

# Coral reef - Documentation

Group 18

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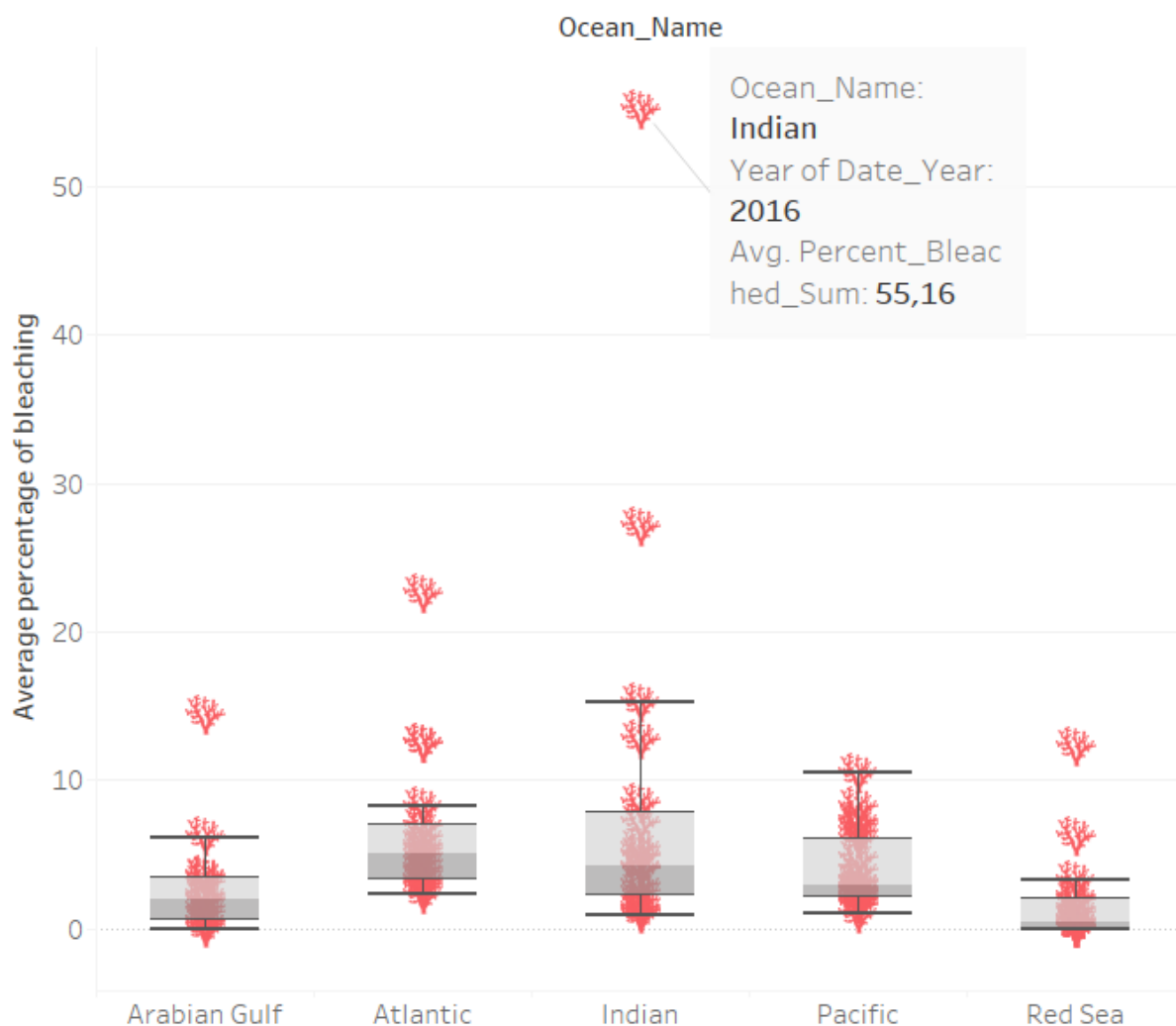
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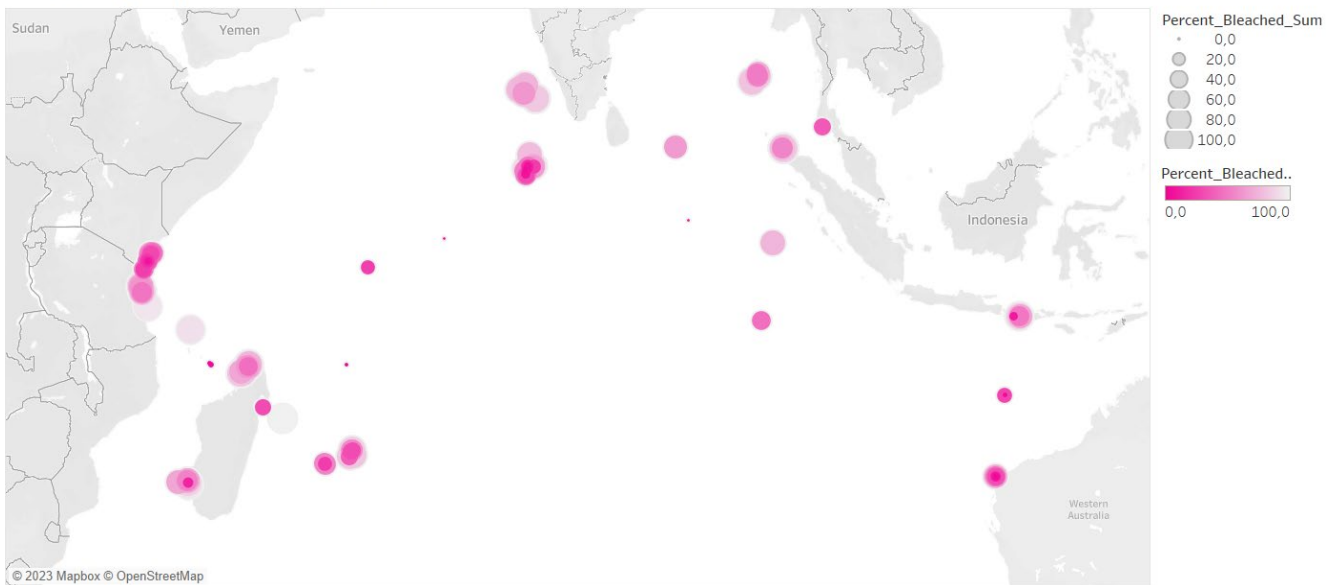
## Percentage of bleaching per year per Ocean



The image shows the average percentage of bleaching per ocean per year. This is gathered from different spots in that specific ocean. It shows a box and whiskers plot, to highlight the extreme cases, like 2016 in the Indian ocean.

[https://springernature.figshare.com/collections/A\\_Global\\_Coral-Bleaching\\_Database\\_GCBD\\_1998\\_2020/5314466](https://springernature.figshare.com/collections/A_Global_Coral-Bleaching_Database_GCBD_1998_2020/5314466)

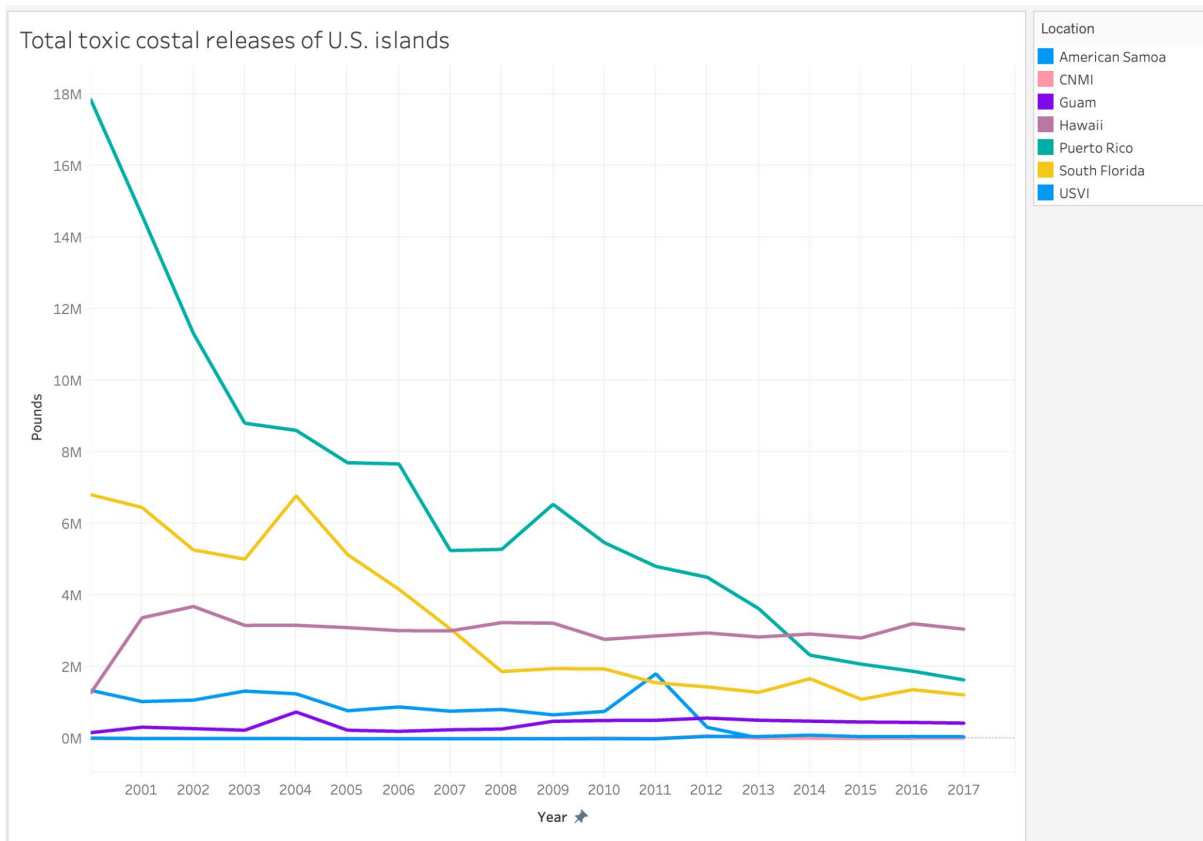
### Bleaching per spot in the Indian ocean



Map based on the percentage of bleaching per year at different spots in the indian ocean. If the dot is more white, this means more bleaching. The bigger the dot the more bleaching.

[https://springernature.figshare.com/collections/A\\_Global\\_Coral-Bleaching\\_Database\\_GCBD\\_1998\\_2020/5314466](https://springernature.figshare.com/collections/A_Global_Coral-Bleaching_Database_GCBD_1998_2020/5314466)

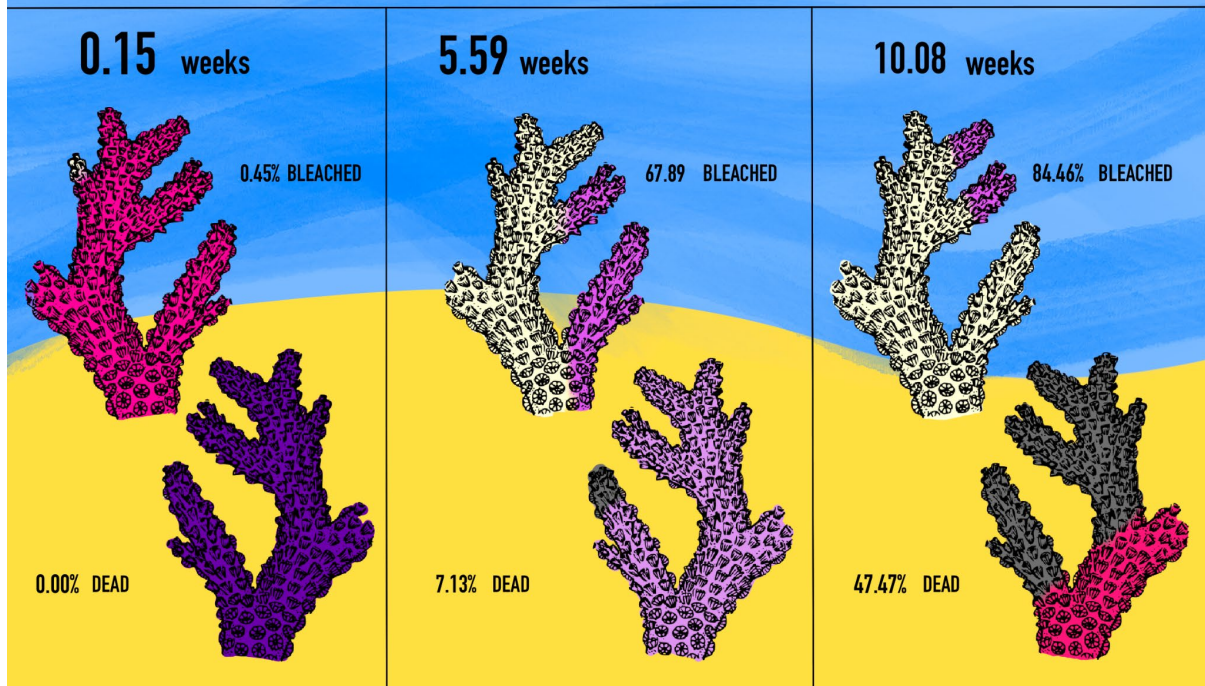
This Visualization has a slider to move over the years, starting at 1998 and ending at 2020. This is a snapshot of 2016.



### National Coral Reef Monitoring Program - US Virgin Islands

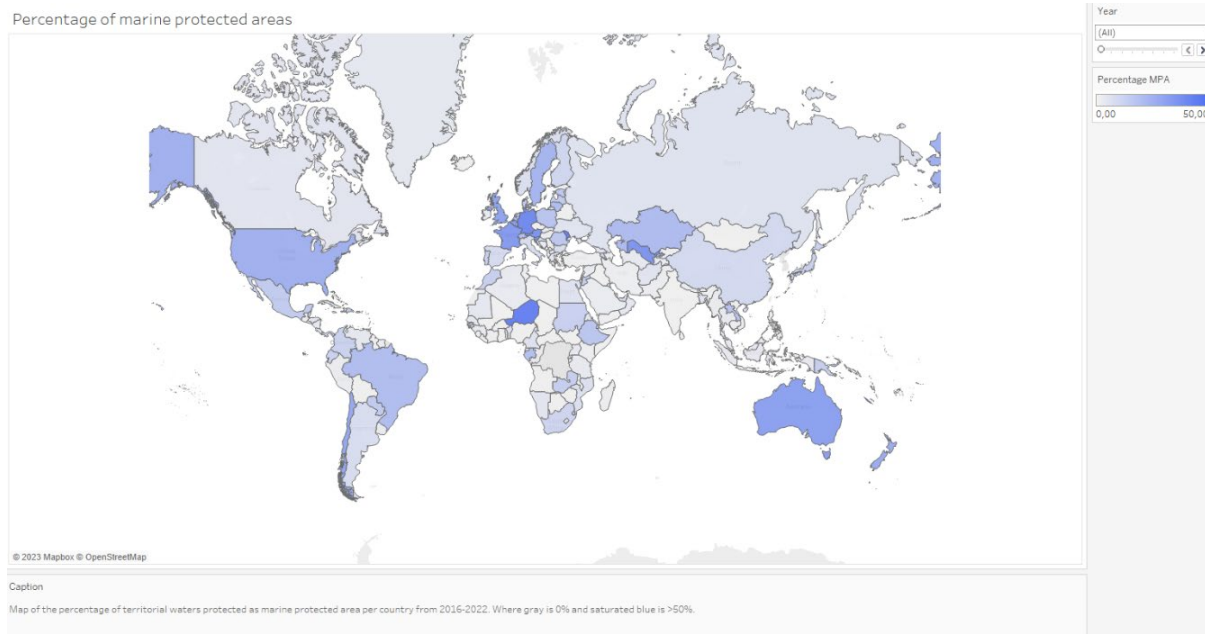
<https://www.ncei.noaa.gov/access/metadata/landing-page/bin/iso?id=gov.noaa.nodc:0191508>

# Damage to coral due to exposure to harmful temperatures



Research on coral (Australia) - Mortality, Bleaching, Over exposure to dangerous temperatures

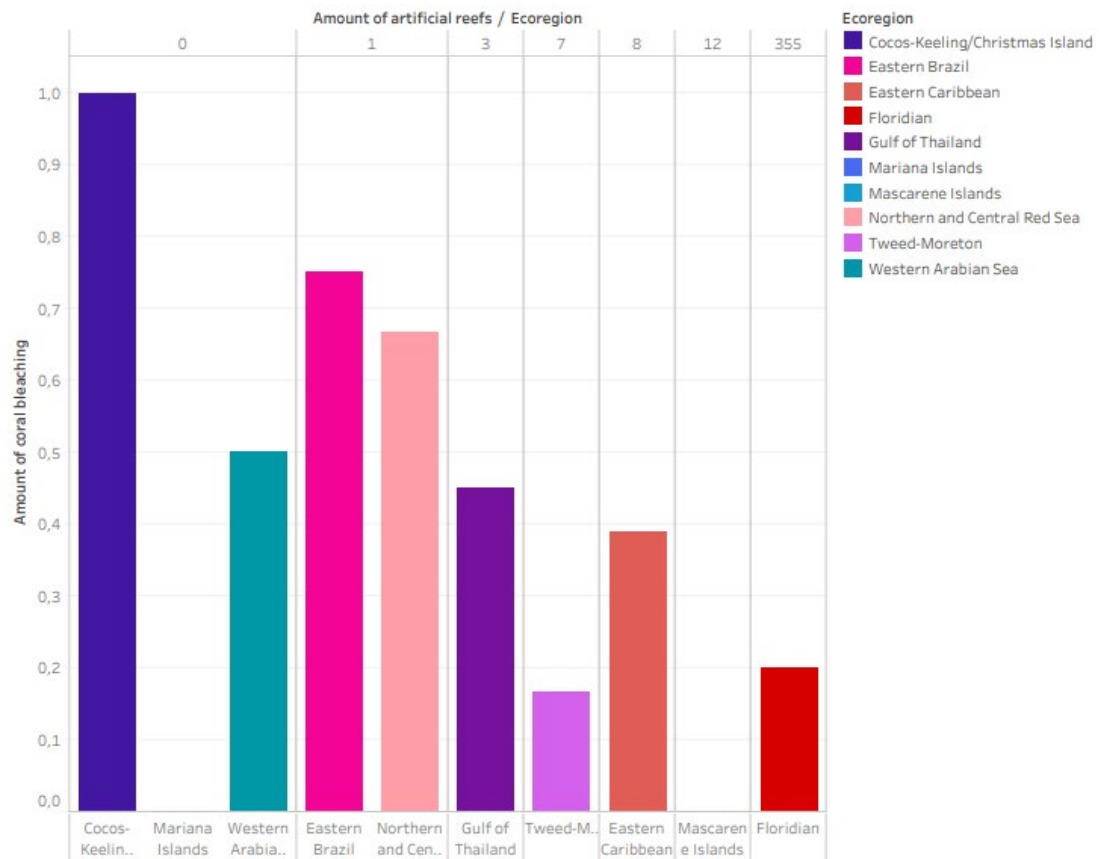
<https://research.jcu.edu.au/data/published/16b8774ca262131b430148506083d3ef/>



Visualization of territorial waters which are protected as marine protected area per country, with a slider to select a year.

Source: <https://data.worldbank.org/indicator/ER.MRN.PTMR.ZS>

## Coral bleaching against amount of artificial reefs



Amount of coral bleaching, where 0 is no bleaching and 1 is 100% bleached. Against the number of artificial reefs such as deliberately sunken boats or other vehicles in a specific ecoregion.

Visualization of the amount of artificial reefs in a region (called an ecoregion) compared to the amount of coral bleaching.

Sources:

[Ilieva, I., Jouvett, L., Seidelin, L., Best, B., Aldabet, S., da Silva, R. and Conde, D.A., 2018. A global database of intentionally deployed wrecks to serve as artificial reefs. Data in Brief.](https://www.sciencedirect.com/ezproxy2.utwente.nl/science/article/pii/S2352340918315622#s0030)

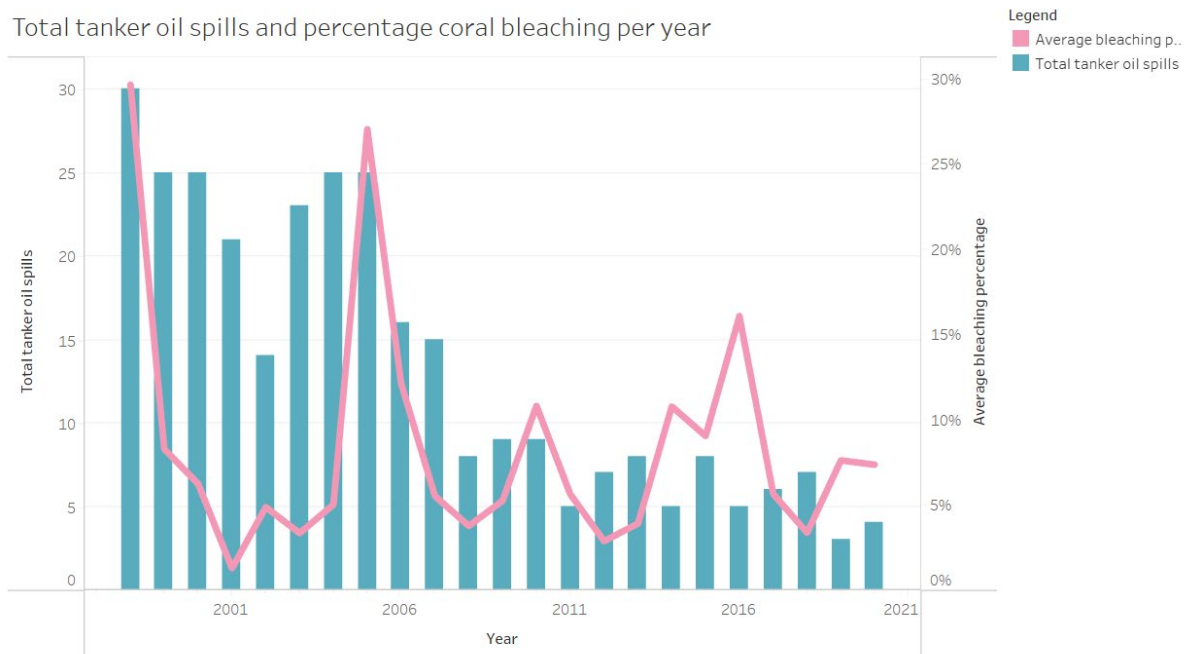
<https://www.sciencedirect.com/ezproxy2.utwente.nl/science/article/pii/S2352340918315622#s0030>

<https://hub.arcgis.com/datasets/TNC::percent-of-high-impact-coral-bleaching-events/explore?location=0.246606%2C0.000000%2C2.17>

Since these two datasets do not use a compatible variable for location, a manual count took place and the following dataset was created for the visualization

[https://drive.google.com/file/d/1AkGonhD37Zxk18SbQVFWjKQctzGFnjPe/view?usp=drive\\_link](https://drive.google.com/file/d/1AkGonhD37Zxk18SbQVFWjKQctzGFnjPe/view?usp=drive_link)

### Total tanker oil spills and percentage coral bleaching per year



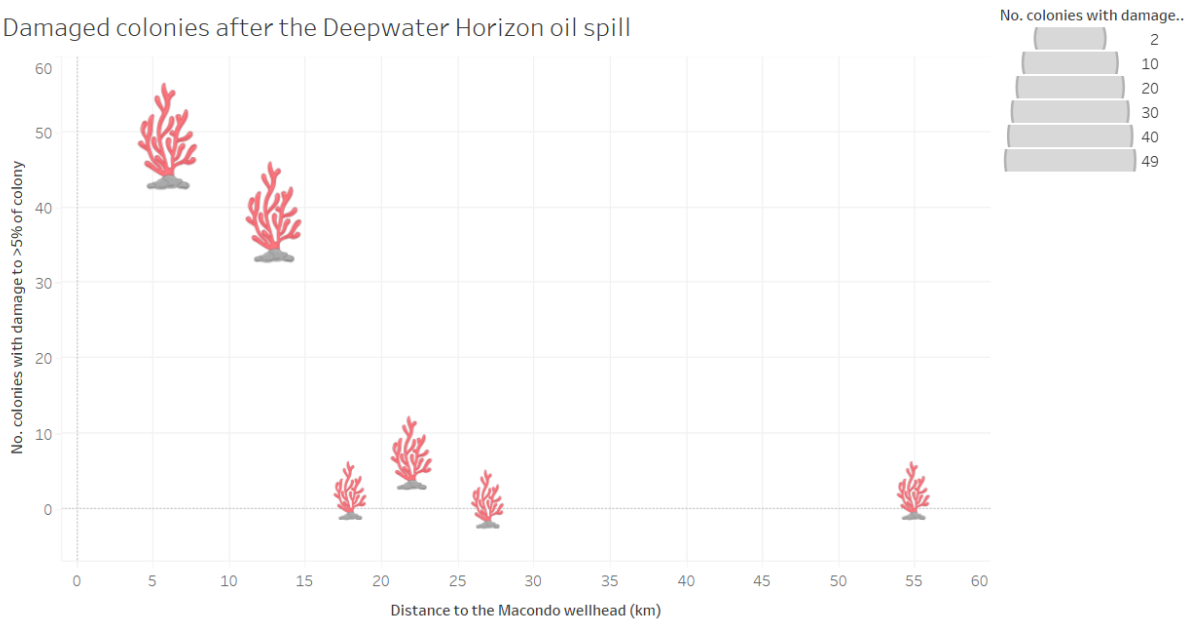
This visualization shows the possible relationship between the amount of tanker oil spills and the percentage of coral bleaching per year.

### Visualization of tanker oil spills and coral bleaching per year.

[https://springernature.figshare.com/articles/dataset/Global Coral Bleaching Database/17076287?backTo=/collections/A\\_Global\\_Coral-Bleaching\\_Database\\_GCBD\\_1998\\_2020/5314466](https://springernature.figshare.com/articles/dataset/Global_Coral_Bleaching_Database/17076287?backTo=/collections/A_Global_Coral-Bleaching_Database_GCBD_1998_2020/5314466)

<https://ourworldindata.org/oil-spills>

### Damaged colonies after the Deepwater Horizon oil spill

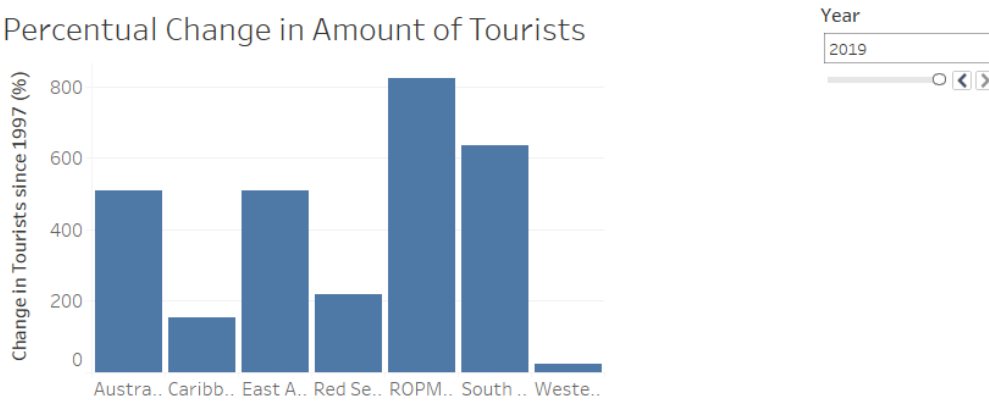


This visualization shows the relationship between the distance from the source of the deepwater horizon oil spill to the coral reefs and the amount of colonies with damage to more than 5% of the colony. If the coral symbol is bigger there is a larger amount of colonies with more than 5% damage.

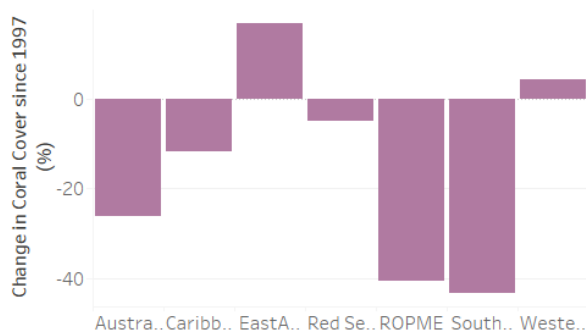
### Visualization of damage done to corals after the deepwater horizon oil spill.

<https://www.pnas.org/doi/full/10.1073/pnas.1403492111>

## Percentual Change in Amount of Tourists



## Percentual Change in Coral Cover



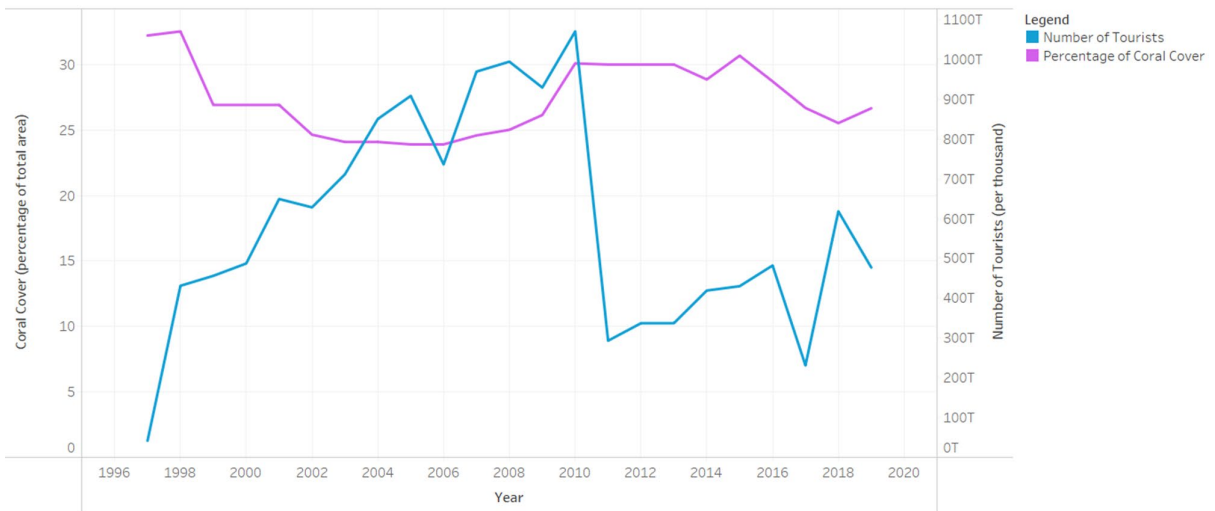
This visualisation compares the percentual change in the amount of tourists to the percentual change in coral cover since 1997 in the following regions: Australia, Caribbean, East Asia, Red Sea, ROPME, South Asia and Western India.

This visualisation has a slider to move through the years, from 1997 to 2019, so you can look at the impact over time. This is a snapshot of 2019.

From a report of the Global Coral Reef Monitoring Network (<https://gcrmn.net/2020-report/> ) a dataset was gathered, which can be found here:

[https://docs.google.com/spreadsheets/d/1W5AjWF1qPj1cyKK7pGYPB1fPn-O9rM2d/edit?usp=drive link&oid=109389384353960187874&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1W5AjWF1qPj1cyKK7pGYPB1fPn-O9rM2d/edit?usp=drive_link&oid=109389384353960187874&rtpof=true&sd=true).

## Tourism to the Western India Ocean Region



This visualisation shows the relationship between the change in total area covered by coral in this area (pink, left axis) and the number of tourists coming to the Western India Ocean Region each year (blue, right axis), from 1997 to 2019.

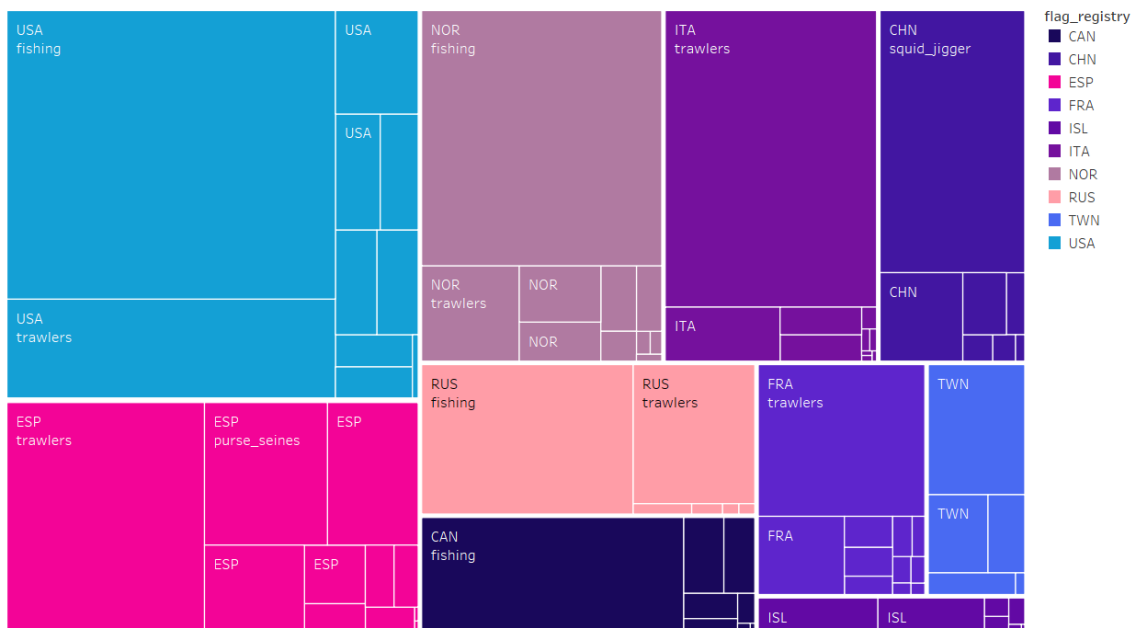
The dataset gathered from the GCRMN was used, as well as data on the amount of tourists coming into a country per year, from The World Bank:

[https://data.worldbank.org/indicator/IS.AIR.PSGR?end=1983&most\\_recent\\_year\\_desc=true&start=1970](https://data.worldbank.org/indicator/IS.AIR.PSGR?end=1983&most_recent_year_desc=true&start=1970)

From these data, the following data was gathered per area (adding the number of tourists per country in an area, where the area is defined by the countries in each area according to the GCRMN report. This was then normalized to the percentual change since 1997 in amount of tourists to that region. The data can be found here:

[https://drive.google.com/file/d/1EzsBWFmyD4iZaqfRaML6\\_vmqC3sx1Ifb/view?usp=drive\\_link](https://drive.google.com/file/d/1EzsBWFmyD4iZaqfRaML6_vmqC3sx1Ifb/view?usp=drive_link)

## Fishing ships per Country

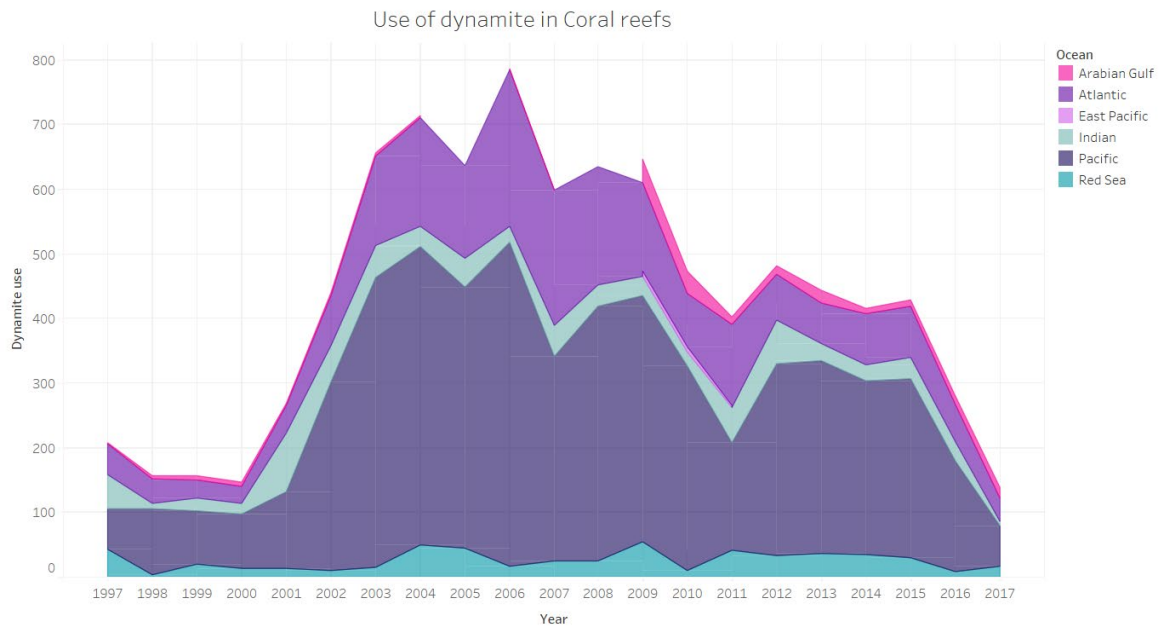


Flag\_registry and vessel\_class\_registry. Color shows details about flag\_registry. Size shows Count Vessels per country. The marks are labeled by flag\_registry and vessel\_class\_registry. The view is filtered on flag\_registry and vessel\_class\_registry. The flag\_registry filter has multiple members selected. The vessel\_class\_registry filter keeps 17 of 627 members.

<https://globalfishingwatch.org/dataset-and-code-fishing-effort/>



The interaction in this visualisation is that if you hover over one of the squares you can see the details about that specific kind of fishing. In this specific visualisation the top 10 countries with the most registered fishing ships is displayed.



The plot of Dynamite use for Year. Color shows details about Ocean.

<https://www.kaggle.com/datasets/oasisdata/noaa-reef-check-coral-bleaching-data>