

SKYTRUTH

2016 ANNUAL REPORT

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“The savvy watchdog group SkyTruth consistently makes invaluable contributions to our understanding of oil and gas development and its impacts, enhancing our ability to respond and prevent future harm. Now, as hard-won government monitoring and transparency practices - imperfect as they are - are eroded on a near-daily basis, SkyTruth’s accessible images and data are even more crucial to grassroots and policy efforts to turn this ship around.”

**- Sandra Steingraber, PhD
Distinguished Scholar in Residence, Environmental Studies & Science
Ithaca College**

Cover Image: Global density of vessels with AIS in 2015. Data from Orbcomm, map by SkyTruth/Global Fishing Watch



*U.S. Secretary of State John Kerry looks on as Paul Woods, SkyTruth CTO, demonstrates the Global Fishing Watch interface.
Credit: Franz Mahr, Oceana*

"The fact that the Belizean government stopped the seismic blasting when the public was informed is a classic example of how transparency can actually lead to improved ocean conservation."

- Jackie Savitz, Oceana

MESSAGE FROM THE PRESIDENT



On September 15th I was honored to be among an international crowd of ocean conservation activists, politicians, government officials and industry representatives at the State Department in Washington, DC. We watched as Secretary of State John Kerry and ocean advocate Leonardo DiCaprio announced the public launch of Global Fishing Watch, our ambitious project with Oceana and Google to put all of the world's trackable commercial fishing on an interactive map, for the world to see. This was a thrilling moment for us at SkyTruth: the culmination of two years of hard work leading the software development team that built the Global Fishing Watch platform. The launch of Global Fishing Watch marked a realization of a 2014 vision, when we learned we could identify gear-in-the-water fishing behavior by analyzing the Automatic Identification System (AIS) broadcasts of fishing vessels at sea.

Within two weeks of that euphoric mid-September day, more than 25,000 people from all over the world had signed up to keep an eye on commercial fishing activity, and we knew Global Fishing Watch was on the path to success. We assembled and managed a team of programmers, researchers and data scientists distributed across six continents, bringing transparency and a new level of accountability to one of the most opaque industries on the planet. I was gratified SkyTruth could apply our expertise with satellite and big data technologies to play such an important role in addressing overfishing and illegal fishing, with the promise of protecting marine biodiversity and improving the lives of millions of people.

Barely two months later, our euphoria was replaced by deep disappointment as we found ourselves facing a new world order marked by the rise of authoritarianism here in the US and abroad. An unwelcome resurgence of governing by fiat, by tweet even, abetted by the systematic disparagement of investigative journalism and the intentional diminishment of public participation in government decision making. If there is a silver lining in this looming cloud, it is the surge of interest in examining what democracy is all about, and the elements that make democracy work. Like many, I took the opportunity to reflect on SkyTruth and its role in protecting not only the environment and public well-being, but also our role in promoting participatory democracy.

THIS IS WHAT SKYTRUTH STANDS FOR:

We care about the environment.

The plants and animals that evolved on the planet together with us over millennia deserve to survive and thrive. Human health, security, and long-term survival depend on a healthy and diverse environment that supplies us with food, clean air, clean water, economic opportunity, and the sense of belonging necessary for spiritual well-being.

We care about public lands and waters. This is the beautiful, democratic concept so central to being an American, and so compelling to people around the world -- that the enjoyment of nature shouldn't only be for the rich, it should be available to everyone.

We believe governments and businesses work better to protect the environment when the consequences of their action and inaction are plain for all to see.

Persistent public vigilance has always been necessary for a functioning democracy. It's especially crucial when governments are disdainful of environmental protection and public health and safety, dismissive of science-based decision making with public participation, and openly hostile toward the public ownership and long-term stewardship of our lands and waters.

If you can see it, you can change it.

We have work to do. Please join us.

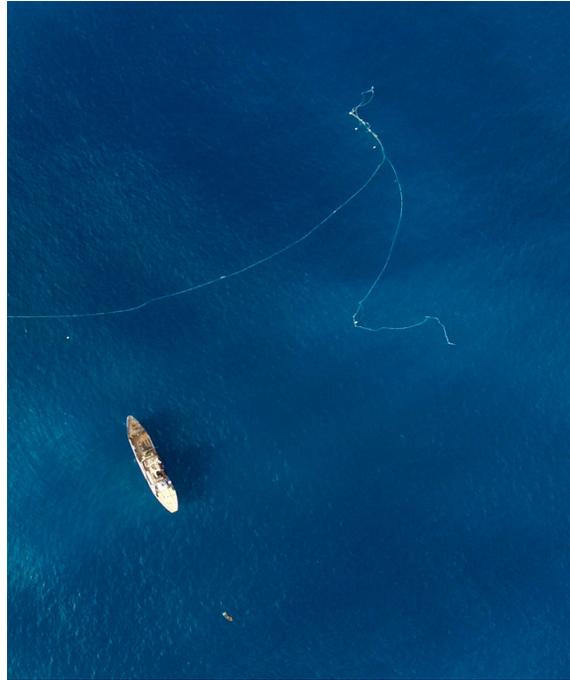
A handwritten signature in black ink, appearing to read 'John Amos', with a stylized, flowing script.

John Amos

WATCHDOG

SkyTruth is a well-known public watchdog, using satellite imagery, geospatial data, and scientifically credible techniques to report on issues of environmental concern. Our reporting on irregular vessel activity in the southern Indian Ocean led to the discovery of a Chinese fishing fleet illegally using driftnets (right) to catch tuna and other pelagic species. Our rapid response to observations of seismic surveying for oil and gas near the Belize Barrier Reef system (one of the world's largest barrier reefs and a UNESCO World Heritage Site) prompted public outcry leading the Government of Belize to revoke permission for the survey. This work effectively halted the first steps toward offshore oil and gas development in close proximity to this endangered habitat.

SkyTruth continues to shine a light on oil spills in the Gulf of Mexico and around the world. We've kept the pressure on Taylor Energy for their chronic oil spill, now in its twelfth year, constantly leaking oil into the sea a mere eleven miles off the Louisiana coast. We continue to expose the limitations of the oil industry's tragically inadequate offshore spill response capacity, evidenced by the Glider Field pipeline leak discovered accidentally by a passing helicopter pilot. Our staff worked to bring media attention from Wired and WWLTV to the daily deluge of smaller spills reported to the Coast Guard by the polluters themselves, and to shine a spotlight on the systematic under-reporting of those spills by the responsible parties.



Investigating a report published by SkyTruth, the crew of the M/Y Steve Irwin located a fleet of six Chinese vessels fishing illegally in the southern Indian Ocean. Credit: Sea Shepherd Global

Not all threats to the planet come directly from drill bits or bulldozers. Political decisions made in secret or based on faulty information can lead to ecological disasters and cause harm to public health. Against these threats SkyTruth is an advocate for transparency, evidence-based policy, and scientific accuracy. In 2015 we helped decipher misleading conclusions drawn by the Environmental Protection Agency's long-awaited report on fracking. In 2016, documents came to light proving that officials in the Obama administration had altered the findings of the report at the eleventh hour. Now, with emphatically pro-drilling and pro-mining special interests running and influencing the highest levels of U.S. government, constant vigilance is necessary to protect the public and our environment from decisions based on faulty science and incomplete or misleading reports.

INNOVATOR

SkyTruth utilizes aerial imagery and satellite data, combined with our knowledge of environmental issues, to develop new solutions to conservation problems. At the 2016 Our Ocean Conference in Washington, D.C., U.S. Secretary of State John Kerry and actor/philanthropist Leonardo DiCaprio announced the public launch of Global Fishing Watch, a major SkyTruth project developed in partnership with Oceana and Google. A concept we evolved from identifying polluters off the coast of Africa and monitoring vessels in the waters around Easter Island, Global Fishing Watch required two years to build and now processes twenty million new data points a day to create an increasingly comprehensive global view of commercial fishing activity.

Using satellite data from four decades of the Landsat program and cloud computing from Google, we updated our mountaintop removal (MTR) mining datasets to provide

an annual composite map of active MTR mining in Appalachia from 1985 to 2015. This data enables new research to proceed on the ecological and public health impacts of this extreme form of strip mining. These algorithms are also being refined to measure the lifecycle of fracking waste impoundments in Pennsylvania and will allow us to build new tools to rapidly respond to landscape changes.

SkyTruth continues to develop collaborative image analysis tools, refining our FrackFinder projects and expanding their scope to drilling and hydraulic fracturing operations here in West Virginia. Working with researchers at Downstream Strategies in Morgantown and the San Francisco State University, SkyTruth staff and volunteers mapped the footprint of drilling at over five hundred well pads across West Virginia.



Aerial image of a fracking operation in West Virginia. Credit: USDA

MOTIVATOR



John Amos presented "Satellites for Good" at the Clinton Global Initiative 2016 meeting in New York City.

SkyTruth's role is not merely to observe, but also to motivate and enable others to take action to protect the environment.

The New York Times Magazine profiled our work with a small Pacific island nation in a feature piece "Palau vs. the Poachers," showing how our groundbreaking work with satellite AIS data can provide actionable intelligence to regulators and law enforcement. SkyTruth's goal is to motivate and enable citizens, media, and decision-makers to take responsibility and ownership of their cherished places and ecosystems. We provide visual resources to communities fighting pipelines by documenting pipeline right-of-ways, spills, and accidents. Our reporting on the ongoing Taylor Energy leak

"One of the things that makes SkyTruth such an impactful partner is their continued dedication to applying new and creative tech solutions to some of the world's most pressing environmental issues at both local and global scales."

**- Brian Sullivan, Sr. Program Manager,
Google Earth Outreach**

brought pressure to bear on the responsible party at a court-ordered public meeting where a company executive refused to answer questions from citizens, including a retired Army general.

Our staff traveled extensively in 2016 to amplify the message. We held workshops with Google engineers in San Francisco, gathered our global research team at SkyTruth HQ in Shepherdstown, and spoke at prestigious events including the Bloomberg Data for Good Exchange, the Clinton Global Initiative Annual Meeting, and The Economist South-East Asia and Pacific Regional Fisheries Summit held in Jakarta, Indonesia.

CATALYST

Our value is best realized when our data and research are published and when governments make decisions that benefit citizens and the environment based on this data. SkyTruth's FrackFinder Pennsylvania projects have contributed to several extensive public health studies by epidemiologists at Johns Hopkins Bloomberg School of public health. Their most recent research found links between living near fracking sites and increased incidence of both migraine headaches and asthma attacks.

In the closing months of his administration, President Obama protected millions of acres of Arctic and Atlantic waters from offshore oil exploration and exploitation. Our imagery and data aided in building public pressure to declare these areas off limits from dirty and dangerous fossil fuel production.

Working with engineers at Google and in partnership with marine conservation researchers from Australia to Nova Scotia, SkyTruth co-authored two papers on commercial fishing activity – turning satellite data into meaningful analysis of natural resource extraction at sea. A study published in PlosOne used machine learning and pattern recognition to detect different methods of commercial fishing at sea. This was the first comprehensive approach to detect and identify potential fishing behavior

for three major gear types operating on a global scale. A study in Science examined the role AIS vessel location data could play in fisheries oversight. The study recommended policy changes for more effective and transparent fisheries management. These studies add to the scientific body of knowledge about detecting fishing activity at sea and provide a framework for regulators.

SkyTruth's work demonstrating the value of transparency and the potential of satellite vessel location data is yielding results. Our outreach and presentations to the Indonesian Ministry of Maritime Affairs and Fisheries inspired Minister Susi Pudjiastuti to direct the agency to partner with SkyTruth and make Indonesia's Vessel Monitoring System (VMS) data publicly available, a paradigm-shifting commitment unmatched by any other country to date. Indonesia's leadership raised the bar for transparency in fisheries management, prompting other coastal and island nations to approach us about taking similar steps to unlock their data for public benefit.



SkyTruth CTO Paul Woods speaks to Minister Susi Pudjiastuti at the launch of Global Fishing Watch. Credit: Franz Mahr, Oceana

MEDIA HIGHLIGHTS

Jan. 7 – AP - *Company sues feds over funds for decade-old Gulf oil leak*

Mentions SkyTruth's estimate of oil leaked from the Taylor Energy site. Also appears in Times-Picayune, Salt Lake Tribune, Tuscon.com, Columbus Telegram, and others.

Jan. 11 – YaleEnvironment360 - *Eyes in the Sky: Green Groups Are Harnessing Data from Space*

Feature article covering SkyTruth's work from mapping mines and flaring to tracking fracking and measuring oil spills

Jan. 20 – The Gazette - *Retired general clashes with company president*

Cites SkyTruth's estimate of oil leaked from the Taylor Energy site. Also appears in US News & World Report, Times-Bulletin, KSL.com, Business Insider, ABC News, and others.

Jan. 20 – Fast Company - *Leonardo DiCaprio Is Giving Away \$15 Million To Environmental Causes*

Lists SkyTruth as a recipient of DiCaprio's contributions via Global Fishing Watch (GFW).

Jan. 21 – Huffington Post - *A Love Letter to the Ocean*

OpEd by Susan Cohn Rockefeller on supporting ocean conservation through projects like GFW

Jan. 29 – Living On Earth. *Radio segment highlighting SkyTruth's most notable success stories*

Feb. 6 – Mongabay WildTech - *Geospatial data for the people, by the people*

Interview with SkyTruth team about remote sensing, citizen science, and public engagement.

Feb. 13 – The Maritime Executive - *Big Data from AIS Could Help Wildlife*

Summary of a paper co-authored by John on utilizing AIS data for wildlife conservation.

Feb. 17 – New York Times Magazine – *Palau vs. The Poachers*

Feature about Bjorn and SkyTruth's work tracking illegal fishing in Palau's waters

Feb. 19 – Greenpeace - *This Oil Leak Could Last for 100 Years – And the Company Involved Refuses to Fix It*

Discusses SkyTruth's monitoring of the Taylor Energy spill and features SkyTruth's Gulf Oil Spill map.

March 10 – Motherboard - *To Stop Marine Poachers, Google and Ecologists Are Ending Privacy at Sea*

Discusses "Ending Hide and Seek at Sea," a paper co-authored by SkyTruth and published in the AAAS Journal Science on how AIS can help keep fishing vessels honest.

March 11 – Mongabay - *Want to end illegal fishing? Make all ships trackable, say researchers*

Review of SkyTruth co-authored paper "Ending Hide and Seek at Sea."

April 6 – Maritime Executive - *China to Investigate Driftnet Fleet Without Sea Shepherd*

Recognizes SkyTruth's leading role in spotting and reporting on irregular vessel behavior in the South Indian Ocean. SkyTruth reporting which ultimately led a Sea Shepherd vessel discovering Chinese vessels engaged in illegal drift-netting.

April 15 – Wall Street Journal - *Indonesia Takes Explosive Approach to Illegal Fishing*

Mentions SkyTruth's partnership with Google and Oceana on GFW.

April 26 – AP – *Regulators relax monitoring of decade-old Gulf oil leak*

Features quote from John about the Taylor Energy leak. Also carried by Miami Herald, Minneapolis Star Tribune, Times-Picayune, Salt Lake Tribune and others.

April 24 – La Gran Epoca - *Increased presence of illegal Chinese fishing boats in Latin American territorial exclusion zone*

Latin American press coverage of SkyTruth and our GFW partnership with Oceana and Google.

May 18 – Kompas Daily - *Minister Susi Use Data to Fight "Illegal Fishing"*

Indonesian press coverage of GFW and our partnership with Indonesia's Ministry of Marine Affairs and Fisheries to share additional vessel location data not picked up by AIS satellites.

MEDIA HIGHLIGHTS (CONT.)

May 20 – *Facing South* - Another Gulf oil spill adds fuel to movement against new offshore drilling leases

Cites SkyTruth's analysis of recent oil spills as well as our reporting on industry's inadequate spill response capacity.

May 25 – *US News & World Report* – *Feds: Company hasn't done enough to end slow-motion oil leak*

Discusses SkyTruth's estimate of the Taylor Energy leak. Also appears on WSFA.com, The Advertiser, The Journal, Leader-Herald, Daily Press,

July 18 – *NPR* - *Health study shows connection between asthma attacks and gas drilling*

Covers findings of a study made possible in part by SkyTruth's FrackFinder PA project. Also appears in Inside Climate News, Natural Gas Intel, and Truth-Out.

Aug. 23 – *TIME Magazine* - *The Fight to Save the World's Seas From China's Bloated Fishing Industry*

Mentions SkyTruth's partnership with Google and Oceana in the GFW Program and a quote from Bjorn. Also appears in AFKInsider

Aug. 25 – *State Impact NPR* - *New study links gas drilling to migraines, fatigue and chronic sinus symptoms*

Discusses study made possible in part by SkyTruth's FrackFinder PA project

Sept. 14 – *US Dept. of State* - *Remarks at Oceana Global Fishing Watch*

Reception Transcript of Sec. of State John Kerry's speech at the Oceana GFW Launch reception

Sept. 15 – *New York Times* - *How Digital Tracking of Rogue Fishing Can Safeguard Vast Ocean Reserves*. Documents SkyTruth's role in GFW along with reviews of recent SkyTruth publications and previous SkyTruth coverage in the Times.

Sept. 15 – *Scientific American* - *Activists Open an Online Window onto the Global Fishing Fleet*

Examines the evolution of satellite vessel tracking and SkyTruth's role in the GFW program.

Sept. 15 – *Washington Post* - *How Google is helping to crack down on illegal fishing – from space*

Discusses SkyTruth's part in the GFW program with a quote from John Amos.

Sept. 16 – *NHK Japan* – *Global Fishing Watch (English) & Global Fishing Watch (Japanese) Video*

Featuring the launch of GFW and an interview with John Amos

Sept. 27 – *Alaska Public Radio KUCB* - *New satellite-based technology aims to crack down on illegal fishing.*

Interview with John Amos about GFW. Also appears on KTOO Public Media, KUCB

Oct. 12 – *Eos* - *Online Tracking of Ships Fights Illegal Fishing Worldwide.*

Discusses SkyTruth's role in Global Fishing Watch and features interview with John Amos. Eos is the official publication of the American Geophysical Union.

Nov. 4 – *NOLA.com* - *More than 60 petrochemical accidents reported in Louisiana during two weeks in October. Coverage of a report published by our Gulf Monitoring Consortium partners, the Louisiana Bucket Brigade. Their report and map facilitated by SkyTruth data extraction and processing.*

Nov. 14 – *WWLTV.com* - *Oil and Water: 11,700 Gulf oil spills since BP raise new fears.*

Features industry response to SkyTruth's mapping and reporting on offshore oil spills in the Gulf of Mexico .

Dec. 9 – *Wired* - *Thousands of Invisible Oil Spills Are Destroying The Gulf.*

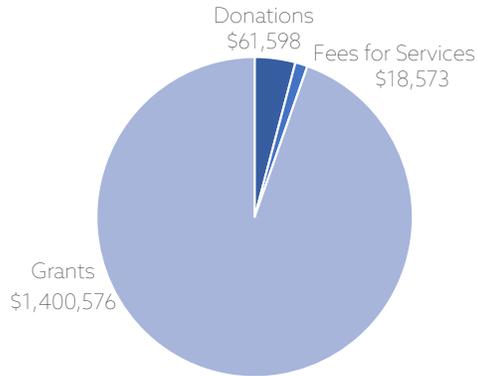
Features interview with David Manthos and map generated from SkyTruth extracted data. Also appears on Zcomm

Dec. 28 – *Mongabay* – *2016's top 10 developments for the world's oceans.*

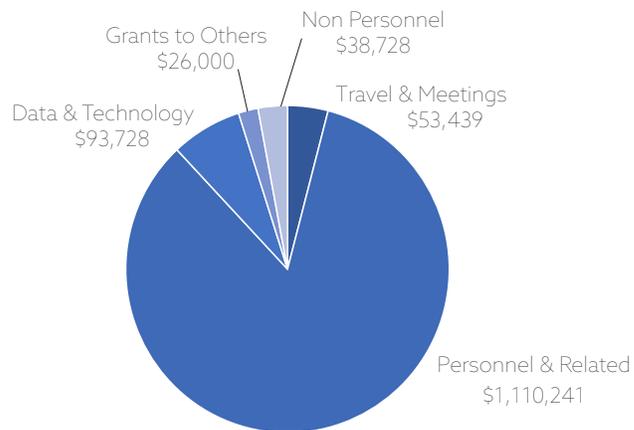
Features Global Fishing Watch as a top tool for ocean conservation through big data.

FINANCIALS

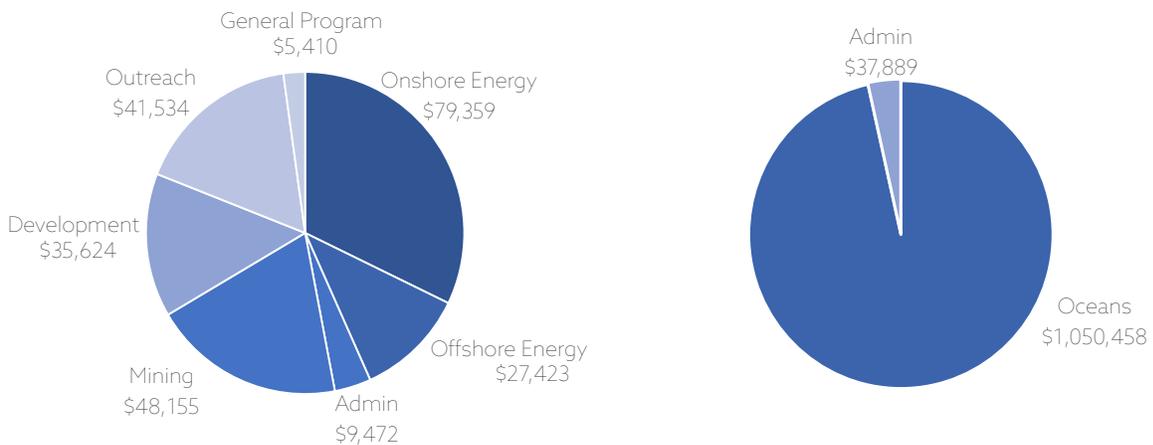
INCOME BY CATEGORY



EXPENSES BY CATEGORY



EXPENSES BY PROGRAM



*Administrative costs displayed proportional to expenditures by program areas.

**SkyTruth's oceans program grew substantially as the Global Fishing Watch partnership matured into a stand-alone organization in July 2017

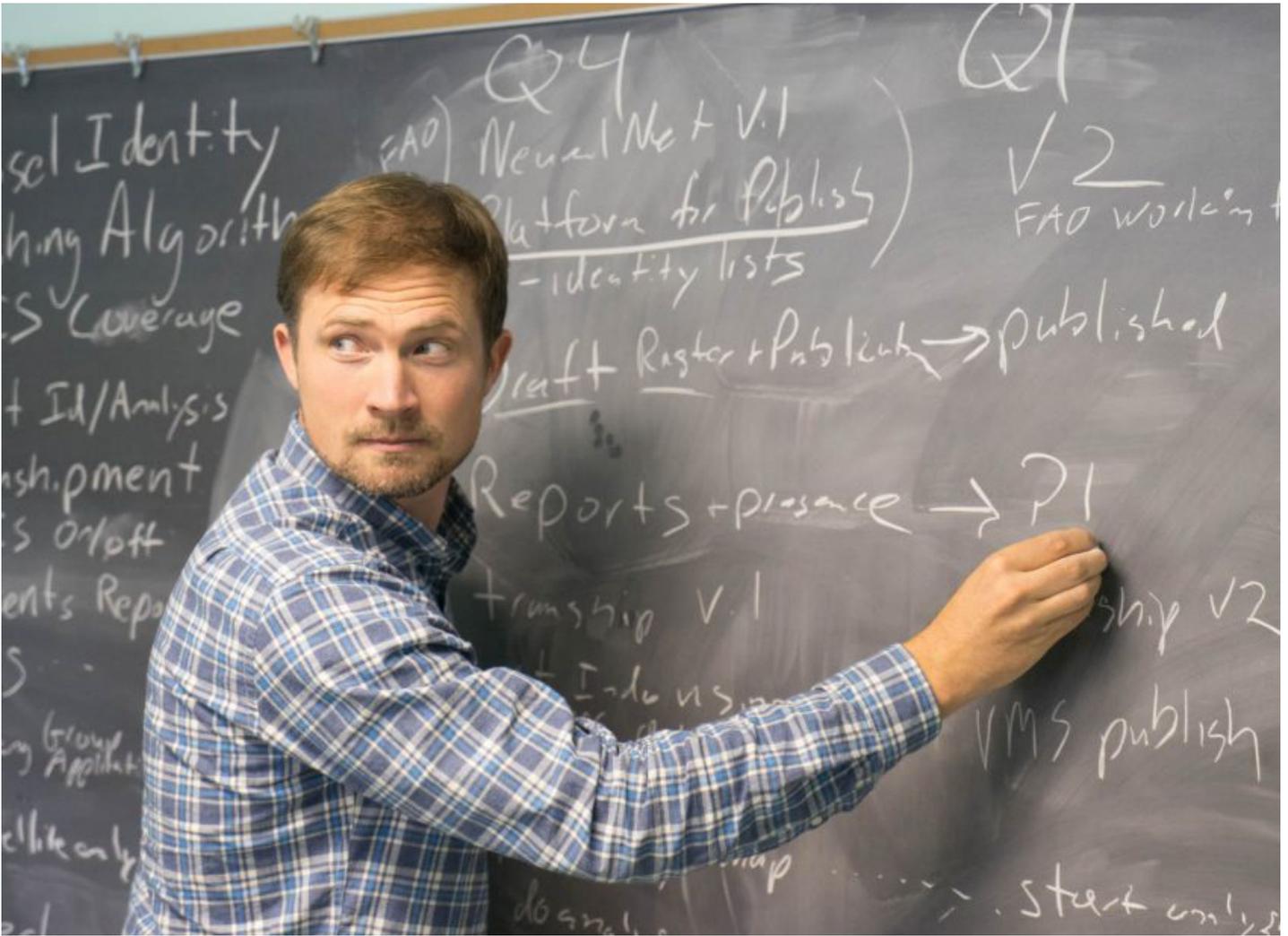
OUR SUPPORTERS

SkyTruth gratefully acknowledges the generous support of our funders, including individuals from around the world. Your support makes it possible to illuminate human impact on the planet and inspire conservation solutions through technology. Thank you!

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Oceana
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WestWind Foundation

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David Kroodsmas, Research Program Manager, leads a brainstorming session in Shepherdstown, WV with the SkyTruth and Global Fishing Watch technology teams.

SkyTruth is a 501 (c) (3) non-profit using remote sensing and digital mapping to motivate and empower new constituencies for environmental protection. We are based in Shepherdstown, West Virginia, about 70 miles from Washington, D.C. We have twelve full-time staff and a wide range of volunteers and interns with skills ranging from computer programming to image analysis. SkyTruth was founded in 2001 and has earned a global recognition as a credible resource on the environmental impact of human activity and a thought-leader in the application of technology to conservation challenges. *Learn more on the web at skytruth.org.*