

NATIONAL CONCLAVE

SUSTAINABLE FOOD SYSTEMS

October 27-29, 2025

Anil Agarwal Environment Training Institute, Nimli, Rajasthan





WeatherCast Solutions Private Limited

Deep-tech weather & climate startup

(Incorporated in May 2022)

OUR PARTNERS



NATIONAL CONCLAVE ON SUSTAINABLE FOOD SYSTEMS



Our Team



Swetha Sridhar

Expert in Environmental sustainability and resilience
MS Environmental Engineering, University of North Carolina

FOUNDERS



Prof. Sridhar Balasubramanian

Professor Mechanical Engineering Dept., IIT Bombay
Expert in meteorology, physics, modeling, and data analysis
PhD Mechanical Engineering Arizona State University, Post-doc – LANL

CORE TEAM



Darshan Waghela

Sr. Data Scientist



Tushar Senghani

Sr. Data Scientist



Shrikrishna Vishwakarma

Full Stack Developer



Dhruv Usadadiya

Cloud Engineer



Biswajit Sahoo

Meteorologist



Kajal Chaurasiya

Jr. Data Scientist



Shreyas Bole

Software Developer



Sahil Chhabria

Data Analyst



Arpit Mohapatra

Jr. Meteorologist



Hrishi Manian

Business Development

Advisors/Mentors

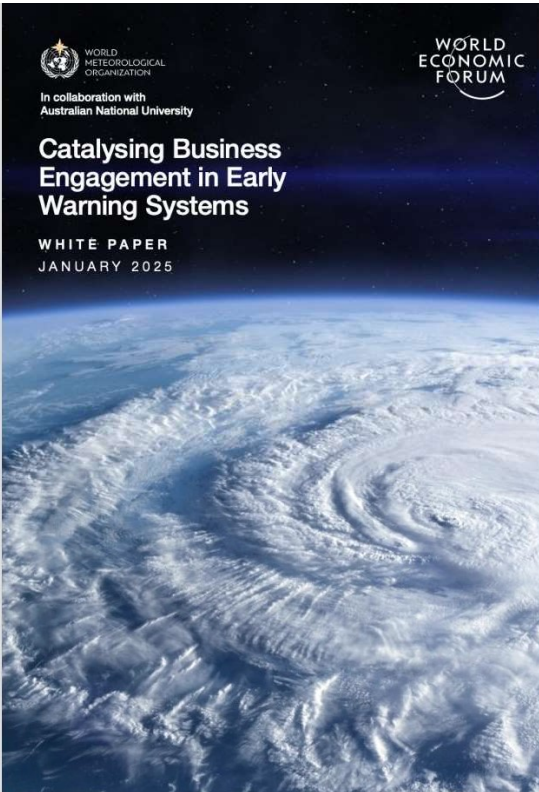
Name	Qualification	Affiliation	Key Skills
Krishnanand Hosalikar	Scientist	IMD, Scientist G	Instrumentation, Liaison
Prof. Joe Fernando	Professor	University of Notre Dame, USA	Technical, Field expeditions



NATIONAL CONCLAVE ON SUSTAINABLE FOOD SYSTEMS



Rising extreme weather events – need for localized early warnings



Executive summary

The world needs more early warning coverage, and businesses can help.

As the earth experiences anthropogenic climate change, weather events are becoming more extreme, frequent and variable. Each country must tailor its response to these growing threats based on its specific circumstances. Certain interventions, including early warning systems (EWS), have proven effective across many contexts.

monitoring and warnings, communications and dissemination, and response capability. Then, building on a survey of 19 businesses (responses provided) and a review of available literature, the paper presents the current state business engagement in EWS.

1.3 Closing this gap will require stronger engagement of private sector

While governments must remain the issuing authority for warnings, the private sector can create value within every other aspect of EWS.

Though early warnings are developed through a collaborative ecosystem of many types of partners, EWS are often seen as governmental. While governments must remain the issuing authority for warnings, the private sector can create value within every other aspect of EWS.^{14,15} These opportunities are poorly understood outside the specialist companies that work closely with EWS. If done in a way that is appropriate and ensures continuity of services, expanding the number of involved companies and deepening their engagement could help close the EWS coverage gap.

It is essential for business leaders and NMHS to recognize the need for a balance between innovation and stable service delivery. By working together with NMHS, private sector innovations can be more effectively integrated into established and

mandated public services, supporting the long-term sustainability of EWS. Such partnership is vital to sustainably closing the global early warning coverage gap and protecting lives and economies from the growing impacts of climate change.

This paper identifies ways to grow business participation in EWS, such that closing the coverage gap becomes a more manageable task. It starts by articulating a framework for businesses' engagement in EWS. Then, relying on academic literature and a survey of 20 businesses conducted by the Forum and WMO, it describes the current contours of business action on EWS. Based on survey responses, follow-up interviews and further references, it then discusses drivers and barriers to business participation in early warning and closes with recommendations for increasing engagement.

1 Context and purpose

Early warning is an effective tool for dealing with the impacts of extreme weather. But it is underprovided.

In recent years, the world has increasingly felt the impacts of hazardous weather events. These include (but are not limited to) floods, droughts, wildfires, heatwaves, cold waves, tornadoes and tropical cyclones, which can all result in death, damage to critical infrastructure and economic loss.¹ The increasing frequency, severity and unpredictability of these events have been attributed to anthropogenic climate change.²

According to the World Meteorological Organization's (WMO) analysis of the Emergency

Events Database (EM-DAT) data, between 1970 and 2021, nearly 12,000 disasters, over 2 million fatalities and \$4.3 trillion in economic losses, were attributed to weather, climate and water extremes.³ The reported economic impacts of extreme weather events have grown eightfold over the last 50 years^{2,6} and pose a significant threat to businesses and economies worldwide. The World Economic Forum's Global Risks Report 2024 listed extreme weather as the most likely global risk to trigger a major crisis in the next decade.⁷

Tailored response to weather extremes & early warning systems (EWS)

USD 4.3 trillion losses due to inaccurate weather monitoring & forecasting

Early Warnings Localised weather forecast and early warnings is the need of the hour



Weather-Driven Challenges in India's Agriculture



Weather/climate extremes and variability on steep rise
(8x rise in last 50 years)



Innovation in forecasting not happening at the same pace.



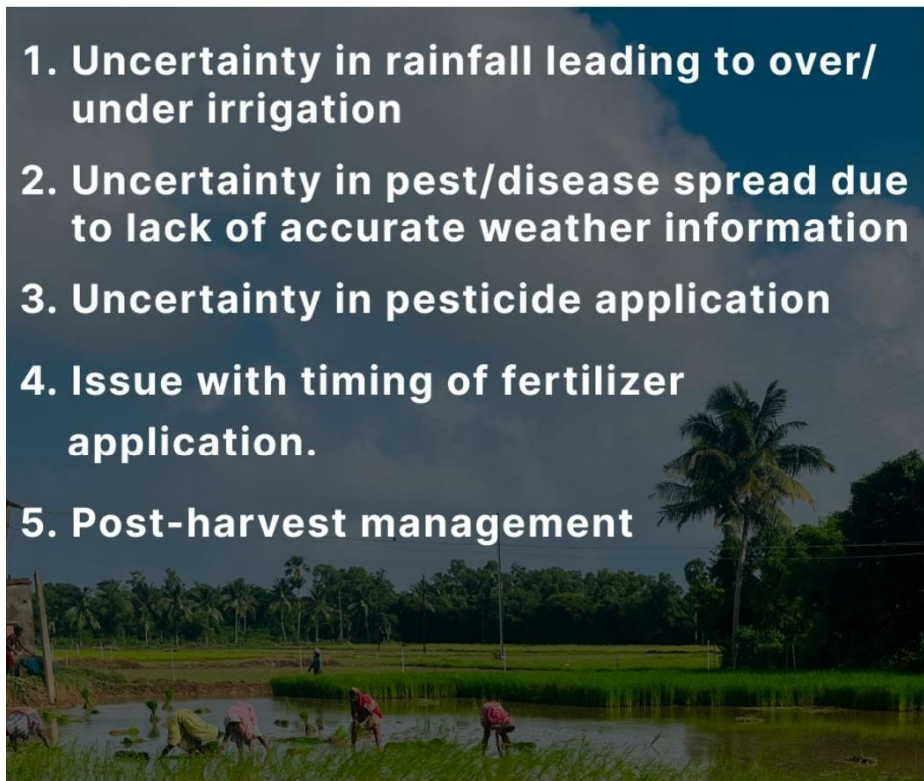
Lack of Weather Awareness
(Most farmers lack timely forecasts)

POOR DISSEMINATION
Weather advisories shared in complicated technical formats that reduce usability and comprehension.



Weather-Driven Challenges in India's Agriculture

1. Uncertainty in rainfall leading to over/under irrigation
2. Uncertainty in pest/disease spread due to lack of accurate weather information
3. Uncertainty in pesticide application
4. Issue with timing of fertilizer application.
5. Post-harvest management



"relative to ensure that everyone on Earth is or"
"life-saving early warning system"

**Weather/climate
extremes and
variability on a steep
rise**

alters climate .
major impacts

ember 2023

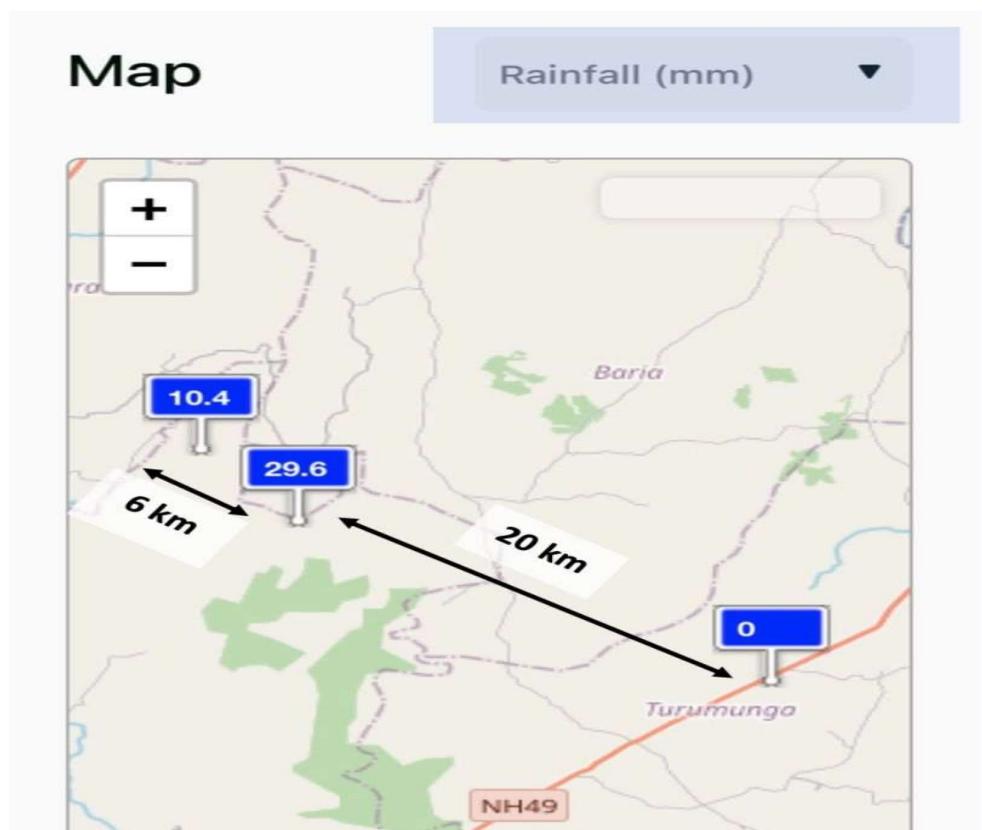
seva/Dubai (WMO) - 2023 has shattered climate records, accompanied by
extreme weather which has left a trail of devastation and despair, according to
World Meteorological Organization (WMO).



**Innovation in
forecasting not
happening at the
same pace.**



Need for Hyperlocal Weather Forecasting



Needs

- ✓ NEW FORECASTING SOLUTIONS
- ✓ HYPERLOCAL MONITORING
- ✓ WEATHER INTELLIGENCE
- ✓ EARLY WARNINGS (EWS)
- ✓ DECISION SUPPORT SYSTEM



Our Solution : Overview



Solution : Patented model; Live Data; Forecasting

An end-to-end solution (E2ES) for weather & climate

Faster & Efficient Model

Patented **AI/ML** weather model; smart blend of data, meteorology & AI/ML



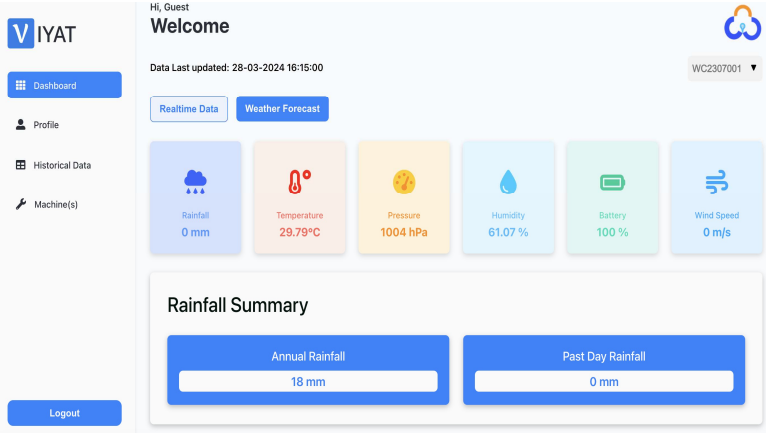
Data generation

IoT Automatic Weather Station providing real-time data



Interactive GUI

Graphics Interface for monitoring and hyperlocal forecasting



Our Deployments



VIYAT at a farm in Shahdol,
Madhya Pradesh



VIYAT at Gram Vikas location



VIYAT at ICAR-DOGR, Pune, MH



VIYAT at Gram Vikas location

35+ of devices installed for providing hyperlocal weather forecasts



Projects in agriculture

AGRI FARMS



600 acres
farm penetration



Commercial MoU signed with TiH for
agri-services for large farms & FPOs



MoU signed with ICAR for agri-
services across their network



- Providing hyperlocal weather services to mid-size farms for high value crops like grapes
- Providing weather services to districts in Odisha through **Gram Vikas**
- ICAR-NIVEDI **NaaVic** grant to provide weather monitoring/forecasting to agri farms and coffee boards
- **Operation Dronagiri** project (DST & IITTNiF) to deploy our solution in Washim, MH

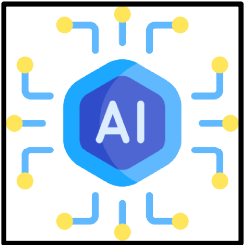


Our hardware and software solution

Our IoT based micro-AWS is deployed on the farm and records various weather parameters that is relayed to our server



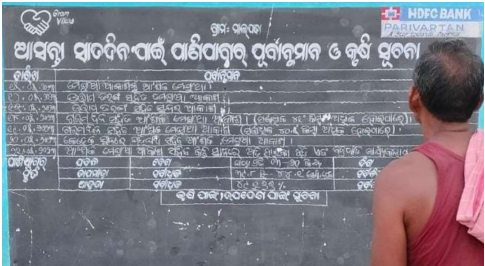
Patented Hybrid AI/ML Weather Model



Data from AWS

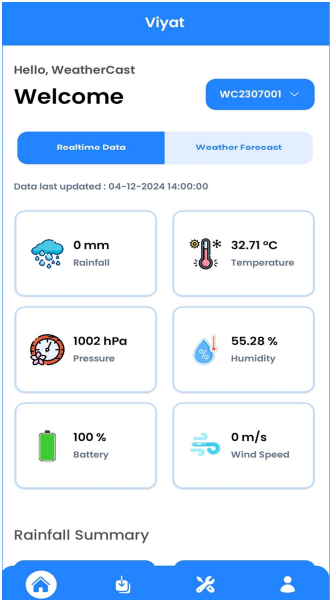
Forecast output from the model

These advisories are written on the panchayat board and viewed by the local farmers and community for necessary planning



Data and prediction accessible on dashboard & app

<https://viyat.weathercastsolutions.com/login>



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Phone: +91-9167986411
Website: www.weathercastsolutions.com/
CIN: U74999MH2022PTC385571

Agro & Weather Advisories
Location: Rudhapadar

Valid for next 7 days, Issued on 18 August 2025

Bullerin:14

ତାରିଖ	ଦୈନିକ ପ୍ରମୁଖ ପୂର୍ବାନୁମାନ
18/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (8.0-9.0 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
19/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (5.6-6.6 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
20/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (8.6-9.6 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
21/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (4.7-5.7 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
22/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (13.1-14.1 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
23/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ (10.0-11.0 ଡିଗ୍ରୀ) ଉପସ୍ଥାପନ
24/08/2025	ପ୍ରାତଃ ସମୟରେ ଶେଷାଞ୍ଚା ଉତ୍ତମ ଗରମ ଚାହିଁ

ପ୍ରାୟତଃ ପାଣିପାଗ ପୂର୍ବାନୁମାନ	
ଉତ୍ତମ ଗରମ ଚାହିଁ	28.5 ଡିଗ୍ରୀ 34.7 ଡିଗ୍ରୀ
ଉତ୍ତମ ଗରମ ଚାହିଁ	24.6 ଡିଗ୍ରୀ 25.4 ଡିଗ୍ରୀ
ବର୍ଷା	ବର୍ଷା ପ୍ରମାଣରେ ଉପସ୍ଥାପନ କରାଯାଇ ପାରେନା
ପ୍ରମାଣ ଚାହିଁ	ପ୍ରମାଣ ଚାହିଁ ୦.୫-୧.୦ ଡିଗ୍ରୀ ଉପସ୍ଥାପନ କରାଯାଇ ପାରେନା
ପ୍ରମାଣ ଚାହିଁ	ପ୍ରମାଣ ଚାହିଁ ୧.୧-୧.୫ ଡିଗ୍ରୀ ଉପସ୍ଥାପନ କରାଯାଇ ପାରେନା
ପ୍ରମାଣ ଚାହିଁ	୧୨ ଡିଗ୍ରୀ ୨୫ ଡିଗ୍ରୀ
ପ୍ରମାଣ ଚାହିଁ	୧୧ ଡିଗ୍ରୀ ୧୫ ଡିଗ୍ରୀ

Weekly forecasts and advisories shared with field coordinating officers (FCOs) in regional language



Deployment and Impact – Case study – Gram Vikas, Odisha



- Working with the NGO - Gram Vikas for skills and livelihood development
- Installing IoT based devices across gram panchayats in Odisha
- Day-wise weekly weather forecasts and agro advisories sent to the **Field Coordinating Officers (FCOs)** in the local language.
- Forecast and advisories can be accessed by them via our dashboard and app as well.
- FCO relays our advisories and forecasts on the local panchayat boards and shares pictures
- Farmers view this information and find it extremely useful in planning their weekly activities



Read about how these weather stations, forecasts and advisories are helping the farmers

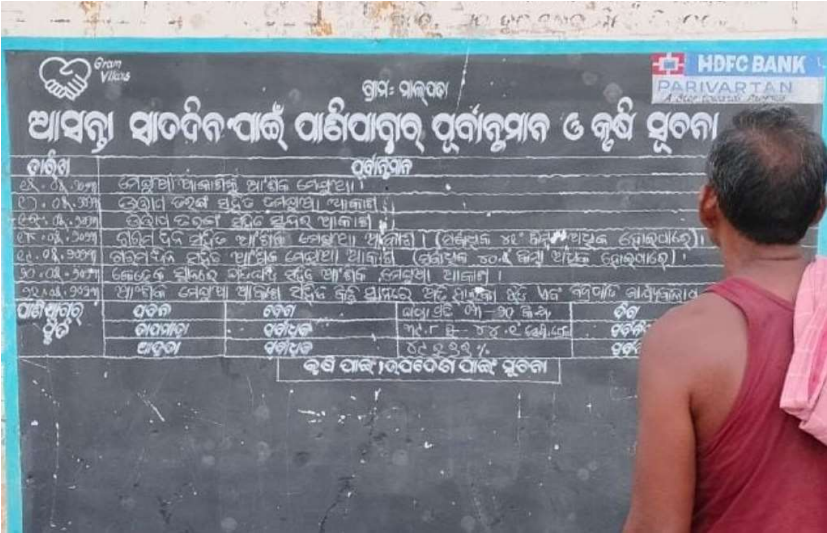
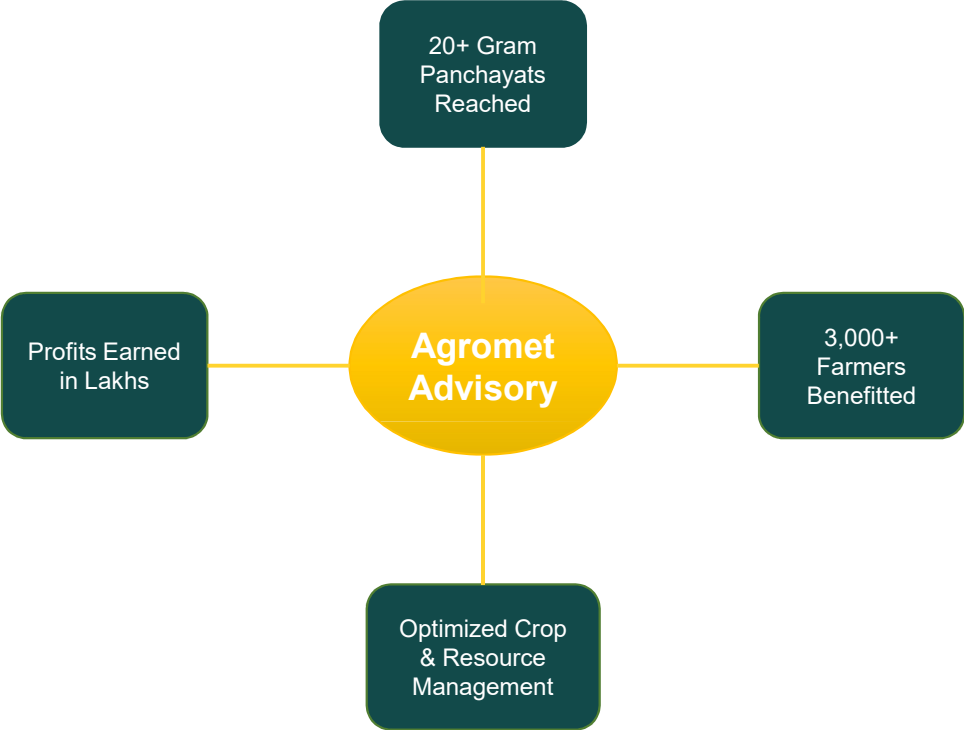
<https://www.gramvikas.org/blg/gram-vikas-sets-up-automatic-weather-stations-to-reduce-farmer-producer-risks-in-odishas-balangir/>



Weekly forecasts and advisories are sent to the field coordinating officers (FCOs) in regional language



Transforming Rural Livelihoods



Advisories sent by us are written on the panchayat board by the FCO and viewed by the local farmers

