oc_cciea.github.io

I. D. Schroeder

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Preface

This is a Quarto book.

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1 Introduction

This is a book created from markdown and executable code.

See Knuth (1984) for additional discussion of literate programming.

Part I

2024

2 importing module

```python
import sys

# appending a path
sys.path.append('../../')
from script_IDS import fun_script_IDS

import pandas as pd

cciea_yr = 2024


fn_meta = '../../metadata.csv'
df1 = pd.read_csv(fn_meta)
cell2_wnt = ['Component_Section', 'Subcomponent', 'ERDDAP_Dataset_ID', 'PI', 'Contact']

ds_id_oni = 'cciea_OC_ONI'
ts_id_list = ['cciea_OC_ONI']
vec2_oni, ds_id_lbl_oni, rgn_lbl_oni = fun_script_IDS(df1, cell2_wnt, ds_id_oni, ts_id_list)

ds_id_pdo = 'cciea_OC_PDO'
ts_id_list = ['cciea_OC_PDO']
vec2_pdo, ds_id_lbl_pdo, rgn_lbl_pdo = fun_script_IDS(df1, cell2_wnt, ds_id_pdo, ts_id_list)

ds_id_npgo = 'cciea_OC_NPGO'
ts_id_list = ['cciea_OC_NPGO']
vec2_npgo, ds_id_lbl_npgo, rgn_lbl_npgo = fun_script_IDS(df1, cell2_wnt, ds_id_npgo, ts_id_l
```

3 Basin-Scale Indicators

HELLO

Description The CCLME is driven by atmosphere–ocean energy exchange that occurs on many temporal and spatial scales. Large-scale variability is represented by three indices: the status of the equatorial El Niño–Southern Oscillation (ENSO), described by the Oceanic Niño Index (ONI, https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php); the Pacific Decadal Oscillation (PDO, **Mantua1997?**); and the North Pacific Gyre Oscillation (NPGO, **DiLorenzo2008?**). Positive ONI and PDO values and negative NPGO values usually denote conditions that lead to low CCLME productivity, whereas negative ONI and PDO values and positive NPGO values are associated with periods of high CCE productivity.

Indicator Category array([['Climate and Ocean Drivers']], dtype=object)

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Erddap Dataset ID cciea_OC_ONI, cciea_OC_PDO, cciea_OC_NPGO

CCIEA timeseries ID cciea_OC_ONI, cciea_OC_PDO, cciea_OC_NPGO

Region NA, NA, NA

Additional Information ENSO events impact the CCLME by modifying the jet stream and storm tracks, changing the nearshore thermocline, and influencing coastal currents that affect poleward transport and distribution of equatorial and subequatorial waters (and species). A positive ONI greater than 0.5°C indicates El Niño conditions, which usually means more storms

to the south, weaker upwelling, and lower primary productivity in the CCLME. A negative ONI less than -0.5°C means La Niña conditions, which usually lead to higher productivity. The PDO is related to sea surface temperature (SST), and is derived from sea surface temperature anomalies (SSTa) in the Northeast Pacific, which often persist in "regimes" that last for many years. In positive PDO regimes, coastal SSTa along North American tend to be warmer, while those in the central North Pacific tend to be cooler. Positive PDO values are associated with lower productivity in the CCLME.

The NPGO is a low-frequency variation of sea surface height, indicating variations in the circulation of the North Pacific Subtropical Gyre and the Alaskan Gyre, which in turn relate to the source waters for the CCLME. Positive NPGO values are associated with increased equatorward flow, along with increased surface salinities, nutrients, and chlorophyll-a. Negative NPGO values are associated with decreases in such values, implying less subarctic source water and generally lower productivity.

Oceanic Niño Index information and data are from the NOAA Climate Prediction Center (https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php). Pacific Decadal Oscillation data are from N. Mantua, NMFS/SWFSC, and are served on the CCIEA ERDDAP server (https://oceanview.pfeg.noaa.gov/erddap/tabledap/cciea_OC_PDO.html). North Pacific Gyre Oscillation data are from E. Di Lorenzo, Brown University (https://www.o3d.org/npgo/index.html).

Figures

2024 Conditions

- Figure 5.1 and Figure 5.2 show monthly and seasonal means of the three indices.
- El Niño event spanned the winter and spring 2023-24 and ENSO neutral by summer 2024 (Figure 5.1 and Figure 5.2a).
- Short duration La Niña conditions are expected by Jan 2024 (59% chance), with a quick transition to ENSO neutral by March-May 2024 (61% chance), see https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/.
- PDO and NPGO both have the 5-year mean below 1 standard deviation (Figure 5.1), with the PDO having a negative 5-year trend.
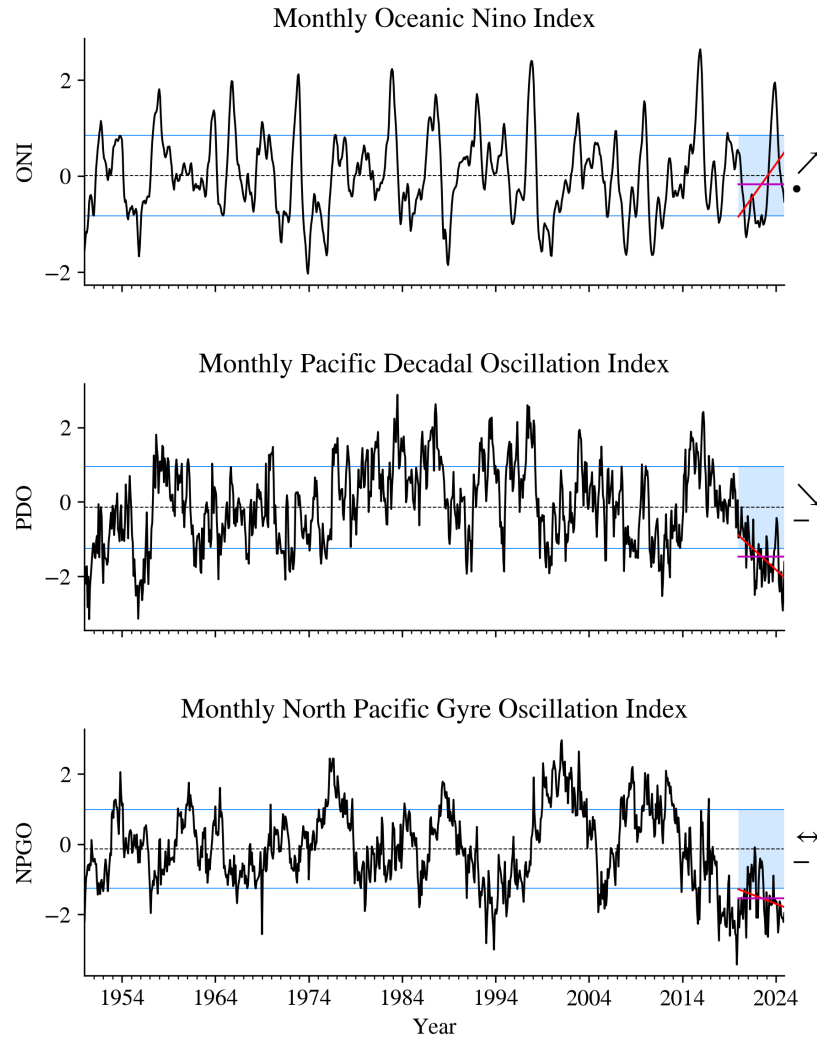
References

Figure 3.1: Monthly values of the Oceanic Niño Index (ONI), the Pacific Decadal Oscillation (PDO), and the North Pacific Gyre Oscillation (NPGO), starting 1950 and ending: October 2024 (ONI), November 2024 (PDO), and October 2024 (NPGO).
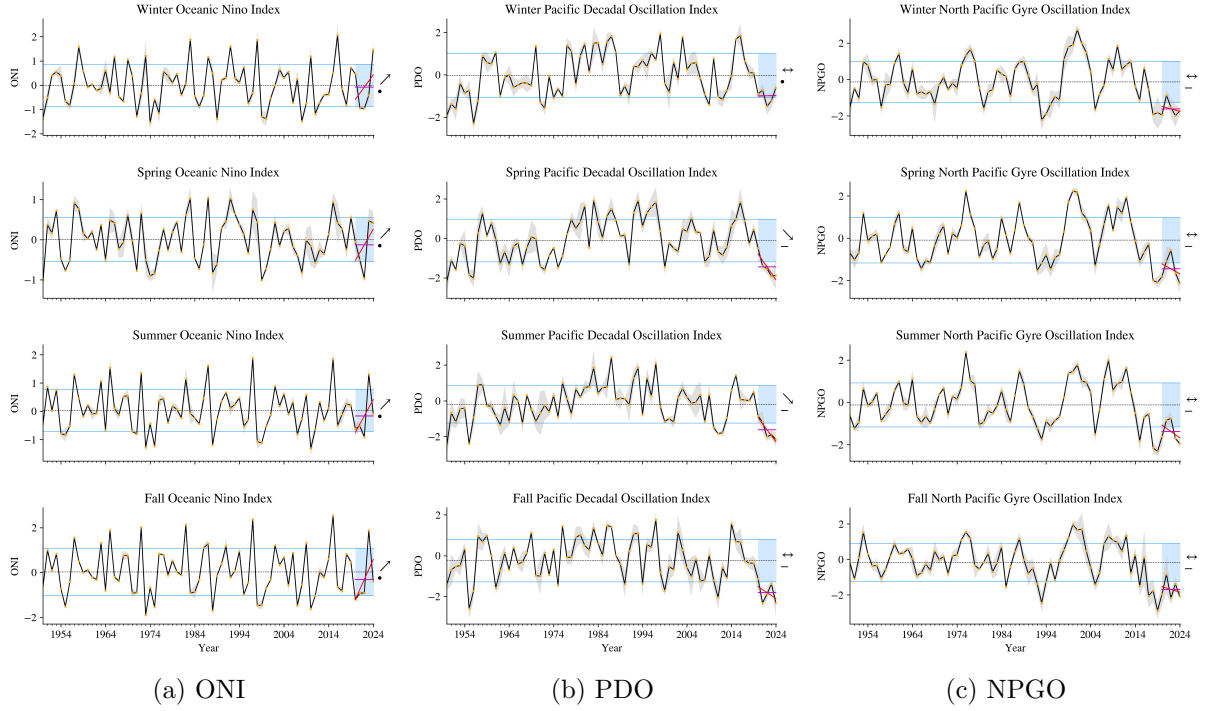
(a) ONI   (b) PDO   (c) NPGO

Figure 3.2: Seasonal values of the Oceanic Niño Index (ONI), Pacific Decadal Oscillation (PDO), North Pacific Gyre Oscillation (NPGO) from 1950-2024.

Part II

2025

4 importing module

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IDS - Hello

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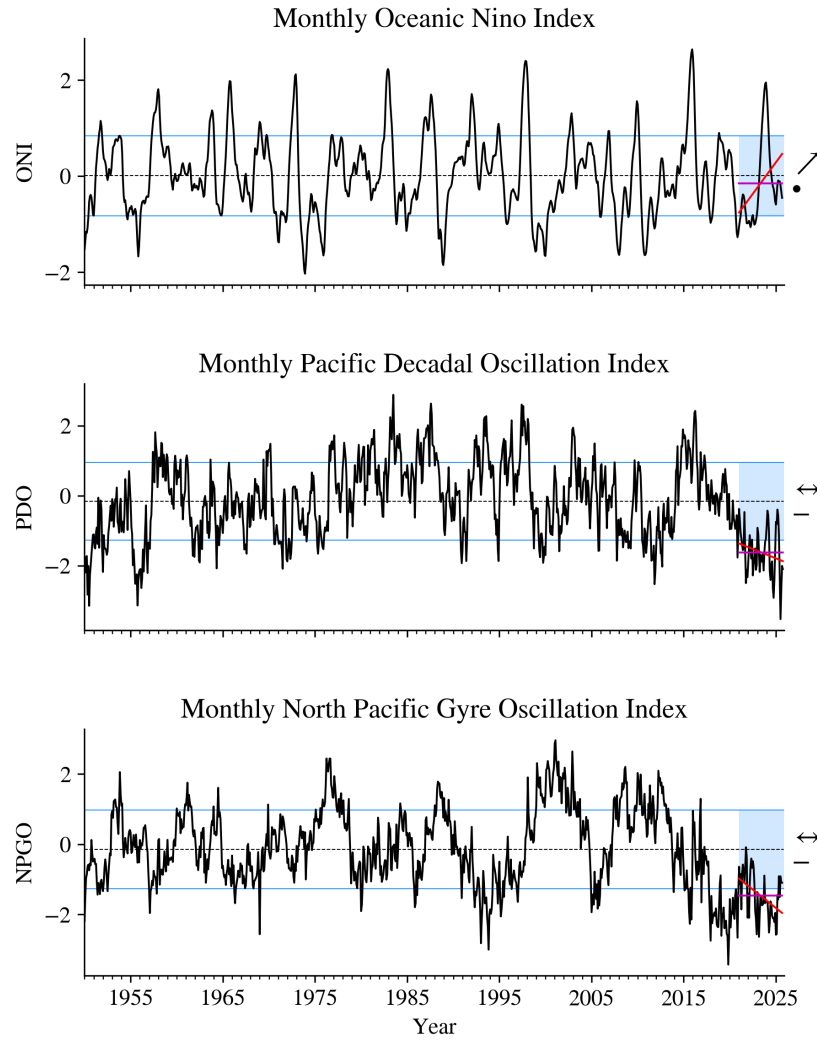
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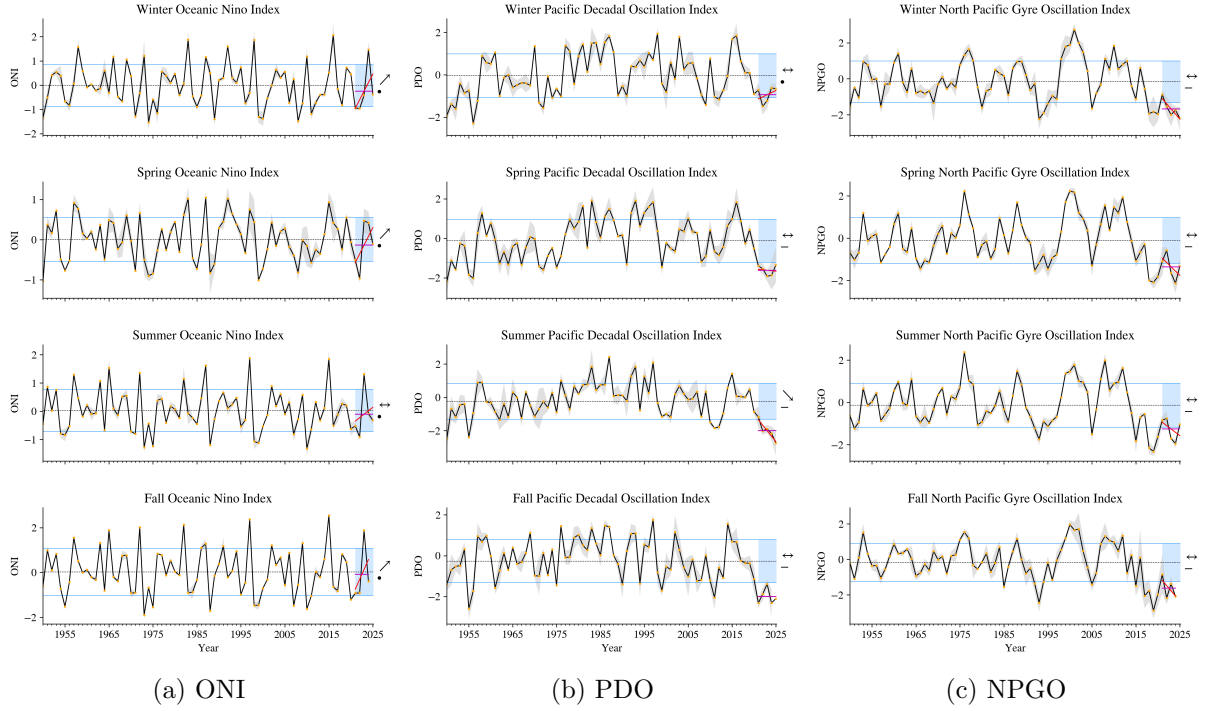
Figure 5.2: Seasonal values of the Oceanic Niño Index (ONI), Pacific Decadal Oscillation (PDO), North Pacific Gyre Oscillation (NPGO) from 1950-2025.

6 Summary

In summary, this book has no content whatsoever.

References

Knuth, Donald E. 1984. "Literate Programming." *Comput. J.* 27 (2): 97–111. https://doi.org/10.1093/comjnl/27.2.97.