Ocean - *abyss of time*

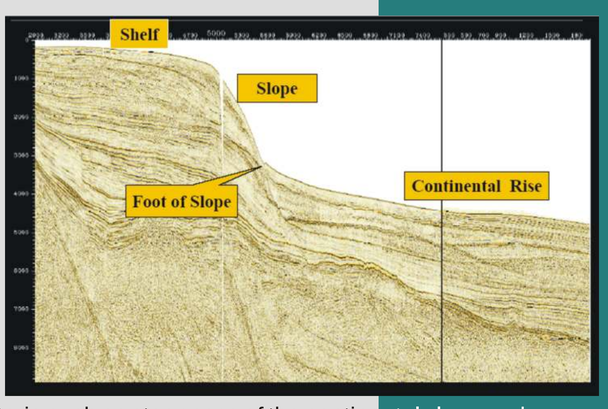
The oceans, which began to be scientifically explored 200 years ago, hold the key to how the Earth works. For example, the ocean's sediments provide a record of climatic signals over the last 200 million years. Although our improving knowledge of the oceans has revolutionised our understanding of the planet as a whole (the best example being the sea-going expeditions after World War 2, which led to the theory of plate tectonics in the late 1960s) much more remains to be discovered – not only in the use of oceans to the benefit of humankind and the environment, but also in mitigating hazards around the continental margins.

Within the framework of plate tectonics, the birth of a new ocean spreading centre often involves the rupturing of a continent and this leads to the production of a pair of rifted continental margins (like opposing sides of the Atlantic Ocean today). Ocean floor is generated continuously at the global system of spreading ridges, and the ocean crust moves away from the ridge. After its journey across the deep ocean basin, seafloor may disappear at an ocean trench, where the oceanic plate is subducted, often beneath a continent – as around the Pacific Ocean today.

Year of Planet Earth

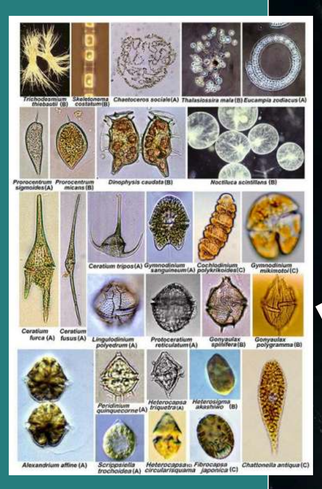
International Year of Planet Earth

At the Skeleton Coast the Namib sand dunes sweep down to the ocean, while Bogenfels is a famous landmark of Namibia´s southern shoreline



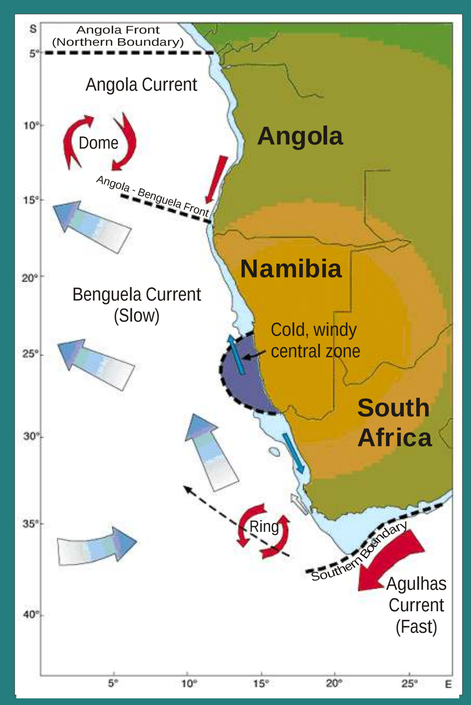
Criteria such as steepness of the continental slope and sediment thickness (above), determine Namibia´s claim to sovereignty over an Economic Zone extending up to 300 nautical miles offshore

About 21% of the world's population, live within 30km of a coastline



Red tides or, more correctly, algal blooms, are characterized by the rapid accumulation of estuarine or marine algae (above) in the water column, and lead to an increased mortality among marine and coastal organisms

Red tide along the Namibian coast



The Benguela Current extends from the Cape of Good Hope northwards to Cabinda. A major coastal upwelling ecosystem, it belongs to the world's most productive ocean areas, and also played a role in the redistribution of alluvial diamonds along the Namibian coastline

While conventional mining continues in onshore and near-shore regions, the most advanced technologies available, such as the mini-submarine "Jago" and seabottom crawlers, are employed in the exploitation of alluvial diamonds farther offshore

Lüderitz Harbour - modern centre of Namibia´s fishing and diamond mining industry

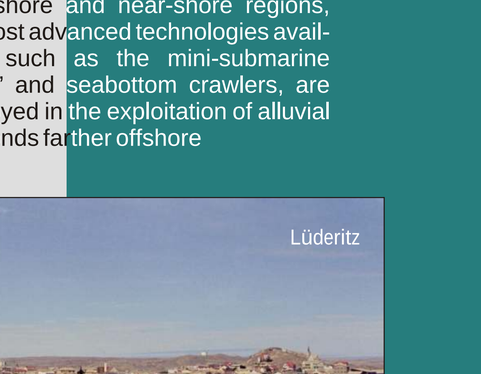
Unlike in other parts of the world, life in Namibia for a long time developed away from the more than 1500 km long shoreline, due to the harsh and inhospitable conditions of the coastal desert. Only when alluvial diamonds were discovered in the Namib sands in the early 1900s, mining settlements began to spring up between the mouth of the Orange River and Lüderitz.

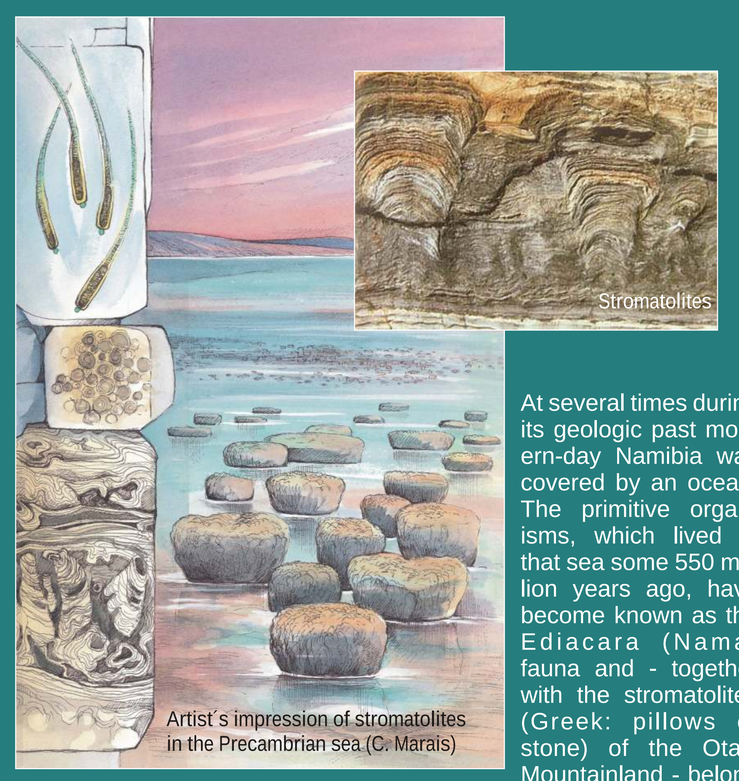
Nowadays Namibia´s greatest riches come from the sea. Transported from the interior of the South African subcontinent by ancient rivers millions of years ago, diamonds are being mined both onshore and offshore, although - with onshore resources being almost depleted - in recent years recovery has been mostly from the seabed, with the aid of ever improving mining technology. In addition, older sedimentary layers of the continental shelf have become targets for oil and gas exploration, and the Kudu Gas Field off the southern coast is scheduled to begin production in the near future.

Also, the nutrient-rich Benguela current which hugs the Namibian shoreline ensures rich fishing grounds, and thus is an important factor in the country´s economy. For this reason, and because farther offshore the sea might hold as yet undiscovered treasures, Namibia is preparing a petition to the United Nations to extend its territorial waters beyond the current limit of 200 nautical miles .

In Namibia sedimentary layers consisting of the calcareous or siliceous skeletons of sea-dwelling organisms like bivalves are only found in the Cenozoic (younger than 65 million years) deposits of the Namib Group

The plentiful seabirds living along the Namibian coast produce an enormous amount of guano, which for a long time has been harvested from artificial platforms erected along the shoreline





Artist´s impression of stromatolites in the Precambrian sea (C. Marais)

At several times during its geologic past modern-day Namibia was covered by an ocean. The primitive organisms, which lived in that sea some 550 million years ago, have become known as the Ediacara (Nama) fauna and - together with the stromatolites (Greek: pillows of stone) of the Otavi Mountainland - belong to the oldest life forms on Earth

planetearth
Earth Sciences for Society

www.yearofplanetearth.org