Success Stories on User Engagement

Amanda Rycerz, Acclimatise

Annette Hollingshead, GST

Global Science & Technology, Inc.

NOAA's National Centers for

Environmental Information

Who we are

ACCLIMATISE
building climate resilience

- Global Science & Technology Inc, is a **scientific and technical consulting company** that provides support to the **National Centers for Environmental Information**

- Acclimatise Group is a **specialist consulting, digital application and communications company** providing world-class expertise in climate change adaptation and climate resilience with contracts in nearly 60 countries

THE COLLIDER

NOAA's National Centers for Environmental Information (NCEI)

The National Climatic Data Center, the National Geophysical Data Center, and the National Oceanographic Data Center merged into into the **National Centers for Environmental Information**.

MISSION: Responsible for preserving, monitoring, assessing and providing public access to the Nation's treasure of climate and historical weather data and information.

Two Case Studies

ACCLIMATISE
building climate resilience

Sector	NCEI Data	Outcome	$$$	Social / Environmental
Agriculture	Global Historical Climatology Network Daily GHCN-D	Optimal Nitrogen Management	✓	✓
Natural resources (coral reefs)	Pathfinder Climate Data Record (CDR)	Coral reef management	✓	✓

Adapt-N

ACCLIMATISE
building climate resilience

Adapt-N is a web-based decision support tool that helps growers optimally manage their nitrogen inputs for corn production.

Who are the developers of Adapt-N?

Cornell University, Department of Crop and Soil Sciences, the Northeast Regional Climate Center, Agronomic Technology Corporation

Why is nitrogen management important?

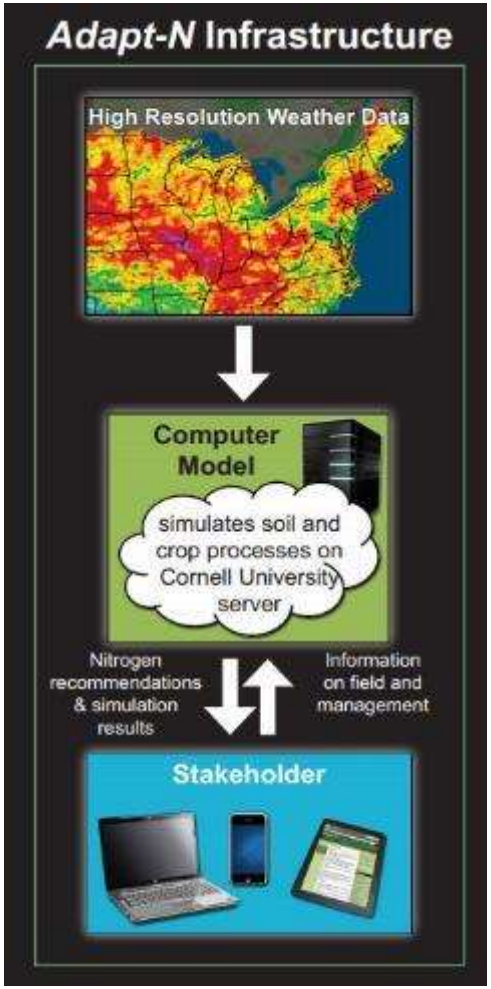
Nitrogen is a critical input to crop growth and productivity, but 50% of it is wasted due to complexity, mobility, and lack of visibility

Nitrogen is elusive!

What is the role of NCEI's data in Adapt-N?

ACCLIMATISE
building climate resilience

- GHCN-Daily min & max temperature
- GHCN-Daily rainfall



Successes of Adapt-N

Economic

Profit gains as a result of using Adapt-N, versus not using Adapt-N, have been quantified through strip trials and average approximately **$30 per acre.**

The Donald's followed Adapt-N's recommendations and decreased their N-inputs by 1/3

There were NO yield losses and the Donald's **saved approximately $35/acre** through avoided N inputs

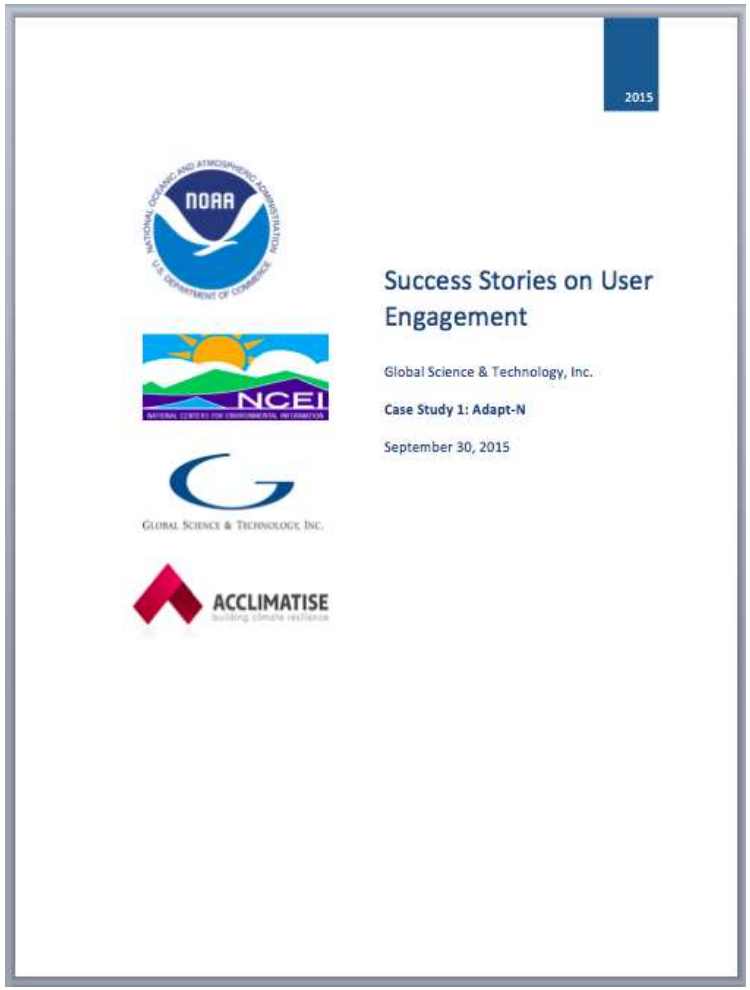
Environmental / social benefits: Reduction of the following:

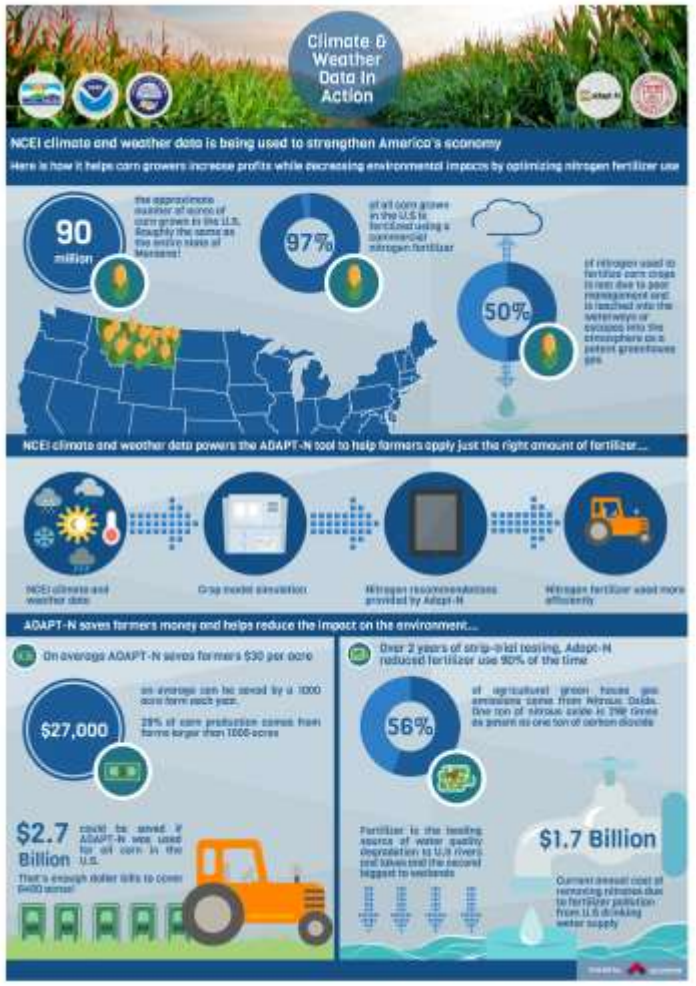
ACCLIMATISE
building climate resilience

- Hypoxia (oxygen depletion) and eutrophication in the Gulf of Mexico
- Global Climate Change
- Harmful algal blooms
- Bio-diversity loss in aquatic and terrestrial ecosystems

Check out the info-graphic and the report for further details on Adapt-N

ACCLIMATISE
building climate resilience





What is coral bleaching?

ACCLIMATISE
building climate resilience

1. Corals depend on algae to survive
2. If stressed, the algae leave the coral
3. Coral is left bleached and vulnerable and may die if the stress is severe enough or prolonged

NOAA's Coral Reef Watch

ACCLIMATISE
building climate resilience

NOAA's Coral Reef Watch (CRW) is a satellite remote sensing tool that provides a global analysis of sea surface temperature to identify coral reefs that are at risk of bleaching.

- 5-km resolution
- Global
- Amongst other data inputs, CRW utilizes near-real time (NESDIS 5-km geo-polar blended night-only) SST analysis and historical (Pathfinder CDR) satellite measurements of SST to compute an SST anomaly

NCEI data inputs in CRW

ACCLIMATISE
building climate resilience

The Pathfinder CDR was chosen to develop the climatology for CRW's 5-km product suite for three primary reasons:

- As a NOAA Climate Data Record, Pathfinder is recognized as a **credible and authoritative source of SST**
- Pathfinder CDR has the **finest resolution** of any available long-term SST record allowing for highly downscaled analysis
- Pathfinder CDR had a **sufficiently long term record of 28 years** of SST measurements

Why is coral conservation important?

ACCLIMATISE
building climate resilience

$30 billion: net annual benefits to the global economy

500 million people worldwide depend on coral reefs for food (fishing)

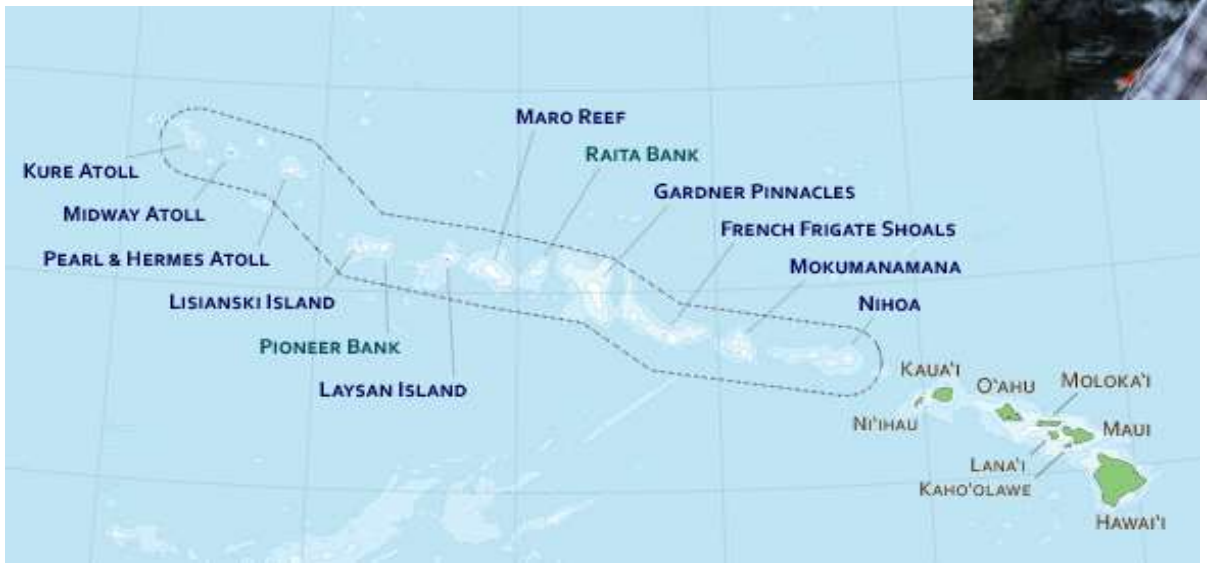
400x more likely to find the next pharmaceutical drug in the ocean than on land

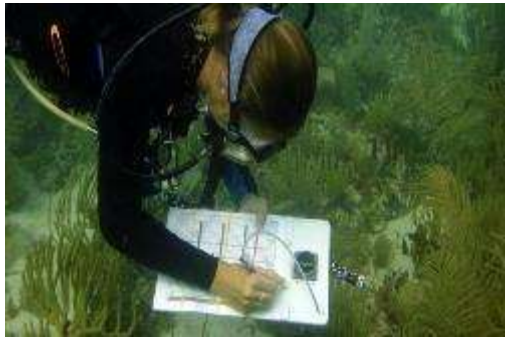
Successes of CRW

ACCLIMATISE
building climate resilience

- Prioritization and planning of reef surveys

"If we didn't have Coral Reef Watch we might be blissfully unaware that a bleaching event is taking place. We could go out the following year and find the coral dead and not be able to speculate on what happened." – Randy Kosaki, NOAA PNMN





Map of Papahānaumokuākea National Marine Monument, Northwestern Hawaiian Islands

Successes of CRW

ACCLIMATISE
building climate resilience

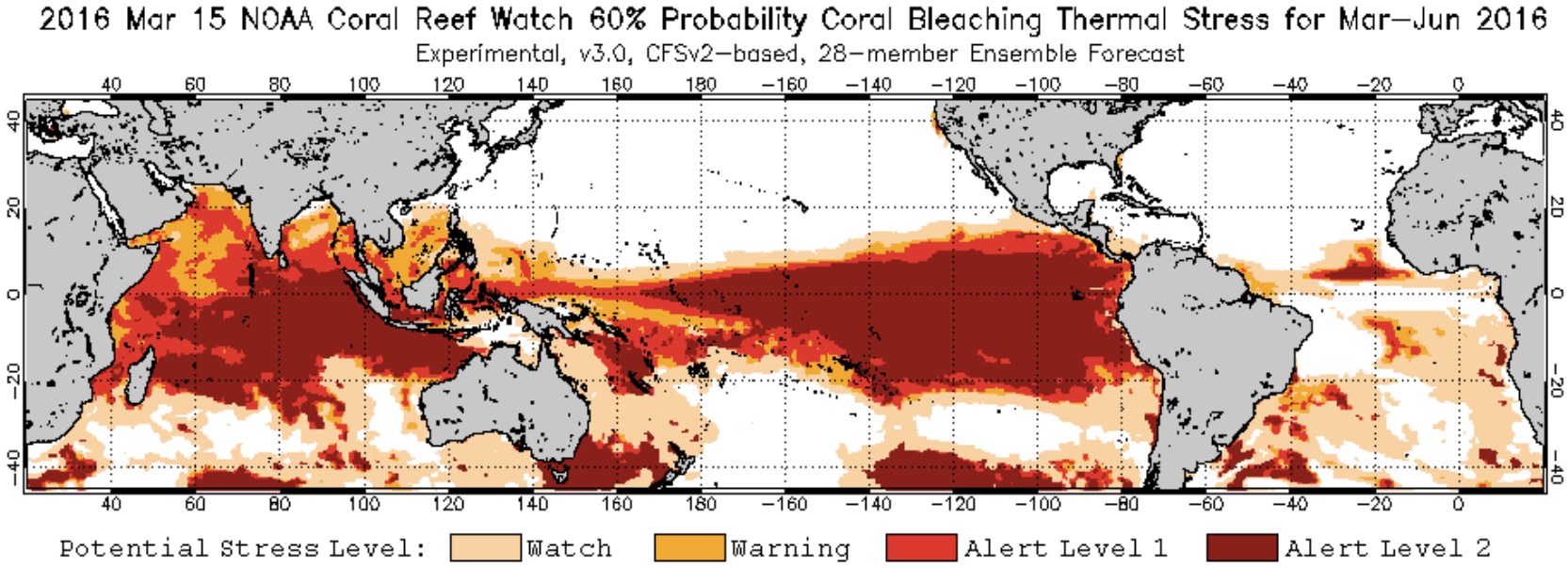
- Education and outreach
- Responsible tourism

Let's listen to the end users (and Mark Eakin) so they can speak for themselves …

We are in the 3rd global coral bleaching event (2014-2016)

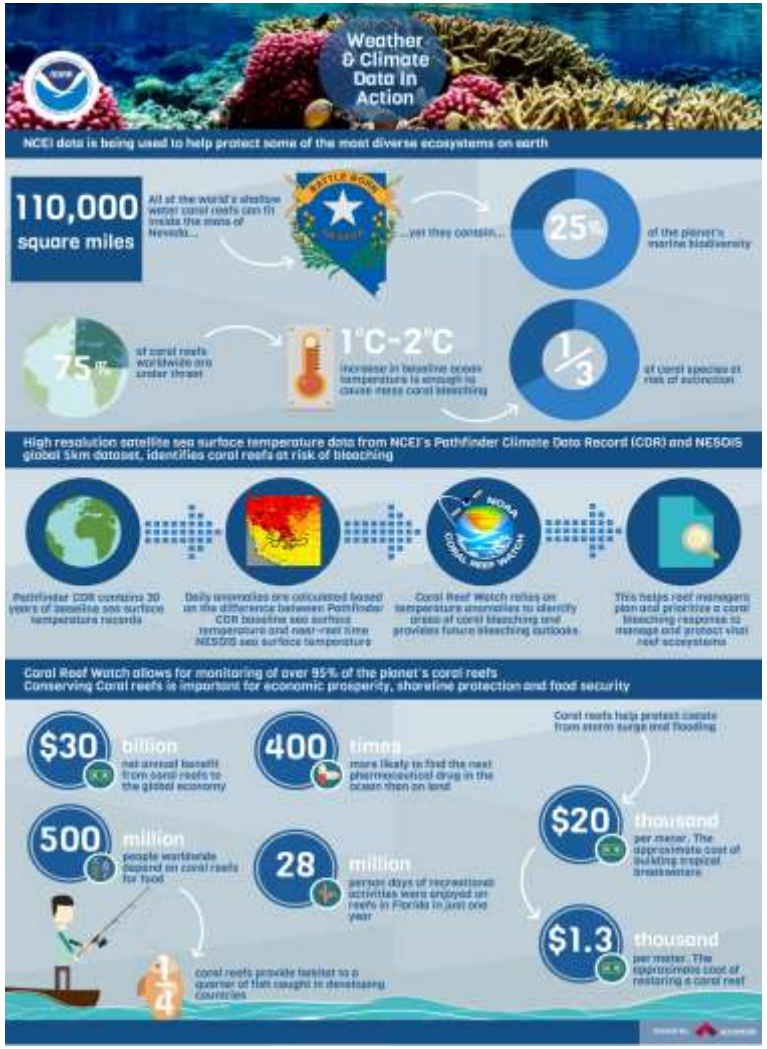
ACCLIMATISE
building climate resilience

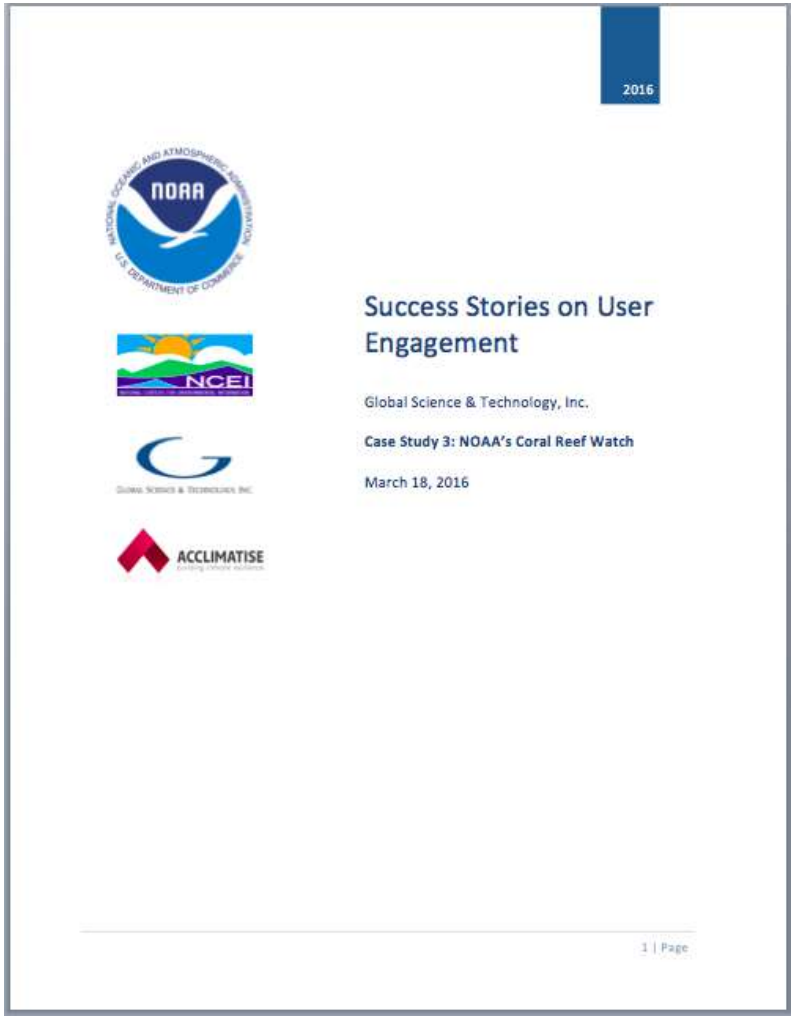
The CRW products have been successful in alerting managers to coral bleaching episodes around the world, and forecasting bleaching events months in advance.



The CRW Info-graphic & report preview:

ACCLIMATISE
building climate resilience





Success Stories on User Engagement

Adapt-N Case Study #1

Adapt-N is a precision nitrogen management tool, initially developed by Cornell University, with support from the Northeast Regional Climate Center, and later commercialized by Agronomic Technology Corporation. The online tool uses CWC's **Global Historical Climatology Network Daily (GHCN-D)** dataset to help farmers apply the correct amount of nitrogen to their crops to ensure optimal yields. In this way, Adapt-N saves corn growers money while reducing negative environmental impacts, such as nitrogen leaching into waterways.

Report

http://bit.ly/Adapt-n-casestudy

http://bit.ly/Adapt-n-infographic

Infographic

Video

http://bit.ly/Adapt-n-video

NEXRAD Case Study #2

NCEI, as the official repository of **NEXRAD archived data**, allows airlines and public agencies, including the FAA and the NTSB, to undertake forensic investigations to understand the weather and non-weather factors that led to an aviation incident or accident. Such analysis are invaluable to improving the safety of airline passengers, and to protect the sector's bottom line through avoidable accidents. This data source plays an important role for the continued safety of air travel, and to insulate the economy's bottom line from the economic impacts of aviation incidents and accidents.

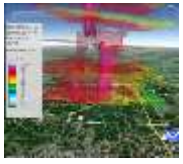
Report

http://bit.ly/NEXRAD-casestudy

Infographic

http://bit.ly/NEXRAD-infographic

Video



http://bit.ly/NEXRAD-video

Coral Reef Watch Case Study #3

NOAA's Coral Reef Watch (CRW) is a free, online tool that provides a global analysis of sea surface temperature (SST), and future outlooks, to identify coral reefs that are at risk of bleaching. Among other inputs, the CRW products utilize near-real- time and historical satellite measurements of SST to determine the thermal threshold of coral reefs across the globe. Historical satellite measurements of SST are derived from the **Pathfinder Climate Data Record (CDR)**, a 28-year record of SST data managed and delivered by NCEI. This record of SST is an essential data input to CRW, as it serves as the baseline, or climatology, against which anomalous daily temperatures are measured. CRW products depend on these anomalies, or differences, to provide coral bleaching alerts. CRW is a tremendous resource to coral reef managers, and allows them to better protect and manage the planet's most diverse aquatic resources. NCEI data plays a central role in supporting CRW, and by extension the global coral reefs that this product monitors.

Report

http://bit.ly/CoralReef-casestudy

http://bit.ly/CoralReef-infographic

Video

http://bit.ly/CoralReef-video

ACCLIMATISE
building climate resilience

Thanks for listening!

Questions?

Amanda Rycerz: a.rycerz@acclimatise.us

Annette Hollingshead: Annette.Hollingshead@gst.com