Science on the Seven Seas

The oceans are the last great unknowns on our planet. We know less about them than we do about the moon. There are many reasons why researchers are making a concerted effort to gather information about the world’s oceans. Concerns include the safety of global shipping traffic, the protection of marine plants and animals, and the search for natural resources. Comprehensive data are urgently needed if ocean resources are to be managed sustainably. And there is much to suggest that the oceans play a key role in the causes and consequences of climate change. Science on the Seven Seas reports on research projects about the mysteries of the deep.

01 Ice from the Depths – The Search for Gas Hydrate
Methane hydrate is an icy compound of the highly potent greenhouse gas methane. There are significant deposits of the substance under the ocean floor. An expedition led by the marine geologist Gerhard Bohrmann is carrying out research into methane hydrate as a potential source of energy – but also as a substance that could exacerbate global warming.

03 Treacherous Giants – Iceberg Research in Canada
Twenty to forty thousand icebergs calve every year from the glaciers of Greenland. One in ten of them then drifts onto one of the world’s most important shipping routes. Scientists from the Canadian Institute for Ocean Technology are working on an iceberg early warning system and looking for ways to protect ships from the floating giants.

04 Dangerous Beauties – The Mysterious World of the Jellyfish
Jellyfish reside in all ocean waters, from coastal regions to the deepest seas. Their life-cycle is characterized by extreme transformations. And although some species of jellyfish number among the seas’ most deadly inhabitants, their sheer variety and beauty are a source of fascination. Jellyfish are effective hunters and an important food for many marine animals. Zoologist Gerhard Jarms has been investigating the jellyfish for years.

05 Teeming with Life – The Coral Sea off New Guinea
The Raja Ampat archipelago is located off the coast of New Guinea. Its waters contain a greater variety of species than the entire Caribbean. An international team of scientists has set out to explore this unique habitat and find out what has caused this huge variety of flora and fauna. They say Raja Ampat must be protected as a world heritage site.

06 Hidden Giants – Seamounts in the Atlantic
Seamounts are the huge, largely unexplored mountains that rise up from the ocean floor. Some peaks extend beyond the surface of the water and create islands, others almost reach the surface and create areas of relatively shallow water right in the middle of the ocean. The slopes of these seamounts are home to unique ecosystems. European scientists are taking a closer look.

07 Intelligent Monsters – The Giant Octopus of the North Pacific
Contrary to popular belief, the octopus is a sensitive, adaptable and highly intelligent creature. Biologist Karen Palmer is searching for new insights into these eight-armed cephalopods in the sea around Vancouver Island off the Canadian Pacific coast.
Coelacanths or gombessa, as they are known on the Comoros Islands, are “living fossils”. This is because the species has existed for several hundred million years. The discovery of the fish in 1938 was a scientific sensation. But still, relatively little is known about the creature’s behavior and reproductive cycle. A submersible has been deployed to help scientists discover more about what is perhaps the world’s oldest species of vertebrate.

The shipping channel between Germany’s Fischland-Darss-Zingst peninsula and Denmark’s Falster Island could be described as the Baltic Sea highway. Every day some 200 vessels struggle through the bottleneck, which is tricky to navigate. Known as the Cadet Channel, the waterway also accommodates researchers looking for sunken ships and studying the marine habitat in order to try to prevent further accidents.

Phylogenetically speaking, sponges are ancient life forms with a very simple structure. This makes their inner workings and characteristics all the more interesting. Scientists believe that some sponges can live for 10,000 years. Some contain glass fibers more sophisticated than any industrially-produced optical fibers. And they form substances that could revolutionise both medicine and technology.

Marine fauna has been decimated in many parts of the world’s oceans, in the Mediterranean for example, or the North Sea. Stocks of many commercially harvested species have been depleted to alarmingly low levels. Protective measures have been agreed, albeit haltingly, but they are proving difficult to enforce. Scientists are warning that if entire populations are wiped out, this could have a knock-on effect on aquatic lifecycles – and on the human food chain as a result.

Seafaring is safer than ever, but ships still get into difficulties on a daily basis. Scientists and engineers are working on ways to ensure optimal safety conditions for crews and passengers out at sea. How can ship construction contribute to better safety? And how can rescue facilities be improved? And if a vessel is in trouble, how can the people onboard be evacuated rapidly and in an organized fashion?

Beaked whales are notoriously difficult to observe. They live out on the high seas and hunt at great depths. There are at least 19 species of this larger relative of the dolphin – many of them only familiar to us because specimens have been washed ashore. In a bid to discover more about these mysterious creatures, a British marine biologist plans to locate and track them using the sounds they make.