

GLOBAL DISASTER ANALYTICS (SQL)

Analyzing Environmental, Economic and
Humanitarian Impacts

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DATABASE & STRUCTURE

Tables included in the project

-  Countries – Region, GDP, population data
-  Disaster Types – Category, severity, subtypes
-  Disasters – Impact scale, affected population, damage estimates
-  Relief Efforts – Organizations, response times, funding, volunteers
-  Environmental Impact – CO₂, air, water & soil degradation indicators
-  Economic Impacts – GDP loss, recovery time, financial aid flows

environmental_impact	
air_quality_drop_index	Integer:N
co2_increase_percent	Integer:N
disaster_id	Integer
env_id	Integer:I:U
forest_loss_hectares	Integer:N
soil_degradation_index	Integer:N
water_contamination_index	Integer:N

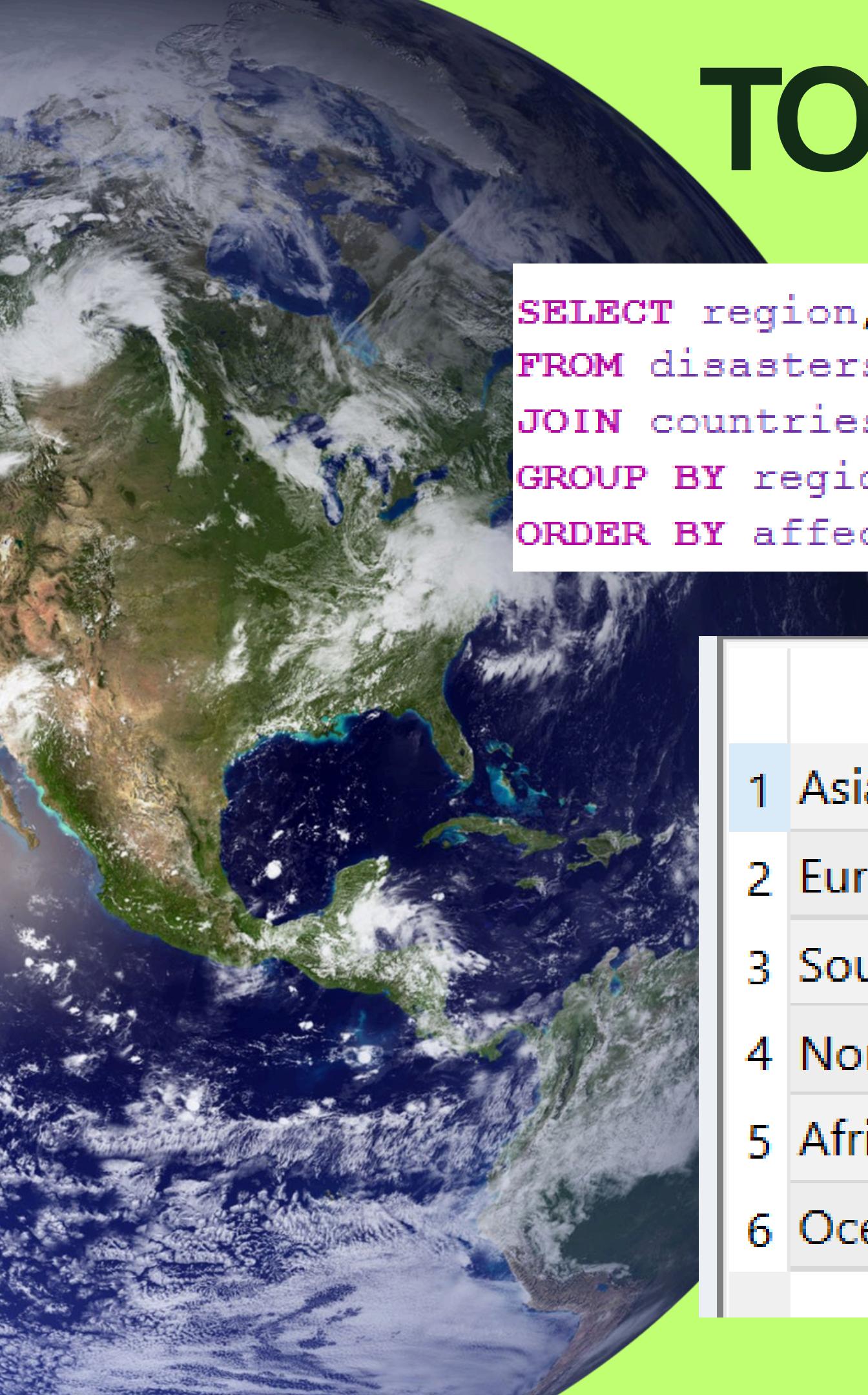
disasters	
country_id	Integer
disaster_id	Integer:I:U
disaster_name	Character Varying(100):I:U
disaster_type_id	Integer
end_date	Date:N
severity_index	Integer:N
start_date	Date:N
total_affected	BigInt:N
total_damage	BigInt:N
total_deaths	Integer:N
Uniques (1)	

relief_efforts	
aid_type	Character Varying(100):N
disaster_id	Integer
funds_allocated_musd	Integer:N
organization	Character Varying(100):N
relief_id	Integer:I:U
response_time_days	Integer:N
volunteers	Integer:N

economic_impacts	
country_id	Integer
econ_id	Integer:I:U
foreign_aid_usd_million	BigInt:N
gdp_loss_percent	Numeric:N
insurance_payout_usd_million	BigInt:N
recovery_time_years	Integer:N
total_damage_usd_million	BigInt:N
total_disasters	Integer:N
year	Integer:N

countries	
country_id	Integer:I:U
country_name	Character Varying(100):I:U
gdp_per_capita	Integer:N
population	BigInt:N
region	Character Varying(100):N
urbanization_rate	Integer:N
Uniques (1)	

disaster_types	
description	Character Varying(200):N
disaster_type	Character Varying(50):I:U
disaster_type_id	Integer:I:U
subcategory	Character Varying(50):N
Uniques (1)	



TOP IMPACT REGIONS

```
SELECT region, SUM(total_affected) AS affected_people  
FROM disasters d  
JOIN countries c USING(country_id)  
GROUP BY region  
ORDER BY affected_people DESC;
```

	region	affected_people
1	Asia	82934305
2	Europe	62115052
3	South America	34811855
4	North America	27887464
5	Africa	16771090
6	Oceania	14993235

MOST DAMAGING DISASTER TYPES

```
SELECT disaster_type, SUM(total_damage) AS total_damage
FROM disasters d
JOIN disaster_types dt USING(disaster_type_id)
GROUP BY disaster_type
ORDER BY total_damage DESC;
```

	disaster_type	total_damage
1	Tsunami	173853786
2	Wildfire	161014818
3	Earthquake	140330257
4	Hurricane	119587269
5	Tornado	109407682
6	Flood	104854758
7	Extreme Heat	82132708
8	Drought	71422663
9	Volcano	68591916
10	Landslide	38097302



RESPONSE PERFORMANCE

```
SELECT organization, AVG(response_time_days) AS avg_response
FROM relief_efforts
GROUP BY organization
ORDER BY avg_response ASC;
```

	organization	avg_response
1	CARE	13.3
2	UNICEF	13.5714285714285714
3	World Food Programme	14.875
4	Save the Children	15
5	Oxfam	15.4285714285714286
6	UNDP	15.6363636363636364
7	WWF	15.8
8	FEMA	17.8
9	UNHCR	19.2857142857142857
10	Red Cross	20.5

Top GDP loss countries (avg)

```
SELECT c.country_name, ROUND(AVG(e.gdp_loss_percent),2) AS avg_gdp_loss
FROM economic_impacts e
JOIN countries c ON c.country_id = e.country_id
GROUP BY c.country_name
ORDER BY avg_gdp_loss DESC
LIMIT 10;
```

	country_name	avg_gdp_loss
1	India	1.23
2	Italy	1.15
3	United States	1.13
4	Nigeria	1.08
5	Australia	1.05
6	Egypt	1.03
7	Chile	1
8	South Korea	0.95
9	Indonesia	0.95
10	Norway	0.94



Volunteers by organization

```
| 166 | SELECT r.organization, SUM(r.volunteers) AS total_volunteers  
| 167 | FROM relief_efforts r  
| 168 | GROUP BY r.organization  
| 169 | ORDER BY total_volunteers DESC;
```

	organization	total_volunteers
1	CARE	104606
2	UNDP	104406
3	FEMA	103491
4	Oxfam	84204
5	World Food Programme	84198
6	UNHCR	73945
7	UNICEF	67980
8	WWF	61353
9	Save the Children	33928
10	Red Cross	27288

Most frequent disaster type by country

```
WITH T AS (
    SELECT c.country_name, dt.disaster_type, COUNT(*) AS hits
    FROM disasters d
    JOIN countries c ON c.country_id = d.country_id
    JOIN disaster_types dt ON dt.disaster_type_id = d.disaster_type_id
    GROUP BY c.country_name, dt.disaster_type
)
SELECT country_name, disaster_type, hits
FROM (
    SELECT T.*,
           ROW_NUMBER() OVER (PARTITION BY country_name ORDER BY hits DESC) AS rn
    FROM T
) X
WHERE rn = 1
ORDER BY hits DESC;
```

	country_name	disaster_type	hits
1	Chile	Flood	2
2	Norway	Tsunami	2
3	China	Wildfire	2
4	Japan	Wildfire	2
5	Egypt	Earthquake	2
6	United States	Tsunami	2
7	India	Flood	1
8	Argentina	Extreme Heat	1
9	Italy	Extreme Heat	1
10	Mexico	Hurricane	1
11	Nigeria	Extreme Heat	1
12	South Korea	Hurricane	1
13	Spain	Volcano	1
14	Turkey	Hurricane	1
15	Indonesia	Extreme Heat	1
16	Australia	Flood	1
17	Brazil	Tsunami	1
18	Canada	Tornado	1
19	France	Landslide	1



SUMMARY

This project analyzes global natural disasters to understand their environmental, economic, and humanitarian impacts.

Through a series of SQL queries, the project:

- Identifies which regions are most vulnerable
- Reveals which disaster types result in the highest economic damage
- Analyzes response speed and volunteer participation among relief organizations
- Evaluates how disasters affect CO₂ levels, air quality, water safety, and soil health
- Measures GDP loss, recovery time, and the role of international aid

Overall, this project provides a clear and data-driven understanding of how natural disasters impact societies and ecosystems, supporting better policy-making, risk mitigation, and resilience planning.