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of Oxford] at Mammalian is suited to close quarters manoeuvring and paral- Species , 1â€”7. Balancing requirements for stability and maneuverabil- vring in freshwater odontocetes Klima et al. Integrative and Comparative Biology 42, 85â€” Second, the evolution- T. Oxygen isotope composition of carbonate concretions arily plastic body proportions of plesiosaurians e. Late Mesozoic and Cenozoic palaeomagnatism of Australiaâ€”1. A redetermined apparent polar wander path. Mammalian Species , 1â€” Plesiosaur remains from Cretaceous high-latitude non-marine deposits in southeastern Australia. Journal of Verte- brate Paleontology 26, â€” Palaeontological Association We thank M. A new pliosaurid Saurop- P; L. Kool for fossil preparation; and D. Jurassic, Callovian of England: The cranial anatomy and Upchurch. Habi- tat preference of river dolphins in the Peruvian Amazon. In Biology and other individuals. Tooth morphology and prey preferences of Meso- References zoic marine reptiles. Journal of Vertebrate Paleontology 7, â€” The evolution of marine reptiles. Annals of the South African Museum 1, â€” Acta Zoologica Fennica of the Oxford Clay. British Museum Natural History , , 1â€” Description of a new plesiosaur from the photypes in the Plesiosauria Reptilia: Paleobiol- Weald Clay of Berwick Sussex. Quarterly Journal of the ogy 28, â€” Geological Society of London 78, â€” A Wealden guide 1: Polar dinosaurs and biotas of the Early of Cretaceous dinosaur faunas. Biology Letters 7, â€” Cretaceous of southeastern Australia. The discovery of plesiosaurian remains in Research 5, 15â€” Australian Journal of Science 28, Early Cretaceous biota from the new leptocleidid Sauropterygia, Plesiosauria from the Vectis For- northern side of the Australo-Antarctic rift valley. Canadian Field Naturalist clade. Journal of Systematic Palaeontology 11, â€” Late of the odontocete forelimb. Marine Mammal Science 26, â€” Restudy of Bishanpliosaurus Canada. Updated Gondwana Permianâ€”Cretaceous earth sic of Chongqing. Vertebrata PalAsiatica 41, 17â€” Gondwana Research 9, â€” Palynological dating of Cretaceous pliosaur Plesiosauria, Pliosauridae, Brachauchenius Lower Cretaceous coastal vertebrate localities, Victoria, Australia. Journal of Vertebrate Paleontology. Function and phylogeny in sauropterygian rinthodonts? Palaeontographica A , 1â€” American Journal of Science A, 63â€” Irritator ride aus dem Wealden Westfalens. Lower Cretaceous of Brazil. Elasmosaurid plesiosaurs with description of new 22, â€” A review of Upper Jurassic pliosaurs.

Chapter 2 : Cretaceous Australia

Get this from a library! Fish from the freshwater Lower Cretaceous of Victoria, Australia: with comments on the palaeo-environment. [Michael Waldman].

A biography of the Australian continent Cretaceous Australia - The southern continents were beginning to break from Gondwana, and the effects on the world were enormous. As the continents moved from Gondwana the new arrangement of the land masses led to new circulation patterns in the oceans and the atmosphere. The result was a huge effect on the climate of the world. In the Early Cetaceous there was a global sealevel rise as the continents separated. Around the world vast areas of land were flooded. At Ma the sealevel reached its maximum height, after which it rapidly dropped, and by the Late Cretaceous most continental areas were again dry land. Resulting from the plate movements, mountain building surged in many places. There was a sudden cooling phase at the start of the Cretaceous, the severity or length of which is unknown. For the rest of the period the temperatures continued to rise so that most of the Period was characterised by a warm to hot climate, the mean annual temperatures being about o C warmer than at present. The temperature gradient between the tropics and the poles was about half the present gradient. It is believed tropical and subtropical conditions extended much further south and north than now, possibly up to 70o at its greatest extent, and the poles had a warm temperate climate. It is even estimated that the abyssal water was about 15oC compared with 2o C at the present. Ocean circulation was sluggish and had almost no vertical zonation. During the Period there appear to have been times of great aridity around the world, as evidenced by widespread evaporite deposits that have been found in a band either side of the Equator that are believed to have extended to possibly 45o on either side of the Equator. The Late Cretaceous was the warmest time in the Phanerozoic Era. At the end of the Period there was a sudden cooling that ushered in a regime of fluctuation of climatic patterns that continued up to the most recent ice age. Tectonic movements were raising and lowering blocks of crust at the time of the rising sea level, leading to flooding of areas locally where raising sealevels flooded lowering crust. As a result, new environments were becoming available for colonisation even before the epicontinental seas began to retreat. Following the retreat of the seas the areas exposed contained salt marshes, swamps, dunes, and areas of sand that had been the sea bed. This appearance of large areas of new land was on a very large scale around the world as the epicontinental seas regressed. There was then a burst of evolution as the flora and fauna invaded the new niches. The flowering plants had been adapting to the conditions and when this opportunity arose diversified rapidly and became the dominant type of vegetation. The Angiosperms originated prior to the disintegration of Pangaea , then Gondwana allowed them to become established on all the continents and evolve into the plants of the present. There were great changes in the flora and the fauna of the world. During this Period the flowering plants came to dominate the vegetation and among the fauna, Dinosaurs reached their peak and were declining by the time of the mass extinction event that occurred at the close of the Cretaceous, and the mammals started on the road to dominance of the fauna. Australia According to the authors3 at the start of the Cretaceous, the Berriasian, Australia maintained a continuous landsurface with India along what is now western coast, its eastern coast being the Queensland Plateau and the Lord Howe Rise, though it was geographically isolated. A complex series of rivers and lakes was supported by the southern rift valley that had formed between Antarctica and Australia during the Jurassic. The Otway Basin , Gippsland Basin and the Bass Basin of the present received vast amounts of sediment from these rivers. About Ma, in the Valanginian, India finally split from Australia and much of the western margin of the continent was inundated by the ocean. About Ma, in the Barremian, large areas of Eromanga Basin and the Carpentaria Basin of northeastern Australia was flooded by the sea following a major global sealevel rise, at which time the sea covered terrestrial environments that had survived the inundation of the western coast of Ma. The result of this was the geographic isolation of terrestrial organisms that led to the production of large numbers of endemic and relictual flora and fauna. Terrestrial habitats in central and Western Australia, the Queensland

Plateau and the southern rift valley, that partially flooded to the west, but largely remained landlocked, were increasingly restricted by continued sealevel rises during the Aptian. Extensive crustal folding and volcanic activity in the Great Dividing Range of the present now provided new coastal environments. Further east, coal-forming swamps that formed such deposits as the Styx River Coal Measures of the present, and rivers drained to the east entering the sea off the outboard coastal margin of the Queensland Plateau. Along the western and southwestern coasts of the present-day Victoria there were areas of inundation that persisted, receding by the Turonian about 93 Ma, the only remnants of the great inland sea at this time were shallow embayments along the coast of Western Australia. The northern branch of the inland sea remained in the area of Darwin and nearby offshore islands, Bathurst Island and Melville Island, where is deposited sediments of the Bathurst Island Group, then receding during the Turonian These islands and the smaller landmasses to the north, Timor, Moluccas and Celebes, became dry land. Active crustal movements, such as the beginning of a phase of mountain building events continuing into the Cainozoic , are widely believed to be responsible for the widespread seaway regression that occurred. Western Australia and central Queensland are the areas from which fossils from the Upper cretaceous are best known, these deposits preserving evidence of both marine and terrestrial assemblages. The remains in Western Australia preserve shallow marine faunas from along the western margin of the forming Indian Ocean. These fossils are mostly derived from limestone, marl and chalk that are exposed along the coast. The chalk is a friable rock formed from the shells of unicellular foraminifers that are part of the plankton. The rocks in many places the rocks have been described by the authors3 as extremely fossiliferous, recording the marine life in the Australian region close to the end of the Cretaceous about 65 Ma. The situation is different for the terrestrial faunas of Australia in the Late Cretaceous, the Winton Formation of Queensland being the main source of information from the Late Cretaceous. The rifting took a long time to complete, not being completely separated until the Early Tertiary. Sea levels rose and central Australia was submerged by a last inland sea. At this time southern and central Queensland were a series of islands in this inland sea. The dinosaur fossils that are known are mostly in the sediments deposited by this inland sea over much of Queensland, New South Wales and South Australia. It is believed that the fossils found were dead dinosaurs washed into the shallow seas during floods. According to the authors3 at the beginning of the Cretaceous, about Ma Berriasian Australia was the eastern high-latitude extremity of Gondwana, 50oo S. In the west of the continent the future Australia and future India formed a continuous landsurface. In the east of the continent the Queensland Plateau and the Lord Howe Rise comprised the eastern margin. Most of the continent was landlocked as it had been in the Jurassic. Narrow marine straits had formed in the rifts that had developed between Australia and India in the west and between Australia and Antarctica in the south by Ma in the Valanginian. At this time there were also marine transgressions in the north-western section of the Carnarvon Basin and the coastal margin of the Perth Basin resulting in the opening of new habitats in the shallow epicontinental marine environment. The Australian continent was mostly inundated by about Ma as the sealevel rise continued during the Aptian. In the west of the continent the northwestern Kimberley Region remained above sealevel, as did the Queensland Plateau in the east of the continent that was volcanically active. In the south of the continent the southeastern margin was still continuous with Antarctica. Open ocean in the south was connected to the open ocean ocean in the west by the epicontinental sea that extended from the western Perth Basin and Carnarvon Basin and by a broad strait across the Nullarbor Plain in the south. In the east of the continent the vast epicontinental sea connected the Gulf of Carpentaria to the Great Artesian Basin and across the Northern Territory, and in the Surat Basin a narrow southeastern channel around the Queensland-New South Wales border. The sea surface temperatures dropped to near freezing when the climate began to cool during the Aptian. Isotopic and sedimentary analyses has indicated that average palaeotemperatures at sea level were about 12o C. According to the authors3 there appears to have been extensive ice build-up along the coasts and along the southern margin of the inland seaway during long winters at high latitude. The palaeotemperatures rose by about Ma in the early-middle Albian as the extreme conditions became more temperate. Along the coastlines of Western Australia and the Northern Territory

isolated inundations remained as the epicontinental sea regressed. In the central east of the continent the sea remained throughout the early and middle Albian until about Ma, finally retreating to the north towards the Gulf of Carpentaria by the earliest part of the Late Cretaceous about 99 Ma in the Cenomanian. During the Cretaceous, Australia was still attached to Gondwana, but as the process of separation got under way rift valleys formed a complex system along the lines of separation of the 2 continents. It had been thought that at the time Australia was between 40o and 75o S, later evidence suggested that it was actually between 50o and 85o S. For the first 50 million years of the Cretaceous the sealevel had been rising and this caused the flooding of the Tasman Depression as it continued its subsidence. Low-lying central and southern basins adjacent to the Depression were also flooded at this time, as were West Australian basins where the Amadeus Transverse Zone had previously been. The continent had been separated into 4 blocks of land by the vast expanse of the Eromanga Sea. Deposits of terrestrial origin that formed at the start and towards the end of the period are not common. The Maryburian Orogeny, a major phase of mountain building that occurred in coastal Queensland, was the final act of the Tasman Orogen. Along the southern margin basins were formed by the rifting that was under way accumulating large amounts of sediment throughout the Cretaceous. The accumulations of Bass Strait contained coal deposits. In the Gippsland , Otway and Bass Basin s the rifts were slowly evolving, and continued to accumulate sediments and volcanic detritus. The sea inundated the rift zone progressively from west to east, and by late in the Period Tasmania was the last connection to Antarctica. Throughout the Cretaceous the break-up of Gondwana picked up speed. The western margin of Australia was becoming progressively delineated as sea floor spreading began near Carnarvon and Perth on the edge of the Westralian Depression. India began breaking away from the western arm of the Depression, its northward movement beginning at about Ma. At the same time Africa broke from Antarctica and began rotating away from India. By the time the Tasman Sea began opening about 80 Ma the southeast margin of the continent was established. The movement ceased about 60 Ma and the distance separating the 2 has remained constant ever since. The tectonic events involved in the opening of the Tasman Sea led to the tilting of the eastern margin of Australia and the uplift of the Great Divide. During the Cretaceous, Australia was close to the South Pole, but its climate was warm-temperate and humid, but south-eastern Australia is believed to have been temperate to cool at the time. By the Early Cretaceous the first angiosperms flowering plants had begun to appear among the dominant conifers, pines and ferns. At the Koonwarra site in eastern Victoria, some of the oldest flower fossils in the world have been found. The fish deposits at the Koonwarra site show evidence of what is believed to have been a winter fish kill in the Early Cretaceous and the ice-rafted boulders found in the bed of the Eromanga Sea from this time indicate that sea ice must have been present, at least in winter. Winters would have been cold at this time, with glaciers probably on the high ground. The cool to cold seas off the southeastern coast is also indicated by study of the plankton from that time. The vegetation, having evolved during warm humid times of the Jurassic , would have been under stress during this cold phase. The stress increased as the epicontinental sea expanded as sea levels rose. Most Australian rocks from the Mesozoic are of Cretaceous age. The coasts of Queensland and northern Western Australia were inundated by major marine transgressions, resulting in a shallow inland sea that covered central Queensland and large areas of the the Northern Territory. By the Middle Cretaceous marine incursions had flooded large areas of the continent form the north, west and south until the landmass had been divided into a series of 4 main islands in what was then the Eromanga Seas. The very large amounts of sediment deposited in the Eromanga Sea cover vast areas of central Queensland, northern New South Wales, central South Australia and the northwest of Western Australia. A rift valley had formed as the separation of Australia from Antarctica got under way, though the margin of the southeast of the continent was still land-locked. This resulted in the deposition of sediment by inland rivers, as well as isolated subsurface deposits in northern New South Wales, that together form 1 of the few instances of rocks containing non-marine fossils from the Lower Cretaceous3. The Eromanga Sea had retreated by the beginning of the Late Cretaceous, all that remained of the inundation was a series of low-lying lakes and swamps.

Chapter 3 : Archaeomaenidae - Wikipedia

Fish From The Freshwater Lower Cretaceous Of Victoria, Australia: With Comments On The Palaeo-environment by Michael Waldman Kear BP, , Marine reptiles from the lower Cretaceous of South Australia, Elements of.

This deposit has an assemblage of plant and animals similar to that at Talbragar , it is at least 30 million years younger, dated from the Early Cretaceous. This site shares 2 of its 5 genera of fish with the Talbragar site, both being widespread during the Jurassic and Cretaceous, Leptolepis known at Spitzbergen, as well as all continents outside Antarctica. Coccolepis also occurred in Europe and Asia, was a late-surviving palaeoniscoid. The archaeomaenid holostean, Wadeichthyes was also present in the Koonwarra deposits. A small amount of lungfish material has also been found at Koonwarra, as well as at isolated sites in younger rocks of the Otway Group to the west. In places tooth plates have been found very similar to those of modern lungfish, different from the denticles of some older members of the group. Shortly after this time India broke from Gondwana Antarctica , moving north, so no further exchange of biota was possible after this time. Finds at this site include invertebrates, such as crustaceans, spiders, insects, a mussel, freshwater bryozoans, worms and a horseshoe crab, as well as fish, plants and a bird feather. Flora Angiosperms flowering plants evolved rapidly shortly after the Koonwarra deposits. A small flower found in the Koonwarra deposit that is the oldest known flower in the world. Among the plant fossils from this site if a leaf, Ginkgoites australia, from the Lower Cretaceous. Fauna A fish Leptolepis koonwarri, Lower Cretaceous mayfly nymph Australurus plexus, Lower Cretaceous beetle Duncanovelia extensa, Lower Cretaceous Flea, Tarwinia australia, Lower Cretaceous Prochoristella leongatha Many of the fish found in this deposit are immature, which leads to the conclusion that the deposit may have been a shallow part of a lake. It appears the fish all died at the same time in a cataclysmic event, the young of modern lake fish tend to occupy the shallow areas of lakes. The layers of the deposit occur in alternate light and dark bands. The light layers were deposited during the summer when more sediment washed into the lake, while the darker ones represent sediments deposited in winter, the colour resulting from the inclusion of black organic debris. The fossils are in the darker bands. As with the rest of southeast Australia, at the time the deposit was laid down it was inside the Antarctic Circle. At the time the world was at its highest temperature of any time in the Phanerozoic, but because it was close to the South Pole, it is thought the lake may have frozen over in winter. It is believed that if any fish lived in shallow parts of the lake that was cut off from the main body of water when the ice formed it could have resulted in a winter fish-kill as the oxygen in the water was exhausted. It is assumed that the adult fish lived in deeper water. The only non-fish animal remains in the Koonwarra deposit are some small feathers. They provide only enough evidence to conclude that birds existed at the site near the end of the Early Cretaceous. The feathers in the mudstone of the Koonwarra deposit, first described by Talent et al. Follwing the discovery of small feathered dinosaurs in Cretaceous deposits in China in is is now uncertain whether the feathers are indeed from birds, or possibly from dinosaurs. Most invertebrate fossils in the deposit are of the insect larvae, as well as some spiders, bryozoans and an ostracod. Fleas have also been found in this deposit. They had previously been found associated with pterosaur fossils from Russia.

Chapter 4 : Koonwarria - Wikipedia

Title / Author Type Language Date / Edition Publication; 1. Fish from the freshwater lower cretaceous of Victoria, Australia with comments on the palaeo-environment.

Chapter 5 : Fishing locations - VFA

Archaeomaenidae is an extinct family of pachycormid fish found in freshwater environments of Jurassic New South

Wales of Australia, Asia, and Antarctica, and in Lower Cretaceous New South Wales.

Chapter 6 : Michael Waldman | Open Library

Large freshwater plesiosaurian from the Cretaceous (Aptian) of Australia. Alcheringa 37, ISSN We report a large plesiosaurian tooth from the freshwater early-middle Aptian (Early.

Chapter 7 : Archaeomaenidae | Revolvy

Fish from the freshwater Lower Cretaceous of Victoria, Australia, with comments on the palaeoenvironment. Special Papers in Palaeontology 9, 1 - [Google Scholar], Dettmann Dettmann, M.E.,

Chapter 8 : Fossilworks: Gateway to the Paleobiology Database

Fish from the freshwater Lower Cretaceous of Victoria, Australia with comments of the palaeo-environment. Special Papers in Palaeontology [M. Bell/M. Bell] more details Purpose of describing collection: taxonomic analysis.

Chapter 9 : Koonwarra Fossil Field

ISSN We report a large plesiosaurian tooth from the freshwater early-middle Aptian (Early Cretaceous) Eumeralla Formation of Victoria, Australia. This, combined with records of smaller plesiosaurian teeth with an alternative morphology, provides evidence for a multitaxic freshwater plesiosaurian assemblage.