DIVE INTO THE WORLD OCEAN!

The ‘’Interactive World Ocean‘‘ is a touchscreen-based map of the ocean that invites you to dive in and explore with research videos, image galleries and visualised scientific data sets. Here we suggest a few diving tours through the world ocean for initial orientation or brainstorming, each with a different theme and focus.

In the World Ocean you will find the keywords for the individual interaction points in the respective marine region. For the dives, the listed interaction points are visited one after the other.

THE TOURS

Dive no. 1: ‘Overview and introduction’

Aim: The first dive tour serves as an introduction to the concept and functions of the digital map. The tour gives an impression of different habitats and their inhabitants. It also shows the different formats of the world ocean: from videos and photos to layered images and satellite data.

Content: The sea is not just the sea. It has countless facets. Even the North Sea coast is very different from the Baltic Sea coast. The same applies to the deep sea: there are hot springs as well as cold-water corals and manganese nodules. But as different as the coasts, seas and oceans of our planet may be, they are all connected. Be it through natural phenomena such as ocean currents or through the various influences of humans.

From the deep sea to the coast, the habitats of the World Ocean contain an impressive diversity of species - from the cold-water corals of the deep sea to the salt marshes of the North Sea coast. The different habitats and also individual species with special ecological or cultural significance can be explored in the Interactive World Ocean - for example the harbour porpoise, Germany's only native ‘whale’. However, it also becomes clear time and again that global warming and environmental pollution are changing the oceans and the reality of life in them. All of this becomes visible and tangible on a diving tour through the world ocean.

The dive in detail:

A. Cold water corals (Atlantic) - biodiversity
B. Salt marshes (North Sea) - biodiversity
C. Harbour porpoises (Baltic Sea)
D. Algal bloom satellite image (Baltic Sea)
E. Sea level rise Maldives (Indian Ocean)
F. Ocean currents/ shipping (global

Dive no. 2: ‘Example region Antarctica’

Aim: To illustrate the diversity within a region in order to highlight different ecosystems and their interrelationships and to show the effects of global warming.

Content: Every region is different. The underwater journey to the individual regions often begins with a general ‘immersion video’ that focuses on the special features. At other dive points, for example, important animal species and their food webs are depicted, habitats shown, positive developments emphasised or challenges addressed. In addition, there are always small or large surprises to marvel at.

A good example of this is a dive through the Antarctic. In this region of superlatives, fin whales can be observed, krill can be seen in the ice and the largest fish breeding colony in the world can be discovered. As the consequences of global warming are already very clear in the polar regions, this is also a recurring theme in the Antarctic. For example, with the effects of sea ice retreat on the krill swarms, the basic building block of the Antarctic food web, or the progressive melting of glaciers, which can be visualised using remote sensing. As remote as this region is, the Antarctic has always been a place that arouses fascination and a thirst for adventure, which was confirmed not least by the astonishing discovery of the wreck of the Endurance 2022. At the end of the dive, there is something unexpectedly hot to marvel at in the cold beauty.

The dive in detail:

A. Immersion video
B. Fin whales
C. Krill close-ups
D. Krill in the ice
E. Icefish nests
F. Finding the Endurance
G. Glacier remote sensing
H. Hot springs

Dive no. 3: ‘The deep sea habitat’

Aim: A journey through the biodiversity of the largest habitat on earth, during which special ecosystems, their inhabitants and the threats they face are shown.

Content: Dark, huge and quite cold: the deep sea is the largest habitat on our planet and, despite the extreme conditions, contains an impressive variety of ecosystems and a very high diversity of species. Unfortunately, this seemingly inaccessible world is also under threat: marine pollution and waste can also be detected in the depths, while trawling and the extraction of mineral resources leave clear traces.

The dive provides various insights into the deep sea and reveals some fascinating inhabitants. Cold-water corals, for example, provide a home for many animals and are an important nursery for many fish. The seemingly desolate deep-sea plains are anything but deserted or empty, as many animals settle on or in the seabed or on manganese nodules. Again and again we come across different marine animals such as deep-sea sponges on seamounts or colonies of barnacles on hydrothermal vents.

The dive in detail:

A. Cold water corals (Atlantic)
B. Deep sea level (Pacific)
C. Bizarre creatures (Atlantic)
D. Barnacles (Pacific)
E. Deep-sea sponges (Pacific)
F. Manganese nodules (Pacific)
G. Cold springs (Indian)
H. Hot springs (Antarctic)

Dive No. 4: ‘ A journey through the World Ocean’

Aim: This is a selection of ‘best-of’ videos showing a fascinating visual range of habitats and selected species in the world ocean.

Content: We jump into the water in the Arctic and dive from north to south until we arrive in the Antarctic. Along the way, we explore the polar ice from below, the biodiversity of seagrass and salt marshes as well as coral gardens. We meet special marine animals, such as the only whale in German waters, seabirds diving into the sea, bizarre deep-sea creatures in the deep sea and even very small creatures, without which hardly any other animal in the sea could survive.

The dive in detail:

A. Glacier (Arctic)
B. Seagrass meadow (Baltic Sea)
C. Harbour porpoise (Baltic Sea)
D. Salt marshes (North Sea)
E. Gannets (Atlantic)
F. Bizarre creatures (Atlantic)
G. Manganese nodules (Pacific)
H. Coral reef (Pacific)
I. Cold springs (Indian)
J. Close-up of krill (Antarctica)
K. Fin whales (Antarctica)

Dive no. 5: ‘Our local seas, the North Sea and Baltic Sea’

Aim: To provide a good overview of the biodiversity, habitats, uses and problems in the North Sea and Baltic Sea. Both seas are special regions that are very different and therefore face very different challenges. The tour is therefore offered in two parts: One to the Baltic Sea and one to the North Sea.

Dive no. 5a: The Baltic Sea

The Baltic Sea is the largest brackish sea in the world with a variety of different habitats. For example, there are sandbanks - important foraging grounds for animals such as the harbour porpoise, the only German whale species. Another example are the seagrass meadows of the Baltic Sea, which are an important nursery for many fish, but are under severe threat. This is mainly due to too many nutrients from agriculture, which end up in the Baltic Sea via the rivers. However, there are also successful examples that show that things can be done differently - such as the Nienhagen artificial reef. The reef was created 20 years ago and is now home to numerous fish and other marine animals, as images taken with bait traps show

The dive in detail:

A. Dive video
B. Harbour porpoises
C. Seagrass
D. Algal bloom
E. Artificial reef

Dive no. 5b: The North Sea

When you think of the North Sea, you usually have the Wadden Sea in mind. That's what makes it so special. Numerous migratory birds rest in the Wadden Sea every year and the salt marshes are home to unique animals and plants that can only be found in this transition zone between land and sea. However, there is much more to the North Sea: rocky reefs, seagrass meadows and kelp forests around Germany's only rocky island, Helgoland. At the same time, the discussion about energy production often takes centre stage: offshore wind and oil in particular. Both have an impact on the marine environment.

The dive in detail:

A. Salt marshes
B. Migratory birds
C. Immersion video (stone reefs)
D. Seagrass meadows
E. Heligoland

F. Offshore wind
G. Oil platforms

Dive no. 6: 'Science in the World Ocean'

Aim: Selection of different scientific data sets and forms of presentation in the Interactive World Ocean.

Content: There is a lot of research into our seas and oceans. In Germany, we have a particularly active marine science community with numerous institutes and research facilities. The data is collected and processed in different ways. Satellite data, for example, shows the oceans from above. In the Interactive World Ocean, they are often presented as a global overview, such as ocean currents, sea temperatures or ship routes. These world maps make it clear that everything is connected to everything else. At the same time, the satellite data can also be used to track regional developments, such as the spread of seagrass meadows or changes in the mudflats. Comparisons can also be made, such as the development of buildings in the Maldives or glacier movements in the Antarctic.

However, marine research is of course much more than observation from space, as satellites do not look below sea level. Instead, other methods are used, for example bait traps and cameras can be used to observe animals directly.

The dive in detail:

A. Global: ocean currents, plant productivity, shipping
B. Algal bloom (Baltic Sea)
C. Sea level rise Maldives (Indian Ocean)
D. Seagrass density (Baltic Sea)
E. Mudflats (North Sea)
F. Seal camera (North Sea)
G. Camera with bait (North Sea)
H. Reef Nienhagen (Baltic Sea)

Dive no. 7: 'Climate heating in the World Ocean'

Aim: In this dive, the effects of global warming are visualised using a few examples.

Content: The ocean regulates the climate and has absorbed a large proportion of the heat from man-made greenhouse gas emissions. Due to climate change, the water is getting warmer and warmer. The ice caps are melting and the sea level is rising as a result. In addition, the water is becoming increasingly acidic due to carbon dioxide uptake, with negative consequences for calcifying corals and other marine life as well as for us humans. Habitats are changing, and in the North Sea there will be more squid than large predatory fish in the future. However, the

ocean is also our greatest ally in the fight against climate change. This is because seagrass beds, mangroves and many other marine habitats store carbon dioxide so that it is not released into the atmosphere.

The dive in detail:

A. Polar bears (Arctic)
B. Floating glaciers (Antarctic)
C. Endangered Maldives (Indian Ocean)
D. Coral reefs (Pacific)
E. More squid (North Sea)
F. Seagrass meadows (Baltic Sea / North Sea)

Dive no. 8: 'Breathtaking biodiversity'

Aim: The seas and oceans form huge habitats with countless ecosystems and biocoenoses. The tour offers an insight into some very different underwater environments.

Content: Coral reefs are probably the best-known habitats of biodiversity, but there are also many other types of reefs, all of which harbour a special wealth of species. In the Atlantic there are breathtaking cold-water corals and in the Baltic Sea there is life in the rocky reefs. The salt marshes of the North Sea coast are also species-rich habitats: they are home to numerous migratory birds, plants and insects that thrive in this transition zone between land and sea. However, the deep sea is home to the most astounding diversity. Over millions of years, extraordinary animals have evolved here - from the symbiotic communities of hydrothermal vents to bizarre creatures in the darkness. Deep down in the sea there are still many unknowns. Almost every expedition discovers new species.

The dive in detail:

A. Coral reef (Pacific)
B. Cold-water corals (Atlantic)
C. Stone reef (Baltic Sea)
D. Salt marshes (North Sea)
E. Bizarre creatures (Atlantic)
F. Deep-sea springs (Pacific)
G. Deep-sea plains (Pacific)