INDICATORS OF THE PLANET EARTH

(A Capacity Building Resource on Climate Action)

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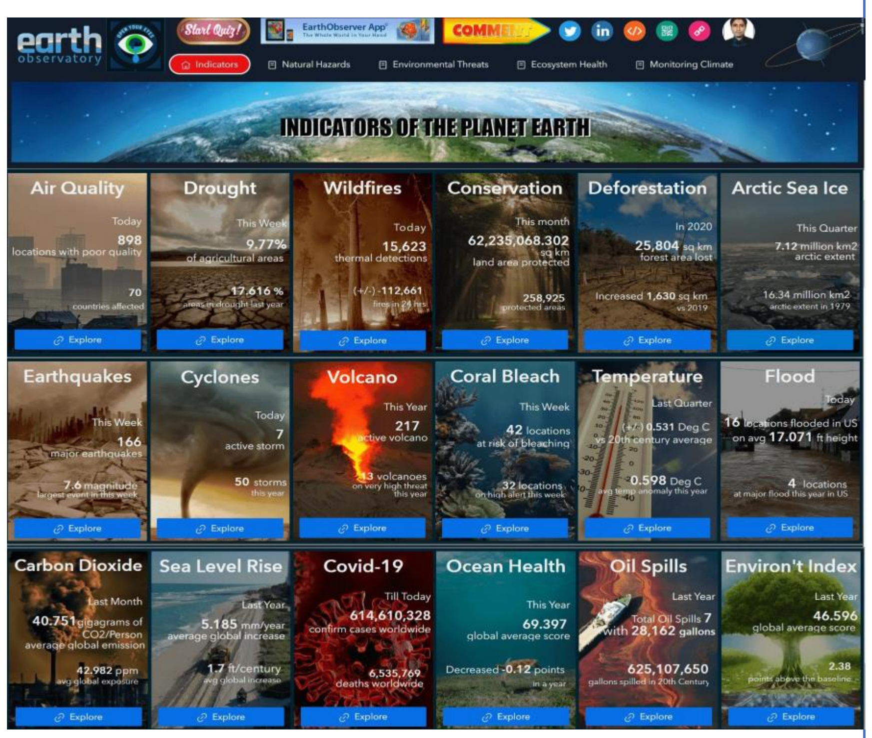
ABSTRACT >>

It's a user-friendly portal/gateway which is bundled with multi Earth observations in which the visualizations are categorized in form of Earth Indicators, Natural Hazards, Environmental Threats, Ecosystem Health and Monitoring Climate. This web app is loaded with 18 Earth Indicators, 18 Geo Maps, 12 Earth Engine Apps, 18 Infographic Data Analysis in Tableau followed by 09 Quizzes based on various climate change factors. This app provides an opportunity to explore multi EO at one place resulting into focused study and creates awareness as well.



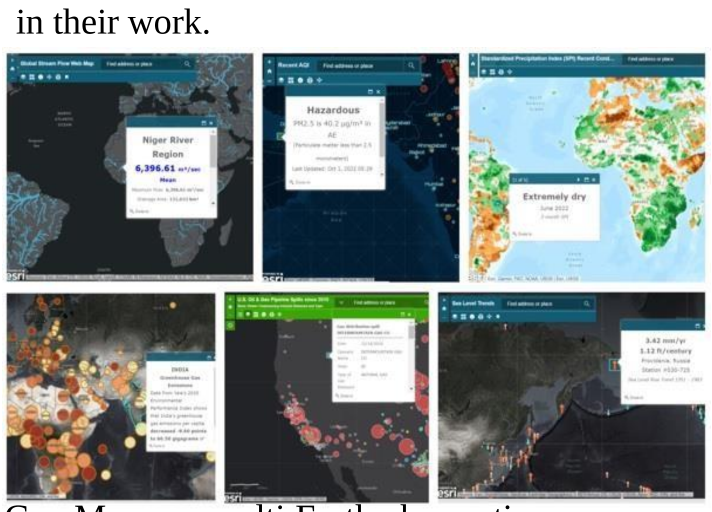
Dashboard of 18 Earth Indicators on multi observations.

OBJECTIVE >>

The main objective is to create a user-friendly virtual gateway of capacity-building resources that will help professionals of all levels and disciplines to find the training they need to apply EO. This interactive portal is for users/community those who want to search, view, explore, analyze and share the tools and resources from one common platform instead of training themselves from various other websites.

CLIMATE CHALLENGES ADDRESSED >>

Earth Observations (EO) can help policymakers around the world make more informed decisions to address natural disasters, land management issues, the impacts of climate change, and other environmental issues. However, policymakers and community members first need to develop the capacity (knowledge and skills) to use EO in their work.



Geo Maps on multi Earth observations.

Satellite based assessments of Natural Disasters portrayed in form of 18 Earth Indicators, displaying the results in terms of historical and near to real time events:

1) Air Quality
2) Drought
3) Wildfires
4) Conservation
5) Deforestation
6) Arctic Sea Ice
7) Earthquake
8) Cyclones
9) Volcanic Erruptions
10) Coral Bleach
11) Global Temp
12) Flood
13) Carbon-di-oxide
14) Sea Level Rise
15) Covid -19
16) Ocean Health
17) Oil Spills
18) Env't Index

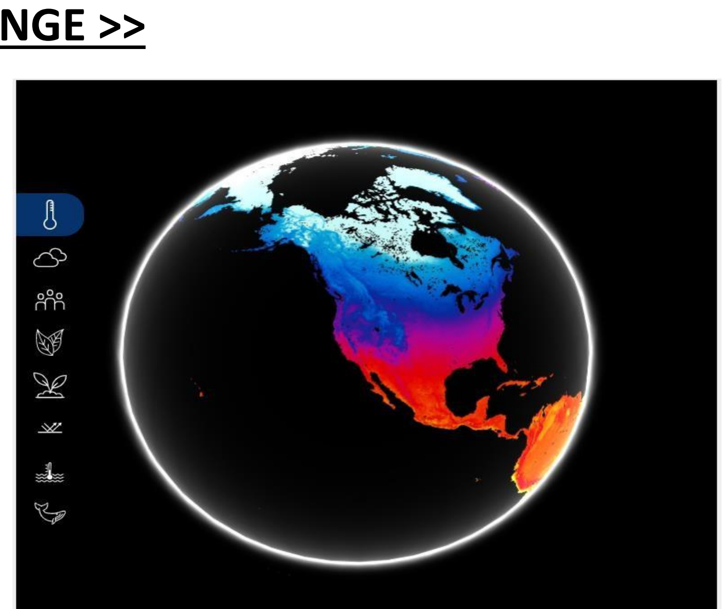
Scientists, School and College students, community stakeholders, science enthusiasts and the Local and Global scientific community are the target audiences for the app.

INNOVATION >>

This web app is able to obtain results based on user inputs by experimenting with the intuitive tabs and buttons and it portrays the results of climate severity in a very simplified manner. The portal also shares methods and steps which may provide important contributions to protecting and saving the planet. It offers a one site solution to the large number of apps that are single-purpose only, allowing users to examine multiple observations across eighteen different areas of observation at the same time. The site is unique for this reason, and user friendly at the same time. This geo-spatial app addresses the solution towards one of the SDG Goal No 13 i.e Climate Action.

HELPING TO COMBAT CLIMATE CHANGE >>

The app is able to depict more accurate pictures of various Earth Observation models in near-to-real time duly supported by the databases published in the public domain by NASA/JAXA/ESA/ESRI Knowledge is half the battle. If our communities and the new generation are fully aware of the hazards associated with climate change, and the disasters that ensue, brought about by humans, we hope they will be more cautious about irresponsible climate actions in the future. Illustration of this dynamic globe is created by using the datasets from NASA Earth Observations (NEO).



NASA Earth Observations (NEO).

WORKING & METHODOLOGY >>

1) APIs have been put in use to obtain real time information from ARCGIS web servers.
2) The GIS mapping feature has been used for Geodata based output on ARCGIS ONLINE platform supported by ESRI.
3) This project is developed on the ARCGIS Experience Builder platform supported by ESRI.
4) Google Earth Engine is used to create Earth Observer Apps.
5) Detailed data analysis is done with the help of Tableau, a tool that extracts data from various websites and translates it into visualizations.
6) The site uses data from NASA, NOAA, ESRI, JAXA, USGS, NCEI, ESA, NSIDC.

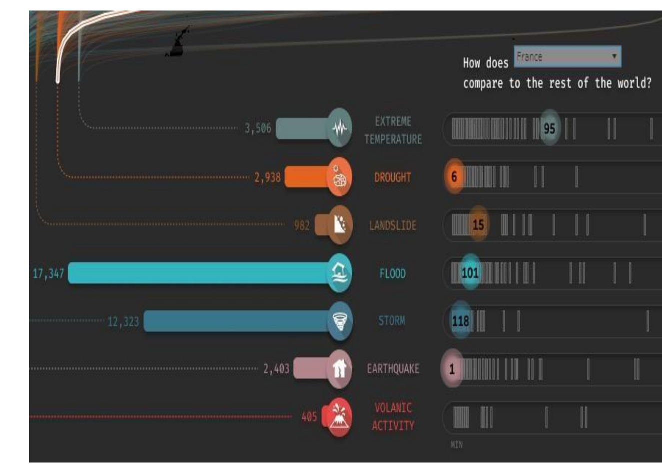
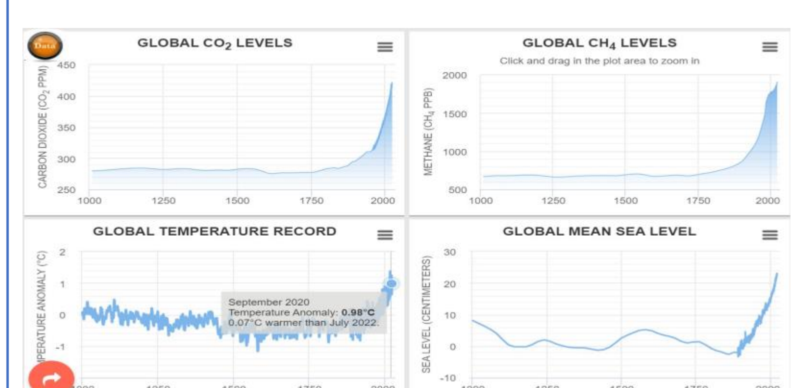


Illustration of Disasters in France from 1960-2018



In this web app Disasters/Hazards can be visualized in form of Geo maps along with respective data information/analysis obtained by various APIs (application programming interfaces) from GIS community. Some of the Earth indicators are also equipped with forecasting information as well, in order to ensure public safety.

RESULTS & ANALYSIS >>

This Graph illustrates the change in global surface temperatures. The 10 warmest years in the 134 year record all have occurred since 2000, with the exception of 1998.The year 2015 ranks as the warmest on record. (Source: NASA/GISS)

Reductions of sea ice extent are accelerating warming along with exposing otherwise protected areas to resource exploitation. Below illustrated graph shows the continual decline in sea ice extent. Last 30 years data trends with next 15 years forecast displays the severity of the current conditions. (Source: NSIDC)

CONCLUSION >>

Global warming is the most crucial existential problem of our age, which requires significant societal changes to mitigate it. Although we have been raising public awareness on climate change for years, this is not enough; the global temperature increases day by day. Even with a reduction in CO2 emissions during the stay at home due to COVID-19, atmospheric CO2 levels are at their highest ever. Furthermore, disasters such as droughts, storms and floods caused by climate change have become stronger and more frequent; also, the destruction they cause has increased. Regrettably, time is running out fast, and it seems that long-term actions such as using eco-friendly light bulbs and solar energy panels cannot stop this increase.

REFERENCES TO DATA SOURCES >>

Space Agency data used in the project:

NASA, NOAA, ESRI, JAXA, USGS, NCEI, ESA, NSIDC

Other Resources: Nurture the Nature - Space Apps Challenge | 2022

Project Demo: https://www.youtube.com/watch?v=i9krcN5oYAU