

# Title: The Impact of Annual Surface Temperature Changes

## Introduction:-

In this data science project, I aim to explore the impact of Annual Surface Temperature Change. The primary question is: How have different regions around the world been affected by changes in surface temperature in terms of climate-related disasters?

## Data sources

### 1. Annual Surface Temperature Change

- **Metadata URL:**  
<https://climatedata.imf.org/datasets/4063314923d74187be9596f10d034914/explore>
- **Data URL:**  
<https://github.com/PrinsSayia01/MADE-PROJECT/blob/main/project/Temperature-Changes.csv>
- **Data Type:** CSV
- **Period:** 1961-2022
- **Data Quality:**

Dimensions	
Accuracy	True
Completeness	False
Consistency	True
Timeliness	True
Relevancy	True

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### 2. Climate-related Disasters Frequency

- **Metadata URL:**  
<https://climatedata.imf.org/datasets/b84a7e25159b4c65ba62d3f82c605855/explore>
- **Data URL:**  
<https://github.com/PrinsSayia01/MADE-PROJECT/blob/main/project/Disasters-Frequency.csv>
- **Data Type:** CSV
- **Period:** 1980-2022
- **Data Quality:**

Dimensions	
Accuracy	True
Completeness	False
Consistency	True
Timeliness	True
Relevancy	True

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**Reason:**

I have selected these datasets for a comprehensive and focused study on the effects of temperature changes on climate-related disasters. the necessary information to analyze and understand the intricate dynamics between climate change and its real-world impacts, making them ideal for my project.

**Libraries Used**

- **Python:** The entire pipeline is implemented in Python.
- **Pandas:** Used for data manipulation and transformation.

**Setup and Imports**

1. Importing required libraries
2. Defining the directory to store database files

```
import pandas as pd
import sqlite3
import re
import os
import sys
from alerts import *
```

3. Data Pipeline Implementation

```
def main():
    # Annual Surface Temperature Change Data Source
    p1 = Pipeline()
    p1.url = "https://github.com/PrinsSayja01/MADE-PROJECT/blob/main/project/Temperature-Change.csv"
    p1.dropColumns = ["ObjectId", "Indicator", "Source", "CTS_Code", "CTS_Name", "CTS_Full_Descriptor"]
    renameColumns1 = {"variable": "Year", "value": "Temperature"}
    p1.csvFetch()
    p1.columnSelector()
    p1.meltTable(["ISO3", "Country"], p1.getYearsFromColumn())
    p1.renameColumn(renameColumns1)
    p1.fixYear()

    # Climate-related Disasters Frequency Data Source
    p2 = Pipeline()
    p2.url = "https://github.com/PrinsSayja01/MADE-PROJECT/blob/main/project/DisastersFrequency.csv"
    p2.dropColumns = ["ObjectId", "Source", "CTS_Code", "CTS_Name", "CTS_Full_Descriptor"]
    renameColumns2 = {"variable": "Year", "value": "Incident"}
    p2.csvFetch()
    p2.rowSelector("Indicator", "Climate related disasters frequency, Number of Disasters: TOTAL")
    p2.columnSelector()
    p2.meltTable(["ISO3"], p2.getYearsFromColumn())
    p2.renameColumn(renameColumns2)
    p2.fixYear()

    # Final Data
    p3 = Pipeline()
    p3.dataLeftJoin(p1.PipelineData, p2.PipelineData, ["ISO3", "Year"], "_temp", "_incident")
    p3.dropNull()
    p3.limitYear(2010, 2020)
    # p3.limitISO3(["AFG"])
    # Saving Data
    targetedPath = os.path.join(os.getcwd(), "data\\")
    fileName = "SurfaceTemperatureChangeOnClimate_relatedDisaster.sqlite"
    dbName = "Temp_Disaster"
    p3.csvToSQLite(targetedPath, fileName, dbName)
```

#### 4. Results :-

Dimensions	
Accuracy	True
Completeness	True
Consistency	True
Timeliness	True
Relevancy	True

	ISO3 TEXT	Country TEXT	Year INTEGER	Temperature REAL	Incident REAL
1	AFG	Afghanistan, Islami...	2010	1.613	4.0
2	ALB	Albania	2010	1.191	1.0
3	AGO	Angola	2010	1.194	3.0
4	ATG	Antigua and Barbuda	2010	1.153	1.0
5	ARG	Argentina	2010	0.135	1.0
6	AUS	Australia	2010	0.673	8.0
7	AZE	Azerbaijan, Rep. of	2010	2.327	1.0
8	BGD	Bangladesh	2010	0.768	6.0
9	BRB	Barbados	2010	1.147	2.0
10	BEL	Belgium	2010	0.233	3.0
11	BLZ	Belize	2010	0.843	1.0
12	BEN	Benin	2010	1.23	1.0
13	BOL	Bolivia	2010	0.68	4.0
14	BIH	Bosnia and Herzegov...	2010	0.954	3.0