ClimaCell.org

Billions empowered through universal access to reliable and trusted weather forecasts.
Agenda

- Introductions
- Our Motivation / Theory of Change
- ClimaCell.org
- Opportunities for Cooperation: ClimaCell.org <> WMO
ClimaCell

2016
$5M
First capital

Weather of Things

2017
$15M
A round

Microweather Models & Engines

2018
$50M
B round

Right Information Unlocks Business Insights

2019

Collaborate and drive actions with personalized insights
“Science [and technology] is giving us the opportunity to improve lives more rapidly than ever. But we’ll only make the most of that potential if we ensure that these tools reach everyone who needs them, including the poorest people in the world.”

Bill Gates | February 14, 2020
Technology Enhancements Have Brought Significant Improvements to Global Forecasts in Recent Years

The quiet revolution of numerical weather prediction
Peter Beuerle, Alan Thorpe & Gilbert Brunet

Advances in numerical weather prediction represent a quiet revolution because they have resulted from a steady accumulation of scientific knowledge and technological advances over many years that, with only a few exceptions, have not been associated with the usual fundamental physics breakthroughs. Nonetheless, the impact of numerical weather prediction is among the greatest of any area of physical science. As a computational problem, global weather prediction is akin to solving the evolution of the early Universe, and it is performed every day at major operational centres across the world.

At the turn of the twentieth century, A. E. and F. B. of the National Center for Atmospheric Research, in the United States, gave the first systematic presentation of numerical weather prediction, and it was observed that the errors in the model were predictable and could be reduced by improving the model's physics. By the 1960s, numerical weather prediction had become a key component of weather forecasting, and it is now used for a wide range of applications, from short-term weather forecasts to long-term climate predictions.
Leading To Significant Socio-Economic Benefits Globally

Long-term forecasts enable preparedness and resilience

Short-term forecasts enable lifesaving warnings and business optimization
Africa is not fully benefiting from these advancements currently. If the system does not change, Africa will get left behind.
Example: Current State of Weather Products and Services in Uganda

“We now need to move from science to action and reach users so they can apply it”.
Closing remarks, 54th Greater Horn of Africa Climate Outlook Forum, 2020

<table>
<thead>
<tr>
<th>Data</th>
<th>Models</th>
<th>Products</th>
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<td>Limited observation coverage of 17%</td>
<td>Accuracy on short-term prediction 40-50%, long-term prediction 70%</td>
<td>Delayed transmission, relay, (poor) use of information</td>
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<td>Limited real-time data collection</td>
<td>Out-of-date models that are inaccessible and not localized, despite various hydro-climatic zones.</td>
<td>Limitations with integration and timely transmission of data and information between mandated institutions and end users</td>
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<td>Few, unreliable and poorly maintained weather stations, many disconnected</td>
<td>On-premise, inflexible compute infrastructure</td>
<td>Inability of businesses, communities, governments etc. to translate weather to impact</td>
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As Climate Shifts, The Urgency and Need For Better Data Has Never Been More Apparent

Image of ClimaCell’s real time lightning tracker. Accordingly to the Journal of Climate American Meteorological Society, an increase in temperatures in Africa over the past seven decades correlates with bigger and more frequent thunderstorms.

The origins of the current locust outbreak can be traced back to the 2018/19 winter along the Red Sea, in Yemen and Oman. Fuelled by the rains brought in by tropical cyclone Luban that produced perfect feeding and breeding grounds for the locusts to flourish into massive populations.
Those Who Are Most Vulnerable Are Suffering The Most

The rule of thumb for a subsistence farmer is “3 days of heavy rains and you plant”. This past season, it rained for 3 days straight, so they planted. On day 4, it went dry for two weeks. This resulted in 30% germination rates and they lost everything.

The water on Lake Victoria gets very rough when it rains. 90% of fishermen do not know how to swim. 3000-5000 people died last year on Lake Victoria as a result.
"Our project is running late by 2 months because of the intense rainfall means the roads are not passable to deliver materials to site. Had we known, we would have delivered all materials early and moved up the schedule of works."

Barriers to Frontline Progress

“Usage” ↔ “Reliability” ↔ “Trust”

“I needed to know when the rains were going to start last week so I could start planning.”
Ag. Supplier, Uganda.

“It matters if it rains 20cm over 10 days or 20cm over 10 hours. General forecasts are not helpful, and especially not helpful when they are wrong.”
Farmer, Nairobi, Kenya.

“I wouldn’t know what to do today, even if I had access to forecasts.”
Ag. NGO, Uganda.

“We now need to move from science to action and reach users so they can apply it”. Closing remarks, 54th Greater Horn of Africa Climate Outlook Forum, 2020

“I just stopped trying to look at the weather. It is never right.”
Emergency Responder, Nairobi, Kenya.
Barriers Within the System

**Data**
- USA: $3B/yr of well organized government investment
- Africa: 10s of billions already invested in CAPEX

**Models**
- Find a sustainable model to bridge that gap

**Products**
- USA: $2.5B/yr market, very few weather casualties
- Africa: 0 market, thousands of deaths every year

**Notes:**
- climacell
- Proprietary and confidential

- 10s of millions of uncoordinated spend
- No pre-existing infrastructure
The good news? Novel technologies, new approaches
Ultimately, The System Must Change To Enable Africa To Benefit from Global Tech. And Reach Its Full Potential

A conservative estimate by the WMO states that USD$2 billion is needed to modernise Africa’s meteorological services in addition to a minimum of USD$400 million per year to cover the costs of staff, operations and maintenance.
ClimaCell.org
Enabling a World where EVERYONE Has Access to Trusted Forecasts
ClimaCell.org - Our Approach
A self-sustaining weather system with foundational public services and market for value-added services
“Jump Start” Model

Phase 1 - Kickoff
- Establish the system
- Engage with users, build trust
- Provide free access, POCs

Phase 2 - Handshake
- Initiate monetization
- Gradually reduce dependency on jump-start funding

Phase 3 - Self-sustained
- Income sufficient to cover OPEX, profits are made by NMS/private market

Breakeven model
- Jump-start funding (through .org)
- Revenues from local market
- Cost recovery (from income)
- Re-invest in enhancements

CAPEX
- HW Deployment
- System Setup

OPEX
- Maintenance
- Power & comms
- Cloud, Eng.
What is ClimaCell.org’s role in this vision?

Key Objective: Lead jump-start projects that demonstrate that we can drive action and improve lives based on better weather information through sustainable foundational services and public-private partnership.

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<th>Raise jump-start funds</th>
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<td>• Raise $1-2M / year to cover ops/ HQ team</td>
<td>• Lead regional e2e demo. projects with the following components:</td>
<td>• Activities that build knowledge of how vulnerable communities benefit from weather data</td>
<td>• Targeted campaigns for public and private sector</td>
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<td>• $100M+ over 10 years in project funds</td>
<td>• Public-private partnership</td>
<td>• Platforms for engaging and sharing community insights with public &amp; private partners</td>
<td>• Free access to API</td>
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<td>• Private philanthropy, multi-laterals, corporate giving program</td>
<td>• Novel data sources</td>
<td>• Co-designed experiments &amp; solutions</td>
<td>• Local trainings and awareness raising workshops (virtual and onsite)</td>
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<td>• Sustainable/ scalable model</td>
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<td>• Partnership building and advocacy</td>
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- Raise jump-start funds
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Example - Frontline Discovery Workshops

Farmer-first discovery workshops to co-identify existing solutions (and begin co-designing new solutions) to help vulnerable farming communities better access, interpret and act on weather information and build resilience within their communities.

Pre-Workshop
- List of farmer-first assumptions
- Current methods, pain points, opps

Frontline Activity
- Validate assumptions
- Co-build solutions

Post- Action
- Share key learnings, recommendations, opps for future collaboration

climacell
Example - Frontline Discovery Workshops

- Food Security
- Disaster Risk Management & Response
- Education
Example - Integrating Technology-Driven Solutions To Improve The Production & Utilization of Weather Services in Uganda

**Goal:** To enable UNMA to provide a portfolio of foundational services to agencies and citizens and become the regional centre of excellence and reference for improved production and utilisation of weather and climate products through processes like GHACOF.
Example - Weather Stations

Key Takeaways:

- Very limited impact until full scale (the highway example)
- WMO estimates 20K needed in Africa, virtual sensing might reduce that number by 30-50%
- MUST work with telcos / tower owner (real-estate, power, connectivity, deployment and maintenance)
- $5k/unit + $5K for installation maintenance (over 15 year lifetime). Can be driven down.

*Financially sustainable because of robust technology and innovative finance and maintenance strategies*
2020 Roadmap for Validated Learning & Partnership Development


**Frontline Weather Action Labs**
Lead community design workshops on food security, emergency response etc. in Kenya and Uganda. Present at Uganda National Water & Environment Week.

**Data Demonstration Projects**
Implement first infrastructure pilot in Uganda, begin building products (dependant on funding).

- **March**
  - WMO Executive Committee
  - Present to WMO Executive Committee on ClimaCell.org and opportunities to promote public-private partnership in Africa, drive system change and enable forecast-based action.

- **June**

- **July**

- **August**
  - GHACOF 2020
  - Present to leaders of Greater Horn of Africa on strategy for driving action and improving lives through weather innovations and public-private partnership.
Why are we different?

**Best-in-class technology**
We have access to best-in-class tech partners. e.g. Through a 1% pledge program with climacell.co, we can leverage ClimaCell’s tech + 110 of the world’s best data scientists, meteorologists and product engineers.

**We are a sunset fund**
We believe in sustainable change and therefore are intentionally designing this fund to have a finite life. Our funds will kick start not sustain change.

**We work WITH the system**
We aim to enable, not bypass, local governments and equip them with technology-enabled foundational tools and knowledge to best serve their people.
For Discussion/ Opportunities for Cooperation

What are WMO’s pain points and where can we be most helpful?

Where do we need help?

- **Endorsement**: WMO support as we solidify local public and private partnerships (letter of support, use of logo on website?)
- **Networks**: WMO support as we build our networks with local governments (introductions, invitations to key events?)
- **Opportunity**: Are there existing/upcoming high-impact projects/proposals where ClimaCell’s technology could be helpful today? (API, dashboard, urban flood alerts, air quality etc.)
Bringing hope to billions through trusted forecasts
Appendix
The Best Weather Intelligence Engine For Your Business

Stop wondering. Get information, generate insights, and drive actions.
70% of businesses are impacted by **weather**

Weather **impact** and volatility is mentioned as one of CEOs top 5 concerns

#1 frustration is that weather data is not **accurate** enough to become actionable
90% of businesses cannot understand what weather data means for them.

85% of the people around the globe doesn’t have reliable real time and forecast weather data.
About us

We are powering actionable weather insights around the world.

Our mission is to help people and organizations manage weather related challenges with the best information and insights.
What ClimaCell MicroWeather OS Does For You
1. Providing you with the right information

2. Equipping your business with invaluable insights

3. Driving collaboration and actions
The Right Information

ClimaCell MicroWeather OS provides high resolution historical, real time, and forecast weather data.
Everywhere

Help people and companies work smarter, making sure that partners, employees, and customers are informed - globally
Invaluable Insights

Provide your team with global weather knowledge and the **business impact** it means for them.

Choose from our vertical-based insight library.
2. Apply insights or create your own **customized insights**

3. Start watching the **impact** on your business
Driving Actions

to improve situational awareness and trigger teams to take the best action at the right location, time and context

Rain starts in 5 minutes, Alert your team!
Collaboration Tools

Share information, insights and decisions using ClimaCell’s collaboration tools, via emails, apps, text messages, and more
Business Products

HyperCast

HyperCast is the next generation of ClimaCell’s revolutionary weather forecasting platform.

API

The modern weather API - providing the most accurate weather and air quality data everywhere in the world.
See how HyperCast™ works
Weather Assistant

Have you ever cancelled a picnic due to “40% chance of rain” only to have sunny skies? Taken your dog for a walk and gotten stuck in unanticipated rain? Wished you’d left the house 10 minutes earlier to avoid suddenly stormy conditions?
Why Weather Forecast is Not Good Enough
All weather data and model outputs are generated by *governments and repackaged* by *private companies*.
How it Works?

Our Data – Weather of Things
Millions of data points from proprietary sources such as IoT, Drones, Airplanes, Cellular Signals, Sat Com Signals, Cameras, and more, combined with traditional data sources.

Our MicroWeather Models
Proprietary models that are researched and developed in-house, optimized to achieve the highest degree of accuracy in history.

MicroWeather Technology Engine
Optimized for low latency, high accuracy, and integration with our MicroWeather Operating System tools. Weather data optimized to solve complex business problems.
Our Models

- Historical (-20 years)
- Real Time
- Nowcasting (+6 hours)
- CBAM (+14 days)
Historical
High resolution historical data sets for **AI model training**

Real Time
Gridded high resolution, high refresh data. **Virtual sensors** - everywhere
Nowcasting
Minute-by-minute precipitation forecast for 3-6 hours

CBAM
NWP platform - high resolution forecast everywhere you need
What Customers Say About ClimaCell
Aviation

- Improve Safety
- Optimize Operations
- Reduce Flight Delays

What Customers say about ClimaCell?

“This tool was designed with an understanding of the decision-making pressure airport leaders face every day.”

Ian Deason, SVP Customer Experience
Drones

- Ensure Safety
- Improve Route Planning
- Increase Operational Efficiency

What Customers say about ClimaCell?

“Our goal at UASidekick is to help pilots be safe when they take to the skies. Providing next generation tools, such as Climacell’s MicroWeather solution, is essential to moving the UAS industry forward.”

Nathan Ruff, UASidekick CEO
On Demand

- Prepare for Changes in Supply and Demand
- Increase ETA Accuracy
- Protect Assets

What Customers say about ClimaCell?

“ClimaCell forecasts provide accurate, actionable insights in real time. We’ve been very impressed with ClimaCell’s products, which help inform our operational decisions and offer quality service to our users.”

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Ari Luks, Operations
Sports & Outdoor

- Minimize Unnecessary Delays and Cancellations
- Reduce Equipment Damage
- Prepare for Extreme Weather Conditions

What Customers say about ClimaCell?

“If lightning is going to touch down on the property, we need to know about the threat in advance - we need to get everyone to sheltered areas. ClimaCell’s tools tell us when to expect a weather event and when it will pass us.”

Jason Stone, Senior Director of Operations, Kraft Sports and Entertainment
Construction

- Increase Operational Efficiency
- Improve Crew Safety
- Lightning Forecast

What Customers say about ClimaCell?

"Our biggest problem is when everything suggests that the weather will be good, we send our crews out, and then a thunderstorm hits seemingly out of nowhere. Now, with the alert system, we are automatically informed in advance"

[Signature]
Zach Clarke, Director of Residential Operations
Energy

- Get Real-Time Data for Asset Utilization
- Up-to-the-Minute Precipitation and Fire Index
- Asset-Specific Weather Insights

What Customers say about ClimaCell?

“Weather is important to us for disaster planning and for responding and recovering from storms, when we can get precise information about what weather will be doing in an area, we can improve readiness and reduce costs.”

nationalgrid
Lisa Lambert, Chief Technology and Innovation Officer of National Grid plc, and Senior Vice President of NGP
See What JetBlue’s CEO Says About us
What do Others Say?

The Washington Post

Meet the ClimaCell weather app. Alerting you when it’s about to rain, down to the minute, all around the world

Forbes
ClimaCell combines data analytics, traditional inputs and the analysis of signals beamed...

FastCompany
ClimaCell’s weather-of-things approach to forecasting helps city planners to prepare for bad weather...

The Wall Street Journal
ClimaCell predicts weather by a few hundred feet. Think about a thunderstorm coming into JFK...

TIME
Inside the Weather Wars That May Threaten the Daily Forecast You Depend On...

TC
That’s where ClimaCell’s main innovation comes in. Instead of relying on government sensors...

Bloomberg
Startup Street: This Tata-Backed Startup Predicts Floods In India, Days in Advance...
Validation Reports

ClimaCell’s NowCast system which boasts over 90% probability of precipitation detection for short lead times

ClimaCell’s CBAM forecasts consistently outperforms the leading government models for all variables
"ClimaCell currently is operating innovative short-term forecast systems (NowCast and CBAM). Through testing and verification, both products have exhibited impressive and unique abilities to accurately predict atmospheric variables such as precipitation (NowCast) as well as temperature, cloud cover, and wind speed (CBAM) for locations across the globe. NowCast and CBAM exhibit substantial accuracy and precision advantages over publicly available forecast model data, especially for short-term predictions."

Dr. Shawn Milrad, Associate Professor, Meteorology
climacell
So you can take control