Asking Questions About

CLIMATE CHANGE

WHAT IS CLIMATE CHANGE?

- According to NASA, climate change is the “long-term change in the average weather patterns that have come to define Earth’s local, regional and global climates.”
- The rapid climate change observed beginning in the 20th century through the present is largely due to human activities, including:
  - burning fossil fuels, deforestation, and farming livestock
- These activities increase greenhouse gases in the atmosphere and lead to a rise in the earth’s average surface temperature
  - higher temperatures can cause (among many other things): extreme droughts and nutrient loss from soil, frequent wildfires, increased intensity of tropical cyclones, melting arctic ice, and rising sea-levels

CLIMATE CHANGE DATASETS

IMF | CLIMATE CHANGE DASHBOARD

NOAA National Centers for Environmental Information
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

THE WORLD BANK
IBRD • IDA

Environmental Defense Fund
The U.S. Climate Vulnerability Index

EXAMPLE RESEARCH QUESTION

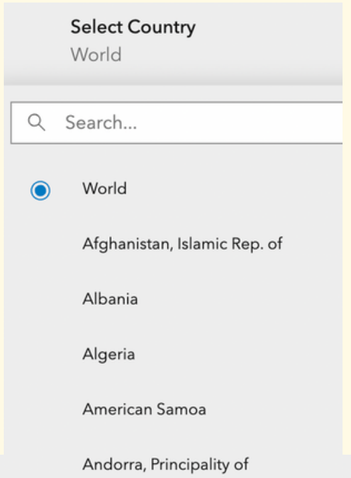
IMF | CLIMATE CHANGE DASHBOARD

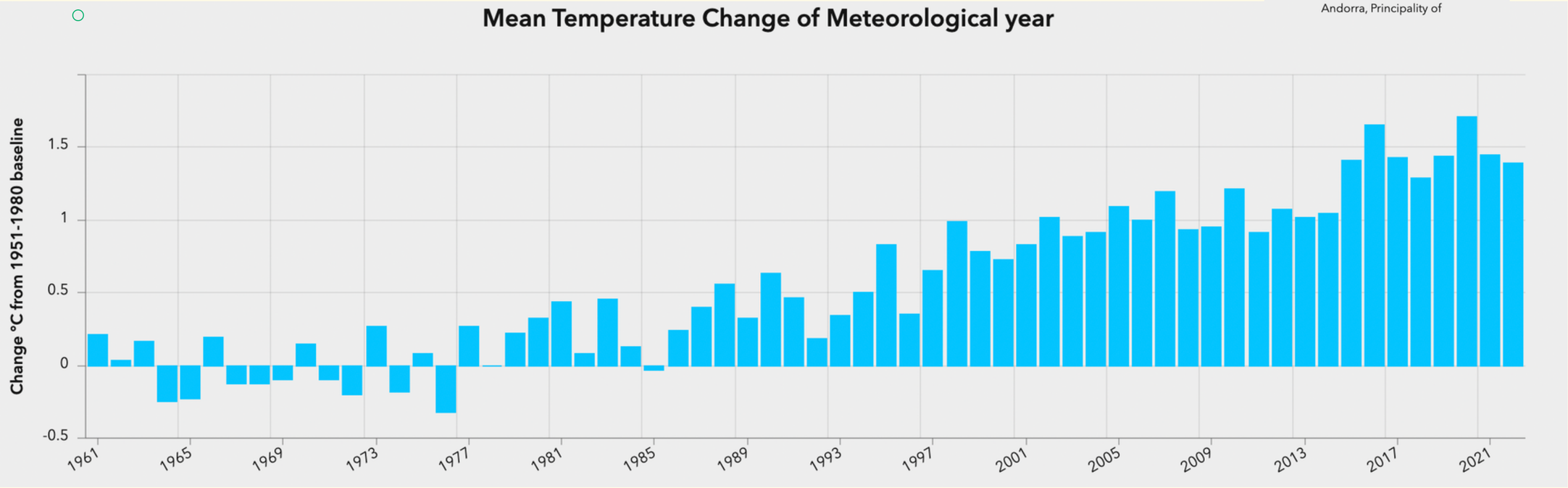
How have average surface temperatures changed globally over the last 10 years?

How to use:

1. To view and export data from the dataset, click the download data button on the lower right side 

2. To filter and sort by country, specify country of interest in the upper right corner





EXAMPLE RESEARCH QUESTION

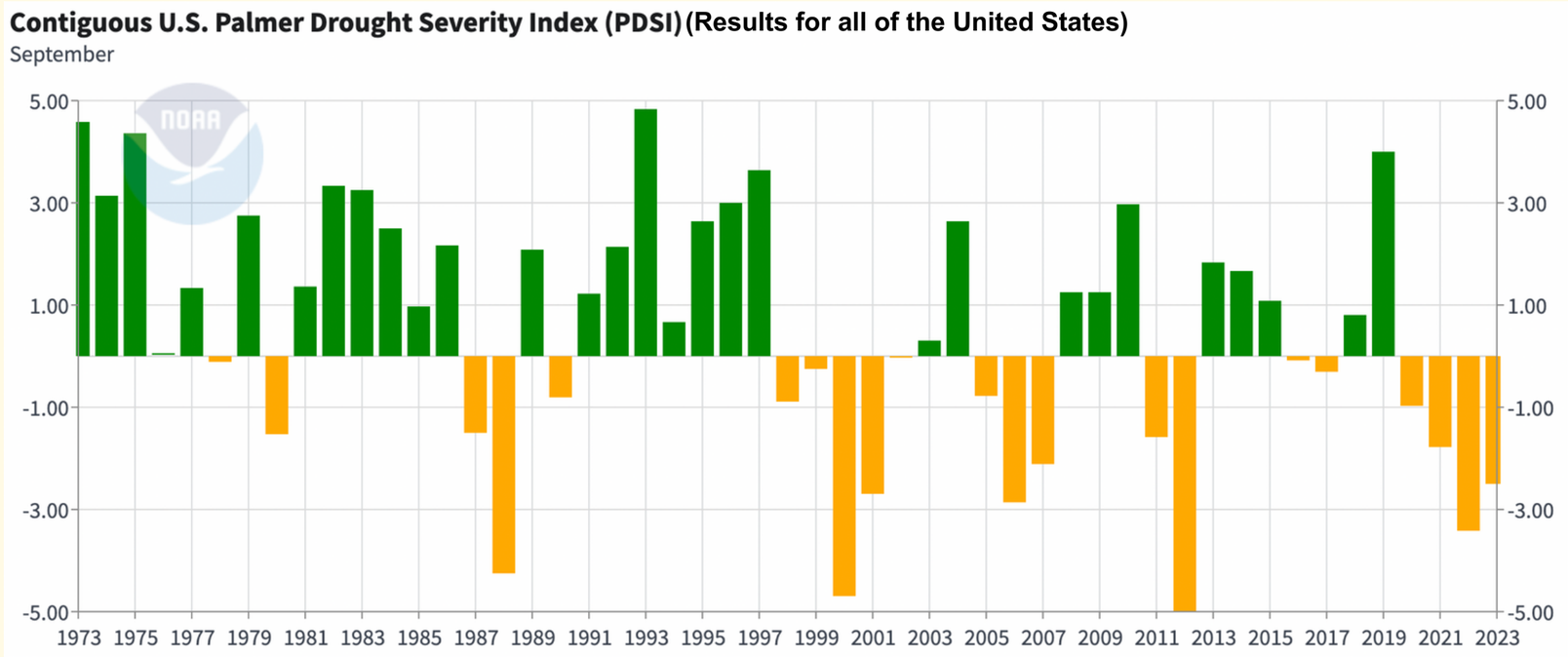
How has drought severity changed in the US over the past 50 years?

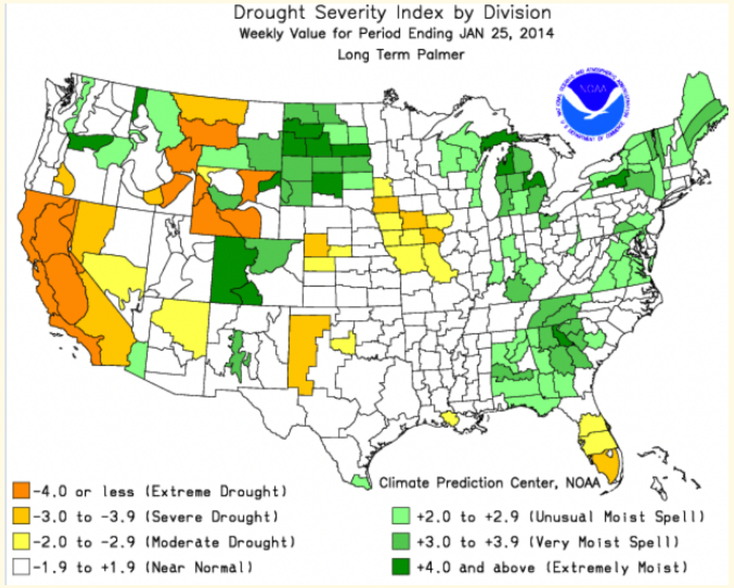
National Centers for Environmental Information
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

How to use:

1. From the filtering sections, select "Palmer Drought Severity Index"
2. Indicate which month and which time periods you are interested in
3. To compare yearly values, select each of the 12 months and calculate with raw data
4. Data can be exported by clicking one of the download buttons in the bottom right corner: **Download:** CSV JSON XML
5. Drought index can be interpreted with the key shown on the map of the US below

Parameter:	Palmer Drought Severity Index (PDSI)
Time Scale:	1-Month
Month:	September
Start Year:	1973
End Year:	2023





EXAMPLE RESEARCH QUESTION

THE WORLD BANK
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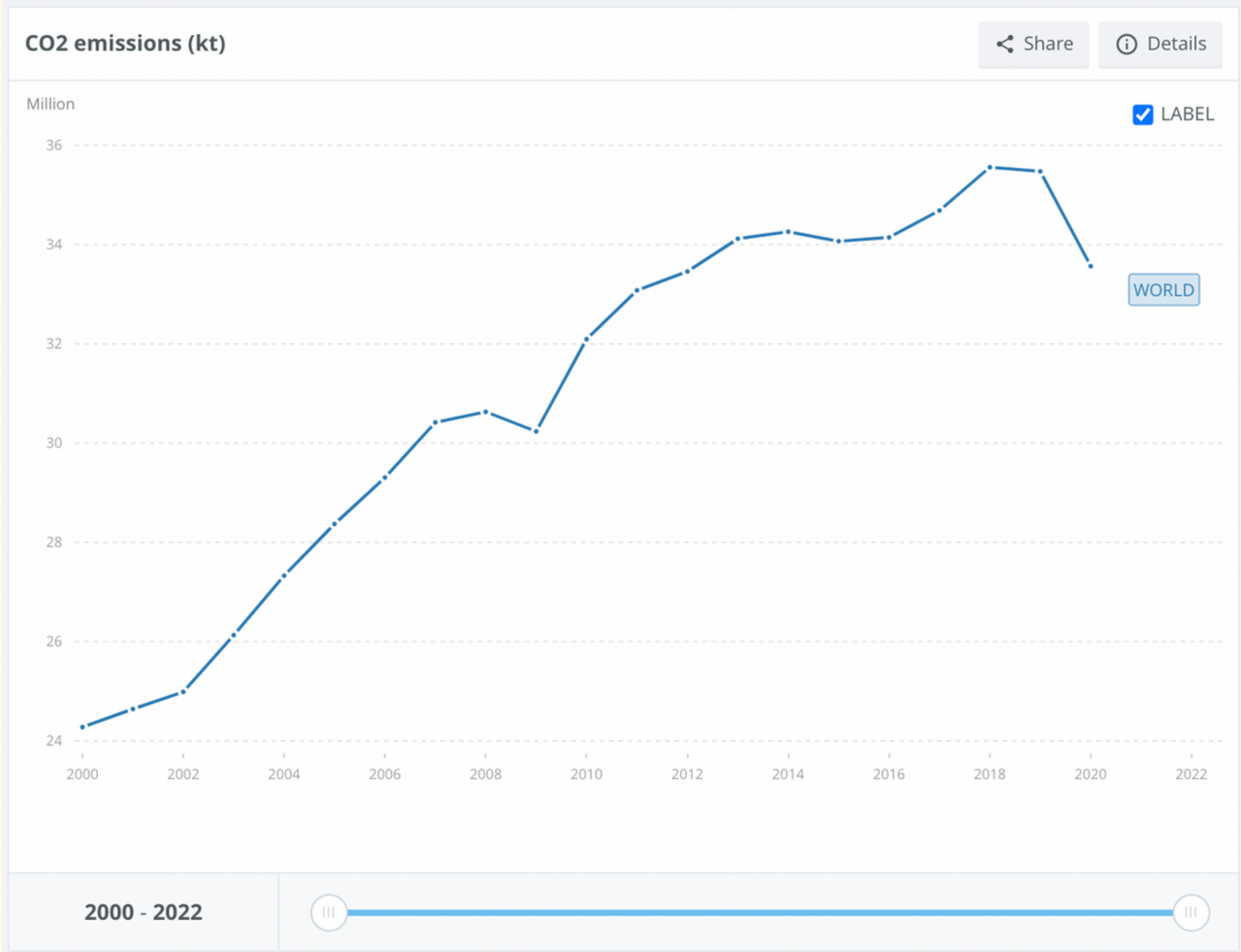
How have global CO2 emissions changed in the last 10 years?

How to use:

1. To set your year parameters, use the sliding year bar at seen at the bottom of the graph
2. The graph represents world total values and you can get each individual data point by hovering over the circle for each year
3. To get specific details for each country, click one of the download buttons: Download CSV XML EXCEL
4. The individual country value will give you specific information (if available) for each country (see below for an example of Afghanistan)

Afghanistan	CO2 emissions from solid fuel consumption (% of total)	30.973451327
Afghanistan	CO2 emissions from solid fuel consumption (kt)	128.345
Afghanistan	CO2 emissions (kg per 2017 PPP $ of GDP)	
Afghanistan	CO2 emissions (kg per PPP $ of GDP)	
Afghanistan	CO2 emissions (metric tons per capita)	
Afghanistan	CO2 emissions from liquid fuel consumption (% of total)	65.486725663
Afghanistan	CO2 emissions from liquid fuel consumption (kt)	271.358
Afghanistan	CO2 emissions (kt)	
Afghanistan	CO2 emissions (kg per 2015 US$ of GDP)	
Afghanistan	CO2 emissions from gaseous fuel consumption (% of total)	0
Afghanistan	CO2 emissions from gaseous fuel consumption (kt)	0



EXAMPLE RESEARCH QUESTION

Are minority status & language barriers related to climate disaster vulnerability in the US?

Environmental Defense Fund

The U.S. Climate Vulnerability Index

How to use:

1. Select a county or census track of interest on the map to see the percentile vulnerability ranking, darker colors=more vulnerable
2. Clicking "View Report" can give you more specific detail for each climate vulnerability metric value
3. Clicking multiple predictors (in the example we see "Minority Status & Language" + "Cost of Climate Disasters") can help you measure the impact of social factors on climate change vulnerability