

March 4, 2024

News and notes

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

Research

- Geophysics: [A rigorous real-time acoustic positioning method for ocean bottom seismic exploration](#); Phys.org summary [here](#).
- Environmental microbiology: [Mineral-eating microorganisms at extinct hydrothermal vents](#).
- Mineralogy: Special Issue of Minerals on the [Deposition, Diagenesis, and Geochemistry of Carbonate Sequences](#).
- Field work problems: [Feeling Relieved: Creating a Positive Bathroom Field Culture in the Geosciences](#).

Sedimentology

- [Carbonate microbialites and chemotrophic microbes: Insights from caves from south-east China](#).
- [A tsunami deposit in the Stonewall Formation \(Upper Ordovician\), northeastern margin of the Williston Basin, Canada, and its tectonic and stratigraphic implications](#); behind paywall, Phys.org summary [here](#).

Plate Tectonics

- [Revealing the Secrets of the Western Mediterranean: A Deep Earthquake and the Overturned Slab](#); Science alert summary [here](#).
- [The role of fault structural evolution on long-term slip rates and seismic cycles in the Himalayan orogenic wedge](#).
- [Characterizing the Complexity of Subduction Zone Flow With an Ensemble of Multiscale Global Convection Models](#); Phys.org summary [here](#).
- [Impact of rift history on the structural style of intracontinental rift-inversion orogens](#).

Paleontology

- Bird evolution: [Transformation of the pectoral girdle in pennaraptorans: critical steps in the formation of the modern avian shoulder joint](#).
- [A new armored dinosaur with double cheek horns from the early Late Cretaceous of southeastern China](#); Sci News summary [here](#).
- [Did evaporite cements and infiltrated silts assist preservation of reptile tracks in Permian desert sediments?](#).

- Vampire squids: [Simoniteuthis, a new vampyromorph coleoid with prey in its arms from the Early Jurassic of Luxembourg.](#)
- Fossil bacteria with magnetite in them: [Discovery of late Quaternary giant magnetofossils in the Bay of Bengal.](#)

Mining and Energy

- Geology of volcanogenic massive sulfide (VMS) ore deposits: [Mafic to intermediate volcanic rocks of the Blake River Group, Abitibi greenstone belt, Canada: Geochemistry, petrogenesis and relation with VMS deposits.](#)
- [Stratabound tungsten mineralization research: Polyphase stratabound scheelite-ferberite mineralization at Mallnock, Eastern Alps, Austria.](#)
- [African leaders call for equity over minerals used for clean energy.](#)
- [Canada Rare Earth sets up supply operations in the DRC.](#)
- [Delta drills high-grade gold near Thunder Bay.](#)
- Opinion: [The importance of critical minerals should not condone their extraction at all costs.](#)
- [Column: Metallurgical coal is the commodity world's quiet performer.](#)
- [Uranium firms revive forgotten mines as price of nuclear fuel soars.](#)
- [Analysts Expect Oil Prices to Remain Close to \\$80 This Year.](#)
- [The United States remained the largest liquefied natural gas supplier to Europe in 2023.](#)

Environmental Geology and Hydrogeology

- [Growing demand for environmental science expertise in the corporate sector.](#)
- Remediation news: [US EPA Announces More Than \\$1 Billion to Start New Projects and Continue Work at 100 Superfund Sites.](#)
- Pollution: [Plastic pellets blight Belgian town as EU weighs action.](#)
- [Texas farmers claim company sold them PFAS-contaminated sludge that killed livestock.](#)
- New Hampshire: [Coakley Landfill PFAS Contamination: Cleanup Slowly Progresses, Questions Remain.](#)
- Aquifer depletion: [Mexico City could be just months away from running out of drinking water.](#)
- Free books from the Groundwater Project: [Introduction to Isotopes and Environmental Tracers as Indicators of Groundwater Flow](#) and the children's book [Wally & Deanna's Groundwater Adventure... to the Saturated Zone.](#)

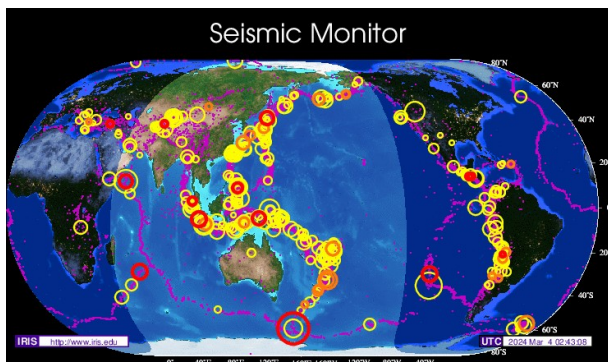
Glaciers and Climate Change

- Ancient glaciers: [Decoding the Late Palaeozoic glaciated landscape of Namibia: A photogrammetric journey](#).
- Glacial geology: [Inherited terrestrial cosmogenic nuclides in landscapes of selective glacial erosion: lessons from Lochnagar, Eastern Grampian Mountains, Scotland](#).
- [Synchronous retreat of Thwaites and Pine Island glaciers in response to external forcings in the presatellite era](#).
- [Study shows glacier shrinkage is causing a 'green transition'](#); two referenced research papers, [here](#) and [here](#).
- [Ocean Coupling Limits Rupture Velocity of Fastest Observed Ice Shelf Rift Propagation Event](#); Phys.org summary [here](#).
- Geoengineering is not the solution: [Flawed Emergency Intervention: Slow Ocean Response to Abrupt Stratospheric Aerosol Injection](#); Phys.org summary [here](#).
- From a year ago, more dumb geoengineering: [St Ives Bay chemical dump a dangerous experiment, claim objectors](#).

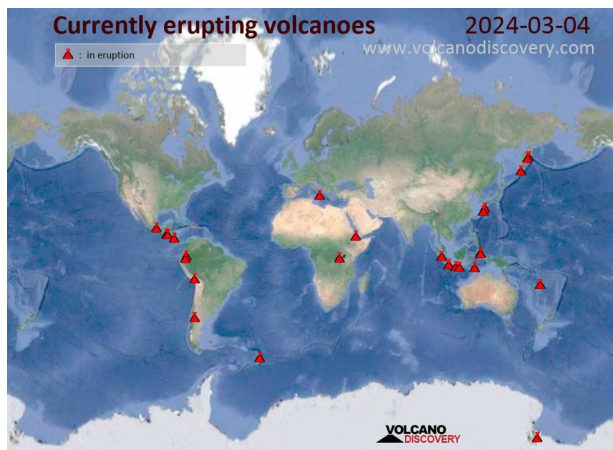
Fun With Rocks

- [Rock star: I've spent 30 years making a Scotland map from pebbles](#).

Volcanoes, Earthquakes and Geohazards



[Seismic Monitor](#)



[Active Volcano Map](#)

- United States Geological Survey (USGS) Volcano Watch: [Kilauea intrusion was a textbook example of dike propagation](#).
- USGS Yellowstone Volcano Observatory: [Hydrothermal puzzles in the lakes of Lower Geyser Basin](#).

- [Smithsonian / USGS Weekly Volcanic Activity Report](#).
- Iceland:
 - [Next Eruption Could Set Off With As Little As Half Hour's Notice](#);
 - [Iceland's Blue Lagoon evacuated ahead of 'imminent' volcanic eruption](#);
 - Live feed on You Tube: [Volcanic Eruption Watch: Blue Lagoon, Iceland](#).
- Volcano research and geochemistry: [Early Jurassic large igneous province carbon emissions constrained by sedimentary mercury](#); Phys.org summary [here](#).
- Photo of volcano in Türkiye from the ISS: [Exploring the Geothermal Mysteries Under Nemrut's Snow-Capped Surface](#).
- [Euro-Mediterranean Seismological Centre](#).
- [M4.9 earthquake shakes Idaho](#); USGS summary [here](#); video by Shawn Willsey [here](#).
- [Seismic swarm rattles Boso Peninsula, Japan](#); Japan Meteorological Agency summary [here](#).
- From Kyle Bradley and Judith A Hubbard: [The great tidal earthquake hypothesis test, part I](#).
- Also from Bradley and Hubbard: [Earthquake Insights digest – March 1, 2024](#).

Upcoming Events



[May 19-22, 2024](#)



[Goldschmidt is the foremost annual, international conference on geochemistry and related subjects, organized by the Geochemical Society and the European Association of Geochemistry](#)

March 3, 2024

Geology and the Fate of Societies – China



Figure 1 – China

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

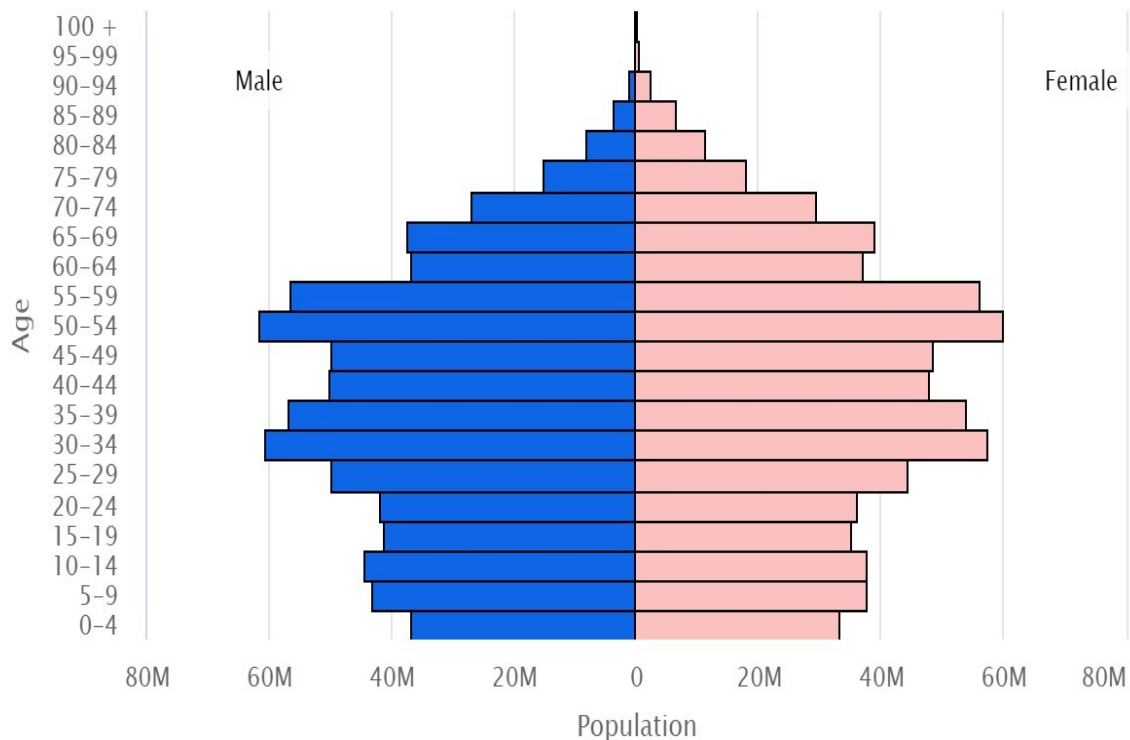
This week's posting is on one of the world's major powers: the [People's Republic of China](#). China is big, the total land area is 9,596,960 square kilometres (km²). Of that approximate 9.6 million km², 9,326,410 km² is land and 270,550 km² is water. The country has land borders with 14 countries: [North Korea](#), [Russia](#), [Mongolia](#), [Kazakhstan](#), [Kyrgyzstan](#), [Tajikistan](#), [Afghanistan](#), [Pakistan](#), [India](#), [Nepal](#), [Bhutan](#), [Myanmar](#), [Laos](#), and [Vietnam](#).

The [Central Intelligence Agency](#) (CIA) [World Factbook](#) lists the current population of China at 1,413,142,846. Of that approximate 1.4 billion (!!!) people, 91.1% are considered [Han Chinese](#). China officially recognizes [56 ethnic groups](#). The overwhelming majority of the population is found in the eastern half of the country. The most spoken and official language of China is [Standard Mandarin](#). Other languages spoken include those associated with the 56 recognized ethnic groups, the [Cantonese](#) language is common among the [Overseas Chinese](#).

China is officially [atheist](#), and 52.1% of the population do not identify with any religion (unless you consider [Communism a religion](#)). Of the remainder, 21.9% follow [folk religion](#), 18.2% are [Buddhist](#), 5.1% identify as [Christian](#), 1.8% follow [Islam](#), <0.1% are [Hindu](#), <0.1% are [Jewish](#), and the remaining

0.7% are listed as other, this includes [Taoists](#). Keep in mind that while these percentages seem small, remember that 0.1% of 1.4 billion is 1,400,000.

China (2023)



U.S. Census Bureau, International Database

Figure 2 – Demographic Profile of China

Credit: [United States Census Bureau International Database](#), public domain

The demographic profile of China shows the effect of the country's [One Child Policy](#) implemented from 1979 to 2015. Some demographers predict a significant [contraction of the Chinese population](#). The median age in China is 39.8 years, the fertility rate is 1.45 births per woman, and life expectancy 78.2.

China is a [Marxist–Leninist](#), one-party [socialist republic](#). The current leader of the state is [Xi Jinping](#) who hold the positions of: [General Secretary of the Chinese Communist Party](#) (CCP), [President](#), and [Chairman of the Central Military Commission](#). Other senior officials include: the Premier, [Li Qiang](#); the Chairman of the National People's Congress, [Zhao Leji](#); the Chairman of the Chinese People's Political Consultative Conference, [Wang Huning](#) and the Vice President, [Han Zheng](#). Also of note, China is a nuclear power, with about [500 nuclear weapons in their arsenal](#).

The Capital City of China is [Beijing](#) (pop. 21,893,095) and the largest city is [Shanghai](#) (pop. 26,875,500).

Geology

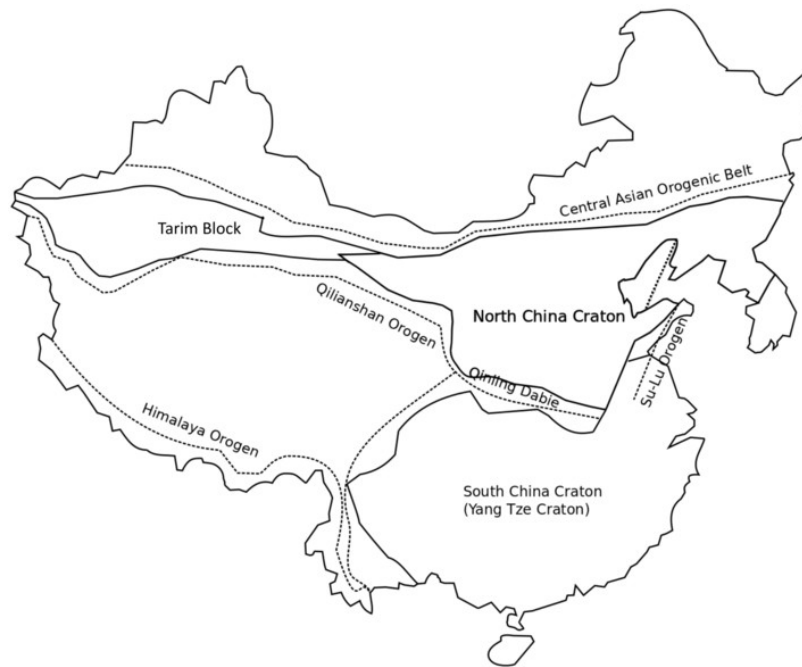


Figure 3 – Tectonic Geology of China

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

The [geology of China](#) is a big subject. One way to start understanding it is to look at the underlying tectonic structure. As shown in Figure 3, the main tectonic units of China are:

- The [North China Craton](#), a [Precambrian](#) aged [craton](#) made up of a variety of igneous, sedimentary, and, especially, metamorphic rocks.
- The [South China Craton](#) is mostly [Proterozoic](#) in age and was formerly a part of [Gondwana](#); the southeastern portion of the South China Craton is the [Cathaysia Fold Belt](#).
- Between the North China and South China Cratons is the [Qinling orogenic belt](#), a [tectonic suture zone](#) that formed during the [Triassic](#).
- The [Tarim Block](#) is underlain by rock ranging in age from [Neoproterozoic](#) to [Cambrian](#) and its formation seems to be closely connected to the adjacent South China Craton.
- The [Himalayan Orogen](#) formed by the closing of the [Tethys Sea](#) when the [Indo-Australian Plate](#) collided with Asia, beginning some 50 million years ago during the [Paleogene](#).
- The [Qilianshan Orogen](#) is a [Paleozoic](#) aged orogeny that formed from rocks deposited from the Cambrian to [Devonian](#) periods and that form a [subduction accretion complex](#).
- The [Central Asian Orogenic Belt](#) is one of the world's largest [Phanerozoic](#) accretionary [orogens](#) and was formed by the [closure](#) of the [Paleo-Asian Ocean](#).

- On the east coast of China is the [Su-Lu Orogen](#) that formed during the [Mesozoic](#); some of the rocks in the Su-Lu Orogen the largest exposed zone of [ultrahigh-pressure metamorphic](#) rocks in the world.

From all this complex geological history, we can expect that the geological map of China is also fairly complex, as shown in Figure 4, below:

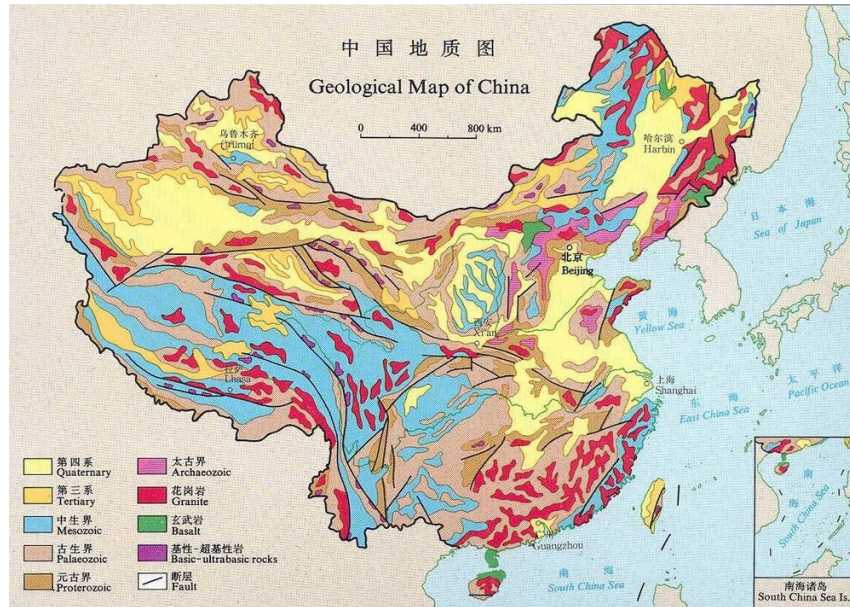


Figure 4 – Geological Map of China
Credit: [Gife X](#)

Resources

Agriculture



Figure 5 – Rice Field in China
Credit: [Markus23~commonswiki](#), [Creative Commons Attribution-Share Alike 2.5 Generic](#) license

[About](#) 54.7% of land in China is agricultural, of this 11.3% is used for [arable agriculture](#), 1.6% for [permanent crops](#), and 41.8% is [permanent pasture](#).

[Agriculture in China](#) has a long history, most varieties of [rice](#) and [millet](#) were originally domesticated there during the [Neolithic](#). In modern times, China arable agriculture produces [rice](#), [wheat](#), [potatoes](#), [tomato](#), [sorghum](#), [peanuts](#), [tea](#), [millet](#), [barley](#), [cotton](#), [oilseed](#), [corn](#) and [soybeans](#). Livestock production in China large, with [pigs](#) and [fowls](#) being the most common animals raised for food. Statistics on agriculture and livestock farming are [here](#).

Another important source of food in China is from fishing, both from [aquaculture](#) and [the wild](#). Statistics on fishing in China are [here](#).

Throughout history, China has struggled with food insecurity. This is the [same today](#) and it is a [major geopolitical concern](#) for the Chinese leadership.

Forestry



[Forest](#) covers about 22.3% of the land area in China. Because of the great variety of climate and ecological zones, there is a great variety of wood harvested, including the [bamboo](#) shown in Figure 6. China expects the monetary value of [forest production](#) to reach 9 trillion yuan (~1.25 trillion USD) by 2025.

As a manufacturing nation, China is both a [great importer of raw wood and a great exporter](#) of finished wood products – the local production of wood does not meet the demands of industry.

Forestry practices in the past led to significant deforestation as forest. Recent efforts since the year 2000 have led to an [increase in forest cover](#) in China.

Statistics on the forest industry in China can be found [here](#).

Figure 6 – Anji Bamboo Forest Zhejiang Province, China

Credit: Clerkwheel, [Creative Commons Attribution-Share Alike 3.0 Unported](#) license

Minerals



Panoramic View of the Benxi Blast Furnaces and Principal Coal Workings

Figure 7 – Panoramic View of Benxi Iron Blast furnaces & Coal Mine c.1920

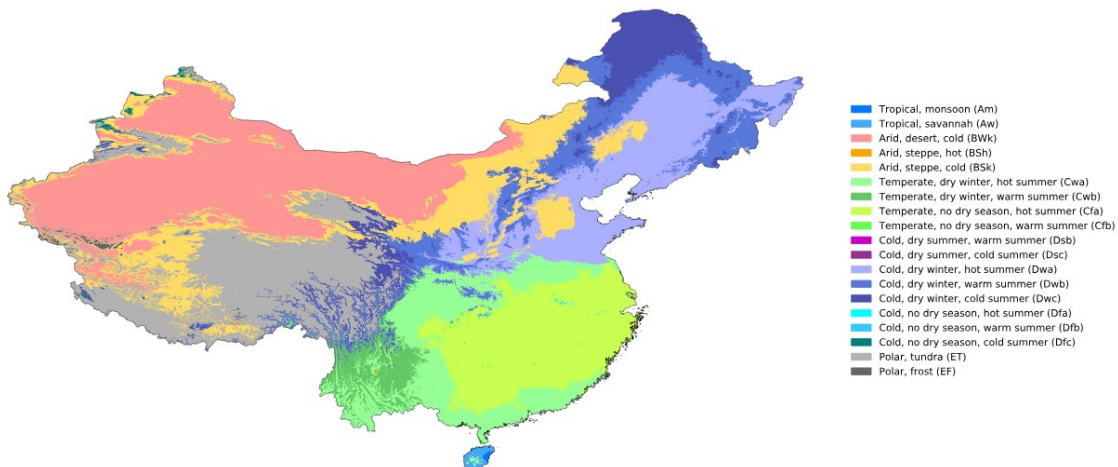
Credit: Chinarail2, [Creative Commons Attribution-Share Alike 4.0 International](#) license

The [mineral industry in China](#), like many things in the country, is huge. Major minerals produced include [iron ore](#), [coal](#), [oil and gas](#), alumina ([bauxite](#)), [precious metals](#), [base metals](#), [tungsten](#) and [rare earth elements](#). Among the so-called critical minerals, the minerals need for modern electronics, China is a [major player in the world market](#). As a socialist state, almost all mineral production is by [state owned enterprises](#).

Rather than list them here, you can find statistics for the mineral industry in China [here](#). Statistics on the Chinese oil & gas industry can be found [here](#).

Climate

Köppen-Geiger climate classification map for China (1980–2016)



Source: Beck et al.: Present and future Köppen-Geiger climate classification maps at 1-km resolution, *Scientific Data* 5:180214, doi:10.1038/sdata.2018.214 (2018)

Figure 8 – Köppen-Geiger Climate Classification for China

Credit: Beck et al, 2018, [Creative Commons Attribution-Share Alike 4.0 International](#) license

As you can see in Figure 8, China has a wide range of climate from tropical to desert to temperate to continental. The explanation of the climate classifications found in Figure 8, can be found [here](#).

If you wish to travel to China, you might want to check out [this site](#) and [this site](#).

History and Geopolitics

An Ancient Civilization



Figure 9 – The Great Wall of China

[Credit: Nicolas Perrault III, Creative Commons CC0 1.0 Universal Public Domain Dedication](#)

[Chinese history](#) is typically into periods corresponding to the name of the country's ruling families, the so-called [dynasties](#). Figure 10, below, graphically outlines the major divisions of Chinese history and the corresponding dynasties.

Human habitation in China goes back to the [Paleolithic](#) as shown in the archaeological discovery of [Peking Man](#), a [hominid](#) (*Homo erectus*) that lived in the [Middle Pleistocene](#). Later, modern humans (*Homo sapiens*) moved into China during the [Late Pleistocene](#).

The development of [Neolithic farming cultures in China](#) began around 8,000 years ago, during the [Holocene](#). There were [numerous Neolithic cultures](#) in China. One of the first Chinese cultures to use [bronze](#), the [Erlitou culture](#), is sometimes credited with giving birth the earliest dynasty, the [Xia](#) (3rd millennium BC).

Much, if not all, that we know about the early history of China is based upon the annals of [Sima Qian](#). Some of this is the result of simple accidental loss of records and some by deliberate destruction of records, such as that [done by Qin Shi Huang](#).

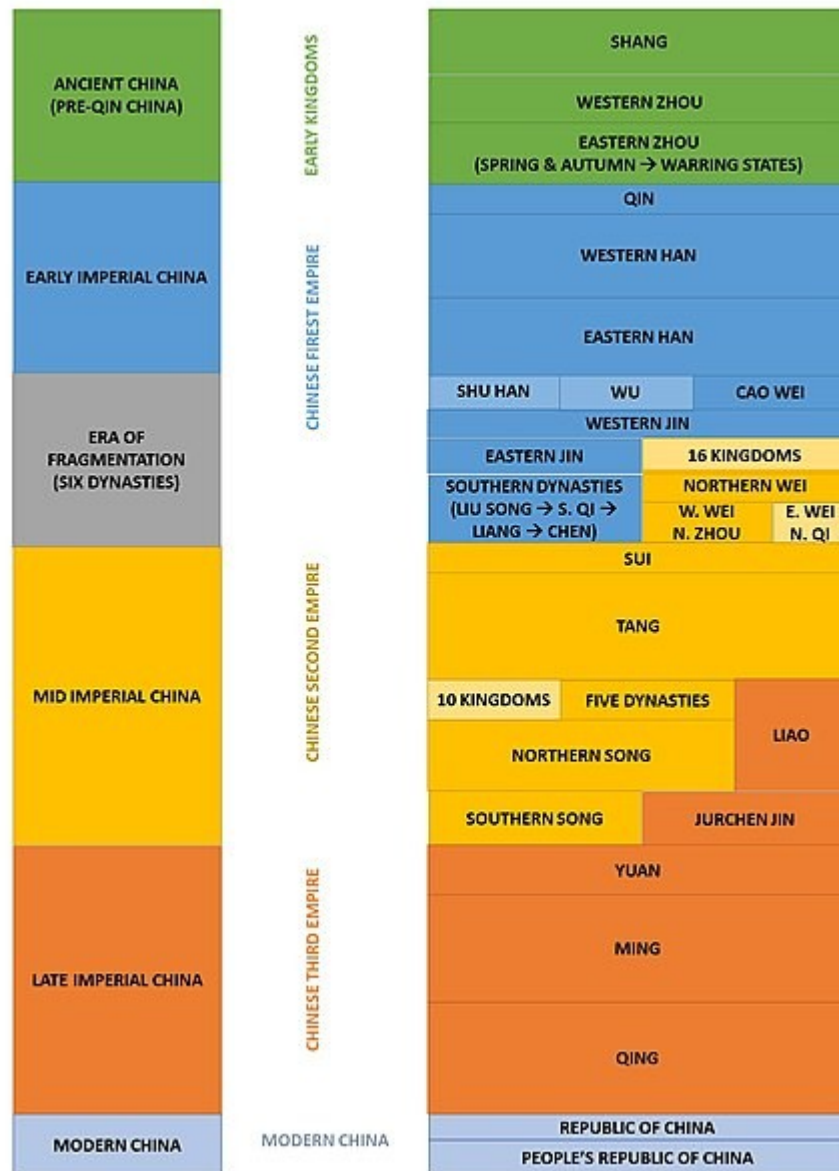


Figure 10 – Divisions of Chinese History and Their Corresponding Dynasties
 Credit: SSITS, [Creative Commons Attribution-Share Alike 4.0 International](#) license

The Xia were superseded by the [Shang](#) who were, in turn, replaced by the [Zhou](#). The breakdown of Zhou rule coincided with the [introduction of iron](#) technology to China, which led to the many states of the [Spring and Autumn Period](#) and then to the murderous [Warring States Period](#). These two periods were characterized by century after century of escalating interstate warfare. They were also the time in Chinese history that gave rise to philosophers such as [Confucius \(Kǒngzǐ\)](#) and [Laozi](#). Also during this time, the military philosopher, [Sun Tzu](#), wrote his famous book, [The Art of War](#) (he had lots of examples to work with).

In the struggles of the Warring States Period, one general, [Qin Shi Huang](#) conquered all the other states and established the first Chinese Empire and the [Qin Dynasty](#). Among his [many accomplishments](#), Qin Shi Huang is known for being buried with an entire army made of [terracotta statues of his soldiers](#). Perhaps Emperor Qin thought that he needed them to protect his soul from the [angry spirits](#) of all the people he sent to an early grave.

Following the end of Qin Dynasty, the [Han Dynasty](#) took over by the usual means – murder and mayhem. The Han are noted for giving their name to the ethnic group that makes up most of China. Following the Han, there was a period of disorder that included the [Xin Dynasty](#), the [Eastern Han](#), the [Three Kingdoms](#), the [Jin Dynasty](#), the [Sixteen Kingdoms](#), and the [Northern and Southern dynasties](#).

The period of disorder was resolved (by the usual means, armed conflict) in the establishment of the [Sui Dynasty](#). The Sui were superseded by the [Tang Dynasty](#) whose demise led to another period of disorder, the [Five Dynasties and Ten Kingdoms Period](#).

The Five Dynasties and Ten Kingdoms Period was ended (by the usual means, with copious flow of blood) by [Zhao Kuangyin](#), who founded the [Song Dynasty](#). The Song Dynasty was followed by the [Liao Dynasty](#), [Western Xia](#), and [Jin Dynasty](#) (all these changes were accompanied by many deaths).

The next murderous despot to impose his will on the long-suffering Chinese people was [Genghis Khan](#), whose grandson [Kublai Khan](#), largely completed the [Mongol conquest of China](#) and established the [Yuan Dynasty](#). As leader of the [Mongol Horde](#), Genghis Khan is known for establishing an [empire](#) that extended from China to Poland. Genghis, considered a [folk hero](#) in the modern state of Mongolia, left many children. So many, that an [estimated 1 in 200 men in the world](#) bear the Y chromosome associated with his lineage.

The Yuan were overthrown (you know how) in 1368 by [Zhu Yuanzhang](#) who founded the [Ming Dynasty](#). The Ming, in turn, were violently overthrown in 1644 by [Nurhaci](#), a [Manchu](#) warlord who founded the [Qing Dynasty](#). Among the notable events of the Qing Dynasty were the [Century of humiliation](#) at the hands of foreign powers – a period that included the [First](#) and [Second Opium Wars](#). The disgust of the Chinese people with their Manchu rulers led, among other things, to the [Taiping Rebellion](#) 1851–1864 (death toll in excess of 20 million) and the [Boxer Rebellion](#) in 1900.

The Qing ruled China until 1912, when they were overthrown by the [Provisional Government of the Republic of China](#). The end of the Imperial Government did not lead to peace and a [bitter civil war](#) broke out that lasted until 1949. The period was also marked by an [invasion of China by Japan](#) (1937 – 1945), a conflict marked by numerous atrocities such as the [Rape of Nanking](#).

The triumph of the [Chinese Communist Party](#) under [Mao Zedong](#) in 1949 led to peace, but not an end to the suffering of the Chinese people. The People's Republic of China from [1949 to present](#) has been marked by at least two failed attempts at economic and political reform and one fairly successful one. The [Great Leap Forward](#), a plan for industrial and agrarian reform led to the [Great Famine](#) and the death of up to 55 million people. A later attempt at political reform, the [Cultural Revolution](#), led to untold millions of deaths.

The one reform that was truly successful was introduced in beginning in the 1980's by Mao's successor [Deng Xiaoping](#). As the result of the introduction of market reforms, the so-called [Chinese Economic](#)

[Miracle](#), China's economy has grown to become the [world's largest manufacturer](#) and the millions of people have been lifted out of poverty.

It hasn't been entirely peaceful. In 1979, China embarked on an [unsuccessful war with Vietnam](#). The defeat and discrediting of established policies may be part of how Deng Xiaoping was able to implement his market based reforms. Ten years later, in 1989, student protests were suppressed in the [Tiananmen Square massacre](#). Fearful of unrest in [Xinjiang](#), the Chinese government has [mercilessly persecuted its Uighur population](#). Another action by the Chinese government was the [persecution](#) of apparently peaceful natural health enthusiasts, the [Falun Gong](#). Out of fear of further protests, or the organization of any movement outside their control, the Chinese government has implemented the [most extensive surveillance system](#) in the history of the world.

Geopolitics of a World Power



Figure 11 – Soldiers of the [People's Liberation Army](#)
Credit: Unknown author, [United States Department of Defense](#), public domain

The geopolitical issues of China fall into two categories: internal problems and external relations. The biggest internal challenge to China in the upcoming years is demographic. As the result of the successful One Child Policy, there are fewer young people than old ones. A typical young Chinese person born since 1979 has four grandparents and no cousins or siblings. In a society that values [filial piety](#), this will put hard burdens on young people, just as they should be forming families of their own. The challenge of what to do with a whole generation of old people now reaching retirement age will also severely task Chinese society and the State.

A related issue is the [slowing down of the Chinese miracle economy](#) as both the economy and the populace become more mature. Already there are strains as the [Shanghai Stock Exchange teeters on collapse](#). In some ways, China has been a victim of its own success. Rapid economic growth led to all kinds of [questionable investment schemes](#), not all of them providing good returns. While the economy was [growing rapidly](#), these glitches in the system could be tolerated, but when things slow down, trouble begins. As Warren Buffet famously [said](#), “Only when the tide goes out do you discover who's been swimming naked” and if recent history is any guide, there are a lot of naked Chinese investors out there. Among the examples are the [bankruptcy of the Evergrande Group](#) property developers this year and the [bankruptcy of the Baoshang Bank](#) in 2020. Some blame these failures on [endemic corruption in the banking sector at the highest levels](#). Others point out that the financial troubles have deep roots and [will continue for a while](#). However you want to [frame the issue](#), it will be a sore spot for the Chinese leadership for years to come.

Based upon the history of China and its current problems, the leadership in China have much to fear from unrest. Frankly, they must be deeply frightened ~~scared-shitless~~ when they think of [all the unattached young men](#) that resulted from the One Child Policy. If we are to believe [Peter Turchin](#), having large number of educated, ambitious young men, with no outlet for their ambitions, can lead to all kinds of trouble, including the many periods of disorder in China’s past (i.e. the [usual means of dynastic change](#)). So, it is not surprising that the [Chinese government is clamping down on dissent](#).

Another “internal problem” that has a strong external dimension is [Taiwan](#). Officially part of China, and styling itself as the [Republic of China](#), Taiwan is, in fact, a separate state. After the victory of the Chinese Communists in the 1949 Civil War, their opponents, the [Kuomintang](#), escaped to Taiwan and set up their own government, [under the protection of the United States](#). To China, this is a long term problem and one in which they would like to resolve by re-unification, [by whatever means](#). Taiwan is especially dangerous to the Communist rules of China since Taiwan shows how a predominately Han Chinese society can be run as a [modern liberal democracy](#). However, any attempt by China to forcibly re-unify with Taiwan is likely to lead to [war with the United States](#).

Another flash-point between the [United States](#) and China are the [islands claimed by China in the South China Sea](#). As well as annoying the Americans, the construction of Chinese bases on these islands [step on the claims of the Philippines and Vietnam to these shoals and reefs](#). This is another situation that could easily lead to armed conflict.

China has a [close trade relationship](#) with the United States, especially in manufactured goods. For some this is considered a [contentious relationship](#), with the USA having paid a [high price for inexpensive goods](#). One product produced in China that is generally not welcome in the North America is [fentanyl](#), illicitly sold to opiate addicts. Maybe it is payback for the Opium Wars.

Another “product” originating in China was the [Covid-19 virus](#), allegedly [cooked-up in the Wuhan Virology Institute](#). True or not, the allegation of even accidental release adds to the tensions between China and the rest of the world.

[China’s relationship with its big neighbour Russia](#) is relatively friendly, and seems to be mutually beneficial. One example is recent [Chinese immigration into Siberia](#) where Chinese workers are filling labour shortages in the [Russian Far East](#). They may be filling a dearth of another kind, since there is [a](#)

[shortage of men in Russia](#), from even before the [Ukrainian War](#). [Russian men often drink themselves to death](#), and, consequently, there is are many women with poor prospects for marriage. Consequently, [Russian women and Chinese men in the Russian Far East are getting married and forming families](#), an interesting development. [Chinese ambitions in the Russian Far East](#) may be mutually beneficial in more ways than one since [China is also informally allied with Russia for military purposes](#). Some fear that China is aiming to [eventually take over Siberia](#), but so far that is only speculation.

That kind of winds up this all too short look at China and its geopolitics. As you might gather from my commentary, I am sympathetic to the Chinese people, but not so much for those in charge of the country. When it comes to geopolitics, we can hope that the Chinese leadership heeds the words of [Sun Tzu who cautioned against rashly engaging in armed conflict](#). The 500 or so nuclear weapons in the Chinese arsenal give us all a stake in the outcome.

Follow up on the links provided if any of this interests you.

Standard Caveat

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.