



Climate Change - the 'stone tape'



The Caprivi and Kavango regions of northern Namibia nowadays have a subtropical climate with the highest rainfall in the country. Sedimentary deposits of such highly vegetated wetlands often show typical banding (right), the darker layers containing more organic material, the lighter ones more sand and silt

Ancient changes in Earth's climate system are 'written in stone'. The nature and properties of dust and ice accumulations, lake and ocean sediments, the size, shape and position of dune fields and river terraces, sequences of fossil plant and animal assemblages, ancient shorelines, growth lines in corals, tree rings and carbonate cave formations, and in the archaeological and the written records of ancient societies all contain elements of the story.

The history of the human race and its cultures owes much to past climate variability. Understanding past climates is one step towards understanding how we came to be who we are. No doubt the shape of our future will be strongly influenced by climate.

Human Activity has Resulted in Changes to Atmospheric Chemistry and Land Cover, Causing a Decline in Biodiversity



Banded shale



Sossusvlei



Mudcracks



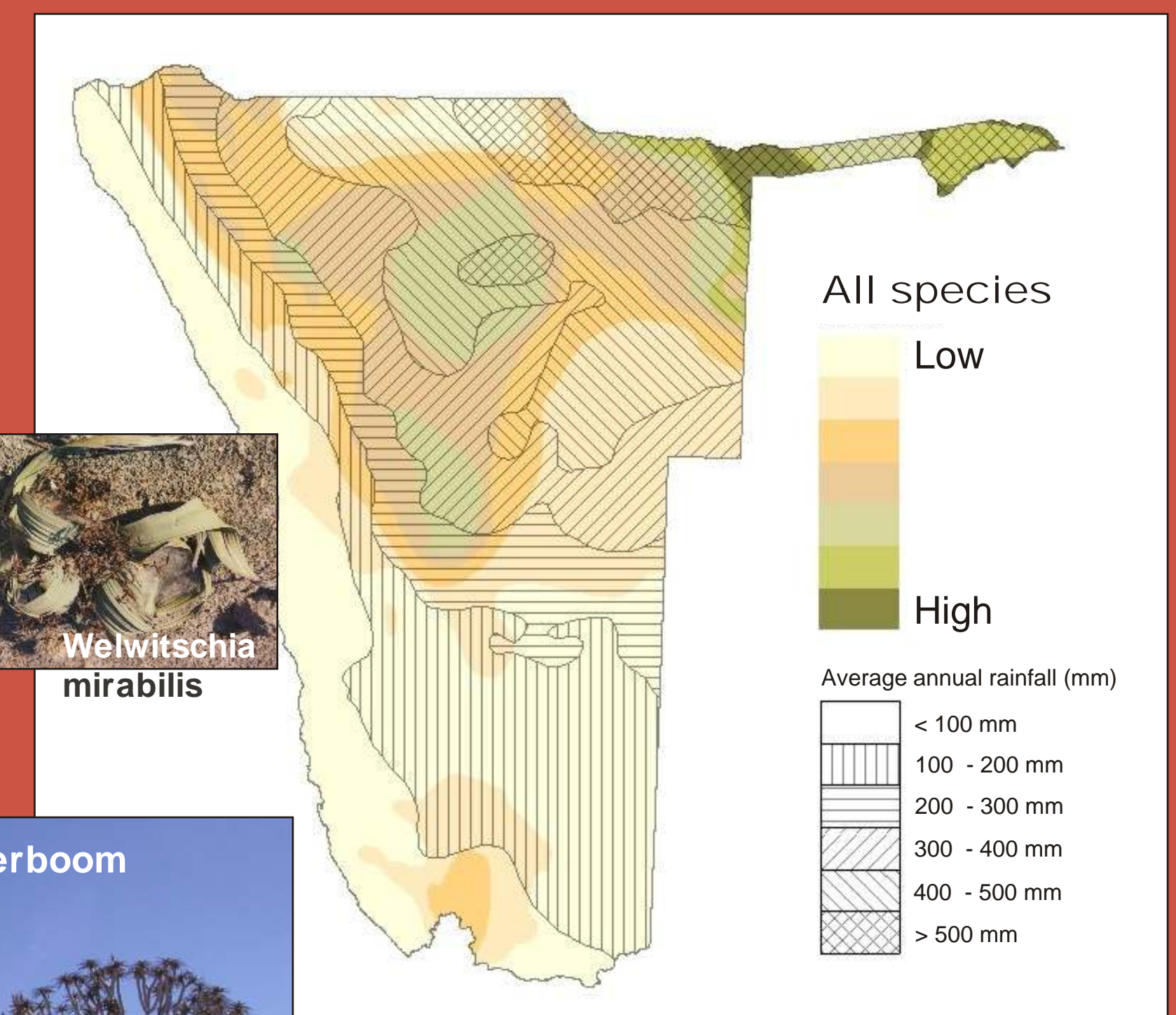
Aeolian sandstone

The cracked mud bottoms (left) of sporadically flooded pans like Sossusvlei under certain conditions are fossilised and become part of the rock record, indicating alternating dryer and wetter periods. Similarly the shifting red sands of the Namib dunes, may be preserved as thick beds of aeolian sandstone, like those of the Twyfelfontein Formation (right), which is the remnant of a great desert that existed some 130 million years ago

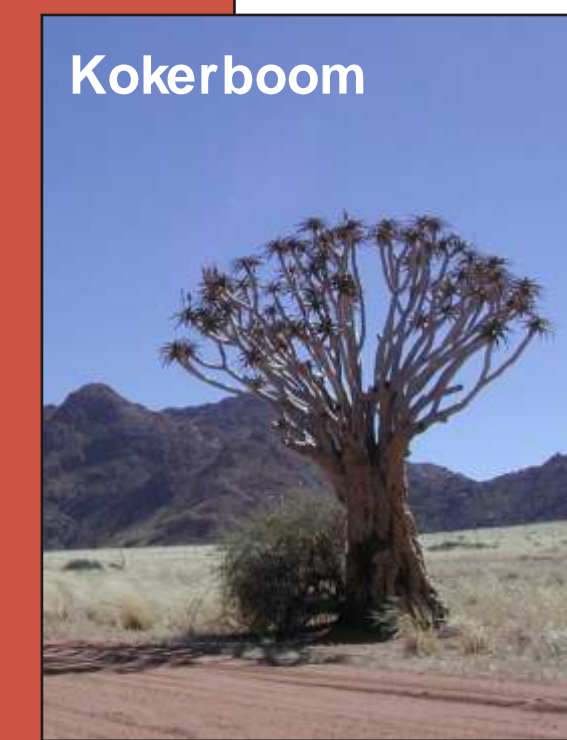


After the Dwyka glaciation, when the climate was still comparatively cool, Namibia was far more wooded than today, as the petrified remnants of enormous tree trunks near Khorixas bear witness

Straddling the Tropic of Capricorn and extending from the Atlantic coast to the highlands of the interior, present-day Namibia experiences a variety of climates, ranging from the aridity of the Namib Desert to subtropical conditions in the Caprivi. However, this hasn't always been like that, and conditions have varied considerably during geological times and continue to change - a process nowadays influenced by human activities such as the establishment of heavy industries and the increased use of chemicals that are harmful to the atmosphere. Thus, in the past the climate in Namibia has been both cold and wet at different times, and the evidence of these periods, that lasted for millions of years, can still be found in the rock record. But although the subtle temperature fluctuations that eventually lead up to long-term climatic change can hardly be felt during a human lifetime, they nevertheless affect our environment and consequently Man. For instance even a minimal rise in water temperature may cause sea life to move to different habitats, and adversely reflect upon the fishing industry, while extended droughts through global warming threaten not only the livelihood of the farming community, but could trigger famine, and thus affect many thousands of people.

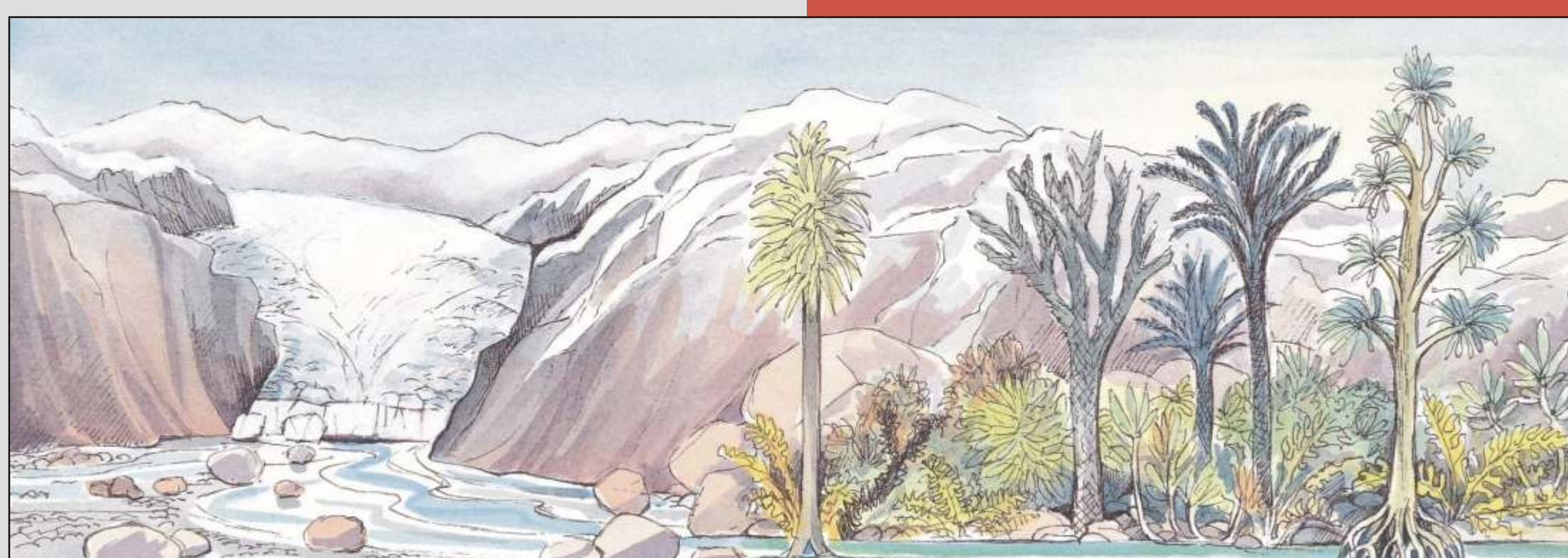


Welwitschia mirabilis



Kokerboom

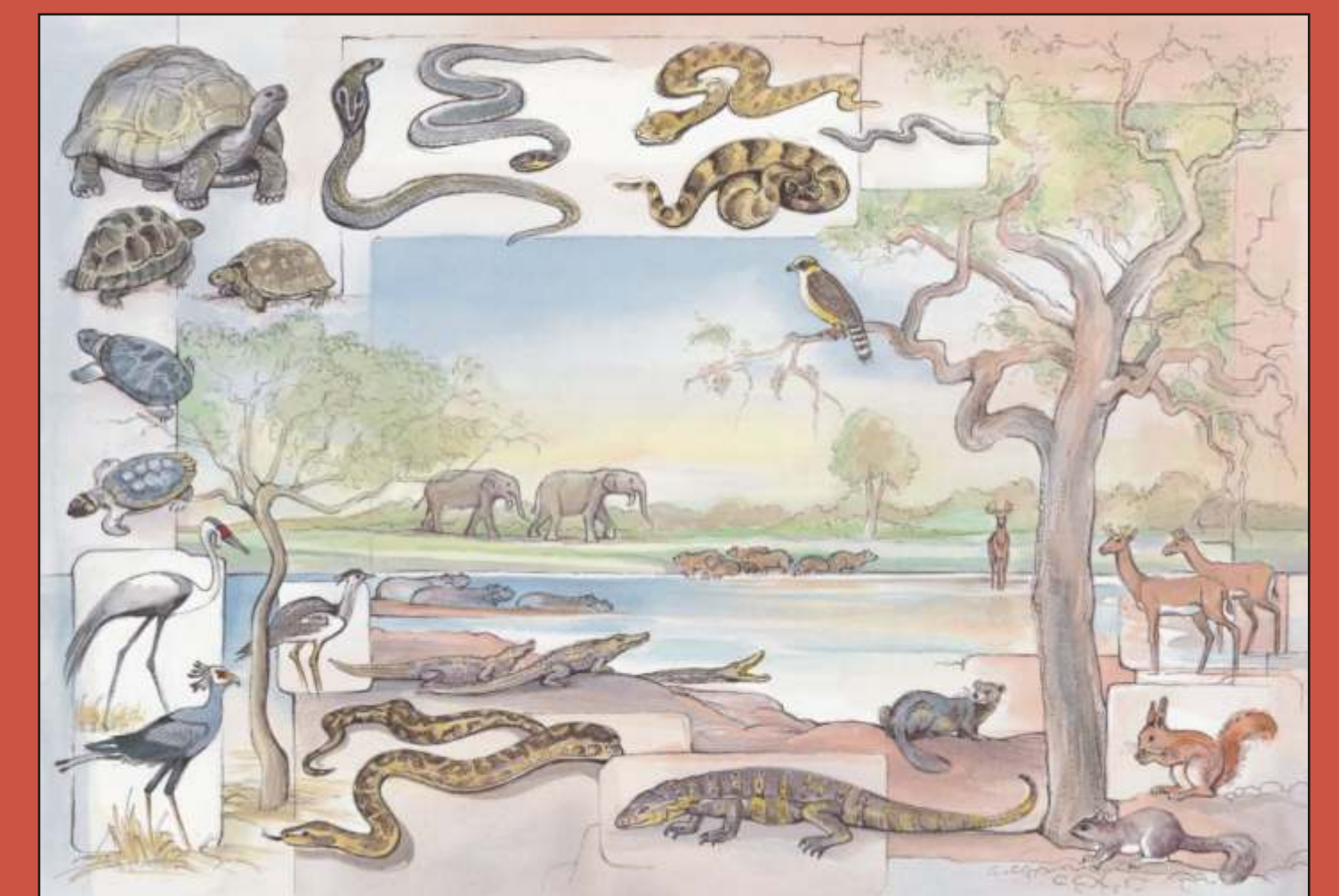
Overall terrestrial biodiversity is generally highest in the north-east of the country (above, after Atlas of Namibia), where higher rainfall and the presence of wetland and forest habitats provide hospitable living conditions; in the harsh environment of the Namib and Kalahari Deserts only a few adapted species, such as the Welwitschia and Kokerboom can survive



Thick ice sheets covered southern Africa during the late Palaeozoic age (above, painting by C. Marais), leaving behind glacial deposits that can be found today in various parts of Namibia (below)



Extent of the Dwyka glaciation 300 million years ago: the south pole at that time was located somewhere in the modern-day Kalahari Desert



Some 20 million years ago, during the Miocene period, the climate in Namibia - and accordingly living conditions - were very different from what they are today, as the exceptional mammal diversity at the famous fossil site of Arriesdrift on the lower Orange River proves (above, artist's impression by C. Marais)