

# Results for MSc Thesis

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June 2020

## **1 Introduction**

This document will consist of every result produced for my thesis, categorised and labelled correctly.

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## 2 Time series

### 2.1 Nimbus-7 seaice timeseries

Below are the mean SIC time series for seaice in Antarctica. All of these are produced from the NSIDC dataset with different variations of post-processing.

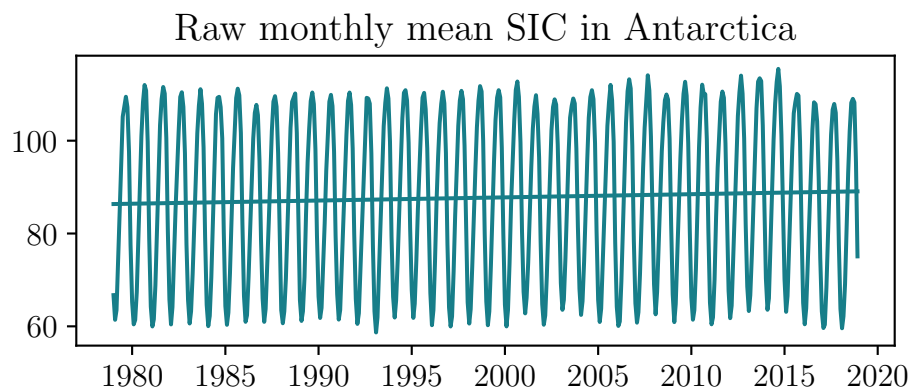


Figure 1: Mean raw monthly raw SIC in Antarctica from the NSIDC dataset.

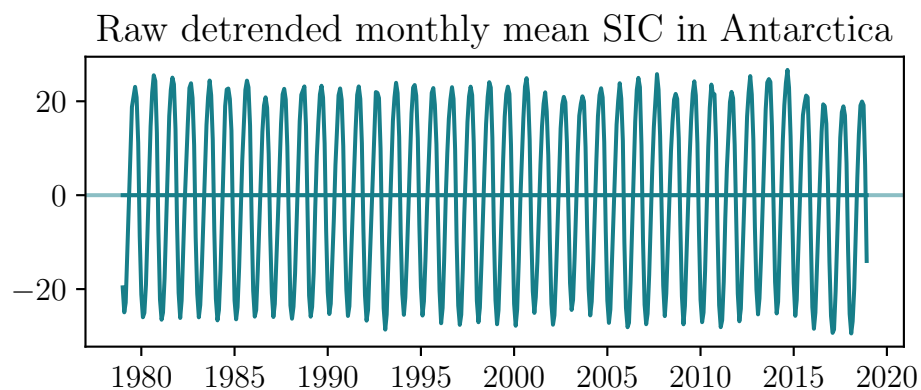


Figure 2: Mean raw monthly detrended SIC in Antarctica from the NSIDC dataset.

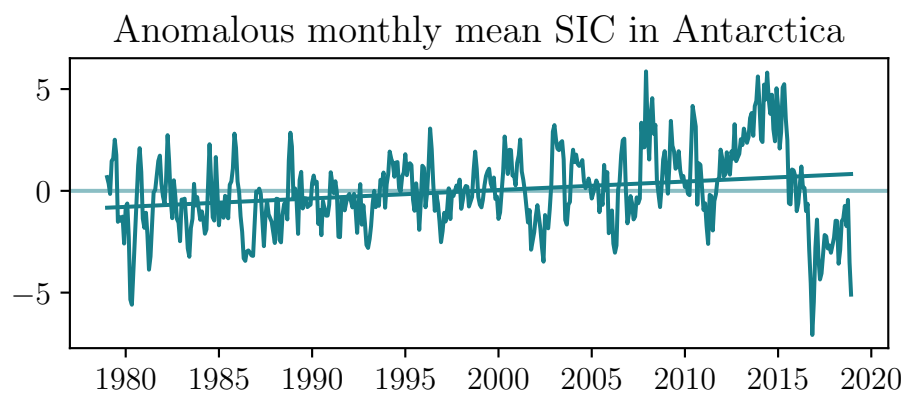


Figure 3: Mean anomalous monthly raw SIC in Antarctica from the NSIDC dataset.

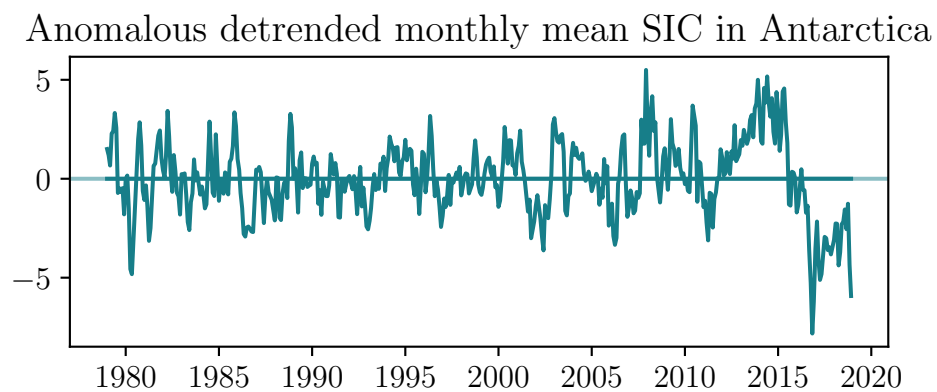


Figure 4: Mean anomalous monthly detrended SIC in Antarctica from the NSIDC dataset.

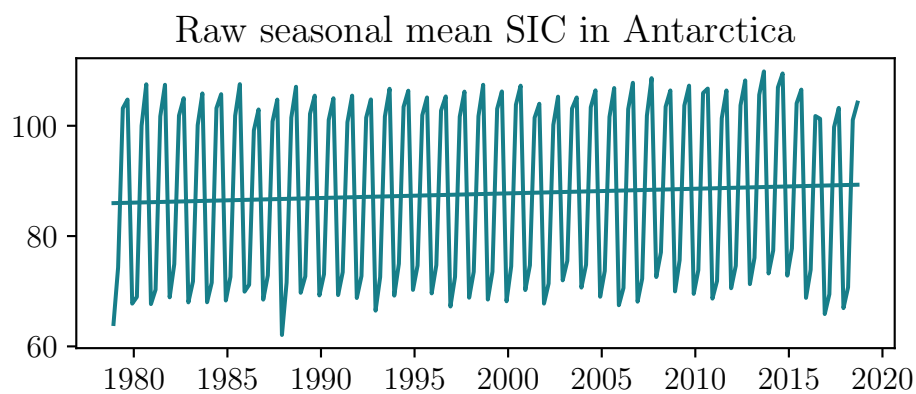


Figure 5: Mean raw seasonal raw SIC in Antarctica from the NSIDC dataset.

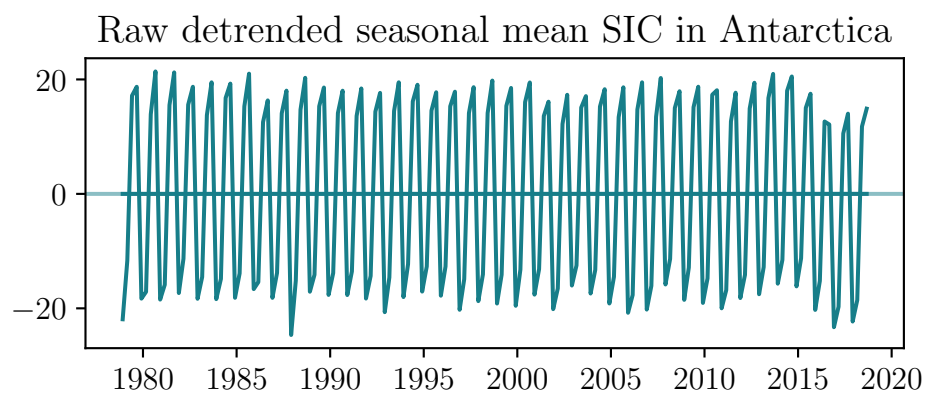


Figure 6: Mean raw seasonal detrended SIC in Antarctica from the NSIDC dataset.



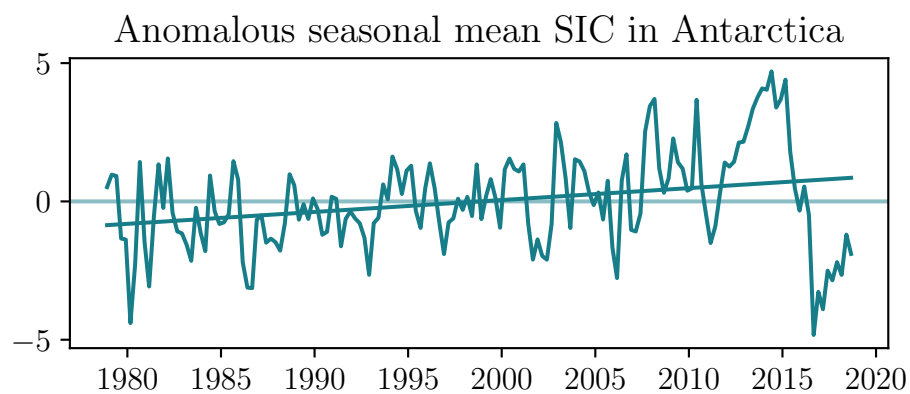


Figure 7: Mean anomalous seasonal raw SIC in Antarctica from the NSIDC dataset.

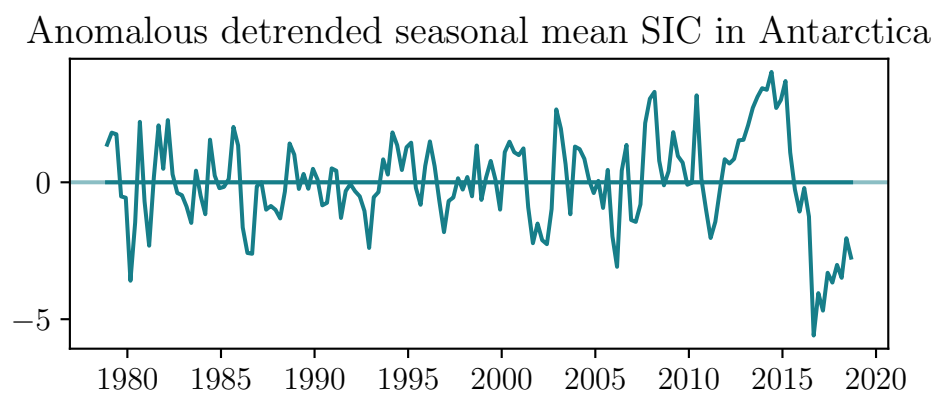


Figure 8: Mean anomalous seasonal detrended SIC in Antarctica from the NSIDC dataset.

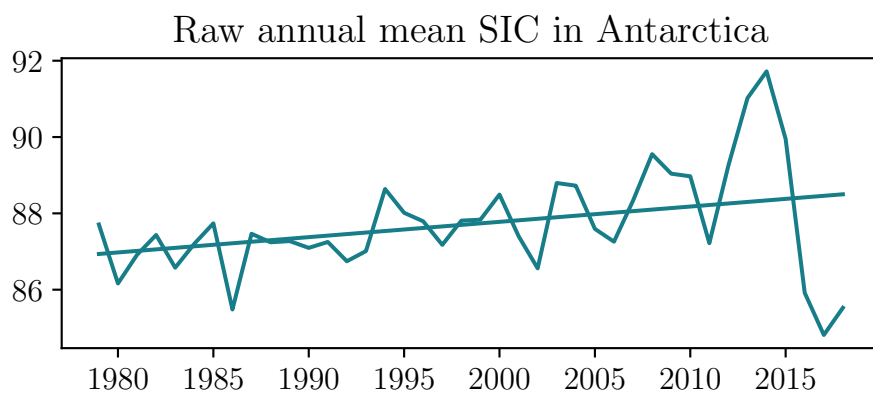


Figure 9: Mean raw annual raw SIC in Antarctica from the NSIDC dataset.

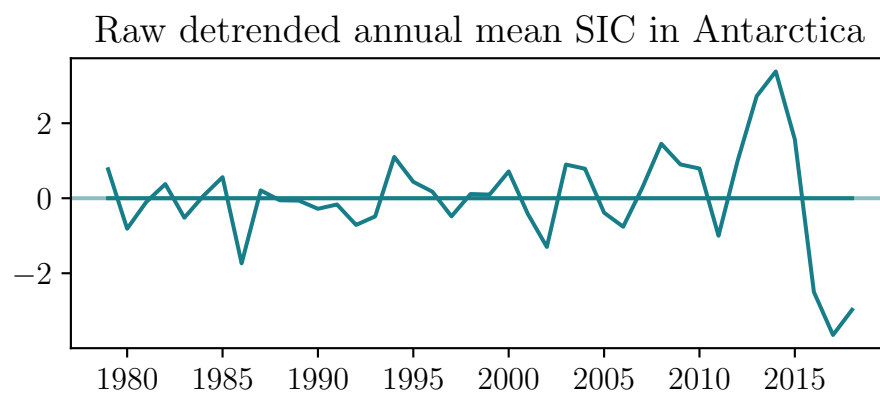


Figure 10: Mean raw annual detrended SIC in Antarctica from the NSIDC dataset.

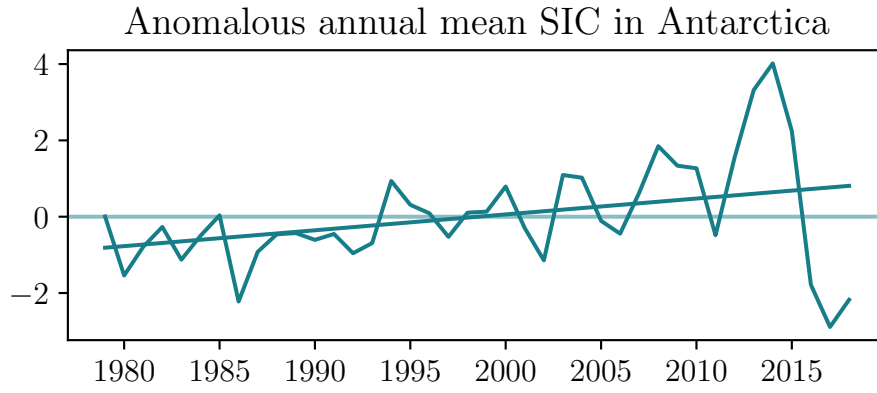


Figure 11: Mean anomalous annual raw SIC in Antarctica from the NSIDC dataset.

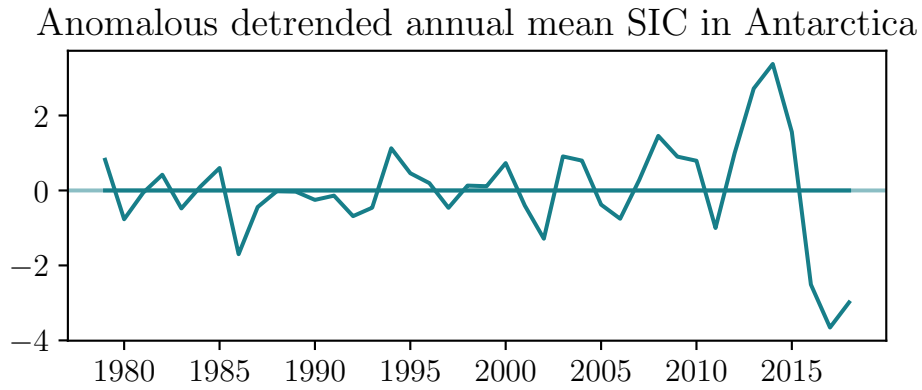


Figure 12: Mean anomalous annual detrended SIC in Antarctica from the NSIDC dataset.

## 2.2 ERA5 seaice timeseries

Below are the mean SIC time series for seaice in Antarctica. All of these are produced from the ECMWF ERA5 dataset with different variations of post-processing.

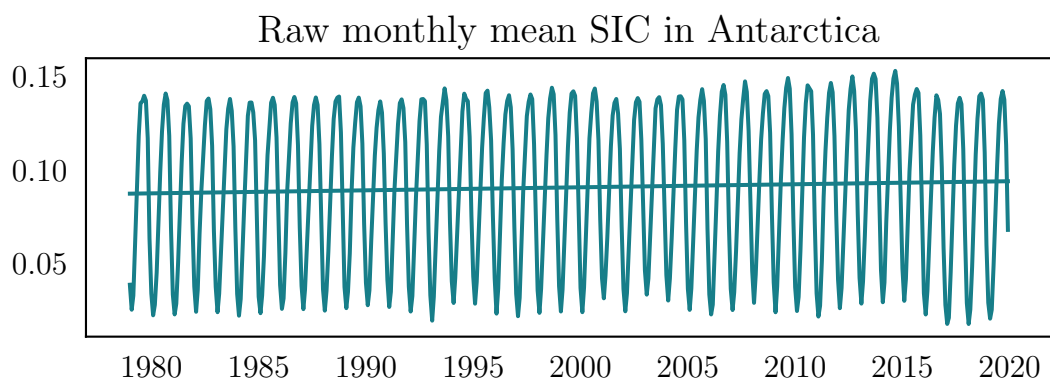


Figure 13: Mean raw monthly raw SIC in Antarctica from the ECMWF ERA5 dataset.

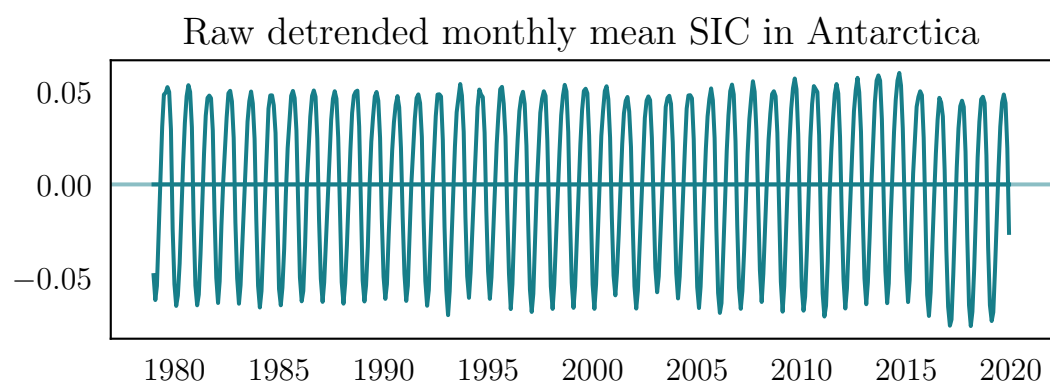


Figure 14: Mean raw monthly detrended SIC in Antarctica from the ECMWF ERA5 dataset.

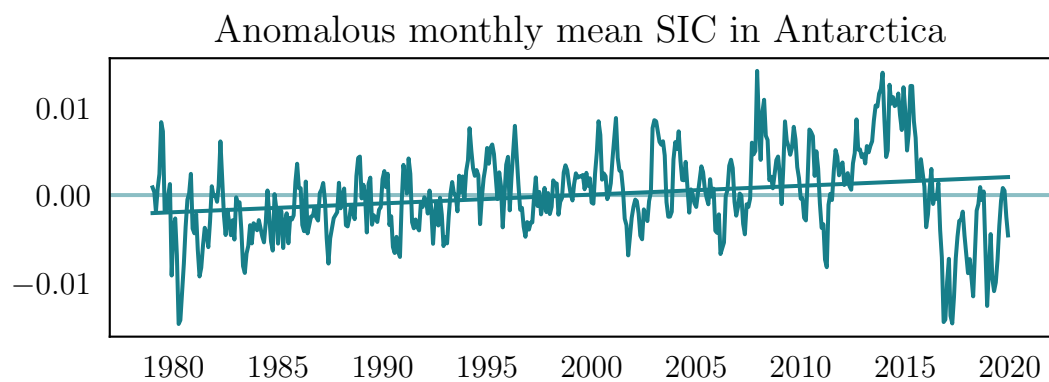


Figure 15: Mean anomalous monthly raw SIC in Antarctica from the ECMWF ERA5 dataset.

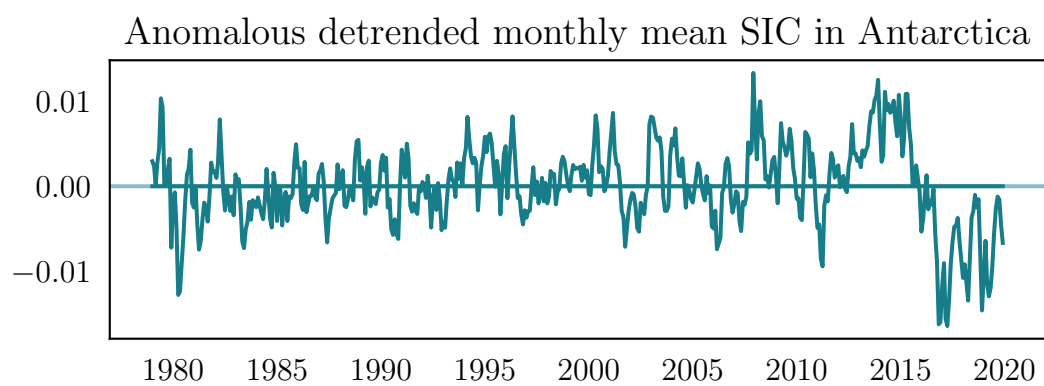


Figure 16: Mean anomalous monthly detrended SIC in Antarctica from the ECMWF ERA5 dataset.

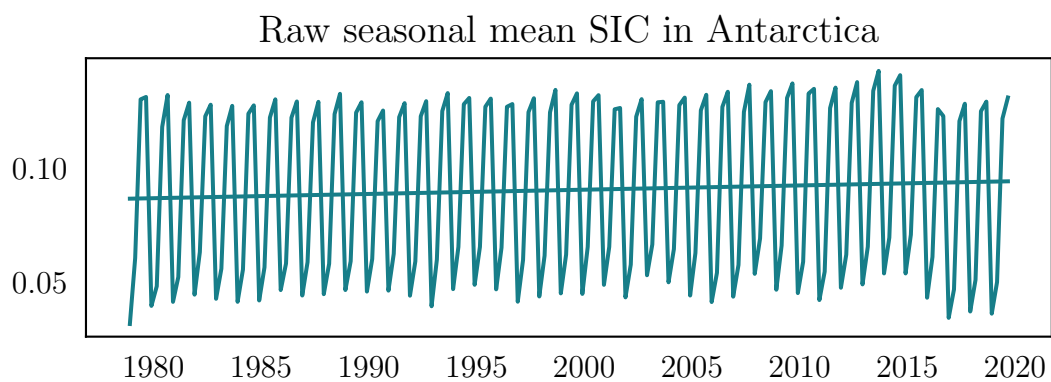


Figure 17: Mean raw seasonal raw SIC in Antarctica from the ECMWF ERA5 dataset.

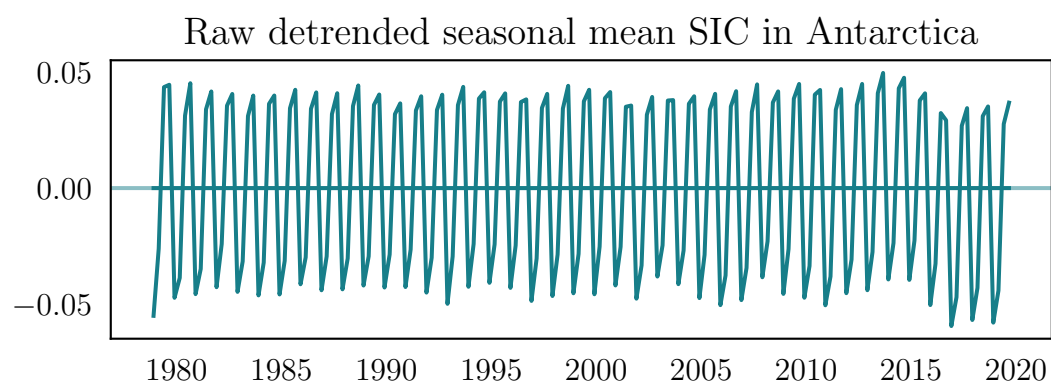


Figure 18: Mean raw seasonal detrended SIC in Antarctica from the ECMWF ERA5 dataset.

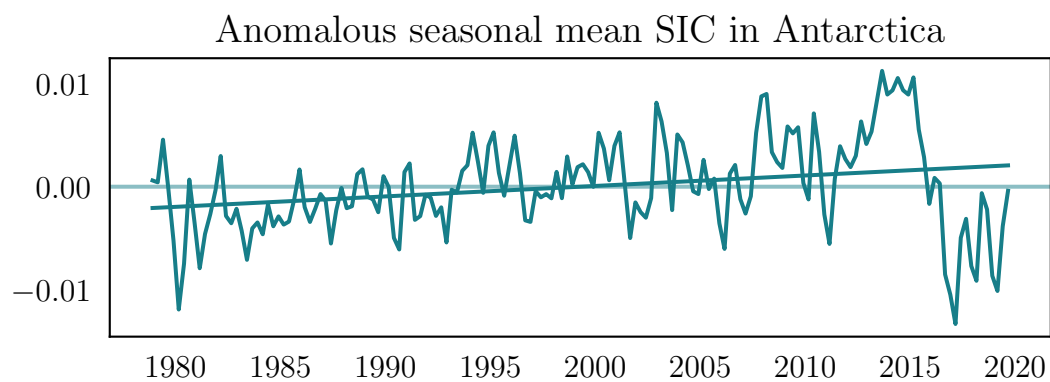


Figure 19: Mean anomalous seasonal raw SIC in Antarctica from the ECMWF ERA5 dataset.

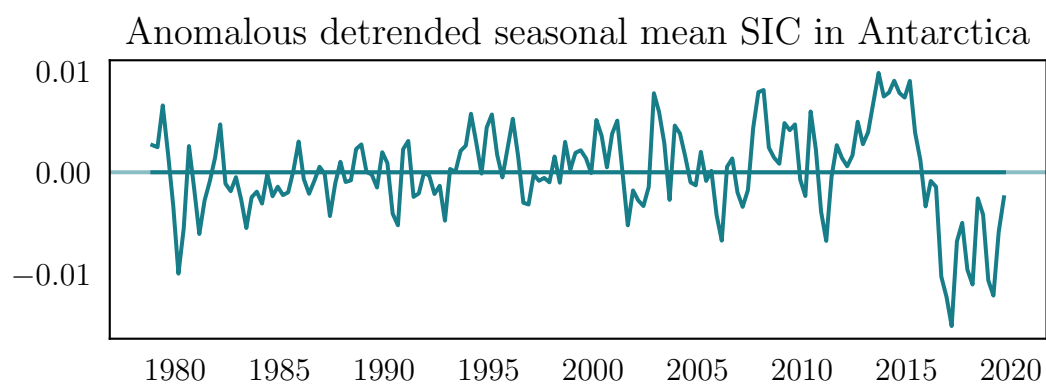


Figure 20: Mean anomalous seasonal detrended SIC in Antarctica from the ECMWF ERA5 dataset.

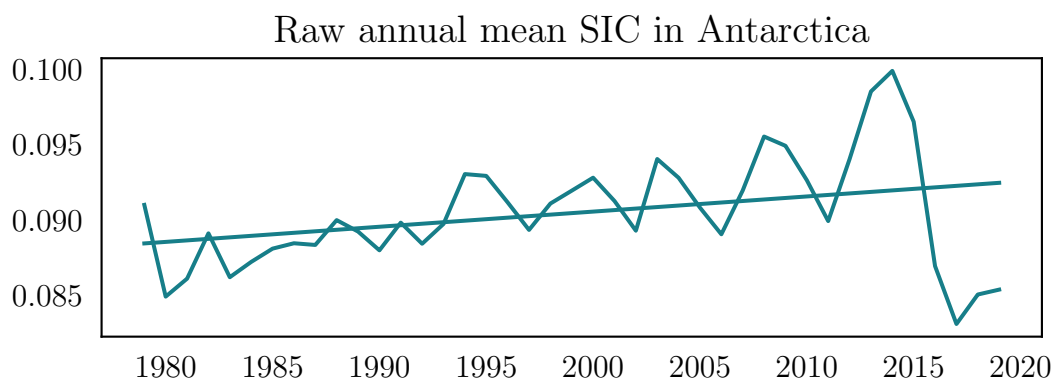


Figure 21: Mean raw annual raw SIC in Antarctica from the ECMWF ERA5 dataset.

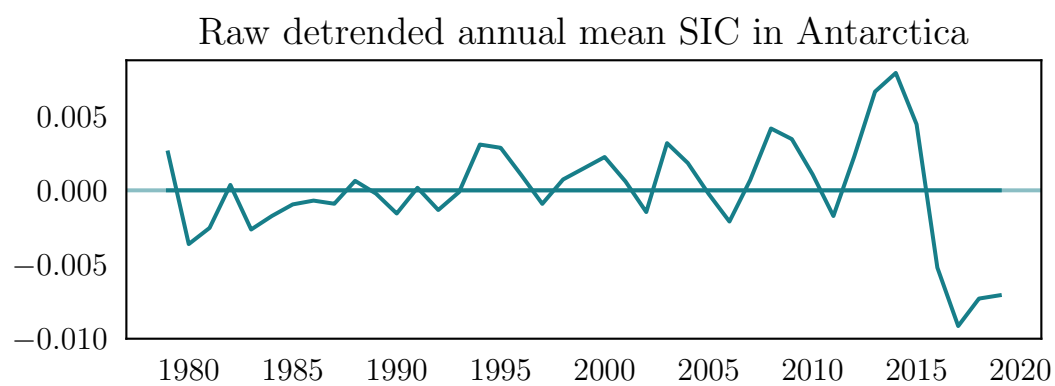


Figure 22: Mean raw annual detrended SIC in Antarctica from the ECMWF ERA5 dataset.



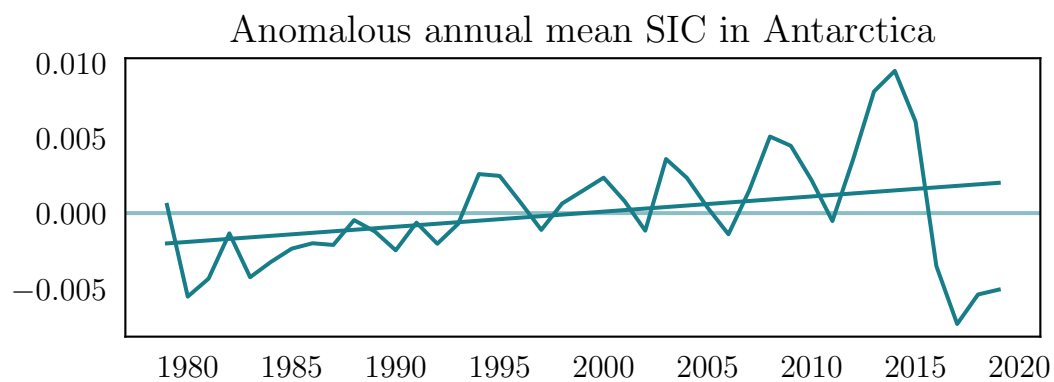


Figure 23: Mean anomalous annual raw SIC in Antarctica from the ECMWF ERA5 dataset.

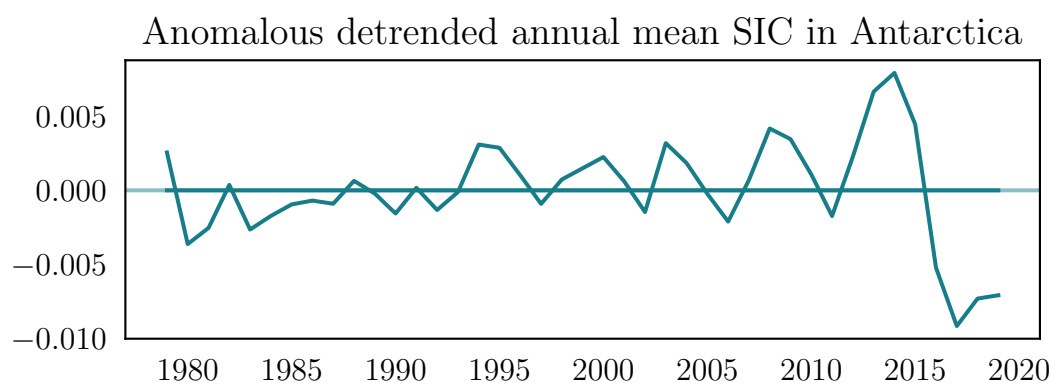


Figure 24: Mean anomalous annual detrended SIC in Antarctica from the ECMWF ERA5 dataset.

## 2.3 Comparison of datasets

We can plot these time series together to look at how similar they are.

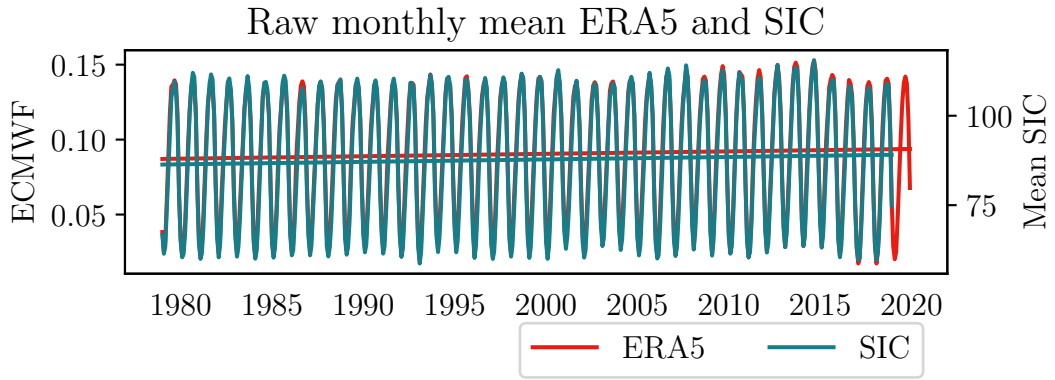


Figure 25: Comparison of mean raw monthly raw SIC in Antarctica datasets.

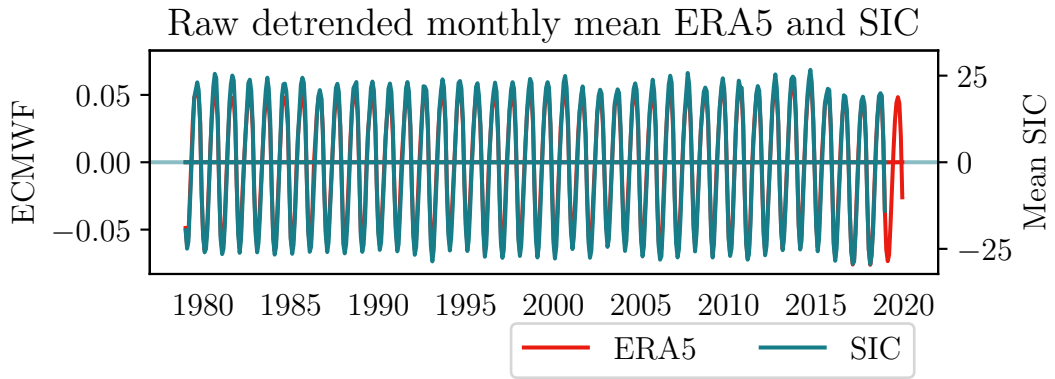


Figure 26: Comparison of mean raw monthly detrended SIC in Antarctica datasets.

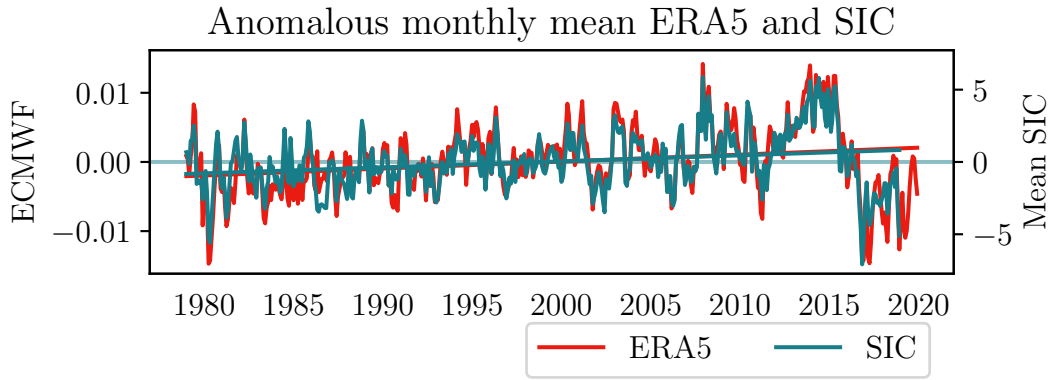


Figure 27: Comparison of mean anomalous monthly raw SIC in Antarctica datasets.

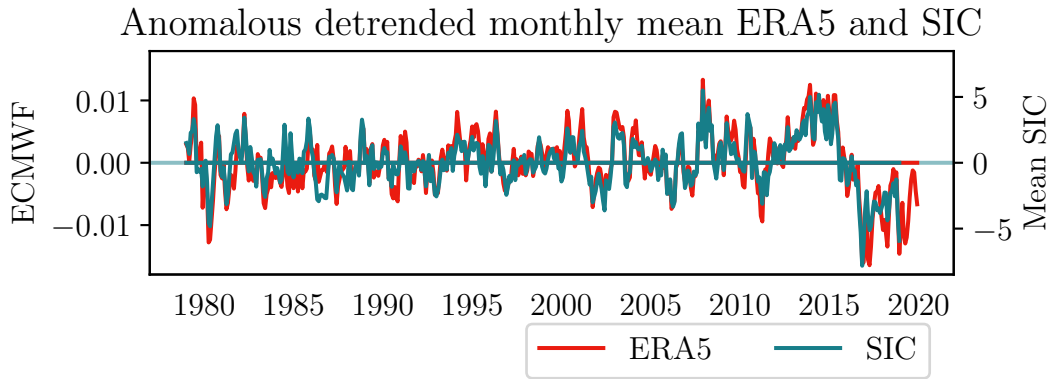


Figure 28: Comparison of mean anomalous monthly detrended SIC in Antarctica datasets.

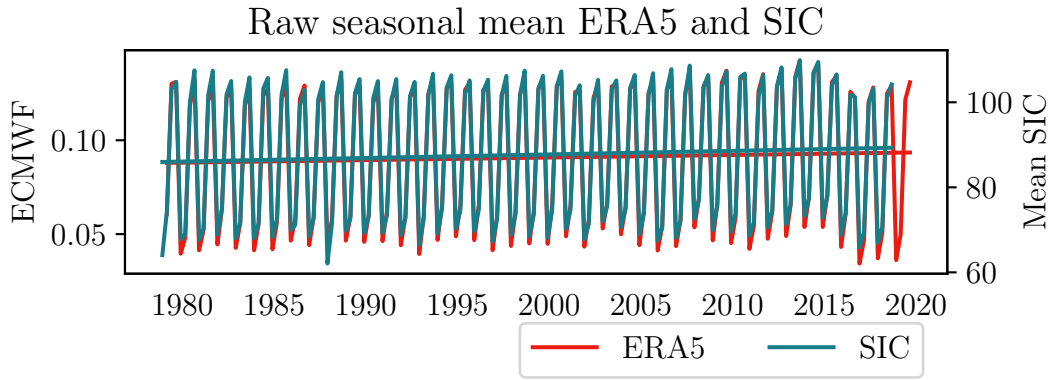


Figure 29: Comparison of mean raw seasonal raw SIC in Antarctica datasets.

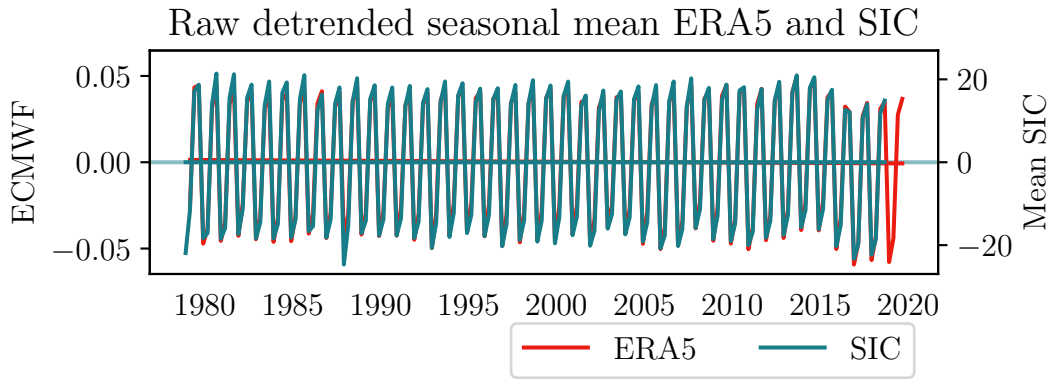


Figure 30: Comparison of mean raw seasonal detrended SIC in Antarctica datasets.

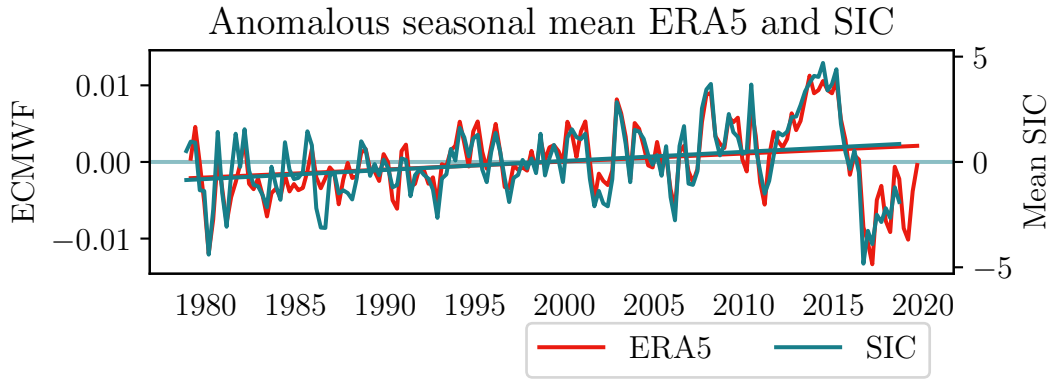


Figure 31: Comparison of mean anomalous seasonal raw SIC in Antarctica datasets.

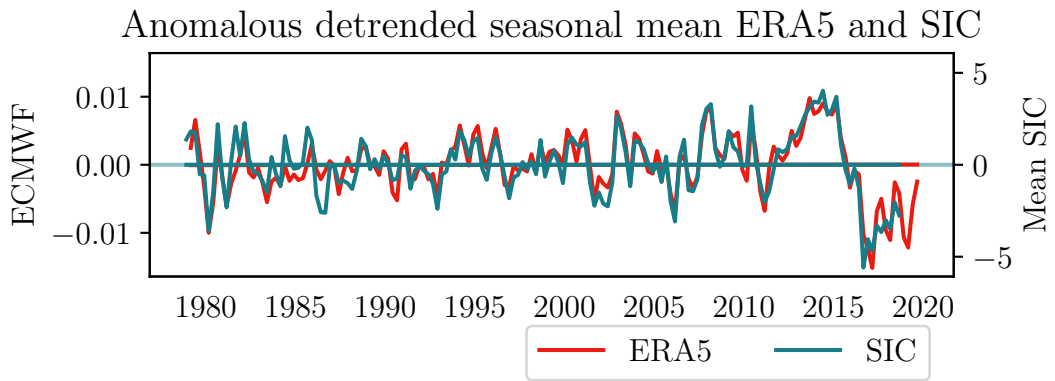


Figure 32: Comparison of mean anomalous seasonal detrended SIC in Antarctica datasets.

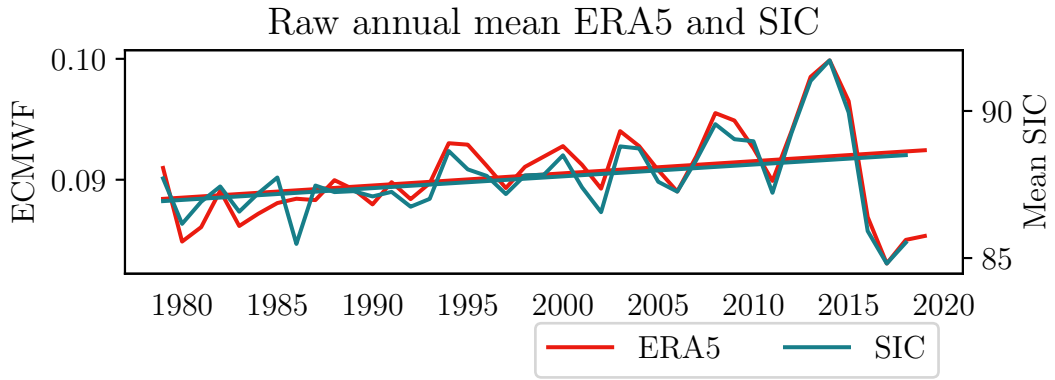


Figure 33: Comparison of mean raw annual raw SIC in Antarctica datasets.

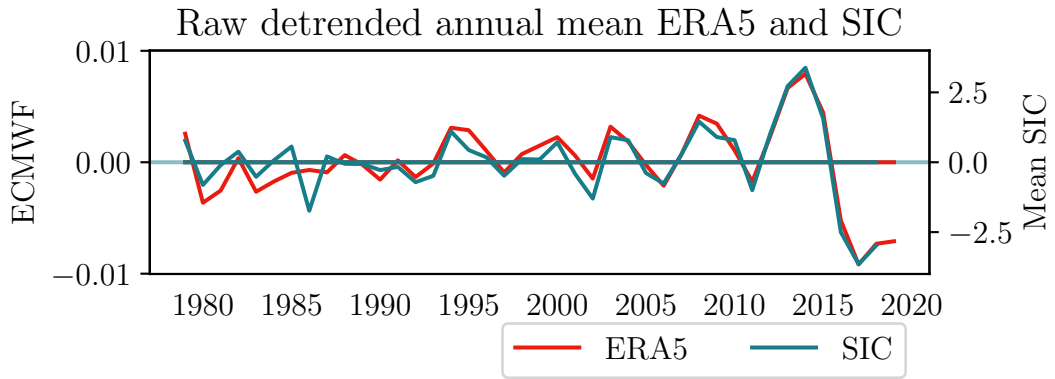


Figure 34: Comparison of mean raw annual detrended SIC in Antarctica datasets.

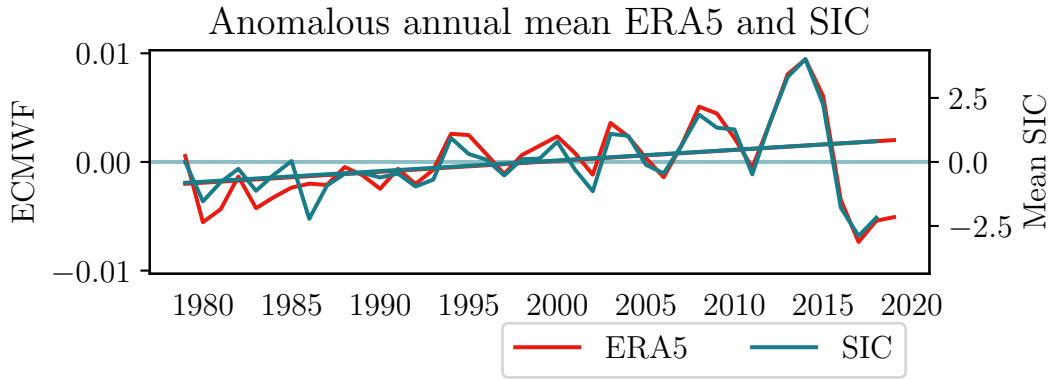


Figure 35: Comparison of mean anomalous annual raw SIC in Antarctica datasets.

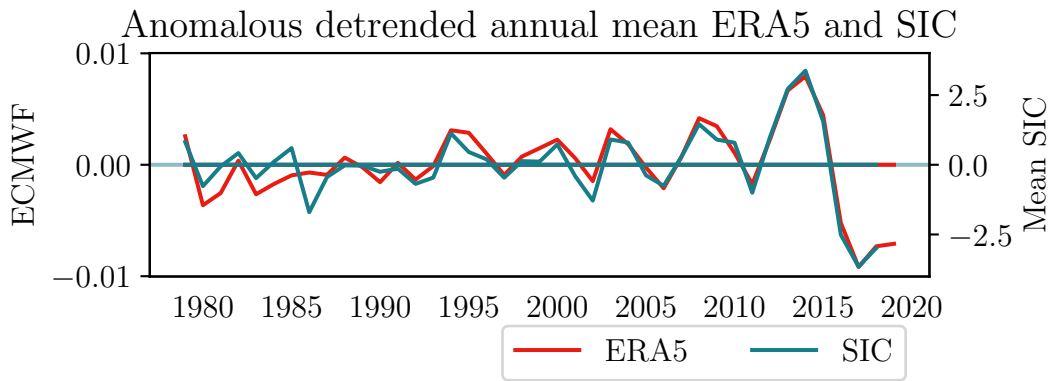


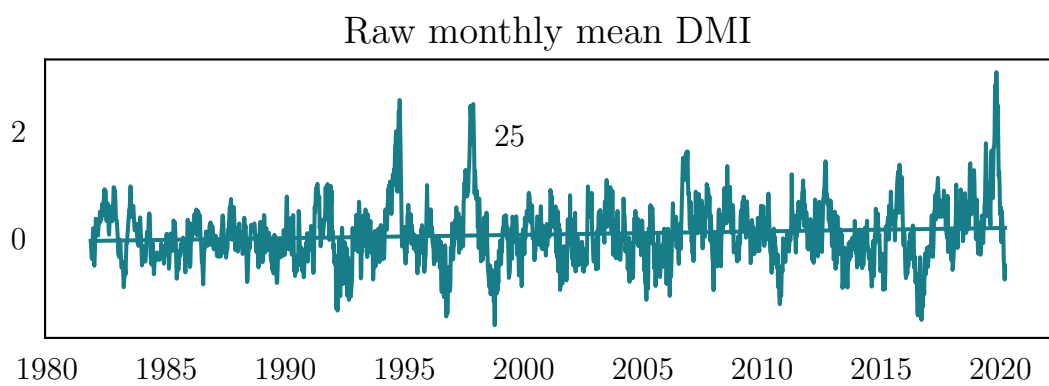
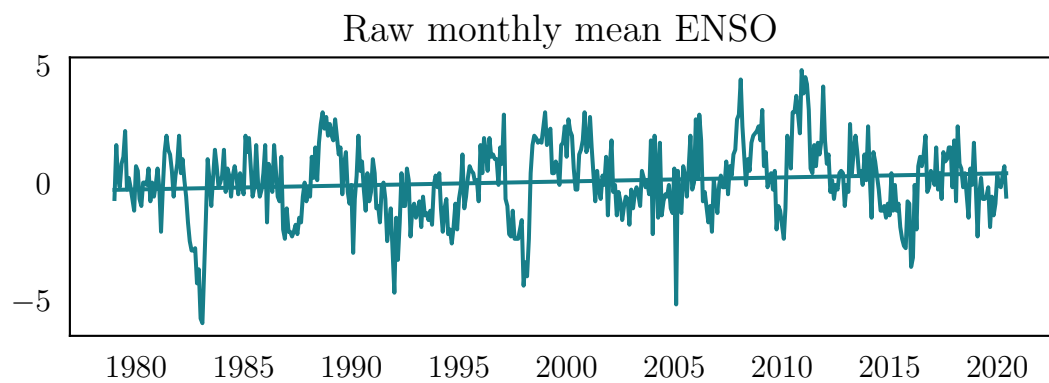
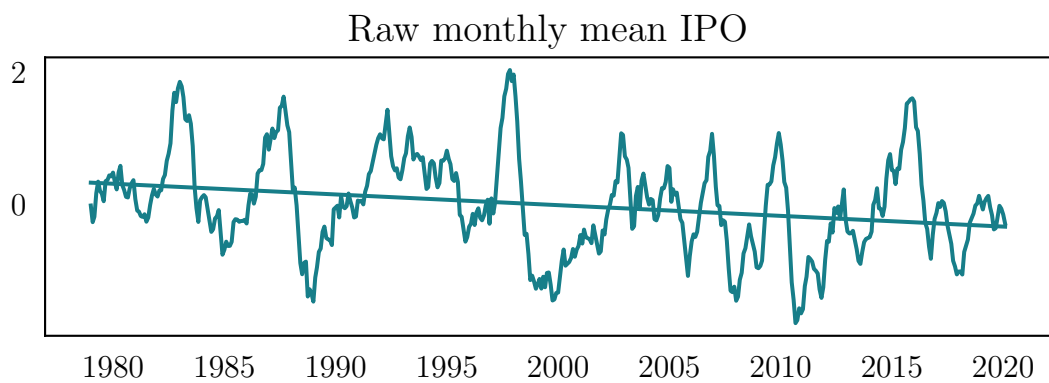
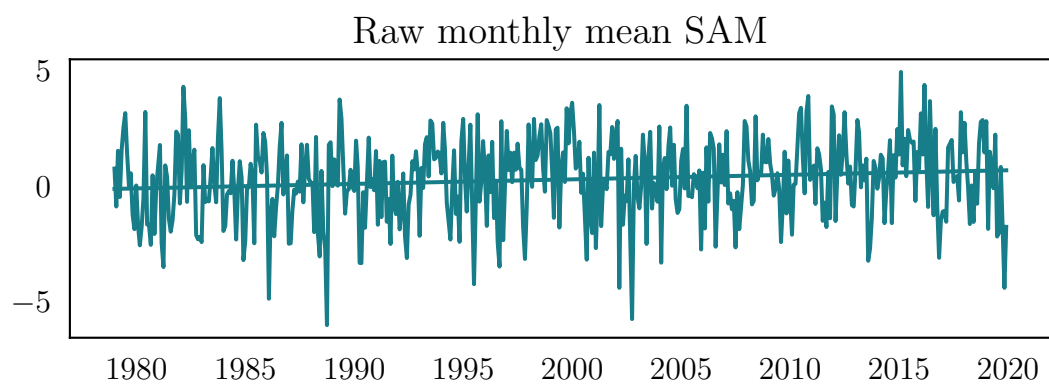
Figure 36: Comparison of mean anomalous annual detrended SIC in Antarctica datasets.





### 3 Indices and SIC

#### 3.1 Index time series



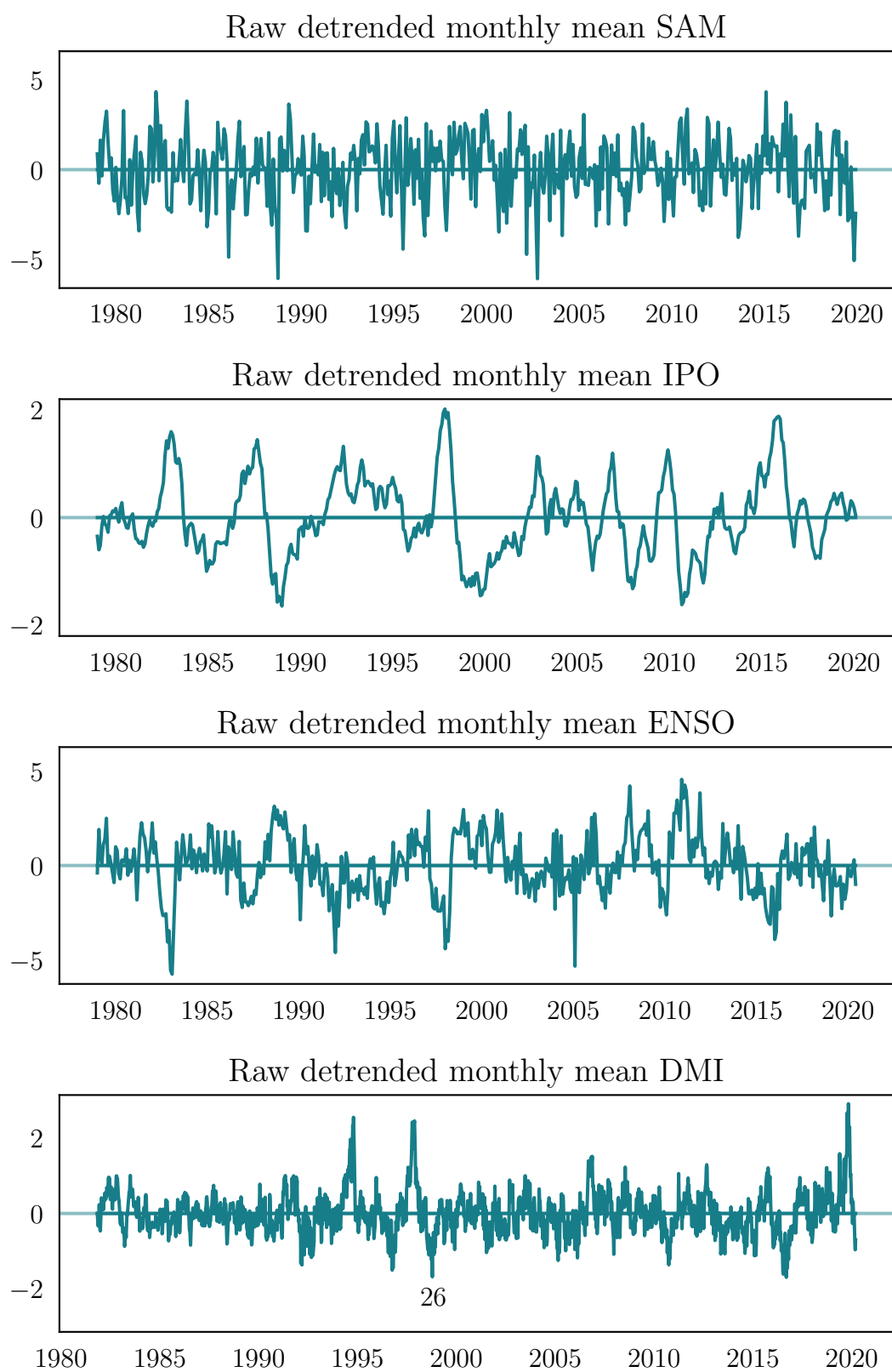


Figure 38: raw monthly detrended index values

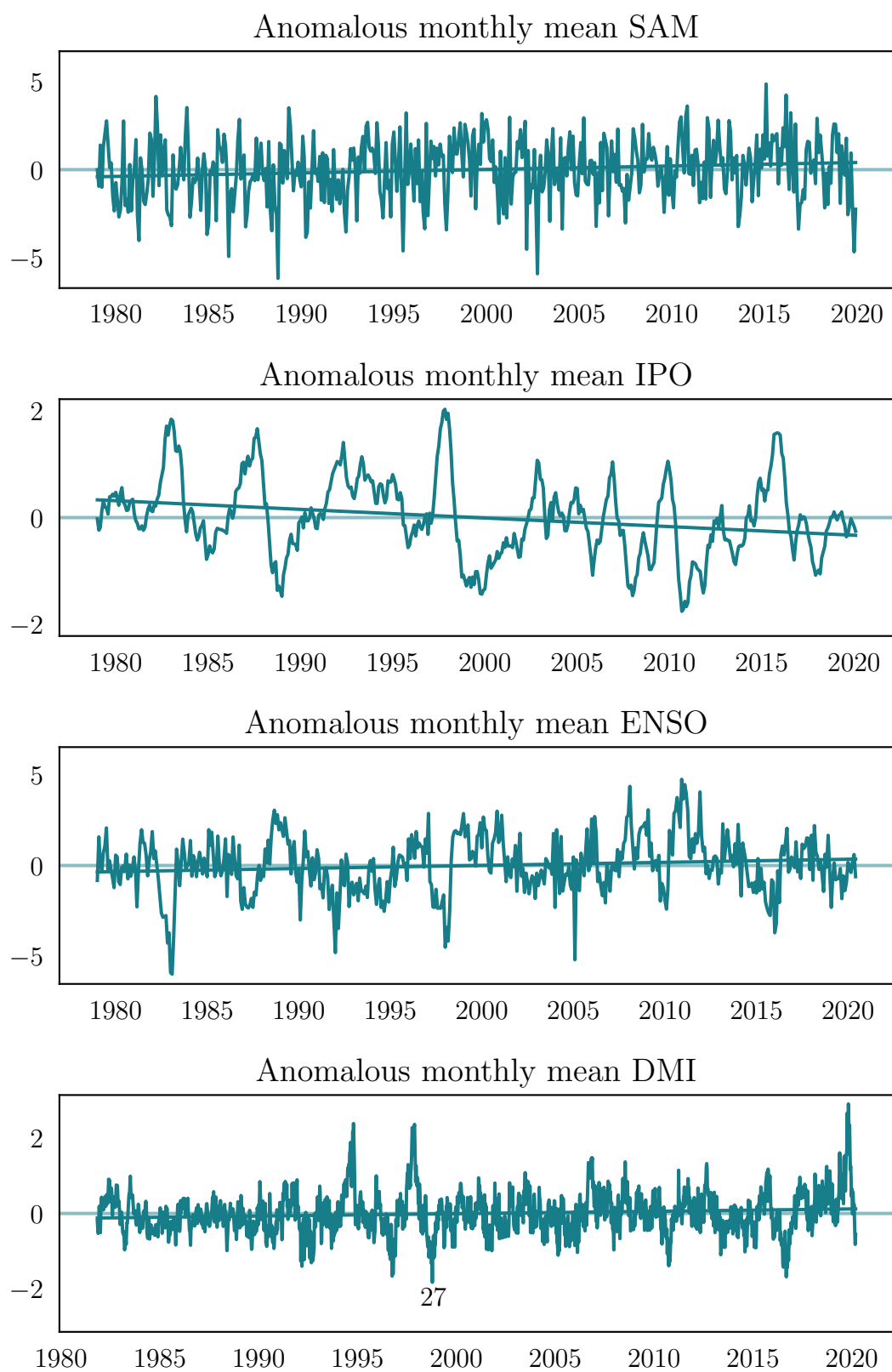


Figure 39: anomalous monthly raw index values

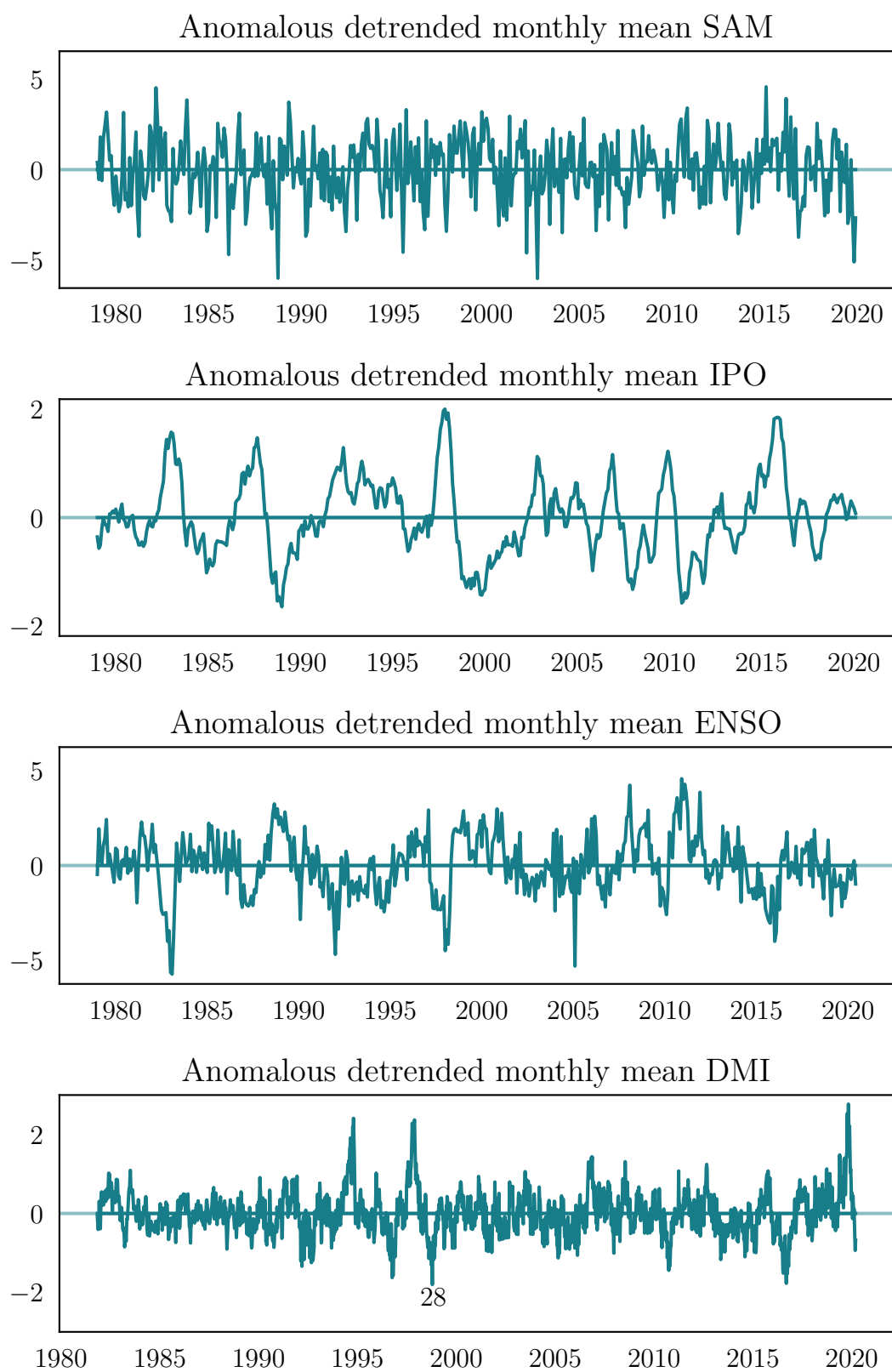


Figure 40: anomalous monthly detrended index values

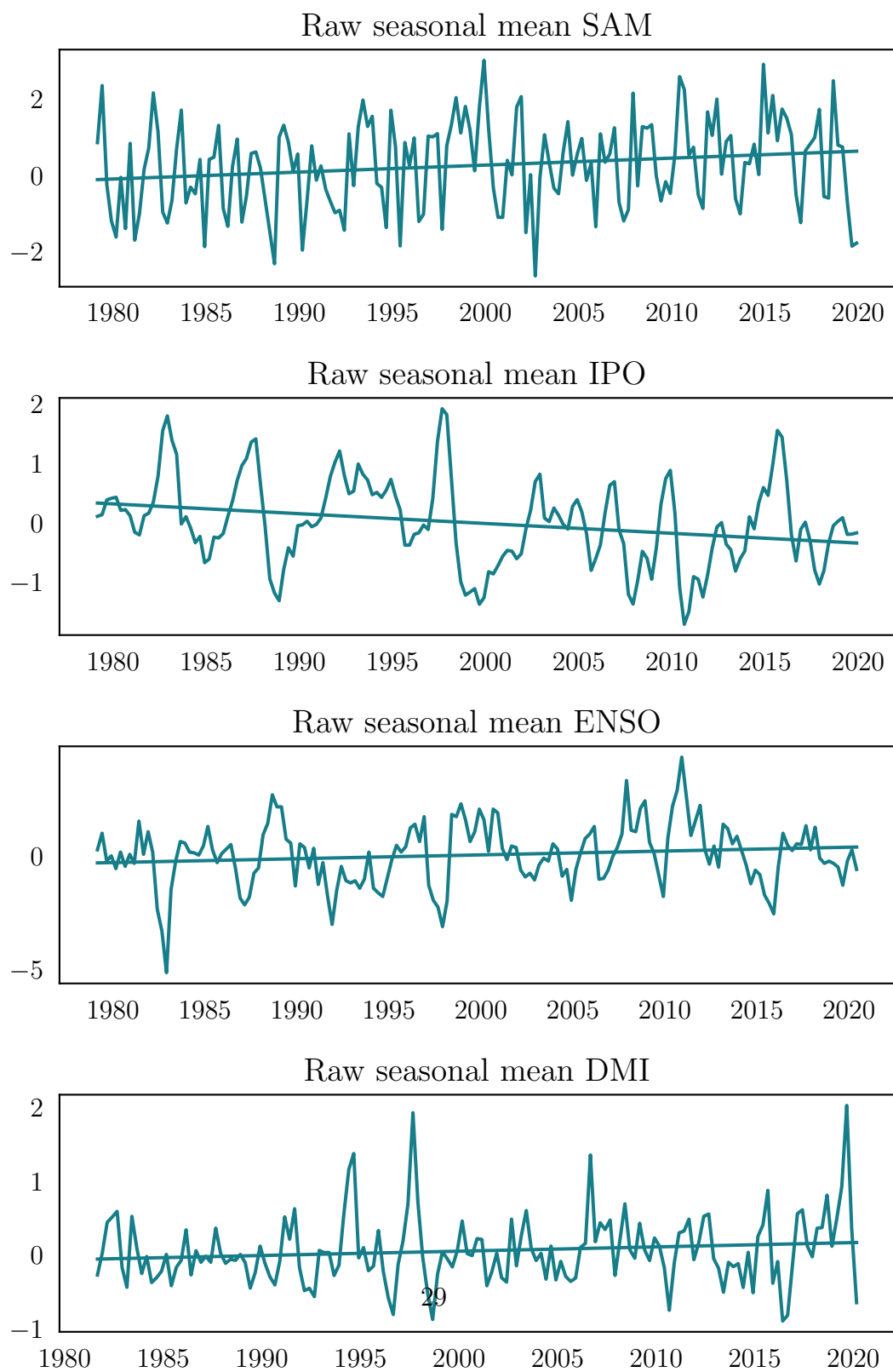


Figure 41: raw seasonal raw index values

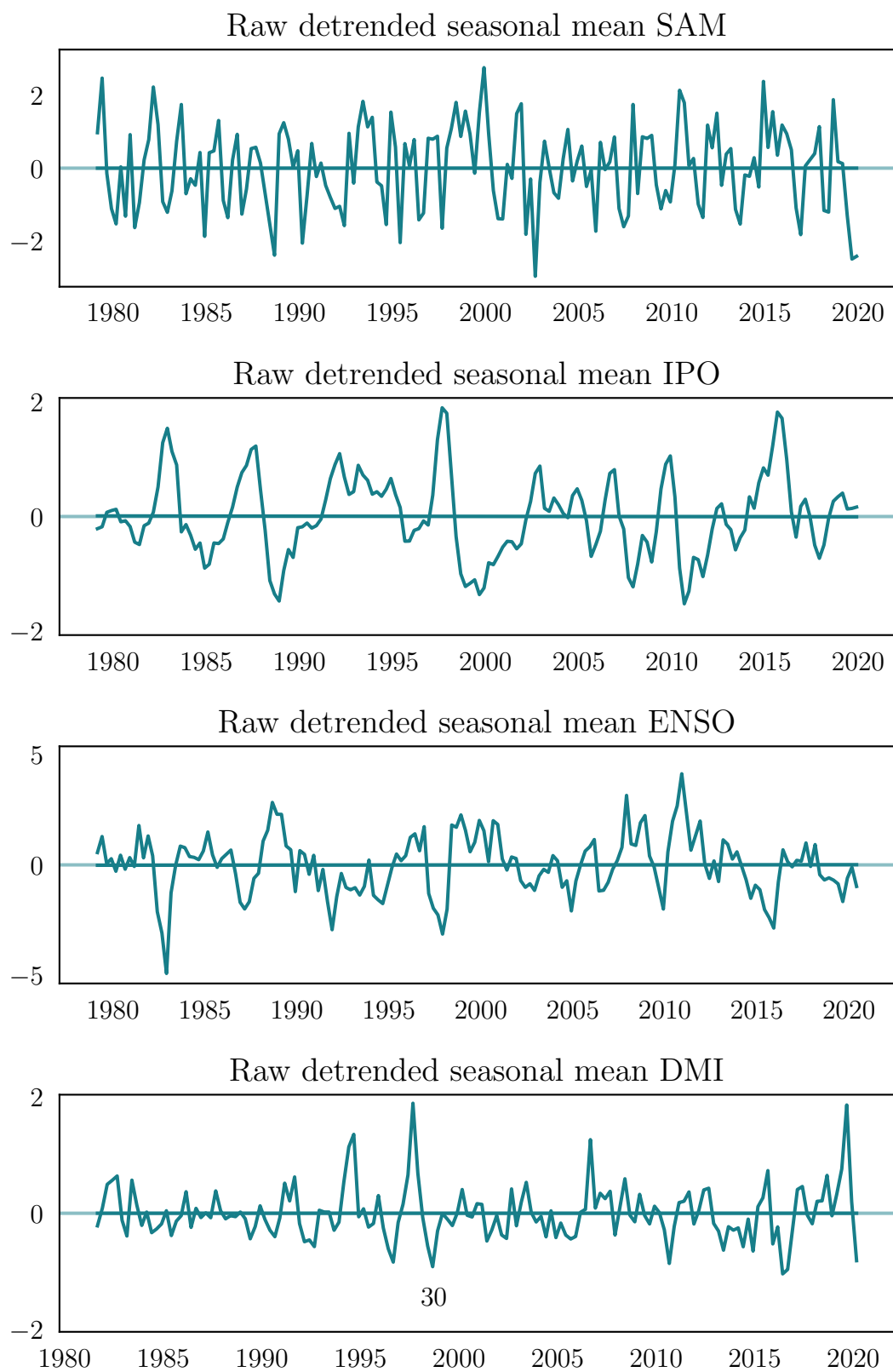


Figure 42: raw seasonal detrended index values

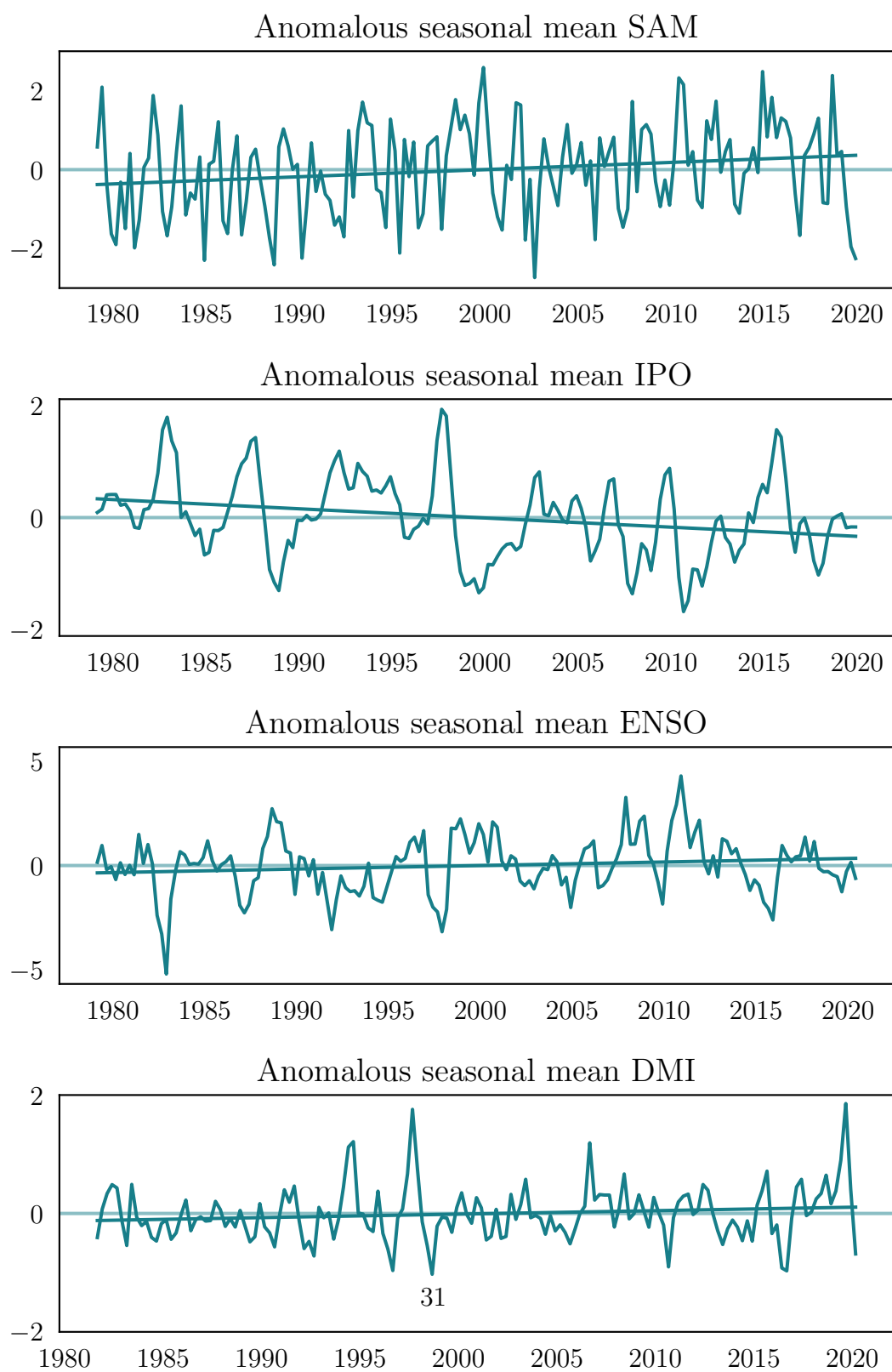


Figure 43: anomalous seasonal raw index values

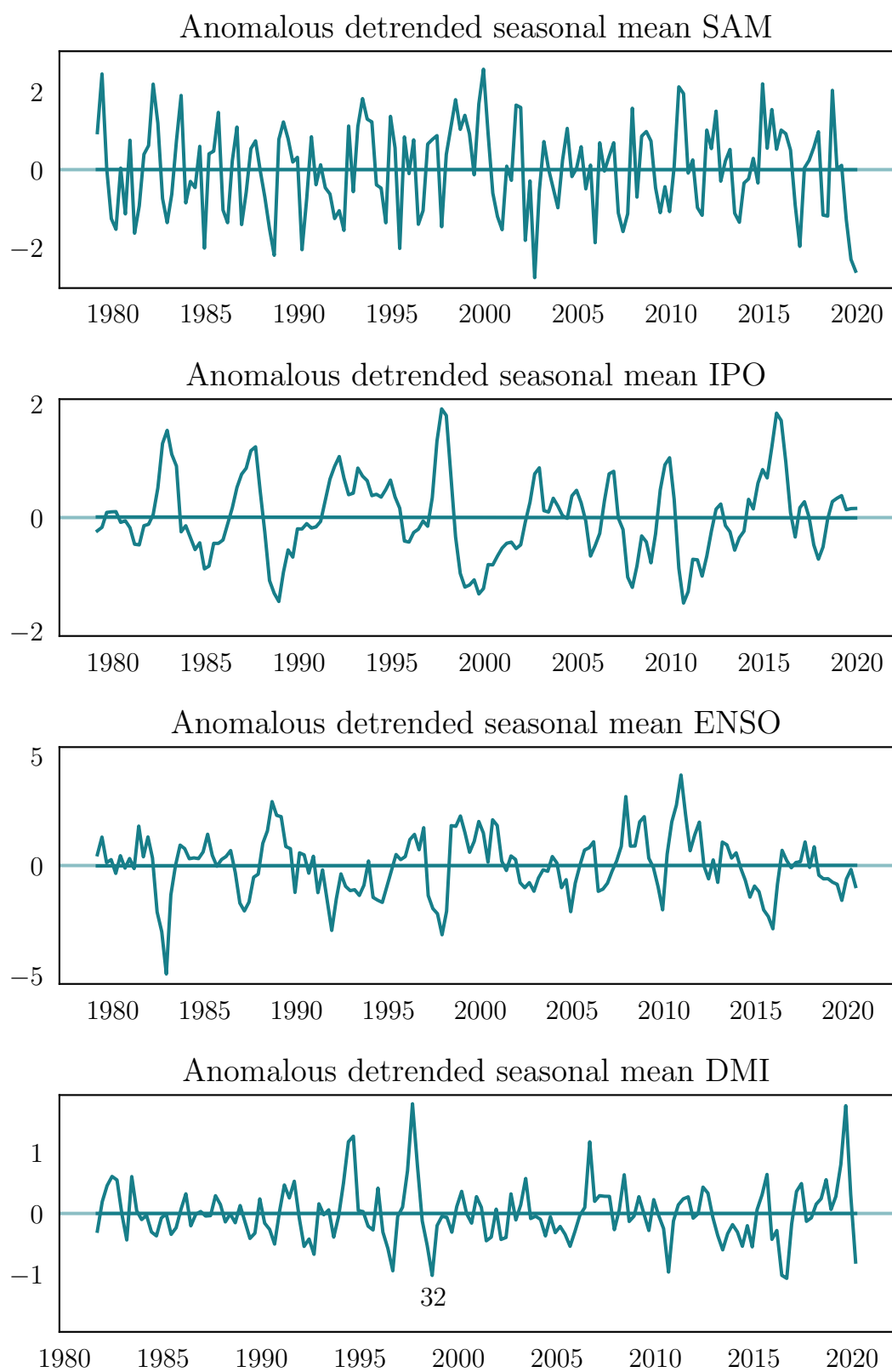


Figure 44: anomalous seasonal detrended index values



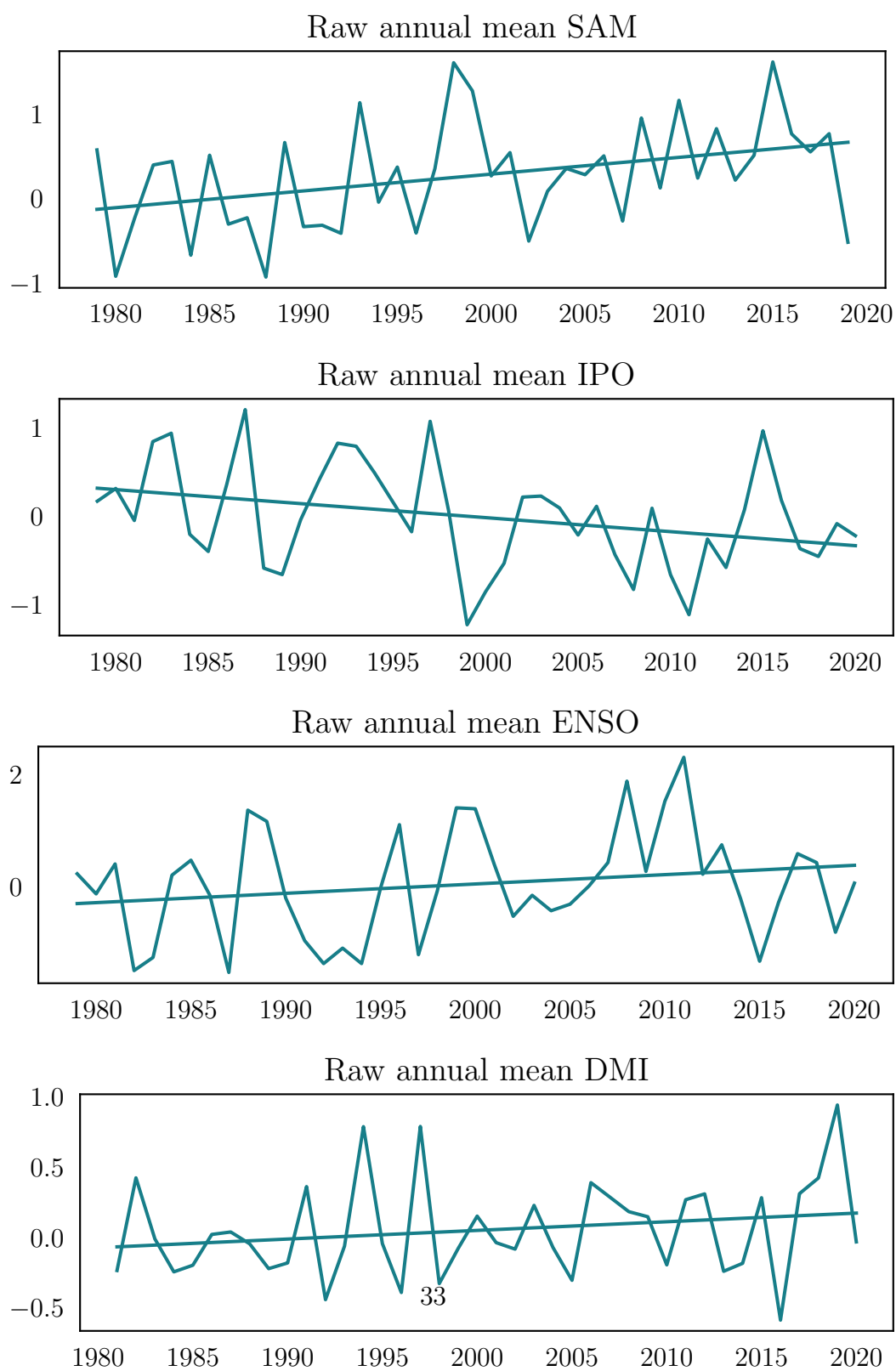


Figure 45: raw annual raw index values

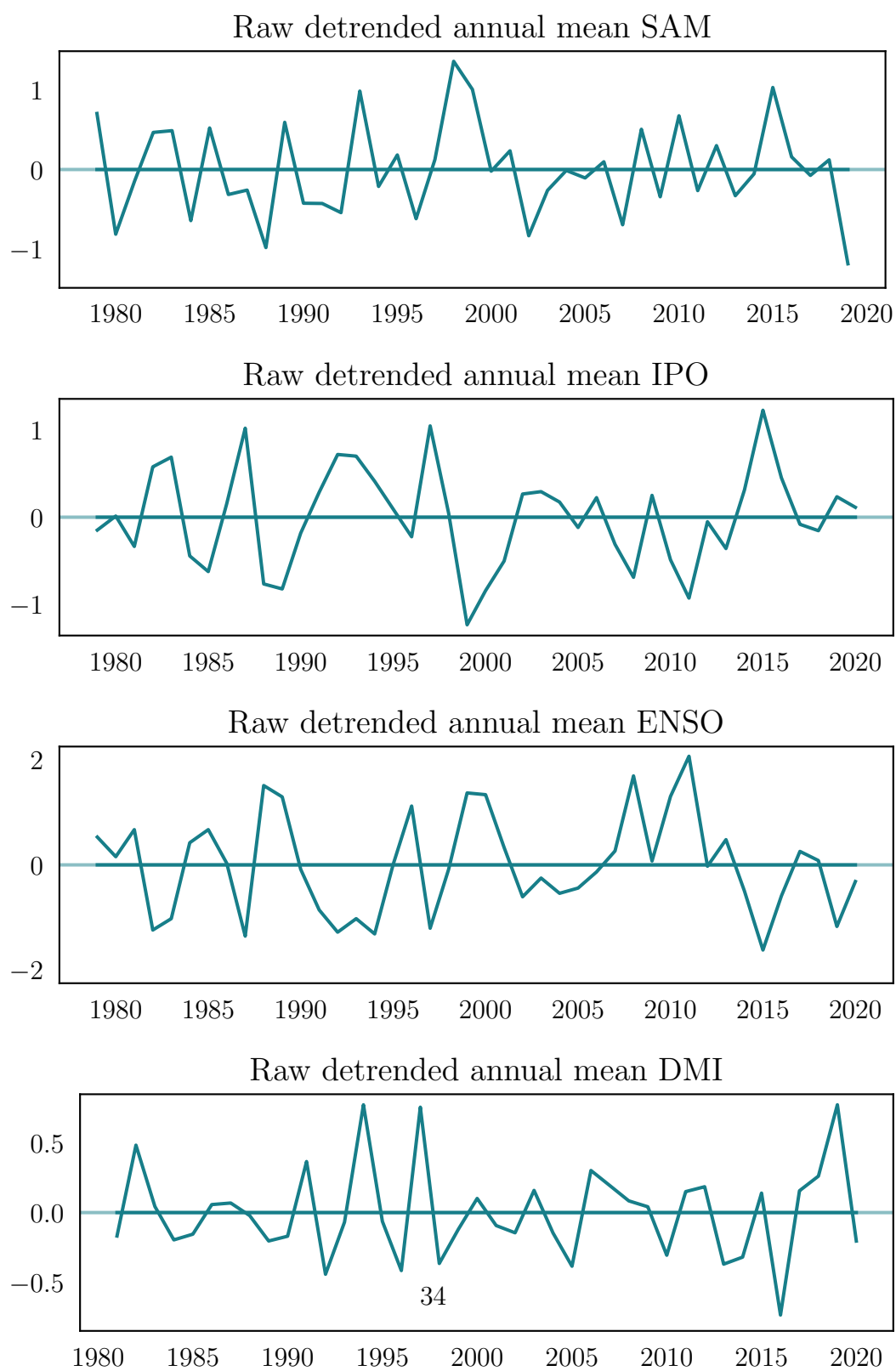


Figure 46: raw annual detrended index values

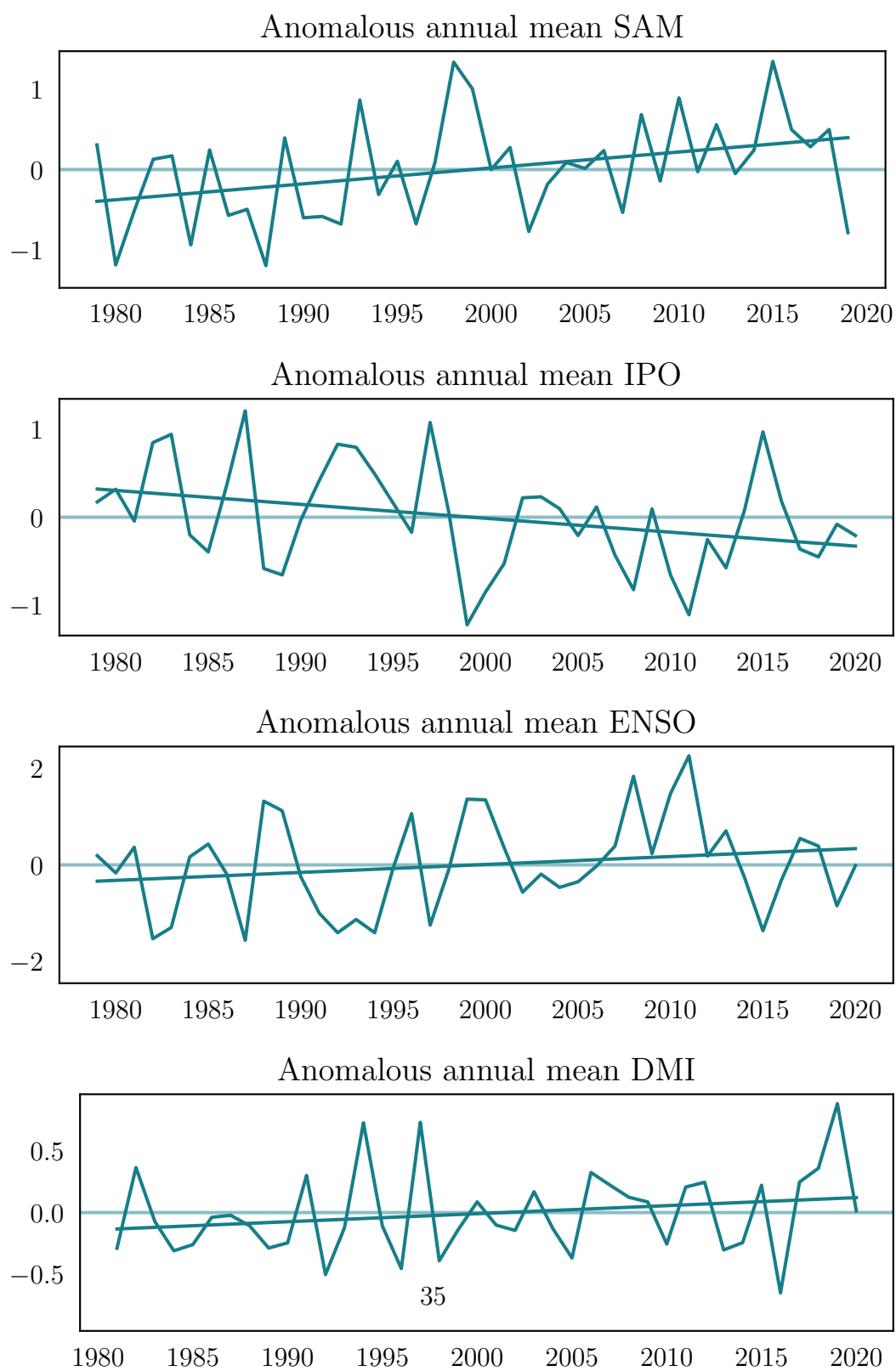


Figure 47: anomalous annual raw index values

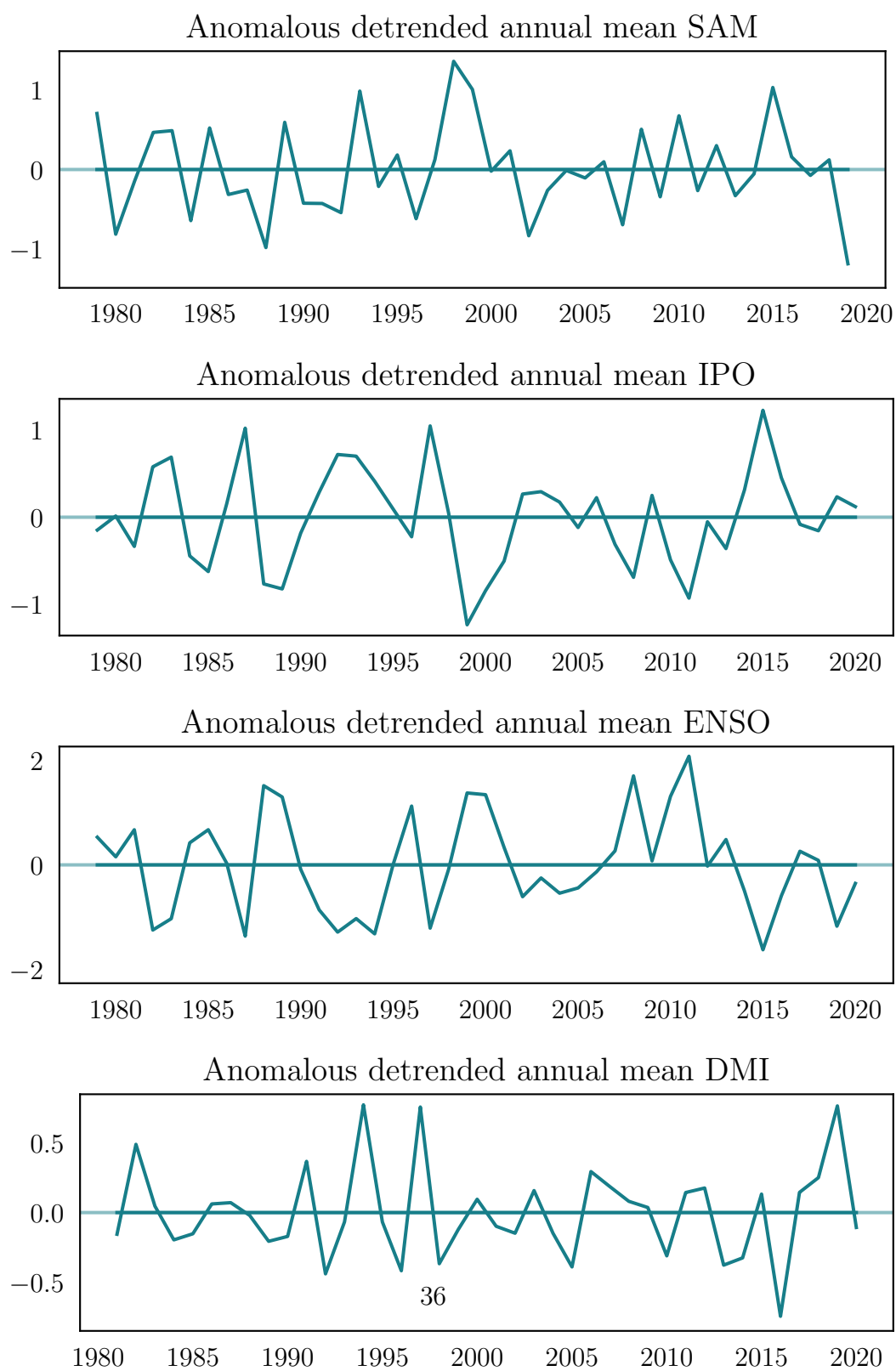


Figure 48: anomalous annual detrended index values

### 3.2 Comparing with SIC

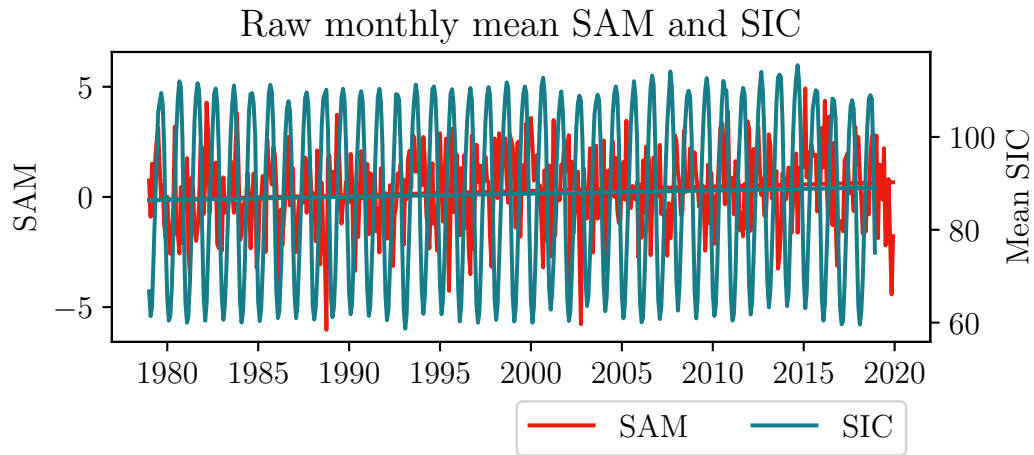


Figure 49: raw monthly raw SAM compared with SIC

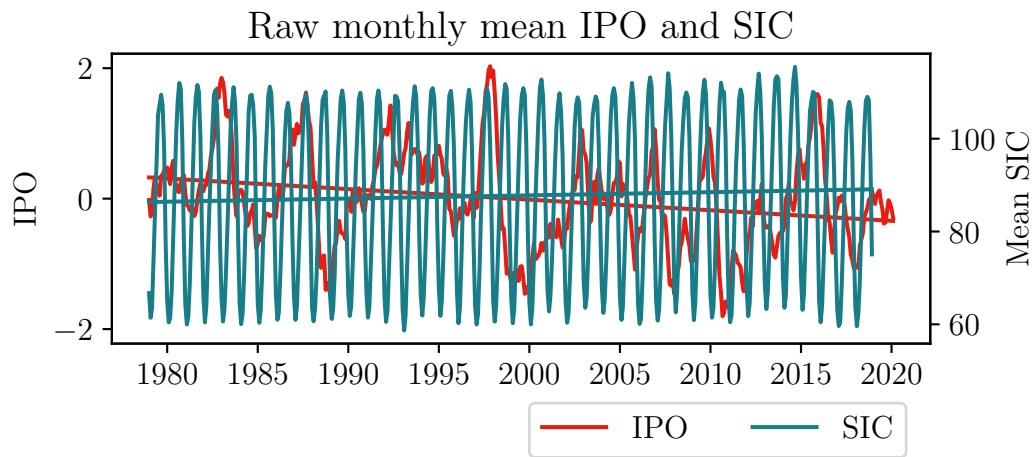


Figure 50: raw monthly raw IPO compared with SIC

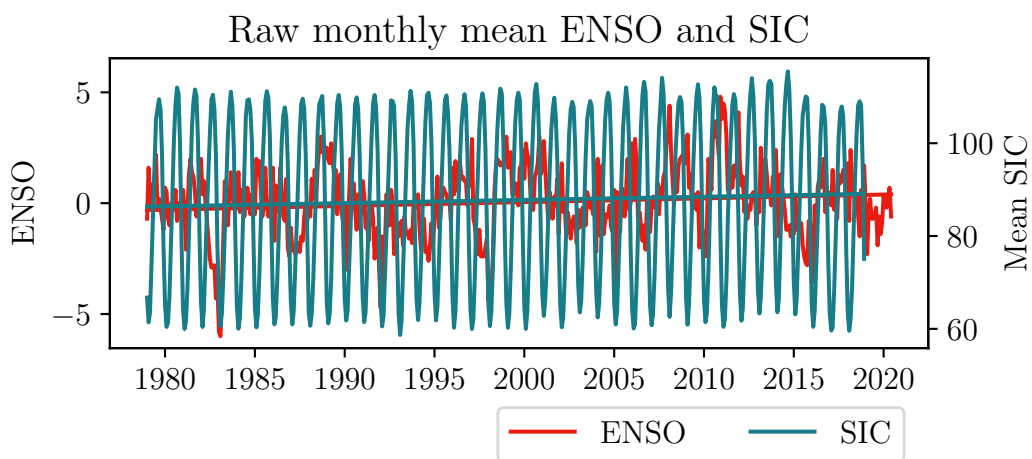


Figure 51: raw monthly raw ENSO compared with SIC

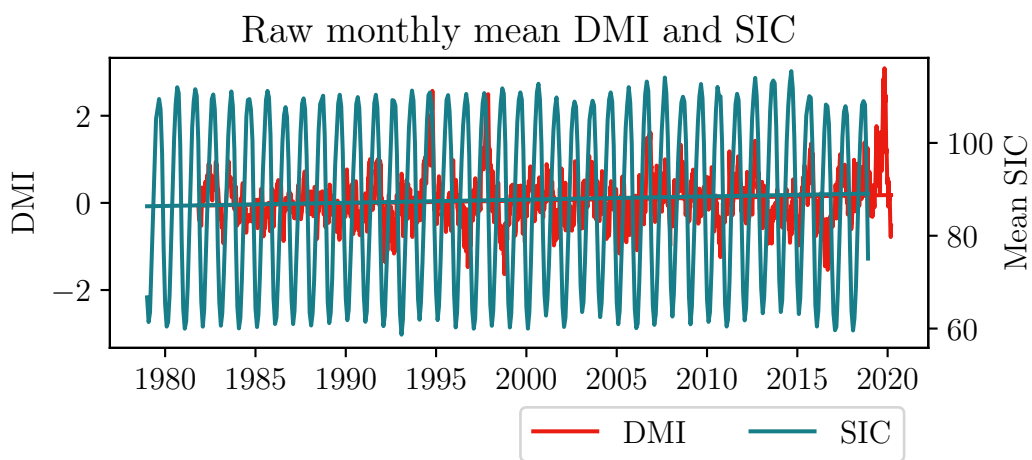


Figure 52: raw monthly raw DMI compared with SIC

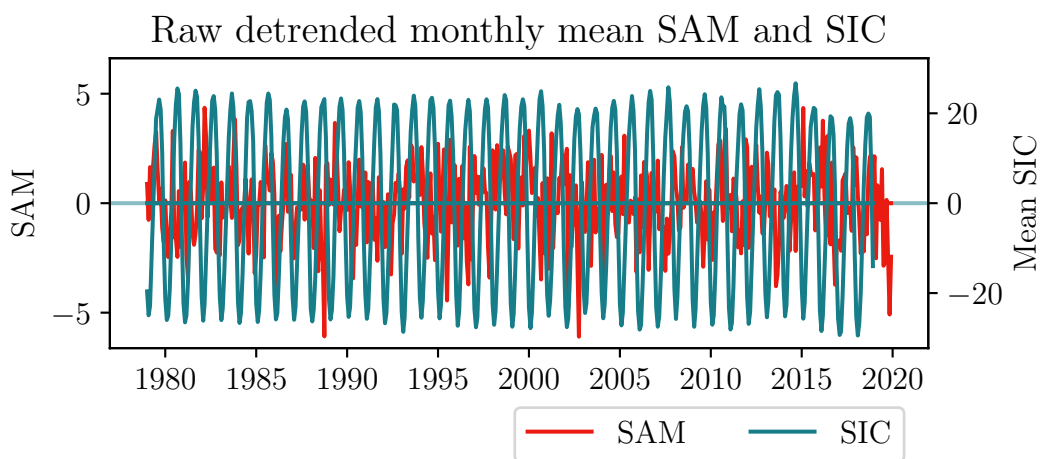


Figure 53: raw monthly detrended SAM compared with SIC

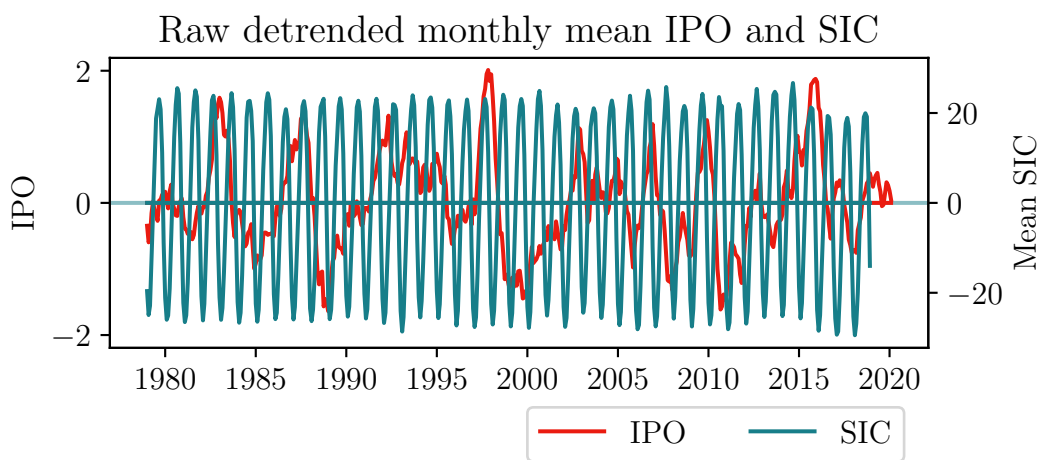


Figure 54: raw monthly detrended IPO compared with SIC

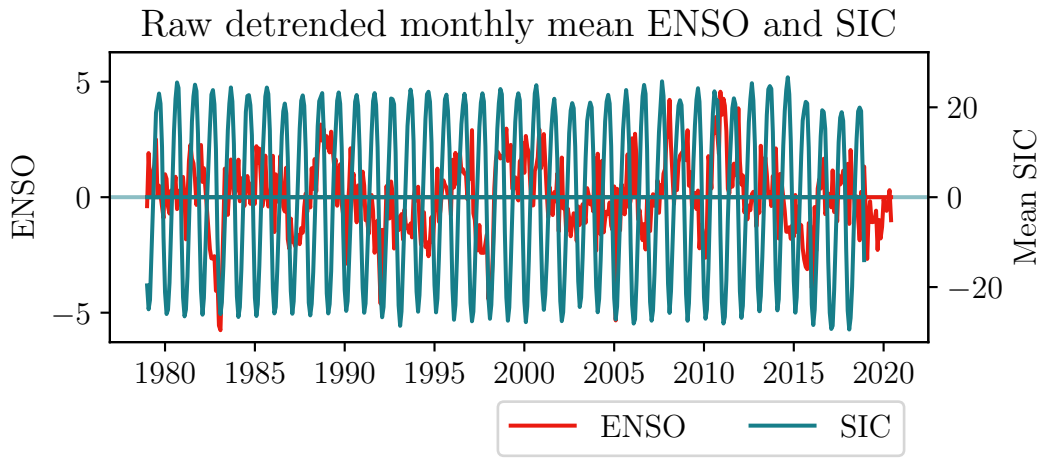


Figure 55: raw monthly detrended ENSO compared with SIC

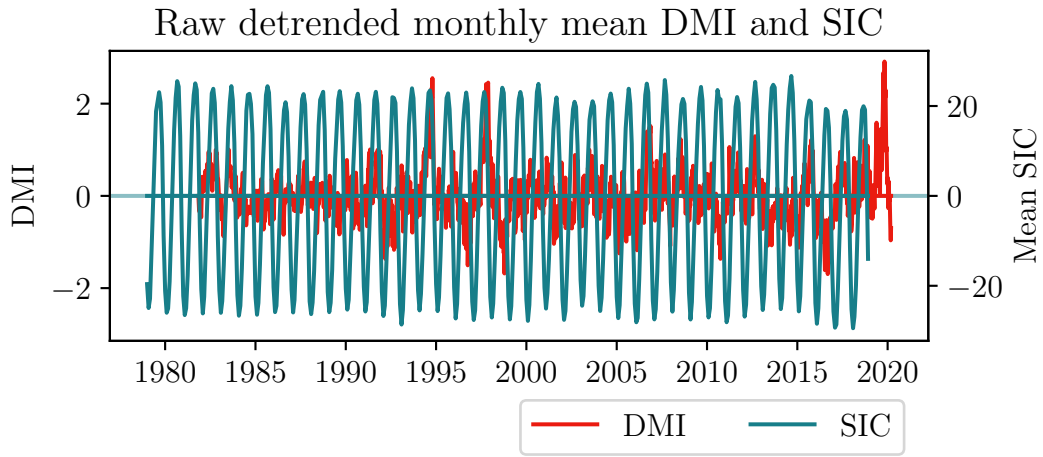


Figure 56: raw monthly detrended DMI compared with SIC



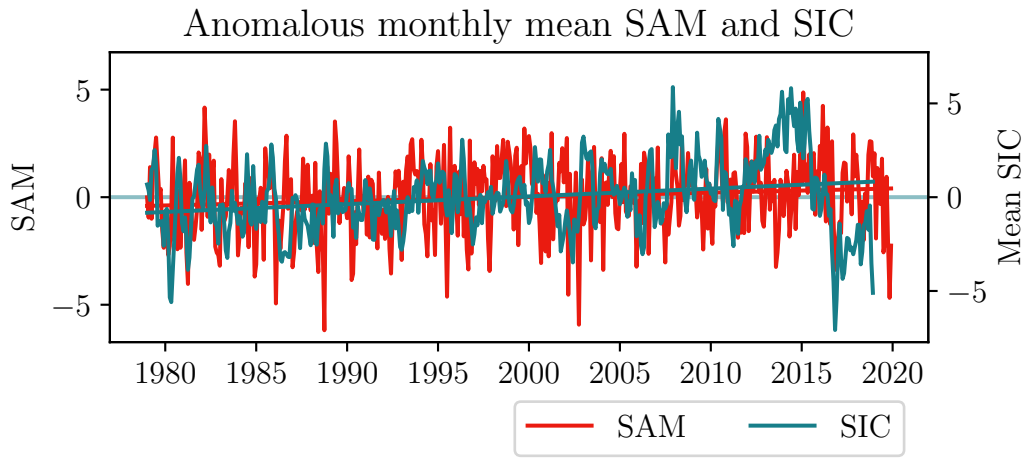


Figure 57: anomalous monthly raw SAM compared with SIC

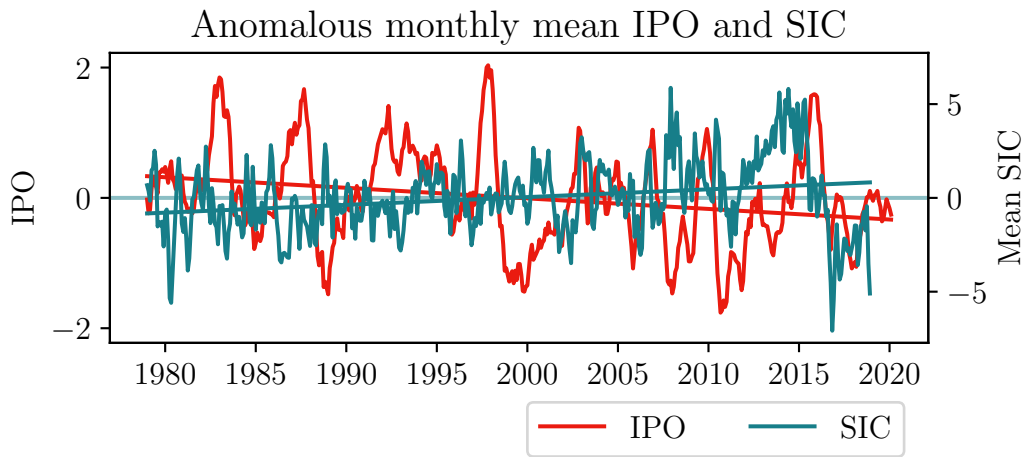


Figure 58: anomalous monthly raw IPO compared with SIC

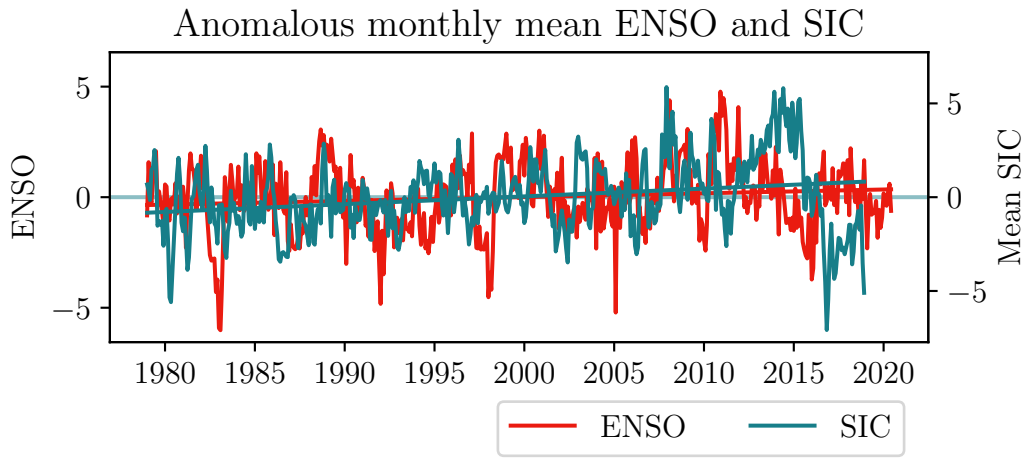


Figure 59: anomalous monthly raw ENSO compared with SIC

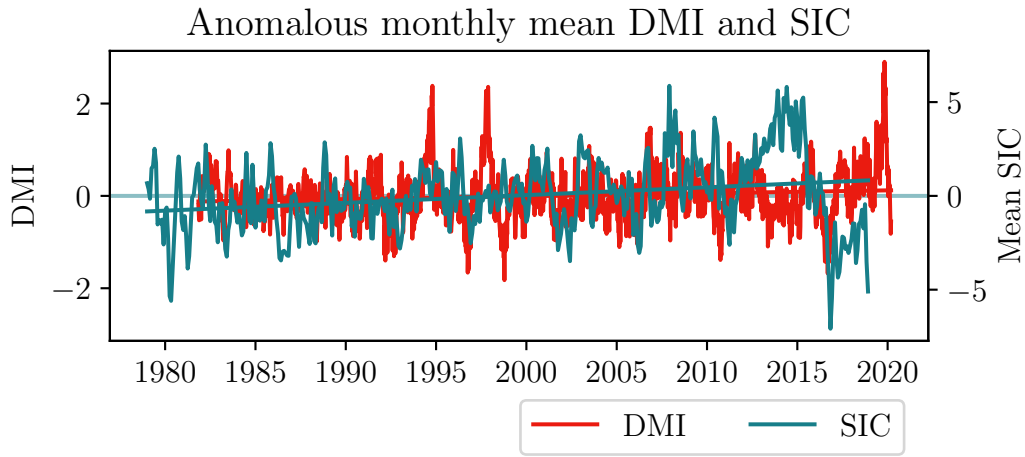


Figure 60: anomalous monthly raw DMI compared with SIC

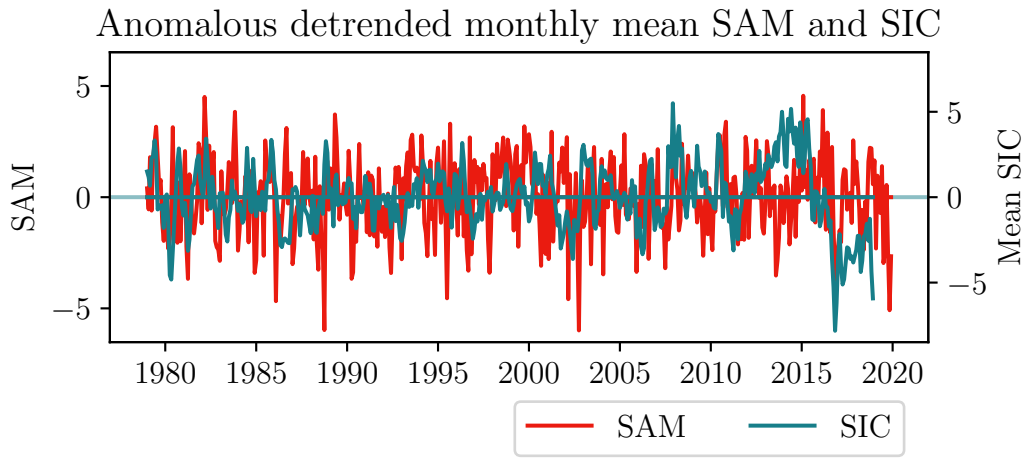


Figure 61: anomalous monthly detrended SAM compared with SIC

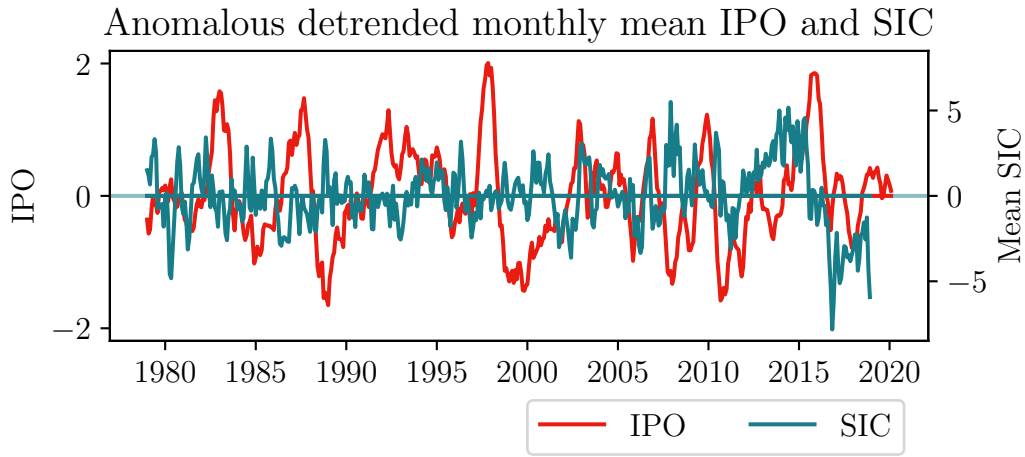


Figure 62: anomalous monthly detrended IPO compared with SIC

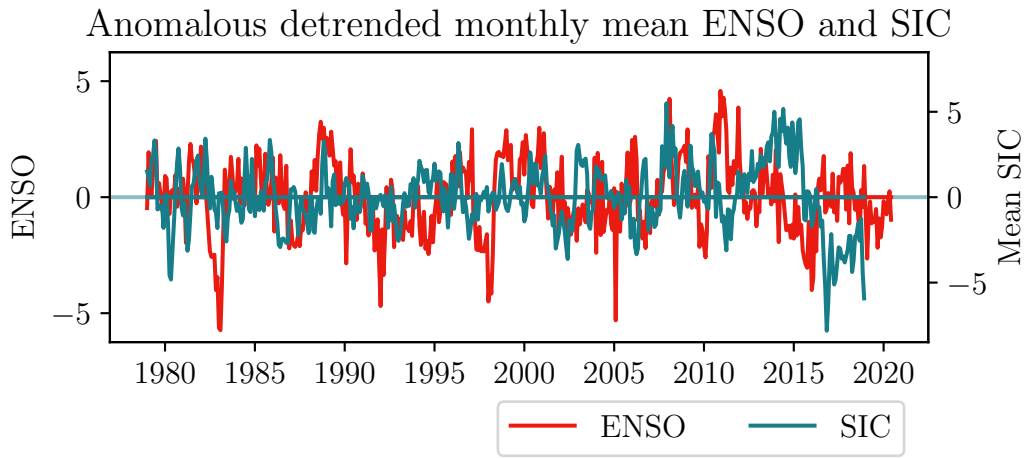


Figure 63: anomalous monthly detrended ENSO compared with SIC

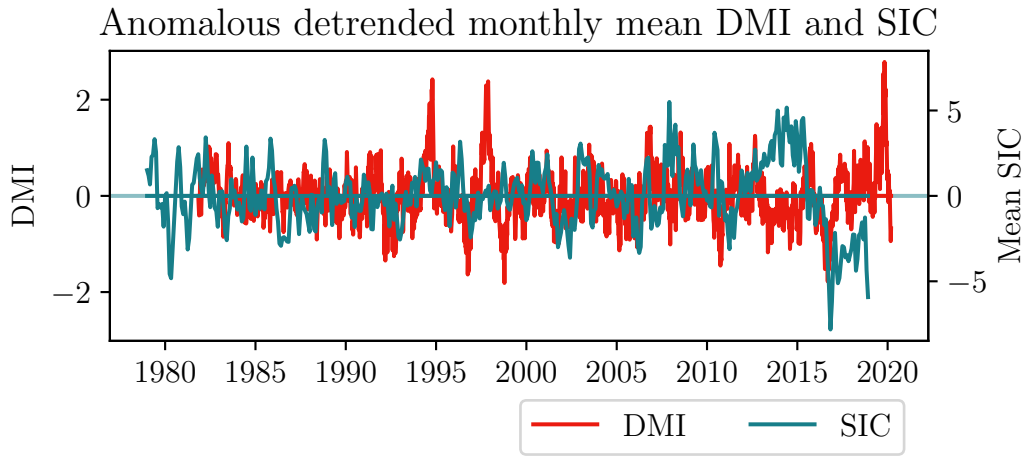


Figure 64: anomalous monthly detrended DMI compared with SIC

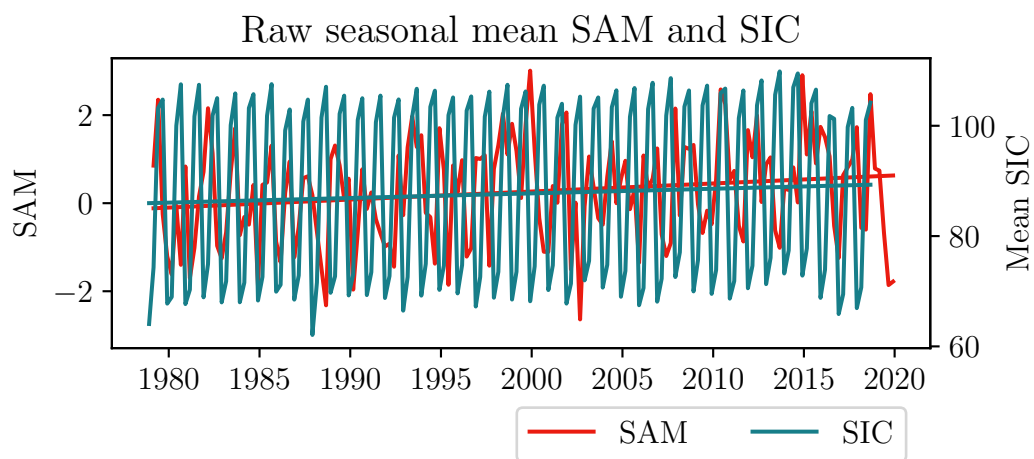


Figure 65: raw seasonal raw SAM compared with SIC

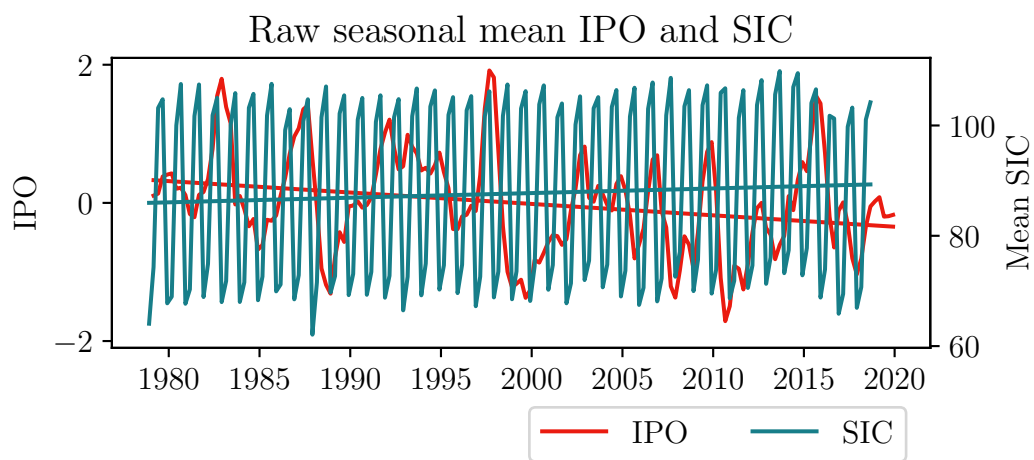


Figure 66: raw seasonal raw IPO compared with SIC

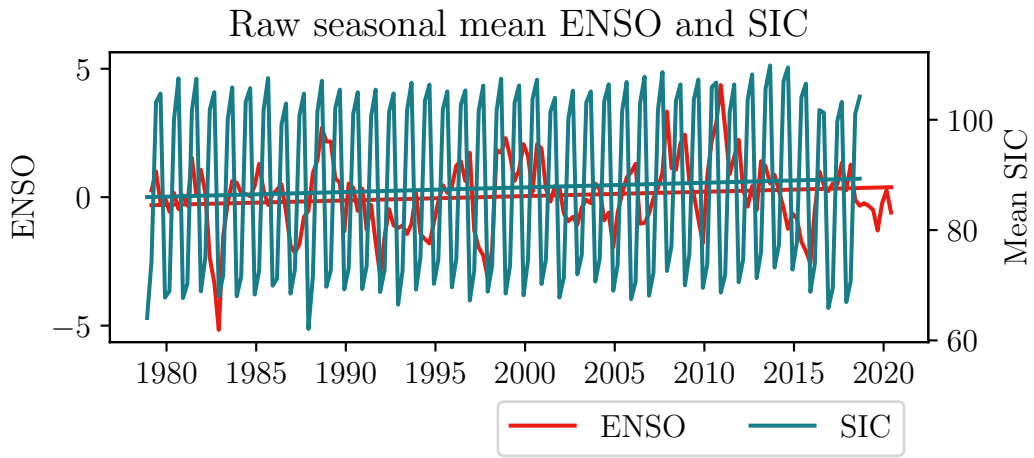


Figure 67: raw seasonal raw ENSO compared with SIC

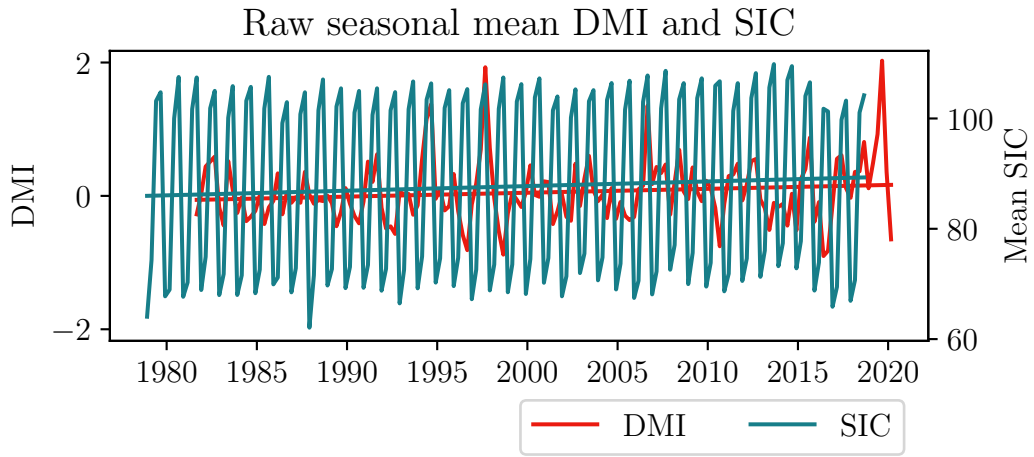


Figure 68: raw seasonal raw DMI compared with SIC

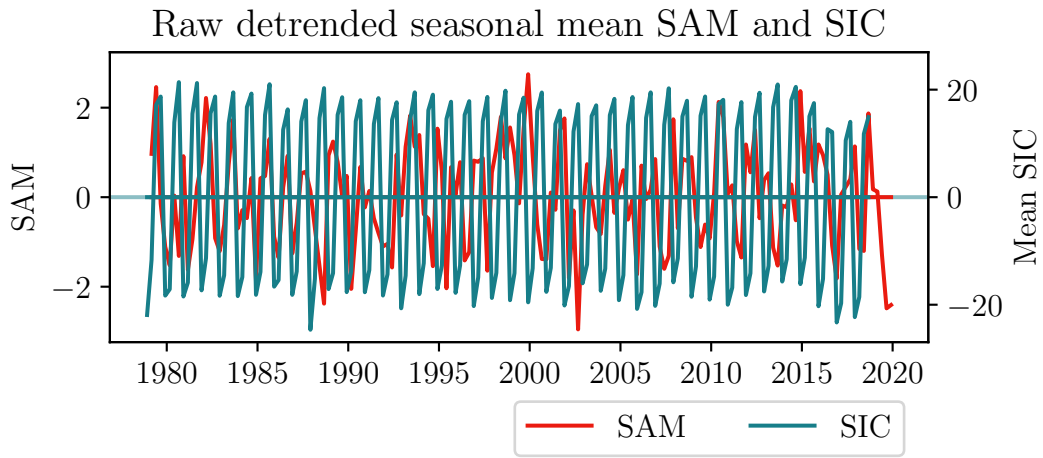


Figure 69: raw seasonal detrended SAM compared with SIC

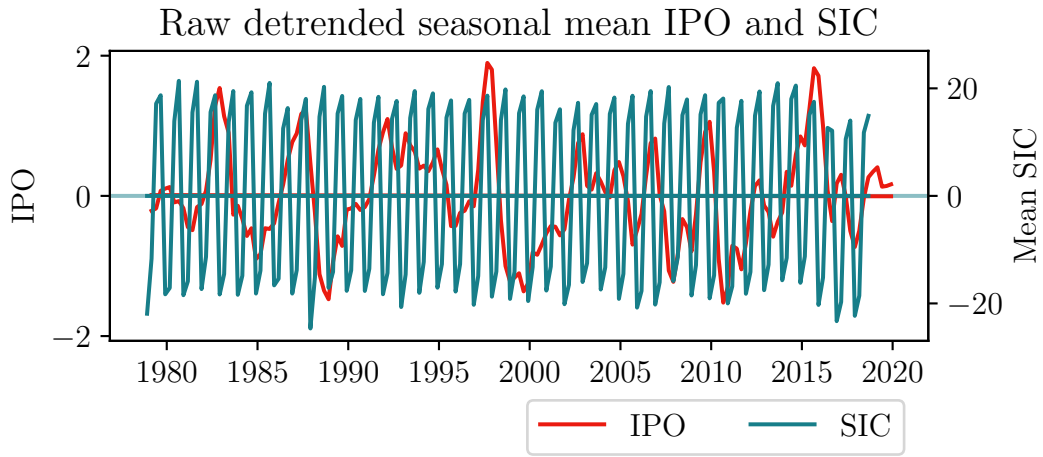


Figure 70: raw seasonal detrended IPO compared with SIC

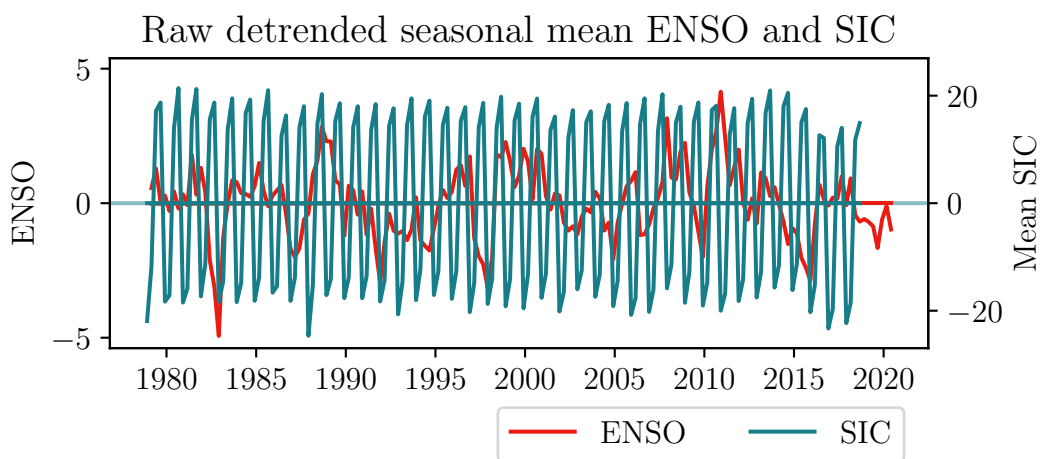


Figure 71: raw seasonal detrended ENSO compared with SIC

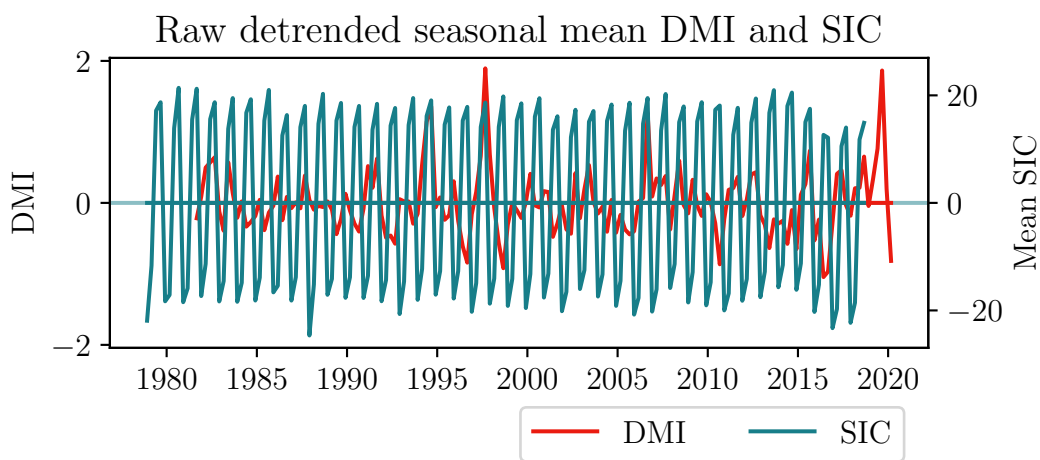


Figure 72: raw seasonal detrended DMI compared with SIC



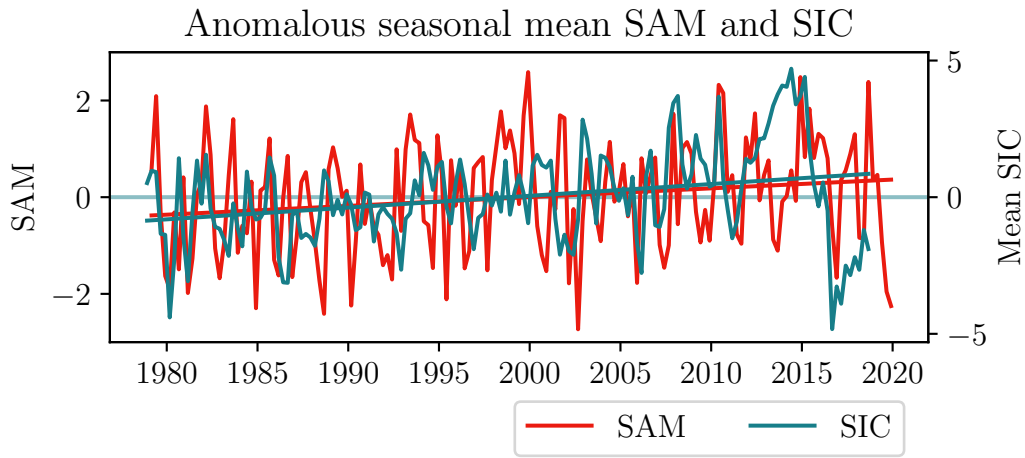


Figure 73: anomalous seasonal raw SAM compared with SIC

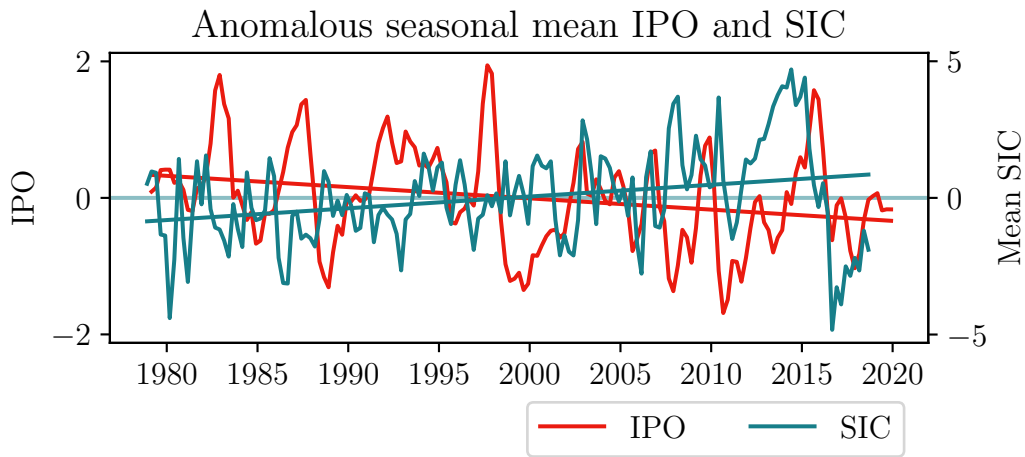


Figure 74: anomalous seasonal raw IPO compared with SIC

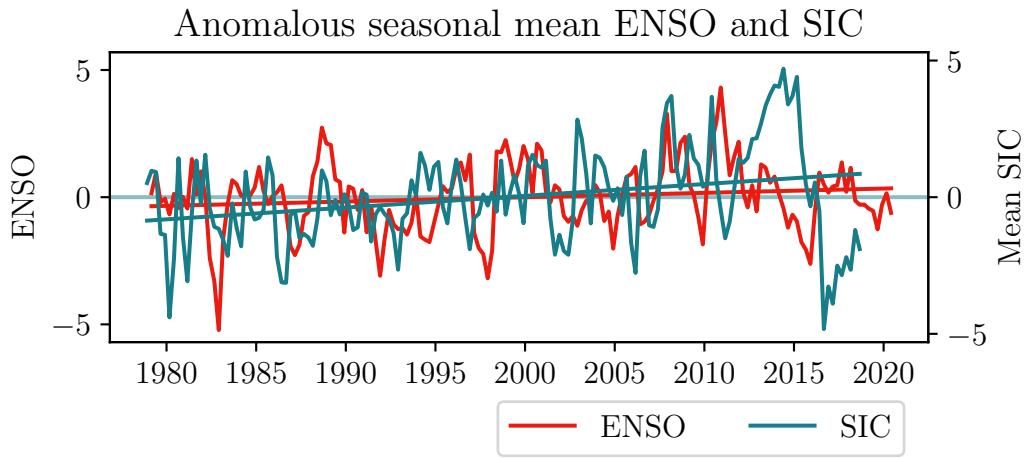


Figure 75: anomalous seasonal raw ENSO compared with SIC

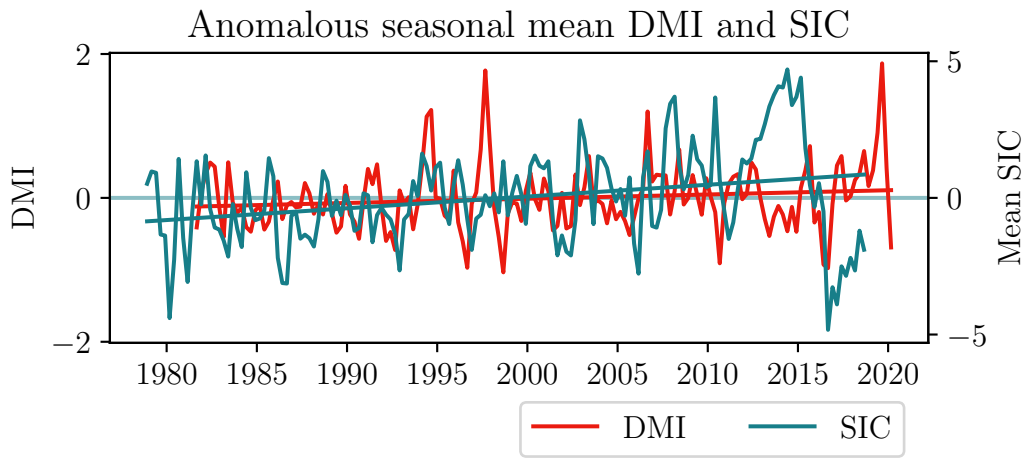


Figure 76: anomalous seasonal raw DMI compared with SIC

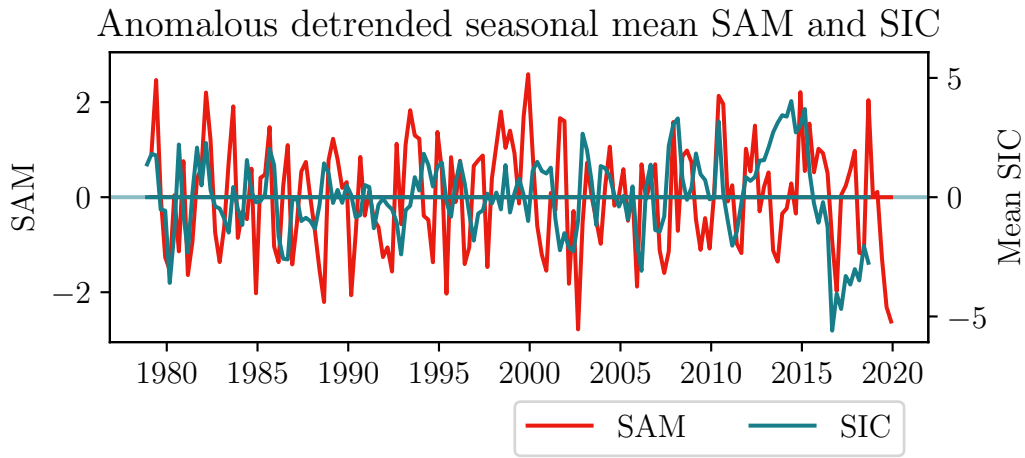


Figure 77: anomalous seasonal detrended SAM compared with SIC

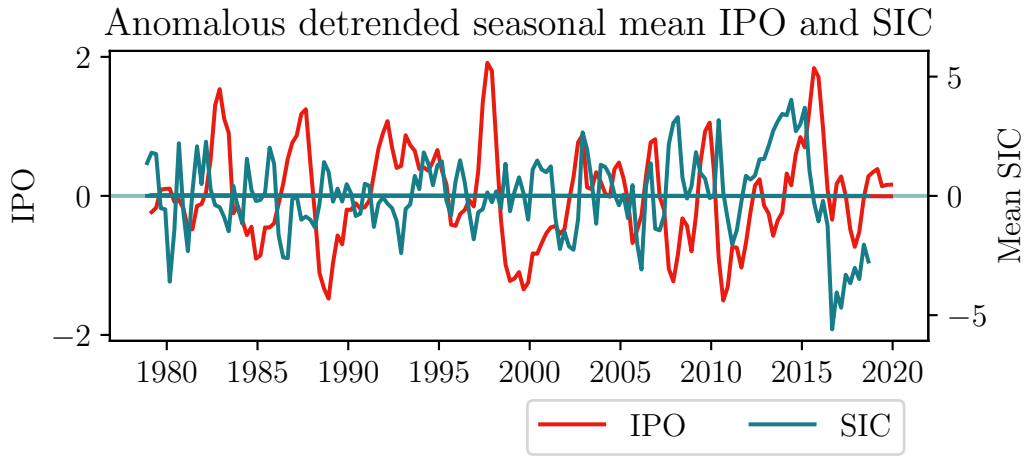


Figure 78: anomalous seasonal detrended IPO compared with SIC

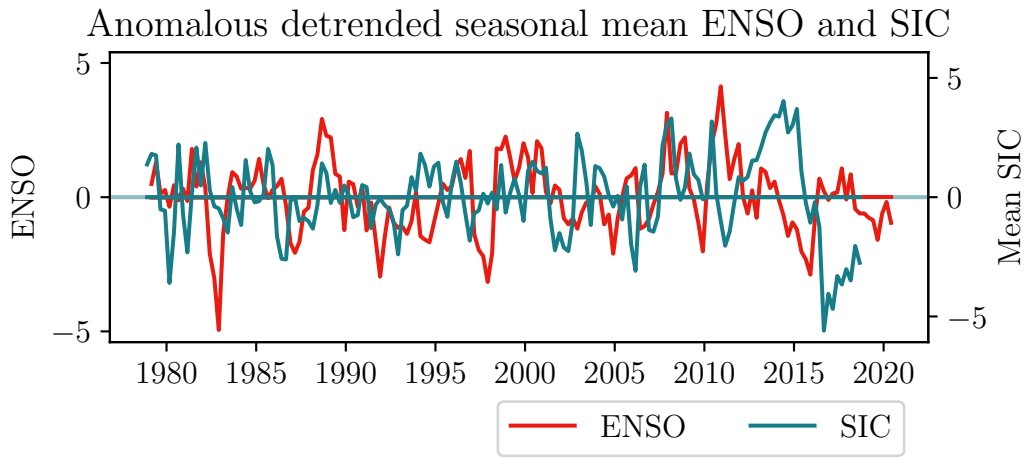


Figure 79: anomalous seasonal detrended ENSO compared with SIC

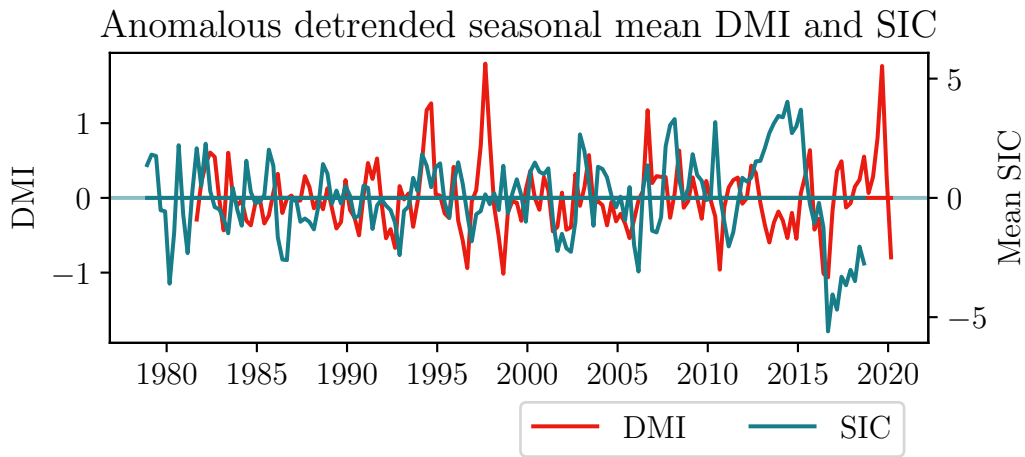


Figure 80: anomalous seasonal detrended DMI compared with SIC

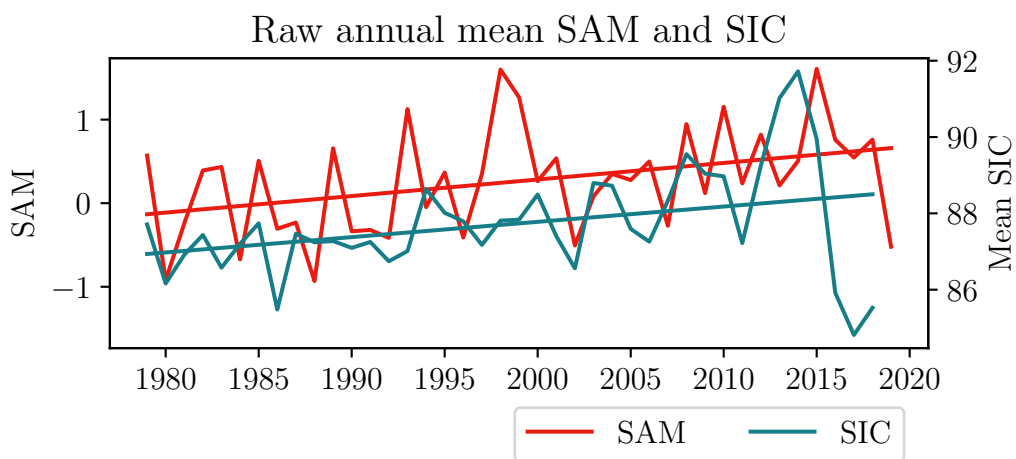


Figure 81: raw annual raw SAM compared with SIC

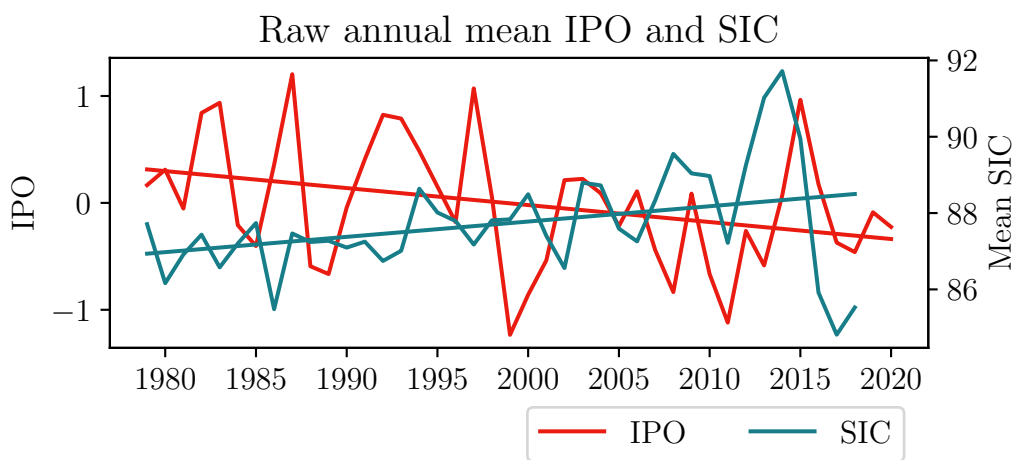


Figure 82: raw annual raw IPO compared with SIC

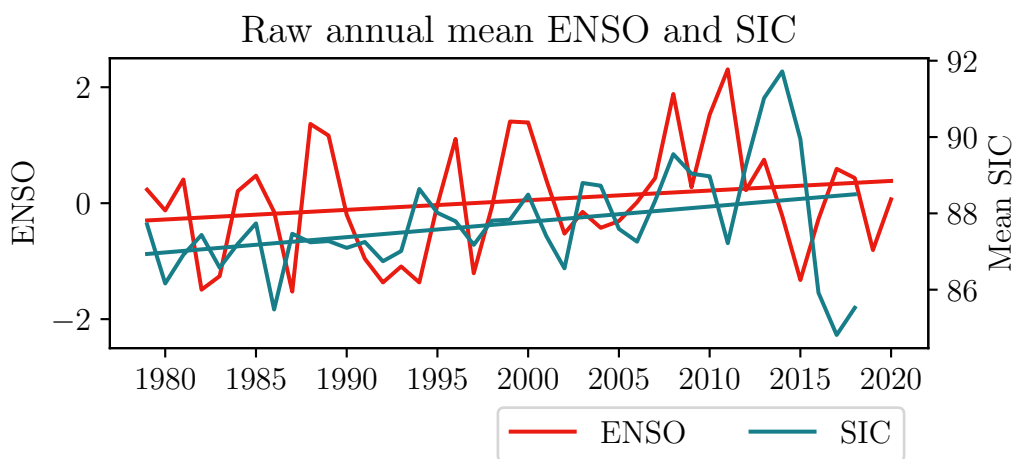


Figure 83: raw annual raw ENSO compared with SIC

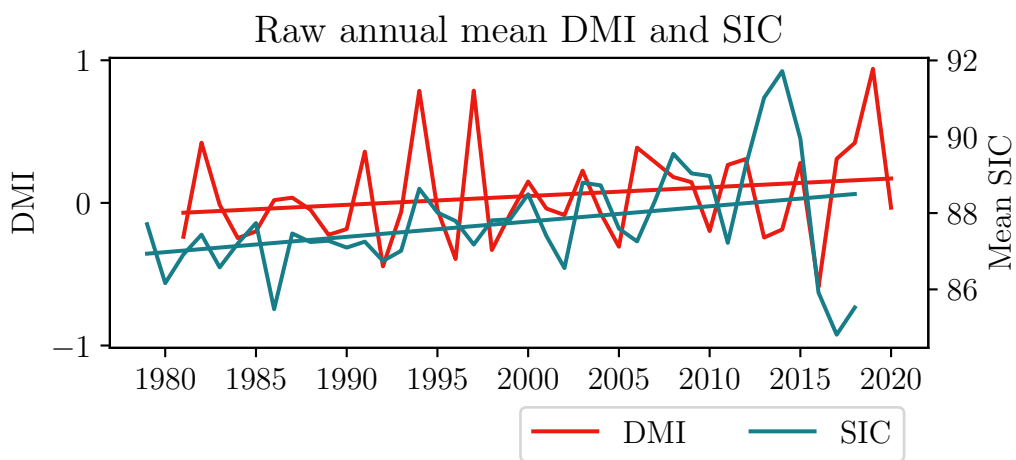


Figure 84: raw annual raw DMI compared with SIC

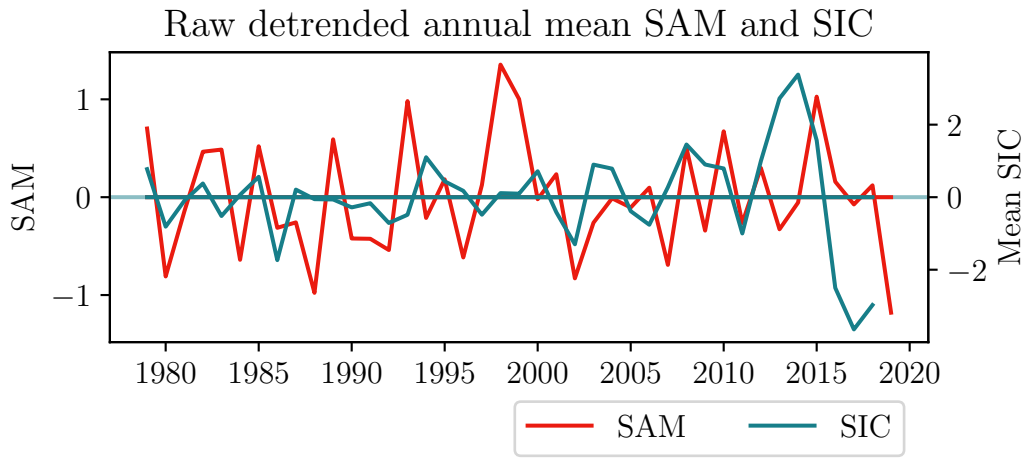


Figure 85: raw annual detrended SAM compared with SIC

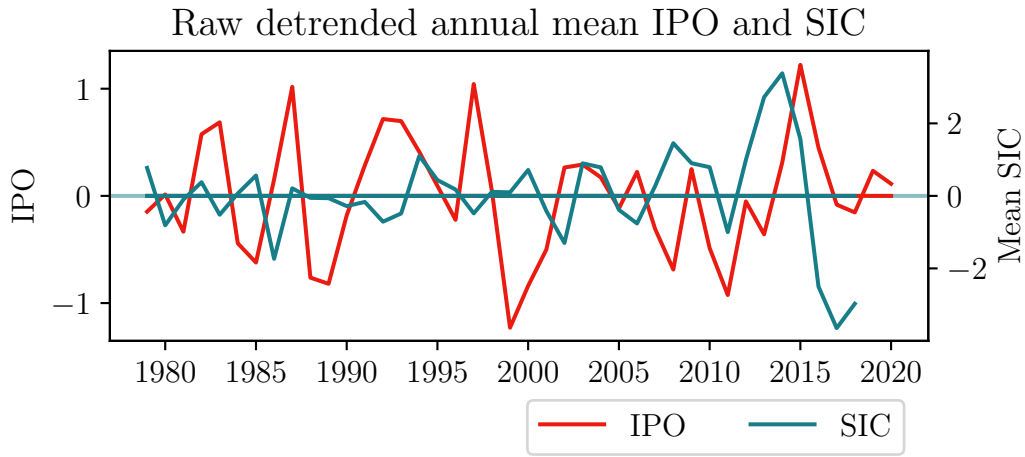


Figure 86: raw annual detrended IPO compared with SIC

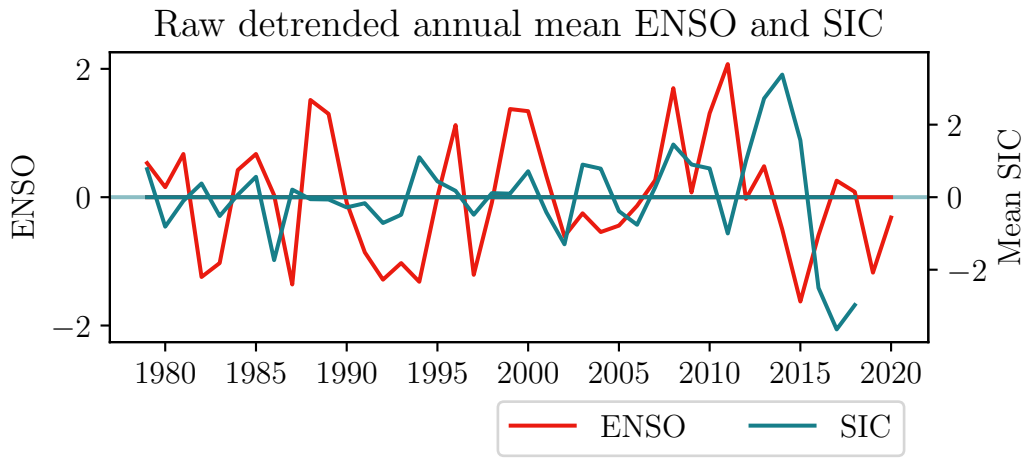


Figure 87: raw annual detrended ENSO compared with SIC

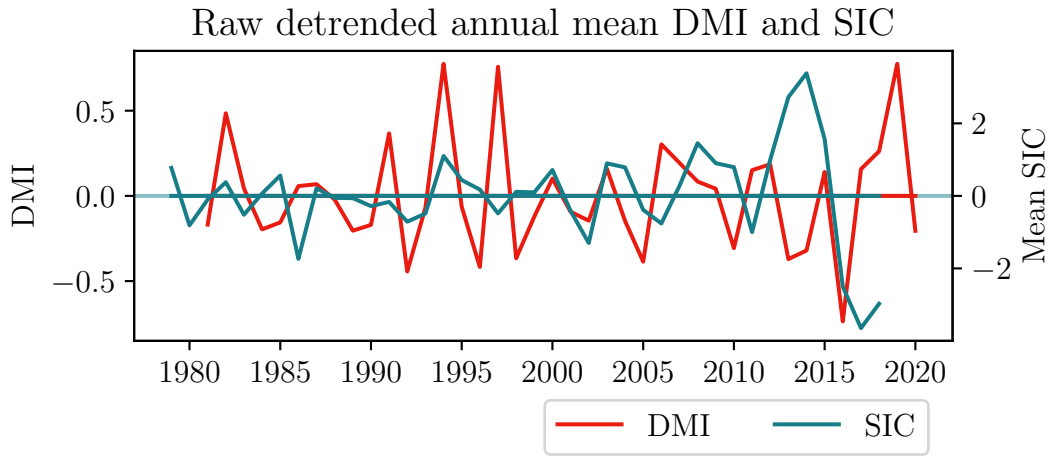


Figure 88: raw annual detrended DMI compared with SIC



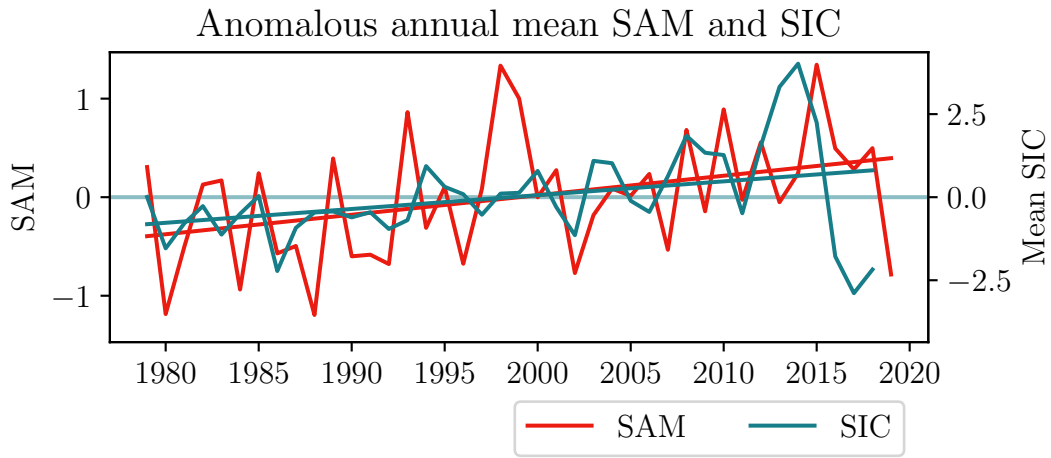


Figure 89: anomalous annual raw SAM compared with SIC

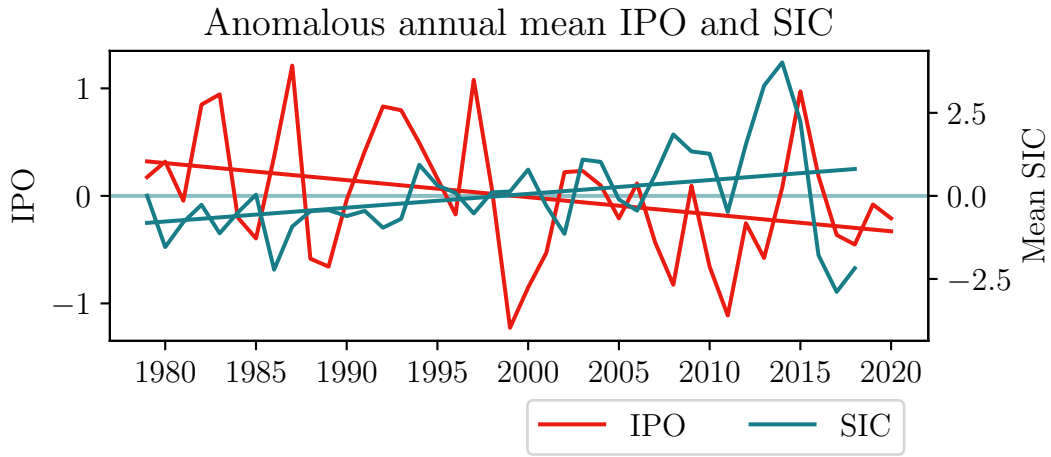


Figure 90: anomalous annual raw IPO compared with SIC

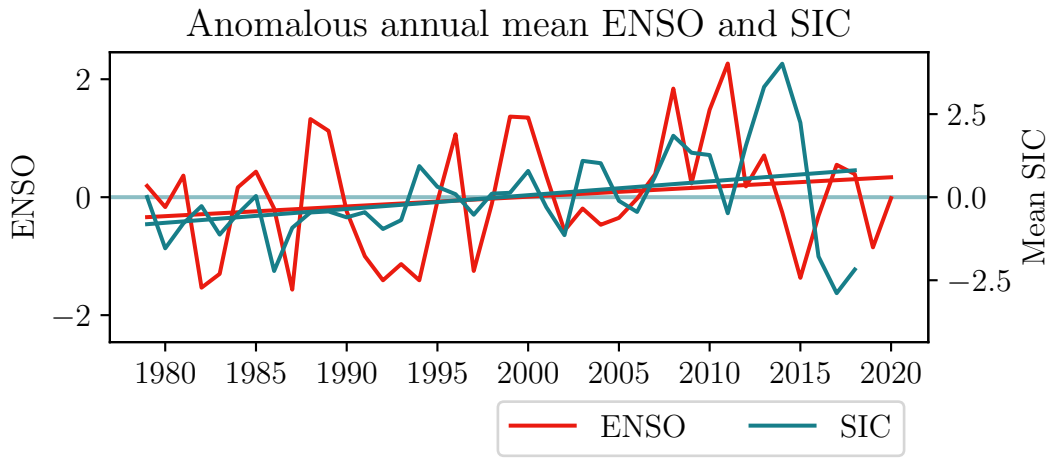


Figure 91: anomalous annual raw ENSO compared with SIC

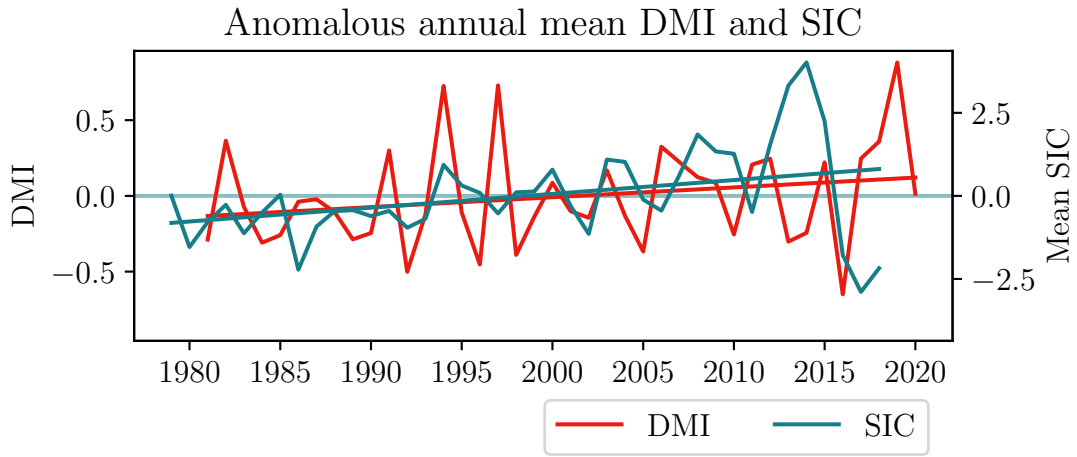


Figure 92: anomalous annual raw DMI compared with SIC

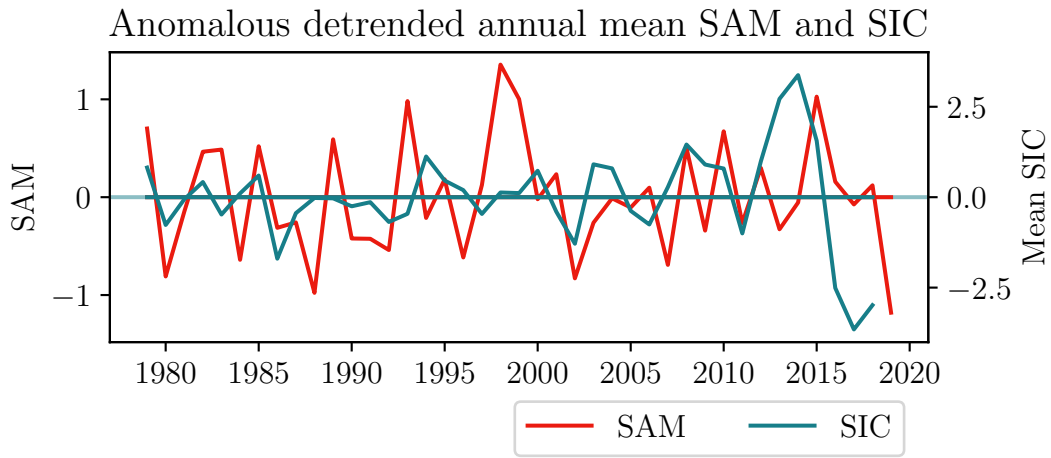


Figure 93: anomalous annual detrended SAM compared with SIC

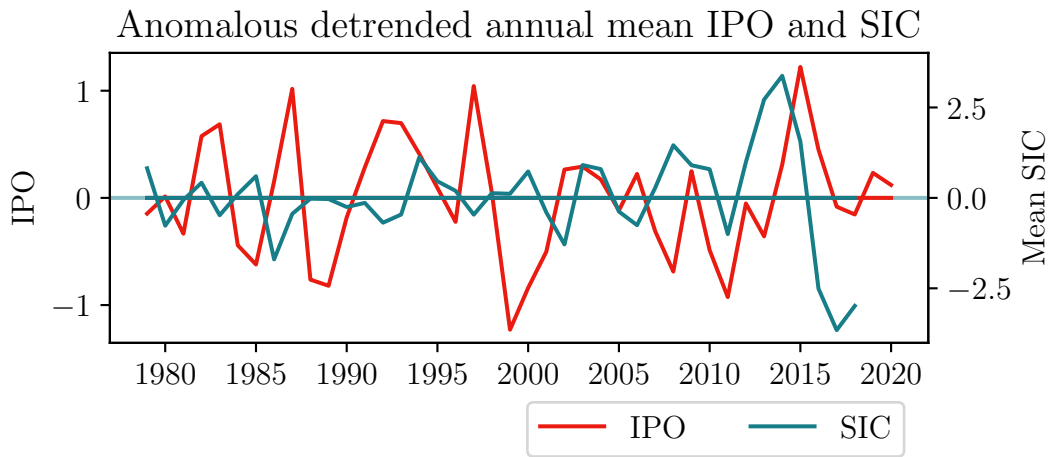


Figure 94: anomalous annual detrended IPO compared with SIC

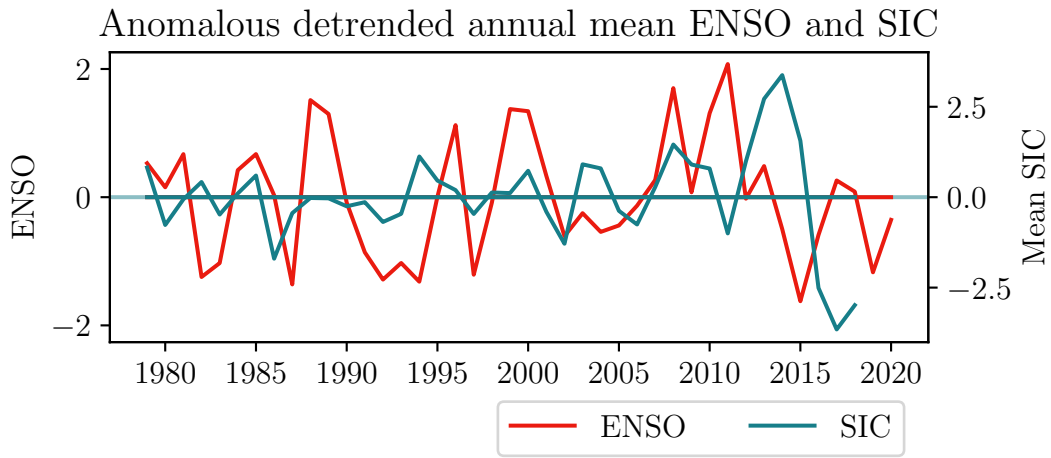


Figure 95: anomalous annual detrended ENSO compared with SIC

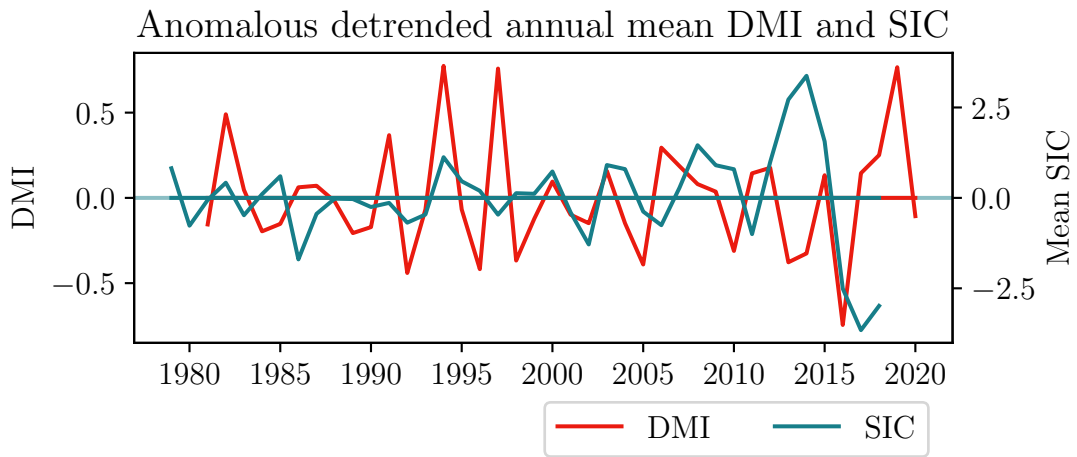


Figure 96: anomalous annual detrended DMI compared with SIC