WHEN SCIENTISTS GO UNDER THE WATER
BİLİM İNSANLARI SUYUN ALTINA İNDİĞİNDE

Treasures of The Sea

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What is Science in Blue?

The SCIENCEinBLUE Project is an initiative funded by the European Union, aimed at raising awareness about ocean and underwater research and innovation. It seeks to bring researchers working in the field of underwater science and technology together with the public. The consortium, consisting of Galatasaray University, Akdeniz University, and the Boğaziçi University Underwater Research Center, will demonstrate the role of researchers in society and the economy, drawing on their worldwide experience, particularly referencing the EU projects their staff has worked on in the past.

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RESEARCHERS' NIGHT

Every year, the last week of September across Europe.

September 27-28, 2024
Galatasaray University

September 26-27, 2025
Akdeniz University



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MAVİ
HACKATHON
Denizin derinliklerinde teknoloji macerası başlıyor!
Mavi Hackathon, lise öğrencilerini İstanbul Boğazı'nı keşfetmeye ve kodlama becerilerini geliştirmeye çağırıyor. Galatasaray Üniversitesi'ndeki etkinlikte öğrenciler, boğazın verilerini toplayacak bir cihaz geliştirecek. Tasarlanan ürün bir ROV'a monte edilecek ve öğrenciler, kendi kodladıkları cihazın dalışını kamplerden izleyebilecekler.
MAVİDE BİLİM
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KÖPRÜÜSSÜ
SİMÜLATÖRÜ
27 Eylül 2024
09:00 - 18:00
Denizciliğe yelken açmaya hazır mısın?
MAVİDE BİLİM
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TEA TALK
27 Eylül 2024
AYDIN DOĞAN SALONU
16:00 - 17:00 Çay/Kahve İkramı
17:00 - 19:00 Sunumlar
The Science of Diving
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BOĞAZDA
GECE
DALIŞI
27 Eylül Cuma
17:00 - 23:00
MAVİDE BİLİM
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ARAŞTIRMA
VE
DALIŞ
ARAÇLARI
27 Eylül 2024
10:00 - 18:00
Cuma
SARAY BİNASI
SERGİ SALONU
MAVİDE BİLİM
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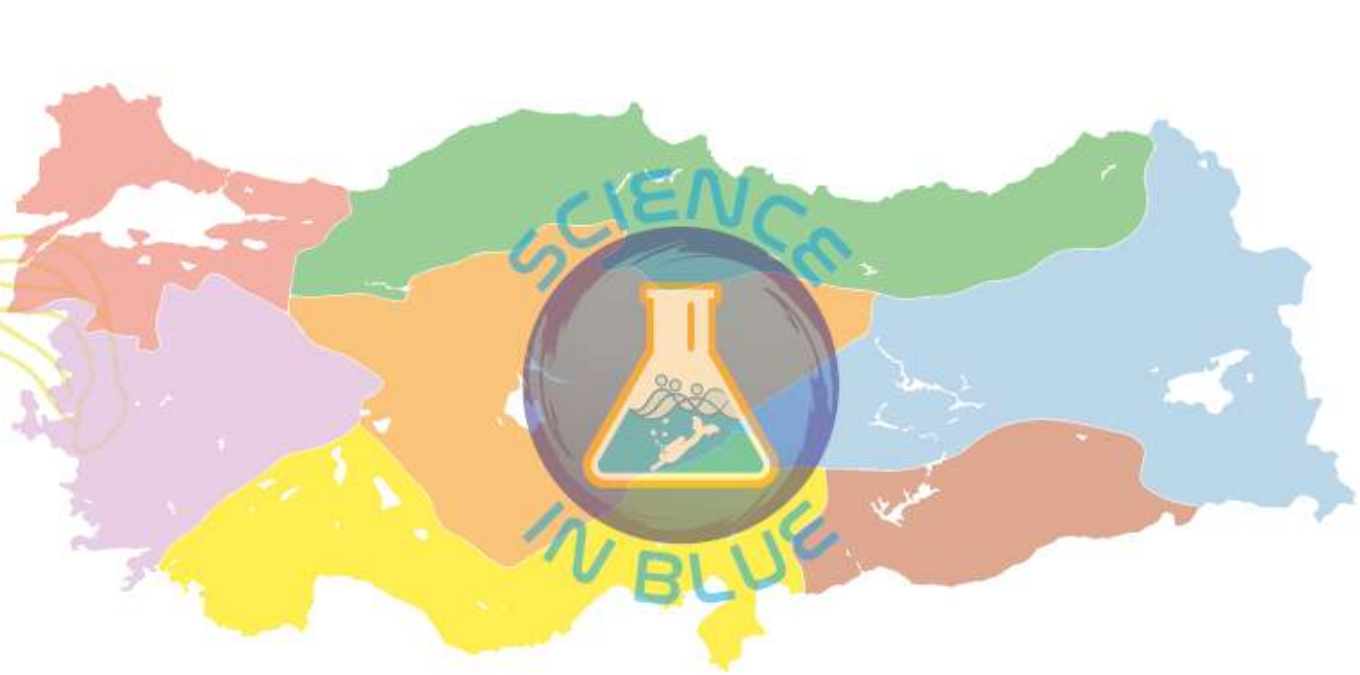

BOĞAZDA
SATIH
DESTEKLİ
BİLİMSEL
DALIŞ
28 Eylül Cumartesi
10:00 - 12:00
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DENİZLERİN
MİRASI
Okyanuslar ve sualtı kültür mirası hakkında ne kadar bilgiye sahibiz?
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ROBOTLAR
SENİ ÇAĞIRIYOR!
28 Eylül Cumartesi
13:30 - 18:00
Bu etkinlik, Boğaziçi Sualtı Araştırma Merkezi (DURC) tarafından sağlanan üç sualtı robotunun desteğiyle düzenlenecektir.
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RESEARCHERS AT THE SCHOOL

7 Bölgede
140 Okulda



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Assist. Prof. Dr. Çağlar ÇAKIR

Dr. Çağlar ÇAKIR was born in Samsun, Türkiye, in 1982. He graduated from the Department of Geography at Atatürk University in 2005. He completed his Master's and Doctoral studies in the Department of Physical Geography at the Institute of Social Sciences at the same university.

Between 2016 and 2017, he worked as an Assistant Professor in the Department of Geography at the Faculty of Letters, Atatürk University. In July 2017, he left Atatürk University to join the Department of Geography at the Faculty of Letters, Akdeniz University. Since then, he has been teaching undergraduate, Master's, and Doctoral-level courses.

His primary research interests include geomorphology, ecological risk, and paleoclimatology. Since 2021, he has been conducting underwater studies along the Mediterranean coasts, focusing on submarine geomorphology, underwater archaeology, and underwater cultural heritage.

How I Started Diving?

My first introduction to diving came in 1993, when I received free diving training from my swimming coach at the Samsun 19 Mayıs Swimming Club. However, it took a long time before I ventured into scuba diving. Interestingly, I began scuba diving far from the sea, in Erzurum—a city with an average altitude of 1,900 meters above sea level.In 2011, I started scuba diving through the "Diving Training for Tourism and Service Purposes in Inland Waters" project, supported by the Northeast Anatolia Development Agency. Since 2021, I have been actively involved in underwater archaeological research and excavations along the coasts of Antalya and Mersin, while continuing my studies in coastal and submarine geomorphology.

REFERENCE PROJECTS

EXT 1. Underwater Archaeology and Underwater Cultural Heritage Studies in Inland Waters

This project, led by Assoc. Prof. Dr. Hakan ÖNİZ from Akdeniz University, is supported by the Ministry of Culture and Tourism of the Republic of Turkey. The project involves research and discoveries related to the ancient port cities of Bathonea in Lake Küçükçekmece, Istanbul, certain ancient structures, and the remains of a lighthouse, as well as the ancient city walls in Lake Büyükçekmece, Istanbul. Additionally, it covers the dam walls built by Emperor Justinian I, Neolithic period artifacts, and Hellenistic and Roman period submerged architectural remains in Lake Beymelek, Demre, Antalya. Recently, the submerged Roman bridge in the Manavgat River, Antalya, discovered in 2023, was also included in these studies.

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EXT 2. Underwater Archaeology and Underwater Cultural Heritage Studies of the Mediterranean Coasts

Since 1999, underwater archaeology research and excavation activities have been conducted along the Mediterranean coastline, from the shores of Kalkan in Antalya to Hatay, under the permission of the General Directorate of Cultural Heritage and Museums of the Ministry of Culture and Tourism of the Republic of Turkey. These efforts are led by Assoc. Prof. Dr. Hakan Öniz, Head of the Department of Cultural Heritage Conservation and Restoration at the Faculty of Fine Arts, Akdeniz University.

In order to transfer underwater cultural heritage to future generations and position Turkey as a leading country in the field of underwater archaeology globally, scientific studies are being carried out on the inventory of underwater cultural heritage. This includes shipwrecks, submerged prehistoric and historical structures, shipyards, ports, mooring sites, and any other archaeological remains found underwater or on the shore.

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In the last decade of research, nearly 400 shipwrecks, 10 man-made ports, 39 natural harbors and mooring sites, over 180 Bronze Age stone anchors, more than 175 Roman and Byzantine iron anchors, Roman and Byzantine millstones, sarcophagi, grave steles, Ottoman cannons and cannonballs, as well as hundreds of amphora and plate fragments, blocks of stone, and other archaeological remains not associated with any wreck, have been identified. Among the most significant of these archaeological finds are the copper ingot-laden wreck of the world's oldest known trading ship (from the 16th-15th century BC) and the 1704 Ottoman trade shipwreck.

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What are Oceans and Seas?

Oceans and seas are interconnected bodies of water that fill the Earth's depression areas. The term "Ocean" is used for vast, boundaryless areas of water that cover large portions of the Earth’s surface, while the term "Sea" is used for those sections of water that have defined boundaries.

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What percentage of the Earth is covered by Oceans and Seas?

Oceans and seas cover approximately 71% of the Earth's surface. The waters in oceans and seas contain 97% of all the water on Earth (1.35 billion km^3). The remaining 3% consists of freshwater, which is found in glaciers, rivers, and underground water sources on land.



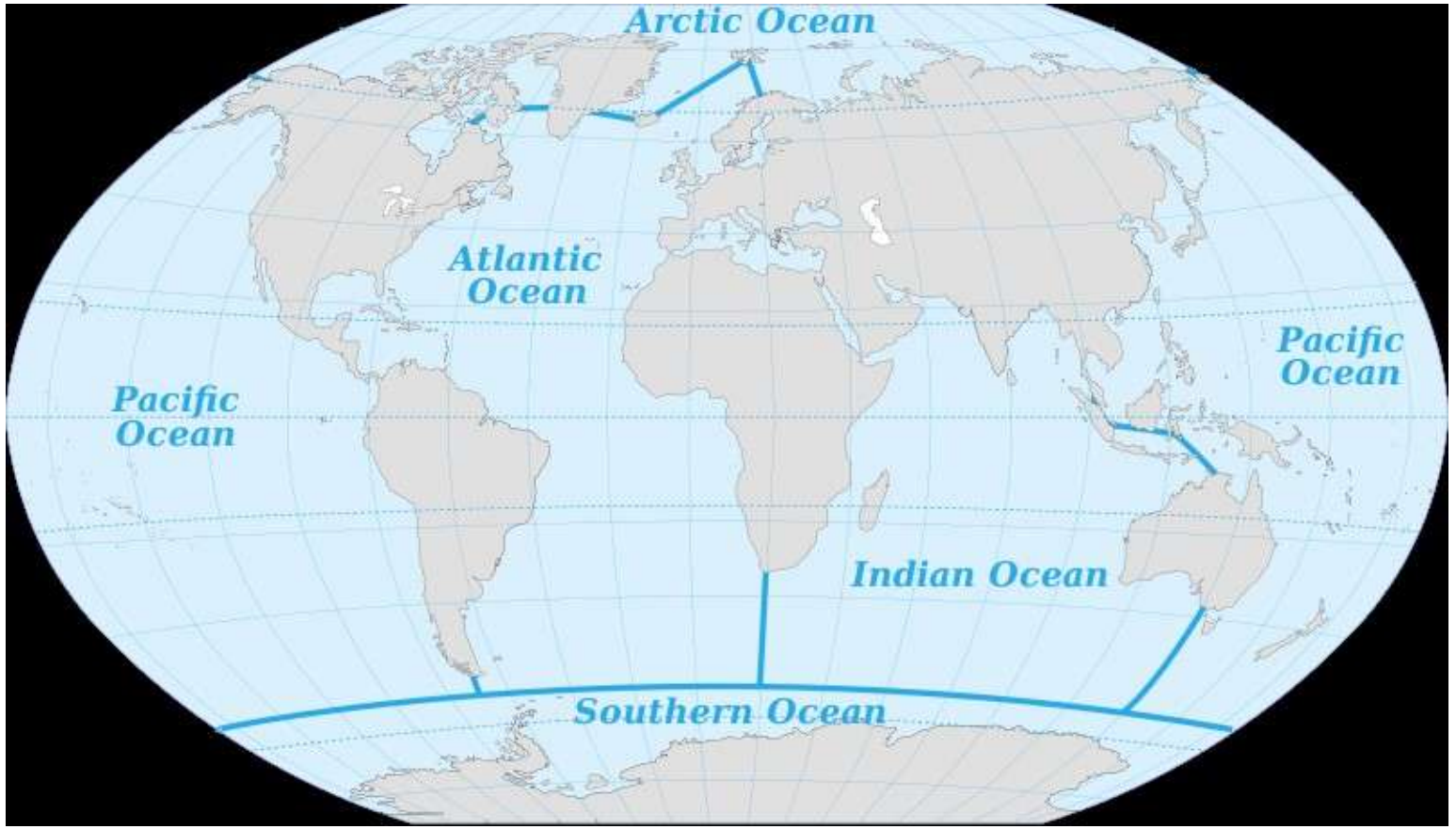
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How many oceans are there on Earth?

Although it is not possible to define their boundaries precisely, five oceans are recognized on Earth. From largest to smallest, these are:

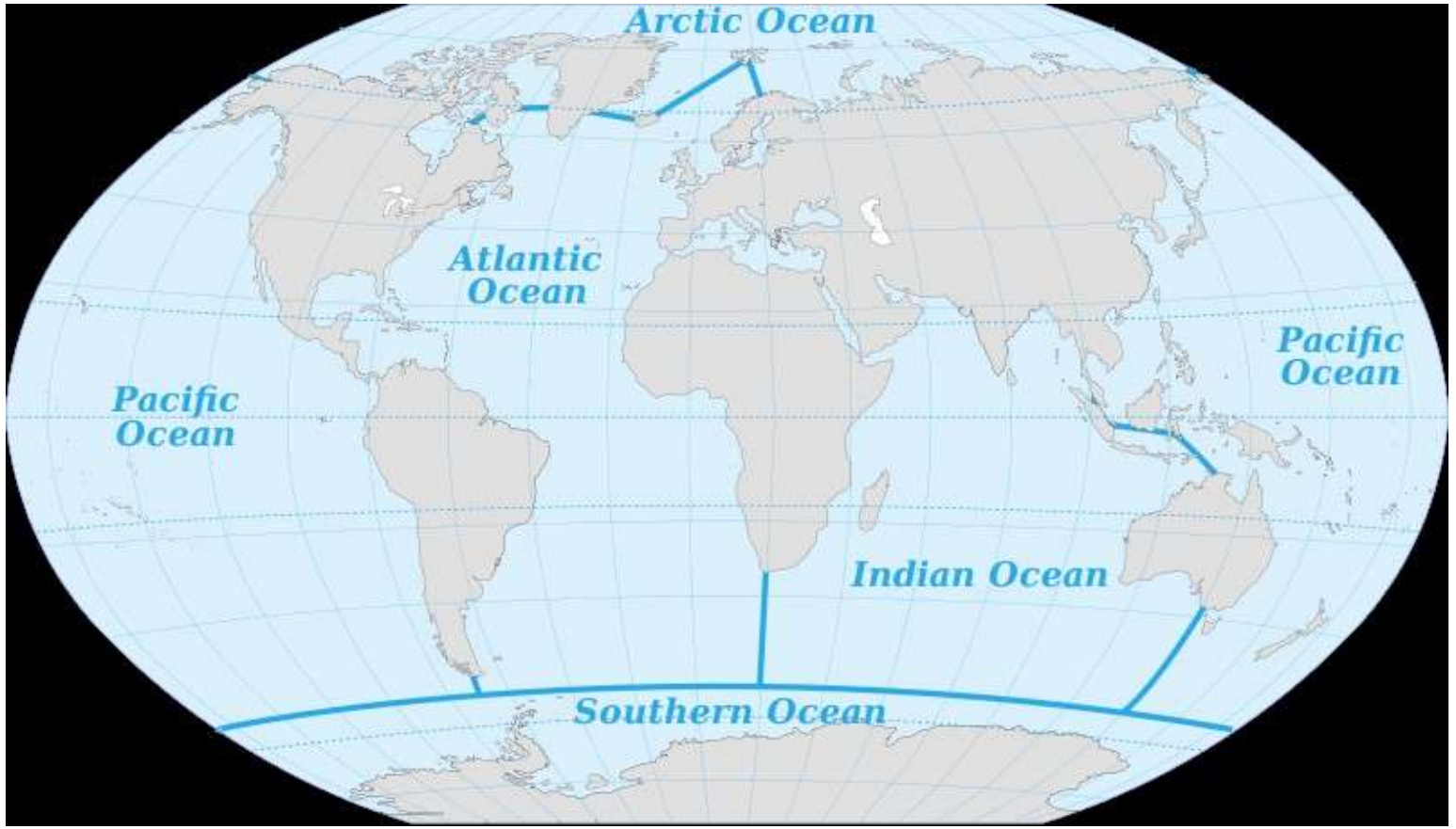
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1. Pacific Ocean



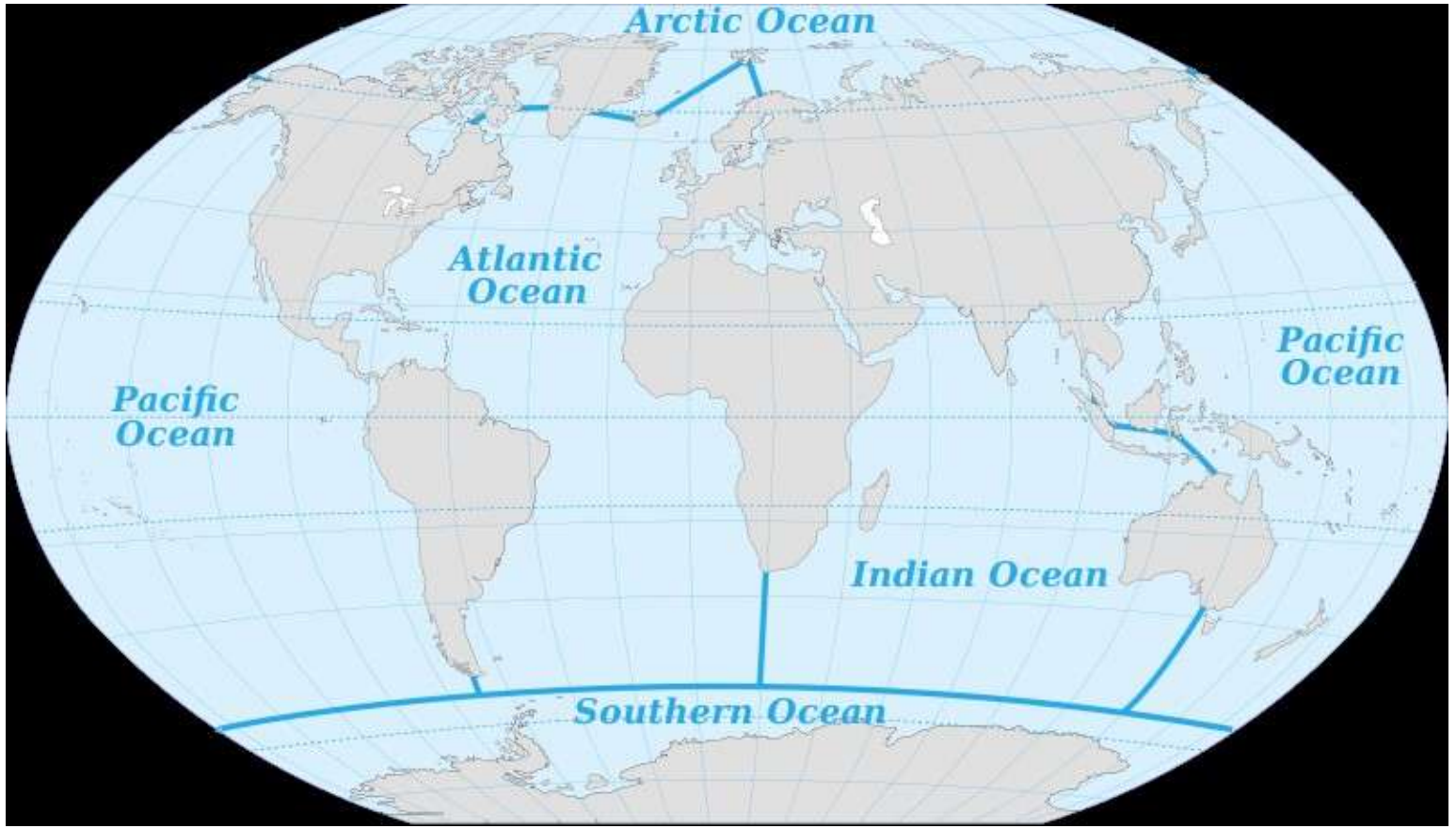
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2. Atlantic Ocean



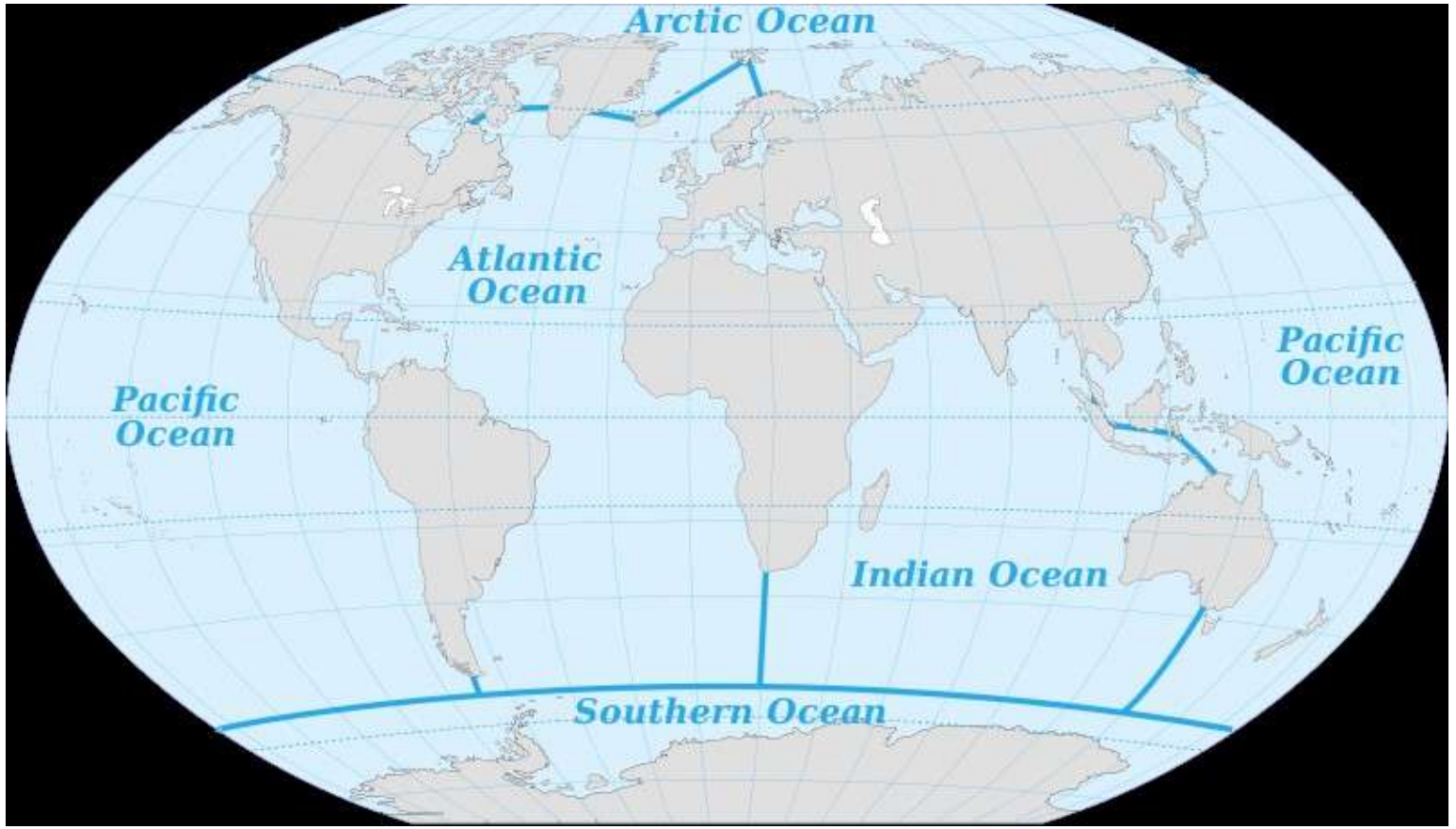
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3. Indian Ocean



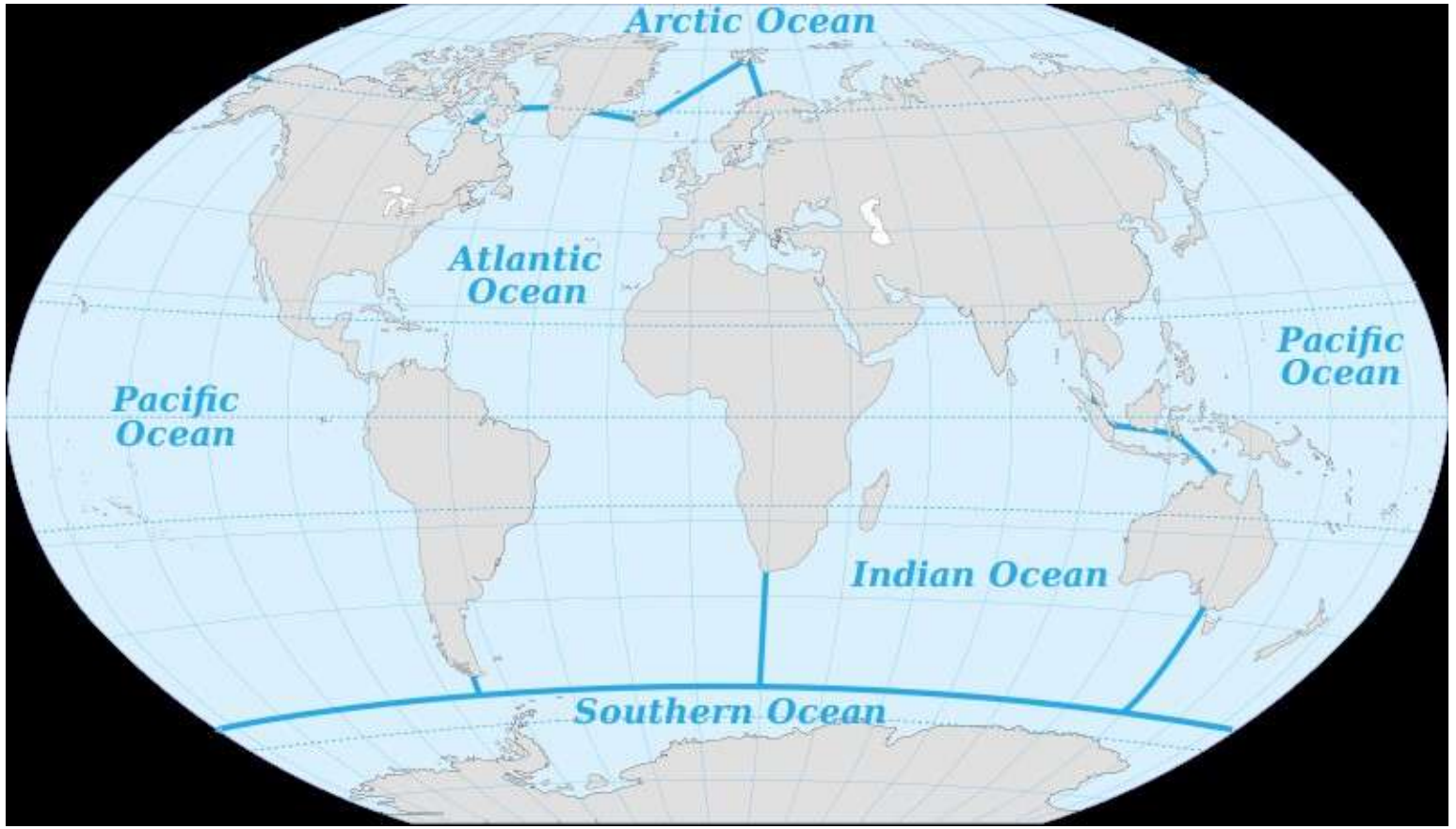
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4. Southern Ocean



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5. Arctic Ocean



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How deep are the oceans?

The average depth of the oceans is 3,700 meters. The deepest point in the oceans is the Mariana Trench in the Pacific Ocean, which reaches a depth of 10,994 meters.

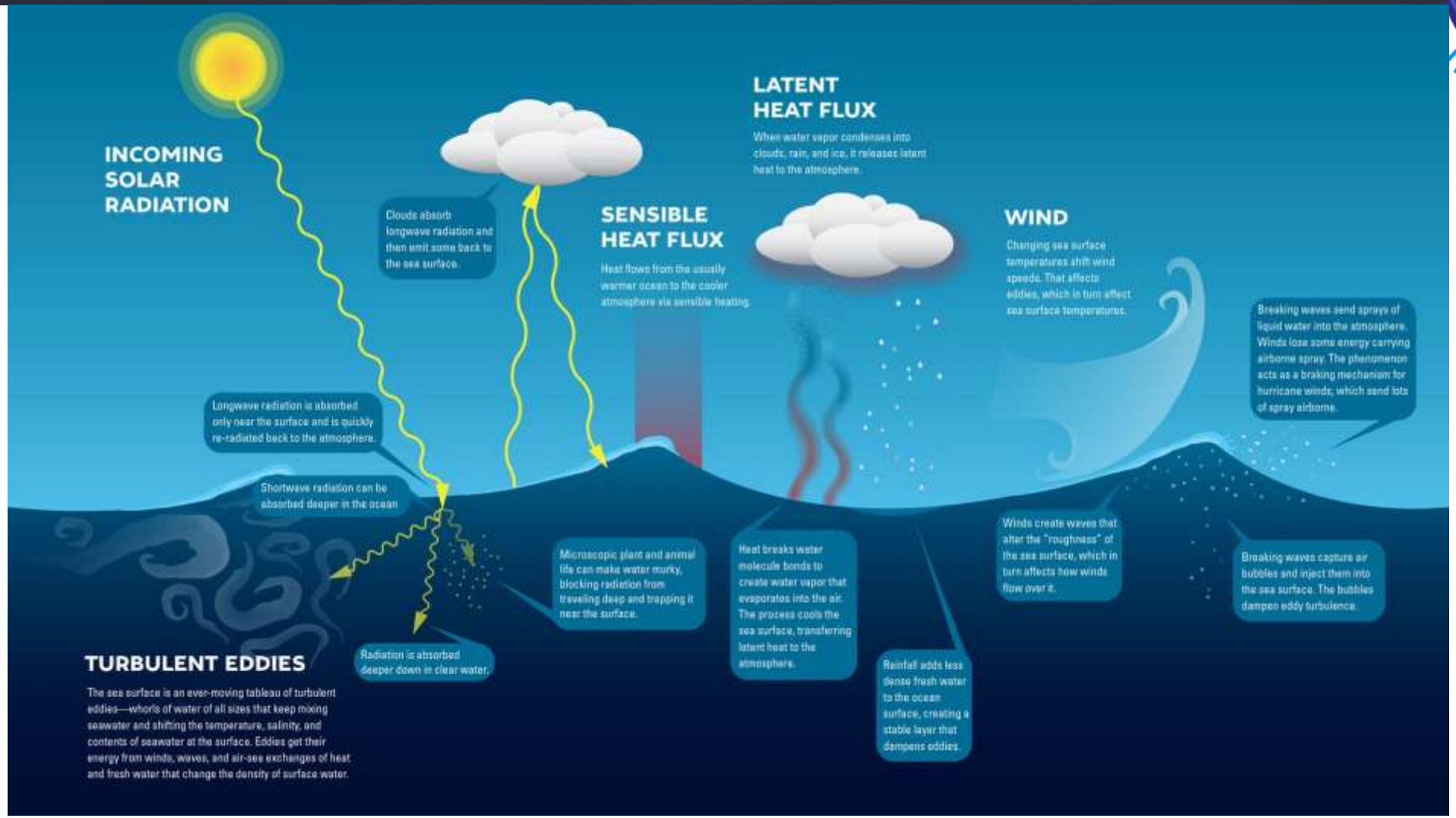
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Are ocean waters fresh or salty?

Ocean waters are not fresh; they are salty. The salinity varies depending on latitude and temperature, but the average salinity in the oceans is about 35 parts per thousand (‰), meaning 35 grams of salt per 1,000 grams of water.The source of the salt in ocean and sea waters comes from the rocks on Earth's surface. When rainwater falls, it absorbs carbon dioxide from the atmosphere, making it slightly acidic. This acidity causes rainwater to erode rocks, and the salts released from the weathering of these rocks are carried to the seas and oceans by rivers.

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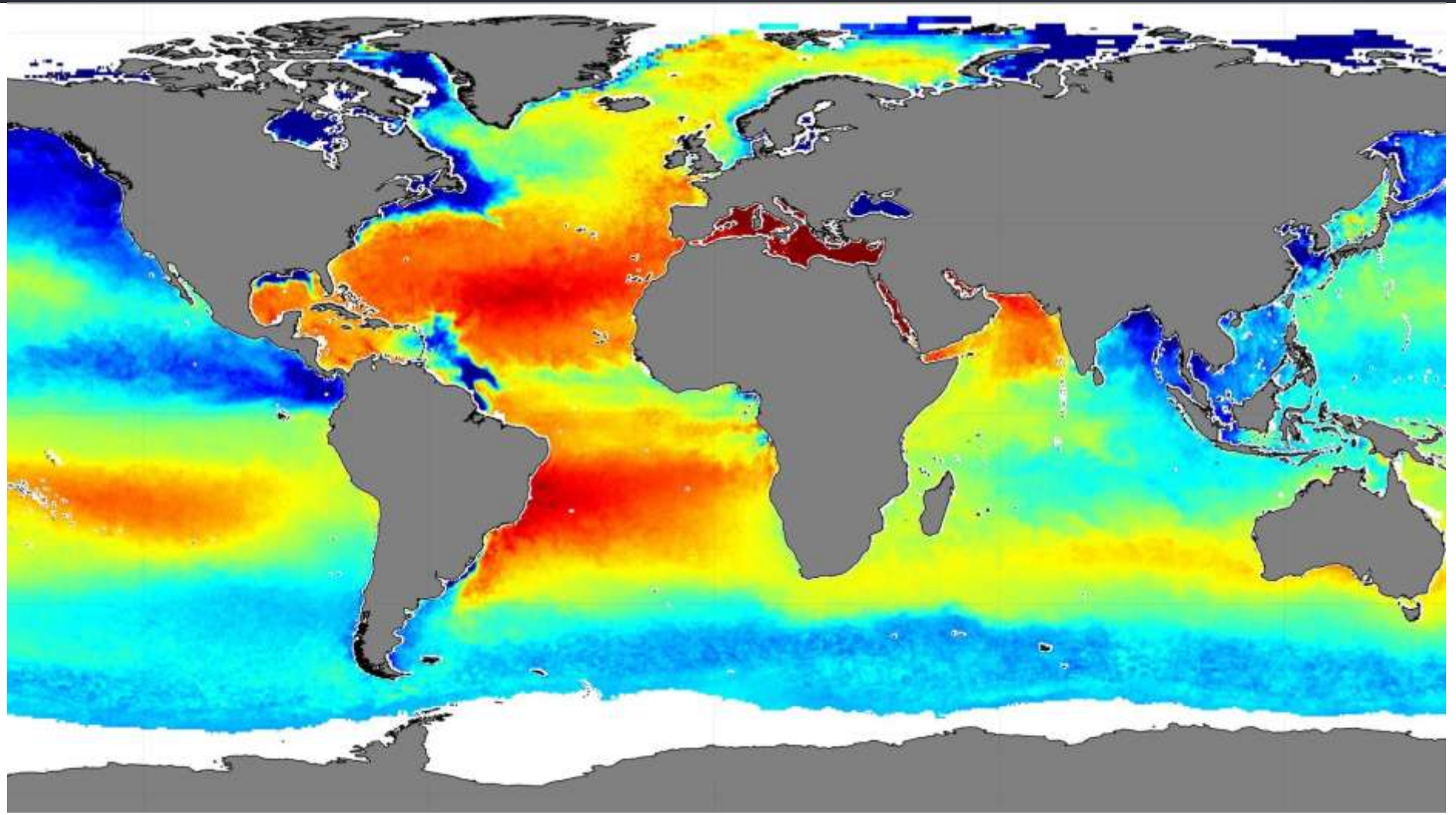
* https://www.whoi.edu/wp-content/uploads/2021/03/WaterCycle_v3.jpg

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Salinity is higher in warm waters, near the poles, and at the surface compared to deeper waters. In other words, salinity decreases as one moves from the equator toward the poles and from the surface to deeper layers. This is because evaporation occurs at the ocean surface, where water evaporates, leaving salts behind, which accumulate in the surface layer.

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* https://www.esa.int/Applications/Observing_the_Earth/Space_for_our_climate/Mapping_salty_waters

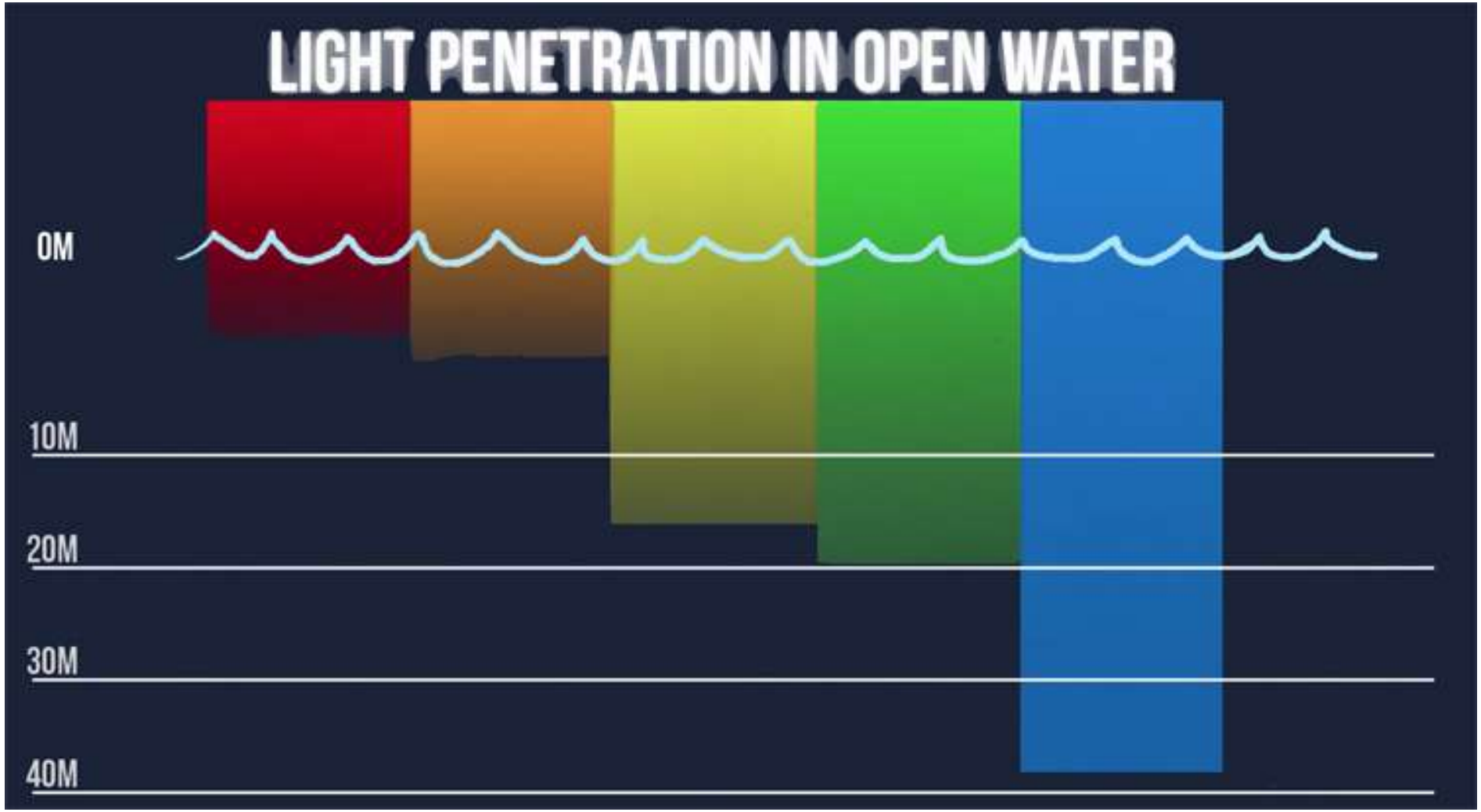
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Are ocean waters colorful or colorless?

Ocean waters are colorless, like the water in a glass we drink. The reason we see the ocean as blue is due to the way different wavelengths of light in white light are absorbed and reflected. Water absorbs longer wavelengths of light, such as red, orange, yellow, and green, more efficiently. Blue light, having shorter wavelengths, is reflected instead. Since shorter wavelengths scatter more and deviate in different directions, the light is reflected back to our eyes from the water, making the ocean appear blue.

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* https://www.surfertoday.com/environment/why-is-the-ocean-blue

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What organisms live in the oceans?

In the oceans and seas, various organisms such as bacteria, algae, aquatic plants, fungi, fish, marine mammals, shellfish, and invertebrates live.

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Do Oceans Affect Climate?

Oceans and seas directly influence climate and weather events. The sun heats the water, causing it to evaporate. The largest source of water vapor in the atmosphere is the water vapor evaporating from oceans and seas.

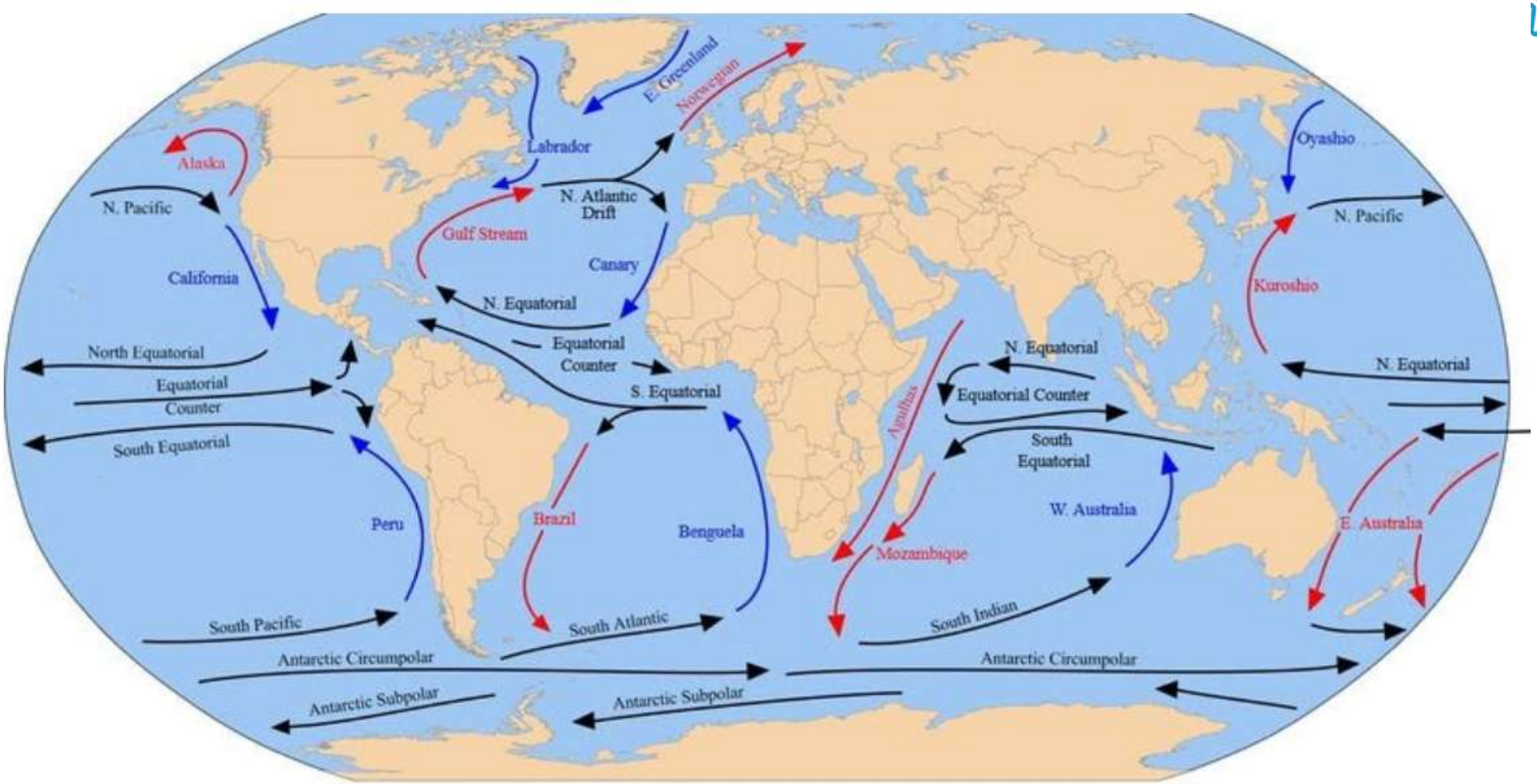
As water vapor condenses, it forms clouds. When the necessary conditions are met, these clouds precipitate as rainfall on the Earth's surface. Life on Earth is dependent on this process, known as the water cycle.

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The atmosphere receives most of its heat from the ocean. As the sun heats the water, the ocean transfers heat to the atmosphere in contact with it. The atmosphere then distributes this heat around the Earth. Because water heats up and cools down more slowly than landmasses, oceans help balance global temperatures by absorbing heat in the summer and releasing it during the winter.At the same time, oceans also regulate the Earth's temperature through currents. Cold water currents lower the temperature in the areas they reach, while warm water currents raise temperatures in the regions they encounter.

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*https://climatechange.bogazici.edu.tr/okyanus-akintilari/

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YOUR QUESTIONS?



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What is Underwater Cultural Heritage?

Underwater cultural heritage refers to the historical remains, structures, cities, shipwrecks, and other cultural traces submerged in aquatic environments such as oceans, seas, lakes, and rivers, which have emerged as a direct result of human activities, provided they are at least a hundred years old (TUSF).

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Which Scientific Disciplines are Related to Underwater Cultural Heritage?

The identification, inventorying, excavation, and recovery of elements of underwater cultural heritage fall within the expertise of underwater archaeology, a branch of archaeology. However, disciplines such as biology, geography, art history, and various engineering fields also support studies on underwater cultural heritage.

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What Elements Does Underwater Cultural Heritage Include?

A. *Shipwrecks*



***** https://www.aa.com.tr/tr/kultur-sanat/datcadaki-batik-osmanlinin-denizcilik-tarihi-acisindan-izler-tasiyor/2361887

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B. *Submerged Cities*



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C. *Amphoras*



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D. *Anchors*



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E. *Maritime Structures*

1. Ports

2. Lighthouses

3. Granaries

4. Shipyards

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Why is It Important to Protect Underwater Cultural Heritage?

- The protection of underwater cultural heritage is crucial for passing on the historical values lying beneath the seas, lakes, and rivers to future generations. These values contain significant information that sheds light on the past and are indispensable for understanding human history.
- Since underwater cultural heritage is not a renewable resource, once it is damaged or destroyed, it cannot be recreated.

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YOUR QUESTIONS?



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