

Climate Change Is Driving Piracy on the Seas

April 27, 2023

by AMS Staff



Photo credit: Pok Rie, Pexels

Climate change is an unseen force behind maritime piracy, with opposite impacts on two of the world's major pirate hotspots, according to a paper just published in the American Meteorological Society journal *Weather, Climate, and Society (WCAS)*. The study, by Bo Jiang, PhD (University of Macau), and Gary LaFree, PhD (University of Maryland, College Park), examines 20 years' worth of data, demonstrating that years with warmer ocean temperatures see increased piracy off the coasts of East Africa, but decreased piracy in the South China Sea.

The reason is fish. South China Sea fisheries see better catches in warmer years, but in East Africa (bordering countries like Somalia), warmer temperatures have a negative effect

on fisheries. This means lean times for fishing communities—which in turn means fishermen are more likely to take up piracy to supplement their income. “When there’s less fish there’s more piracy; when there’s more fish there’s less piracy,” Jiang says. Damage to fish stocks lessened the time between successful pirate attacks, and increased the likelihood that any given attack would succeed. “[This is] like a natural experiment, because we are looking at two regions of the world that have opposite effects. And these two are the hotspots of piracy around the world.”

A Pirate’s Life (for Now?)

The view of piracy as an economic decision—rather than a personal identity—has important implications for addressing crime on the seas. “The public generally looks at people as either criminal or not criminal,” says LaFree. “This looks much more like people drift into it depending on the other opportunities they have. And drift out of it, I think that was an important part.”

People in areas prone to piracy often have names for this phenomenon. In Singapore, where Jiang grew up, fishermen who turn to piracy when fish production is low are called “standby pirates” or “part-time pirates.” This is one of the first studies in criminology to quantitatively examine when these standby pirates are most likely to engage in illegal activities. To tease out the effects of climate from those of other factors, Jiang and LaFree carefully examined the potential effects of other factors—like the presence of private security guards on board, and the regional “misery index” of local economic stress. Holding all other variables constant, they still found a significant relationship between sea surface temperature and piracy.



Photo credit: Bedis ElAcheche, Pexels

Jiang and LaFree were surprised at how rapidly and strongly climate was affecting fisheries. They believe part of the reason is how sensitive fish are to small changes in sea-surface temperature (SST), as poikilothermic (cold-blooded) animals. “There are climate change winners and losers among fish,” says Jiang. “Even if there’s [just] a small increase in the SST, the fish are the first ones to feel it, so they are just going to migrate somewhere either warmer or cooler.”

Where climate change is harming fisheries, the economic incentives for piracy are likely to grow stronger as temperatures increase. What’s more, even in the South China Sea where fisheries currently benefit from warming, there are likely threshold temperatures past which fish stocks won’t respond so positively.

“The important question, based on our paper, is how to decouple the link and break the connection between legitimate and illegitimate activities,” says Jiang. “Climate change is going to continue into the foreseeable future, so governments around the world, especially in these two regions, need to devise policies that are going to take such empirical evidence into consideration.”

Global Forces: Crime and Climate Change

It's not just down to individual governments, either. As LaFree points out, crime is a global endeavor, whether it's piracy or terrorism. "We're making a big pitch in some of the work we're doing right now that ... globalization is really important for solving these sorts of problems that cut across national boundaries."

This paper is the first in a series of collaborations between Jiang and LaFree examining climate change, globalization, and crime—including homicide, terrorism, and civil conflict. Qualitative studies have already shown that when climate change devastates livelihoods, conflict and terrorist recruitment may follow; but criminology often suffers from a lack of complete data or differences in reporting among different countries, making it hard to get the full picture. Being able to use satellite observations of variables like temperature—which can provide reliable data for anywhere in the world—is a major boon to those examining large-scale trends in crime. The authors hope such scientific advances will help counter the world's worsening social and environmental problems.

Climate researchers and criminologists don't tend to overlap much, so there is a wealth of opportunity for research on climate change and crime. Jiang and LaFree called for more collaboration in the future to unleash the power of interdisciplinary science on two of the world's most global and intractable challenges. "From a science standpoint, it's kind of like the best of times-worst of times," says LaFree. "Hopefully our technology will be better than the problems."

Read the paper: Jiang, Bo, and Gary LaFree. 2023. "Climate Change, Fish Production, and Maritime Piracy." *Weather, Climate, and Society (WCAS)*. <https://doi.org/10.1175/WCAS-D-21-0147.1>

[View the press release \[PDF\]](#)

- < [Even without a White Christmas....Snow Measurements Must Go On](#)
- > [The Yarnell Hill Fire: Microbursts, Density Currents, and 19 Lost Lives](#)



Follow Us



Recent Posts

CalFiDE: Observing Large-Scale Fires from the Air and the Road

Recent Trends in Tropical Cyclone Fatalities in the United States

“People in My Community Rely on Me.”

Latest BAMS Articles

The First Systematic Meteorological Observations in the Americas (Recife, 1640–42)

August 21, 2023



The Global Wind Atlas: A High-Resolution Dataset of Climatologies and Associated Web-Based Application August 21, 2023

Process-Oriented Diagnostics: Principles, Practice, Community Development, and Common Standards August 21, 2023

P-Type Processes and Predictability: The Winter Precipitation Type Research Multiscale Experiment (WINTRE-MIX) August 21, 2023

Joint Collaboration on Comparing NOAA's Ground-Based Weather Radar and NASA-JAXA's Spaceborne Radar August 21, 2023

Living on the Real World Blog



Earthlings, your host Planet would like a word.

K-12 climate science education: the worldwide picture.

The new face of severe weather – as manifest at the higher levels of “Earth’s Reality Game”



@ametsoc

Tweets from @ametsoc

 **American Meteorologi...**
Ca... 
@ · 1h

Ka-band clinic by @DopplerChase this morning at #AMS40Radar

  15 



 **American Meteorologi...**
A... 
· 52m


Join our committee!

We're looking for three people, including one student, to join our committee to advance hydrological and meteorological sciences in the @ametsoc.

We're taking applications through September 15th, click here to apply and learn more: ametsoc.org/index.cfm/stac...

  4 


 **American Meteorologi...**
A... 
@ · 2h

 Only a few hrs left until the #wxbandphotocon test closes! Don't miss this chance to show off your photos of weather, water, and climate 📸 Winners will receive cash prizes + complimentary Weather Band membership!

The deadline is today at 5PM ET.
Submit:
bit.ly/3JjNJmD

ALT


  4 

A... 
· 57m

Another great day of sessions yesterday! There is more to come for Day 4 at the @ametsoc_radar Conference. Still time to join virtually, register here:



bit.ly/3OW7OBk
#AMS40Radar



A... 
@ · 1h

LAST CHANCE to
submit an abstract
for the #AMS2024!
Submit by
TONIGHT,
Thursday, 31
August, at 11:59pm
ET: bit.ly/3ORkYzs



 **American
Meteorologi...**
Ji... 
@ · 2h

A very tired
conference co-
Chair getting ready
for a talk, poster,
and STAC meeting
today 😊
#AMS40Radar



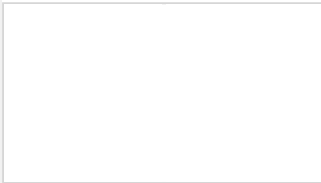
 **American
Meteorologi**

...ology...

Da... 

· 11h


Great day for @NOAANSSL with presentations at #AMS40Radar and an entire panel discussion on phased array radar research #AMSSCM2023! We have a great team and we truly are at the cutting edge for weather research! Thanks @ametsoc for the opportunity!



 1  19 

A... 

@ · 2h

Today's webinar 
Creating Cultural Change through Data: The AMS Equity Assessment

Don't forget to join us at 12:00 PM ET to learn more about our new initiative on equity, inclusion, and justice (EIJ). Register now: bit.ly/45p2m0G

Ame... · At



Join AMS to hear





 From YouTube

AMS COSMOS Webinar - A Climate Scientist and a Priest Walk into a Webinar

The U S Federal Budget and Policy Process

AMS 2023 Meeting Highlights

Presidential Forum, Annual Meeting Welcome, Annual Review and Awards Ceremony

AMS Global Partners Program



All content copyright © The American Meteorological Society 2023.