Caribbean ESR Lab Report

Carissa Gervasi

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ESR Lab Reports

ESR lab reports are quarto books that compile the R scripts for each indicator as well as any other descriptions of how the ESR will be put together.

Caribbean ESR

This lab report is for the Caribbean ESR that was compiled from 2023-2024. This is the first ESR for the Caribbean region. Here we can add more text about why this ESR is being compiled.

Some notes

This lab report was created the following way:

1. clone the Caribbean ESR repo into my R studio
2. create a new folder in the repo called "Lab report"
3. create 2 files, one called "index.qmd" and abother called "_quarto.txt" within the Lab report folder
4. rename the "_quarto.txt" file to "_quarto.yml" in file explorer to change it into the book YAML
5. populate the YAML document

Note: this works great for rendering the quarto book as an html file. I can't figure out how to render it as a pdf though. This is not really necessary for the lab report but something to keep in mind.

Part 1: Intro

Part 2: Indicators

Ocean acidification indicator

Sent by F. Gomez on 02/19/2023

Notes from Fabian:

derived surface omega series from the MOM-Topaz hindcast 0.10deg resolution model *txt files have this structure: column1: year, column2=month, and column3=carbon system variable The mean magnitude of the simulated omega trends, around 9e-3 year-1, is consistent with observed trends in the Subtropical North Atlantic

Question: What is causing the acceleration after 2008?
Answer: made a Taylor decomposition to figure out what was driving that acceleration in the simulated ??Ar anomaly. Interannual ??Ar changes were mostly driven by the balance between dic and alkalinity. There was a positive trend from the 1980s until mid 2000s, which contributed to moderate the ??Ar decline. But that trend vanished in the last 15 years or so, which probably has to do with this accelerated decline in ??Ar in the last decade.

```
library(plotTimeSeries)
library(spam)
```

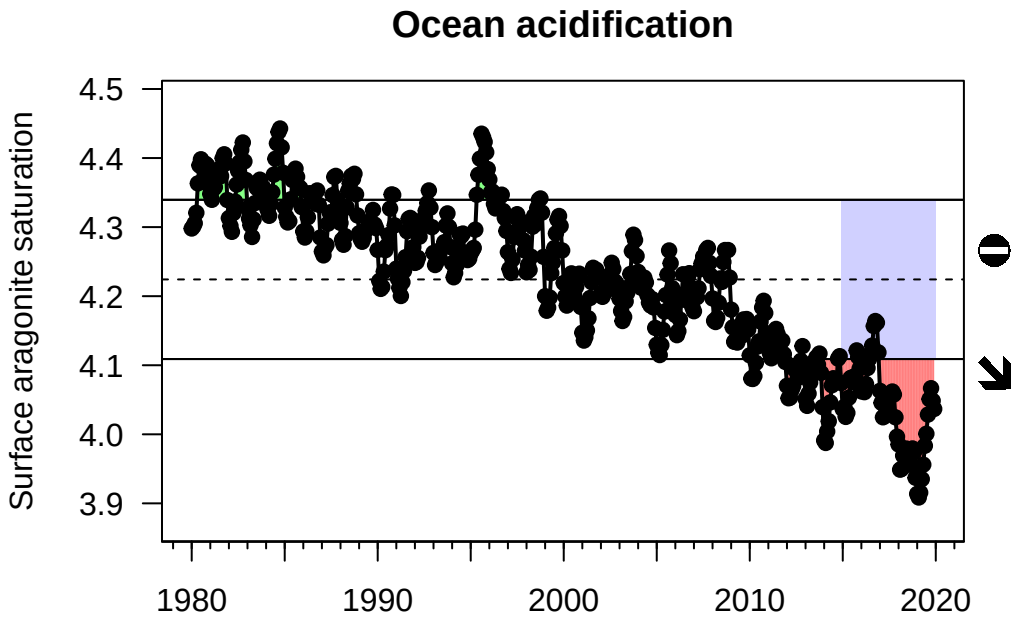
```
rm(list = ls())

dat <- read.table("../indicator_data/surface_omega_series.txt", skip = 0, header = F)
head(dat)
tail(dat)
dat$dates <- paste0(month.abb[dat$V2], dat$V1)
```

Format indicator object

```
datdata <- dat$dates
inddata <- data.frame(dat$V3)
labs <- c("Ocean acidification", "Surface aragonite saturation", "")
indnames <- data.frame(matrix(labs, nrow = 3, byrow = F))
s <- list(labels = indnames, indicators = inddata, datelist = datdata)
class(s) <-"indicatordata"
```

Save and plot

```
plotIndicatorTimeSeries(s)
```




```
inddata <- s
save(inddata, file = "OA_test.RData")
```