

AGU AMA: I'm Admiral Jon White, President and CEO of the Consortium for Ocean Leadership, here to talk about why the ocean matters to everyone and how ocean science makes our country stronger, safer, and more secure. Ask Me Anything!

AmGeophysicalU-AMA¹ and r/Science AMAs¹

¹Affiliation not available

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Hi Jon!

My name is Hans, I'm a student in Surrey, UK, with a place to study Marine Biology at Southampton University, at the NOC. For me this is quite literally a dream come true.

After that bit of context, this leads me to my questions. In terms of Marine Conservation, what can a student in Surrey (or anywhere not directly coastal) do? What are the best ways for me (and others of course) to gain non-sensationalised views and opinions on the topic of Marine Conservation? And for myself, the most important question: Where should I start? What organisations are the ones to shoot for, and who should I start emailing?

Thank you so much for your time (and your work!)

Kind regards, Hans

[hansahilder](#)

Hi Hans! Thanks for your interest, and I hope you're enjoying your studies! I love that you ask what you can do, even if you're not in a coastal area. So many times people forget (or are just not aware) that the ocean impacts all of us (the oxygen in those two breaths of air you took reading that sentence? At least one of them is thanks to the ocean ... (phytoplankton)! In terms of what you can do, I have a couple of ideas. First, do what you're doing - engage people involved in oceans and absorb all you can. Then, share that knowledge with others, and help them see what you already know -- even in inland areas, the ocean matters. Fun story to that effect - we host an academic quiz-bowl style competition for high schoolers called the National Ocean Sciences Bowl. A couple of years ago, a high school in Boise, Idaho (which is a good nine hours from the coast) started competing. As they learned more and more about the ocean, they realized that, even though they were hundreds of miles away, their actions ultimately affected it. Helping people see that we are all connected to the ocean, no matter where we live, helps them start to care, so the more you can help people with that, the better. Sometimes those connections are unexpected -- for example, anyone out there reading from Las Vegas? Your non-



coastal city is the largest consumer of shrimp in America. Oh, and the Boise NOSB team? They won the national finals two years in a row! In terms of where you should start and good organizations, I've found that going to events is a great way to learn more and to get an idea of who the players are. Talks, film screenings, book events, beach cleanups are all great ways to not only learn about what organizations do related to marine conservation, but also great ways to meet people in the organizations and learn how you can help them. And finally, one of the most important things you can do to keep from getting sucked in by sensationalized stories is to educate yourself in ocean science and related fields. Good science isn't always what you read about. One thing you can do is read a news article on a study, then go look at the study itself and determine if you agree with how the study was reported. While you're developing those skills, you can do some research into trustworthy, unbiased news outlets (I'm less familiar with the UK outlets).

Speaking on behalf of environmental science majors out there struggling to get jobs or internships, how do you foresee the job outlook of environmental science related fields in the future? President Trump has clearly shown that the environment is not high up on his agenda.

Edit: Getting downvoted for whatever reason. I'm not trying to drag politics into this, I'm just honestly concerned.

[trextakzona](#)

Great question, especially since I have a daughter majoring in environmental science. I remember being in college and wondering how my major (oceanographic technology) was going to play out in the "real world," so I understand where you're coming from! The long-haired recent college graduate in 1981 who went to sea on a seismic survey boat had no inkling that he would be getting his head nearly shaved and would be learning how to march two years later. My career path didn't go nearly where I expected it to, but my major played a critically important role all along the way. In this world where so many people (more every day), industries, and governments are becoming keenly aware of the importance of understanding and maintaining a healthy environment, I think that there will always be jobs for people pursuing environmental science - whether it's with non-profits, think tanks, industry, foundations, academia, local/state/federal agencies - or even the military! In this time of political shift, keep in mind that the stated goal of decreasing the government workforce also comes with a priority of enabling the creation of more private sector jobs. Industry has need for employees with your scientific education and expertise as well. Through personal experience (and that of many of my colleagues, both in the Navy and out), I did find that science life doesn't always take you where you think it will. It's good to be open to different options than you might expect, and don't be afraid to try something new or go in a different direction. And remember - our environment has and will always outlast shifts in politics.

What are your biggest concerns about the health of our oceans?

[blz09](#)

That's a question I could talk a lot about, but I'll try to keep it brief(ish). I'll give you two of my biggest concerns. 1. We don't know how to measure ocean health. We can't give the ocean an MRI, we can only take its temperature. 2. By the time we figure out what the top problems really are, we may have passed thresholds to adequately solve the issues.

These are the biggest reasons we need to better understand the ocean and its processes. Marine scientists across this great nation (many at COL member institutions and AGU members) spend their days seeking to understand this incredible ocean resource that we all depend upon.

In terms of concerns we do know about and can tackle now, ocean acidification and pirate fishing are up there. The ocean is a natural carbon sink as carbon is taken up from the atmosphere by the ocean.

Now, there is so much carbon stored in the sea that we are seeing changes to the pH of seawater (commonly referred to as ocean acidification), which is dangerous to marine organisms dependent on calcification. This impacts molluscs, shellfish, larval finfish, coral, and much more. Illegal, Unreported, and Unregulated (IUU) fishing is commonly referred to as pirate fishing and makes any nation's thoughtful efforts to sustainably manage their fishery resource base much more complicated (not to mention the human trafficking, human rights, and national security issues that also abound with this practice).

What is the general opinion of people in the Navy towards ocean conservation?

What has been the response to your move of your former colleague flag officers?

[alexelva1](#)

In my experience, all sailors who go to sea love the sea -- its beauty, it's wildness, and its largely unexplored vastness. And they will do whatever they can to conserve the ocean while maintaining our (and our allies) national security. My fellow Flag officers are not surprised and respect what I am doing after retirement. I was an oceanographer before I was a Naval officer, and the ability to use ocean science and knowledge to enhance Navy missions is hugely important. All admirals I know appreciate that.

How have the recent developments in the US affected what you do?

Will your organization be taking on more responsibilities to balance out the shrinking/disappearing federal abilities in the field of ocean research and education with respect to climate change in particular?

With rising sea levels already a major issue in places like Louisiana and Miami, what is the one thing people should know to be more educated about the issue and better prepared?

[mephistophyles](#)

To answer your first question, nothing has changed what we do and our purpose, to shape the future of ocean science and technology through discovery, understanding, and action. We are proud to be the voice of the ocean science community. Every two years, when a new Congress comes in, we develop new priorities, which we did again this year. You can see them more in detail (http://oceanleadership.org/wp-content/uploads/2016_COL_BrochureInserts_Web_Priorities.pdf), but I'll note that we've made a stronger push to help people see that investing in ocean science and technology impacts our entire nation, not just those living in coastal areas. For example, enhancing our ability to observe and monitor the ocean (e.g., through buoys and ocean observing platforms) increases our maritime domain awareness and improves our national security. So we'll keep advocating for the ocean science and tech community and drawing those connections for people. In terms of the one thing people should know to be better prepared for sea level rise, I'd say that it's that sea level rise is happening now. When you're making decisions about what home to buy or whether you should get flood insurance, you need to be taking that into account. Part of our financial concern (and thus planning) at federal, state, and local levels must be how we will respond and adapt (now) to rising sea levels in so many places along our coast lines. South Florida and Louisiana certainly are great examples of places of significant concern, but not the only ones. I encourage you to look at Old Dominion University (ODU)'s link: <http://www.centerforsealevelrise.org/>. This is a great example of a community that is taking a bipartisan, serious approach to this problem, and it was an honor for me to work with ODU (one of our member institutions) to this end when I was still in the Navy.

What one piece of misinformation about our oceans drives you nuts? What have you done to correct the general public's knowledge about that subject?

[sunny-in-texas](#)

It makes me crazy that people think the ocean is fully understood and explored. Nothing could be farther from the truth! Only a fraction of our ocean floor has been accurately mapped (as opposed to the moon and Mars), and we still know relatively little about the physical, chemical, geological, and biological processes and interrelationships in the deep ocean. I highlight our knowledge gaps and needs at every opportunity, in what I write and say to government, to the public, and to anyone who will (or can be convinced to) listen.

1. If the current level of dumping plastic waste into oceans continues, how long will it be before there are virtually no clean beaches anymore?
2. With the current amount of plastic in the oceans, is the situation salvageable? Would simply ceasing plastic dumping into oceans be enough, or would further efforts be necessary?

[DaniaMalia](#)

Plastic is such a big problem in our ocean, and what we see washing up on beaches is only a small part the total volume. It's been predicted that by 2050, plastics will outweigh fish in the ocean. I'm not an expert on plastics, so I'm afraid I don't have any hard numbers I can provide in terms of a timeline, but many of our member aquaria are working on this issue through their research and outreach. I do think it will take more than just stopping the problem (which is much larger than just ocean dumping) to clean up the ocean, especially considering how long it takes some of the trash to biodegrade (the average time for a plastic bottle to biodegrade is 450 years). But I'm encouraged by the great minds out there working on innovative and technological solutions and am optimistic they will find ways to solve this problem. Last year, a 20 year old invented an innovative cleanup technology (<http://www.bbc.com/news/magazine-29631332>). The Navy has also taken leadership of this role; more than a decade ago, they stopped dumping plastic off their ships. They have a plastic squasher onboard now (http://www.navy.mil/submit/display.asp?story_id=2712).

Every single person's actions matter! Taking a reusable bag to the grocery store matters. Choosing not to use plastic straws matters. Did you know that in the U.S. alone, we use more than 500 MILLION straws daily? That enough to fill 125 school busses. Think about how much plastic ends up in the ocean the next time you want to grab a straw for your drink.

Hello sir. Many thanks for your 30+ years of service.

After becoming open-water certified a few years ago and diving some of the wrecks around the Bahamas, the invasiveness and prevalence of the Lionfish epidemic become known to me. I've been tracking the story for a few years now and from what I read, it's getting very, very serious but I hear precious little about countermeasures or social awareness campaigns to capture and kill being employed.

To the question: are organizations like yours able to team up with orgs like NOAA to evaluate solutions to the invasion currently underway, and do you have any solutions you can share with how to defeat this home-grown menace? (Even anything as simple as some East Florida {and now West, apparently} billboards or commercials to show how easy it is to grill a fresh filet of Lionfish?)

2nd question: is this threat to our nations breeding grounds being evaluated as such, a threat, at present, or simply a nuisance, and do you believe that is the correct response?

Thanks for your time.

[Introverted Extrovt](#)

Invasive species are most often a threat to the natural population. While I understand they are difficult to clean, I am a big fan of the eat-invasives-to-extirpation approach.

How can you use your position as a former admiral to oppose this anti-science, anti-green, climate change denying administration?

[Zer0Summoner](#)

I weigh in with both Congress and the administration whenever I see an opportunity. Here are two recent statements. <http://policy.oceanleadership.org/download/documents/Letter-to-Administration-on-Science-Communication-and-International-Collaboration.pdf>

<http://oceanleadership.org/2016-u-s-election-results-consortium-ocean-leadership-statement/>

As an individual, you can also weigh in with your elected officials to highlight your concern on issues as their constituent.

I'm from California, but when I moved to the Midwest for school, I discovered that not everybody shares my love of the ocean. How can I help my roommate see that the ocean is important, even if you can't see it out your window?

[apwhitney](#)

The ocean matters, no matter where you live. I'll start with a pretty basic requirement. While reading this sentence, you've probably taken two breaths. One of those came from the ocean (phytoplankton!). Contrary to the popular perception that all our oxygen comes from trees, half of all oxygen is produced in the ocean. Does your roommate like seafood? In the U.S., Americans eat more than 14 pounds of seafood each year. How about his/her computer? There's a good chance that monitor came from Asia, traversing the Pacific Ocean on a cargo ship. Oh, and I'm guessing it would be hard for your roommate to get by these days without the Internet. We have three-inch fiber optic cables running along the seafloor to thank for that! I could keep going, but I'll end with one of my favorite facts – the ocean helps keep bugs out of your hamburger buns. Yep, you read that right. Diatomaceous earth, a commonly-used insecticide, especially with stored grain, is made from tiny marine fossils. Check out even more ways you interact with the ocean and ocean science every day and likely didn't even realize here: http://oceanleadership.org/wp-content/uploads/OceanSciMattersEveryDay_Web.pdf

Thanks for your service and conservation effort. This question is on the fly, but what is your favorite aquatic animal?

[East2West21](#)

Thank you! Sharks. Different (cartilaginous skeletons), misunderstood, and so vitally important to the health of ocean ecosystems as a top predator. And their teeth fall out naturally and wash up on beaches, so you can wear or display them without harming the wonderful animals.

What advice would you give to students who are considering careers related to ocean science?

[MABOcean](#)

Go for it! I have loved working in, on, and under the water. Check out the National Ocean Sciences Bowl (a program of COL)'s great resources: <http://nosb.org/opportunities/career-resources/>

Hey Mr. Jon! I never expected to see you on here!

In light of the recent budget proposed by the administration, my question is this:

- What do you think that the impacts that the proposed cuts to NOAA would have on our ability to improve our oceans?

Also

- When/why did you decide to become an oceanographer?

-Nick

[nfconnor](#)

Nick, I wanted to be an oceanographer as long as I can remember ... age four or so at most (except for the few years I mistakenly thought I might be a pro tennis or ultimate frisbee player). Remember, the budget proposal is just a recommendation, and the real money comes from congressional appropriations. There is still a long way for this to go through Congress, so don't lose hope.

Hypothetically: If I had USD \$20 million and needed a 7% annual return, where would you invest my money to have the greatest positive impact on the Ocean Environment?

[impactadvisor](#)

If you want a 100% personal "ocean satisfaction return" on your \$20M (or part of it), I suggest writing a check to COL as a donation. :)

Disclaimer: I am NOT a financial advisor so will refrain from specific investment advice. However, I do know there are sustainable opportunities for investment in the blue economy. It's just a matter of you picking the ocean sector that interests you most - energy, food, infrastructure, medicine, marine transportation, minerals, recreation, ship building, etc. Personally I am a big (sustainably caught/raised) seafood fan, and I think there is a booming growth in U.S. aquaculture efforts just waiting to "hatch."

I do also encourage everyone to look at the sustainability efforts of major publicly traded companies if considering that type of investment.

Hello Admiral.

How do massive, loud vessels such as Aircraft carriers impact the marine ecosystems?

[ceropoint](#)

Human-caused sound and noise in the ocean are of great concern, and there is research going on to understand their impacts on ecosystems and organisms. The impact of sound on various types of marine life is (not just marine mammals) is significant, but complex, and relates to frequency (Hz) as well as loudness. Thus it's hard to say which type of ship, or other source has the greatest effect on an entire ecosystem at this point. Much of the ongoing (and much-needed) research is even being paid for in part by industries who make a lot of noise (oil & gas, offshore wind, shipping, etc.), as well as federal agencies like Navy, NOAA, BOEM, etc. That is all good news, as well as the fact that ships are getting

quieter.

Do you guys have any plans for dealing with the recent proposed budget cuts to NOAA and the EPA? Alternatively, how do you anticipate these cuts will affect the average American (either directly or indirectly)?

Incidentally, are you looking to hire any biological oceanographers with a panache for scientific communication? (Hey, it's worth a shot, right?)

[punkinholler](#)

COL advocates on behalf of the ocean science and technology community and definitely is focused on the budget reduction recommendations as well as the appropriations process in Congress. It's important to note that ocean science research and technology development happens in multiple agencies in the federal family. In addition to the NOAA and EPA hits you refer to, I'm concerned about the consequences of reductions to NSF, NASA, DOE, USACE, and State Department. Working with coalition partners of NDD United, we've weighed in on the need to have robust non-defense discretionary federal spending

(<http://policy.oceanleadership.org/download/documents/Multiorganization-Support-of-NDD-Funding.pdf>) and will continue to fight for funding of the national scientific enterprise.

Signing up for our weekly newsletter is a great way to stay abreast of science policy happenings (right side menu mid page): <http://oceanleadership.org/category/news-and-resources/>

It's always worth a shot! We hire policy and communications interns and share opportunities across the ocean science and tech community here: <http://oceanleadership.org/news-resources/ocean-of-opportunities/>

Given that we still dont have a firm grasp of all lifeforms in the deep ocean, are you taking any actions to study these environments? If so, do you believe this act would reignite the imagination of people up here on land enough to care more about the health of our oceans?

[TheRed6889](#)

You're right - the deep ocean does reignite imagination up here on land. Perhaps we need an ocean version of the 1960s moonshot. Redditors to the Rescue! Contact your U.S. Congress elected officials and let them know that it's time for an "oceanshot" - to map, understand, and discover the ocean resource that we depend upon.

Have you seen any crazy sea creatures, like bigfin squid? And what do you think is the best way forward on stopping or alleviating things like corral bleaching and ocean acidification? Thanks!

[noforeplay](#)

I've been snorkeling since I was 6 and scuba diving since I was 17, and I've seen many, many crazy sea creatures (and some crazy land creatures, like people, underwater as well). The invertebrates (including gastropods) are the craziest and most beautiful in my opinion. I really like nudibranchs.

In terms of ocean science, what was the most important/timely topic you dealt with as the Oceanographer of the Navy?

[MABOcean](#)

Helping design a future Navy that will operate successfully in a changing ocean - one with an ice-free Arctic (for part of the year), one with a higher sea level at its installations and bases, and one where ocean knowledge advantage is no longer guaranteed.

I'm enlisting this year & I ship out for basic in a few months. While I'm in, I plan on applying for the STA-21 program and one of the possible officer routes is Naval Oceanographer. I'm really interested in environmental science so I thought that might be the route I aim for. The thing is, it's almost impossible to find resources to learn about what it is a Naval Oceanographer does. (I even tried to get an AG job but was told they almost never come up)

I was wondering if you could offer some insight into the lives of Naval Oceanographers. What do they do? What's their role on a ship? What type of ships they could serve on? Locations they could be deployed to? Just some basics on life as a Naval Oceanographer.

Thanks in advance, Admiral. Hooyah.

[rusiz_ansari](#)

Bravo Zulu for becoming part of the world's greatest navy! First - we are all sailors and support the mission/ship/command as needed (damage control, watches, duty, etc.). Naval oceanographers specialize in meteorology, oceanography, and other sciences, as we seek to apply knowledge to ensure safe and successful operations around the globe. Knowing the ocean and atmosphere anywhere better than an adversary gives us "home field advantage at the away games." Day-to-day functions include weather analysis and forecasting, bottom mapping (bathymetry/hydrography), tactical recommendations, navigation planning, etc. And most importantly, as you get more senior (enlisted or officer) leading others, and everything that goes with that. A lot of training and education is important and involved in a successful career - you've got to study hard to be part of the most knowledgeable Navy in the world. Call or email the AG or oceanography officer detailers for more! Be persistent!

I occasionally read articles about new means of removing plastic debris from the oceans. How bad are these garbage dumps now, and are there any new ideas to clean them that look promising?

[Scirocco-MRK1](#)

Bad! Check out my reply to DaniaMalia for more specifics and ideas.

I've been reading about microfiber being a much bigger threat to aquatic life than plastic microbeads. Has this had a large impact on ocean life, or have you been hearing about this spread through conservational science communities?

[archimedes_principle](#)

My staff were just talking about this. Marine debris, whether microbeads, microfibers, or a plastic water bottle, is detrimental to the integrity of marine ecosystems and the health of marine organisms. Scientists are learning more about types of marine debris, how plastics break down in seawater, how physical oceanography conditions affect their distribution, and much more. Remember that all of your consumer decisions affect the ocean eventually ... maybe cotton instead of synthetic fabrics?

Also, I am fascinated by the concept of the global ocean conveyor belt (thermohaline circulation). Do you think there is any real danger to it stopping in the future? What can we (mankind) do to prevent that from happening?

[treytakzona](#)

It is interesting, and well worth studying, but it is not at the top of my worry list at this point. What can we do? ... I support efforts to mitigate our impact on the warming of our atmosphere and ocean (and derivative impacts such as changes in thermohaline ocean circulation, changes atmospheric circulation, sea level rise, etc.).

As an individual, what can I do to make the biggest impact to help prevent rising water temperatures and damage to ecosystems?

[HenryAlbusNibbler](#)

Join me in riding your bike instead of driving and carrying a reusable water bottle instead of disposable one! And get others to join you ...

I know the Navy has some pretty wild traditions when crossing the Equator and such, but what was your favorite tradition while serving?

[Stambro1](#)

Traditions and associated ritual "ceremonies" are a good thing for moral and team-building, as long as they don't get out of hand with respect to hazing, respect, and fair treatment of shipmates. I have witnessed the entire spectrum of these events and had to disrupt bad behaviors on numerous occasions (I became a shellback a loooong time ago and have participated in many ceremonies). One thing I am very proud of - the U.S. Navy is the most fair and respectful organization I know of and has come a long way in how it conducts such events since I joined in 1983. Done well, such events build camaraderie and positive morale, and are FUN!

Where is a good school/location or what would be a good program to pursue a career in marine exploration? Like diving, subs and ROV stuff.

[raella69](#)

A great starting point would be to check out the academic institutions on this list of COL member institutions. They're all top-rated, innovative, and cutting-edge institutions!

(<http://oceanleadership.org/about-ocean-leadership/membership/>)

What does the average day look like for an active duty Admiral? In addition, what perks (housing, travel, cuisine) come with achieving such a prestigious rank? Lastly, was it hard keeping your ego in check when you were actively serving?

[Deuterion](#)

There really are no average days - balancing the priorities of what to do from hour to hour is the hardest part. People have to come first --doing whatever you can to empower, mentor, and inspire subordinates comes first. Everyone in the military gets rank-based housing support, and perks are

largely a myth. Stress is pretty high and work tempo is fast, so you do get a lot of people to help. Spouses can help a lot with ego checks.

What new ocean conservation technologies are you excited about?

[vrNickNack](#)

Smaller and less expensive sensors, to allow for broader distribution of ocean observations.