Clear Skies Challenge 2025: Innovate, Solve, Breathe!

A National Ideathon & Hackathon for Air Pollution Mitigation

The **'Clear Skies Challenge 2025'** is a national-level Ideathon and Hackathon focused on air pollution mitigation through AI-powered geospatial solutions. The program is part of Operation Dronagiri (initiated by DST's Geospatial Innovation Council), with **IIT Tirupati Navavishkar I-Hub Foundation (IITTNiF)** as the nodal agency. The initiative is supported by IISc Bangalore's Centre for Data for Public Good (data partner), Google (industry partner), A-PAG (Knowledge partner) & TiE Delhi-NCR.

Event Details

Launch Date:
April 01, 2025

Venue: **IIT Delhi Research Park**

Target Cities:
Gurugram, Varanasi, Vizianagaram

Why This Challenge?

Air pollution poses severe health risks and economic losses, with over 1.67 million air pollution-related deaths annually in India. The Clear Skies Challenge 2025 aims to leverage AI, geospatial data, and IoT-driven innovations to create scalable solutions for air quality management. This two-stage event—Ideathon & Hackathon—will foster AI-powered geospatial solutions to tackle the impact of air pollution.

Challenge Structure

Stage 1: Ideathon - AI & Geospatial Solutions for Air Quality

Teams will propose innovative geospatial and AI-driven air pollution mitigation ideas, by integrating air-quality data (from Google Air View+) and geospatial data (from GDI- Geospatial Datasharing Interface).

Stage 2: Hackathon - Solution Development

Selected teams will develop functional solutions for deployment in real-world environments in any of these three cities- Gurugram, Varanasi, Vizianagaram. Solutions must be geospatial-based models and AI-powered..

Stage 3: Final Pitch & Implementation

Winning solutions will be showcased to key stakeholders, including policymakers, industry leaders, and research institutions, for potential support, further development, and integration into national clean-air initiatives.

Focused Areas & Problem Statements

Agriculture: AI-GIS-Based Pollution-Resilient Farming

Problem: Air pollution (O3, SO2, NO2) causes 9% wheat and 3% rice yield losses annually in India.
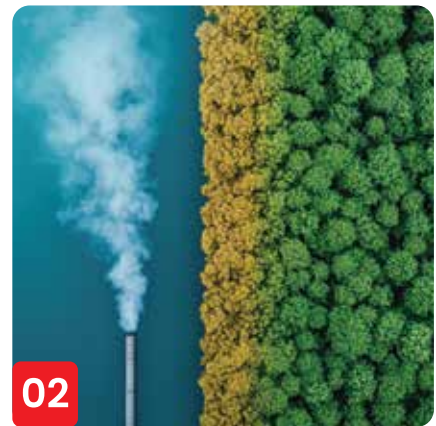
Challenge Statements:
- Develop AI-GIS models to predict pollution impact on crops and optimize farming strategies.
- Design precision agriculture tools using real-time air quality and meteorological data.
- Develop geospatial pollution monitoring for targeted fertilizer application and pollutant-resistant crops.

Smart Cities: Predictive AI for Air Quality Management

Problem: Indian cities lack high-resolution, predictive air quality mapping systems.

Challenge Statements:
- Develop an AI-powered geospatial model for real-time air quality monitoring.
- Build a smart city dashboard that integrates satellite and sensor-based pollution data.
- Use drone-based remote sensing for monitoring urban pollution sources.

Infrastructure & Clean Mobility: AI-GIS for Pedestrian & Bicycle Pathways

Problem: Traffic congestion and vehicular emissions are major contributors to urban air pollution.

Challenge Statements:
- Use geospatial AI models for urban mobility planning.
- Optimize pedestrian and cycling infrastructure based on real-time pollution and traffic data.
- Integrate LiDAR and satellite imagery to design green corridors for clean mobility.

Industrial Emission Control: AI & Satellite-Based Monitoring

Problem: Industries contribute heavily to NO2, SO2, and PM2.5 emissions, but real-time emission monitoring is weak.

Challenge Statements:
- Design an AI-powered emission tracking system for industries.
- Develop a satellite-integrated monitoring framework for regulatory compliance.
- Use predictive analytics to recommend emission reduction strategies.

Focused Areas & Problem Statements

Healthcare: Personalized Air Quality Risk Management

Problem: PM2.5 exposure causes 1.67 million deaths annually, with urban areas exceeding WHO air quality limits.

Challenge Statements:
- Develop AI-driven health risk prediction models based on pollution exposure data.
- Build geospatial health risk alert systems for real-time personalized notifications.
- Integrate wearable sensor data with geospatial insights to monitor respiratory health.

Sustainable Travel & Eco-Tourism: Low-Pollution Route Optimization

Problem: Air pollution reduces tourism, with polluted areas seeing a 93.4% drop in return visits.

Challenge Statements:
- Develop a GIS-based travel route planner that prioritizes low-pollution paths.
- Create an AI-powered eco-tourism mapping tool to promote clean-air destinations.
- Identify real-time pollution hotspots for better travel planning.

Real Estate & Urban Planning: Pollution-Resilient Infrastructure

Problem: 75% of urban India exceeds WHO air quality standards, affecting real estate values and public health.

Challenge Statements:
- Develop a geospatial AI framework for pollution-aware real estate development.
- Create predictive models to optimize building design based on air quality.
- Use geospatial insights for low-emission urban planning.

Community-Driven Air Quality Solutions: Crowdsourced Monitoring

Problem: Public participation in air quality monitoring is low, and citizens lack tools for real-time pollution tracking.

Challenge Statements:
- Build a citizen-led air quality monitoring app using geospatial and sensor data.
- Use crowdsourced mobile sensor data for localized pollution mapping.
- Develop a real-time public alert system for high-risk areas.

Participants are welcome to work on other significant problem statements as long as they contribute to managing and mitigating the adverse impact of poor air quality.

Who Can Participate?

- **Students (UG, PG, Ph.D.)**   • **Researchers**
- **Startups & Innovators**

Why Participate?

- National Recognition & Cash Prizes
- Exclusive Access to Google's Geospatial & Air Quality Data
- Opportunity to Deploy Real-World Solutions
- Exclusive access to Google's AirView+ data & GDI's geospatial data for three cities-https://blog.google/intl/en-in/company-news/using-googles-ai-and-local-ecosystem=to-generate-actionable-air-quality-insights-in-india-with-air-view/
- USD 500 Google Cloud Credits for the top 50 teams (valid for 5 months after redemption)
- Interactive Google organized AI Workshops for group learning
- one-on-one mentoring for the top15 teams from Google and Industry experts

PRIZES WORTH

First Prize:	₹2,00,000
Second Prize:	₹1,50,000
Third Prize:	₹1,00,000

Special Awards for Innovation & Best Team

Registration Link   Website Link

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