

May 26, 2025

News and notes

Before going on to discuss the geology and geopolitics of [Kiribati](#), here are some news items I thought were interesting.

Comments

If anyone has comments on any of my postings, please leave a comment on the LinkedIn page for the posting or email me at raymondreichelt@gmail.com.

Geopolitics

- Welcome to the [Fourth Turning: Reflections On The Revolution In America](#).
- [Tensions rise as superpowers scrap for a piece of the Arctic](#).
- [Canada's crude oil shift to China schools Trump in unintended consequences](#).
- [Iraq Seals Major Oil Deal with Chinese Company](#).
- [Greenland Signs Lucrative Minerals Deal with Europe in Blow to Trump](#).
- [Woodside Sees Global Natural Gas Demand Surging by 50% by 2030](#).
- [Greenland's Mineral Wealth Could Pave Way To Independent Future](#).

Research and News

- [Exploring high-resolution targeting till geochemical data in central Lapland, Finland](#).
- [Insights From Megacryst-Included Zircon Dates on the Spatial Extent of Magma Mixing in the Tuolumne Intrusive Suite, California, USA](#).
- [Coastal Erosion as a Major Sediment Source in the Inner Gulf of Thailand: Implications for Carbon Dynamics in Tropical Coastal Ocean Systems](#).
- [The impact of a freshwater diluted plume on spatial halite accumulation in a hypersaline lake: Direct observations from the Dead Sea](#).
- [Subsurface Geology of the Paraná-Etendeka Large Igneous Province: Implications to Province Stratigraphy and CO₂ Storage](#).
- [Assessment of formation brine salinity, pressure and temperature in selected structures in eastern Denmark and implications for CO₂ storage](#).
- [Ru and W isotope systematics in ocean island basalts reveals core leakage](#); Phys.org summary [here](#).
- [Variable mantle redox states driven by deeply subducted carbon](#); Phys.org summary [here](#).

- [Sedimentology: Volume 72, Issue 4, Pages: 1021-1369 June 2025.](#)
- [Origin and composition of hydrothermally-influenced sediments at Aurora Vent Field, southwestern Gakkel Ridge \(82.9°N\).](#)
- 05/20 [Resolving allogenic forcings on shallow-marine sedimentary archives of the Taiwan Western Foreland Basin.](#)
- Diamond anvil experiments: [Deformation of Hydrous Phases Egg \[AlSiO₃\(OH\)\], δ \[AlO\(OH\)\] and Stishovite \[Si_{1-n}H_{4n}O₂\] Relevant to Anisotropy of the Earth's Mantle.](#)
- [Kiloyear cycles of carbonate and Mg-silicate replacement at Von Damm hydrothermal vent field.](#)
- [Paleoenvironmental reconstruction of the Griquatown Granular Iron Formation, South Africa, and its implications for the Great Oxidation Event.](#)
- [Sedimentation differences and depositional model in slope-controlled travertine precipitation stream in Huanglong, China.](#)
- [Australian continental-scale heavy mineral patterns track climate, weathering and erosion.](#)
- Presentations at the Geological Survey of Western Australia [Big Day Out 2025](#), 11 videos.

Geophysics

- [Crustal and Lithospheric Structures Beneath an Ophiolite Nappe, Southern New Caledonia, Southwest Pacific.](#)
- [Seismic investigations of eight geological structures for potential storage of CO₂ in Denmark: an introduction.](#)
- [Detection of fractured zones, faults, and cavities by high resolution muon tomography in the Buda Hills.](#)

Plate Tectonics

- [Marine Magnetic Anomalies Enhanced by Internal Stress in Rapidly Cooled Submarine Basalts.](#)
- [Effects of Subduction Fluids and Fractional Crystallization on the Magnetic Minerals Formation in the Back-Arc Basin.](#)
- [Regional Thermal History Trends From the Idaho-Montana Fold-Thrust Belt Using Multiple Low-T Thermochronometers.](#)
- [The Rovuma Transform Margin: Locating East Africa's Transform Continent-Ocean Transition.](#)
- [Oligocene Slab Break-Off and Pleistocene Glacial Erosion Shaped the Tectonic Evolution of the Dent Blanche Tectonic System, Western Alps.](#)
- [Hg isotopes constrain metallogenic effects of the Wilson Cycle of the Paleo-Asian Ocean.](#)

- [Backthrusts in the Bowen Basin Folded Zone, eastern Australia: progressive intra-basin shortening or passive-roof thrusting?](#)
- [East Tauern Detachment System: Coupled Oligocene Ductile Thinning and Miocene Extension of the Eastern European Alps.](#)

Paleontology

- [The Patagonian *Mara Dolichotis patagonum* \(Zimmermann, 1780\) \(Rodentia, Caviomorpha, Caviidae\) in the Late Pleistocene of Northern Uruguay: Body Mass, Paleoenvironmental and Biogeographical Connotations.](#)
- [A new eusauropod \(Dinosauria, Sauropodomorpha\) from the Middle Jurassic of Gansu, China.](#)
- [Global spatiotemporal patterns of demographic fluctuations in terrestrial vertebrates during the Late Pleistocene.](#)
- [Early conch morphology of a gigantic Cretaceous ammonoid, *Pachydesmoceras denisonianum* \(Desmoceratidae\).](#)
- [Re-evaluation of historic putative caimanine material from the lower Palaeocene Salamanca Formation in Patagonia \(Argentina\).](#)
- [Pathological vertebrae in the holotype of *Paludidraco multidentatus* \(Sauropterygia, Simosauridae\) from the Upper Triassic of El Atance \(Central Spain\).](#)
- [Reconstructing the paired fin skeletons and musculature in arthrodires from the Devonian \(Frasnian\) Gogo Formation, Western Australia: implications of arthrodire appendicular anatomy for the serial homology of vertebrate limbs.](#)
- [A name for the Provincial Fossil of British Columbia: a strange new elasmosaur taxon from the Santonian of Vancouver Island; Phys.org summary \[here\]\(#\).](#)
- [The end-Cretaceous mass extinction restructured functional diversity but failed to configure the modern marine biota.](#)
- [A new ichthyosaur from the Lower Jurassic of Portugal \(Iberian Peninsula\); SciNews summary \[here\]\(#\).](#)

Mining and Energy

- [Hundreds of workers remain underground after 'shaft incident' at South African gold mine, company says.](#)
- Ore geology: [A Late Paleozoic Hydrothermal Gold Mineralization Event in the Northern Margin of the North China Craton: Evidence of In Situ Apatite U-Pb Dating and Hg Isotope Tracing of the Giant Hadamengou Gold Deposit.](#)
- Western Australia: [Great Boulder confirms another gold discovery at Side Well.](#)

- Natural gas geology: [Construction of gas content model based on KPCA-SVR for Southern Sichuan shale gas.](#)
- Ore deposit chemistry: [The role of boron in controlling the pH of lithium brines](#); Phys.org summary [here](#).
- [US approves Utah uranium mine after two-week environmental review.](#)
- China: [30 Million Tons of Uranium: This Discovery Could Shake Up the Global Energy Market.](#)
- Ore deposit geology: [The Roles of Transcrustal Magma and Fluid-Conducting Faults in the Formation of Mineral Deposits.](#)
- [U.S. retail gasoline prices heading into Memorial Day weekend are at a multi-year low.](#)
- Natural gas from shale: [Pore structure evolution and geological controls in lacustrine shale systems with implications for marine shale reservoir characterization.](#)
- [US shale to plateau if oil stays in current range, ConocoPhillips CEO says.](#)

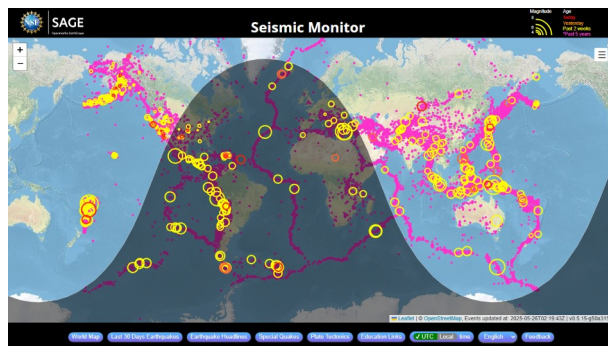
Environmental Geology and Hydrogeology

- Po Valley, Italy: [Intensive irrigation buffers groundwater declines in key European breadbasket.](#)
- [Management of groundwater resources in the coastal aquifers of the Magdalen Islands \(Canada\) using decision support models.](#)

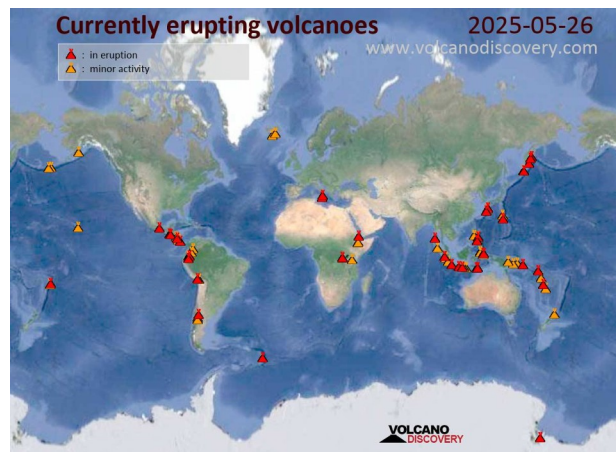
Glaciers and Climate Change

- [Warming of +1.5 °C is too high for polar ice sheets](#); Phys.org summary [here](#).
- [Fingerprint of anthropogenic climate change detected in long-term western North American fire weather trends.](#)

Volcanoes, Earthquakes and Geohazards



[Seismic Monitor](#)



[Active Volcano Map](#)

Volcanoes

- [Smithsonian / USGS Weekly Volcanic Activity Report](#).
- United States Geological Survey (USGS) Volcano Observatories:
 - [Cascades Volcano Observatory Weekly Update](#).
 - [Volcano Watch – Inter-Episode Rumbblings at Kīlauea](#).
 - [Yellowstone’s thermal areas, by the numbers](#).

Earthquakes

- [Euro-Mediterranean Seismological Centre \(EMSC\)](#).
- [Earthquakes Monitoring Live Worldwide](#).
- [Seismicity Patterns and Multi-Scale Imaging of Krafla, N–E Iceland, With Local Earthquake Tomography](#).
- [Fault Geometry Control on Earthquake Segmentation and Locking Transition on Mid-Crustal Ramp in Kumaun-Garhwal, Central Himalaya: Implications for Regional Tectonics and Seismic Hazard](#).
- [Significant afterslip contribution to postseismic deformation in Sado Island following the 2024 Noto Peninsula earthquake: insights from two dense GNSS observation networks](#).
- [Seismic Structure Characterizing the Large Shallow Slip Zone of the 17th-Century Kuril Earthquake](#).
- [Tsunami warning after magnitude 6 earthquake strikes off Crete coast in Greece; USGS summary here](#).
- [Earthquake forces temporary shutdown of Ivanhoe’s Kakula underground mine in DRC](#).
- [Generalized Nearest-Neighbor Distance and Hawkes Point Process Modeling Applied to Mining-Induced Seismicity](#).
- [Analysis of the Szarvas, Hungary, Earthquake Swarm of 19 August 2023: A Case Study in a Low-Seismicity Sedimentary Basin](#).
- [The ripple effect of small earthquakes near major faults](#).

Landslides

- [A combined analysis of frequency ratio and analytical hierarchy process for landslide susceptibility assessment in Tenta, South Wollo, Ethiopia](#).
- [Submarine landslides caused by the 2024 Noto Peninsula earthquake](#).

Free Geology Books and Other Stuff

Free geology books can be downloaded from these sites:

- [OreZone Readers and Experts Telegram Channel](#); the Ore Zone channel also shows employment opportunities for geologists.
- [The Groundwater Project](#) has many groundwater geology books for free download; also they now have a [Free Online Learning Module: Pumping Test Analysis](#).
- Free Groundwater Modeling Course – [HydroGeoCenter](#).
- From Western Australia: [Carbonatite, lamprophyre and host rocks in the northern Aileron Province](#).
- Two volumes of Geology of Indonesia now can be accessed for [FREE/GRATIS](#). The books can be accessed from: vol 1 <https://lnkd.in/eH6Gcka4>; vol 2 <https://lnkd.in/egTYmpjk>.
- Brett Davis' book on veins in a deforming rock mass: "[The Veining Bible](#)"; also at [this site](#).

Upcoming Events

- [Sedimentary Geology and the Energy Transition Conference, June 2-5, 2025 – Salt Lake City, UT USA](#).
- Calgary, AB: [2025 Bootleggin' Breakfast – July 8th & 10th](#); during the Calgary Stampede.
- [June 10, Kentucky Geological Survey 64th Annual Seminar: Geology in the Modern World](#).
- [Society for Sedimentary Geology conference, Mountjoy IV – August 10-13, 2025, in Montreal, Canada](#).
- [Copper to the World Conference, Tuesday 26 – Wednesday 27 August 2025](#), in Adelaide, Australia; report on 2024 conference [here](#).
- [The 52nd Congress of the International Association of Hydrogeologists, 15-19 September 2025, Melbourne Australia](#).
- [GeoManitoba 2025 78th Annual Canadian Geotechnical Society Conference & 9th Canadian Permafrost Conference, RBC Convention Centre, Winnipeg, Manitoba, September 21 – 24, 2025](#).
- [29 September – 1 October 2025, Stuttgart, Germany, Nature Conference on Advancing Perovskite-Based Photovoltaics](#).
- [November 3 – 4, 2025 Central Canada Mineral Exploration Convention 2025 Victoria Inn Hotel & Convention Centre, 1808 Wellington Avenue, Winnipeg, Manitoba R3H 0G3, Canada](#).
- [5th International Professional Geology Conference \(IPGC\), November 5 to 7, 2025, Zaragoza, Spain](#).
- 2025 [Society of Petroleum Engineers Distinguished Lecturer Schedule](#).
- [List of geoscience events in 2025 from the International Union of Geological Sciences](#).
- [American Geophysical Union List of Upcoming Meetings](#).
- The Geological Society: [Events & Courses](#).

May 26, 2025

Geology and the Fate of Societies – Kiribati

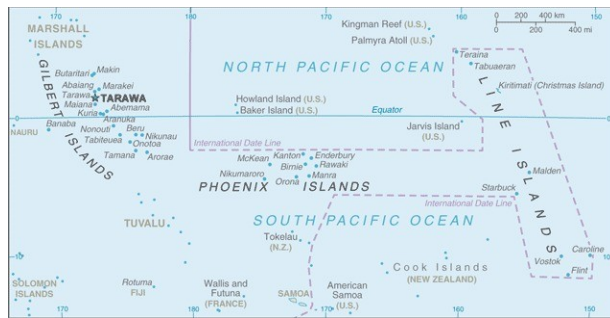


Figure 1a – Kiribati

Credit: [CIA World Factbook, public domain](#)



Figure 1b – Location of Kiribati

Credit: [CIA World Factbook, public domain](#)

The south seas islands of the [Republic of Kiribati](#) are located in the [Central Pacific](#). Considered part of [Micronesia](#) in [Oceania](#), [Kiribati](#) consists of some [32 coral atolls](#) and one [raised coral island, Banaba](#). The country is divided into three main groups: the [Gilbert Islands](#), the [Phoenix Islands](#), and the [Line Islands](#). The government of Kiribati is a unitary [parliamentary republic with an executive presidency](#). The President is [Taneti Maamau](#) and the Vice President is [Teuea Toatu](#). The legislature is called the [House of Assembly](#), the Speaker of which is [Willie Tokataake](#). The Capital and largest city in Kiribati is [South Tarawa](#) (pop. 63,439).

According to the [Central Intelligence Agency \(CIA\) World Factbook on Kiribati](#), the total land area of the country is 811 square kilometres (km²) dispersed over about 3.5 million km² of ocean. Also, according to the CIA, 116,545 people live in Kiribati, 54.4% of whom live in the Capital, South Tarawa. Of the approximately 117,000 people who live in Kiribati, 95.78% are ethnic Gilbertese a.k.a. [I-Kiribati](#); 3.8% are mixed race; 0.2% are [Tuvaluan](#); and 1.7% are something other. The official languages of Kiribati are [Gilbertese](#) and [English](#). In terms of religion, most people in Kiribati profess some sort of [Christianity](#): 58.9% are [Roman Catholic](#); 21.2% are in the [Kiribati Uniting Church](#); 8.4% go to the [Kiribati Protestant Church](#); 5.6% belong to the [Church of Jesus Christ](#); and 2.1% are [Seventh Day Adventist](#). Among the remaining 2.1% are [Baha'i](#) and 1.7% are something other. In terms of education, the various [Christian missionaries to Kiribati](#) have done a good job and [98% of the population](#) 15 years or older can read and write.

In terms of the economy, the per capita [GDP \(PPP\)](#) is \$2,381; the [Gini coefficient](#) is 27.8, indicating low inequality; and the [Human Development Index](#) is medium at 0.628. In 2023, the [top exports of Kiribati](#) were non-fillet frozen fish (\$73.8m), fish fillets (\$4.69m), coconut oil (\$1.04m), iron pipes (\$920k), and gas turbines (\$668k); the last two appear to be re-exports to get around tariffs. The top destinations were Thailand (\$71.1M), Japan (\$5M), Philippines (\$2.51M), United Arab Emirates (\$1.74M), and Fiji (\$688k). Also in 2023, the [top imports of Kiribati](#) were centrifuges (\$9.17m), passenger and cargo ships (\$9.16m), other sea vessels (\$8.55m), refined petroleum (\$7.07m), and rice (\$6.37m). The top origins were China (\$37.7M), Australia (\$31.6M), Fiji (\$24M), Japan (\$11.5M), and New Zealand (\$9.46M).

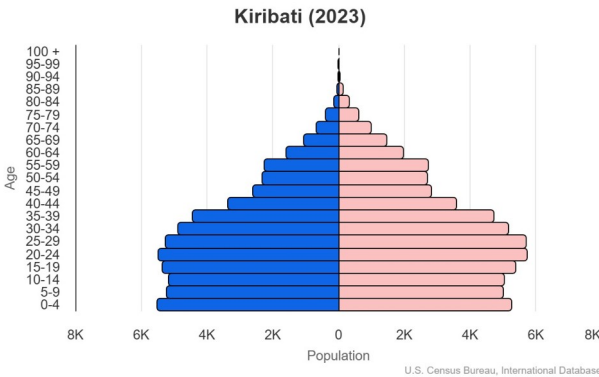


Figure 2 – Demographics of Kiribati
 Credit: [U.S. Census Bureau, International Database, public domain](#)

The demographics of Kiribati shows a fairly young country with a stabilizing population. The median age is 27.3 years; 26.8% are under 15 years of age; and 67.9% are between 15 and 64 years old. The total fertility rate is 2.18 births per woman, just above the replacement rate of 2.1. The net migration rate is -2.8 migrant(s)/1,000 population and the annual growth rate is 1.02%. The life expectancy for men is 65.9 years and 71.3 years for women.

Geology



Figure 3 – South Tarawa Atoll from the Air
 Credit: [Government of Kiribati, Creative Commons Attribution 3.0 Unported license](#)

The geology of the islands of Kiribati, the [Gilbert Islands](#), the [Phoenix Islands](#), and the [Line Islands](#), are all best described as [coral atolls](#) developed on [volcanic seamounts](#). The first stage is the [formation of volcanic seamounts](#). This starts with the formation of a volcanic “[hotspot](#)” leading to the eruption of a volcano. As the underlying [oceanic plate](#) moves, a line of volcanic seamount forms.

In Kiribati, the underlying volcanic rock is generally [Cretaceous](#) in age. Also, the details of seamount formation varies. For the [Gilbert Islands](#), the eleven atolls and five coral islands without lagoons run in an NW to SE trend, reflecting the past movements of the [Pacific Plate](#). The eight [Phoenix Islands](#), unlike

most other oceanic island groups, forms not in a linear trend, but in a ring, as seamounts surmounting a low dome. The [Line Islands](#), as the name implies, form a general northwest-southeast trend line.

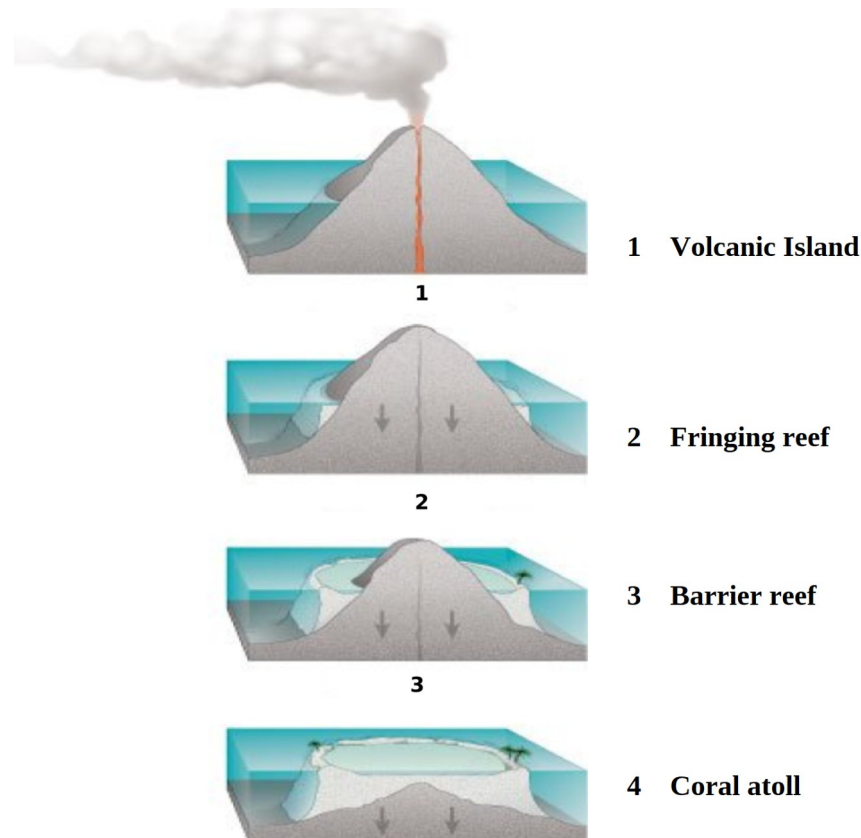


Figure 4 – Stages of the Formation of a Coral Atoll

Credit: [USGS](#) employees Susan Mayfield, Sara Boore, and Eurico Zimbres, [public domain](#)

The next stages are the [accumulation of a coral reef](#), the subsidence of the old volcano, and the eventual [formation of a coral atoll](#). This process can take millions of years. The coral limestone on the islands of Kiribati range in age from [Paleogene](#) to [Quaternary](#).

The geologist [Charles Darwin](#) was the first to propose the process for the formation of coral atolls discussed above in his 1842 monograph *The Structure and Distribution of Coral Reefs*, London, Smith, Elder & Co (Wikipedia summary [here](#), archived pdf [here](#)). [Other scientists](#), such as [John Murray](#) [proposed](#) that the volcanic core remained stable, and that the sea level rose. [Reginald Daly](#) thought that the [rise and fall of sea levels during the Quaternary](#) were important and [William M. Davis](#) provided [additional evidence](#) supporting Charles Darwin's original original hypotheses. All these were written up before the [Plate Tectonics](#) were discovered, throwing another complication into the mix. Perhaps we can best understand the situation with reference to the observation by British statistician [George E. P. Box](#) that "[All models are wrong, but some are useful](#)". In the case of coral atolls, Darwin's model is a good working hypotheses, or model.

As far as rock types found on the Kiribati islands, [Mindat](#) lists the following: [alkali basalt](#), [basalt](#), [clay](#), [gabbro](#), [hawaiiite](#), [limestone](#), [mugearite](#), [nephelinite](#), [phonolite](#), [quartz-trachyte](#), [sand](#), [theralite](#), [tholeiitic basalt](#), [trachyte](#) and [tuff](#).

Also found on [Banaba or Ocean Island](#) are, or were, [phosphorite](#) deposits. [Sedimentary phosphorites](#), such as those on Banaba Island were formed by the accumulation of organic matter containing phosphates. The accumulation is then followed by [diagenesis](#) (i.e. physical and chemical changes) to the phosphate deposits, with burial and [lithification](#) as the final step. For more information on phosphorite deposits, begin by checking out these papers:

- Gabriel M. Filippelli, 2011, *Phosphate rock formation and marine phosphorus geochemistry: The deep time perspective*, *Chemosphere*, Volume 84, Issue 6, Pages 759-766, ISSN 0045-6535, <https://doi.org/10.1016/j.chemosphere.2011.02.019>.
- Peir K. Pufahl & Lee A. Groat, 2017, *Sedimentary and Igneous Phosphate Deposits: Formation and Exploration: An Invited Paper*, *Economic Geology*, Volume 112, Number 3, Pages 483–516, <https://doi.org/10.2113/econgeo.112.3.483>.
- Robert C. Hill, Zhen Wang, Gordon D.Z. Williams, Victor Polyak, Anjali Singh, Michael A. Kipp, Yemane Asmerom, Avner Vengosh, 2024, *Reconstructing the depositional environment and diagenetic modification of global phosphate deposits through integration of uranium and strontium isotopes*, *Chemical Geology*, Volume 662, 122214, ISSN 0009-2541, <https://doi.org/10.1016/j.chemgeo.2024.122214>.

Resources

Agriculture and Fishing



Figure 5 – Coconut Palms, Kiribati

Credit: [Vladimir Lysenko \(L\)](#), [Creative Commons Attribution-Share Alike 4.0 International](#) license

The CIA World Factbook indicates that agricultural land makes up 42% of the land area of Kiribati (2.5% arable land, 39.5% permanent crops, 0% permanent pasture). Of the remainder, forest covers 1.5% and 56.6% has other, or no, use. Agriculture makes up 27.8% of the country's GDP.

Statistics on food production in Kiribati from the [United Nations Food and Agriculture Organization](#) (FAO) can be found [here](#). In 2023, the top ten agricultural products based on tonnage are: coconuts, bananas, vegetables, [taro](#), tropical fruits, pork, chicken, nuts, eggs, and pork offal. One product, not mentioned in the FAO report is the [harvest of edible seaweed](#).

According to the FAO, [41% of the population](#) suffers from moderate to severe food insecurity.

A few interesting statistics from the FAO on Kiribati, in 2023 the country produced 189,209 tonnes of coconuts, 1,076 tonnes of pork, and 1,924 tonnes of taro.



Figure 6 – Tuna Catch, South Tarawa

Credit: [Government of Kiribati](#), [Creative Commons Attribution 3.0 Unported](#) license

The other main source of food in Kiribati is [fishing](#), which is an [intimate part of the Kiribati way of life](#). The Kiribati fishing industry includes: a commercial fishery, an artisanal fishery, and a sports fishery for tourists. The main species caught for the commercial fishery is [skipjack tuna](#). The [artisanal fishery](#) targets a wide variety of finfish and invertebrates. The [government website for the sports fishery](#) advertises opportunities for tourists to catch [bonefish](#), [Giant Trevally](#), [Sailfish](#) and [Marlin](#). Statistics on fish production in Kiribati from the FAO can be found [here](#).

Mineral Resources

Ocean Island (1936)

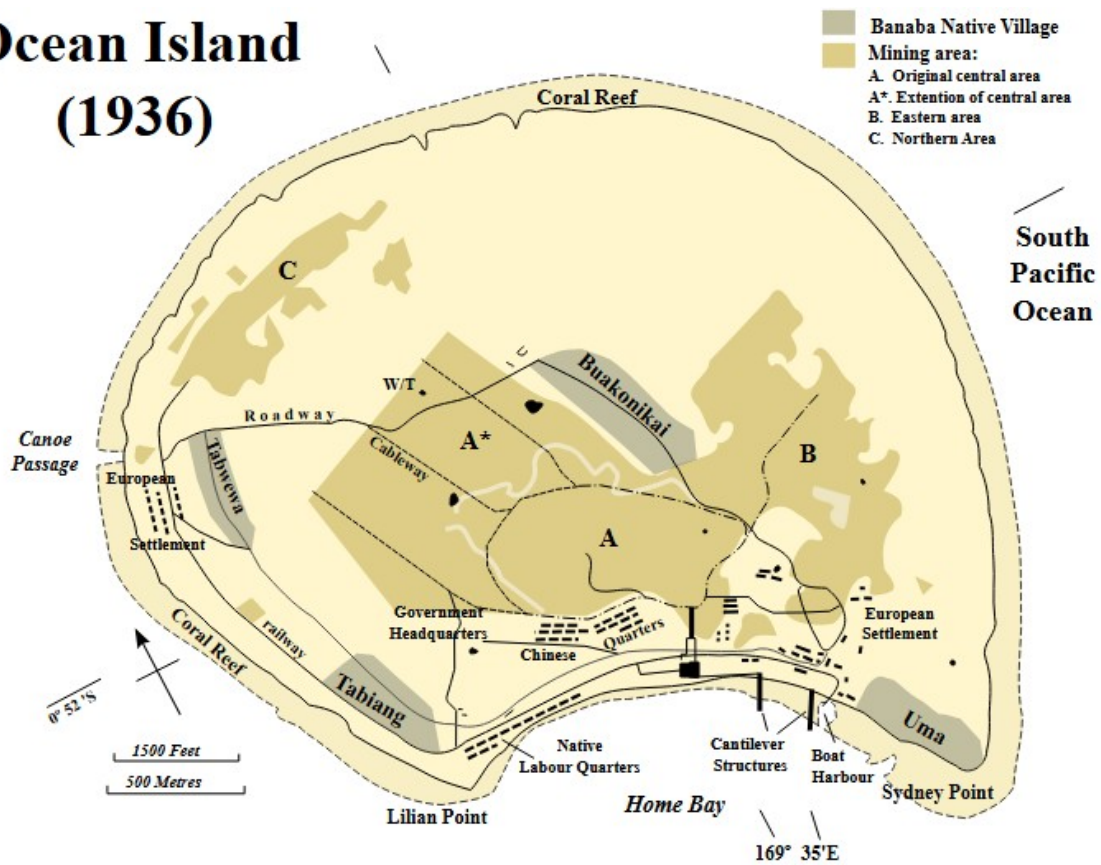


Figure 7 – Banaba (Ocean) Island 1936
Credit: [Indolences](#), public domain



Figure 8 – Phosphate Rock from Banaba Island
Credit: [MozzazzoM](#)|public domain, [Creative Commons](#)
[CC0 1.0 Universal Public Domain Dedication](#)

Currently, there are no mining activities in Kiribati and the USGS does not list the country in its [International Minerals Statistics and Information](#) website. [Phosphate rock](#) was mined from [Banaba Island](#) (a.k.a. Ocean Island) from 1900 to 1979. Consistent with the practices of the day, the mining was not [environmentally friendly](#). There are plans for further exploration of phosphate potential on the island. However, the Banaban islanders displaced by past mining [do not favour the development](#).

Climate

The CIA World Factbook on Kiribati describes the climate as tropical; marine, hot and humid, moderated by trade winds. There is no Köppen climate map for Kiribati.

Kiribati looks like a nice place to visit, especially for people seeking a South Sea island experience. The government of Kiribati has a [useful site](#) for travellers to the islands as does their [tourism authority](#). The travel advisories ([here](#) and [here](#)) indicate that Kiribati is a fairly safe place to visit; just be careful for the [unexploded ordnance](#) that still remains on [Tarawa from WWII](#). Also, check out [Climates to Travel](#) and [Lonely Planet](#). If you are wondering how to get there, a useful site is [Rome2Rio](#).

History and Geopolitics

History, a South Sea Island

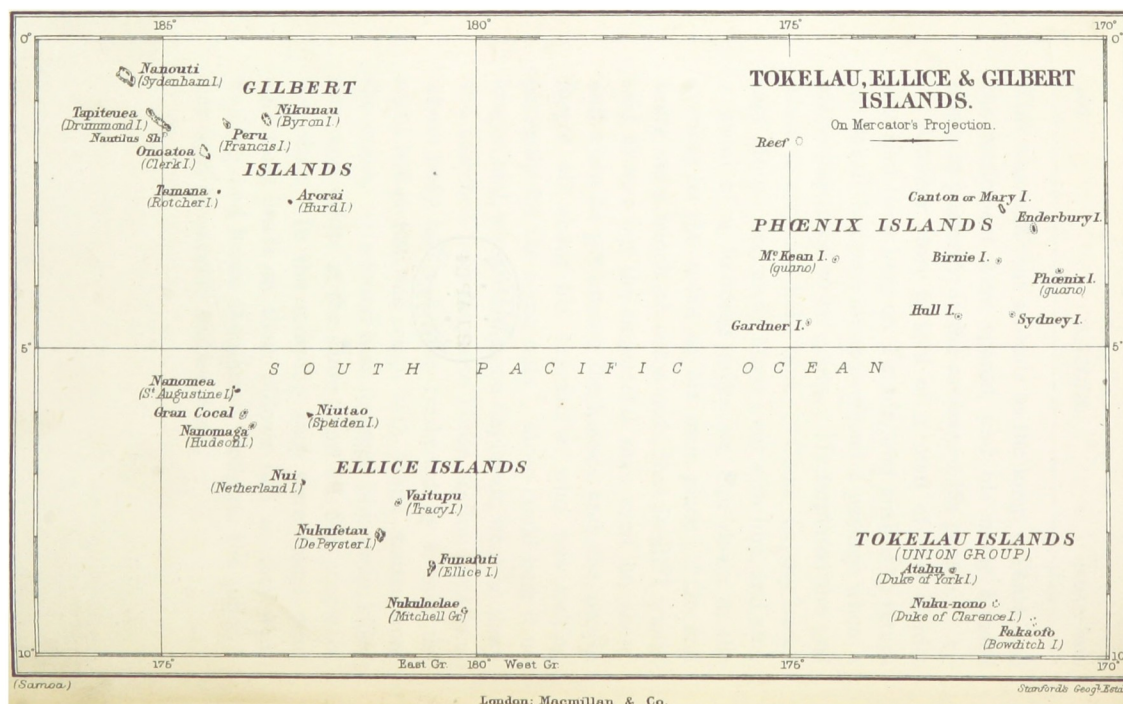


Figure 9 – 1884 Map Of The Tokelu, Ellice And Gilbert Islands

Credit: [British Library HMNTS 10492.eee.13](#), public domain

The [history of Kiribati](#) can be divided into four main phases: the period prior to European contact, the colonial period, World War II, and post WWII independence.

[Austronesian](#) voyagers first arrived in the Gilbert Islands as early as 3000 B.C. However it was not until about A.D. 200 that these islands were settled by [Micronesians](#) sailing in from islands further west. Around 1300, [Polynesians](#) from [Samoa](#) and [Tonga](#) settled in the southern Gilbert Islands, then known as Tungaru. Later arrivals of people from [Fiji](#) added to the mixture of Micronesians, Polynesians, and [Melanesians](#) on the Gilbert Islands, who all intermarried. If you want, you can play a game called [Tungaru that re-creates](#) the settlement of Kiribati by the various voyagers.

Further east, the Phoenix Islands and Line Islands were both visited by various Melanesian and Polynesian peoples, but their isolation and lack of natural resources meant that long-term settlements were not possible. Both island groups were uninhabited by the time of European contact.

Europeans began to arrive in the 1760's and by 1826 all three island groups had been named and charted. In 1892 the UK declared a [protectorate over the Gilbert and nearby Ellice Islands](#), in an attempt to block growing influence from American whalers. Phosphate-rich Banaba Island was annexed to the protectorate in 1900. The protectorate became a [British colony in 1916](#). Some Line Islands were added to the colony in 1916 and 1919, with the final ones added in 1972. The Phoenix Islands were added to the colony in 1937, although the British agreed to share jurisdiction of some of the Phoenix Islands with the Americans because of their strategic location for aviation.



Figure 10 – US Marines Storm Tarawa, November 1943
Credit: WO Obie Newcomb, Jr, [public domain](#)

During [World War II](#) the Japanese initially [occupied parts of the Gilbert Islands](#). The Americans kicked out the Japanese in the bloody battles of [Tarawa](#) and [Makin](#). The [arrival of large number of American soldiers](#) on the Gilbert Islands significantly affected the people of the islands, essentially bringing them into contact with the wider world.

After the war, the islands were governed under colonial arrangements until the 1970's. The Ellice Islands became its own colony in 1974 and was renamed [Tuvalu](#) for “eight standing together” in 1975. In 1977

the Gilbert Islands became self-governing and fully independent in 1979 under the new name of Kiribati, which is the Gilbertese spelling of Gilberts. In 1979, the US relinquished all claims to the sparsely inhabited Phoenix and Line Islands in a [treaty of friendship](#).

Since independence, Kiribati has enjoyed a peaceful government. The two big issues that have come up are the exploitation of the phosphate deposits at Banaba (discussed above) and the distinct possibility that [rising sea levels brought about by climate change](#) could flood out the whole country. In preparation for that possibility, in 2012 [Kiribati purchased a 22 km² plot of land in Fiji](#) for possible re-settlement of its population.

Geopolitics – When Your Country Disappears under the Waves



Figure 11 – Parliament House, South Tarawa

Credit: KiribatiTraveller, [Creative Commons Attribution-Share Alike 4.0 International](#) license

The [destruction of a country by geological changes](#) is the ultimate geological risk. The possibility of rising sea levels swamping Kiribati is the biggest existential threat to the country. What ever the cause, anthropogenic or natural, rising sea levels in a country barely above sea level certainly worries the people in the building in Figure 11, and indeed, all ~17,000 people in Kiribati. Recent studies, [like this one](#), add to the anxiety.

In terms of external geopolitics, while officially independent, Kiribati relies on larger nations, such as [Australia](#) and especially the [United States for protection](#). The growing influence of [China in Oceania](#) will be a future concern. Hopefully, for the people of Kiribati, Great Power conflict will pass them by and

allow them a peaceful life. Otherwise, perhaps there will be another Battle of Tarawa. I remain optimistic.

Standard Caveat

[J. Robert Oppenheimer on freedom and scientific inquiry](#)

The purpose of my weblog postings is to spark people's curiosity in geology. Don't entirely believe me until you've done your own research and checked the evidence. If I have sparked your curiosity in the subject of this posting, follow up with some of the links provided here. If you want to, go out into the field and examine some rocks on your own with the help of a good field guide. Follow the evidence and make up your own mind.

In science, the only authority is the evidence.