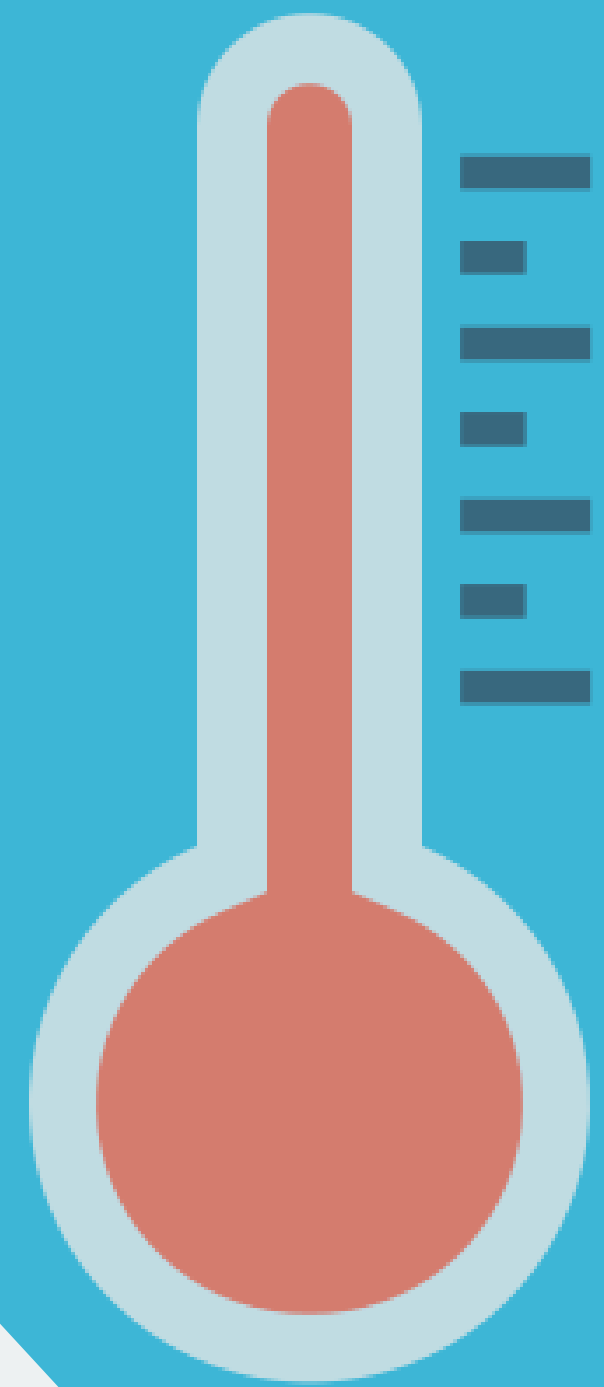




Effect of Temperature





TOPIC

- 전기 사용량
 - 시계열 그림
 - 예측 모형으로 사용량 추측
- 온도와 남극/북극의 관계
 - 시각화를 통한 표현
 - 인과관계가있는가

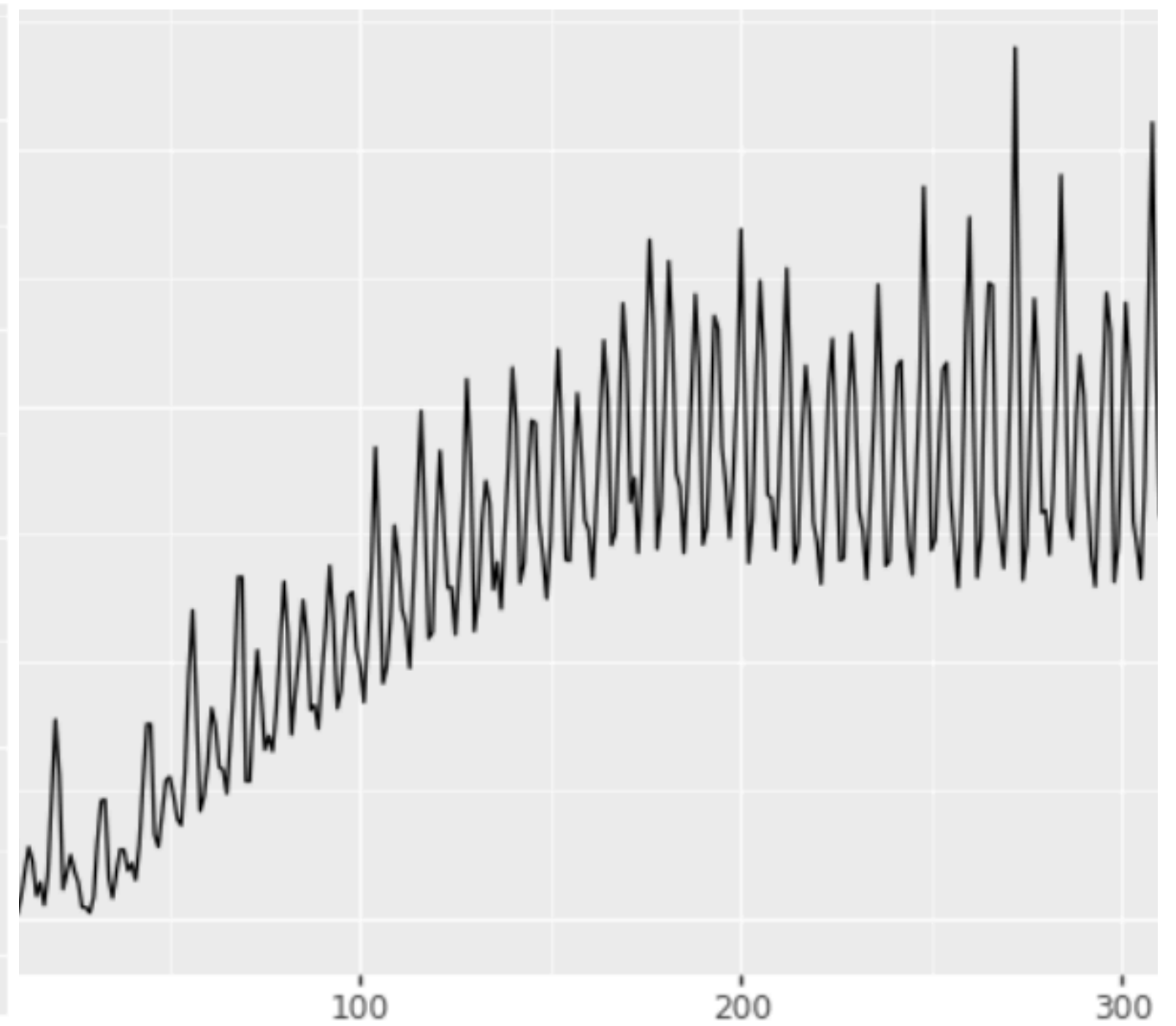
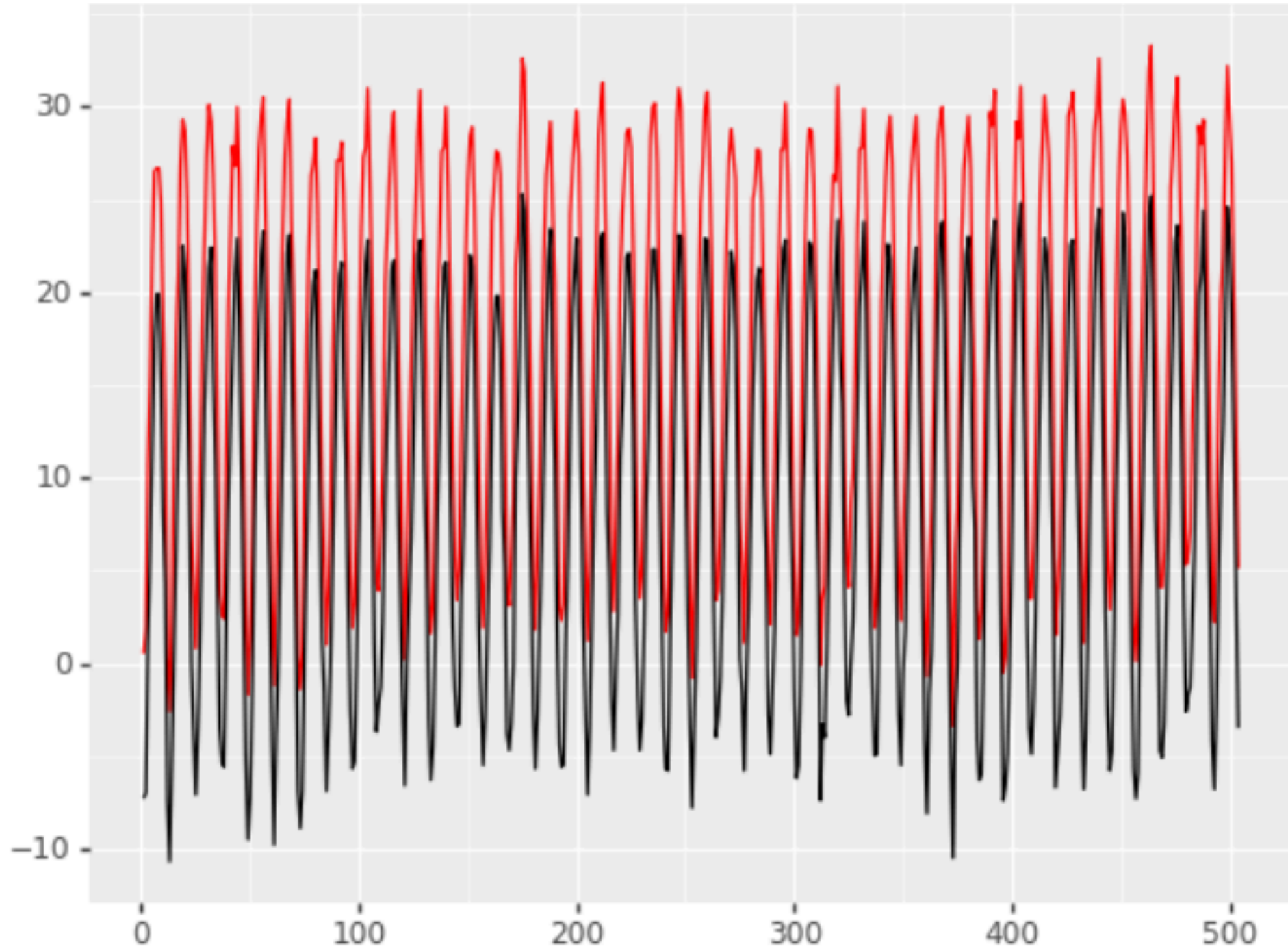


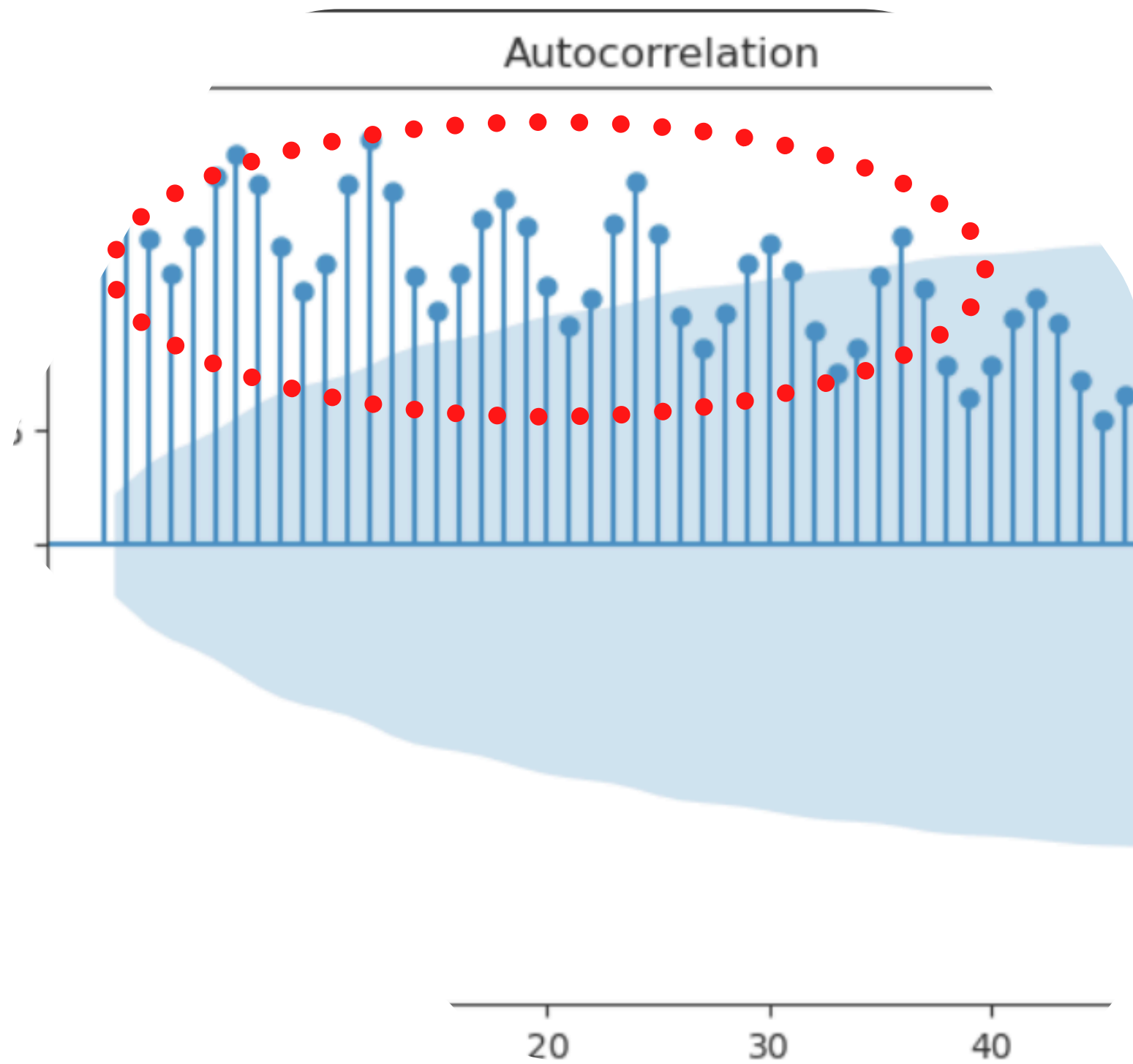
01. 전기 사용량

계절에 따라 전기 사용량을 영향을 줄까? 또한 영향을 준다면 얼마나 영향을 받고 우리가 전기 사용량을 예측하여 어느 정도 측정 값을 사용해야 하는가?



1980-2021 최고온도 최저 온도 1996-2021 서울시 전기 사용량





**영가설 : 전기 사용량은 온도 변화
가 큰 여름 겨울과 관계가없다.**

**대안가설: 전기 사용량은 온도 변
화가 큰 여름 겨울과 관계가 있다**

```
dummy1 = elect.iloc[6::12,:]  
dummy2 = elect.iloc[7::12,:]  
dummy3 = elect.iloc[8::12,:]  
dummy4 = elect.iloc[11::12,:]  
dummy5 = elect.iloc[0::12,:]
```

```
elect_789121 = pd.concat([dummy1,dummy2,dummy3,dummy4,dum
```

```
elect_j = elect.drop(elect_789121.index)
```

```
print([len(elect),len(elect_789121),len(elect_j)])
```

```
[312, 130, 182]
```

```
elect_j['Seoul'].mean()
```

```
3174977.9065934066
```

```
elect_789121['Seoul'].mean()
```

```
3673270.315384615
```

```
np.sqrt(elect_789121['Seoul'].var())
```

```
739105.7799493646
```

```
elect_789121['Seoul'].mean() - elect_j['Seoul'].mean()
```

```
498292.40879120864
```

```
np.sqrt(elect_789121['Seoul'].var())/np.sqrt(130)
```

```
64823.86514207668
```

```
498292.40879120864/64823.86514207668
```

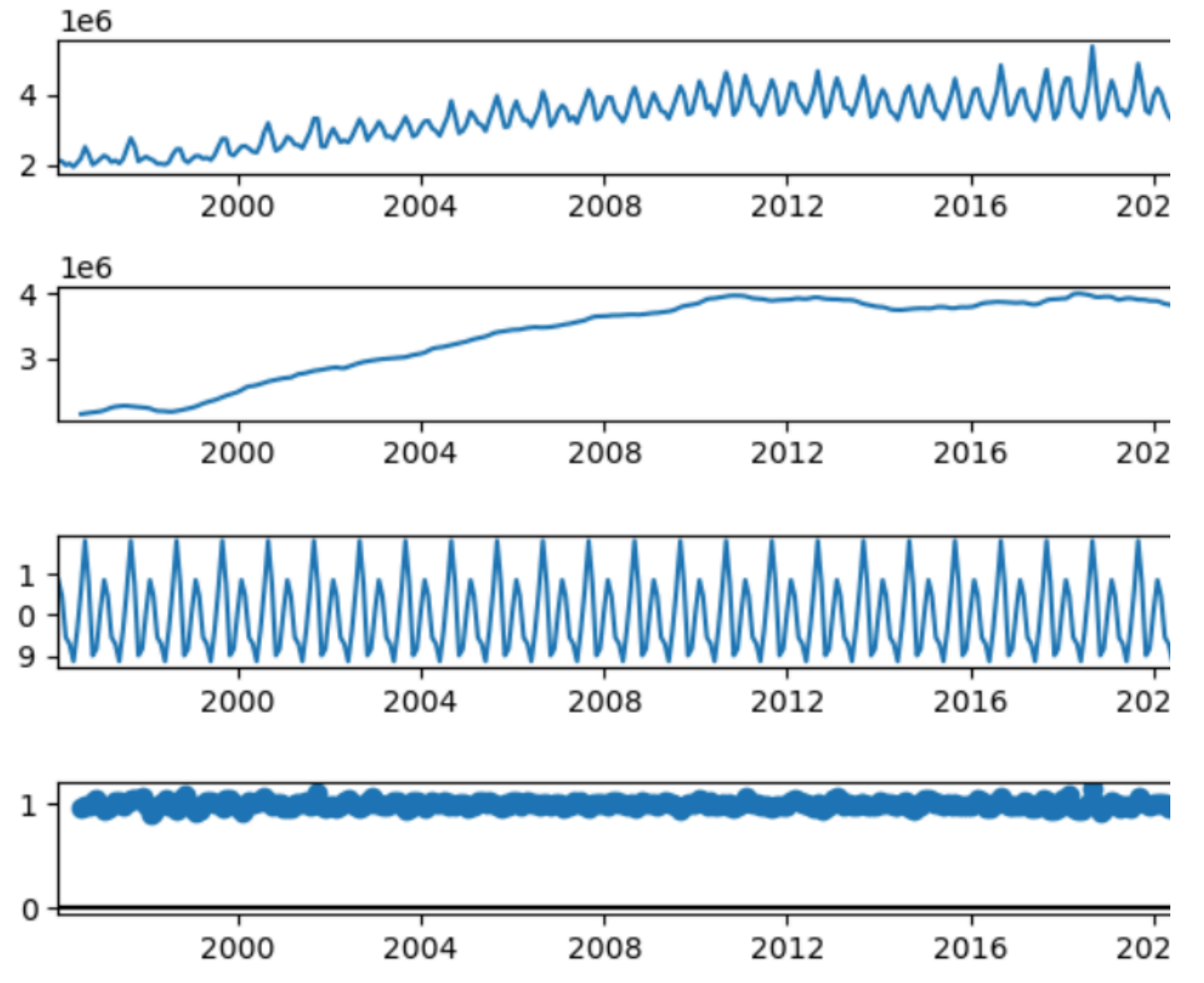
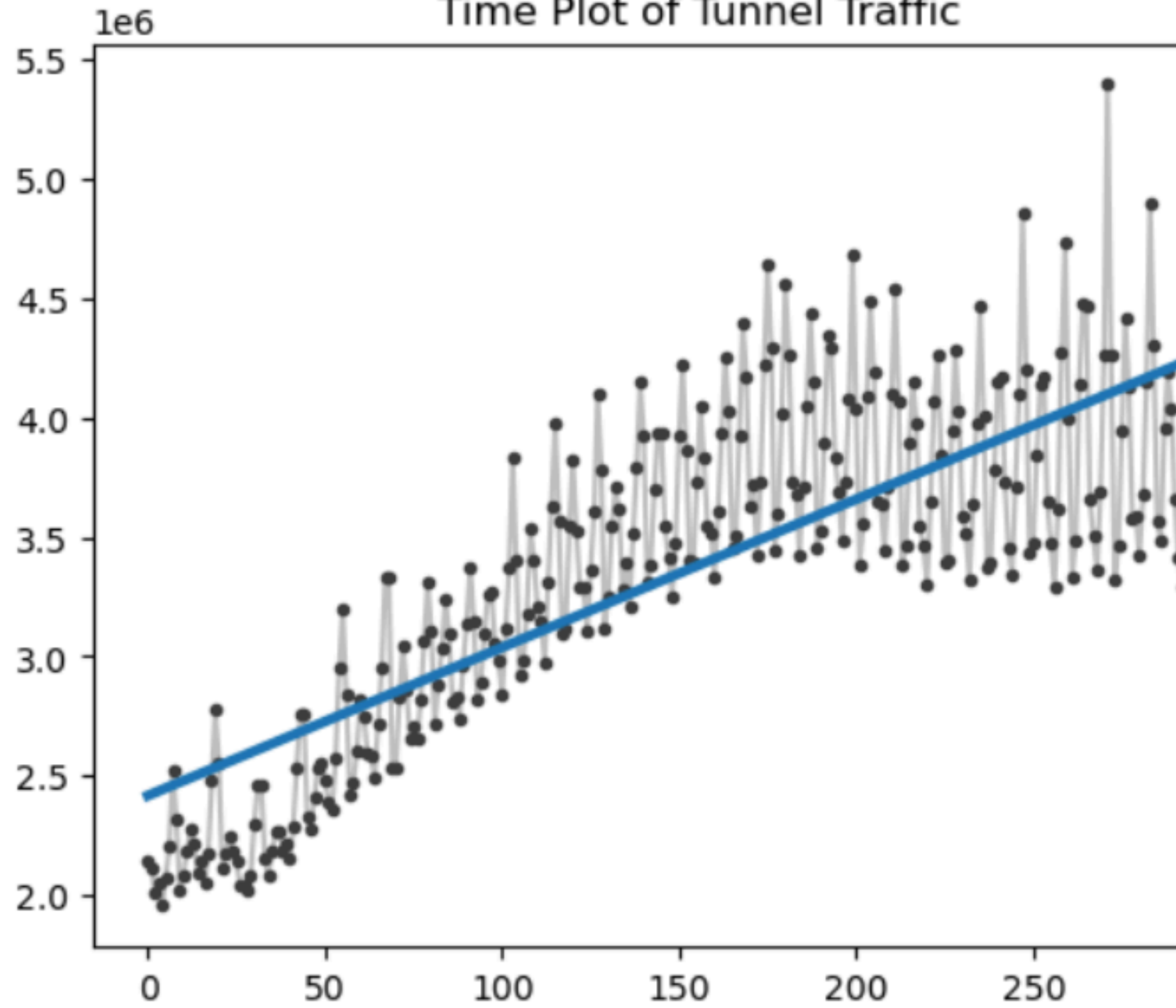
```
7.686866676324902
```

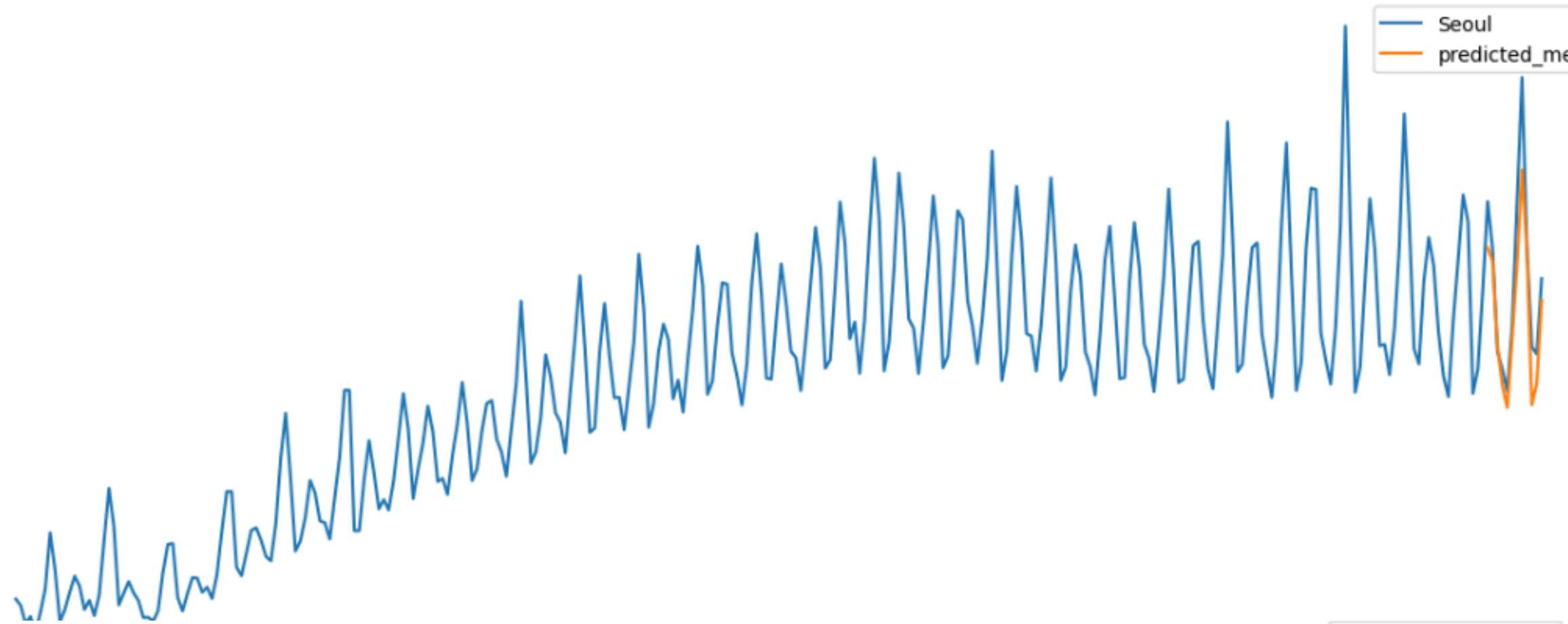
```
1-stats.norm(0,1).cdf(7.686866676324902) # pvalue
```

```
7.549516567451064e-15
```

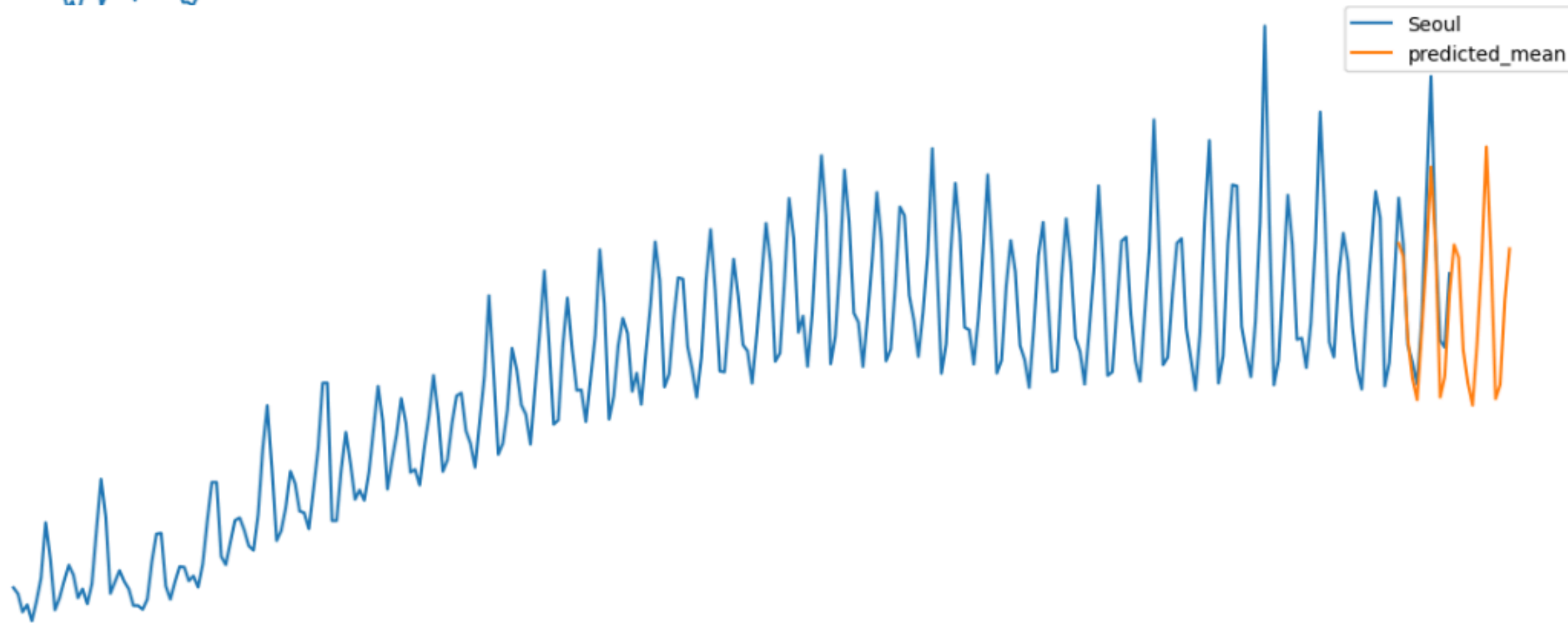


Time Plot of Tunnel Traffic





Train



Test



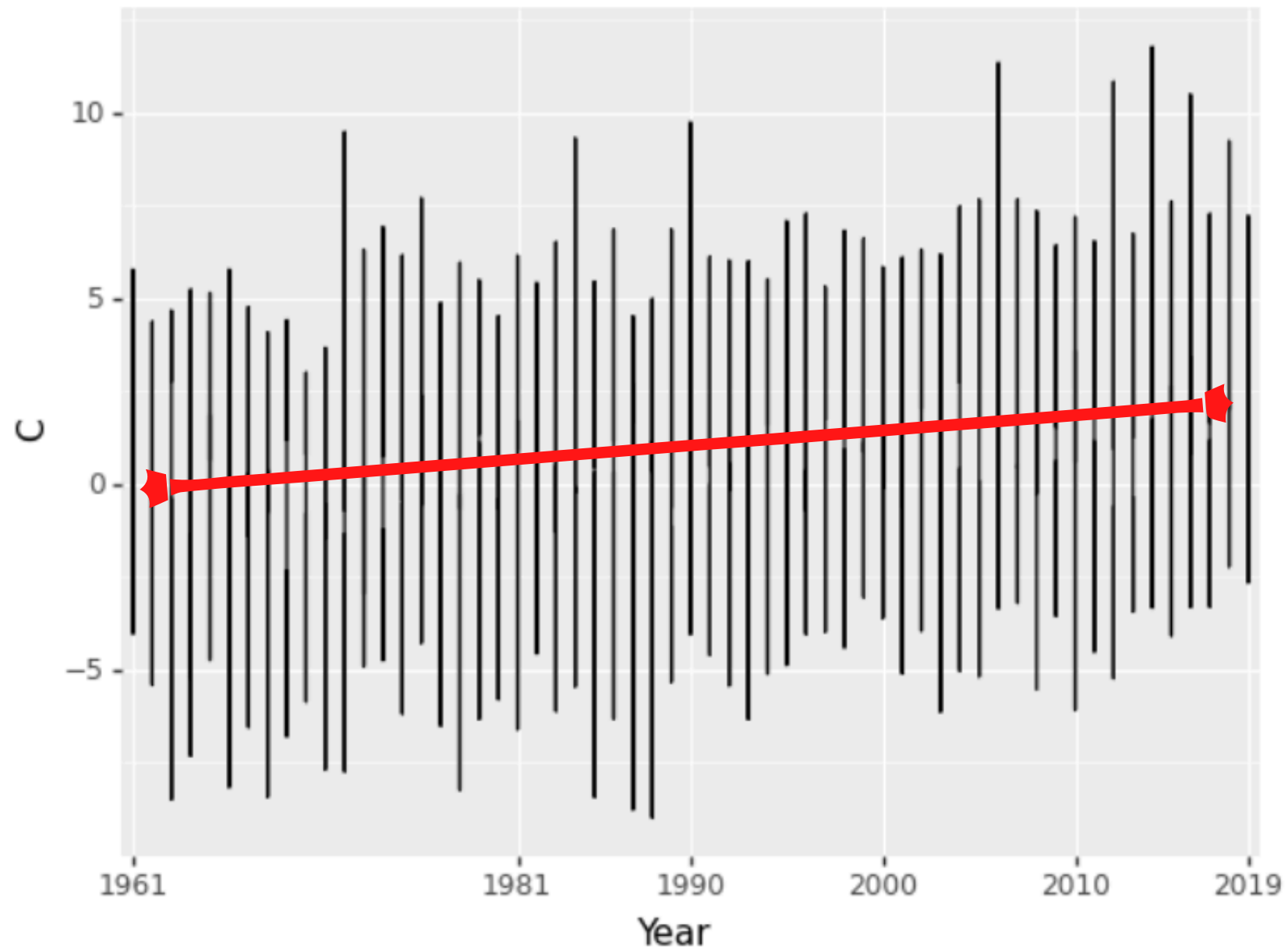
02. 온도/북극/남극

온도가 북극/남극에 얼마나 영향을 줄까?
지구 온난화는 매년 주목되고 있는데 진짜 영향
을 줄까?

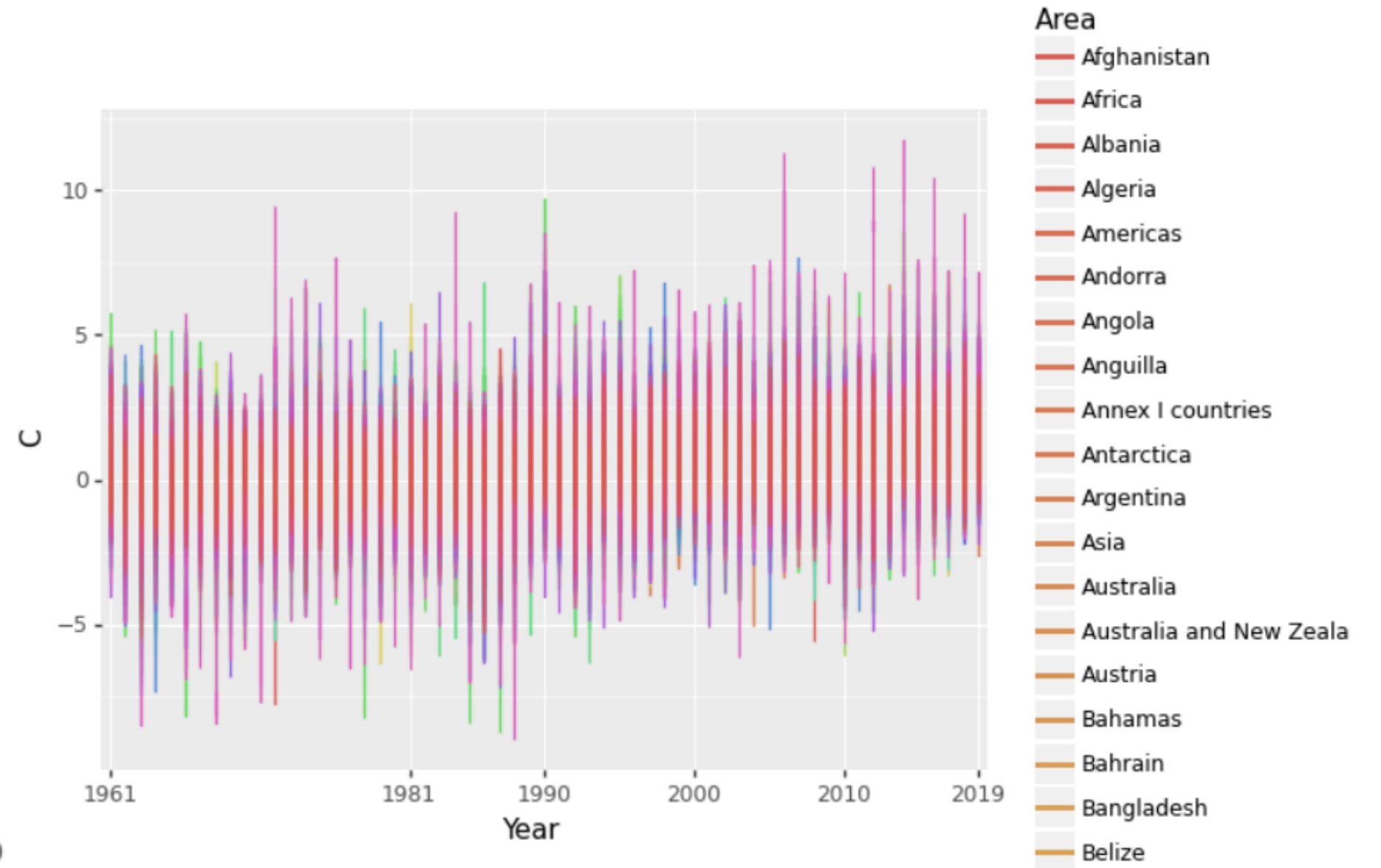




1961-2019 모든 국가 온도

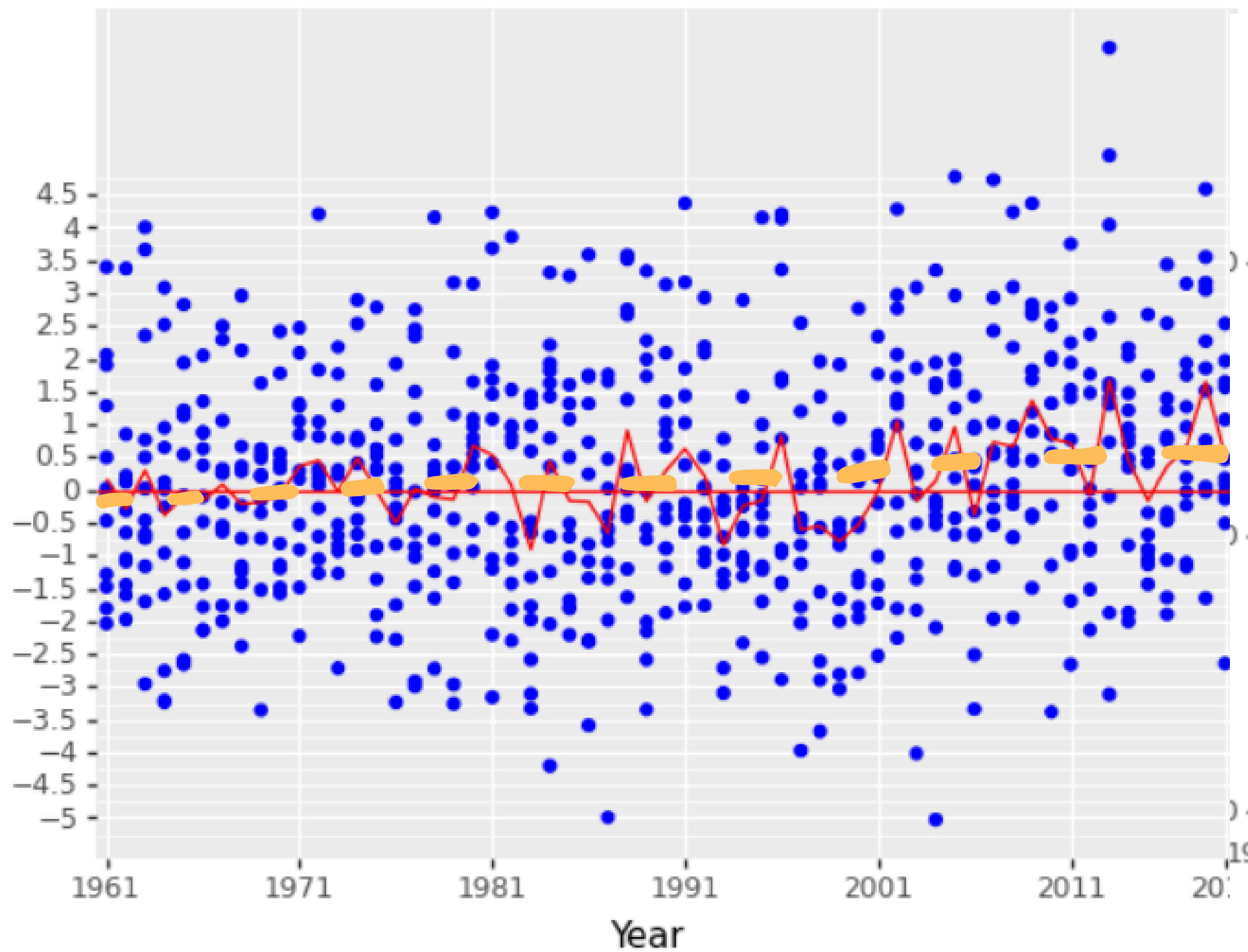


1961-2019 국가 별 온도

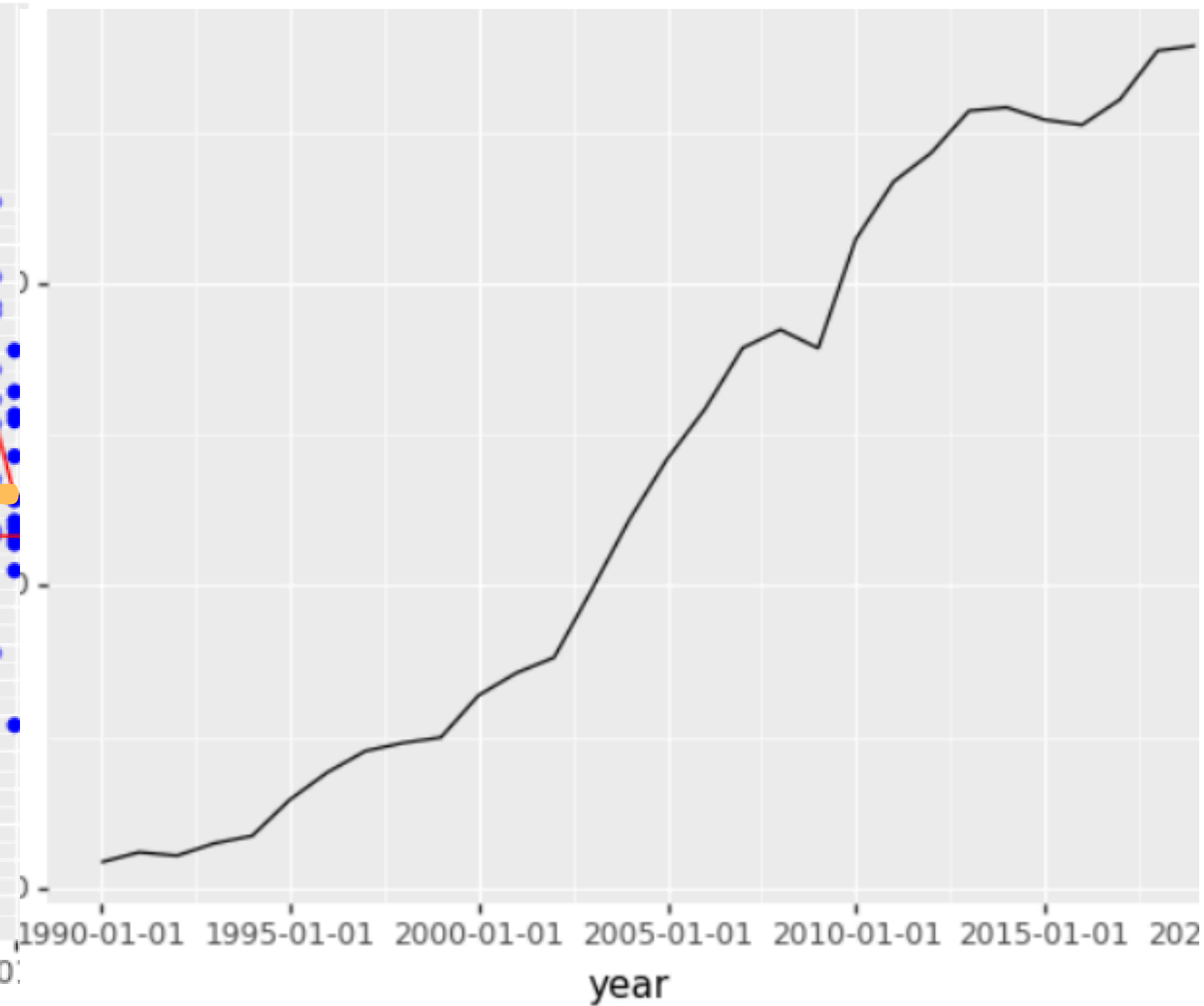




1961-2019 남극 온도



일산화 탄소 배출량

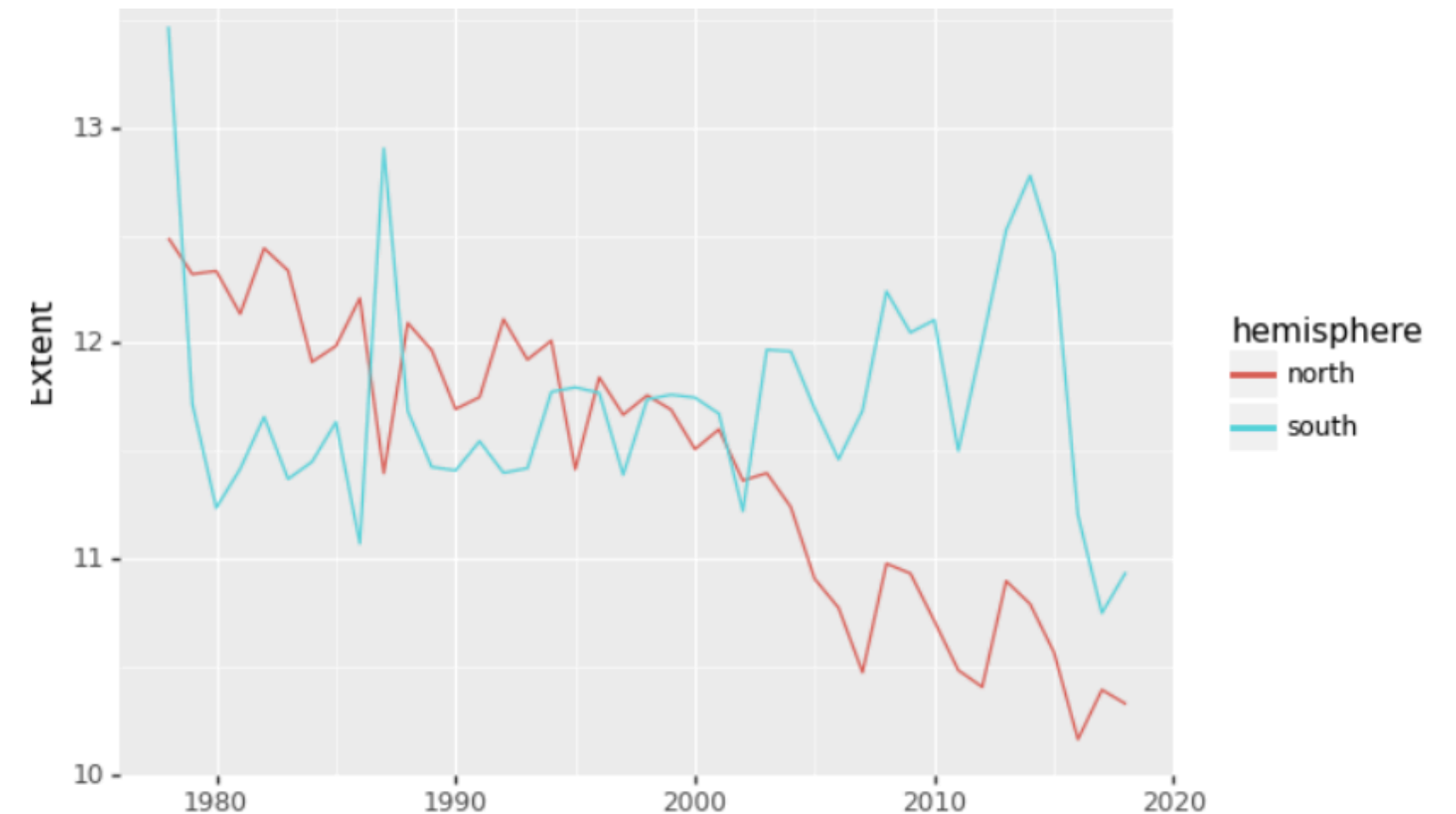


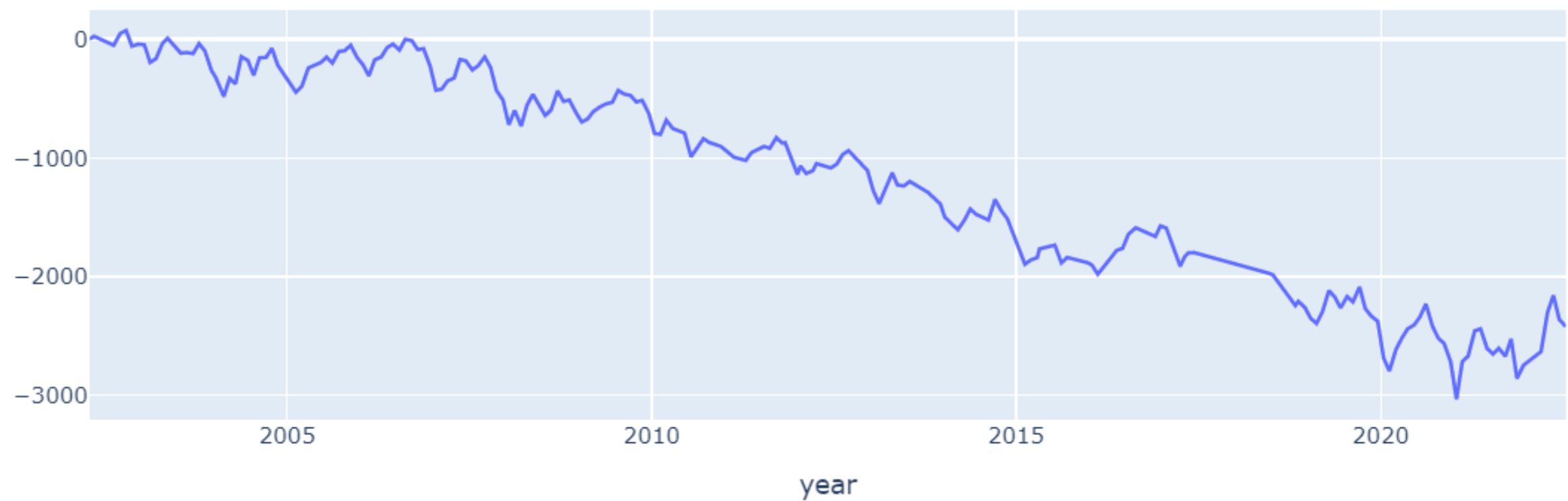


온도와 일산화 탄소 선형 모델

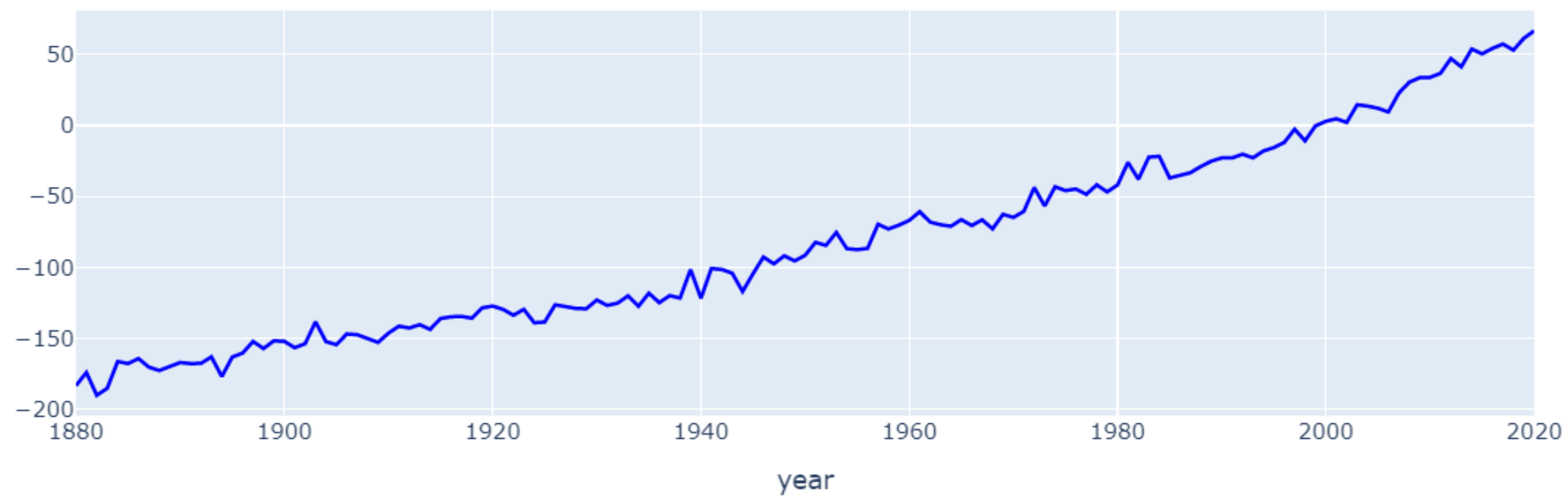
| OLS Regression Results | | | | | | |
|------------------------|------------------|------------------------------|---------|-------|----------|----------|
| ===== | | | | | | |
| Dep. Variable: | C | R-squared (uncentered): | 0.239 | | | |
| Model: | OLS | Adj. R-squared (uncentered): | 0.213 | | | |
| Method: | Least Squares | F-statistic: | 9.108 | | | |
| Date: | Mon, 05 Dec 2022 | Prob (F-statistic): | 0.00526 | | | |
| Time: | 19:12:09 | Log-Likelihood: | -29.314 | | | |
| No. Observations: | 30 | AIC: | 60.63 | | | |
| Df Residuals: | 29 | BIC: | 62.03 | | | |
| Df Model: | 1 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| ===== | | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| ----- | | | | | | |
| C0 | 1.323e-05 | 4.38e-06 | 3.018 | 0.005 | 4.26e-06 | 2.22e-05 |
| ===== | | | | | | |
| Omnibus: | 1.122 | Durbin-Watson: | 1.666 | | | |
| Prob(Omnibus): | 0.571 | Jarque-Bera (JB): | 0.959 | | | |
| Skew: | 0.205 | Prob(JB): | 0.619 | | | |
| Kurtosis: | 2.226 | Cond. No. | 1.00 | | | |
| ===== | | | | | | |

남극/북극 해빙 면적



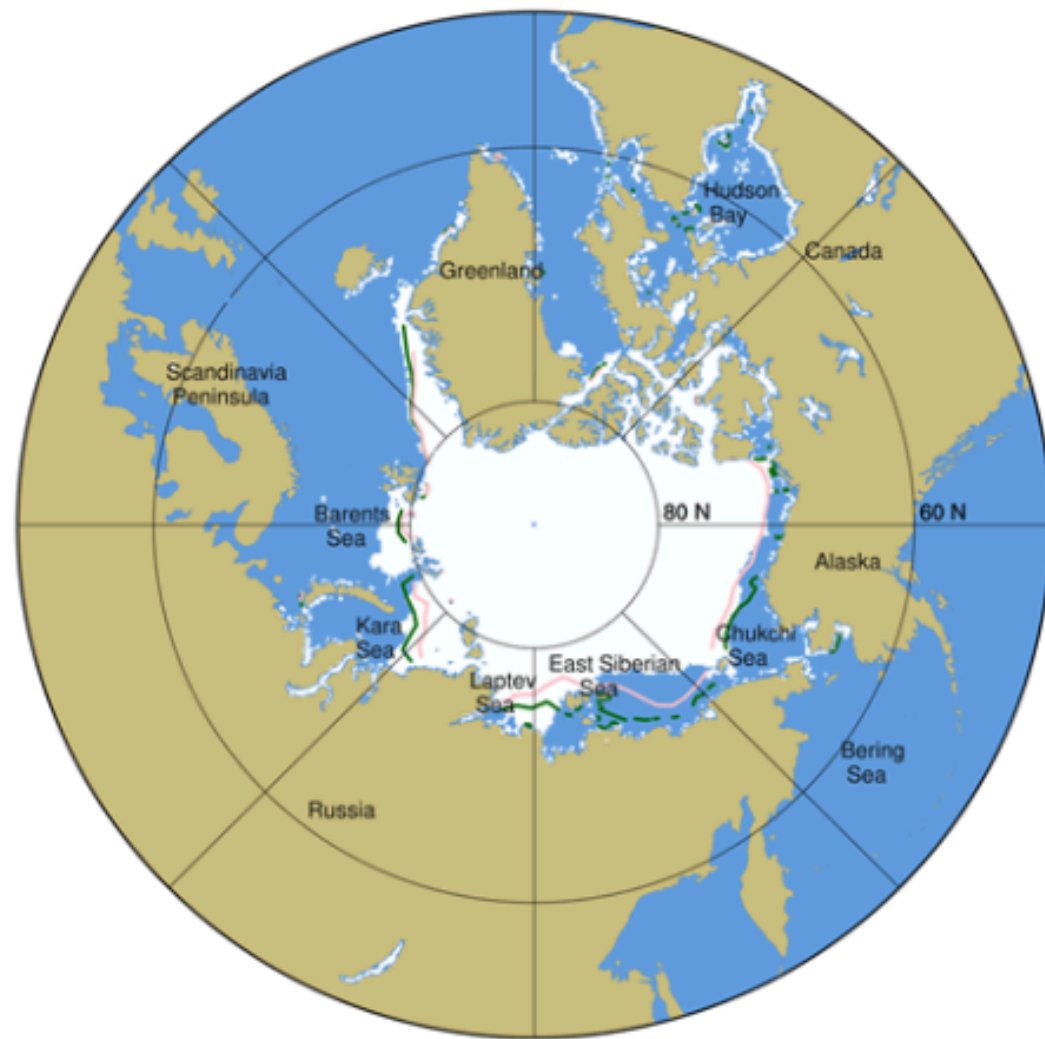


남극 얼음 부피

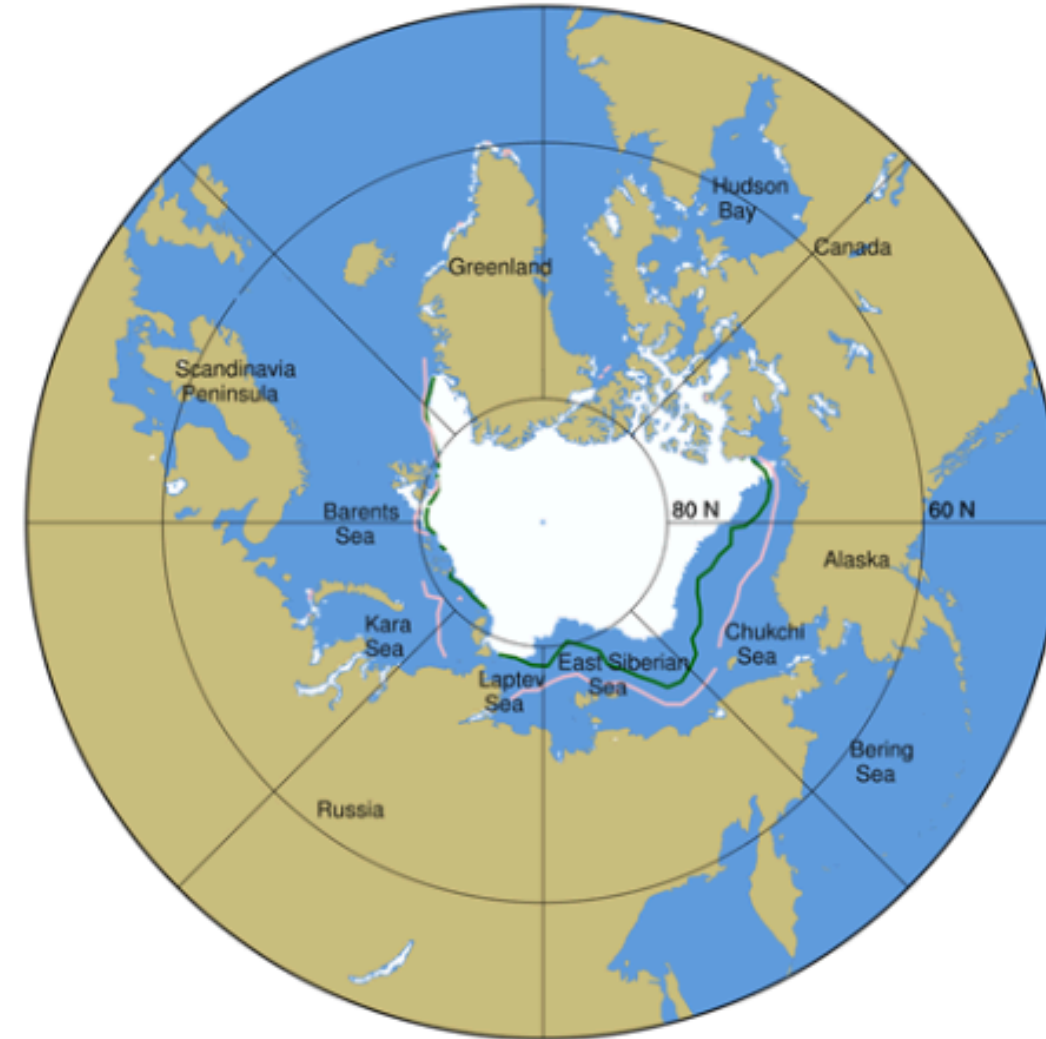


SEA LEVEL

북극 1989



북극 2019



참고자료

<https://www.kaggle.com/datasets/jarredpriester/antarctica-mass>

<https://www.kaggle.com/datasets/sevgisarak/temperature-change>

<https://epsis.kpx.or.kr/epsisnew/selectEkgeEpsMepChart.do?menuId=030100>

https://data.seoul.go.kr/dataList/378/S/2/datasetView.do;jsessionid=7EE43F5525D74D0FDA259D7953BFD9D3.new_portal-svr-21

<https://data.seoul.go.kr/dataList/378/S/2/datasetView.do>

<https://m.dongascience.com/news.php?idx=53668>

https://www.hani.co.kr/arti/science/science_general/971206.html

Q & A

감사합니다.

