ~ z.lag.1 + 1 + z.diff.lag)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -159375  -19053    -292   17268  123299
##
## Coefficients:
##              Estimate Std. Error t value      Pr(>|t|)
## (Intercept) 9222.39368 1821.86442   5.062 0.000000512958 ***
## z.lag.1      -0.10080    0.01597  -6.312 0.000000000452 ***
## z.diff.lag   -0.03374    0.03499  -0.964      0.335
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 31600 on 815 degrees of freedom
## Multiple R-squared:  0.05333,    Adjusted R-squared:  0.051
## F-statistic: 22.96 on 2 and 815 DF,  p-value: 0.0000000002002
##
##
## Value of test-statistic is: -6.312 19.9232
##
## Critical values for test statistics:
##      1pct  5pct 10pct
## tau2 -3.43 -2.86 -2.57
## phi1  6.43  4.59  3.78
```

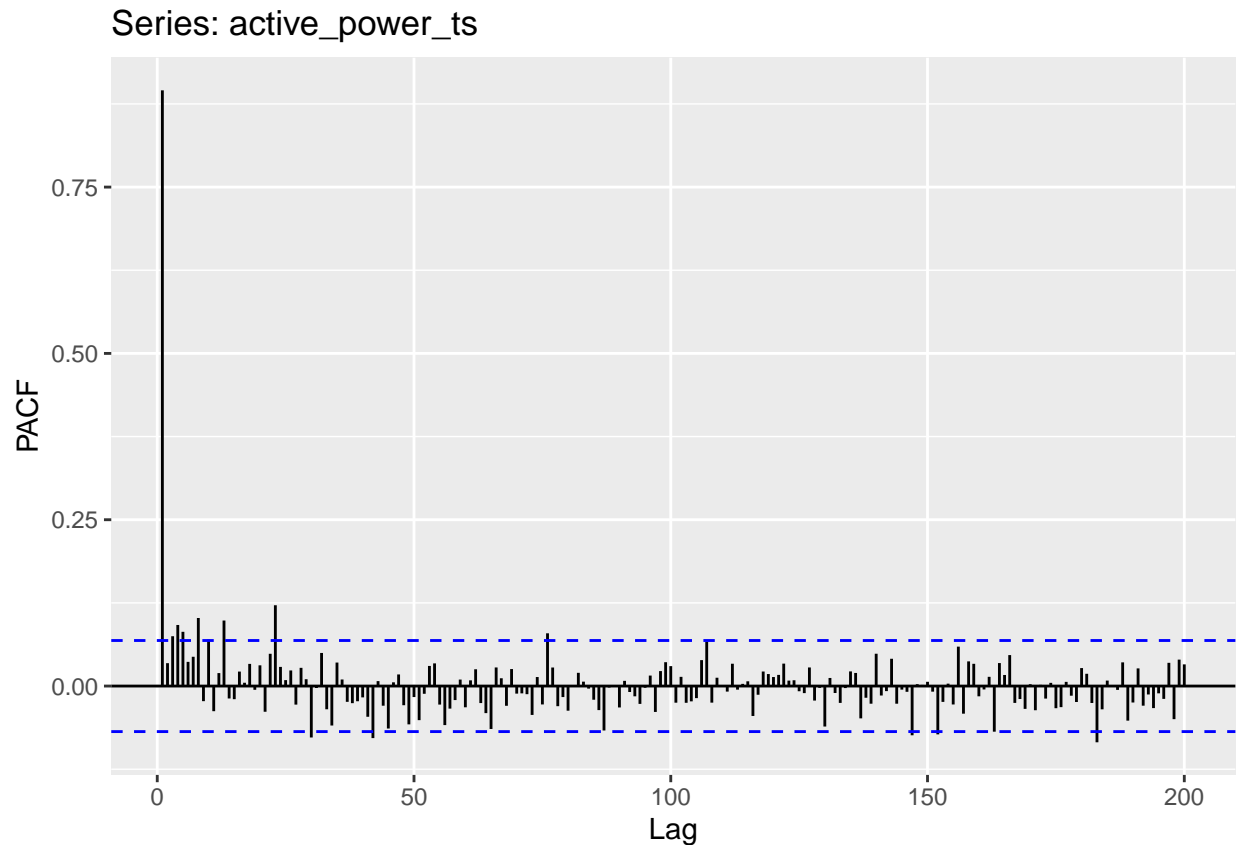
Plot ACF and PACF

```
ggAcf(active_power_ts, lag = 200)
```

Series: active_power_ts



```
ggPacf(active_power_ts, lag = 200)
```

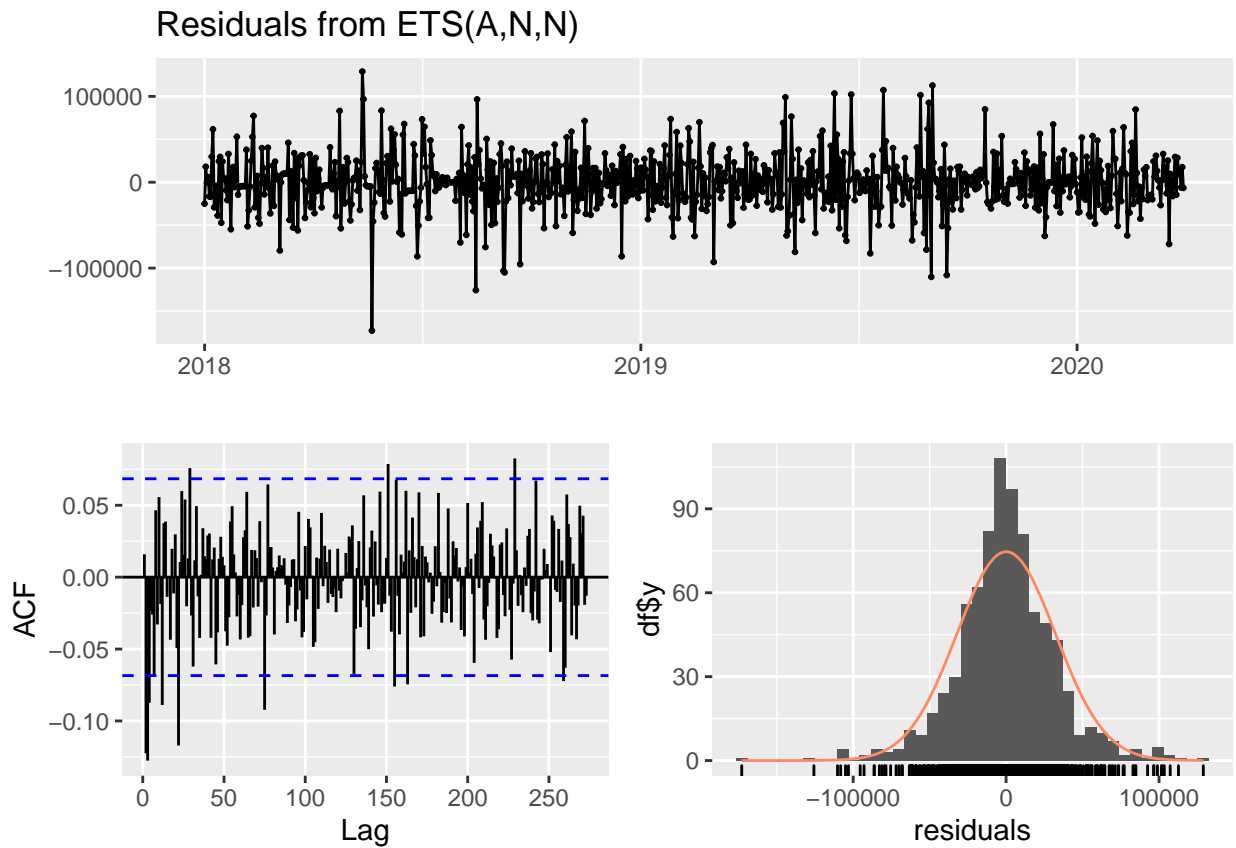


Fit Seasonal Exponential Smoothing Model

```
active_power_ets <- ets(active_power_ts, model="ZNZ")
summary(active_power_ets)
```

```
## ETS(A,N,N)
##
## Call:
## ets(y = active_power_ts, model = "ZNZ")
##
## Smoothing parameters:
##   alpha = 0.8844
##
## Initial states:
##   l = 52566.9896
##
## sigma: 32281.47
##
##      AIC      AICc      BIC
## 22532.52 22532.54 22546.64
##
## Training set error measures:
##              ME      RMSE      MAE  MPE  MAPE      MASE      ACF1
## Training set 74.1439 32242.08 23349.82 -Inf   Inf  0.5370699 0.01592923
```

```
checkresiduals(active_power_ets)
```

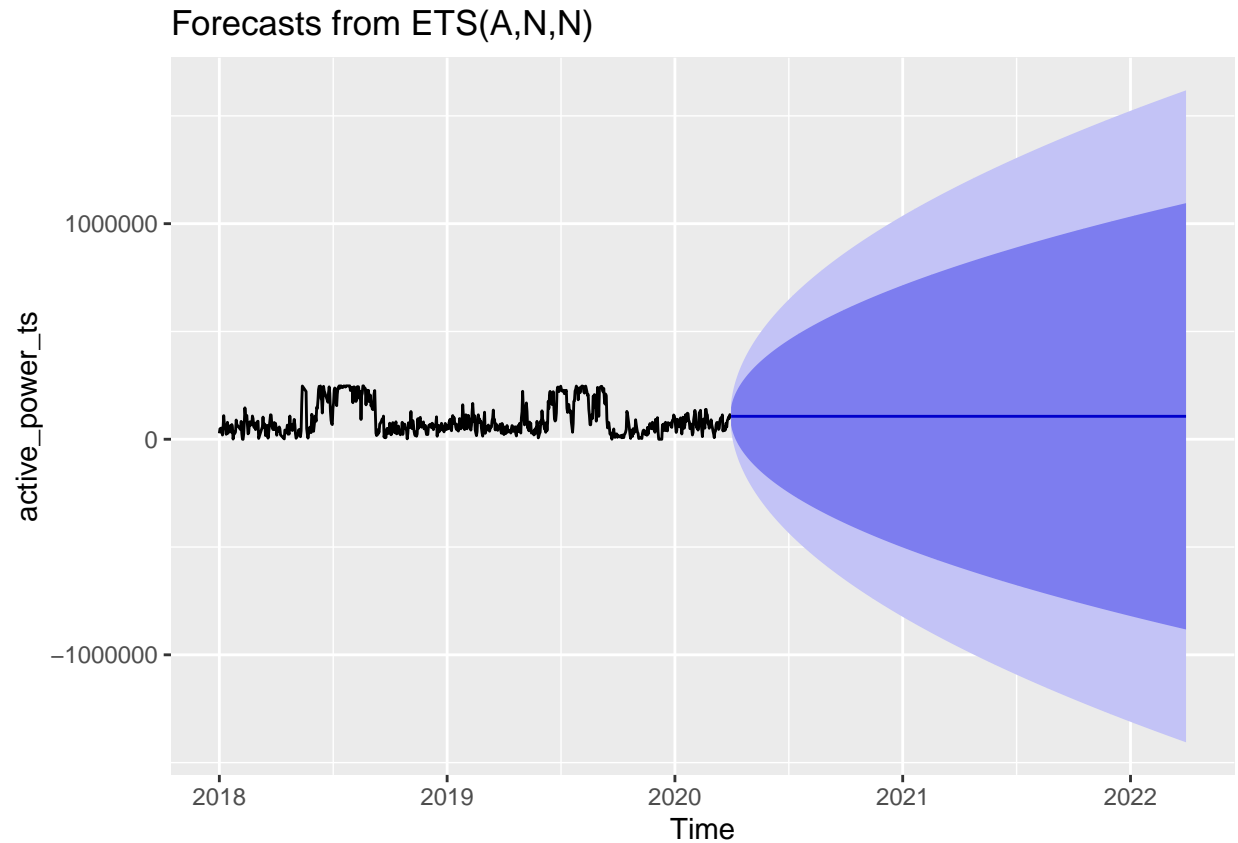


```
##
##  Ljung-Box test
##
## data:  Residuals from ETS(A,N,N)
## Q* = 210.46, df = 162, p-value = 0.00623
##
## Model df: 2.   Total lags used: 164
```

```
forecast(active_power_ts, h=5)
```

	Point Forecast	Lo 80	Hi 80	Lo 95	Hi 95
## 2020.2466	91650.31	62246.677	121054.0	46681.331	136619.3
## 2020.2493	72295.93	33213.893	111378.0	12525.115	132066.7
## 2020.2521	73365.20	26565.234	120165.2	1790.830	144939.6
## 2020.2548	79527.56	26113.445	132941.7	-2162.281	161217.4
## 2020.2575	67153.50	7858.483	126448.5	-23530.405	157837.4

```
active_power_ets %>% forecast() %>% autoplot()
```

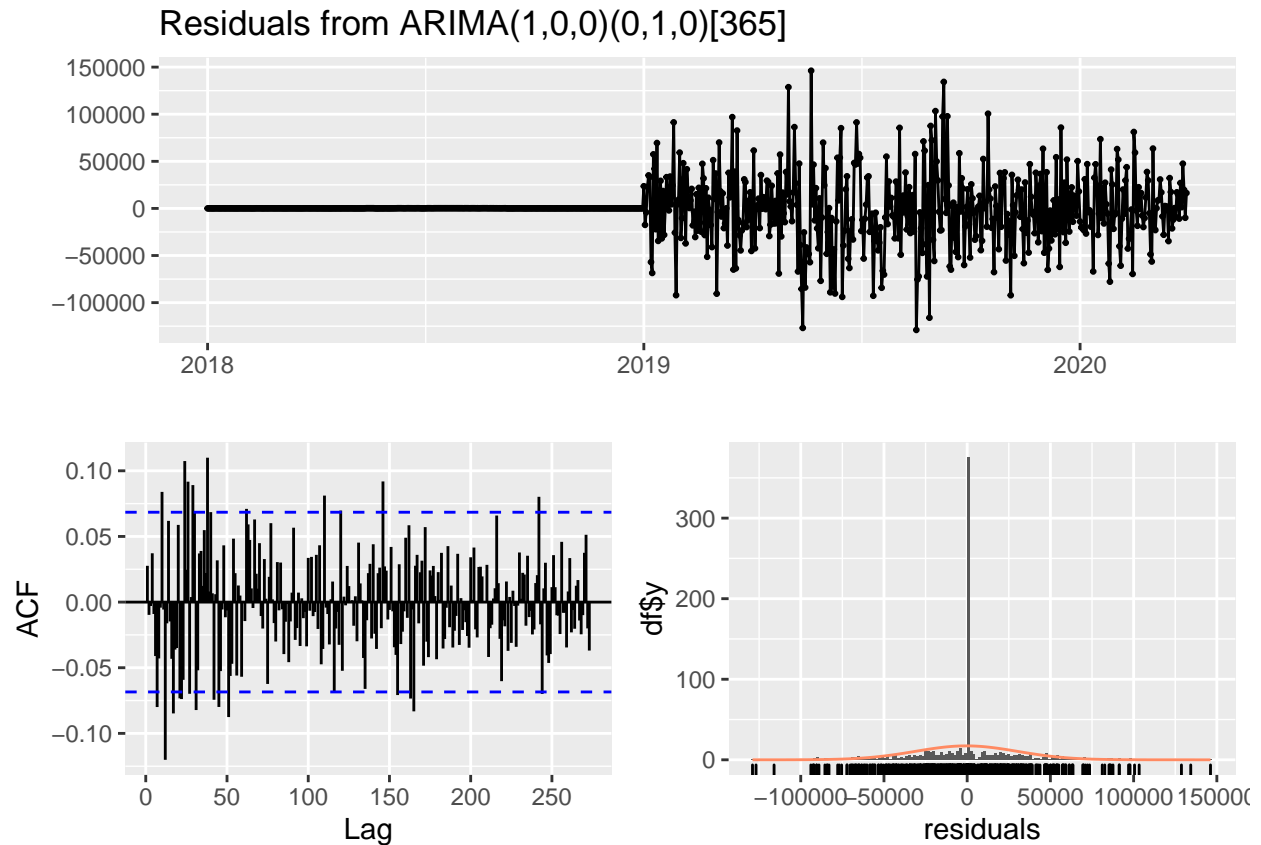


Use auto.arima

```
fitauto <- auto.arima(active_power_ts)
summary(fitauto)
```

```
## Series: active_power_ts
## ARIMA(1,0,0)(0,1,0)[365]
##
## Coefficients:
##      ar1
##      0.7486
## s.e.  0.0309
##
## sigma^2 = 1694411810: log likelihood = -5480.04
## AIC=10964.08  AICc=10964.1  BIC=10972.32
##
## Training set error measures:
##              ME      RMSE      MAE MPE MAPE      MASE      ACF1
## Training set -487.6294 30628.84 17636.59 NaN  Inf  0.4056599 0.02762721
```

```
checkresiduals(fitauto)
```

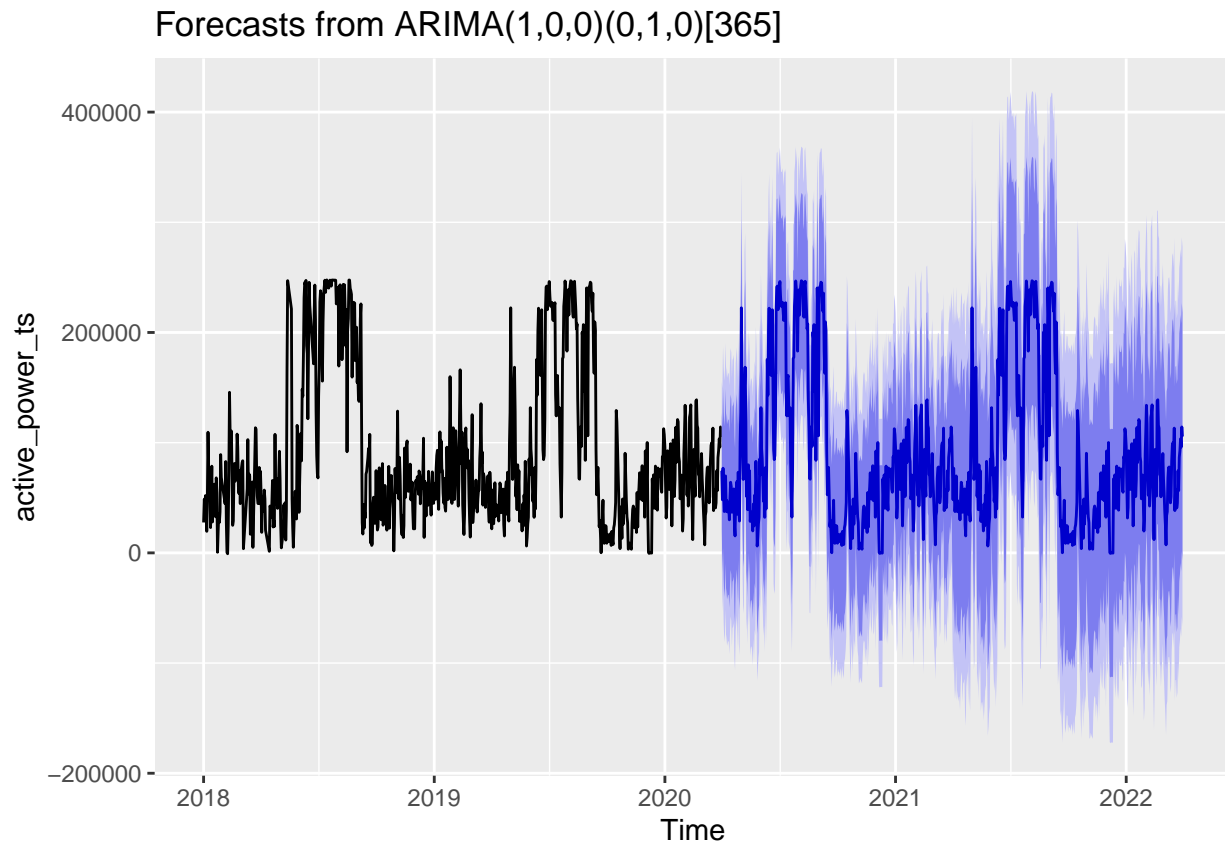


```
##
##  Ljung-Box test
##
## data:  Residuals from ARIMA(1,0,0)(0,1,0)[365]
## Q* = 271.45, df = 163, p-value = 0.0000002024
##
## Model df: 1.   Total lags used: 164
```

```
fitauto %>% forecast(h=5)
```

	Point Forecast	Lo 80	Hi 80	Lo 95	Hi 95
2020.2466	74450.32	21697.514	127203.1	-6228.135	155128.8
2020.2493	48200.26	-17697.710	114098.2	-52581.986	148982.5
2020.2521	76822.37	4595.756	149049.0	-33638.702	187283.4
2020.2548	52304.91	-23237.171	127847.0	-63226.731	167836.5
2020.2575	37496.37	-39841.771	114834.5	-80782.108	155774.8

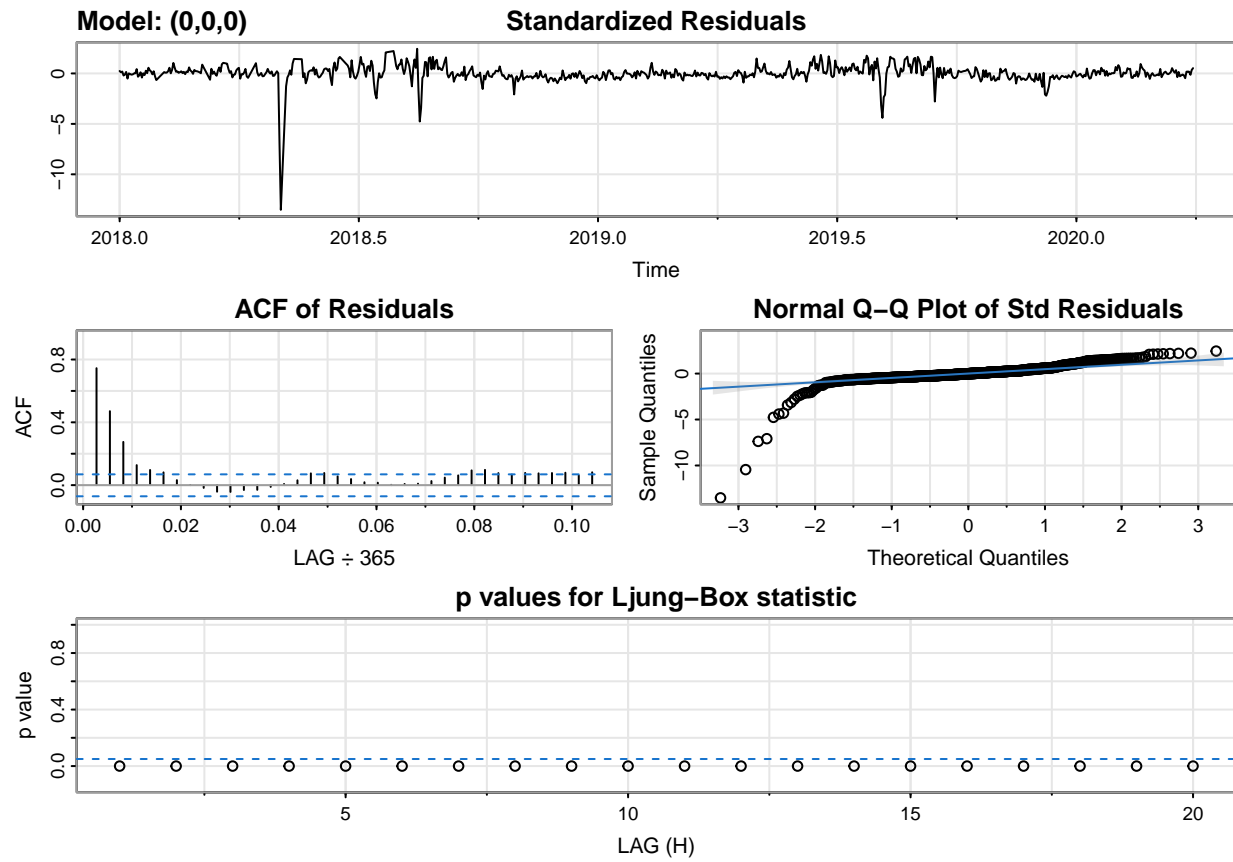
```
fitauto %>% forecast() %>% autoplot()
```



Which Explanatory Variables are Important?

```
fit1_AR0 <- sarima(active_power_ts, 0, 0, 0, xreg=turbine_data[,5:7])
```

```
## initial value 10.126393
## iter 1 value 10.126393
## final value 10.126393
## converged
## initial value 10.126393
## iter 1 value 10.126393
## final value 10.126393
## converged
```



```
summary(fit1_AR0)
```

```
##               Length Class  Mode
## fit           14      Arima list
## degrees_of_freedom 1      -none- numeric
## ttable        16      -none- numeric
## AIC            1      -none- numeric
## AICc           1      -none- numeric
## BIC            1      -none- numeric
```

```
fit1_AR0
```

```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##      Q), period = S), xreg = xreg, transform.pars = trans, fixed = fixed, optim.control = list(trace =
##      REPORT = 1, reltol = tol))
##
## Coefficients:
##      intercept  ambient_temperature  wind_direction  wind_speed
##      -102582.449           610.2466       -42.5943   30919.5702
## s.e.      8210.022           261.3685          12.7461    408.8773
##
## sigma^2 estimated as 624702560:  log likelihood = -9467.17,  aic = 18944.34
```

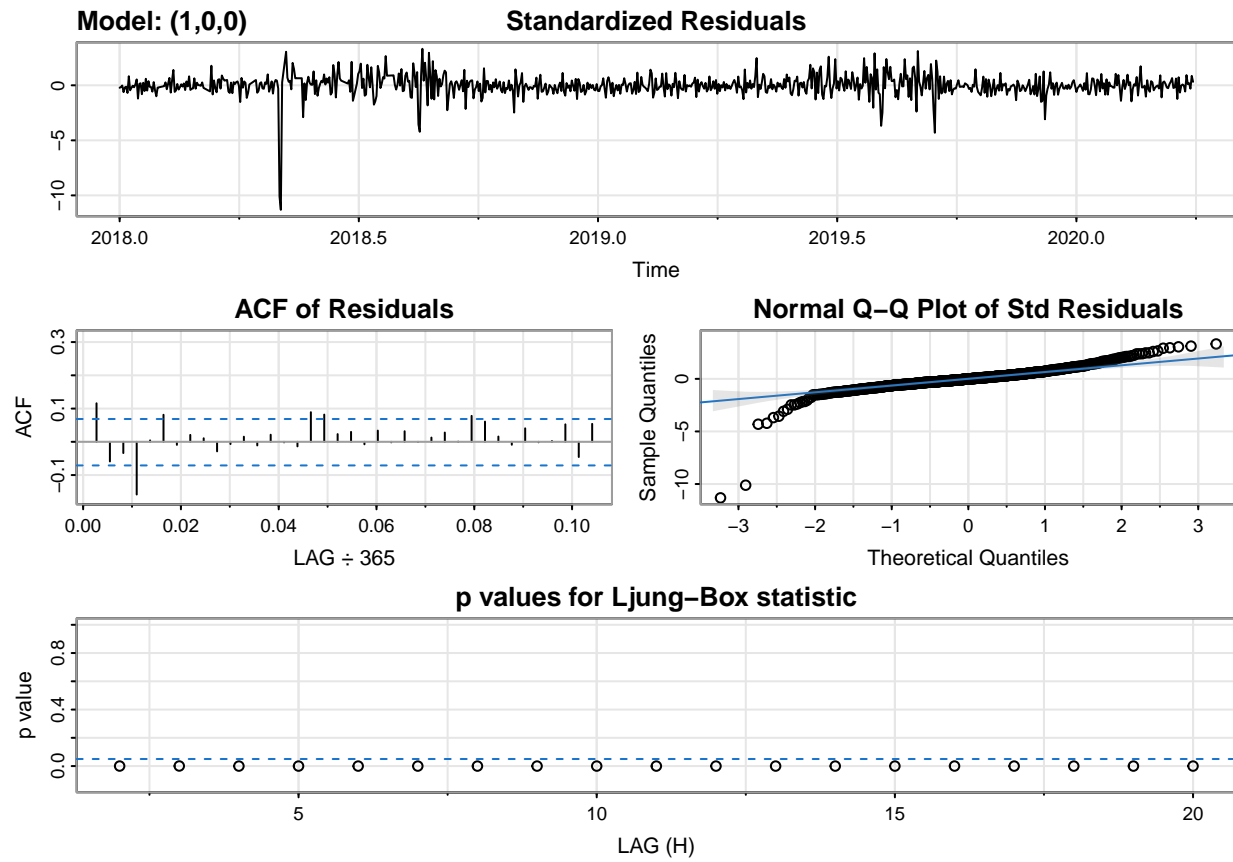


```
##
## $degrees_of_freedom
## [1] 816
##
## $ttable
##           Estimate      SE  t.value p.value
## intercept    -102582.4490 8210.0225 -12.4948 0.0000
## ambient_temperature     610.2466 261.3685  2.3348 0.0198
## wind_direction      -42.5943  12.7461 -3.3418 0.0009
## wind_speed       30919.5702  408.8773 75.6207 0.0000
##
## $AIC
## [1] 23.10286
##
## $AICc
## [1] 23.10292
##
## $BIC
## [1] 23.13157
```

Explore AR(1,0,0)

```
fit1_AR1 <- sarima(active_power_ts, 1, 0, 0, xreg=turbine_data[,5:7])
```

```
## initial value 10.126967
## iter 2 value 9.722222
## iter 3 value 9.719269
## iter 4 value 9.700964
## iter 5 value 9.698416
## iter 6 value 9.696073
## iter 7 value 9.696032
## iter 8 value 9.696000
## iter 9 value 9.695924
## iter 10 value 9.695897
## iter 11 value 9.695891
## iter 12 value 9.695891
## iter 13 value 9.695890
## iter 14 value 9.695888
## iter 14 value 9.695888
## iter 14 value 9.695888
## final value 9.695888
## converged
## initial value 9.695900
## iter 2 value 9.695899
## iter 3 value 9.695898
## iter 3 value 9.695898
## iter 3 value 9.695898
## final value 9.695898
## converged
```



```
summary(fit1_AR1)
```

```
##           Length Class  Mode
## fit           14    Arima list
## degrees_of_freedom 1    -none- numeric
## ttable         20    -none- numeric
## AIC             1    -none- numeric
## AICc            1    -none- numeric
## BIC             1    -none- numeric
```

```
fit1_AR1
```

```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##     Q), period = S), xreg = xreg, transform.pars = trans, fixed = fixed, optim.control = list(trace =
##     REPORT = 1, reltol = tol))
##
## Coefficients:
##           ar1 intercept ambient_temperature wind_direction wind_speed
##           0.7866 -56526.20         -460.9779         -13.7054 27367.7602
## s.e. 0.0227 12524.78           391.7762           17.3690 581.7194
##
## sigma^2 estimated as 263778685: log likelihood = -9114.17, aic = 18240.33
```

```
##
## $degrees_of_freedom
## [1] 815
##
## $ttable
##               Estimate      SE t.value p.value
## ar1              0.7866    0.0227 34.6540 0.0000
## intercept      -56526.2014 12524.7798 -4.5131 0.0000
## ambient_temperature -460.9779   391.7762 -1.1766 0.2397
## wind_direction    -13.7054    17.3690 -0.7891 0.4303
## wind_speed       27367.7602   581.7194 47.0463 0.0000
##
## $AIC
## [1] 22.24431
##
## $AICc
## [1] 22.2444
##
## $BIC
## [1] 22.27877
```

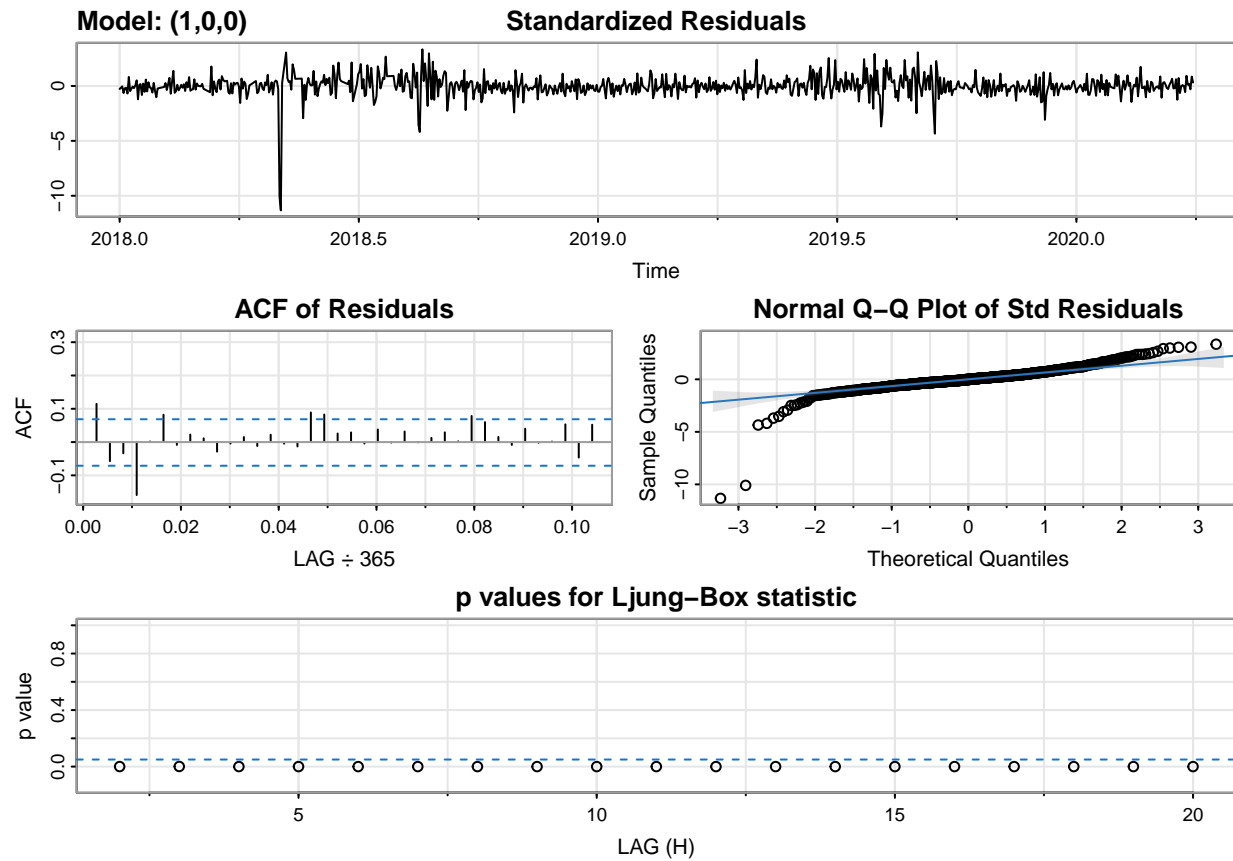
Remove Wind Direction

```
xreg2 <- subset(turbine_data, select=-c(wind_direction))

fit1_AR1 <- sarima(active_power_ts, 1, 0, 0, xreg=xreg2[,5:6])
```

```
## initial value 10.133760
## iter 2 value 9.723134
## iter 3 value 9.719979
## iter 4 value 9.701848
## iter 5 value 9.698544
## iter 6 value 9.696292
## iter 7 value 9.696265
## iter 8 value 9.696264
## iter 9 value 9.696261
## iter 10 value 9.696258
## iter 11 value 9.696258
## iter 12 value 9.696258
## iter 13 value 9.696257
## iter 14 value 9.696257
## iter 15 value 9.696256
## iter 16 value 9.696256
## iter 16 value 9.696256
## iter 16 value 9.696256
## final value 9.696256
## converged
## initial value 9.696287
## iter 2 value 9.696286
## iter 3 value 9.696286
## iter 3 value 9.696286
## iter 3 value 9.696286
```

```
## final value 9.696286
## converged
```



```
summary(fit1_AR1)
```

```
##               Length Class  Mode
## fit           14      Arima list
## degrees_of_freedom 1      -none- numeric
## ttable        16      -none- numeric
## AIC            1      -none- numeric
## AICc           1      -none- numeric
## BIC            1      -none- numeric
```

```
fit1_AR1
```

```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##     Q), period = S), xreg = xreg, transform.pars = trans, fixed = fixed, optim.control = list(trace =
##     REPORT = 1, reltol = tol))
##
## Coefficients:
##      ar1 intercept ambient_temperature wind_speed
```

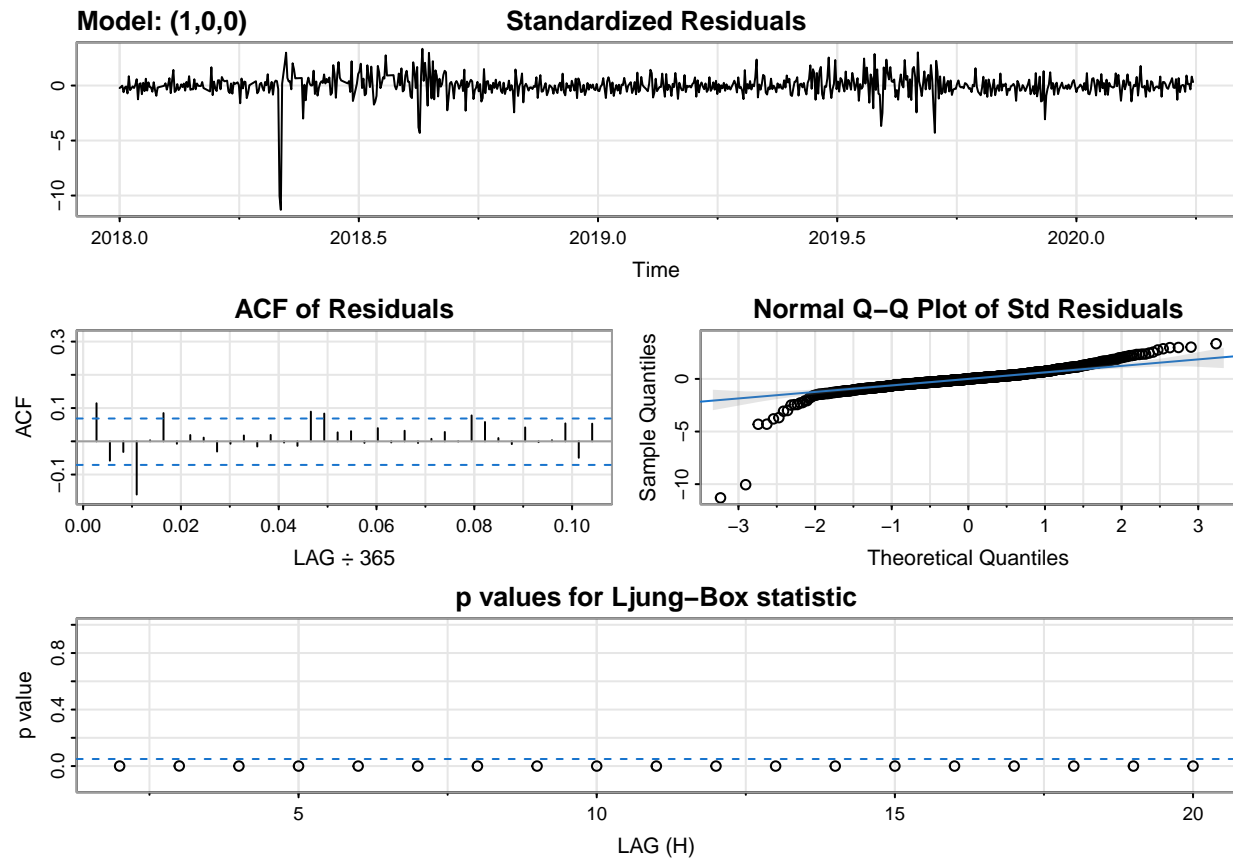
```
##      0.7887 -58490.83      -475.9906 27308.1808
## s.e. 0.0225  12268.65      391.7388   578.2886
##
## sigma^2 estimated as 263980254:  log likelihood = -9114.48,  aic = 18238.97
##
## $degrees_of_freedom
## [1] 816
##
## $ttable
##              Estimate          SE t.value p.value
## ar1              0.7887      0.0225 35.1124 0.0000
## intercept      -58490.8254 12268.6547 -4.7675 0.0000
## ambient_temperature -475.9906   391.7388 -1.2151 0.2247
## wind_speed      27308.1808   578.2886 47.2224 0.0000
##
## $AIC
## [1] 22.24264
##
## $AICc
## [1] 22.2427
##
## $BIC
## [1] 22.27136
```

Remove Ambient Temperature

```
xreg3 <- subset(xreg2, select=-c(ambient_temperature))

fit1_AR1 <- sarima(active_power_ts, 1, 0, 0, xreg=xreg3[,5])
```

```
## initial value 10.135842
## iter 2 value 9.720127
## iter 3 value 9.717420
## iter 4 value 9.701969
## iter 5 value 9.698915
## iter 6 value 9.697175
## iter 7 value 9.697159
## iter 8 value 9.697159
## iter 8 value 9.697159
## final value 9.697159
## converged
## initial value 9.697169
## iter 2 value 9.697169
## iter 3 value 9.697168
## iter 3 value 9.697168
## iter 3 value 9.697168
## final value 9.697168
## converged
```



```
summary(fit1_AR1)
```

```
##               Length Class  Mode
## fit           14      Arima list
## degrees_of_freedom 1      -none- numeric
## ttable         12      -none- numeric
## AIC             1      -none- numeric
## AICc            1      -none- numeric
## BIC             1      -none- numeric
```

```
fit1_AR1
```

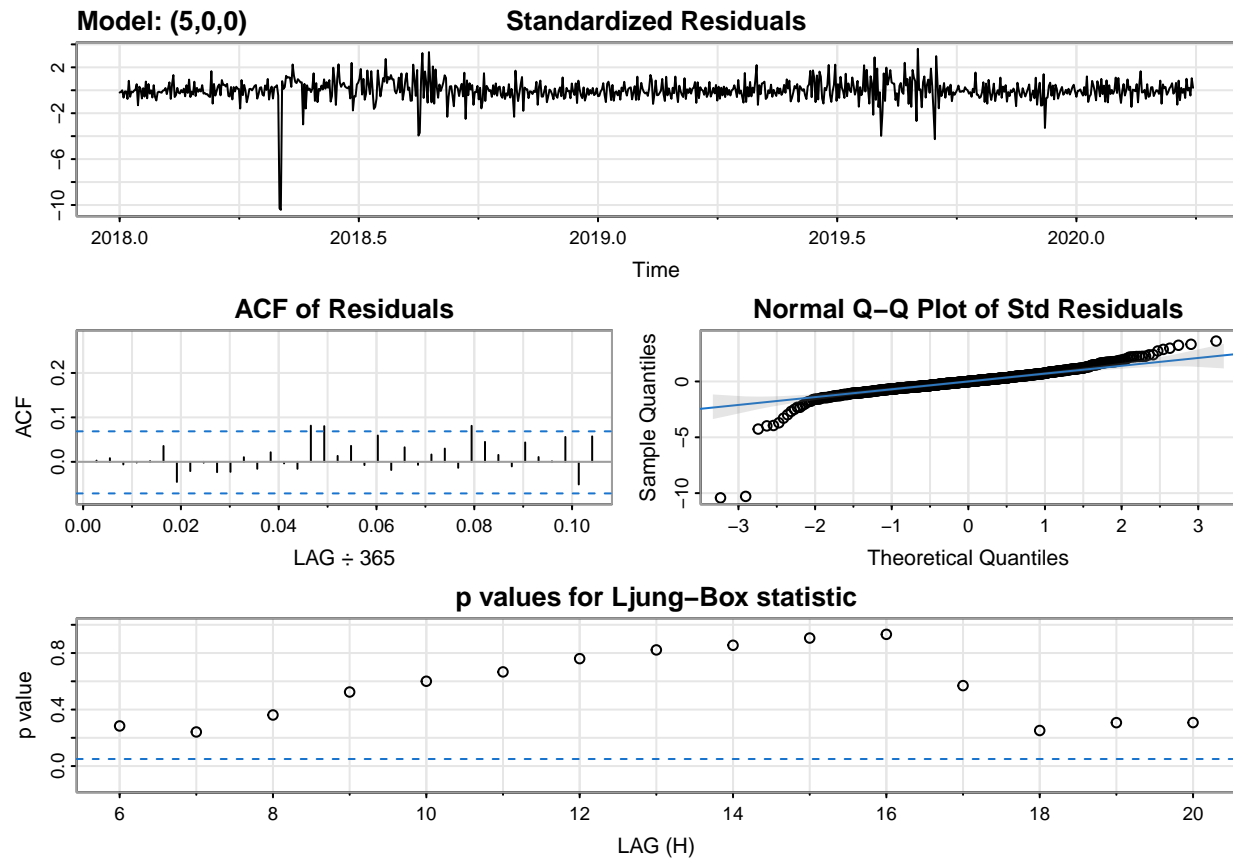
```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##      Q), period = S), xreg = xreg, transform.pars = trans, fixed = fixed, optim.control = list(trace =
##      REPORT = 1, reltol = tol))
##
## Coefficients:
##      ar1      intercept      wind_speed
##      0.7858    -72450.616    27360.9220
## s.e.  0.0225     4335.673     577.6845
##
## sigma^2 estimated as 264450409:  log likelihood = -9115.21,  aic = 18238.41
```

```
##
## $degrees_of_freedom
## [1] 817
##
## $ttable
##           Estimate      SE  t.value p.value
## ar1           0.7858   0.0225  34.9557     0
## intercept -72450.6158 4335.6731 -16.7104     0
## wind_speed  27360.9220  577.6845  47.3631     0
##
## $AIC
## [1] 22.24197
##
## $AICc
## [1] 22.24201
##
## $BIC
## [1] 22.26494
```

Explore p, d, q Value

```
fit1_AR5 <- sarima(active_power_ts, 5, 0, 0, xreg=xreg3[,5])
```

```
## initial value 10.138102
## iter 2 value 9.976112
## iter 3 value 9.792247
## iter 4 value 9.723194
## iter 5 value 9.696597
## iter 6 value 9.688874
## iter 7 value 9.683490
## iter 8 value 9.681179
## iter 9 value 9.679613
## iter 10 value 9.676730
## iter 11 value 9.675882
## iter 12 value 9.675112
## iter 13 value 9.674991
## iter 14 value 9.674982
## iter 15 value 9.674982
## iter 15 value 9.674982
## iter 15 value 9.674982
## final value 9.674982
## converged
## initial value 9.672900
## iter 2 value 9.672899
## iter 2 value 9.672899
## iter 2 value 9.672899
## final value 9.672899
## converged
```



```
summary(fit1_AR5)
```

```
##               Length Class  Mode
## fit           14      Arima list
## degrees_of_freedom 1      -none- numeric
## ttable        28      -none- numeric
## AIC            1      -none- numeric
## AICc           1      -none- numeric
## BIC            1      -none- numeric
```

```
fit1_AR5
```

```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##     Q), period = S), xreg = xreg, transform.pars = trans, fixed = fixed, optim.control = list(trace =
##     REPORT = 1, reltol = tol))
##
## Coefficients:
##           ar1      ar2      ar3      ar4      ar5  intercept  wind_speed
##          0.9063 -0.1781  0.0698 -0.1697  0.1571 -75070.677  27806.9496
## s.e.  0.0344   0.0467  0.0468   0.0465  0.0345   4320.004    582.3119
##
## sigma^2 estimated as 251873207:  log likelihood = -9095.31,  aic = 18206.61
```



```
##
## $degrees_of_freedom
## [1] 813
##
## $ttable
##           Estimate      SE  t.value p.value
## ar1           0.9063   0.0344  26.3073  0.0000
## ar2          -0.1781   0.0467  -3.8155  0.0001
## ar3           0.0698   0.0468   1.4931  0.1358
## ar4          -0.1697   0.0465  -3.6481  0.0003
## ar5           0.1571   0.0345   4.5508  0.0000
## intercept -75070.6765 4320.0039 -17.3775  0.0000
## wind_speed  27806.9496  582.3119  47.7527  0.0000
##
## $AIC
## [1] 22.20319
##
## $AICc
## [1] 22.20336
##
## $BIC
## [1] 22.24913
```

```
reg_matrix <- as.matrix(xreg3[,5])
fit1_AR5 <- Arima(active_power_ts, order=c(5, 0, 0), xreg=reg_matrix)
summary(fit1_AR5)
```

```
## Series: active_power_ts
## Regression with ARIMA(5,0,0) errors
##
## Coefficients:
##           ar1      ar2      ar3      ar4      ar5  intercept  wind_speed
##           0.9063 -0.1781  0.0698 -0.1697  0.1571 -75070.677  27806.9496
## s.e.    0.0344   0.0467  0.0468   0.0465  0.0345   4320.004    582.3119
##
## sigma^2 = 254041857:  log likelihood = -9095.31
## AIC=18206.61  AICc=18206.79  BIC=18244.29
##
## Training set error measures:
##           ME      RMSE      MAE  MPE  MAPE      MASE      ACF1
## Training set 3.031391 15870.51 10250.08 -Inf  Inf  0.2357625  0.002777523
```

```
fit1_AR5 %>% forecast(xreg=xreg3$wind_speed, h=5)
```

```
##           Point Forecast      Lo 80      Hi 80      Lo 95      Hi 95
## 2020.2466    44205.7417  23779.48782  64632.00  12966.4822  75445.00
## 2020.2493    64354.8817  36788.49637  91921.27  22195.7335 106514.03
## 2020.2521    56360.7719  25823.38168  86898.16   9657.8638 103063.68
## 2020.2548    69303.4110  37158.79067 101448.03  20142.4565 118464.37
## 2020.2575    51329.3116  18859.74017  83798.88   1671.3873 100987.24
## 2020.2603    33951.9959   1310.17403  66593.82 -15969.3627  83873.35
## 2020.2630    75211.6491  42372.20256 108051.10  24988.0497 125435.25
## 2020.2658   115432.7978  82423.56659 148442.03  64949.5351 165916.06
```

## 2020.2685	84059.4214	50873.26679	117245.58	33305.5777	134813.27
## 2020.2712	76458.7475	43145.38743	109772.11	25510.3599	127407.14
## 2020.2740	72292.9725	38908.66653	105677.28	21236.0825	123349.86
## 2020.2767	34583.7535	1156.70320	68010.80	-16538.5083	85706.02
## 2020.2795	60301.4610	26849.46940	93753.45	9141.0547	111461.87
## 2020.2822	76112.4290	42643.47993	109581.38	24926.0885	127298.77
## 2020.2849	45891.8147	12409.63936	79373.99	-5314.7536	97098.38
## 2020.2877	69550.7508	36058.82461	103042.68	18329.2698	120772.23
## 2020.2904	64318.6295	30819.69103	97817.57	13086.4242	115550.83
## 2020.2932	80053.6968	46549.99422	113557.40	28814.2054	131293.19
## 2020.2959	61959.1957	28452.41728	95465.97	10715.0002	113203.39
## 2020.2986	48088.4746	14579.66090	81597.29	-3158.8336	99335.78
## 2020.3014	70332.9415	36822.74966	103843.13	19083.5257	121582.36
## 2020.3041	63296.5399	29785.39229	96807.69	12045.6623	114547.42
## 2020.3068	1925.4499	-31586.37293	35437.27	-49326.4603	53177.36
## 2020.3096	22265.3665	-11246.92665	55777.66	-28987.2631	73518.00
## 2020.3123	40851.9267	7339.31050	74364.54	-10401.1969	92105.05
## 2020.3151	40920.6366	7407.80077	74433.47	-10332.8229	92174.10
## 2020.3178	42619.4957	9106.51120	76132.48	-8634.1912	93873.18
## 2020.3205	101021.2467	67508.16086	134534.33	49767.4049	152275.09
## 2020.3233	92830.4254	59317.27004	126343.58	41576.4772	144084.37
## 2020.3260	86406.8423	52893.63893	119920.05	35152.8207	137660.86
## 2020.3288	79984.4902	46471.25381	113497.73	28730.4181	131238.56
## 2020.3315	73563.1948	40049.93568	107076.45	22309.0879	124817.30
## 2020.3342	67142.7933	33629.51863	100656.07	15888.6626	118396.92
## 2020.3370	60723.1448	27209.85941	94236.43	9468.9978	111977.29
## 2020.3397	54304.1196	20790.82692	87817.41	3049.9614	105558.28
## 2020.3425	87625.0234	54111.72577	121138.32	36370.8576	138879.19
## 2020.3452	36024.9766	2511.67553	69538.28	-15229.1944	87279.15
## 2020.3479	5574.4185	-27938.88497	39087.72	-45679.7562	56828.59
## 2020.3507	-8059.1005	-41572.40554	25454.20	-59313.2776	43195.08
## 2020.3534	30345.0592	-3168.24693	63858.37	-20909.1196	81599.24
## 2020.3562	72314.8568	38801.54991	105828.16	21060.6769	123569.04
## 2020.3589	121584.3164	88071.00899	155097.62	70330.1357	172838.50
## 2020.3616	97869.9970	64356.68918	131383.30	46615.8157	149124.18
## 2020.3644	102116.0123	68602.70427	135629.32	50861.8306	153370.19
## 2020.3671	108490.4382	74977.13002	142003.75	57236.2563	159744.62
## 2020.3699	73008.4799	39495.17153	106521.79	21754.2978	124262.66
## 2020.3726	31772.2301	-1741.07832	65285.54	-19481.9521	83026.41
## 2020.3753	32449.3797	-1063.92877	65962.69	-18804.8026	83703.56
## 2020.3781	74433.1707	40919.86221	107946.48	23178.9883	125687.35
## 2020.3808	82531.5571	49018.24859	116044.87	31277.3747	133785.74
## 2020.3836	73503.4119	39990.10339	107016.72	22249.2295	124757.59
## 2020.3863	73714.0844	40200.77588	107227.39	22459.9020	124968.27
## 2020.3890	69988.7156	36475.40703	103502.02	18734.5331	121242.90
## 2020.3918	96692.4589	63179.15030	130205.77	45438.2764	147946.64
## 2020.3945	93435.7067	59922.39812	126949.02	42181.5242	144689.89
## 2020.3973	63266.5847	29753.27617	96779.89	12012.4023	114520.77
## 2020.4000	61696.7017	28183.39310	95210.01	10442.5192	112950.88
## 2020.4027	71401.6219	37888.31330	104914.93	20147.4394	122655.80
## 2020.4055	47334.0727	13820.76416	80847.38	-3920.1098	98588.26
## 2020.4082	71192.7341	37679.42556	104706.04	19938.5516	122446.92
## 2020.4110	77116.5747	43603.26612	110629.88	25862.3922	128370.76
## 2020.4137	82539.5456	49026.23706	116052.85	31285.3632	133793.73

## 2020.4164	84833.4178	51320.10925	118346.73	33579.2353	136087.60
## 2020.4192	-1760.9272	-35274.23573	31752.38	-53015.1096	49493.26
## 2020.4219	12127.1797	-21386.12892	45640.49	-39127.0028	63381.36
## 2020.4247	26015.2882	-7498.02033	59528.60	-25238.8942	77269.47
## 2020.4274	39903.3983	6390.08971	73416.71	-11350.7842	91157.58
## 2020.4301	53791.5095	20278.20096	87304.82	2537.3270	105045.69
## 2020.4329	67679.6218	34166.31321	101192.93	16425.4393	118933.80
## 2020.4356	81567.7349	48054.42629	115081.04	30313.5524	132821.92
## 2020.4384	94436.3689	60923.06031	127949.68	43182.1864	145690.55
## 2020.4411	60615.6134	27102.30482	94128.92	9361.4309	111869.80
## 2020.4438	71342.0464	37828.73787	104855.36	20087.8640	122596.23
## 2020.4466	74035.9149	40522.60629	107549.22	22781.7324	125290.10
## 2020.4493	27578.0267	-5935.28184	61091.34	-23676.1557	78832.21
## 2020.4521	57835.9684	24322.65979	91349.28	6581.7859	109090.15
## 2020.4548	26976.3477	-6536.96083	60489.66	-24277.8347	78230.53
## 2020.4575	64237.0598	30723.75120	97750.37	12982.8773	115491.24
## 2020.4603	-8909.8050	-42423.11361	24603.50	-60163.9875	42344.38
## 2020.4630	11504.6407	-22008.66784	45017.95	-39749.5417	62758.82
## 2020.4658	37197.0459	3683.73728	70710.35	-14057.1366	88451.23
## 2020.4685	62889.4511	29376.14248	96402.76	11635.2686	114143.63
## 2020.4712	88581.8563	55068.54776	122095.16	37327.6738	139836.04
## 2020.4740	101201.3662	67688.05763	134714.67	49947.1837	152455.55
## 2020.4767	72402.8117	38889.50315	105916.12	21148.6292	123656.99
## 2020.4795	49617.8976	16104.58904	83131.21	-1636.2849	100872.08
## 2020.4822	55283.8617	21770.55316	88797.17	4029.6792	106538.04
## 2020.4849	48251.5141	14738.20549	81764.82	-3002.6684	99505.70
## 2020.4877	78205.9182	44692.60961	111719.23	26951.7357	129460.10
## 2020.4904	40989.4146	7476.10606	74502.72	-10264.7678	92243.60
## 2020.4932	66664.8228	33151.51419	100178.13	15410.6403	117919.01
## 2020.4959	45842.7557	12329.44708	79356.06	-5411.4268	97096.94
## 2020.4986	39243.8457	5730.53711	72757.15	-12010.3368	90498.03
## 2020.5014	57118.8571	23605.54853	90632.17	5864.6746	108373.04
## 2020.5041	46132.2219	12618.91332	79645.53	-5121.9606	97386.40
## 2020.5068	43660.6205	10147.31196	77173.93	-7593.5619	94914.80
## 2020.5096	52317.7246	18804.41600	85831.03	1063.5421	103571.91
## 2020.5123	64112.0027	30598.69412	97625.31	12857.8202	115366.19
## 2020.5151	43070.5894	9557.28084	76583.90	-8183.5931	94324.77
## 2020.5178	34255.8096	742.50107	67769.12	-16998.3728	85509.99
## 2020.5205	25441.0299	-8072.27869	58954.34	-25813.1526	76695.21
## 2020.5233	16626.2501	-16887.05846	50139.56	-34627.9324	67880.43
## 2020.5260	7811.4704	-25701.83822	41324.78	-43442.7121	59065.65
## 2020.5288	-1003.3094	-34516.61798	32510.00	-52257.4919	50250.87
## 2020.5315	-9818.0892	-43331.39774	23695.22	-61072.2717	41436.09
## 2020.5342	45648.5594	12135.25082	79161.87	-5605.6231	96902.74
## 2020.5370	51695.1779	18181.86932	85208.49	440.9954	102949.36
## 2020.5397	38296.9148	4783.60625	71810.22	-12957.2677	89551.10
## 2020.5425	44041.3381	10528.02950	77554.65	-7212.8444	95295.52
## 2020.5452	69516.9188	36003.61020	103030.23	18262.7363	120771.10
## 2020.5479	33474.7777	-38.53092	66988.09	-17779.4048	84728.96
## 2020.5507	31922.5006	-1590.80801	65435.81	-19331.6819	83176.68
## 2020.5534	25078.7694	-8434.53922	58592.08	-26175.4131	76332.95
## 2020.5562	92605.9366	59092.62800	126119.25	41351.7541	143860.12
## 2020.5589	42468.2246	8954.91603	75981.53	-8785.9579	93722.41
## 2020.5616	52005.0838	18491.77528	85518.39	750.9014	103259.27

## 2020.5644	63824.0638	30310.75520	97337.37	12569.8813	115078.25
## 2020.5671	50901.1649	17387.85636	84414.47	-353.0176	102155.35
## 2020.5699	48310.9760	14797.66743	81824.28	-2943.2065	99565.16
## 2020.5726	68475.2057	34961.89717	101988.51	17221.0233	119729.39
## 2020.5753	82832.8729	49319.56430	116346.18	31578.6904	134087.06
## 2020.5781	64661.6185	31148.30997	98174.93	13407.4361	115915.80
## 2020.5808	188618.6735	155105.36493	222131.98	137364.4910	239872.86
## 2020.5836	319138.7352	285625.42667	352652.04	267884.5528	370392.92
## 2020.5863	253575.3134	220062.00484	287088.62	202321.1309	304829.50
## 2020.5890	188011.8916	154498.58302	221525.20	136757.7091	239266.07
## 2020.5918	122448.4698	88935.16119	155961.78	71194.2873	173702.65
## 2020.5945	75634.9005	42121.59193	109148.21	24380.7180	126889.08
## 2020.5973	44321.6565	10808.34790	77834.97	-6932.5260	95575.84
## 2020.6000	49893.6283	16380.31968	83406.94	-1360.5542	101147.81
## 2020.6027	7887.9669	-25625.34169	41401.28	-43366.2156	59142.15
## 2020.6055	41971.6518	8458.34323	75484.96	-9282.5307	93225.83
## 2020.6082	135978.1816	102464.87298	169491.49	84723.9991	187232.36
## 2020.6110	200964.0701	167450.76153	234477.38	149709.8876	252218.25
## 2020.6137	196198.6272	162685.31867	229711.94	144944.4448	247452.81
## 2020.6164	191433.1844	157919.87580	224946.49	140179.0019	242687.37
## 2020.6192	186667.7415	153154.43294	220181.05	135413.5590	237921.92
## 2020.6219	181902.2986	148388.99007	215415.61	130648.1162	233156.48
## 2020.6247	177136.8558	143623.54721	210650.16	125882.6733	228391.04
## 2020.6274	172371.4129	138858.10434	205884.72	121117.2304	223625.60
## 2020.6301	57857.5160	24344.20743	91370.82	6603.3335	109111.70
## 2020.6329	28674.2850	-4839.02359	62187.59	-22579.8975	79928.47
## 2020.6356	30707.5328	-2805.77573	64220.84	-20546.6496	81961.72
## 2020.6384	40725.7364	7212.42786	74239.05	-10528.4461	91979.92
## 2020.6411	45943.0879	12429.77928	79456.40	-5311.0946	97197.27
## 2020.6438	54159.4725	20646.16388	87672.78	2905.2900	105413.65
## 2020.6466	41129.6554	7616.34683	74642.96	-10124.5271	92383.84
## 2020.6493	28817.7088	-4695.59974	62331.02	-22436.4737	80071.89
## 2020.6521	93066.8166	59553.50807	126580.13	41812.6342	144321.00
## 2020.6548	103778.7455	70265.43688	137292.05	52524.5630	155032.93
## 2020.6575	62036.4907	28523.18216	95549.80	10782.3083	113290.67
## 2020.6603	42920.7188	9407.41028	76434.03	-8333.4636	94174.90
## 2020.6630	72339.2124	38825.90380	105852.52	21085.0299	123593.39
## 2020.6658	95230.1644	61716.85583	128743.47	43975.9819	146484.35
## 2020.6685	105223.4715	71710.16292	138736.78	53969.2890	156477.65
## 2020.6712	76869.7730	43356.46443	110383.08	25615.5905	128123.96
## 2020.6740	127588.7672	94075.45867	161102.08	76334.5848	178842.95
## 2020.6767	122801.1401	89287.83158	156314.45	71546.9577	174055.32
## 2020.6795	155444.8700	121931.56143	188958.18	104190.6875	206699.05
## 2020.6822	208361.0033	174847.69470	241874.31	157106.8208	259615.19
## 2020.6849	215950.0411	182436.73255	249463.35	164695.8586	267204.22
## 2020.6877	234899.1125	201385.80398	268412.42	183644.9301	286153.30
## 2020.6904	252235.6474	218722.33882	285748.96	200981.4649	303489.83
## 2020.6932	161116.2582	127602.94963	194629.57	109862.0757	212370.44
## 2020.6959	142624.5314	109111.22288	176137.84	91370.3490	193878.71
## 2020.6986	109420.3507	75907.04216	142933.66	58166.1682	160674.53
## 2020.7014	159899.9754	126386.66685	193413.28	108645.7929	211154.16
## 2020.7041	192605.2698	159091.96123	226118.58	141351.0873	243859.45
## 2020.7068	171534.9462	138021.63767	205048.25	120280.7638	222789.13
## 2020.7096	166711.9469	133198.63837	200225.26	115457.7645	217966.13

## 2020.7123	161888.9476	128375.63907	195402.26	110634.7652	213143.13
## 2020.7151	157065.9483	123552.63978	190579.26	105811.7659	208320.13
## 2020.7178	152242.9490	118729.64048	185756.26	100988.7666	203497.13
## 2020.7205	147419.9497	113906.64118	180933.26	96165.7673	198674.13
## 2020.7233	142596.9505	109083.64188	176110.26	91342.7680	193851.13
## 2020.7260	188646.3446	155133.03600	222159.65	137392.1621	239900.53
## 2020.7288	231320.4077	197807.09916	264833.72	180066.2252	282574.59
## 2020.7315	166327.9158	132814.60719	199841.22	115073.7333	217582.10
## 2020.7342	115316.2340	81802.92548	148829.54	64062.0516	166570.42
## 2020.7370	91930.8915	58417.58291	125444.20	40676.7090	143185.07
## 2020.7397	80516.4691	47003.16056	114029.78	29262.2866	131770.65
## 2020.7425	72144.5899	38631.28132	105657.90	20890.4074	123398.77
## 2020.7452	129158.6667	95645.35813	162671.98	77904.4842	180412.85
## 2020.7479	136267.7654	102754.45683	169781.07	85013.5829	187521.95
## 2020.7507	172085.7240	138572.41541	205599.03	120831.5415	223339.91
## 2020.7534	198631.4168	165118.10822	232144.73	147377.2343	249885.60
## 2020.7562	192920.3631	159407.05451	226433.67	141666.1806	244174.55
## 2020.7589	174788.8107	141275.50217	208302.12	123534.6283	226042.99
## 2020.7616	154262.2265	120748.91795	187775.54	103008.0440	205516.41
## 2020.7644	178832.8025	145319.49391	212346.11	127578.6200	230086.98
## 2020.7671	199992.0683	166478.75975	233505.38	148737.8858	251246.25
## 2020.7699	216929.6419	183416.33329	250442.95	165675.4594	268183.82
## 2020.7726	200177.4366	166664.12805	233690.75	148923.2541	251431.62
## 2020.7753	200189.2346	166675.92603	233702.54	148935.0521	251443.42
## 2020.7781	247671.5409	214158.23231	281184.85	196417.3584	298925.72
## 2020.7808	273283.9440	239770.63545	306797.25	222029.7615	324538.13
## 2020.7836	277380.0366	243866.72807	310893.35	226125.8542	328634.22
## 2020.7863	242229.1778	208715.86926	275742.49	190974.9953	293483.36
## 2020.7890	220698.7887	187185.48013	254212.10	169444.6062	271952.97
## 2020.7918	235533.8267	202020.51815	269047.14	184279.6442	286788.01
## 2020.7945	236141.3043	202627.99573	269654.61	184887.1218	287395.49
## 2020.7973	224230.4391	190717.13051	257743.75	172976.2566	275484.62
## 2020.8000	215735.4864	182222.17787	249248.80	164481.3040	266989.67
## 2020.8027	182123.4669	148610.15832	215636.78	130869.2844	233377.65
## 2020.8055	181600.4313	148087.12272	215113.74	130346.2488	232854.61
## 2020.8082	181077.3957	147564.08713	214590.70	129823.2132	232331.58
## 2020.8110	180554.3601	147041.05153	214067.67	129300.1776	231808.54
## 2020.8137	180031.3245	146518.01594	213544.63	128777.1420	231285.51
## 2020.8164	179508.2889	145994.98034	213021.60	128254.1064	230762.47
## 2020.8192	178985.2533	145471.94475	212498.56	127731.0708	230239.44
## 2020.8219	172995.9899	139482.68128	206509.30	121741.8074	224250.17
## 2020.8247	197046.7749	163533.46630	230560.08	145792.5924	248300.96
## 2020.8274	201834.8346	168321.52603	235348.14	150580.6521	253089.02
## 2020.8301	201590.6724	168077.36381	235103.98	150336.4899	252844.85
## 2020.8329	137553.6259	104040.31737	171066.93	86299.4435	188807.81
## 2020.8356	192452.2564	158938.94787	225965.57	141198.0740	243706.44
## 2020.8384	213753.5030	180240.19442	247266.81	162499.3205	265007.69
## 2020.8411	213957.9891	180444.68050	247471.30	162703.8066	265212.17
## 2020.8438	210159.7600	176646.45145	243673.07	158905.5775	261413.94
## 2020.8466	131328.6650	97815.35641	164841.97	80074.4825	182582.85
## 2020.8493	163671.0687	130157.76008	197184.38	112416.8862	214925.25
## 2020.8521	208026.5895	174513.28094	241539.90	156772.4070	259280.77
## 2020.8548	212585.7214	179072.41285	246099.03	161331.5389	263839.90
## 2020.8575	253645.6202	220132.31159	287158.93	202391.4377	304899.80

## 2020.8603	192262.3151	158749.00654	225775.62	141008.1326	243516.50
## 2020.8630	146148.0036	112634.69499	179661.31	94893.8211	197402.19
## 2020.8658	192713.8457	159200.53713	226227.15	141459.6632	243968.03
## 2020.8685	40179.2492	6665.94063	73692.56	-11074.9333	91433.43
## 2020.8712	226896.5774	193383.26885	260409.89	175642.3949	278150.76
## 2020.8740	303289.9202	269776.61162	336803.23	252035.7377	354544.10
## 2020.8767	304979.5304	271466.22181	338492.84	253725.3479	356233.71
## 2020.8795	237978.7447	204465.43610	271492.05	186724.5622	289232.93
## 2020.8822	225844.0392	192330.73061	259357.35	174589.8567	277098.22
## 2020.8849	193063.3755	159550.06690	226576.68	141809.1930	244317.56
## 2020.8877	191169.1865	157655.87796	224682.50	139915.0040	242423.37
## 2020.8904	154904.6071	121391.29857	188417.92	103650.4247	206158.79
## 2020.8932	167216.1077	133702.79918	200729.42	115961.9253	218470.29
## 2020.8959	173210.7776	139697.46900	206724.09	121956.5951	224464.96
## 2020.8986	176227.5448	142714.23621	209740.85	124973.3623	227481.73
## 2020.9014	172727.6894	139214.38082	206241.00	121473.5069	223981.87
## 2020.9041	152244.6694	118731.36080	185757.98	100990.4869	203498.85
## 2020.9068	142730.5643	109217.25571	176243.87	91476.3818	193984.75
## 2020.9096	159795.3515	126282.04295	193308.66	108541.1690	211049.53
## 2020.9123	135194.0020	101680.69338	168707.31	83939.8195	186448.18
## 2020.9151	139531.0005	106017.69188	173044.31	88276.8180	190785.18
## 2020.9178	123076.9727	89563.66413	156590.28	71822.7902	174331.16
## 2020.9205	121220.3848	87707.07625	154733.69	69966.2023	172474.57
## 2020.9233	142849.9493	109336.64072	176363.26	91595.7668	194104.13
## 2020.9260	168974.9836	135461.67503	202488.29	117720.8011	220229.17
## 2020.9288	172729.7540	139216.44543	206243.06	121475.5715	223983.94
## 2020.9315	114801.2367	81287.92814	148314.55	63547.0542	166055.42
## 2020.9342	40048.3175	6535.00891	73561.63	-11205.8650	91302.50
## 2020.9370	23371.4904	-10141.81813	56884.80	-27882.6920	74625.67
## 2020.9397	43283.2951	9769.98649	76796.60	-7970.8874	94537.48
## 2020.9425	22140.8088	-11372.49976	55654.12	-29113.3737	73394.99
## 2020.9452	56203.5357	22690.22716	89716.84	4949.3532	107457.72
## 2020.9479	43701.4715	10188.16293	77214.78	-7552.7110	94955.65
## 2020.9507	74461.2761	40947.96754	107974.58	23207.0936	125715.46
## 2020.9534	73129.2031	39615.89454	106642.51	21875.0206	124383.39
## 2020.9562	84530.1524	51016.84379	118043.46	33275.9699	135784.33
## 2020.9589	89031.2103	55517.90174	122544.52	37777.0278	140285.39
## 2020.9616	89152.6143	55639.30570	122665.92	37898.4318	140406.80
## 2020.9644	84770.3642	51257.05558	118283.67	33516.1817	136024.55
## 2020.9671	87001.1159	53487.80733	120514.42	35746.9334	138255.30
## 2020.9699	29373.8502	-4139.45840	62887.16	-21880.3323	80628.03
## 2020.9726	39986.4696	6473.16102	73499.78	-11267.7129	91240.65
## 2020.9753	16021.0428	-17492.26575	49534.35	-35233.1397	67275.23
## 2020.9781	10645.4686	-22867.84000	44158.78	-40608.7139	61899.65
## 2020.9808	37977.1639	4463.85529	71490.47	-13277.0186	89231.35
## 2020.9836	39164.9269	5651.61836	72678.24	-12089.2556	90419.11
## 2020.9863	56482.8712	22969.56260	89996.18	5228.6887	107737.05
## 2020.9890	41885.8891	8372.58054	75399.20	-9368.2934	93140.07
## 2020.9918	57451.7767	23938.46813	90965.09	6197.5942	108705.96
## 2020.9945	81305.1914	47791.88285	114818.50	30051.0089	132559.37
## 2020.9973	53625.7096	20112.40105	87139.02	2371.5271	104879.89
## 2021.0000	28445.6557	-5067.65289	61958.96	-22808.5268	79699.84
## 2021.0027	53458.4711	19945.16252	86971.78	2204.2886	104712.65
## 2021.0055	93483.6242	59970.31559	126996.93	42229.4417	144737.81

## 2021.0082	86100.4490	52587.14044	119613.76	34846.2665	137354.63
## 2021.0110	78337.9676	44824.65902	111851.28	27083.7851	129592.15
## 2021.0137	46559.5068	13046.19821	80072.82	-4694.6757	97813.69
## 2021.0164	29207.3738	-4305.93474	62720.68	-22046.8087	80461.56
## 2021.0192	69301.5242	35788.21567	102814.83	18047.3418	120555.71
## 2021.0219	84883.3275	51370.01893	118396.64	33629.1450	136137.51
## 2021.0247	38227.4302	4714.12165	71740.74	-13026.7523	89481.61
## 2021.0274	33223.6876	-289.62099	66737.00	-18030.4949	84477.87
## 2021.0301	35909.0842	2395.77565	69422.39	-15345.0983	87163.27
## 2021.0329	59053.7273	25540.41872	92567.04	7799.5448	110307.91
## 2021.0356	43042.4636	9529.15501	76555.77	-8211.7189	94296.65
## 2021.0384	32715.4266	-797.88199	66228.74	-18538.7559	83969.61
## 2021.0411	14955.9948	-18557.31378	48469.30	-36298.1877	66210.18
## 2021.0438	41104.3468	7591.03824	74617.66	-10149.8357	92358.53
## 2021.0466	48654.7245	15141.41594	82168.03	-2599.4580	99908.91
## 2021.0493	85788.0983	52274.78972	119301.41	34533.9158	137042.28
## 2021.0521	39884.2994	6370.99082	73397.61	-11369.8831	91138.48
## 2021.0548	71105.7860	37592.47741	104619.09	19851.6035	122359.97
## 2021.0575	70665.5331	37152.22450	104178.84	19411.3506	121919.72
## 2021.0603	78342.0234	44828.71481	111855.33	27087.8409	129596.21
## 2021.0630	67405.9023	33892.59376	100919.21	16151.7198	118660.08
## 2021.0658	59091.4740	25578.16543	92604.78	7837.2915	110345.66
## 2021.0685	55423.8097	21910.50115	88937.12	4169.6272	106677.99
## 2021.0712	53545.4634	20032.15480	87058.77	2291.2809	104799.65
## 2021.0740	43110.8173	9597.50876	76624.13	-8143.3652	94365.00
## 2021.0767	83411.2008	49897.89223	116924.51	32157.0183	134665.38
## 2021.0795	80473.4613	46960.15271	113986.77	29219.2788	131727.64
## 2021.0822	70852.9204	37339.61187	104366.23	19598.7380	122107.10
## 2021.0849	80534.6994	47021.39086	114048.01	29280.5169	131788.88
## 2021.0877	118382.3059	84868.99735	151895.61	67128.1234	169636.49
## 2021.0904	79168.6480	45655.33939	112681.96	27914.4655	130422.83
## 2021.0932	62907.7895	29394.48091	96421.10	11653.6070	114161.97
## 2021.0959	95447.4851	61934.17651	128960.79	44193.3026	146701.67
## 2021.0986	77695.0878	44181.77923	111208.40	26440.9053	128949.27
## 2021.1014	51136.6271	17623.31852	84649.94	-117.5554	102390.81
## 2021.1041	35106.3900	1593.08142	68619.70	-16147.7925	86360.57
## 2021.1068	29011.2997	-4502.00888	62524.61	-22242.8828	80265.48
## 2021.1096	49366.1795	15852.87095	82879.49	-1888.0030	100620.36
## 2021.1123	26192.5472	-7320.76135	59705.86	-25061.6353	77446.73
## 2021.1151	36388.5878	2875.27925	69901.90	-14865.5947	87642.77
## 2021.1178	92706.5196	59193.21103	126219.83	41452.3371	143960.70
## 2021.1205	66139.2971	32625.98854	99652.61	14885.1146	117393.48
## 2021.1233	68336.8009	34823.49234	101850.11	17082.6184	119590.98
## 2021.1260	90093.2465	56579.93788	123606.56	38839.0640	141347.43
## 2021.1288	105869.6595	72356.35091	139382.97	54615.4770	157123.84
## 2021.1315	73859.7441	40346.43558	107373.05	22605.5617	125113.93
## 2021.1342	66551.9753	33038.66668	100065.28	15297.7928	117806.16
## 2021.1370	78727.4194	45214.11080	112240.73	27473.2369	129981.60
## 2021.1397	81308.0735	47794.76498	114821.38	30053.8911	132562.26
## 2021.1425	103912.1933	70398.88472	137425.50	52658.0108	155166.38
## 2021.1452	65404.6925	31891.38391	98918.00	14150.5100	116658.87
## 2021.1479	68485.5021	34972.19355	101998.81	17231.3196	119739.68
## 2021.1507	79759.4762	46246.16762	113272.78	28505.2937	131013.66
## 2021.1534	62464.7978	28951.48920	95978.11	11210.6153	113718.98

## 2021.1562	40062.3938	6549.08520	73575.70	-11191.7887	91316.58
## 2021.1589	43642.8511	10129.54256	77156.16	-7611.3314	94897.03
## 2021.1616	49400.3641	15887.05555	82913.67	-1853.8184	100654.55
## 2021.1644	77367.7176	43854.40904	110881.03	26113.5351	128621.90
## 2021.1671	78712.7368	45199.42820	112226.05	27458.5543	129966.92
## 2021.1699	77275.7318	43762.42323	110789.04	26021.5493	128529.91
## 2021.1726	64748.9959	31235.68732	98262.30	13494.8134	116003.18
## 2021.1753	75870.0964	42356.78786	109383.40	24615.9139	127124.28
## 2021.1781	72890.9986	39377.69000	106404.31	21636.8161	124145.18
## 2021.1808	86403.5530	52890.24443	119916.86	35149.3705	137657.74
## 2021.1836	83583.8090	50070.50042	117097.12	32329.6265	134837.99
## 2021.1863	54141.4056	20628.09707	87654.71	2887.2232	105395.59
## 2021.1890	76646.5617	43133.25308	110159.87	25392.3792	127900.74
## 2021.1918	63710.5362	30197.22759	97223.84	12456.3537	114964.72
## 2021.1945	68136.9696	34623.66106	101650.28	16882.7871	119391.15
## 2021.1973	83108.3639	49595.05532	116621.67	31854.1814	134362.55
## 2021.2000	102458.0390	68944.73038	135971.35	51203.8565	153712.22
## 2021.2027	30280.4781	-3232.83048	63793.79	-20973.7044	81534.66
## 2021.2055	67650.4048	34137.09618	101163.71	16396.2223	118904.59
## 2021.2082	52147.6321	18634.32355	85660.94	893.4496	103401.81
## 2021.2110	40560.1315	7046.82289	74073.44	-10694.0510	91814.31
## 2021.2137	77998.6378	44485.32928	111511.95	26744.4554	129252.82
## 2021.2164	53586.7801	20073.47151	87100.09	2332.5976	104840.96
## 2021.2192	65434.7046	31921.39601	98948.01	14180.5221	116688.89
## 2021.2219	99307.1362	65793.82764	132820.44	48052.9537	150561.32
## 2021.2247	72622.0876	39108.77899	106135.40	21367.9051	123876.27
## 2021.2274	62470.3136	28957.00504	95983.62	11216.1311	113724.50
## 2021.2301	60999.6713	27486.36270	94512.98	9745.4888	112253.85
## 2021.2329	47597.7884	14084.47979	81111.10	-3656.3941	98851.97
## 2021.2356	69633.5298	36120.22124	103146.84	18379.3473	120887.71
## 2021.2384	86439.2849	52925.97636	119952.59	35185.1024	137693.47
## 2021.2411	69911.5088	36398.20028	103424.82	18657.3264	121165.69
## 2021.2438	55493.6233	21980.31473	89006.93	4239.4408	106747.81
## 2021.2466	79426.6248	45913.31621	112939.93	28172.4423	130680.81
## 2021.2493	78684.1451	45170.83657	112197.45	27429.9627	129938.33
## 2021.2521	66328.1645	32814.85598	99841.47	15073.9821	117582.35
## 2021.2548	90120.0353	56606.72669	123633.34	38865.8528	141374.22
## 2021.2575	87733.9837	54220.67516	121247.29	36479.8013	138988.17
## 2021.2603	96508.5350	62995.22640	130021.84	45254.3525	147762.72
## 2021.2630	70124.6825	36611.37397	103637.99	18870.5001	121378.87
## 2021.2658	49221.6937	15708.38513	82735.00	-2032.4888	100475.88
## 2021.2685	73779.5712	40266.26261	107292.88	22525.3887	125033.75
## 2021.2712	102692.0801	69178.77153	136205.39	51437.8976	153946.26
## 2021.2740	79197.1787	45683.87011	112710.49	27942.9962	130451.36
## 2021.2767	101819.6200	68306.31143	135332.93	50565.4375	153073.80
## 2021.2795	91761.6963	58248.38774	125275.00	40507.5138	143015.88
## 2021.2822	91992.0839	58478.77534	125505.39	40737.9014	143246.27
## 2021.2849	66894.0173	33380.70876	100407.33	15639.8348	118148.20
## 2021.2877	62493.4033	28980.09469	96006.71	11239.2208	113747.59
## 2021.2904	80196.6813	46683.37273	113709.99	28942.4988	131450.86
## 2021.2932	62924.4704	29411.16186	96437.78	11670.2879	114178.65
## 2021.2959	53352.4283	19839.11972	86865.74	2098.2458	104606.61
## 2021.2986	66605.9149	33092.60636	100119.22	15351.7325	117860.10
## 2021.3014	94092.5814	60579.27280	127605.89	42838.3989	145346.76

## 2021.3041	69224.7133	35711.40471	102738.02	17970.5308	120478.90
## 2021.3068	54356.7946	20843.48607	87870.10	3102.6122	105610.98
## 2021.3096	64065.4157	30552.10709	97578.72	12811.2332	115319.60
## 2021.3123	91874.6761	58361.36750	125387.98	40620.4936	143128.86
## 2021.3151	157548.0510	124034.74240	191061.36	106293.8685	208802.23
## 2021.3178	119338.1614	85824.85286	152851.47	68083.9789	170592.34
## 2021.3205	63871.5396	30358.23099	97384.85	12617.3571	115125.72
## 2021.3233	48772.8471	15259.53849	82286.16	-2481.3354	100027.03
## 2021.3260	72297.4176	38784.10901	105810.73	21043.2351	123551.60
## 2021.3288	107645.4196	74132.11105	141158.73	56391.2371	158899.60
## 2021.3315	69328.6964	35815.38780	102842.00	18074.5139	120582.88
## 2021.3342	59132.4755	25619.16695	92645.78	7878.2930	110386.66
## 2021.3370	89585.6506	56072.34205	123098.96	38331.4681	140839.83
## 2021.3397	107214.7792	73701.47063	140728.09	55960.5967	158468.96
## 2021.3425	94273.4240	60760.11540	127786.73	43019.2415	145527.61
## 2021.3452	80768.8646	47255.55606	114282.17	29514.6822	132023.05
## 2021.3479	65160.8120	31647.50339	98674.12	13906.6295	116414.99
## 2021.3507	56626.2937	23112.98510	90139.60	5372.1112	107880.48
## 2021.3534	74167.1405	40653.83197	107680.45	22912.9581	125421.32
## 2021.3562	110057.1391	76543.83050	143570.45	58802.9566	161311.32
## 2021.3589	136026.0951	102512.78652	169539.40	84771.9126	187280.28
## 2021.3616	113215.6472	79702.33862	146728.96	61961.4647	164469.83
## 2021.3644	85982.0380	52468.72946	119495.35	34727.8556	137236.22
## 2021.3671	103846.2506	70332.94208	137359.56	52592.0682	155100.43
## 2021.3699	46986.5203	13473.21169	80499.83	-4267.6622	98240.70
## 2021.3726	35537.6292	2024.32064	69050.94	-15716.5533	86791.81
## 2021.3753	23876.5242	-9636.78438	57389.83	-27377.6583	75130.71
## 2021.3781	42982.8927	9469.58414	76496.20	-8271.2898	94237.08
## 2021.3808	92322.4039	58809.09531	125835.71	41068.2214	143576.59
## 2021.3836	107429.8096	73916.50103	140943.12	56175.6271	158683.99
## 2021.3863	92061.1030	58547.79440	125574.41	40806.9205	143315.29
## 2021.3890	86333.2005	52819.89188	119846.51	35079.0180	137587.38
## 2021.3918	77258.9258	43745.61718	110772.23	26004.7433	128513.11
## 2021.3945	83310.7142	49797.40561	116824.02	32056.5317	134564.90
## 2021.3973	50298.7800	16785.47143	83812.09	-955.4025	101552.96
## 2021.4000	43804.0450	10290.73643	77317.35	-7450.1375	95058.23
## 2021.4027	23383.3166	-10129.99193	56896.63	-27870.8658	74637.50
## 2021.4055	60669.4066	27156.09803	94182.72	9415.2241	111923.59
## 2021.4082	75841.7854	42328.47687	109355.09	24587.6030	127095.97
## 2021.4110	114835.5539	81322.24536	148348.86	63581.3715	166089.74
## 2021.4137	37798.5310	4285.22241	71311.84	-13455.6515	89052.71
## 2021.4164	42931.5386	9418.23005	76444.85	-8322.6439	94185.72
## 2021.4192	45930.9923	12417.68373	79444.30	-5323.1902	97185.17
## 2021.4219	70037.7823	36524.47369	103551.09	18783.5998	121291.96
## 2021.4247	63149.1003	29635.79173	96662.41	11894.9178	114403.28
## 2021.4274	62847.5332	29334.22466	96360.84	11593.3507	114101.72
## 2021.4301	52216.9706	18703.66207	85730.28	962.7882	103471.15
## 2021.4329	42528.8175	9015.50891	76042.13	-8725.3650	93783.00
## 2021.4356	55586.4412	22073.13265	89099.75	4332.2587	106840.62
## 2021.4384	62293.8603	28780.55172	95807.17	11039.6778	113548.04
## 2021.4411	64122.4301	30609.12152	97635.74	12868.2476	115376.61
## 2021.4438	89701.5897	56188.28114	123214.90	38447.4072	140955.77
## 2021.4466	97424.9243	63911.61571	130938.23	46170.7418	148679.11
## 2021.4493	122909.3201	89396.01153	156422.63	71655.1376	174163.50

## 2021.4521	86938.8550	53425.54641	120452.16	35684.6725	138193.04
## 2021.4548	88724.5213	55211.21269	122237.83	37470.3388	139978.70
## 2021.4575	50514.8859	17001.57729	84028.19	-739.2966	101769.07
## 2021.4603	77073.7450	43560.43640	110587.05	25819.5625	128327.93
## 2021.4630	67800.0947	34286.78618	101313.40	16545.9123	119054.28
## 2021.4658	58921.6425	25408.33394	92434.95	7667.4600	110175.82
## 2021.4685	46983.4161	13470.10752	80496.72	-4270.7664	98237.60
## 2021.4712	58212.9485	24699.63989	91726.26	6958.7660	109467.13
## 2021.4740	64648.2551	31134.94653	98161.56	13394.0726	115902.44
## 2021.4767	72187.3616	38674.05303	105700.67	20933.1791	123441.54
## 2021.4795	68963.9269	35450.61834	102477.24	17709.7444	120218.11
## 2021.4822	45421.8155	11908.50690	78935.12	-5832.3670	96676.00
## 2021.4849	37144.6806	3631.37198	70657.99	-14109.5019	88398.86
## 2021.4877	76213.7958	42700.48720	109727.10	24959.6133	127467.98
## 2021.4904	66757.2015	33243.89295	100270.51	15503.0190	118011.38
## 2021.4932	38184.7026	4671.39399	71698.01	-13069.4799	89438.89
## 2021.4959	33330.0599	-183.24867	66843.37	-17924.1226	84584.24
## 2021.4986	64279.0738	30765.76524	97792.38	13024.8913	115533.26
## 2021.5014	52622.9257	19109.61711	86136.23	1368.7432	103877.11
## 2021.5041	37578.8465	4065.53789	71092.16	-13675.3360	88833.03
## 2021.5068	50607.9147	17094.60608	84121.22	-646.2678	101862.10
## 2021.5096	69806.1060	36292.79746	103319.41	18551.9235	121060.29
## 2021.5123	45272.3616	11759.05304	78785.67	-5981.8209	96526.54
## 2021.5151	51650.1951	18136.88656	85163.50	396.0126	102904.38
## 2021.5178	45611.1697	12097.86114	79124.48	-5643.0128	96865.35
## 2021.5205	48896.7996	15383.49100	82410.11	-2357.3829	100150.98
## 2021.5233	53929.2149	20415.90635	87442.52	2675.0324	105183.40
## 2021.5260	40973.5898	7460.28119	74486.90	-10280.5927	92227.77
## 2021.5288	57148.3526	23635.04407	90661.66	5894.1702	108402.54
## 2021.5315	61978.0243	28464.71569	95491.33	10723.8418	113232.21
## 2021.5342	56657.2793	23143.97076	90170.59	5403.0968	107911.46
## 2021.5370	44106.8399	10593.53136	77620.15	-7147.3425	95361.02
## 2021.5397	46957.6908	13444.38224	80471.00	-4296.4917	98211.87
## 2021.5425	53355.3866	19842.07805	86868.70	2101.2041	104609.57
## 2021.5452	59149.1406	25635.83200	92662.45	7894.9581	110403.32
## 2021.5479	33615.3533	102.04474	67128.66	-17638.8292	84869.54
## 2021.5507	41645.0271	8131.71854	75158.34	-9609.1554	92899.21
## 2021.5534	48431.6465	14918.33796	81944.96	-2822.5359	99685.83
## 2021.5562	68073.6111	34560.30253	101586.92	16819.4286	119327.79
## 2021.5589	70017.2505	36503.94192	103530.56	18763.0680	121271.43
## 2021.5616	43424.3266	9911.01807	76937.64	-7829.8558	94678.51
## 2021.5644	73443.6222	39930.31367	106956.93	22189.4398	124697.80
## 2021.5671	45187.3804	11674.07183	78700.69	-6066.8021	96441.56
## 2021.5699	31325.2078	-2188.10076	64838.52	-19928.9747	82579.39
## 2021.5726	103667.6491	70154.34049	137180.96	52413.4666	154921.83
## 2021.5753	118912.9276	85399.61902	152426.24	67658.7451	170167.11
## 2021.5781	178266.3743	144753.06574	211779.68	127012.1918	229520.56
## 2021.5808	131355.7576	97842.44903	164869.07	80101.5751	182609.94
## 2021.5836	83107.4321	49594.12356	116620.74	31853.2496	134361.61
## 2021.5863	59798.0252	26284.71664	93311.33	8543.8427	111052.21
## 2021.5890	66154.1178	32640.80920	99667.43	14899.9353	117408.30
## 2021.5918	129178.4974	95665.18887	162691.81	77924.3150	180432.68
## 2021.5945	138420.1417	104906.83312	171933.45	87165.9592	189674.32
## 2021.5973	114888.4404	81375.13179	148401.75	63634.2579	166142.62

## 2021.6000	53259.9993	19746.69077	86773.31	2005.8169	104514.18
## 2021.6027	67953.9051	34440.59658	101467.21	16699.7227	119208.09
## 2021.6055	47797.7572	14284.44858	81311.07	-3456.4253	99051.94
## 2021.6082	76904.7764	43391.46785	110418.08	25650.5939	128158.96
## 2021.6110	58893.9516	25380.64299	92407.26	7639.7691	110148.13
## 2021.6137	77021.8654	43508.55687	110535.17	25767.6830	128276.05
## 2021.6164	33249.7895	-263.51903	66763.10	-18004.3929	84503.97
## 2021.6192	49394.9571	15881.64851	82908.27	-1859.2254	100649.14
## 2021.6219	44364.9633	10851.65472	77878.27	-6889.2192	95619.15
## 2021.6247	41842.1719	8328.86328	75355.48	-9412.0106	93096.35
## 2021.6274	24868.3556	-8644.95294	58381.66	-26385.8268	76122.54
## 2021.6301	52611.4849	19098.17632	86124.79	1357.3024	103865.67
## 2021.6329	35290.9753	1777.66670	68804.28	-15963.2072	86545.16
## 2021.6356	53226.1559	19712.84732	86739.46	1971.9734	104480.34
## 2021.6384	50174.4812	16661.17262	83687.79	-1079.7013	101428.66
## 2021.6411	71120.6723	37607.36375	104633.98	19866.4898	122374.85
## 2021.6438	49310.6811	15797.37252	82823.99	-1943.5014	100564.86
## 2021.6466	-16068.2208	-49581.52936	17445.09	-67322.4033	35185.96
## 2021.6493	10515.4810	-22997.82755	44028.79	-40738.7015	61769.66
## 2021.6521	39183.9517	5670.64314	72697.26	-12070.2308	90438.13
## 2021.6548	46373.3269	12860.01830	79886.64	-4880.8556	97627.51
## 2021.6575	91017.0545	57503.74589	124530.36	39762.8720	142271.24
## 2021.6603	68994.5906	35481.28206	102507.90	17740.4082	120248.77
## 2021.6630	118840.4201	85327.11151	152353.73	67586.2376	170094.60
## 2021.6658	98761.5803	65248.27175	132274.89	47507.3978	150015.76
## 2021.6685	87178.3299	53665.02130	120691.64	35924.1474	138432.51
## 2021.6712	64915.6599	31402.35135	98428.97	13661.4774	116169.84
## 2021.6740	47707.1772	14193.86860	81220.49	-3547.0053	98961.36
## 2021.6767	52797.0411	19283.73254	86310.35	1542.8586	104051.22
## 2021.6795	36500.7863	2987.47778	70014.09	-14753.3961	87754.97
## 2021.6822	94583.2870	61069.97844	128096.60	43329.1045	145837.47
## 2021.6849	48606.4878	15093.17919	82119.80	-2647.6947	99860.67
## 2021.6877	73700.1201	40186.81149	107213.43	22445.9376	124954.30
## 2021.6904	145093.3465	111580.03789	178606.66	93839.1640	196347.53
## 2021.6932	123910.0940	90396.78538	157423.40	72655.9115	175164.28
## 2021.6959	162566.3260	129053.01745	196079.63	111312.1435	213820.51
## 2021.6986	173600.8650	140087.55648	207114.17	122346.6826	224855.05
## 2021.7014	148067.7686	114554.45998	181581.08	96813.5861	199321.95
## 2021.7041	160446.1926	126932.88403	193959.50	109192.0101	211700.38
## 2021.7068	148274.9320	114761.62346	181788.24	97020.7496	199529.11
## 2021.7096	157652.5730	124139.26440	191165.88	106398.3905	208906.76
## 2021.7123	169330.7522	135817.44362	202844.06	118076.5697	220584.93
## 2021.7151	127164.4082	93651.09959	160677.72	75910.2257	178418.59
## 2021.7178	91092.2377	57578.92913	124605.55	39838.0552	142346.42
## 2021.7205	83615.2821	50101.97354	117128.59	32361.0996	134869.46
## 2021.7233	89701.0810	56187.77244	123214.39	38446.8985	140955.26
## 2021.7260	112312.0356	78798.72703	145825.34	61057.8531	163566.22
## 2021.7288	172230.9898	138717.68120	205744.30	120976.8073	223485.17
## 2021.7315	206206.1490	172692.84041	239719.46	154951.9665	257460.33
## 2021.7342	233908.8013	200395.49269	267422.11	182654.6188	285162.98
## 2021.7370	219403.0614	185889.75278	252916.37	168148.8789	270657.24
## 2021.7397	225832.6997	192319.39118	259346.01	174578.5173	277086.88
## 2021.7425	199321.8187	165808.51017	232835.13	148067.6363	250576.00
## 2021.7452	220968.6143	187455.30570	254481.92	169714.4318	272222.80

## 2021.7479	207440.2013	173926.89276	240953.51	156186.0188	258694.38
## 2021.7507	213337.5651	179824.25654	246850.87	162083.3826	264591.75
## 2021.7534	205024.6598	171511.35127	238537.97	153770.4774	256278.84
## 2021.7562	204362.0865	170848.77790	237875.40	153107.9040	255616.27
## 2021.7589	203854.3216	170341.01298	237367.63	152600.1391	255108.50
## 2021.7616	207127.4443	173614.13577	240640.75	155873.2619	258381.63
## 2021.7644	202424.2168	168910.90824	235937.53	151170.0343	253678.40
## 2021.7671	210631.5129	177118.20434	244144.82	159377.3304	261885.70
## 2021.7699	209184.3168	175671.00825	242697.63	157930.1343	260438.50
## 2021.7726	125802.6421	92289.33355	159315.95	74548.4596	177056.82
## 2021.7753	116354.8402	82841.53163	149868.15	65100.6577	167609.02
## 2021.7781	133778.7216	100265.41303	167292.03	82524.5391	185032.90
## 2021.7808	133292.3297	99779.02110	166805.64	82038.1472	184546.51
## 2021.7836	116820.8031	83307.49455	150334.11	65566.6206	168074.99
## 2021.7863	111882.7772	78369.46859	145396.09	60628.5947	163136.96
## 2021.7890	110972.5704	77459.26182	144485.88	59718.3879	162226.75
## 2021.7918	86855.4326	53342.12408	120368.74	35601.2502	138109.62
## 2021.7945	59516.9198	26003.61122	93030.23	8262.7373	110771.10
## 2021.7973	38359.4956	4846.18705	71872.80	-12894.6869	89613.68
## 2021.8000	80376.6521	46863.34355	113889.96	29122.4696	131630.83
## 2021.8027	142885.1476	109371.83901	176398.46	91630.9651	194139.33
## 2021.8055	148769.0857	115255.77715	182282.39	97514.9032	200023.27
## 2021.8082	175180.6930	141667.38438	208694.00	123926.5105	226434.88
## 2021.8110	187162.4814	153649.17285	220675.79	135908.2989	238416.66
## 2021.8137	238314.5224	204801.21386	271827.83	187060.3400	289568.70
## 2021.8164	216786.5988	183273.29026	250299.91	165532.4163	268040.78
## 2021.8192	204319.3771	170806.06854	237832.69	153065.1946	255573.56
## 2021.8219	194669.4420	161156.13340	228182.75	143415.2595	245923.62
## 2021.8247	191572.8991	158059.59055	225086.21	140318.7166	242827.08
## 2021.8274	216756.0065	183242.69790	250269.32	165501.8240	268010.19
## 2021.8301	174489.2543	140975.94572	208002.56	123235.0718	225743.44
## 2021.8329	216830.6510	183317.34245	250343.96	165576.4685	268084.83
## 2021.8356	241779.9182	208266.60960	275293.23	190525.7357	293034.10
## 2021.8384	307659.2095	274145.90098	341172.52	256405.0271	358913.39
## 2021.8411	335721.5062	302208.19762	369234.81	284467.3237	386975.69
## 2021.8438	288808.0983	255294.78972	322321.41	237553.9158	340062.28
## 2021.8466	259091.3799	225578.07134	292604.69	207837.1974	310345.56
## 2021.8493	206480.7771	172967.46852	239994.09	155226.5946	257734.96
## 2021.8521	218939.9880	185426.67940	252453.30	167685.8055	270194.17
## 2021.8548	218885.3446	185372.03606	252398.65	167631.1621	270139.53
## 2021.8575	184631.8112	151118.50263	218145.12	133377.6287	235885.99
## 2021.8603	176049.9640	142536.65542	209563.27	124795.7815	227304.15
## 2021.8630	163003.1218	129489.81324	196516.43	111748.9393	214257.30
## 2021.8658	167565.1190	134051.81046	201078.43	116310.9365	218819.30
## 2021.8685	124791.9727	91278.66408	158305.28	73537.7902	176046.16
## 2021.8712	104463.9407	70950.63213	137977.25	53209.7582	155718.12
## 2021.8740	83968.9471	50455.63853	117482.26	32714.7646	135223.13
## 2021.8767	76020.5665	42507.25789	109533.88	24766.3840	127274.75
## 2021.8795	99242.0892	65728.78058	132755.40	47987.9067	150496.27
## 2021.8822	107004.2376	73490.92903	140517.55	55750.0551	158258.42
## 2021.8849	93324.7526	59811.44402	126838.06	42070.5701	144578.94
## 2021.8877	160831.7697	127318.46112	194345.08	109577.5872	212085.95
## 2021.8904	155654.7183	122141.40976	189168.03	104400.5358	206908.90
## 2021.8932	162587.8777	129074.56917	196101.19	111333.6953	213842.06

## 2021.8959	128697.2517	95183.94312	162210.56	77443.0692	179951.43
## 2021.8986	140710.7920	107197.48343	174224.10	89456.6095	191964.97
## 2021.9014	86625.3443	53112.03569	120138.65	35371.1618	137879.53
## 2021.9041	133593.6213	100080.31277	167106.93	82339.4389	184847.80
## 2021.9068	197264.0905	163750.78195	230777.40	146009.9080	248518.27
## 2021.9096	168131.6168	134618.30823	201644.93	116877.4343	219385.80
## 2021.9123	108657.4240	75144.11543	142170.73	57403.2415	159911.61
## 2021.9151	185873.0064	152359.69786	219386.31	134618.8239	237127.19
## 2021.9178	199771.3034	166257.99485	233284.61	148517.1209	251025.49
## 2021.9205	212730.6158	179217.30727	246243.92	161476.4334	263984.80
## 2021.9233	238886.2080	205372.89942	272399.52	187632.0255	290140.39
## 2021.9260	237931.8663	204418.55770	271445.17	186677.6838	289186.05
## 2021.9288	201045.5790	167532.27046	234558.89	149791.3965	252299.76
## 2021.9315	204722.3591	171209.05057	238235.67	153468.1767	255976.54
## 2021.9342	215274.2917	181760.98309	248787.60	164020.1092	266528.47
## 2021.9370	150434.0319	116920.72337	183947.34	99179.8495	201688.21
## 2021.9397	143099.5837	109586.27511	176612.89	91845.4012	194353.77
## 2021.9425	164166.3349	130653.02631	197679.64	112912.1524	215420.52
## 2021.9452	157204.1490	123690.84048	190717.46	105949.9666	208458.33
## 2021.9479	91918.6189	58405.31034	125431.93	40664.4364	143172.80
## 2021.9507	121797.9326	88284.62398	155311.24	70543.7501	173052.12
## 2021.9534	79379.3895	45866.08096	112892.70	28125.2070	130633.57
## 2021.9562	70373.6642	36860.35568	103886.97	19119.4818	121627.85
## 2021.9589	66467.9808	32954.67219	99981.29	15213.7983	117722.16
## 2021.9616	20137.8925	-13375.41607	53651.20	-31116.2900	71392.07
## 2021.9644	38981.5227	5468.21413	72494.83	-12272.6598	90235.71
## 2021.9671	33952.6265	439.31792	67465.94	-17301.5560	85206.81
## 2021.9699	-109.8018	-33623.11036	33403.51	-51363.9843	51144.38
## 2021.9726	30434.2048	-3079.10374	63947.51	-20819.9777	81688.39
## 2021.9753	37547.3902	4034.08167	71060.70	-13706.7922	88801.57
## 2021.9781	45801.8620	12288.55341	79315.17	-5452.3205	97056.04
## 2021.9808	20521.7533	-12991.55530	54035.06	-30732.4292	71775.94
## 2021.9836	5908.4193	-27604.88928	39421.73	-45345.7632	57162.60
## 2021.9863	27354.9937	-6158.31483	60868.30	-23899.1887	78609.18
## 2021.9890	40447.6646	6934.35607	73960.97	-10806.5178	91701.85
## 2021.9918	40768.4013	7255.09276	74281.71	-10485.7812	92022.58
## 2021.9945	26476.0671	-7037.24146	59989.38	-24778.1154	77730.25
## 2021.9973	27623.1429	-5890.16564	61136.45	-23631.0396	78877.33
## 2022.0000	14380.0831	-19133.22552	47893.39	-36874.0994	65634.27
## 2022.0027	14924.6350	-18588.67361	48437.94	-36329.5475	66178.82
## 2022.0055	13948.2218	-19565.08681	47461.53	-37305.9607	65202.40
## 2022.0082	22125.1906	-11388.11796	55638.50	-29128.9919	73379.37
## 2022.0110	22393.8164	-11119.49213	55907.13	-28860.3660	73648.00
## 2022.0137	8715.0057	-24798.30292	42228.31	-42539.1768	59969.19
## 2022.0164	18473.2224	-15040.08619	51986.53	-32780.9601	69727.40
## 2022.0192	10548.6995	-22964.60905	44062.01	-40705.4830	61802.88
## 2022.0219	11202.6302	-22310.67837	44715.94	-40051.5523	62456.81
## 2022.0247	29482.6384	-4030.67022	62995.95	-21771.5441	80736.82
## 2022.0274	40562.6904	7049.38183	74076.00	-10691.4921	91816.87
## 2022.0301	43842.7535	10329.44494	77356.06	-7411.4290	95096.94
## 2022.0329	55348.3960	21835.08744	88861.70	4094.2135	106602.58
## 2022.0356	111809.5826	78296.27407	145322.89	60555.4002	163063.77
## 2022.0384	106743.9168	73230.60826	140257.23	55489.7344	157998.10
## 2022.0411	95617.4585	62104.14996	129130.77	44363.2760	146871.64

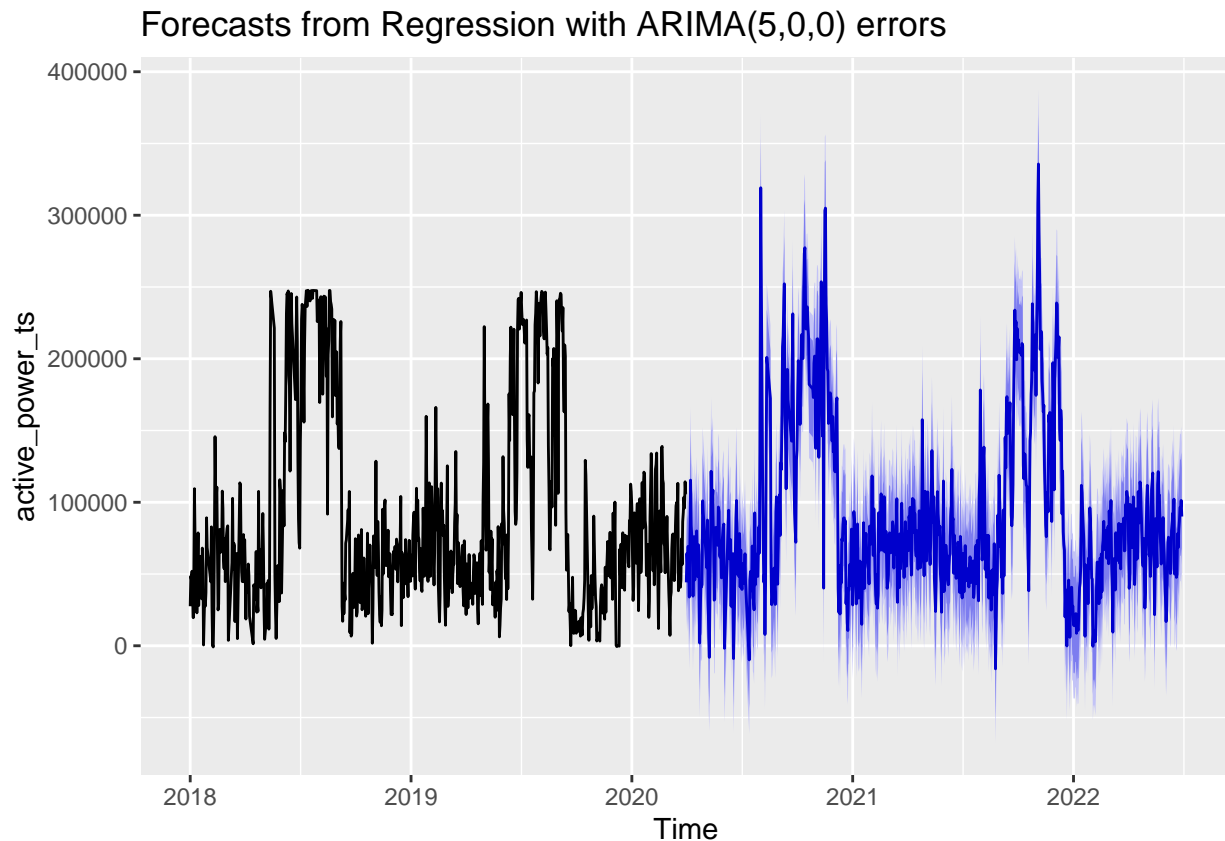
## 2022.0438	84491.0002	50977.69165	118004.31	33236.8177	135745.18
## 2022.0466	73364.5419	39851.23335	106877.85	22110.3594	124618.72
## 2022.0493	43607.7649	10094.45630	77121.07	-7646.4176	94861.95
## 2022.0521	6650.1959	-26863.11265	40163.50	-44603.9866	57904.38
## 2022.0548	56351.0238	22837.71523	89864.33	5096.8413	107605.21
## 2022.0575	35734.6776	2221.36906	69247.99	-15519.5048	86988.86
## 2022.0603	31994.4567	-1518.85184	65507.77	-19259.7257	83248.64
## 2022.0630	54907.5887	21394.28016	88420.90	3653.4062	106161.77
## 2022.0658	29357.5294	-4155.77915	62870.84	-21896.6531	80611.71
## 2022.0685	61162.7661	27649.45756	94676.07	9908.5836	112416.95
## 2022.0712	53795.8989	20282.59029	87309.21	2541.7164	105050.08
## 2022.0740	96126.5885	62613.27997	129639.90	44872.4061	147380.77
## 2022.0767	87773.9642	54260.65565	121287.27	36519.7817	139028.15
## 2022.0795	67482.9142	33969.60566	100996.22	16228.7318	118737.10
## 2022.0822	47229.2886	13715.98008	80742.60	-4024.8938	98483.47
## 2022.0849	46440.2839	12926.97533	79953.59	-4813.8986	97694.47
## 2022.0877	-343.9896	-33857.29817	33169.32	-51598.1721	50910.19
## 2022.0904	9049.3609	-24463.94772	42562.67	-42204.8216	60303.54
## 2022.0932	10312.6085	-23200.70004	43825.92	-40941.5739	61566.79
## 2022.0959	7701.9777	-25811.33084	41215.29	-43552.2048	58956.16
## 2022.0986	2753.8187	-30759.48985	36267.13	-48500.3638	54008.00
## 2022.1014	15585.9775	-17927.33106	49099.29	-35668.2050	66840.16
## 2022.1041	41311.1363	7797.82775	74824.44	-9943.0462	92565.32
## 2022.1068	58239.0225	24725.71394	91752.33	6984.8400	109493.20
## 2022.1096	58360.8165	24847.50797	91874.13	7106.6341	109615.00
## 2022.1123	52497.6051	18984.29650	86010.91	1243.4226	103751.79
## 2022.1151	29319.7419	-4193.56668	62833.05	-21934.4406	80573.92
## 2022.1178	42293.8353	8780.52677	75807.14	-8960.3471	93548.02
## 2022.1205	61062.8968	27549.58826	94576.21	9808.7144	112317.08
## 2022.1233	33288.0433	-225.26531	66801.35	-17966.1392	84542.23
## 2022.1260	64007.6347	30494.32615	97520.94	12753.4522	115261.82
## 2022.1288	37866.7098	4353.40127	71380.02	-13387.4726	89120.89
## 2022.1315	69417.4027	35904.09413	102930.71	18163.2202	120671.59
## 2022.1342	73408.9741	39895.66548	106922.28	22154.7916	124663.16
## 2022.1370	86705.9441	53192.63556	120219.25	35451.7617	137960.13
## 2022.1397	74683.0801	41169.77152	108196.39	23428.8976	125937.26
## 2022.1425	66954.6331	33441.32453	100467.94	15700.4506	118208.82
## 2022.1452	74815.0451	41301.73657	108328.35	23560.8627	126069.23
## 2022.1479	80440.7321	46927.42351	113954.04	29186.5496	131694.91
## 2022.1507	60934.4381	27421.12954	94447.75	9680.2556	112188.62
## 2022.1534	68965.2767	35451.96817	102478.59	17711.0943	120219.46
## 2022.1562	83049.8090	49536.50045	116563.12	31795.6265	134303.99
## 2022.1589	57192.3363	23679.02772	90705.64	5938.1538	108446.52
## 2022.1616	94009.6917	60496.38315	127523.00	42755.5092	145263.87
## 2022.1644	78423.4726	44910.16401	111936.78	27169.2901	129677.66
## 2022.1671	85953.2151	52439.90655	119466.52	34699.0326	137207.40
## 2022.1699	101232.1514	67718.84283	134745.46	49977.9689	152486.33
## 2022.1726	57642.5507	24129.24210	91155.86	6388.3682	108896.73
## 2022.1753	41046.5597	7533.25108	74559.87	-10207.6228	92300.74
## 2022.1781	9526.4869	-23986.82164	43039.80	-41727.6956	60780.67
## 2022.1808	58338.4988	24825.19019	91851.81	7084.3163	109592.68
## 2022.1836	60790.9684	27277.65978	94304.28	9536.7859	112045.15
## 2022.1863	52216.9836	18703.67499	85730.29	962.8011	103471.17
## 2022.1890	38861.1989	5347.89036	72374.51	-12392.9836	90115.38

## 2022.1918	78769.9333	45256.62477	112283.24	27515.7509	130024.12
## 2022.1945	62684.7471	29171.43850	96198.06	11430.5646	113938.93
## 2022.1973	77832.9950	44319.68646	111346.30	26578.8125	129087.18
## 2022.2000	59466.1879	25952.87928	92979.50	8212.0054	110720.37
## 2022.2027	65653.2459	32139.93737	99166.55	14399.0635	116907.43
## 2022.2055	85274.9692	51761.66063	118788.28	34020.7867	136529.15
## 2022.2082	57596.4794	24083.17082	91109.79	6342.2969	108850.66
## 2022.2110	68582.1198	35068.81126	102095.43	17327.9373	119836.30
## 2022.2137	53585.5389	20072.23030	87098.85	2331.3564	104839.72
## 2022.2164	84755.0343	51241.72576	118268.34	33500.8518	136009.22
## 2022.2192	80205.6313	46692.32268	113718.94	28951.4488	131459.81
## 2022.2219	81889.8690	48376.56047	115403.18	30635.6866	133144.05
## 2022.2247	79197.0069	45683.69829	112710.32	27942.8244	130451.19
## 2022.2274	89002.1278	55488.81923	122515.44	37747.9453	140256.31
## 2022.2301	66127.2710	32613.96246	99640.58	14873.0885	117381.45
## 2022.2329	66323.3773	32810.06868	99836.69	15069.1948	117577.56
## 2022.2356	98236.5631	64723.25451	131749.87	46982.3806	149490.75
## 2022.2384	89249.1621	55735.85352	122762.47	37994.9796	140503.34
## 2022.2411	107559.9125	74046.60390	141073.22	56305.7300	158814.09
## 2022.2438	104351.0564	70837.74779	137864.36	53096.8739	155605.24
## 2022.2466	103336.0235	69822.71496	136849.33	52081.8410	154590.21
## 2022.2493	70839.5694	37326.26085	104352.88	19585.3869	122093.75
## 2022.2521	40053.4122	6540.10358	73566.72	-11200.7703	91307.59
## 2022.2548	46342.0235	12828.71495	79855.33	-4912.1590	97596.21
## 2022.2575	98448.3585	64935.04992	131961.67	47194.1760	149702.54
## 2022.2603	81509.0924	47995.78381	115022.40	30254.9099	132763.27
## 2022.2630	84491.3789	50978.07031	118004.69	33237.1964	135745.56
## 2022.2658	68401.0828	34887.77427	101914.39	17146.9004	119655.27
## 2022.2685	79889.1771	46375.86851	113402.49	28634.9946	131143.36
## 2022.2712	103761.1748	70247.86620	137274.48	52506.9923	155015.36
## 2022.2740	76300.1057	42786.79714	109813.41	25045.9232	127554.29
## 2022.2767	42664.3713	9151.06275	76177.68	-8589.8112	93918.55
## 2022.2795	55473.2337	21959.92517	88986.54	4219.0513	106727.42
## 2022.2822	95472.0142	61958.70567	128985.32	44217.8318	146726.20
## 2022.2849	93544.2114	60030.90284	127057.52	42290.0289	144798.39
## 2022.2877	60382.3732	26869.06467	93895.68	9128.1908	111636.56
## 2022.2904	64896.2976	31382.98907	98409.61	13642.1152	116150.48
## 2022.2932	107449.6168	73936.30821	140962.93	56195.4343	158703.80
## 2022.2959	85509.5085	51996.19988	119022.82	34255.3260	136763.69
## 2022.2986	95838.8684	62325.55980	129352.18	44584.6859	147093.05
## 2022.3014	114176.6373	80663.32872	147689.95	62922.4548	165430.82
## 2022.3041	110038.1875	76524.87894	143551.50	58784.0050	161292.37
## 2022.3068	93638.9281	60125.61952	127152.24	42384.7456	144893.11
## 2022.3096	78779.2612	45265.95264	112292.57	27525.0787	130033.44
## 2022.3123	59427.7796	25914.47105	92941.09	8173.5971	110681.96
## 2022.3151	55494.7742	21981.46564	89008.08	4240.5917	106748.96
## 2022.3178	74800.7992	41287.49065	108314.11	23546.6167	126054.98
## 2022.3205	52428.6053	18915.29672	85941.91	1174.4228	103682.79
## 2022.3233	26324.9140	-7188.39458	59838.22	-24929.2685	77579.10
## 2022.3260	37644.6796	4131.37107	71157.99	-13609.5028	88898.86
## 2022.3288	77210.4368	43697.12827	110723.75	25956.2544	128464.62
## 2022.3315	101572.2998	68058.99123	135085.61	50318.1173	152826.48
## 2022.3342	111793.6985	78280.38989	145307.01	60539.5160	163047.88
## 2022.3370	102406.0750	68892.76646	135919.38	51151.8925	153660.26

## 2022.3397	78383.9084	44870.59981	111897.22	27129.7259	129638.09
## 2022.3425	63054.0546	29540.74602	96567.36	11799.8721	114308.24
## 2022.3452	66610.8782	33097.56960	100124.19	15356.6957	117865.06
## 2022.3479	48296.4148	14783.10623	81809.72	-2957.7677	99550.60
## 2022.3507	63196.0071	29682.69852	96709.32	11941.8246	114450.19
## 2022.3534	108923.4695	75410.16090	142436.78	57669.2870	160177.65
## 2022.3562	114588.3191	81075.01056	148101.63	63334.1367	165842.50
## 2022.3589	120391.3186	86878.01007	153904.63	69137.1362	171645.50
## 2022.3616	83211.1882	49697.87961	116724.50	31957.0057	134465.37
## 2022.3644	57861.1034	24347.79485	91374.41	6606.9209	109115.29
## 2022.3671	21675.4750	-11837.83360	55188.78	-29578.7075	72929.66
## 2022.3699	61126.5610	27613.25241	94639.87	9872.3785	112380.74
## 2022.3726	88623.8380	55110.52946	122137.15	37369.6555	139878.02
## 2022.3753	73701.5945	40188.28592	107214.90	22447.4120	124955.78
## 2022.3781	54977.1714	21463.86284	88490.48	3722.9889	106231.35
## 2022.3808	112507.0708	78993.76221	146020.38	61252.8883	163761.25
## 2022.3836	121360.8076	87847.49907	154874.12	70106.6252	172614.99
## 2022.3863	104702.3988	71189.09020	138215.71	53448.2163	155956.58
## 2022.3890	104961.6856	71448.37701	138474.99	53707.5031	156215.87
## 2022.3918	81211.9103	47698.60175	114725.22	29957.7278	132466.09
## 2022.3945	69869.8372	36356.52868	103383.15	18615.6548	121124.02
## 2022.3973	56953.5915	23440.28294	90466.90	5699.4090	108207.77
## 2022.4000	81688.7542	48175.44560	115202.06	30434.5717	132942.94
## 2022.4027	78002.3047	44488.99613	111515.61	26748.1222	129256.49
## 2022.4055	89345.1172	55831.80868	122858.43	38090.9348	140599.30
## 2022.4082	73712.2743	40198.96572	107225.58	22458.0918	124966.46
## 2022.4110	62925.4429	29412.13437	96438.75	11671.2605	114179.63
## 2022.4137	45743.3554	12230.04684	79256.66	-5510.8271	96997.54
## 2022.4164	32845.5949	-667.71363	66358.90	-18408.5875	84099.78
## 2022.4192	16870.7242	-16642.58436	50384.03	-34383.4583	68124.91
## 2022.4219	28091.7985	-5421.51007	61605.11	-23162.3840	79345.98
## 2022.4247	49491.8953	15978.58670	83005.20	-1762.2872	100746.08
## 2022.4274	72126.0294	38612.72083	105639.34	20871.8469	123380.21
## 2022.4301	75673.8053	42160.49670	109187.11	24419.6228	126927.99
## 2022.4329	74478.7904	40965.48181	107992.10	23224.6079	125732.97
## 2022.4356	72009.0345	38495.72591	105522.34	20754.8520	123263.22
## 2022.4384	50395.3934	16882.08484	83908.70	-858.7891	101649.58
## 2022.4411	53511.3360	19998.02740	87024.64	2257.1535	104765.52
## 2022.4438	80222.1933	46708.88478	113735.50	28968.0109	131476.38
## 2022.4466	84008.9152	50495.60664	117522.22	32754.7327	135263.10
## 2022.4493	92423.5615	58910.25292	125936.87	41169.3790	143677.74
## 2022.4521	83952.3346	50439.02598	117465.64	32698.1521	135206.52
## 2022.4548	102194.0713	68680.76268	135707.38	50939.8888	153448.25
## 2022.4575	49979.9665	16466.65790	83493.28	-1274.2160	101234.15
## 2022.4603	54443.1166	20929.80799	87956.43	3188.9341	105697.30
## 2022.4630	65518.5006	32005.19199	99031.81	14264.3181	116772.68
## 2022.4658	47667.1582	14153.84960	81180.47	-3587.0243	98921.34
## 2022.4685	49840.2418	16326.93321	83353.55	-1413.9407	101094.42
## 2022.4712	78081.2634	44567.95479	111594.57	26827.0809	129335.45
## 2022.4740	68450.4836	34937.17502	101963.79	17196.3011	119704.67
## 2022.4767	81230.4867	47717.17809	114743.80	29976.3042	132484.67
## 2022.4795	86775.8627	53262.55410	120289.17	35521.6802	138030.05
## 2022.4822	96358.6999	62845.39128	129872.01	45104.5174	147612.88
## 2022.4849	96077.0900	62563.78140	129590.40	44822.9075	147331.27


```
## 2022.4877    101289.4284   67776.11983 134802.74   50035.2459 152543.61
## 2022.4904     90081.1763   56567.86772 123594.48   38826.9938 141335.36
```

```
fit1_AR5 %>% forecast(xreg=xreg3$wind_speed, h=5) %>% autoplot()
```

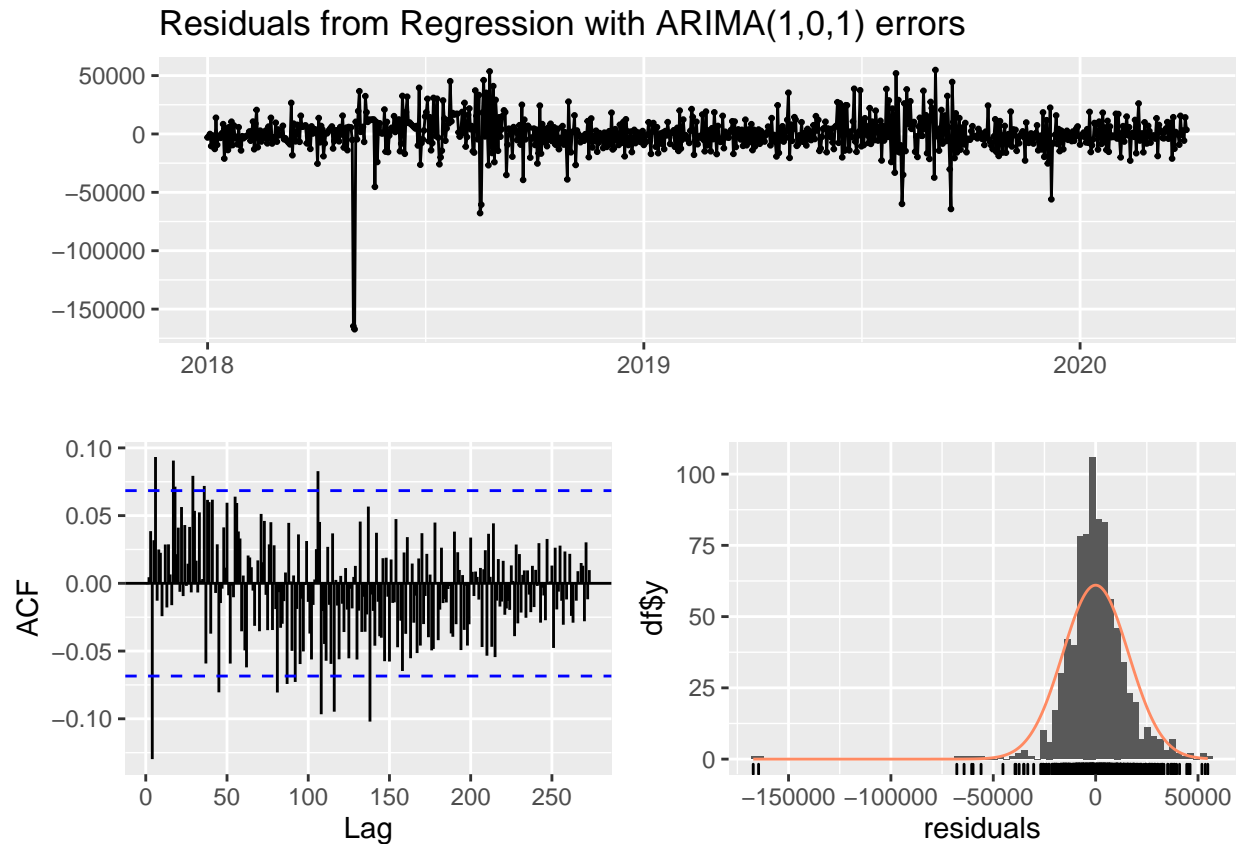


```
## Use auto.arima
```

```
fit_auto <- auto.arima(active_power_ts, xreg=xreg3$wind_speed)
summary(fit_auto)
```

```
## Series: active_power_ts
## Regression with ARIMA(1,0,1) errors
##
## Coefficients:
##          ar1      ma1  intercept      xreg
##          0.7011  0.2035 -75857.82 27932.79
## s.e.    0.0341  0.0463   4098.91   574.53
##
## sigma^2 = 259637818: log likelihood = -9105.68
## AIC=18221.37  AICc=18221.44  BIC=18244.92
##
## Training set error measures:
##              ME      RMSE      MAE  MPE  MAPE      MASE      ACF1
## Training set 7.072441 16073.93 10296.59 -Inf  Inf  0.2368323 -0.0006827484
```

```
checkresiduals(fit_auto)
```



```
##
##  Ljung-Box test
##
## data:  Residuals from Regression with ARIMA(1,0,1) errors
## Q* = 253.13, df = 162, p-value = 0.000006078
##
## Model df: 2.   Total lags used: 164
```

```
fit_auto %>% forecast(xreg=xreg3$wind_speed, h=5)
```

	Point Forecast	Lo 80	Hi 80	Lo 95	Hi 95
## 2020.2466	44050.4383	23400.43809	64700.44	12468.98830	75631.89
## 2020.2493	62617.9960	34772.04772	90463.94	20031.29311	105204.70
## 2020.2521	56258.6807	25486.09356	87031.27	9196.06995	103321.29
## 2020.2548	69601.6822	37488.00207	101715.36	20488.04672	118715.32
## 2020.2575	50517.9419	17765.10892	83270.77	426.80647	100609.08
## 2020.2603	32626.8260	-435.68384	65689.34	-17937.91933	83191.57
## 2020.2630	73549.6141	40335.92610	106763.30	22753.66174	124345.57
## 2020.2658	113835.7420	80547.98682	147123.50	62926.51364	164744.97
## 2020.2685	82608.6937	49284.58751	115932.80	31643.87128	133573.52
## 2020.2712	75203.9748	41862.01302	108545.94	24211.84463	126196.10
## 2020.2740	71239.9051	37889.16907	104590.64	20234.35587	122245.45

## 2020.2767	33512.2649	157.21633	66867.31	-17499.87982	84524.41
## 2020.2795	59418.7826	26061.61418	92775.95	8403.39586	110434.17
## 2020.2822	75378.9202	42020.70969	108737.13	24361.93973	126395.90
## 2020.2849	45100.6304	11741.90764	78459.35	-5917.13350	96118.39
## 2020.2877	68946.9581	35587.98350	102305.93	17928.80906	119965.11
## 2020.2904	63772.9372	30413.83883	97132.04	12754.59885	114791.28
## 2020.2932	79646.9796	46287.82035	113006.14	28628.54815	130665.41
## 2020.2959	61524.7801	28165.59089	94883.97	10506.30286	112543.26
## 2020.2986	47634.9085	14275.70462	80994.11	-3383.59120	98653.41
## 2020.3014	70014.8538	36655.64269	103374.06	18996.34304	121033.36
## 2020.3041	62976.5348	29617.32013	96335.75	11958.01860	113995.05
## 2020.3068	1353.8341	-32005.38230	34713.05	-49664.68476	52372.35
## 2020.3096	21808.1940	-11551.02331	55167.41	-29210.32622	72826.71
## 2020.3123	40497.8954	7138.67772	73857.11	-10520.62541	91516.42
## 2020.3151	40582.6305	7223.41258	73941.85	-10435.89067	91601.15
## 2020.3178	42302.0330	8942.81495	75661.25	-8716.48835	93320.55
## 2020.3205	100978.6927	67619.47467	134337.91	49960.17135	151997.21
## 2020.3233	92759.5951	59400.37702	126118.81	41741.07368	143778.12
## 2020.3260	86314.2991	52955.08102	119673.52	35295.77768	137332.82
## 2020.3288	79869.0530	46509.83494	113228.27	28850.53160	130887.57
## 2020.3315	73423.8420	40064.62387	106783.06	22405.32053	124442.36
## 2020.3342	66978.6555	33619.43734	100337.87	15960.13399	117997.18
## 2020.3370	60533.4861	27174.26802	93892.70	9514.96467	111552.01
## 2020.3397	54088.3289	20729.11076	87447.55	3069.80741	105106.85
## 2020.3425	87562.4470	54203.22891	120921.67	36543.92556	138580.97
## 2020.3452	35730.8838	2371.66566	69090.10	-15287.63769	86749.41
## 2020.3479	5144.1838	-28215.03432	38503.40	-45874.33767	56162.71
## 2020.3507	-8549.6521	-41908.87026	24809.57	-59568.17361	42468.87
## 2020.3534	30029.4565	-3329.76160	63388.67	-20989.06495	81047.98
## 2020.3562	72190.1427	38830.92459	105549.36	21171.62124	123208.66
## 2020.3589	121683.3628	88324.14470	155042.58	70664.84135	172701.88
## 2020.3616	97862.3723	64503.15424	131221.59	46843.85089	148880.89
## 2020.3644	102128.1426	68768.92452	135487.36	51109.62117	153146.66
## 2020.3671	108531.8635	75172.64542	141891.08	57513.34207	159550.38
## 2020.3699	72889.6979	39530.47977	106248.92	21871.17642	123908.22
## 2020.3726	31467.1357	-1892.08246	64826.35	-19551.38581	82485.66
## 2020.3753	32147.6039	-1211.61423	65506.82	-18870.91758	83166.13
## 2020.3781	74321.6077	40962.38954	107680.83	23303.08619	125340.13
## 2020.3808	82456.8185	49097.60036	115816.04	31438.29701	133475.34
## 2020.3836	73387.9597	40028.74160	106747.18	22369.43825	124406.48
## 2020.3863	73599.7052	40240.48704	106958.92	22581.18369	124618.23
## 2020.3890	69857.5757	36498.35763	103216.79	18839.05428	120876.10
## 2020.3918	96682.2518	63323.03368	130041.47	45663.73033	147700.77
## 2020.3945	93410.8287	60051.61062	126770.05	42392.30727	144429.35
## 2020.3973	63105.2293	29746.01118	96464.45	12086.70783	114123.75
## 2020.4000	61528.2881	28169.07000	94887.51	10509.76665	112546.81
## 2020.4027	71277.1676	37917.94948	104636.39	20258.64613	122295.69
## 2020.4055	47100.7300	13741.51190	80459.95	-3917.79145	98119.25
## 2020.4082	71067.3929	37708.17478	104426.61	20048.87143	122085.91
## 2020.4110	77018.0644	43658.84626	110377.28	25999.54291	128036.59
## 2020.4137	82465.5957	49106.37761	115824.81	31447.07426	133484.12
## 2020.4164	84769.8641	51410.64599	118129.08	33751.34264	135788.39
## 2020.4192	-2216.3608	-35575.57893	31142.86	-53234.88228	48802.16
## 2020.4219	11734.6085	-21624.60963	45093.83	-39283.91298	62753.13

## 2020.4247	25685.5778	-7673.64033	59044.80	-25332.94367	76704.10
## 2020.4274	39636.5471	6277.32898	72995.77	-11381.97437	90655.07
## 2020.4301	53587.5164	20228.29828	86946.73	2568.99493	104606.04
## 2020.4329	67538.4857	34179.26758	100897.70	16519.96423	118557.01
## 2020.4356	81489.4550	48130.23688	114848.67	30470.93353	132507.98
## 2020.4384	94416.3308	61057.11267	127775.55	43397.80932	145434.85
## 2020.4411	60442.5184	27083.30033	93801.74	9423.99698	111461.04
## 2020.4438	71217.4974	37858.27932	104576.72	20198.97597	122236.02
## 2020.4466	73923.5591	40564.34103	107282.78	22905.03768	124942.08
## 2020.4493	27255.4222	-6103.79589	60614.64	-23763.09924	78273.94
## 2020.4521	57650.3008	24291.08272	91009.52	6631.77938	108668.82
## 2020.4548	26651.0226	-6708.19549	60010.24	-24367.49884	77669.54
## 2020.4575	64080.3631	30721.14495	97439.58	13061.84160	115098.88
## 2020.4603	-9397.5353	-42756.75343	23961.68	-60416.05678	41620.99
## 2020.4630	11109.2989	-22249.91920	44468.52	-39909.22255	62127.82
## 2020.4658	36917.9784	3558.76027	70277.20	-14100.54308	87936.50
## 2020.4685	62726.6579	29367.43974	96085.88	11708.13640	113745.18
## 2020.4712	88535.3373	55176.11922	121894.56	37516.81587	139553.86
## 2020.4740	101211.9585	67852.74037	134571.18	50193.43702	152230.48
## 2020.4767	72283.0732	38923.85506	105642.29	21264.55171	123301.59
## 2020.4795	49395.0436	16035.82546	82754.26	-1623.47788	100413.57
## 2020.4822	55086.6498	21727.43170	88445.87	4068.12835	106105.17
## 2020.4849	48022.4766	14663.25850	81381.69	-2996.04485	99041.00
## 2020.4877	78112.4428	44753.22473	111471.66	27093.92138	129130.96
## 2020.4904	40727.5119	7368.29383	74086.73	-10291.00952	91746.03
## 2020.4932	66519.1171	33159.89896	99878.34	15500.59561	117537.64
## 2020.4959	45602.8174	12243.59932	78962.04	-5415.70403	96621.34
## 2020.4986	38974.0434	5614.82530	72333.26	-12044.47805	89992.56
## 2020.5014	56929.9502	23570.73212	90289.17	5911.42877	107948.47
## 2020.5041	45893.5938	12534.37570	79252.81	-5124.92765	96912.12
## 2020.5068	43410.8070	10051.58887	76770.03	-7607.71448	94429.33
## 2020.5096	52107.0897	18747.87162	85466.31	1088.56827	103125.61
## 2020.5123	63954.7442	30595.52608	97313.96	12936.22273	114973.27
## 2020.5151	42818.1057	9458.88756	76177.32	-8200.41579	93836.63
## 2020.5178	33963.4336	604.21554	67322.65	-17055.08781	84981.96
## 2020.5205	25108.7616	-8250.45649	58467.98	-25909.75984	76127.28
## 2020.5233	16254.0896	-17105.12851	49613.31	-34764.43186	67272.61
## 2020.5260	7399.4176	-25959.80054	40758.64	-43619.10389	58417.94
## 2020.5288	-1455.2545	-34814.47257	31903.96	-52473.77592	49563.27
## 2020.5315	-10309.9265	-43669.14459	23049.29	-61328.44794	40708.59
## 2020.5342	45407.7426	12048.52449	78766.96	-5610.77886	96426.26
## 2020.5370	51481.7257	18122.50764	84840.94	463.20429	102500.25
## 2020.5397	38022.8273	4663.60923	71382.05	-12995.69412	89041.35
## 2020.5425	43793.2476	10434.02952	77152.47	-7225.27383	94811.77
## 2020.5452	69384.1209	36024.90281	102743.34	18365.59946	120402.64
## 2020.5479	33178.8671	-180.35105	66538.09	-17839.65440	84197.39
## 2020.5507	31619.5650	-1739.65314	64978.78	-19398.95649	82638.09
## 2020.5534	24744.8617	-8614.35642	58104.08	-26273.65977	75763.38
## 2020.5562	92577.6307	59218.41255	125936.85	41559.10920	143596.15
## 2020.5589	42213.0149	8853.79676	75572.23	-8805.50659	93231.54
## 2020.5616	51793.0342	18433.81613	85152.25	774.51278	102811.56
## 2020.5644	63665.5023	30306.28417	97024.72	12646.98082	114684.02
## 2020.5671	50684.1194	17324.90130	84043.34	-334.40205	101702.64
## 2020.5699	48082.2083	14722.99018	81441.43	-2936.31317	99100.73

## 2020.5726	68337.6935	34978.47540	101696.91	17319.17205	119356.21
## 2020.5753	82760.3379	49401.11976	116119.56	31741.81641	133778.86
## 2020.5781	64506.8475	31147.62939	97866.07	13488.32604	115525.37
## 2020.5808	189024.8840	155665.66584	222384.10	138006.36250	240043.41
## 2020.5836	320135.6288	286776.41070	353494.85	269117.10735	371154.15
## 2020.5863	254275.4924	220916.27429	287634.71	203256.97094	305294.01
## 2020.5890	188415.3560	155056.13787	221774.57	137396.83452	239433.88
## 2020.5918	122555.2196	89196.00146	155914.44	71536.69811	173573.74
## 2020.5945	75529.7903	42170.57215	108889.01	24511.26880	126548.31
## 2020.5973	44074.8347	10715.61654	77434.05	-6943.68680	95093.36
## 2020.6000	49672.0230	16312.80490	83031.24	-1346.49844	100690.54
## 2020.6027	7476.2603	-25882.95778	40835.48	-43542.26113	58494.78
## 2020.6055	41714.1948	8354.97667	75073.41	-9304.32668	92732.72
## 2020.6082	136146.1616	102786.94347	169505.38	85127.64012	187164.68
## 2020.6110	201426.1510	168066.93292	234785.37	150407.62957	252444.67
## 2020.6137	196639.1416	163279.92351	229998.36	145620.62016	247657.66
## 2020.6164	191852.1322	158492.91410	225211.35	140833.61075	242870.65
## 2020.6192	187065.1228	153705.90469	220424.34	136046.60134	238083.64
## 2020.6219	182278.1134	148918.89528	215637.33	131259.59193	233296.63
## 2020.6247	177491.1040	144131.88587	210850.32	126472.58252	228509.63
## 2020.6274	172704.0946	139344.87646	206063.31	121685.57311	223722.62
## 2020.6301	57671.9522	24312.73412	91031.17	6653.43077	108690.47
## 2020.6329	28356.6492	-5002.56887	61715.87	-22661.87222	79375.17
## 2020.6356	30399.0988	-2960.11932	63758.32	-20619.42267	81417.62
## 2020.6384	40462.6409	7103.42277	73821.86	-10555.88058	91481.16
## 2020.6411	45703.6040	12344.38589	79062.82	-5314.91746	96722.13
## 2020.6438	53957.1728	20597.95466	87316.39	2938.65131	104975.69
## 2020.6466	40868.3878	7509.16971	74227.61	-10150.13364	91886.91
## 2020.6493	28500.7222	-4858.49594	61859.94	-22517.79929	79519.24
## 2020.6521	93040.5965	59681.37838	126399.81	42022.07504	144059.12
## 2020.6548	103801.0033	70441.78522	137160.22	52782.48187	154819.52
## 2020.6575	61869.8394	28510.62127	95229.06	10851.31792	112888.36
## 2020.6603	42667.5569	9308.33882	76026.78	-8350.96453	93686.08
## 2020.6630	72219.1871	38859.96902	105578.41	21200.66567	123237.71
## 2020.6658	95213.7347	61854.51662	128572.95	44195.21327	146232.26
## 2020.6685	105252.2676	71893.04953	138611.49	54233.74618	156270.79
## 2020.6712	76770.2513	43411.03321	110129.47	25751.72986	127788.77
## 2020.6740	127718.7800	94359.56192	161078.00	76700.25857	178737.30
## 2020.6767	122909.4860	89550.26789	156268.70	71890.96454	173928.01
## 2020.6795	155700.9487	122341.73060	189060.17	104682.42725	206719.47
## 2020.6822	208856.5598	175497.34173	242215.78	157838.03838	259875.08
## 2020.6849	216479.9427	183120.72462	249839.16	165461.42127	267498.46
## 2020.6877	235514.7703	202155.55219	268873.99	184496.24884	286533.29
## 2020.6904	252929.7636	219570.54545	286288.98	201911.24210	303948.29
## 2020.6932	161398.0034	128038.78529	194757.22	110379.48194	212416.52
## 2020.6959	142822.5903	109463.37216	176181.81	91804.06881	193841.11
## 2020.6986	109468.1403	76108.92221	142827.36	58449.61887	160486.66
## 2020.7014	160176.2162	126816.99809	193535.43	109157.69474	211194.74
## 2020.7041	193029.5220	159670.30393	226388.74	142011.00058	244048.04
## 2020.7068	171863.8424	138504.62427	205223.06	120845.32092	222882.36
## 2020.7096	167019.0161	133659.79795	200378.23	116000.49460	218037.54
## 2020.7123	162174.1897	128814.97163	195533.41	111155.66828	213192.71
## 2020.7151	157329.3634	123970.14531	190688.58	106310.84196	208347.88
## 2020.7178	152484.5371	119125.31899	185843.76	101466.01564	203503.06

## 2020.7205	147639.7108	114280.49267	180998.93	96621.18932	198658.23
## 2020.7233	142794.8845	109435.66635	176154.10	91776.36300	193813.41
## 2020.7260	189052.6803	155693.46214	222411.90	138034.15879	240071.20
## 2020.7288	231919.8697	198560.65154	265279.09	180901.34819	282938.39
## 2020.7315	166633.2469	133274.02879	199992.47	115614.72544	217651.77
## 2020.7342	115390.7061	82031.48801	148749.92	64372.18466	166409.23
## 2020.7370	91899.5306	58540.31246	125258.75	40881.00911	142918.05
## 2020.7397	80433.4510	47074.23287	113792.67	29414.92952	131451.97
## 2020.7425	72023.6839	38664.46576	105382.90	21005.16241	123042.21
## 2020.7452	129295.7843	95936.56614	162655.00	78277.26279	180314.31
## 2020.7479	136437.0560	103077.83786	169796.27	85418.53451	187455.58
## 2020.7507	172417.1127	139057.89462	205776.33	121398.59127	223435.63
## 2020.7534	199082.9410	165723.72292	232442.16	148064.41958	250101.46
## 2020.7562	193346.0413	159986.82321	226705.26	142327.51986	244364.56
## 2020.7589	175132.4326	141773.21449	208491.65	124113.91114	226150.95
## 2020.7616	154512.9530	121153.73493	187872.17	103494.43158	205531.47
## 2020.7644	179194.7259	145835.50777	212553.94	128176.20442	230213.25
## 2020.7671	200449.7503	167090.53223	233808.97	149431.22888	251468.27
## 2020.7699	217463.9768	184104.75866	250823.19	166445.45531	268482.50
## 2020.7726	200635.9575	167276.73944	233995.18	149617.43609	251654.48
## 2020.7753	200647.8089	167288.59081	234007.03	149629.28746	251666.33
## 2020.7781	248345.0017	214985.78357	281704.22	197326.48022	299363.52
## 2020.7808	274073.3166	240714.09851	307432.53	223054.79516	325091.84
## 2020.7836	278187.9466	244828.72845	311547.16	227169.42510	329206.47
## 2020.7863	242878.0086	209518.79050	276237.23	191859.48715	293896.53
## 2020.7890	221250.1813	187890.96319	254609.40	170231.65984	272268.70
## 2020.7918	236152.3569	202793.13883	269511.58	185133.83548	287170.88
## 2020.7945	236762.5837	203403.36562	270121.80	185744.06227	287781.11
## 2020.7973	224797.8146	191438.59645	258157.03	173779.29310	275816.34
## 2020.8000	216264.4171	182905.19895	249623.64	165245.89560	267282.94
## 2020.8027	182500.2826	149141.06445	215859.50	131481.76110	233518.80
## 2020.8055	181974.8799	148615.66180	215334.10	130956.35845	232993.40
## 2020.8082	181449.4773	148090.25915	214808.70	130430.95580	232468.00
## 2020.8110	180924.0746	147564.85649	214283.29	129905.55315	231942.60
## 2020.8137	180398.6720	147039.45384	213757.89	129380.15049	231417.19
## 2020.8164	179873.2693	146514.05119	213232.49	128854.74784	230891.79
## 2020.8192	179347.8667	145988.64854	212707.08	128329.34519	230366.39
## 2020.8219	173331.4981	139972.28000	206690.72	122312.97665	224350.02
## 2020.8247	197491.1276	164131.90953	230850.35	146472.60618	248509.65
## 2020.8274	202300.8563	168941.63816	235660.07	151282.33481	253319.38
## 2020.8301	202055.5891	168696.37096	235414.81	151037.06761	253074.11
## 2020.8329	137728.7358	104369.51771	171087.95	86710.21436	188747.26
## 2020.8356	192875.8162	159516.59809	226235.03	141857.29474	243894.34
## 2020.8384	214273.4639	180914.24581	247632.68	163254.94247	265291.99
## 2020.8411	214478.8754	181119.65731	247838.09	163460.35396	265497.40
## 2020.8438	210663.4571	177304.23896	244022.68	159644.93561	261681.98
## 2020.8466	131475.6031	98116.38499	164834.82	80457.08164	182494.12
## 2020.8493	163964.3759	130605.15782	197323.59	112945.85448	214982.90
## 2020.8521	208520.6327	175161.41455	241879.85	157502.11120	259539.15
## 2020.8548	213100.3974	179741.17932	246459.62	162081.87597	264118.92
## 2020.8575	254346.1173	220986.89921	287705.34	203327.59586	305364.64
## 2020.8603	192685.0153	159325.79716	226044.23	141666.49381	243703.54
## 2020.8630	146362.0083	113002.79014	179721.23	95343.48679	197380.53
## 2020.8658	193138.5893	159779.37121	226497.81	142120.06786	244157.11

## 2020.8685	39913.6805	6554.46235	73272.90	-11104.84100	90932.20
## 2020.8712	227476.0188	194116.80069	260835.24	176457.49734	278494.54
## 2020.8740	304215.0882	270855.87007	337574.31	253196.56672	355233.61
## 2020.8767	305912.3449	272553.12678	339271.56	254893.82343	356930.87
## 2020.8795	238608.3396	205249.12153	271967.56	187589.81818	289626.86
## 2020.8822	226418.7172	193059.49908	259777.94	175400.19573	277437.24
## 2020.8849	193489.7009	160130.48281	226848.92	142471.17946	244508.22
## 2020.8877	191586.9396	158227.72151	224946.16	140568.41816	242605.46
## 2020.8904	155158.2408	121799.02272	188517.46	104139.71937	206176.76
## 2020.8932	167525.4585	134166.24039	200884.68	116506.93704	218543.98
## 2020.8959	173547.2579	140188.03976	206906.48	122528.73641	224565.78
## 2020.8986	176577.6778	143218.45969	209936.90	125559.15634	227596.20
## 2020.9014	173061.9834	139702.76531	206421.20	122043.46196	224080.50
## 2020.9041	152486.2652	119127.04710	185845.48	101467.74375	203504.79
## 2020.9068	142929.1030	109569.88486	176288.32	91910.58151	193947.62
## 2020.9096	160071.1188	126711.90070	193430.34	109052.59735	211089.64
## 2020.9123	135358.4331	101999.21498	168717.65	84339.91163	186376.95
## 2020.9151	139715.0592	106355.84105	173074.28	88696.53770	190733.58
## 2020.9178	123186.5669	89827.34876	156545.78	72168.04541	174205.09
## 2020.9205	121321.5768	87962.35868	154680.79	70303.05533	172340.10
## 2020.9233	143049.0283	109689.81016	176408.25	92030.50681	194067.55
## 2020.9260	169292.2943	135933.07623	202651.51	118273.77288	220310.82
## 2020.9288	173064.0574	139704.83927	206423.28	122045.53592	224082.58
## 2020.9315	114873.3781	81514.16000	148232.60	63854.85665	165891.90
## 2020.9342	39782.1562	6422.93808	73141.37	-11236.36527	90800.68
## 2020.9370	23029.8563	-10329.36180	56389.07	-27988.66515	74048.38
## 2020.9397	43031.7740	9672.55591	76390.99	-7986.74744	94050.30
## 2020.9425	21793.6051	-11565.61302	55152.82	-29224.91637	72812.13
## 2020.9452	56010.4867	22651.26858	89369.70	4991.96523	107029.01
## 2020.9479	43451.8430	10092.62486	76811.06	-7566.67849	94470.36
## 2020.9507	74350.8545	40991.63640	107710.07	23332.33305	125369.38
## 2020.9534	73012.7531	39653.53495	106371.97	21994.23160	124031.27
## 2020.9562	84465.2986	51106.08048	117824.52	33446.77713	135483.82
## 2020.9589	88986.7266	55627.50846	122345.94	37968.20511	140005.25
## 2020.9616	89108.6800	55749.46185	122467.90	38090.15850	140127.20
## 2020.9644	84706.5975	51347.37937	118065.82	33688.07602	135725.12
## 2020.9671	86947.4447	53588.22664	120306.66	35928.92329	137965.97
## 2020.9699	29059.3804	-4299.83772	62418.60	-21959.14107	80077.90
## 2020.9726	39720.0284	6360.81029	73079.25	-11298.49305	90738.55
## 2020.9753	15646.1434	-17713.07469	49005.36	-35372.37804	66664.66
## 2020.9781	10246.2414	-23112.97670	43605.46	-40772.28005	61264.76
## 2020.9808	37701.6293	4342.41123	71060.85	-13316.89212	88720.15
## 2020.9836	38894.7678	5535.54964	72253.99	-12123.75371	89913.29
## 2020.9863	56291.0863	22931.86818	89650.30	5272.56483	107309.61
## 2020.9890	41628.0440	8268.82585	74987.26	-9390.47750	92646.57
## 2020.9918	57264.3767	23905.15860	90623.59	6245.85525	108282.90
## 2020.9945	81225.7427	47866.52461	114584.96	30207.22126	132244.26
## 2020.9973	53420.9943	20061.77622	86780.21	2402.47287	104439.52
## 2021.0000	28126.9852	-5232.23286	61486.20	-22891.53621	79145.51
## 2021.0027	53252.9989	19893.78084	86612.22	2234.47749	104271.52
## 2021.0055	93459.2903	60100.07222	126818.51	42440.76887	144477.81
## 2021.0082	86042.7018	52683.48368	119401.92	35024.18033	137061.22
## 2021.0110	78245.0904	44885.87228	111604.31	27226.56893	129263.61
## 2021.0137	46322.8126	12963.59450	79682.03	-4695.70885	97341.33

## 2021.0164	28892.1506	-4467.06747	62251.37	-22126.37082	79910.67
## 2021.0192	69167.7516	35808.53350	102526.97	18149.23015	120186.27
## 2021.0219	84820.0721	51460.85395	118179.29	33801.55060	135838.59
## 2021.0247	37953.0283	4593.81019	71312.25	-13065.49316	88971.55
## 2021.0274	32926.6407	-432.57745	66285.86	-18091.88080	83945.16
## 2021.0301	35624.1904	2264.97226	68983.41	-15394.33109	86642.71
## 2021.0329	58873.5771	25514.35900	92232.80	7855.05565	109892.10
## 2021.0356	42789.8526	9430.63452	76149.07	-8228.66883	93808.37
## 2021.0384	32416.0795	-943.13864	65775.30	-18602.44199	83434.60
## 2021.0411	14576.2754	-18782.94271	47935.49	-36442.24606	65594.80
## 2021.0438	40842.9647	7483.74659	74202.18	-10175.55676	91861.49
## 2021.0466	48427.5125	15068.29437	81786.73	-2591.00898	99446.03
## 2021.0493	85728.9375	52369.71938	119088.16	34710.41603	136747.46
## 2021.0521	39617.3958	6258.17771	72976.61	-11401.12564	90635.92
## 2021.0548	70980.1787	37620.96062	104339.40	19961.65727	121998.70
## 2021.0575	70537.9334	37178.71530	103897.15	19519.41195	121556.45
## 2021.0603	78249.1645	44889.94643	111608.38	27230.64308	129267.69
## 2021.0630	67263.5508	33904.33273	100622.77	16245.02939	118282.07
## 2021.0658	58911.4946	25552.27653	92270.71	7892.97318	109930.02
## 2021.0685	55227.2319	21868.01383	88586.45	4208.71048	106245.75
## 2021.0712	53340.3849	19981.16681	86699.60	2321.86346	104358.91
## 2021.0740	42858.5157	9499.29761	76217.73	-8160.00574	93877.04
## 2021.0767	83341.2831	49982.06498	116700.50	32322.76163	134359.80
## 2021.0795	80390.2485	47031.03038	113749.47	29371.72703	131408.77
## 2021.0822	70726.1688	37366.95072	104085.39	19707.64737	121744.69
## 2021.0849	80451.7638	47092.54568	113810.98	29433.24233	131470.29
## 2021.0877	118470.6538	85111.43574	151829.87	67452.13239	169489.18
## 2021.0904	79079.5301	45720.31199	112438.75	28061.00864	130098.05
## 2021.0932	62745.0813	29385.86317	96104.30	11726.55982	113763.60
## 2021.0959	95432.0389	62072.82081	128791.26	44413.51746	146450.56
## 2021.0986	77599.3012	44240.08306	110958.52	26580.77971	128617.82
## 2021.1014	50920.6472	17561.42907	84279.87	-97.87428	101939.17
## 2021.1041	34817.8635	1458.64535	68177.08	-16200.65800	85836.38
## 2021.1068	28695.1891	-4664.02897	62054.41	-22323.33232	79713.71
## 2021.1096	49142.1873	15782.96915	82501.41	-1876.33420	100160.71
## 2021.1123	25863.6801	-7495.53801	59222.90	-25154.84136	76882.20
## 2021.1151	36105.8640	2746.64590	69465.08	-14912.65745	87124.39
## 2021.1178	92678.6689	59319.45078	126037.89	41660.14743	143697.19
## 2021.1205	65991.2135	32631.99536	99350.43	14972.69201	117009.73
## 2021.1233	68198.6623	34839.44421	101557.88	17180.14086	119217.18
## 2021.1260	90053.5691	56694.35097	123412.79	39035.04762	141072.09
## 2021.1288	105901.3800	72542.16191	139260.60	54882.85856	156919.90
## 2021.1315	73746.6002	40387.38214	107105.82	22728.07879	124765.12
## 2021.1342	66405.7592	33046.54112	99764.98	15387.23777	117424.28
## 2021.1370	78636.3047	45277.08657	111995.52	27617.78322	129654.83
## 2021.1397	81228.6379	47869.41979	114587.86	30210.11644	132247.16
## 2021.1425	103935.0551	70575.83699	137294.27	52916.53365	154953.58
## 2021.1452	65253.2843	31894.06619	98612.50	14234.76284	116271.81
## 2021.1479	68348.0365	34988.81838	101707.25	17329.51503	119366.56
## 2021.1507	79673.0322	46313.81407	113032.25	28654.51072	130691.55
## 2021.1534	62300.0848	28940.86666	95659.30	11281.56331	113318.61
## 2021.1562	39796.2962	6437.07808	73155.51	-11222.22527	90814.82
## 2021.1589	43392.9573	10033.73919	76752.18	-7625.56416	94411.48
## 2021.1616	49176.5266	15817.30845	82535.74	-1841.99490	100195.05

## 2021.1644	77270.4494	43911.23133	110629.67	26251.92798	128288.97
## 2021.1671	78621.5556	45262.33752	111980.77	27603.03417	129640.08
## 2021.1699	77178.0473	43818.82923	110537.27	26159.52588	128196.57
## 2021.1726	64594.6203	31235.40217	97953.84	13576.09882	115613.14
## 2021.1753	75766.0506	42406.83249	109125.27	24747.52914	126784.57
## 2021.1781	72773.4705	39414.25239	106132.69	21754.94904	123791.99
## 2021.1808	86347.1775	52987.95940	119706.40	35328.65605	137365.70
## 2021.1836	83514.6724	50155.45432	116873.89	32496.15097	134533.19
## 2021.1863	53939.0242	20579.80609	87298.24	2920.50274	104957.55
## 2021.1890	76546.0298	43186.81170	109905.25	25527.50835	127564.55
## 2021.1918	63551.4609	30192.24278	96910.68	12532.93943	114569.98
## 2021.1945	67997.9267	34638.70856	101357.14	16979.40521	119016.45
## 2021.1973	83037.0756	49677.85754	116396.29	32018.55419	134055.60
## 2021.2000	102474.3198	69115.10172	135833.54	51455.79837	153492.84
## 2021.2027	29970.1114	-3389.10676	63329.33	-21048.41011	80988.63
## 2021.2055	67509.1598	34149.94168	100868.38	16490.63833	118527.68
## 2021.2082	51936.2276	18577.00952	85295.45	917.70617	102954.75
## 2021.2110	40296.2864	6937.06834	73655.50	-10722.23501	91314.81
## 2021.2137	77904.2250	44545.00686	111263.44	26885.70351	128922.75
## 2021.2164	53381.8886	20022.67050	86741.11	2363.36715	104400.41
## 2021.2192	65283.4322	31924.21411	98642.65	14264.91076	116301.95
## 2021.2219	99309.1573	65949.93922	132668.38	48290.63587	150327.68
## 2021.2247	72503.3425	39144.12440	105862.56	21484.82105	123521.86
## 2021.2274	62305.6256	28946.40746	95664.84	11287.10411	113324.15
## 2021.2301	60828.3277	27469.10956	94187.55	9809.80621	111846.85
## 2021.2329	47365.7930	14006.57493	80725.01	-3652.72842	98384.31
## 2021.2356	69501.2597	36142.04159	102860.48	18482.73824	120519.78
## 2021.2384	86383.0711	53023.85304	119742.29	35364.54969	137401.59
## 2021.2411	69780.4968	36421.27866	103139.71	18761.97531	120799.02
## 2021.2438	55297.3615	21938.14336	88656.58	4278.84001	106315.88
## 2021.2466	79338.6744	45979.45631	112697.89	28320.15296	130357.20
## 2021.2493	78592.8346	45233.61650	111952.05	27574.31315	129611.36
## 2021.2521	66180.9356	32821.71753	99540.15	15162.41418	117199.46
## 2021.2548	90080.4791	56721.26102	123439.70	39061.95767	141099.00
## 2021.2575	87683.6293	54324.41114	121042.85	36665.10779	138702.15
## 2021.2603	96497.8907	63138.67259	129857.11	45479.36925	147516.41
## 2021.2630	69994.6352	36635.41709	103353.85	18976.11374	121013.16
## 2021.2658	48997.0476	15637.82945	82356.27	-2021.47390	100015.57
## 2021.2685	73666.0644	40306.84634	107025.28	22647.54299	124684.59
## 2021.2712	102709.4202	69350.20204	136068.64	51690.89870	153727.94
## 2021.2740	79108.1899	45748.97183	112467.41	28089.66848	130126.71
## 2021.2767	101833.0116	68473.79353	135192.23	50814.49018	152851.53
## 2021.2795	91729.5697	58370.35158	125088.79	40711.04823	142748.09
## 2021.2822	91960.9999	58601.78183	125320.22	40942.47848	142979.52
## 2021.2849	66749.3493	33390.13114	100108.57	15730.82779	117767.87
## 2021.2877	62328.8197	28969.60160	95688.04	11310.29825	113347.34
## 2021.2904	80112.2159	46752.99780	113471.43	29093.69446	131130.74
## 2021.2932	62761.8377	29402.61961	96121.06	11743.31626	113780.36
## 2021.2959	53146.4762	19787.25813	86505.69	2127.95478	104165.00
## 2021.2986	66459.9430	33100.72491	99819.16	15441.42156	117478.46
## 2021.3014	94071.0034	60711.78533	127430.22	43052.48198	145089.52
## 2021.3041	69090.5930	35731.37492	102449.81	18072.07157	120109.11
## 2021.3068	54155.3880	20796.16985	87514.61	3136.86650	105173.91
## 2021.3096	63907.9464	30548.72832	97267.16	12889.42497	114926.47

## 2021.3123	91843.0608	58483.84265	125202.28	40824.53930	142861.58
## 2021.3151	157813.6478	124454.42974	191172.87	106795.12639	208832.17
## 2021.3178	119430.8352	86071.61707	152790.05	68412.31372	170449.36
## 2021.3205	63713.1929	30353.97481	97072.41	12694.67146	114731.71
## 2021.3233	48546.1696	15186.95149	81905.39	-2472.35186	99564.69
## 2021.3260	72177.2032	38817.98509	105536.42	21158.68174	123195.72
## 2021.3288	107685.1766	74325.95846	141044.39	56666.65511	158703.70
## 2021.3315	69195.0467	35835.82860	102554.26	18176.52525	120213.57
## 2021.3342	58952.6817	25593.46361	92311.90	7934.16026	109971.20
## 2021.3370	89543.6761	56184.45796	122902.89	38525.15461	140562.20
## 2021.3397	107252.5872	73893.36913	140611.81	56234.06578	158271.11
## 2021.3425	94252.6645	60893.44634	127611.88	43234.14299	145271.19
## 2021.3452	80686.9887	47327.77062	114046.21	29668.46727	131705.51
## 2021.3479	65008.3001	31649.08196	98367.52	13989.77861	116026.82
## 2021.3507	56435.1579	23075.93975	89794.38	5416.63640	107453.68
## 2021.3534	74055.3878	40696.16969	107414.61	23036.86634	125073.91
## 2021.3562	110107.8105	76748.59241	143467.03	59089.28906	161126.33
## 2021.3589	136194.2920	102835.07385	169553.51	85175.77050	187212.81
## 2021.3616	113280.6128	79921.39472	146639.83	62262.09137	164299.13
## 2021.3644	85923.7549	52564.53682	119282.97	34905.23347	136942.28
## 2021.3671	103868.8140	70509.59592	137228.03	52850.29257	154887.34
## 2021.3699	46751.7586	13392.54047	80110.98	-4266.76288	97770.28
## 2021.3726	35251.0543	1891.83618	68610.27	-15767.46717	86269.58
## 2021.3753	23537.1756	-9822.04247	56896.39	-27481.34582	74555.70
## 2021.3781	42730.0122	9370.79406	76089.23	-8288.50929	93748.53
## 2021.3808	92292.8148	58933.59670	125652.03	41274.29335	143311.34
## 2021.3836	107468.5908	74109.37267	140827.81	56450.06932	158487.11
## 2021.3863	92030.3314	58671.11324	125389.55	41011.80989	143048.85
## 2021.3890	86276.5066	52917.28846	119635.72	35257.98511	137295.03
## 2021.3918	77161.1652	43801.94712	110520.38	26142.64377	128179.69
## 2021.3945	83240.3417	49881.12359	116599.56	32221.82024	134258.86
## 2021.3973	50079.0083	16719.79022	83438.23	-939.51313	101097.53
## 2021.4000	43554.8807	10195.66256	76914.10	-7463.64079	94573.40
## 2021.4027	23041.7360	-10317.48208	56400.95	-27976.78543	74060.26
## 2021.4055	60496.5684	27137.35024	93855.79	9478.04689	111515.09
## 2021.4082	75737.6115	42378.39338	109096.83	24719.09003	126756.13
## 2021.4110	114907.8506	81548.63253	148267.07	63889.32918	165926.37
## 2021.4137	37522.1880	4162.96993	70881.41	-13496.33342	88540.71
## 2021.4164	42678.4257	9319.20756	76037.64	-8340.09579	93696.95
## 2021.4192	45691.4537	12332.23560	79050.67	-5327.06775	96709.98
## 2021.4219	69907.3416	36548.12353	103266.56	18888.82018	120925.86
## 2021.4247	62987.4842	29628.26608	96346.70	11968.96273	114006.01
## 2021.4274	62684.5523	29325.33423	96043.77	11666.03088	113703.07
## 2021.4301	52005.8800	18646.66184	85365.10	987.35849	103024.40
## 2021.4329	42273.8820	8914.66386	75633.10	-8744.63949	93292.40
## 2021.4356	55390.5994	22031.38134	88749.82	4372.07799	106409.12
## 2021.4384	62128.3737	28769.15558	95487.59	11109.85223	113146.90
## 2021.4411	63965.2189	30606.00078	97324.44	12946.69743	114983.74
## 2021.4438	89660.1399	56300.92175	123019.36	38641.61840	140678.66
## 2021.4466	97418.4272	64059.20913	130777.65	46399.90578	148436.95
## 2021.4493	123018.1555	89658.93743	156377.37	71999.63408	174036.68
## 2021.4521	86884.9021	53525.68394	120244.12	35866.38060	137903.42
## 2021.4548	88678.6496	55319.43146	122037.87	37660.12811	139697.17
## 2021.4575	50296.0922	16936.87409	83655.31	-722.42926	101314.61

## 2021.4603	76975.1464	43615.92828	110334.36	25956.62493	127993.67
## 2021.4630	67659.5272	34300.30912	101018.75	16641.00577	118678.05
## 2021.4658	58740.8946	25381.67646	92100.11	7722.37311	109759.42
## 2021.4685	46748.6404	13389.42225	80107.86	-4269.88110	97767.16
## 2021.4712	58028.9932	24669.77513	91388.21	7010.47178	109047.51
## 2021.4740	64493.4236	31134.20547	97852.64	13474.90212	115511.95
## 2021.4767	72066.6491	38707.43104	105425.87	21048.12769	123085.17
## 2021.4795	68828.6264	35469.40833	102187.84	17810.10498	119847.15
## 2021.4822	45179.9725	11820.75443	78539.19	-5838.54892	96198.49
## 2021.4849	36865.3785	3506.16042	70224.60	-14153.14293	87883.90
## 2021.4877	76111.3054	42752.08728	109470.52	25092.78393	127129.83
## 2021.4904	66611.9143	33252.69616	99971.13	15593.39281	117630.44
## 2021.4932	37910.1073	4550.88916	71269.33	-13108.41419	88928.63
## 2021.4959	33033.4944	-325.72372	66392.71	-17985.02707	84052.02
## 2021.4986	64122.5715	30763.35341	97481.79	13104.05006	115141.09
## 2021.5014	52413.6722	19054.45408	85772.89	1395.15073	103432.19
## 2021.5041	37301.5093	3942.29119	70660.73	-13717.01216	88320.03
## 2021.5068	50389.5420	17030.32389	83748.76	-628.97946	101408.06
## 2021.5096	69674.6169	36315.39883	103033.84	18656.09548	120693.14
## 2021.5123	45029.8423	11670.62420	78389.06	-5988.67915	96048.36
## 2021.5151	51436.5394	18077.32132	84795.76	418.01797	102455.06
## 2021.5178	45370.1837	12010.96562	78729.40	-5648.33773	96388.71
## 2021.5205	48670.6831	15311.46496	82029.90	-2347.83839	99689.20
## 2021.5233	53725.8732	20366.65507	87085.09	2707.35172	104744.39
## 2021.5260	40711.6159	7352.39778	74070.83	-10306.90557	91730.14
## 2021.5288	56959.5795	23600.36136	90318.80	5941.05801	107978.10
## 2021.5315	61811.1083	28451.89020	95170.33	10792.58685	112829.63
## 2021.5342	56466.2838	23107.06564	89825.50	5447.76230	107484.81
## 2021.5370	43859.0459	10499.82783	77218.26	-7159.47552	94877.57
## 2021.5397	46722.7987	13363.58056	80082.02	-4295.72279	97741.32
## 2021.5425	53149.4480	19790.22985	86508.67	2130.92650	104167.97
## 2021.5452	58969.4222	25610.20408	92328.64	7950.90073	109987.94
## 2021.5479	33320.0789	-39.13919	66679.30	-17698.44254	84338.60
## 2021.5507	41386.0919	8026.87379	74745.31	-9632.42955	92404.61
## 2021.5534	48203.4249	14844.20683	81562.64	-2815.09652	99221.95
## 2021.5562	67934.2814	34575.06329	101293.50	16915.75995	118952.80
## 2021.5589	69886.7170	36527.49885	103245.94	18868.19550	120905.24
## 2021.5616	43173.4439	9814.22575	76532.66	-7845.07760	94191.97
## 2021.5644	73328.5951	39969.37702	106687.81	22310.07367	124347.12
## 2021.5671	44944.4765	11585.25840	78303.69	-6074.04495	95963.00
## 2021.5699	31019.5691	-2339.64900	64378.79	-19998.95235	82038.09
## 2021.5726	103689.4042	70330.18605	137048.62	52670.88270	154707.93
## 2021.5753	119003.6769	85644.45880	152362.90	67985.15545	170022.20
## 2021.5781	178625.7343	145266.51617	211984.95	127607.21282	229644.26
## 2021.5808	131502.8183	98143.60022	164862.04	80484.29687	182521.34
## 2021.5836	83036.1397	49676.92156	116395.36	32017.61821	134054.66
## 2021.5863	59621.2434	26262.02532	92980.46	8602.72197	110639.76
## 2021.5890	66006.1012	32646.88308	99365.32	14987.57973	117024.62
## 2021.5918	129315.7047	95956.48663	162674.92	78297.18328	180334.23
## 2021.5945	138599.1731	105239.95497	171958.39	87580.65162	189617.69
## 2021.5973	114960.9764	81601.75830	148320.19	63942.45495	165979.50
## 2021.6000	53053.6290	19694.41089	86412.85	2035.10754	104072.15
## 2021.6027	67814.0337	34454.81560	101173.25	16795.51225	118832.56
## 2021.6055	47566.6668	14207.44871	80925.88	-3451.85464	98585.19

## 2021.6082	76805.4132	43446.19505	110164.63	25786.89170	127823.93
## 2021.6110	58713.0783	25353.86019	92072.30	7694.55684	109731.60
## 2021.6137	76923.0321	43563.81397	110282.25	25904.51062	127941.55
## 2021.6164	32952.8607	-406.35736	66312.08	-18065.66071	83971.38
## 2021.6192	49171.0951	15811.87694	82530.31	-1847.42641	100189.62
## 2021.6219	44118.3375	10759.11936	77477.56	-6900.18399	95136.86
## 2021.6247	41584.1288	8224.91074	74943.35	-9434.39261	92602.65
## 2021.6274	24533.4957	-8825.72238	57892.71	-26485.02573	75552.02
## 2021.6301	52402.1796	19042.96151	85761.40	1383.65816	103420.70
## 2021.6329	35003.2841	1644.06598	68362.50	-16015.23736	86021.81
## 2021.6356	53019.6324	19660.41427	86378.85	2001.11092	104038.15
## 2021.6384	49954.1470	16594.92888	83313.37	-1064.37447	100972.67
## 2021.6411	70995.1324	37635.91433	104354.35	19976.61098	122013.65
## 2021.6438	49086.4377	15727.21955	82445.66	-1932.08380	100104.96
## 2021.6466	-16588.3437	-49947.56185	16770.87	-67606.86520	34430.18
## 2021.6493	10115.6656	-23243.55253	43474.88	-40902.85588	61134.19
## 2021.6521	38913.8786	5554.66053	72273.10	-12104.64282	89932.40
## 2021.6548	46135.7901	12776.57201	79495.01	-4882.73134	97154.31
## 2021.6575	90981.5579	57622.33978	124340.78	39963.03643	142000.08
## 2021.6603	68859.4289	35500.21083	102218.65	17840.90748	119877.95
## 2021.6630	118930.8412	85571.62314	152290.06	67912.31979	169949.36
## 2021.6658	98761.1325	65401.91435	132120.35	47742.61100	149779.65
## 2021.6685	87125.4607	53766.24261	120484.68	36106.93926	138143.98
## 2021.6712	64762.0386	31402.82046	98121.26	13743.51711	115780.56
## 2021.6740	47475.6769	14116.45879	80834.90	-3542.84456	98494.20
## 2021.6767	52588.5756	19229.35749	85947.79	1570.05414	103607.10
## 2021.6795	36218.5703	2859.35220	69577.79	-14799.95115	87237.09
## 2021.6822	94563.9298	61204.71171	127923.15	43545.40836	145582.45
## 2021.6849	48379.0574	15019.83932	81738.28	-2639.46403	99397.58
## 2021.6877	73586.2538	40227.03565	106945.47	22567.73230	124604.78
## 2021.6904	145302.5782	111943.36008	178661.80	94284.05673	196321.10
## 2021.6932	124023.4585	90664.24039	157382.68	73004.93704	175041.98
## 2021.6959	162854.6337	129495.41556	196213.85	111836.11221	213873.16
## 2021.6986	173939.1107	140579.89262	207298.33	122920.58927	224957.63
## 2021.7014	148290.4614	114931.24325	181649.68	97271.93990	199308.98
## 2021.7041	160724.9053	127365.68723	194084.12	109706.38388	211743.43
## 2021.7068	148498.5624	115139.34427	181857.78	97480.04092	199517.08
## 2021.7096	157918.6429	124559.42477	191277.86	106900.12142	208937.16
## 2021.7123	169649.6730	136290.45489	203008.89	118631.15154	220668.19
## 2021.7151	127292.5005	93933.28236	160651.72	76273.97901	178311.02
## 2021.7178	91057.0814	57697.86326	124416.30	40038.55991	142075.60
## 2021.7205	83546.2880	50187.06988	116905.51	32527.76653	134564.81
## 2021.7233	89659.6289	56300.41074	123018.85	38641.10739	140678.15
## 2021.7260	112372.9118	79013.69373	145732.13	61354.39038	163391.43
## 2021.7288	172563.0359	139203.81782	205922.25	121544.51447	223581.56
## 2021.7315	206691.9535	173332.73541	240051.17	155673.43206	257710.47
## 2021.7342	234519.9772	201160.75914	267879.20	183501.45579	285538.50
## 2021.7370	219948.5900	186589.37188	253307.81	168930.06854	270967.11
## 2021.7397	226407.3264	193048.10832	259766.54	175388.80498	277425.85
## 2021.7425	199776.4675	166417.24937	233135.69	148757.94602	250794.99
## 2021.7452	221521.2280	188162.00989	254880.45	170502.70654	272539.75
## 2021.7479	207931.5907	174572.37260	241290.81	156913.06925	258950.11
## 2021.7507	213855.6437	180496.42556	247214.86	162837.12221	264874.17
## 2021.7534	205505.1174	172145.89930	238864.34	154486.59595	256523.64

## 2021.7562	204839.5455	171480.32739	238198.76	153821.02404	255858.07
## 2021.7589	204329.4826	170970.26452	237688.70	153310.96117	255348.00
## 2021.7616	207617.4183	174258.20020	240976.64	156598.89685	258635.94
## 2021.7644	202892.9058	169533.68768	236252.12	151874.38433	253911.43
## 2021.7671	211137.3449	177778.12682	244496.56	160118.82347	262155.87
## 2021.7699	209683.5994	176324.38128	243042.82	158665.07793	260702.12
## 2021.7726	125924.5716	92565.35349	159283.79	74906.05014	176943.09
## 2021.7753	116434.0126	83074.79450	149793.23	65415.49115	167452.53
## 2021.7781	133936.7477	100577.52961	167295.97	82918.22626	184955.27
## 2021.7808	133448.1546	100088.93646	166807.37	82429.63311	184466.68
## 2021.7836	116902.0843	83542.86618	150261.30	65883.56283	167920.61
## 2021.7863	111941.7107	78582.49263	145300.93	60923.18928	162960.23
## 2021.7890	111027.3847	77668.16662	144386.60	60008.86327	162045.91
## 2021.7918	86801.1022	53441.88408	120160.32	35782.58073	137819.62
## 2021.7945	59338.8658	25979.64773	92698.08	8320.34438	110357.39
## 2021.7973	38085.6914	4726.47327	71444.91	-12932.83008	89104.21
## 2021.8000	80293.0012	46933.78310	113652.22	29274.47975	131311.52
## 2021.8027	143084.3859	109725.16774	176443.60	92065.86439	194102.91
## 2021.8055	148994.9524	115635.73431	182354.17	97976.43096	200013.47
## 2021.8082	175526.0883	142166.87022	208885.31	124507.56687	226544.61
## 2021.8110	187562.1017	154202.88361	220921.32	136543.58026	238580.62
## 2021.8137	238945.6370	205586.41889	272304.86	187927.11554	289964.16
## 2021.8164	217320.2864	183961.06826	250679.50	166301.76491	268338.81
## 2021.8192	204796.6428	171437.42474	238155.86	153778.12139	255815.16
## 2021.8219	195103.0359	161743.81774	228462.25	144084.51439	246121.56
## 2021.8247	191992.4792	158633.26114	225351.70	140973.95779	243011.00
## 2021.8274	217289.5556	183930.33746	250648.77	166271.03411	268308.08
## 2021.8301	174831.5205	141472.30237	208190.74	123812.99902	225850.04
## 2021.8329	217364.5379	184005.31982	250723.76	166346.01647	268383.06
## 2021.8356	242426.7158	209067.49767	275785.93	191408.19432	293445.24
## 2021.8384	308604.1512	275244.93314	341963.37	257585.62979	359622.67
## 2021.8411	336793.4469	303434.22883	370152.67	285774.92549	387811.97
## 2021.8438	289667.7272	256308.50907	323026.95	238649.20572	340686.25
## 2021.8466	259816.5225	226457.30436	293175.74	208798.00101	310835.04
## 2021.8493	206967.8245	173608.60638	240327.04	155949.30303	257986.35
## 2021.8521	219483.4209	186124.20282	252842.64	168464.89947	270501.94
## 2021.8548	219428.5303	186069.31217	252787.75	168410.00882	270447.05
## 2021.8575	185019.9787	151660.76056	218379.20	134001.45721	236038.50
## 2021.8603	176399.2933	143040.07524	209758.51	125380.77189	227417.81
## 2021.8630	163293.4062	129934.18812	196652.62	112274.88477	214311.93
## 2021.8658	167876.0493	134516.83116	201235.27	116857.52781	218894.57
## 2021.8685	124909.3282	91550.11013	158268.55	73890.80678	175927.85
## 2021.8712	104489.2995	71130.08140	137848.52	53470.77805	155507.82
## 2021.8740	83901.5535	50542.33542	117260.77	32883.03207	134920.07
## 2021.8767	75917.2016	42557.98349	109276.42	24898.68014	126935.72
## 2021.8795	99243.8159	65884.59778	132603.03	48225.29443	150262.34
## 2021.8822	107041.0928	73681.87470	140400.31	56022.57135	158059.61
## 2021.8849	93299.6998	59940.48165	126658.92	42281.17831	144318.22
## 2021.8877	161112.2274	127753.00930	194471.45	110093.70595	212130.75
## 2021.8904	155911.7467	122552.52861	189270.96	104893.22526	206930.27
## 2021.8932	162876.2829	129517.06481	196235.50	111857.76146	213894.80
## 2021.8959	128832.2811	95473.06294	162191.50	77813.75960	179850.80
## 2021.8986	140900.1900	107540.97188	174259.41	89881.66853	191918.71
## 2021.9014	86569.9725	53210.75439	119929.19	35551.45105	137588.49

## 2021.9041	133750.8098	100391.59166	167110.03	82732.28831	184769.33
## 2021.9068	197709.4268	164350.20867	231068.64	146690.90532	248727.95
## 2021.9096	168445.1108	135085.89268	201804.33	117426.58933	219463.63
## 2021.9123	108701.7609	75342.54278	142060.98	57683.23943	159720.28
## 2021.9151	186266.7911	152907.57295	219626.01	135248.26960	237285.31
## 2021.9178	200227.9863	166868.76824	233587.20	149209.46489	251246.51
## 2021.9205	213245.9476	179886.72947	246605.17	162227.42612	264264.47
## 2021.9233	239519.9098	206160.69167	272879.13	188501.38832	290538.43
## 2021.9260	238561.2491	205202.03098	271920.47	187542.72763	289579.77
## 2021.9288	201508.0288	168148.81072	234867.25	150489.50737	252526.55
## 2021.9315	205201.4486	171842.23052	238560.67	154182.92717	256219.97
## 2021.9342	215801.1351	182441.91698	249160.35	164782.61364	266819.66
## 2021.9370	150667.4335	117308.21542	184026.65	99648.91207	201685.95
## 2021.9397	143299.7924	109940.57429	176659.01	92281.27095	194318.31
## 2021.9425	164461.8835	131102.66543	197821.10	113443.36208	215480.41
## 2021.9452	157468.1896	124108.97145	190827.41	106449.66810	208486.71
## 2021.9479	91887.2025	58527.98436	125246.42	40868.68101	142905.72
## 2021.9507	121901.7383	88542.52017	155260.96	70883.21682	172920.26
## 2021.9534	79291.2254	45932.00729	112650.44	28272.70394	130309.75
## 2021.9562	70244.7437	36885.52559	103603.96	19226.22224	121263.27
## 2021.9589	66321.3846	32962.16650	99680.60	15302.86315	117339.91
## 2021.9616	19781.6244	-13577.59376	53140.84	-31236.89710	70800.15
## 2021.9644	38710.5335	5351.31540	72069.75	-12307.98795	89729.05
## 2021.9671	33658.8785	299.66036	67018.10	-17359.64299	84677.40
## 2021.9699	-557.7031	-33916.92125	32801.51	-51576.22460	50460.82
## 2021.9726	30124.5338	-3234.68431	63483.75	-20893.98766	81143.06
## 2021.9753	37269.9107	3910.69262	70629.13	-13748.61073	88288.43
## 2021.9781	45561.7390	12202.52089	78920.96	-5456.78246	96580.26
## 2021.9808	20167.2223	-13191.99577	53526.44	-30851.29912	71185.74
## 2021.9836	5487.7541	-27871.46403	38846.97	-45530.76738	56506.28
## 2021.9863	27031.3874	-6327.83071	60390.61	-23987.13406	78049.91
## 2021.9890	40183.3106	6824.09253	73542.53	-10835.21082	91201.83
## 2021.9918	40505.4989	7146.28075	73864.72	-10513.02260	91524.02
## 2021.9945	26148.4831	-7210.73503	59507.70	-24870.03838	77167.00
## 2021.9973	27300.7501	-6058.46799	60659.97	-23717.77134	78319.27
## 2022.0000	13997.7573	-19361.46081	47356.98	-37020.76416	65016.28
## 2022.0027	14544.7736	-18814.44448	47903.99	-36473.74782	65563.30
## 2022.0055	13563.9416	-19795.27653	46923.16	-37454.57988	64582.46
## 2022.0082	21777.9162	-11581.30190	55137.13	-29240.60525	72796.44
## 2022.0110	22047.7577	-11311.46038	55406.98	-28970.76373	73066.28
## 2022.0137	8307.0420	-25052.17615	41666.26	-42711.47950	59325.56
## 2022.0164	18109.4206	-15249.79752	51468.64	-32909.10087	69127.94
## 2022.0192	10149.0344	-23210.18369	43508.25	-40869.48704	61167.56
## 2022.0219	10805.9245	-22553.29357	44165.14	-40212.59692	61824.45
## 2022.0247	29168.6609	-4190.55721	62527.88	-21849.86056	80187.18
## 2022.0274	40298.8570	6939.63885	73658.08	-10719.66450	91317.38
## 2022.0301	43593.7644	10234.54626	76952.98	-7424.75709	94612.29
## 2022.0329	55151.4769	21792.25883	88510.70	4132.95548	106170.00
## 2022.0356	111868.1850	78508.96686	145227.40	60849.66351	162886.71
## 2022.0384	106779.5939	73420.37582	140138.81	55761.07247	157798.12
## 2022.0411	95602.7816	62243.56348	128962.00	44584.26013	146621.30
## 2022.0438	84425.9693	51066.75115	117785.19	33407.44780	135444.49
## 2022.0466	73249.1569	39889.93881	106608.38	22230.63546	124267.68
## 2022.0493	43357.7123	9998.49415	76716.93	-7660.80920	94376.23

## 2022.0521	6232.8877	-27126.33040	39592.11	-44785.63375	57251.41
## 2022.0548	56158.6422	22799.42412	89517.86	5140.12077	107177.16
## 2022.0575	35448.9945	2089.77637	68808.21	-15569.52698	86467.52
## 2022.0603	31691.8468	-1667.37131	65051.06	-19326.67466	82710.37
## 2022.0630	54708.6747	21349.45662	88067.89	3690.15327	105727.20
## 2022.0658	29042.9858	-4316.23234	62402.20	-21975.53569	80061.51
## 2022.0685	60992.1606	27632.94253	94351.38	9973.63918	112010.68
## 2022.0712	53591.9538	20232.73567	86951.17	2573.43232	104610.48
## 2022.0740	96114.2157	62754.99763	129473.43	45095.69428	147132.74
## 2022.0767	87723.7907	54364.57257	121083.01	36705.26922	138742.31
## 2022.0795	67340.9113	33981.69317	100700.13	16322.38982	118359.43
## 2022.0822	46995.6256	13636.40754	80354.84	-4022.89581	98014.15
## 2022.0849	46203.0502	12843.83206	79562.27	-4815.47129	97221.57
## 2022.0877	-792.9508	-34152.16890	32566.27	-51811.47225	50225.57
## 2022.0904	8642.9103	-24716.30779	42002.13	-42375.61114	59661.43
## 2022.0932	9911.8750	-23447.34314	43271.09	-41106.64649	60930.40
## 2022.0959	7289.4295	-26069.78865	40648.65	-43729.09200	58307.95
## 2022.0986	2318.8770	-31040.34110	35678.10	-48699.64445	53337.40
## 2022.1014	15209.1092	-18150.10894	48568.33	-35809.41229	66227.63
## 2022.1041	41050.6901	7691.47195	74409.91	-9967.83140	92069.21
## 2022.1068	58055.1853	24695.96718	91414.40	7036.66383	109073.71
## 2022.1096	58177.5305	24818.31240	91536.75	7159.00905	109196.05
## 2022.1123	52287.7844	18928.56631	85647.00	1269.26296	103306.31
## 2022.1151	29005.0272	-4354.19087	62364.25	-22013.49422	80023.55
## 2022.1178	42037.8364	8678.61828	75397.05	-8980.68507	93056.36
## 2022.1205	60891.8394	27532.62126	94251.06	9873.31791	111910.36
## 2022.1233	32991.2876	-367.93052	66350.51	-18027.23387	84009.81
## 2022.1260	63849.9040	30490.68589	97209.12	12831.38254	114868.43
## 2022.1288	37590.6754	4231.45733	70949.89	-13427.84602	88609.20
## 2022.1315	69284.1545	35924.93638	102643.37	18265.63303	120302.68
## 2022.1342	73293.7901	39934.57203	106653.01	22275.26868	124312.31
## 2022.1370	86650.9371	53291.71904	120010.16	35632.41569	137669.46
## 2022.1397	74573.6623	41214.44418	107932.88	23555.14083	125592.18
## 2022.1425	66810.2393	33451.02124	100169.46	15791.71789	117828.76
## 2022.1452	74706.2246	41347.00645	108065.44	23687.70310	125724.75
## 2022.1479	80357.3712	46998.15306	113716.59	29338.84971	131375.89
## 2022.1507	60762.7993	27403.58119	94122.02	9744.27784	111781.32
## 2022.1534	68829.9824	35470.76427	102189.20	17811.46092	119848.50
## 2022.1562	82978.2558	49619.03767	116337.47	31959.73432	133996.78
## 2022.1589	57003.7622	23644.54406	90362.98	5985.24071	108022.28
## 2022.1616	93987.7387	60628.52055	127346.96	42969.21720	145006.26
## 2022.1644	78330.9823	44971.76423	111690.20	27312.46088	129349.50
## 2022.1671	85894.8016	52535.58347	119254.02	34876.28012	136913.32
## 2022.1699	101242.8844	67883.66627	134602.10	50224.36293	152261.41
## 2022.1726	57456.0141	24096.79594	90815.23	6437.49259	108474.54
## 2022.1753	40784.9160	7425.69791	74144.13	-10233.60544	91803.44
## 2022.1781	9122.1957	-24237.02243	42481.41	-41896.32577	60140.72
## 2022.1808	58155.1117	24795.89362	91514.33	7136.59027	109173.63
## 2022.1836	60618.6802	27259.46213	93977.90	9600.15879	111637.20
## 2022.1863	52005.8929	18646.67482	85365.11	987.37147	103024.41
## 2022.1890	38589.6652	5230.44709	71948.88	-12428.85626	89608.19
## 2022.1918	78679.0110	45319.79294	112038.23	27660.48959	129697.53
## 2022.1945	62521.0295	29161.81136	95880.25	11502.50801	113539.55
## 2022.1973	77737.8325	44378.61441	111097.05	26719.31106	128756.35

## 2022.2000	59287.9043	25928.68620	92647.12	8269.38285	110306.43
## 2022.2027	65502.9626	32143.74450	98862.18	14484.44115	116521.48
## 2022.2055	85213.4862	51854.26807	118572.70	34194.96472	136232.01
## 2022.2082	57409.7343	24050.51616	90768.95	6391.21281	108428.26
## 2022.2110	68445.0914	35085.87334	101804.31	17426.56999	119463.61
## 2022.2137	53380.6418	20021.42368	86739.86	2362.12033	104399.16
## 2022.2164	84691.1983	51331.98017	118050.42	33672.67682	135709.72
## 2022.2192	80121.2064	46761.98826	113480.42	29102.68491	131139.73
## 2022.2219	81813.0664	48453.84826	115172.28	30794.54491	132831.59
## 2022.2247	79108.0173	45748.79922	112467.24	28089.49587	130126.54
## 2022.2274	88957.5125	55598.29434	122316.73	37938.99099	139976.03
## 2022.2301	65979.1330	32619.91485	99338.35	14960.61150	116997.65
## 2022.2329	66176.1267	32816.90857	99535.34	15157.60522	117194.65
## 2022.2356	98233.7392	64874.52109	131592.96	47215.21774	149252.26
## 2022.2384	89205.6647	55846.44661	122564.88	38187.14326	140224.19
## 2022.2411	107599.2824	74240.06434	140958.50	56580.76099	158617.80
## 2022.2438	104375.9043	71016.68619	137735.12	53357.38284	155394.43
## 2022.2466	103356.2778	69997.05971	136715.50	52337.75636	154374.80
## 2022.2493	70712.7574	37353.53927	104071.98	19694.23592	121731.28
## 2022.2521	39787.2739	6428.05581	73146.49	-11231.24754	90805.80
## 2022.2548	46104.3451	12745.12699	79463.56	-4914.17636	97122.87
## 2022.2575	98446.4931	65087.27500	131805.71	47427.97165	149465.01
## 2022.2603	81430.5665	48071.34835	114789.78	30412.04500	132449.09
## 2022.2630	84426.3496	51067.13152	117785.57	33407.82817	135444.87
## 2022.2658	68263.2352	34904.01704	101622.45	17244.71369	119281.76
## 2022.2685	79803.3201	46444.10195	113162.54	28784.79860	130821.84
## 2022.2712	103783.3531	70424.13503	137142.57	52764.83168	154801.87
## 2022.2740	76198.0059	42838.78783	109557.22	25179.48448	127216.53
## 2022.2767	42410.0493	9050.83116	75769.27	-8608.47218	93428.57
## 2022.2795	55276.8796	21917.66152	88636.10	4258.35817	106295.40
## 2022.2822	95456.6791	62097.46097	128815.90	44438.15763	146475.20
## 2022.2849	93520.1518	60160.93365	126879.37	42501.63030	144538.67
## 2022.2877	60208.2360	26849.01789	93567.45	9189.71454	111226.76
## 2022.2904	64742.5887	31383.37055	98101.81	13724.06720	115761.11
## 2022.2932	107488.4876	74129.26949	140847.71	56469.96614	158507.01
## 2022.2959	85449.0869	52089.86875	118808.30	34430.56540	136467.61
## 2022.2986	95825.1935	62465.97534	129184.41	44806.67199	146843.71
## 2022.3014	114245.9520	80886.73389	147605.17	63227.43054	165264.47
## 2022.3041	110088.7732	76729.55509	143447.99	59070.25174	161107.29
## 2022.3068	93615.2971	60256.07898	126974.52	42596.77563	144633.82
## 2022.3096	78688.3811	45329.16302	112047.60	27669.85967	129706.90
## 2022.3123	59249.3223	25890.10414	92608.54	8230.80079	110267.84
## 2022.3151	55298.5176	21939.29948	88657.74	4279.99613	106317.04
## 2022.3178	74691.9142	41332.69606	108051.13	23673.39271	125710.44
## 2022.3205	52218.4724	18859.25427	85577.69	1199.95092	103236.99
## 2022.3233	25996.6459	-7362.57221	59355.86	-25021.87556	77015.17
## 2022.3260	37367.6404	4008.42231	70726.86	-13650.88104	88386.16
## 2022.3288	77112.4569	43753.23876	110471.67	26093.93541	128130.98
## 2022.3315	101584.5722	68225.35406	134943.79	50566.05071	152603.09
## 2022.3342	111852.2289	78493.01079	145211.45	60833.70745	162870.75
## 2022.3370	102422.1207	69062.90263	135781.34	51403.59928	153440.64
## 2022.3397	78291.2391	44932.02098	111650.46	27272.71763	129309.76
## 2022.3425	62892.0083	29532.79022	96251.23	11873.48687	113910.53
## 2022.3452	66464.9287	33105.71061	99824.15	15446.40726	117483.45

## 2022.3479	48067.5812	14708.36309	81426.80	-2950.94026	99086.10
## 2022.3507	63034.6033	29675.38514	96393.82	12016.08179	114053.12
## 2022.3534	108969.0104	75609.79227	142328.23	57950.48892	159987.53
## 2022.3562	114659.4969	81300.27884	148018.72	63640.97549	165678.02
## 2022.3589	120488.7586	87129.54047	153847.98	69470.23712	171507.28
## 2022.3616	83140.3653	49781.14718	116499.58	32121.84383	134158.89
## 2022.3644	57675.5559	24316.33777	91034.77	6657.03442	108694.08
## 2022.3671	21326.1653	-12033.05278	54685.38	-29692.35613	72344.69
## 2022.3699	60955.7916	27596.57352	94315.01	9937.27017	111974.31
## 2022.3726	88577.5107	55218.29257	121936.73	37558.98922	139596.03
## 2022.3753	73587.7349	40228.51676	106946.95	22569.21341	124606.26
## 2022.3781	54778.5723	21419.35421	88137.79	3760.05086	105797.09
## 2022.3808	112568.8297	79209.61156	145928.05	61550.30821	163587.35
## 2022.3836	121462.6351	88103.41700	154821.85	70444.11365	172481.16
## 2022.3863	104728.8367	71369.61863	138088.05	53710.31529	155747.36
## 2022.3890	104989.2970	71630.07888	138348.52	53970.77553	156007.82
## 2022.3918	81132.0395	47772.82136	114491.26	30113.51801	132150.56
## 2022.3945	69738.6366	36379.41847	103097.85	18720.11512	120757.16
## 2022.3973	56763.9369	23404.71882	90123.16	5745.41547	107782.46
## 2022.4000	81611.0413	48251.82322	114970.26	30592.51987	132629.56
## 2022.4027	77907.9084	44548.69031	111267.13	26889.38696	128926.43
## 2022.4055	89302.0541	55942.83602	122661.27	38283.53267	140320.58
## 2022.4082	73598.4630	40239.24489	106957.68	22579.94154	124616.98
## 2022.4110	62762.8146	29403.59653	96122.03	11744.29318	113781.34
## 2022.4137	45502.9677	12143.74954	78862.19	-5515.55381	96521.49
## 2022.4164	32546.8369	-812.38118	65906.06	-18471.68453	83565.36
## 2022.4192	16499.6701	-16859.54797	49858.89	-34518.85132	67518.19
## 2022.4219	27771.5267	-5587.69146	61130.74	-23246.99481	78790.05
## 2022.4247	49268.4719	15909.25384	82627.69	-1750.04951	100286.99
## 2022.4274	72005.0394	38645.82127	105364.26	20986.51792	123023.56
## 2022.4301	75568.8711	42209.65299	108928.09	24550.34964	126587.39
## 2022.4329	74368.4480	41009.22993	107727.67	23349.92658	125386.97
## 2022.4356	71887.5150	38528.29688	105246.73	20868.99353	122906.04
## 2022.4384	50176.0590	16816.84085	83535.28	-842.46249	101194.58
## 2022.4411	53306.1031	19946.88496	86665.32	2287.58162	104324.62
## 2022.4438	80137.8434	46778.62531	113497.06	29119.32196	131156.36
## 2022.4466	83941.7025	50582.48440	117300.92	32923.18105	134960.22
## 2022.4493	92394.4302	59035.21211	125753.65	41375.90876	143412.95
## 2022.4521	83884.8658	50525.64769	117244.08	32866.34434	134903.39
## 2022.4548	102209.1575	68849.93940	135568.38	51190.63605	153227.68
## 2022.4575	49758.7520	16399.53386	83117.97	-1259.76949	100777.27
## 2022.4603	54242.1005	20882.88243	87601.32	3223.57908	105260.62
## 2022.4630	65367.6074	32008.38932	98726.83	14349.08597	116386.13
## 2022.4658	47435.4768	14076.25869	80794.69	-3583.04466	98454.00
## 2022.4685	49618.3949	16259.17683	82977.61	-1400.12652	100636.92
## 2022.4712	77987.2244	44628.00631	111346.44	26968.70296	129005.75
## 2022.4740	68312.8595	34953.64136	101672.08	17294.33801	119331.38
## 2022.4767	81150.6999	47791.48176	114509.92	30132.17842	132169.22
## 2022.4795	86721.1721	53361.95399	120080.39	35702.65064	137739.69
## 2022.4822	96347.3775	62988.15938	129706.60	45328.85603	147365.90
## 2022.4849	96064.4932	62705.27504	129423.71	45045.97169	147083.01
## 2022.4877	101300.4206	67941.20249	134659.64	50281.89914	152318.94
## 2022.4904	90041.4443	56682.22619	123400.66	39022.92284	141059.97

```
fit_auto %>% forecast(xreg=xreg3$wind_speed, h=5) %>% autoplot()
```

