

IITM EIACP PC RP NEWSLETTER

APR-JUL 2024

CLIMATE CHANGE AND FOREST FIRE

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LiFE
Lifestyle for
Environment

**INDIAN INSTITUTE OF TROPICAL METEOROLOGY (IITM),
PUNE**

**ENVIRONMENTAL INFORMATION, AWARENESS, CAPACITY BUILDING, AND LIVELIHOOD
PROGRAMME (EIACP)**

PROGRAMME CENTRE - RESOURCE PARTNER (PC-RP)

(Ministry of Environment, Forest & Climate Change, Govt. of India)

Preface

The increasing frequency and intensity of forest fires around the world highlight the urgent need for global awareness and action. Climate change, rising temperatures, and prolonged droughts continue to fuel devastating wildfires, threatening ecosystems, livelihoods, and air quality.

*This newsletter, *Climate Change and Forest Fires: A Global Overview* (April–June 2024), provides a comprehensive analysis of wildfire events across different continents, including North America, South America, Europe, and Asia. It examines the causes, consequences, and mitigation efforts undertaken during this period.*

Through scientific data, expert insights, and real-world case studies, this edition sheds light on the interconnected challenges posed by climate change and human activities in exacerbating wildfires. The report also highlights IITM EIACP Pune's contributions in promoting environmental awareness, including webinars, documentaries, and pledges aimed at fostering a sustainable future.

We hope this newsletter serves as an informative resource, inspiring readers to advocate for proactive policies, sustainable practices, and global cooperation to combat the growing threat of wildfires.



Dr. Latha R

Inside this issue...

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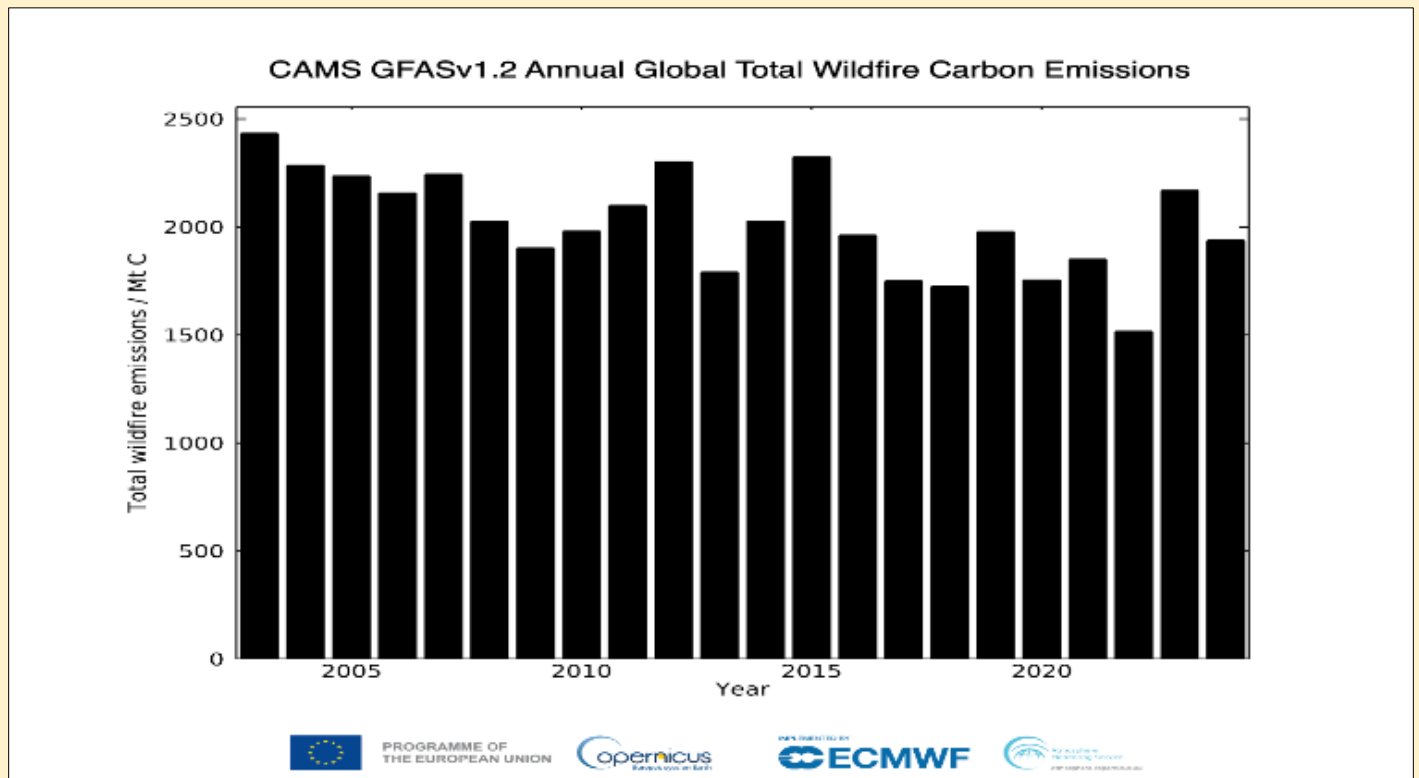
Introduction

The growing impact of climate change continues to fuel devastating wildfires across the globe. From North America to South America, Europe, and Asia, rising temperatures, prolonged dry spells, and extreme weather patterns are making forests more vulnerable to fires. This newsletter provides a comprehensive analysis of wildfire trends between April and July 2024, examining their causes, consequences, and mitigation efforts worldwide.

Global Wildfire Overview (April–July 2024)

Over the past four months, wildfires have caused unprecedented destruction across multiple regions. Key observations include:

- **Canada:** Over 1,497 wildfires burned approximately 522,043 hectares of land, with insured losses



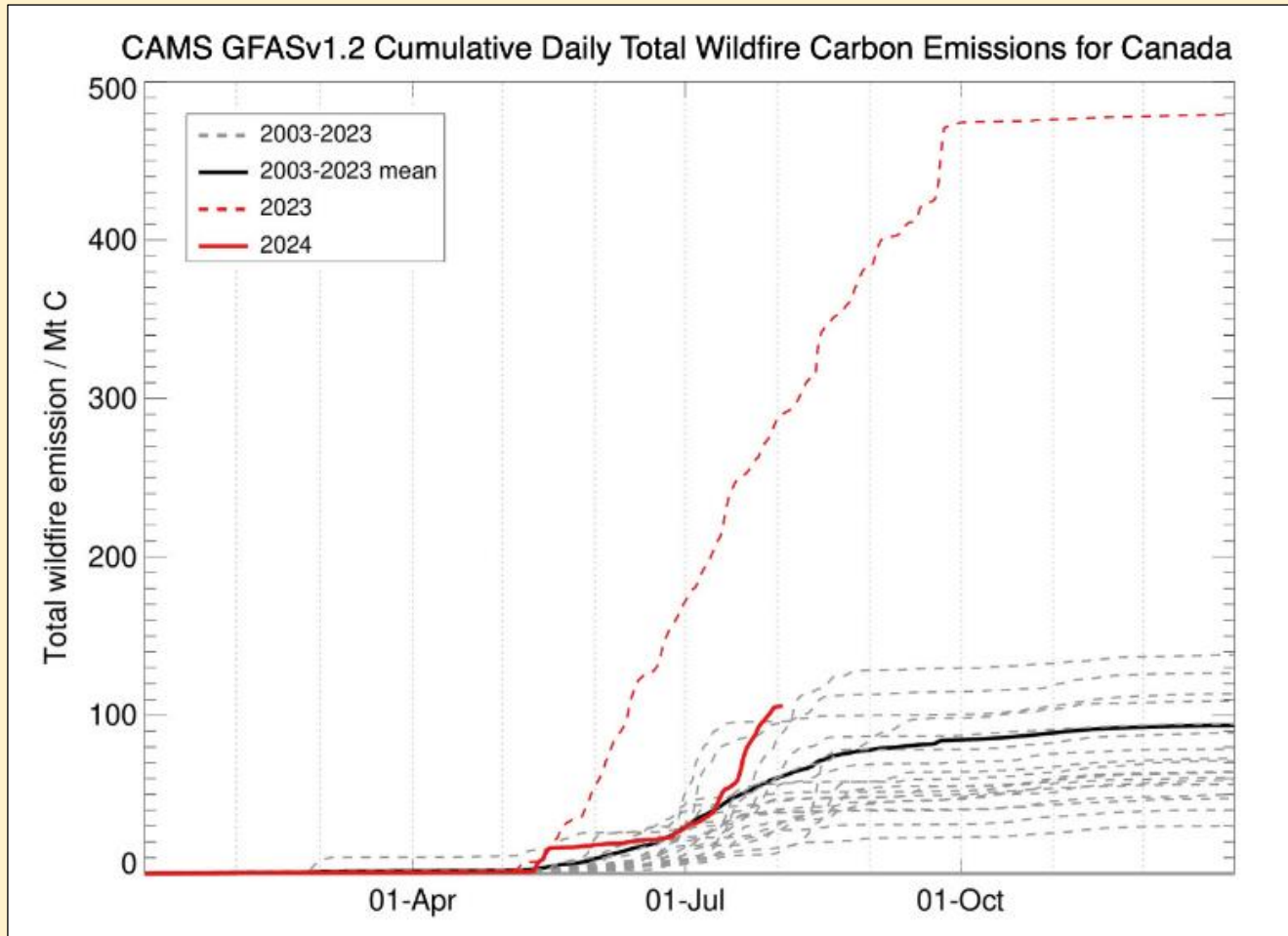
reaching C\$880 million.

- **United States:** Several states, including California and Texas, faced devastating fires, with total damages potentially exceeding \$275 billion.
- **Brazil:** The Pantanal wetlands experienced some of the most severe wildfires in decades, with climate change increasing fire intensity by 40%.
- **Europe:** Greece, Spain, and Italy struggled with wildfires, exacerbated by extreme heatwaves.
- **India:** Uttarakhand witnessed severe forest fires, raising concerns about preparedness and mitigation.

North America

Canada

The 2024 wildfire season was among the most destructive in the past fifty years. By September, over 5.3 million hectares had burned, with significant damage in Jasper, Alberta, where a third of the town was destroyed, resulting in approximately C\$880 million in insured damages. Over 600 fires remained active, primarily in British Columbia.



Cumulative daily total estimated wildfire carbon emissions for Canada, for 2003 to 2024. The outlying data are for the exceptional year of 2023. Credit: CAMS.

- **Wildfire Statistics:** Over 1,497 fires burned approximately 522,043 hectares by June 30, 2024 (NASA FIRMS).
- **Causes:** Rising temperatures (2–4°C above average), precipitation deficit (40% less rainfall in Alberta and British Columbia), and increasingly fire-prone conditions.
- **Economic Impact:** The Insurance Bureau of Canada (IBC) reported wildfire-related insured losses of C\$880 million.
- **Key Incidents:**
 - Early Season Fires:** Around 150 "zombie fires" from 2023 reignited as early as February.

Jasper Fire: A mid-June blaze devastated the tourist town of Jasper, causing evacuations and extensive property damage.

- **Comparison to Previous Years:** While the number of fires was slightly above the 10-year average of 5,736 fires, the total area burned by June 2024 was significantly lower than the 17 million hectares affected during the record-setting 2023 season.

United States

The wildfire season began with notable incidents across several states. In Colorado, human-caused wildfires were reported between April 15 and May 13. Arizona experienced the Wolf Fire, burning approximately 9,872 acres from April 29 to July 26. Additionally, the Flying Bucket Fire in Maricopa County consumed around 2,795 acres starting May 6.

- **Major Wildfires by State:**

- **Texas:** *Mile Marker 32* fire (1,424 acres burned).
- **California:** *Line Fire, Bridge Fire, Airport Fire* (200 square miles affected).
- **Florida:** Human-caused fire (estimated damage \$40,000).
- **Arizona:** *Spring Fire, Adams Fire, Foote Fire* (cumulative damages exceeding \$1.5 million).
- **New Mexico:** *Antone Fire* (12,397 hectares burned).
- **Causes:** Equipment malfunctions (e.g., Southern California Edison's faulty infrastructure), prolonged droughts, and extreme heat.
- **Economic Impact:** Estimated insured losses in California range between \$28 billion and \$275 billion.

South America

Brazil – Pantanal Wetlands

- **Climate Conditions:**

- The July 2023 – June 2024 period was the warmest on record.
- Paraguay River basin saw its lowest rainfall since 2001.
- Climate change increased extreme conditions by 4–5 times, intensifying fires by 40%.
- **Environmental Impact:** Massive habitat loss in one of the world's most biodiverse regions.

- **Response Measures:**

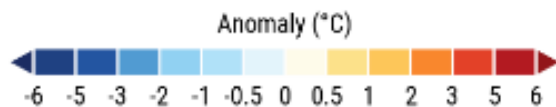
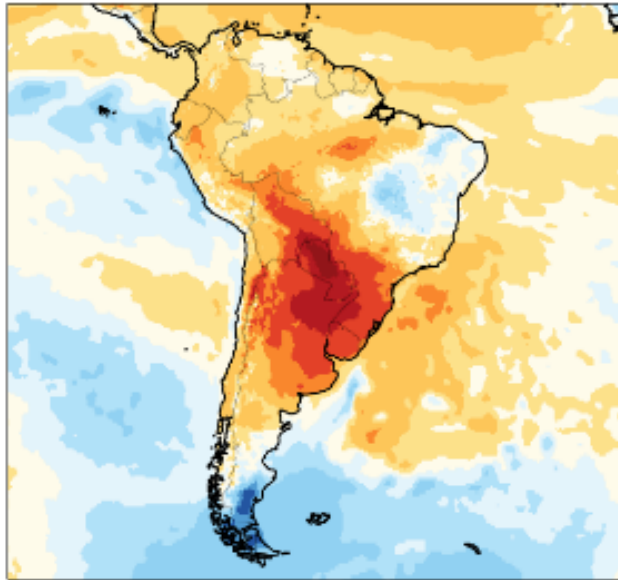
- *Emergency Declaration:* Mato Grosso do Sul declared a state of environmental emergency.
- *Firefighting Operations:* Brazilian Air Force deployed aircraft to combat the wildfires, with federal forces extinguishing 30 of 54 active fires.

- *Community Engagement*: Reforestation initiatives such as *Aquarela Pantanal* were launched.

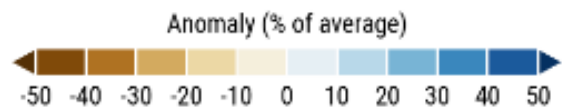
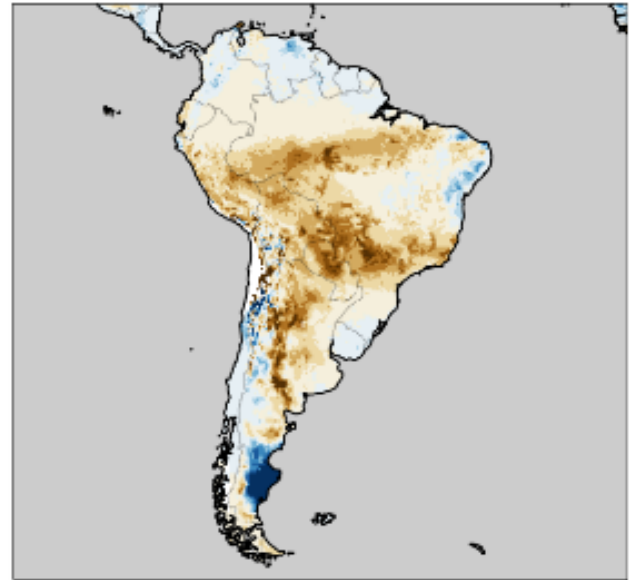
Temperature and soil moisture anomalies for 1–23 June 2024

Reference period: 1991–2020 • Data: ERA5 • Credit: C3S/ECMWF

Surface air temperature anomalies



Soil moisture anomalies



Southern Europe

Greece, Spain, and Italy

• Wildfire Incidents:

- *Greece*: Devastating fires in Attica; over 10,000 hectares destroyed.
- *Spain*: 60,000 hectares burned, particularly in eastern regions.

• Causes:

- Climate change-fueled heatwaves (hottest June–July on record).
- Human activities (arson, negligence, land-use changes).

• Response Measures:

- The European Union deployed emergency resources to combat wildfires in high-risk areas.
- Greece activated the *EU Civil Protection Mechanism*, receiving aid from Italy, France, and Croatia.
- Over 400 firefighters and 22 aircraft were deployed in Greece alone.



- **Pollution and Health Impacts:**

- Air quality degradation led to increased hospital admissions.
- Massive carbon emissions exacerbated climate change.

South Asia (India)

Uttarakhand Wildfires

- **Fire Incidents:** 1,276 fires affecting 1,771.6 hectares of forest land.

- **Contributing Factors:**

- *Anthropogenic activities:* Illegal land clearing and negligence.
- *Climate conditions:* Prolonged dry spells and high temperatures.
- *Chir Pine forests:* Highly flammable due to dry needles.

- **Mitigation Strategies:**

- Government initiatives for controlled burning.
- Strengthened policy enforcement and fund utilization.
- Community-driven fire prevention programs.
- Improved firefighting infrastructure.

Socioeconomic and Environmental Impacts:

- **Human Impact:** Widespread displacement, fatalities, and respiratory illnesses due to air pollution.
- **Biodiversity Loss:** Destruction of ecosystems, endangering species in fire-affected regions.
- **Economic Damage:** Cost of firefighting, insurance claims, and loss of agricultural and commercial assets.

Causes and Contributing Factors:

Wildfires during this period were driven by:

- **Rising Global Temperatures:** Prolonged heatwaves made forests highly flammable.
- **Drought Conditions:** Reduced precipitation intensified fire risks.
- **Human Activities:** Arson, poor land management, and accidental ignitions.
- **Extreme Weather Patterns:** High winds and lightning strikes exacerbated fire spread.

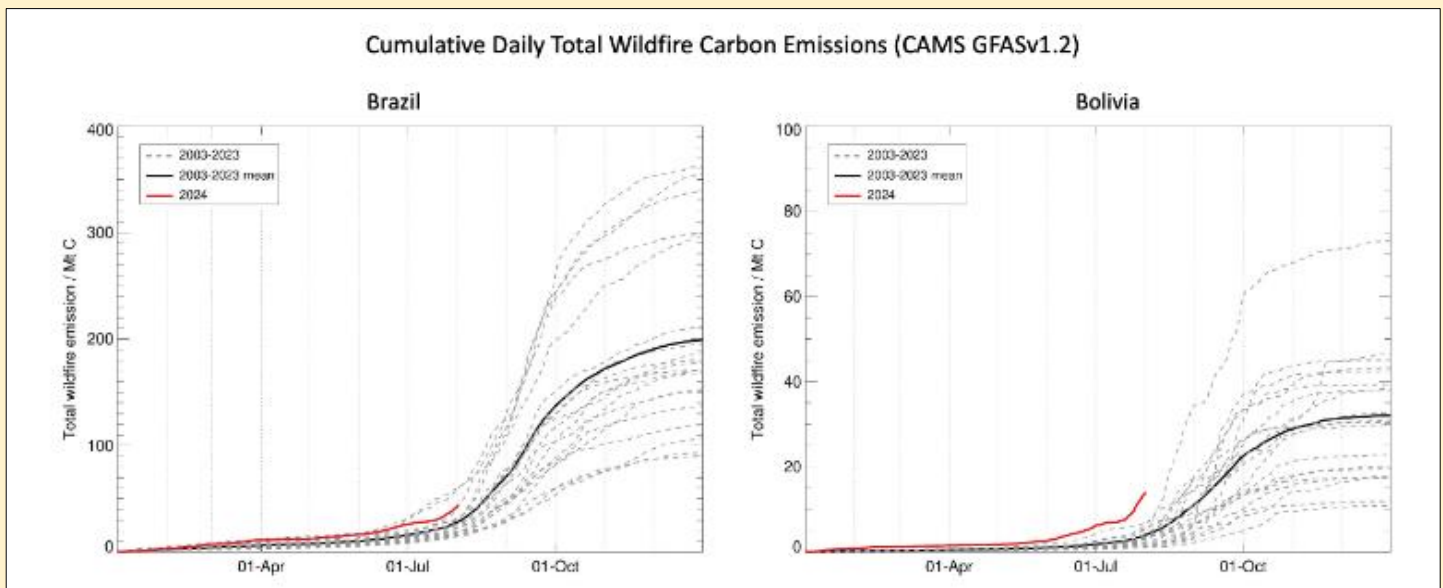
Response and Mitigation Efforts:

Governments and organizations worldwide took urgent steps to address the wildfire crisis:

- **Emergency Declarations & Evacuations:** Thousands were displaced across wildfire-prone regions.
- **Aerial Fire Suppression:** Use of water-bombing aircraft significantly aided firefighting efforts.
- **International Cooperation:** Cross-border support was crucial, especially in Europe and North America.
- **Reforestation & Restoration Initiatives:** Programs launched to rehabilitate affected areas.
- **Firefighting Strategies:** Governments and international agencies deployed resources to contain wildfires.
- **Policy Measures:** Investment in reforestation programs, stricter fire regulations, and fire-resistant infrastructure.
- **Technology in Fire Prevention:** AI-powered early warning systems and advanced satellite monitoring aid in early detection and response.

Climate Change and Environmental Impacts

- **Increased Carbon Emissions:** Wildfires released massive amounts of CO₂, worsening global warming.
- **Biodiversity Loss:** Entire ecosystems were disrupted, endangering wildlife.
- **Air Pollution:** Cities experienced hazardous air quality due to widespread smoke.



Conclusion:

The 2024 wildfire season underscores the growing challenges posed by climate change and human activities. While response efforts have mitigated some impacts, long-term strategies—including improved land management, stringent environmental policies, and enhanced international cooperation—are crucial in combating future wildfire threats.

IITM EIACP's contributions highlighted Apr-Jun 2024:

The Centre organized a webinar on May 26th, 2024, featuring a lecture by Dr. Raymond Ashirwad Duraiswami, the Head of the Department of Environmental Science at Savitribai Phule Pune University, Pune. Dr. Duraiswami spoke on the theme “Land Restoration, Desertification, and Drought Resistance,” focusing on strategies to restore degraded lands, combat desertification, and enhance drought resilience.



YouTube link: https://www.youtube.com/watch?v=G_TV3tgWaZU

VIDEO DOCUMENTARY ON “CLIMATE CHANGE: CHALLENGES, SOLUTIONS, AND THE PATH FORWARD”:

The Centre produced a compelling video documentary titled "Climate Change: Challenges, Solutions, and the Path Forward" for WED 2024 on 28th May 2024. This documentary delves into the complexities of climate change, exploring its impacts on ecosystems, communities, and economies worldwide. Through expert interviews, real-life stories, and scientific insights, the film highlights innovative solutions and collective efforts towards mitigating climate change and building a more sustainable future. It aims to inspire action, raise awareness, and galvanize global solidarity in addressing one of the most pressing challenges of our time.

Key Facts

- Global temperatures have risen by **1.2°C since pre-industrial times**, leading to drier conditions that fuel wildfires.
- **90% of wildfires in the U.S. West** are worsened by prolonged drought.

Glimpses of the video documentary:



YouTube link: <https://youtu.be/K6EzMke6g1w?si=XECJ5oiM19P6ko0C>

PLEDGE ON WED 2024: on World Environment Day 2024, the center organized a significant event aimed at promoting environmental awareness and action. The event included the introduction of two pledges: the Mission LiFE Pledge and the Climate Change Action Pledge. These pledges were presented to the interns studying at our institute, highlighting the importance of individual and collective efforts in addressing pressing environmental challenges. Interns responded positively, showing enthusiasm to integrate sustainable practices into their lives and advocate for environmental stewardship.



Glimpses of students taking pledge at IITM EIACP Pune center on World Environment Day.

Key Facts

- The number of extreme wildfire days has increased by **27% since 2000**.
- **85% of wildfires** are caused by human activities such as unattended campfires, discarded cigarettes, and land clearing.

Announcement of Winners of World Environment Day 2024 :

IITM EIACP Pune organized various competitions in celebration of World Environment Day from May 26 to June 4, 2024. Below are the winners and their presentations.

Slogan Competition -

"A journey from Barren to Blossom : Let's make the arid land, once again awesome!"

by, Bhakti Sharma

"Our Environment is our soul; to keep it clean should be our goal."

by, JAYABHARATHI.R

"प्रकृति संवर्धन लक्ष्य एक हो, हरीतिमा से इसे सजाएं, मृदा-संरक्षण चले अनवरत, भूमि पुनर्स्थापन से भविष्य बनाएं !"

by, Singh Bhupendra

"पर्यावरण की सुरक्षा हमारा धर्म है, हमारे कारण ही धरती आज इतनी गर्म है अब समय है पृथ्वी बचाने का, मिशन लाइफ के तौर तरीकों को अपनाने का"

by, Suraj Jain

"Rotate crops, plant trees, use organic manure;

We have let our lands suffer enough, now it needs a cure!"

by, Hansika Sinha

"Conserving land is the only key, because there is no Planet-B."

by, Smrati Gupta

"Plant a tree, spread the green cover, save the planet, let the land recover!"

by, Abhijeet Chatterjee

Model Making Competition on Waste to Wealth :

#1 Nita saha : *Complaint box is made from carboard,shoe lace and a lock.*

#2 Sanskar prasad : *An air cooler made from carboard box and plastic fully from waste.*

#3 Abhish saha : *A study table organiser that is entirely made from waste.It includes a cardboard box and pieces of unused cloth.*

#4 Pooja Bansal: *A converted a waste Ghee box made up of cardboard in to house for birds.*

Innovative Ideas Competition:

#1 Dr. Abraham Mathew: *Immobilized spores, gemmae of bryophytes can be introduced on to disturbed soil. This enhances the chance of survival of bryophyte propagule and its growth will result in stabilization of microclimate on which other plants group, microbes and small animals will survive. This can fasten succession resulting in stable communities there by preventing desertification or land slides.*

#2 Anmol Agarwal: Debris removal pump.

#3 Akshitha Chelladurai : This project proposed to mitigate drought by conserving through rainwater conservation pipes(RCP) in urban areas.

#4 Sayan Maity: Innovative Agro – Technologies towards Land Restoration and Drought Mitigation

Model Making Competition :

Showcasing methods to combat land desertification and steps to drought resiliene

#1 V.Dhanya : Rainwater Harvesting

#2 Hanishkumar k : Land Restoration

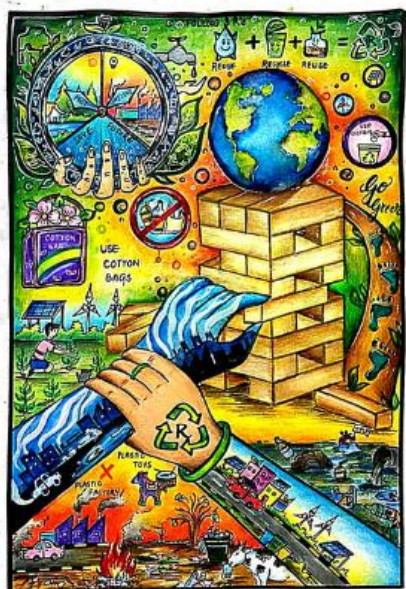
Painting Competition:



by, Aisha Panda

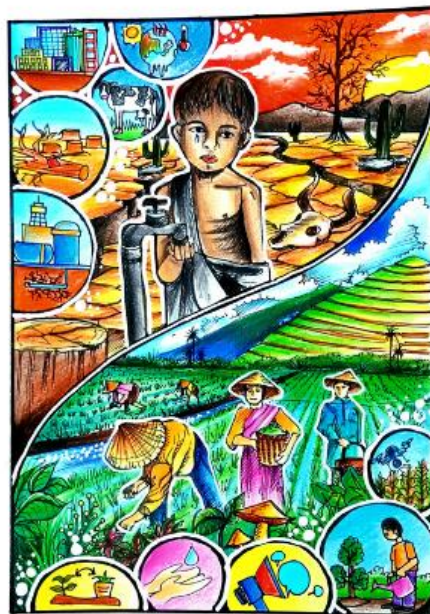


by, Sajal Jain



ASHIRBAD DAS, CLASS-IX AGE 14 yrs

by, Ashirbad Das



Prapti Pratiksha Sahu, X, 9987352599, praptipratikshasahu@gmail.com

by, Prapti Pratiksha Sahu



Age: 11, 2015540723

B. Divyadharshini
Chennai.

by, B.DIVYADHARSHINI

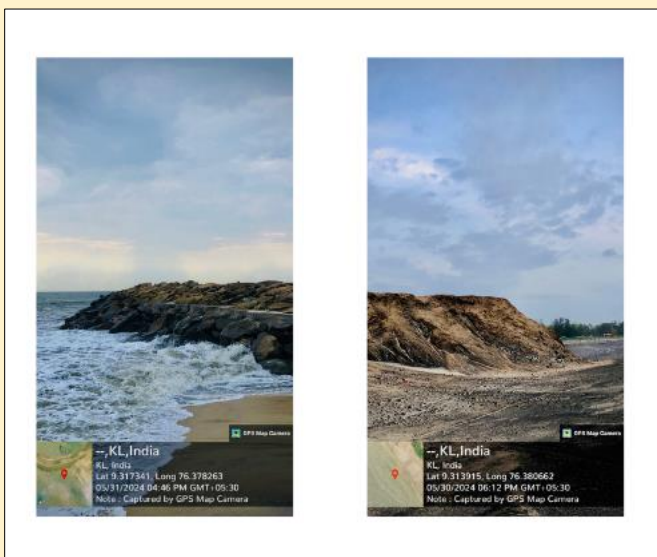
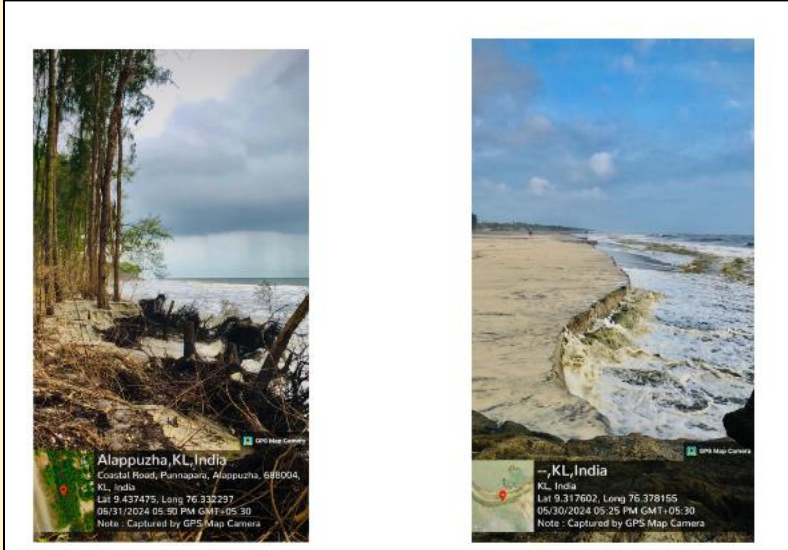


GAURI BEHERE, CLASS-10, JALDHAR, MH, INDIA

by, GAURI BHAVANESH BEHERE

Photography Competition

by, Ann Mariya Joseph



by Abin Yesudas

Rangoli Making competition:



It is created using recycled paper, cardboard, disposal plate which is environment friendly materials. The message I want to convey through the rangoli is that everyone should respect the environment which is given as a lot of things that is very important to our life and the animals which contribute a lot in environment so, love ❤️ your environment and Be proud of it.

by, Rudra pratap nayak



Old CDs and decorative items

by, Anjali Tej



Bangles, c.d and match stick

by, Vaishnavi laxman rathod



Tissue paper, Glu, Colours, Water, Plastic container,
Card Board, Scale, Pencil

by, Aradhya Arati Mahanta

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