

April 22, 2024

News and notes

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

Geopolitics

- From Gail Tverberg: [The Global Economic System is Reaching Its Limits](#).
- [US signals Venezuela oil sanctions relief at risk as deadline looms](#); the USA will reimpose sanctions if the upcoming elections in Venezuela are not fair.
- Video related to today's posting: [CUBA in Deep Trouble – WTF is Going on? Blackouts, Food & Fuel Shortages & Gasoline Prices Rise 500%" on YouTube](#).

Research and News

- Sedimentology and AI: [Deep learning-based grain-size decomposition model: A feasible solution for dealing with methodological uncertainty](#).
- Uranium, clay, and bacteria: [Presence of uranium\(V\) during uranium\(VI\) reduction by *Desulfosporosinus hippei* DSM 8344T](#); Phys.org summary [here](#).
- Geological history: [Cenozoic Exhumation Across the High Plains of Southeastern Colorado from \(U-Th\)/He Thermochronology](#).
- Conditions in the [Hadean](#), chemical precursors to life: [A Surface Hydrothermal Source of Nitriles and Isonitriles](#); Phys.org summary [here](#).
- Video: [Rocks and Ice Shaped New York's Central Park: A Geologic Investigation](#).
- Oceanography: [Weakening of the Atlantic Meridional Overturning Circulation abyssal limb in the North Atlantic](#).
- Vandalism: [2 men filmed hurling, destroying ancient rock formations at Lake Mead](#).

Mineralogy

- Clay mineralogy: [Swelling Stress of Bentonite: Thermodynamics of Interlayer Water in K-Montmorillonite in Consideration of Alteration](#).
- [Systematic trends in the substitution mechanisms of minor elements in cassiterite](#).
- Deep mineralogy: [Iron silicate perovskite and postperovskite in the deep lower mantle](#).

Plate Tectonics

- Ecuador: [Seismological evidence for a multifault network at the subduction interface](#); Phys.org summary [here](#).

- [Cretaceous extensional and contractional stages in the Colombian Andes unraveled by a source-to-sink geochronological and thermochronological study in the Upper Magdalena Basin.](#)
- [Rotation of crustal domains related to Gondwanide deformation in the Neoproterozoic–Cambrian Sauce Chico Complex \(Argentina\), southwestern margin of the Río de la Plata Craton: Insights from AMS data.](#)
- [Structural architecture and tectonic evolution of the Campania-Lucania arc \(Southern Apennines, Italy\): Constraints from seismic reflection profiles, well data and structural-geologic analysis.](#)
- [The onset of Neo-Tethys subduction in the Early Jurassic: evidence from the eclogites of the North Shahrekord Metamorphic Complex \(Sanandaj-Sirjan Zone, W Iran\).](#)

Geophysics

- Geophysics and mineralogy: [Seismic methodologies key to unlocking Earth’s lowermost mantle; sorry, behind a paywall.](#)
- [Crustal permeability generated through microearthquakes is constrained by seismic moment; Phys.org summary \[here\]\(#\).](#)
- Mapping with geophysics: [Geologic Provinces Beneath the Greenland Ice Sheet Constrained by Geophysical Data Synthesis; Phys.org summary \[here\]\(#\).](#)

Paleontology

- [Diversity-dependent speciation and extinction in hominins.](#)
- [Systematics and palaeobiology of kangaroos of the late Cenozoic genus *Protemnodon* \(Marsupialia, Macropodidae\); Phys.org summary \[here\]\(#\).](#)
- Allosaurus in the Smithsonian: [Just Our Type: Museum’s Dinosaur Skeleton Becomes the Scientific Standard for Its Species.](#)
- [A new titanosaur from the La Colonia Formation \(Campanian-Maastrichtian\), Chubut Province, Argentina; Sci News summary \[here\]\(#\).](#)
- [Extinct Bears of North America.](#)
- [Largest known madtsoiid snake from warm Eocene period of India suggests intercontinental Gondwana dispersal; Live Science summary \[here\]\(#\).](#)
- [Marine introgressions and Andean uplift have driven diversification in neotropical Monkey tree frogs \(Anura, Phyllomedusinae\).](#)
- Fossilization research: [How does rapid burial work? New insights from experiments with echinoderms.](#)
- [First occurrence of a †coccolepidid fish \(?Chondrostei: †Coccolepididae\) from the Upper Lias \(Toarcian, Early Jurassic\) of southern Germany.](#)

Mining and Energy

- [China is front and center of gold's record-breaking rally.](#)
- Jade: [A New Nephrite Occurrence in Jiangxi Province, China: Its Characterization and Gemological Significance.](#)
- Geology of Broken Hill Mine, Australia: [Green mystery: Plumbian orthoclase reveals hidden resources.](#)
- [Endeavour accused of misleading buyer of African gold mines.](#)
- Minas Gerais, Brazil: [Viridis claims 'world record' in rare earth recovery at Colossus.](#)
- [How a US\\$10 billion mine became a cautionary tale for the energy transition.](#)
- [Northeast BC: Powering Up On Lithium.](#)
- [Saskatchewan positioning itself as a "stable supplier" of critical minerals after signing two agreements.](#)
- Lithium in shale: [More Than Just Fool's Gold: Scientists Uncover Hidden Treasure in Pyrite; related: Estimates of lithium mass yields from produced water sourced from the Devonian-aged Marcellus Shale.](#)
- [New process recovers five times more lithium from waste than existing technology.](#)
- Politico: [Biden set to block Ambler mining road in Alaska wilderness.](#)
- Commentary: [Deep-sea mining poses an unjustifiable environmental risk.](#)
- [Record Surge in Global Coal Capacity Led by China.](#)
- [Oil Prices Surge as Israel Carries Out Airstrikes on Iran.](#)
- [15 Countries with the Largest Proven Oil Reserves in the World.](#)
- Didn't know they had any: [Germany's Oil and Gas Production Continues to Drop.](#)
- [Russia told OPEC it would export less oil. It's actually exporting more.](#)
- [Global Oil Production Dropped by 1.2 Million Bpd in February.](#)
- [In Texas, ex-oil and gas workers champion geothermal energy as a replacement for fossil-fueled power plants.](#)

Environmental Geology and Hydrogeology

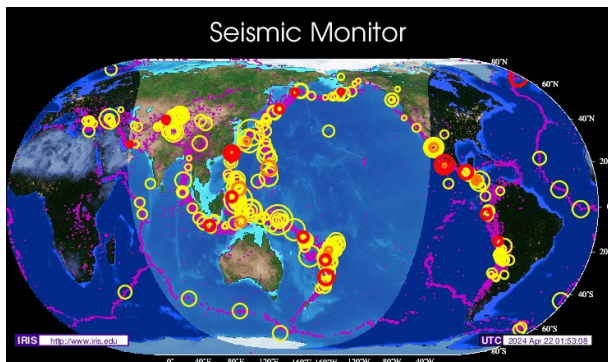
- Phytoremediation: ['Solar powered vacuum cleaners': the native plants that could clean toxic soil.](#)
- Groundwater contaminants: [Sulfolane clustering in aqueous saline solutions](#); Phys.org summary [here.](#)

- [Here's what you can do about PFAS in your drinking water.](#)
- [EPA Designates PFAS Under Superfund Law](#); USEPA press release [here](#).
- Hexavalent chromium: [California sets long-awaited drinking water limit for 'Erin Brockovich' contaminant.](#)
- [Ranked: The Countries With the Most Air Pollution in 2023.](#)
- [A high-resolution map of diffuse groundwater recharge rates for Australia](#); Phys.org summary [here](#).

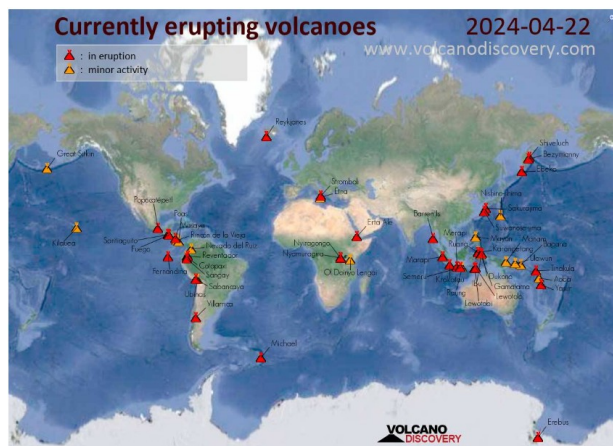
Glaciers and Climate Change

- Ice ages: [Last Glacial Maximum pattern effects reduce climate sensitivity estimates](#); Phys.org summary [here](#).
- Lake Agassiz: [The unrivalled majesty of North America's sixth Great Lake.](#)
- Commentary: [Did Exxon Make It Rain Today?](#)

Volcanoes, Earthquakes and Geohazards



[Seismic Monitor](#)



[Active Volcano Map](#)

- United States Geological Survey (USGS) Volcano Watch: [Magnetics, magma, and monitoring: new technology for old questions.](#)
- USGS Yellowstone Volcano Observatory: [Monument Geyser Basin: a unique vapor-dominated thermal area in Yellowstone National Park.](#)
- [Smithsonian / USGS Weekly Volcanic Activity Report.](#)
- [Volcano in Antarctica spews out precious pieces of gold on a daily basis.](#)

- Iceland volcano: [Seismic activity in Iceland a concern](#); Videos: [Unusual Earthquakes and New Information about the Pipelines Under Iceland](#); [Iceland's Eruption Approaches One Month Mark, Quakes Under Lake Kleifarvatn: Geologist Analysis](#); [Volcanic Eruption Near Grindavik, Iceland](#).
- Video: [Canada Has a Volcano Problem](#).
- Video: [Large Sections of Island Wiped Out by Major Eruption; Ruang Volcano Erupts](#).
- [Euro-Mediterranean Seismological Centre](#) (EMSC).
- [Earthquakes Monitoring Live Worldwide](#).
- [Southern Japan shaken by M6.4 earthquake](#); Japan Meteorological Agency summary [here](#).
- [Central Turkey shaken by unusual M5.6 earthquake](#); EMSC summary [here](#).
- Anthropogenic earthquake? [Seismic event at Nickel Rim Mine Tuesday evening](#).
- Earthquake research: [Perturbation-induced granular fluidization as a model for remote earthquake triggering](#); Phys.org summary [here](#).
- More earthquake research: [Comparison of statistical low-frequency earthquake activity models](#).
- Even more earthquake research: [Data assimilation for fault slip monitoring and short-term prediction of spatio-temporal evolution of slow slip events: application to the 2010 long-term slow slip event in the Bungo Channel, Japan](#).

Upcoming Events

- If you are in Calgary, AB for the Stampede: [Bootleggin' Breakfast 2024](#), July 9 & 11, 2024.



[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

April 22, 2024

Geology and the Fate of Societies – Cuba



Figure 1 – Cuba

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

The Republic of [Cuba](#) is an island nation consisting of the main island of Cuba together with [Isla de la Juventud](#), a number of [archipelagos](#), as well as [4,195 smaller islands](#) and [cays](#). Northwest of Cuba is the [Gulf of Mexico](#) and the [Straits of Florida](#), north of which is the [United States](#). Northeast of Cuba is the [Atlantic Ocean](#) and [The Bahamas](#) (which we looked at [here](#) in July 2023). To the east of Cuba, across the [Windward Passage](#) is [Haiti](#) and the [Island of Hispaniola](#). To the south, in the [Caribbean Sea](#), are [Jamaica](#) and the [Cayman Islands](#) (which we looked at [here](#) in January). Finally, to the west, across the [Yucatan Channel](#), is [Mexico](#).

According to the [Central Intelligence Agency](#) (CIA) [World Factbook on Cuba](#), the country has a total area of 110,860 square kilometres (km²) of which 109,820 km² is land and 1,040 km² is water. Also, according to the CIA, 10,985,974 people live in Cuba. Of the just under 11 million people, 64.1% are considered [White](#) (i.e. [European ancestry](#)), 26.6% are [Mulatto](#) or mixed race, and 9.3% are considered [Black](#) (i.e. [African ancestry](#)). [Spanish](#) is the official language of Cuba, other languages spoken in Cuba include: [Haitian Creole](#), [English](#), [Lucumí](#), [Galician](#) and [Corsican](#). Although officially a [Marxist](#) and therefore an [Atheist](#) country, about 58.9% Cubans describe themselves as [Christian](#), 23.2% say that they have no religion, i.e. Atheist, 17.6% practice [folk religions](#) and the remainder includes [Buddhists](#) <1%, [Hindus](#) <1%, [Jews](#) <1%, and [Muslims](#) <1%.

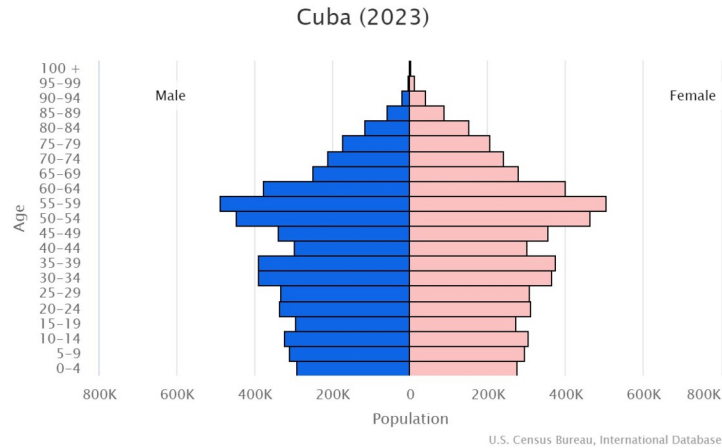


Figure 2 – Demographic Profile of Cuba
 Credit: [U.S. Census Bureau, International Database – Cuba](#), public domain

The [demographic profile](#) in Figure 2 shows an aging population where the total fertility rate is 1.71 births per woman; this is less than the [replacement rate](#) of 2.1 births per woman and consequently the population is declining 0.2% per year. The median age in Cuba is 42.3 years for both sexes and the life expectancy at birth for both sexes is 79.9 years.

The government of Cuba is a [Unitary Marxist–Leninist one-party semi-presidential socialist](#) republic. The [President](#) and [First Secretary of the Communist Party](#) is [Miguel Díaz-Canel](#); the [Vice President](#) is [Salvador Valdés Mesa](#); the [Prime Minister](#) is [Manuel Marrero Cruz](#); and the [President of the National Assembly](#) is [Esteban Lazo Hernández](#). The name of the legislature in Cuba translates as [National Assembly of People's Power](#). The Capital City and largest municipality in Cuba is [Havana](#) (pop. 2,130,872).

Geology

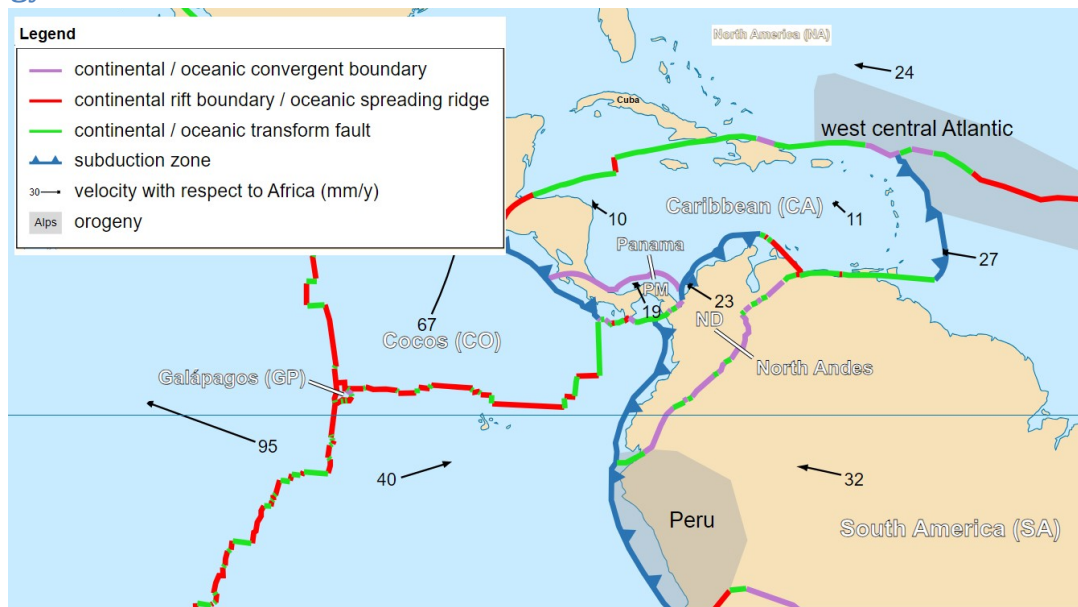


Figure 3 – Tectonic Framework of Cuba
 Credit, extracted: [Eric Gaba \(Sting\)](#), [Creative Commons Attribution-Share Alike 2.5 Generic](#) license

Figure 3 shows the tectonic setting for the [geology of Cuba](#). Cuba sits on the [North American Plate](#) as part of the Greater Antilles or [Cuban Orogen](#). The Greater Antilles Orogen began to form after [Pangea](#) broke up and with the collision of the North American Plate and the [Caribbean Plate](#) during the [Cretaceous](#) and [Paleogene](#). A [transform fault](#), the [North Caribbean Transform Fault System](#) separates the North American and Caribbean plates southeast of Cuba.

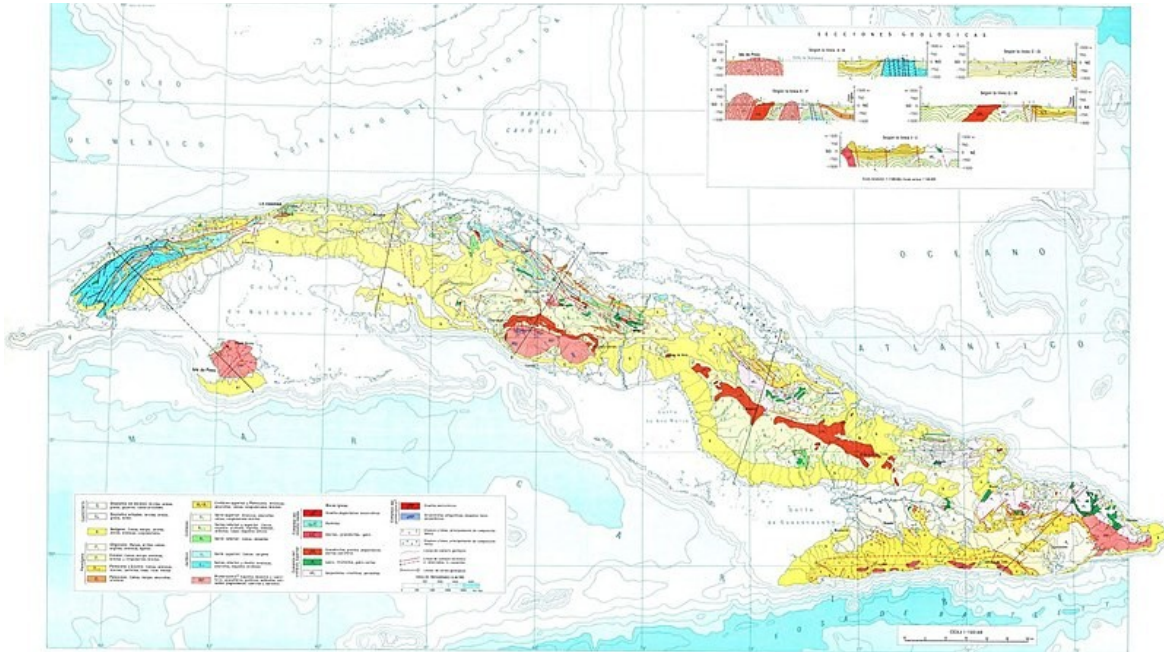


Figure 4 – Geologic Map of Cuba

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

The geology of Cuba, as shown in Figure 4, includes a wide variety of igneous, sedimentary and metamorphic rocks. Rather than go into too much detail here, I am going to suggest that you read the following excellent works on the geology of Cuba:

- Pardo, G., 2009, *The geology of Cuba: AAPG Studies in Geology 58*, American Association of Petroleum Geologists; PDF available [here](#).
- Iturralde-Vinent, M.A.; A. García-Casco; Y. Rojas-Agramonte; J.A. Proenza; J.B. Murphy; and R.J. Stern; 2016, *The geology of Cuba: A brief overview and synthesis*; GSA Today, v. 26, no. 10, [doi: 10.1130/GSATG296A.1](#).

Resources

Agriculture

According to the CIA world Factbook on Cuba, 60.3% of the land is used for agriculture (33.8% [arable land](#), 3.6% [permanent crops](#), 22.9% [permanent pasture](#)), 27.3% is forest, and 12.4% is of other use. Agricultural commodities produced in Cuba include [sugar cane](#), [tobacco](#), [coffee](#), [citrus fruits](#), [cassava](#), [plantains](#), [sweet potatoes](#), [tomatoes](#), [dairy products](#), [pumpkins](#), [mangoes](#), [guavas](#), [beans](#), and [rice](#). Livestock raised in Cuba include dairy and beef [cattle](#), [pigs](#) and [chickens](#).



Figure 5 – Sugar Cane Field, Matanzas Province, Cuba

Credit: [LBM1948](#), [Creative Commons Attribution-Share Alike 4.0 International](#) license

Sugar cane and tobacco are the major cash crops. Sugar cane is used not only for [sugar](#) production but also for Cuba's famous [rum](#). Among aficionados, [Cuban cigars](#) are considered among the finest.

Statistics from the [United Nations Food and Agriculture Organization](#) (FAO) on food production in Cuba can be found [here](#). Statistics on food insecurity in Cuba are hard to come by, the [FAO site on Cuba](#) says they're not available. Anecdotally, many people in Cuba are [struggling to find enough to eat](#) and in February 2024, the Cuban government asked the [United Nations World Food Program for help](#). Needless to say, the people of Cuba are [not happy with the economic situation](#) – they want their black beans and rice.

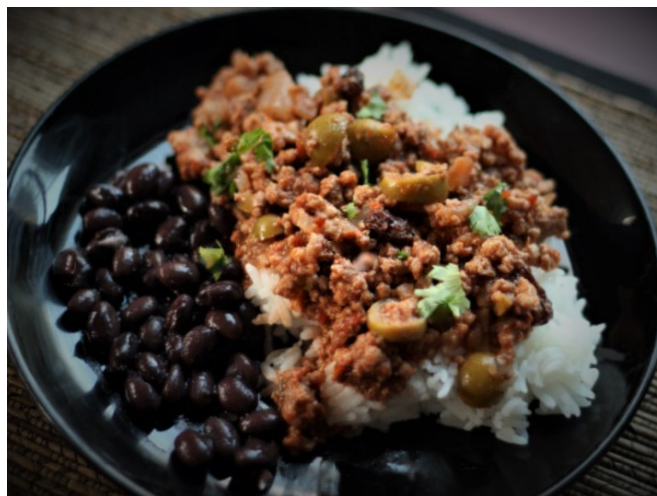


Figure 6 – Traditional Cuban Fare: Picadillo, Black Beans and Rice

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

Forestry



Figure 7 – Tropical forest on Pico Cuba, in the [Sierra Maestra Range](#)
Credit: [Óðinn](#), [Creative Commons Attribution-Share Alike 2.5 Canada](#) license

Forests in Cuba are divided between [moist tropical forests](#) and [tropical dry forests](#) including [pine forests](#). According to the [FAO Yearbook of Forest Products 2020](#), Cuba produced 1,752,000 m³ of [roundwood](#) and 1,141,000 m³ of firewood that year. As far as deforestation: “[In 2010, Cuba had 4.22 Mha of natural forest, extending over 38% of its land area. In 2023, it lost 18.6 kha of natural forest](#)”.

Mineral Resources

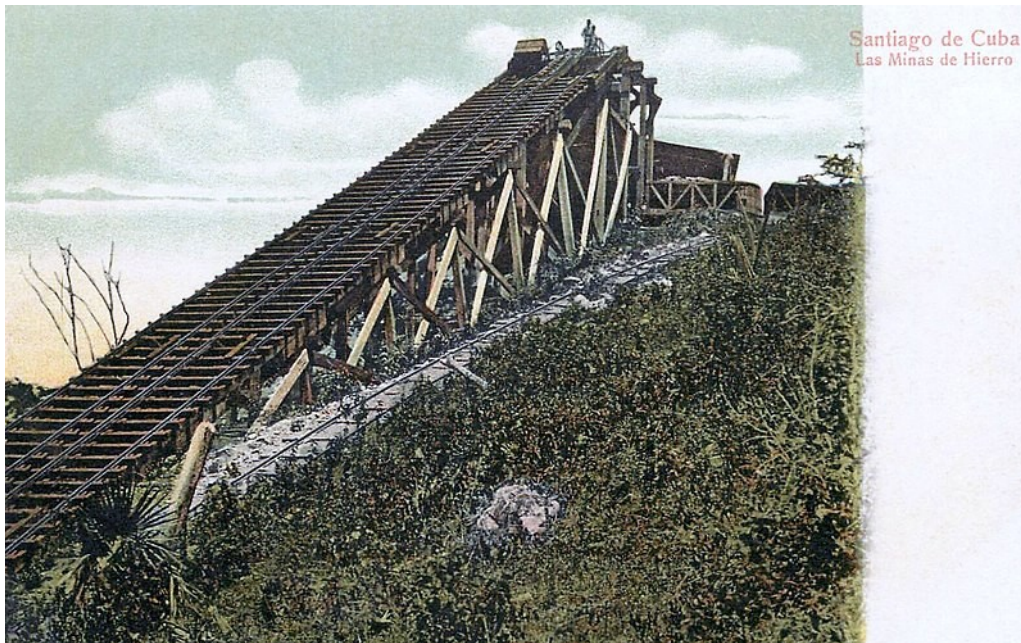


Figure 8 – Iron Mines, Santiago de Cuba, ca. 1903
Credit: Anonymous, [public domain](#)

The [mineral industry in Cuba](#) includes the production of nickel, cobalt, lead, zinc, as well as industrial minerals such as sand, gravel, crushed stone, sulphur, and gypsum as well as cement production. Fuel mineral production includes petroleum and natural gas. The most recent statistics on mineral production in Cuba, from the USGS, are [here](#).

- Cobalt, nickel, and sulphuric acid are produced in the [Moa Bay Mine, Moa, Holguin Province](#);
- Nickel is also produced at the [Ernesto Che Guevara Mine](#) at Punta Gorda, [Holguin Province](#);
- Gypsum is produced at a mine in [Punta Alegre, Ciego de Avila Province](#);
- Lead and zinc is produced in the [Castellanos Mine](#) in [Pinar del Rio Province](#);
- Petroleum and natural gas are produced from fields at [the northern coast](#) between Havana and Cardenas, primarily in [Mayabeque Province](#) together with the [Puerto Escondido](#) and [Yumuri](#) oil and gas fields.

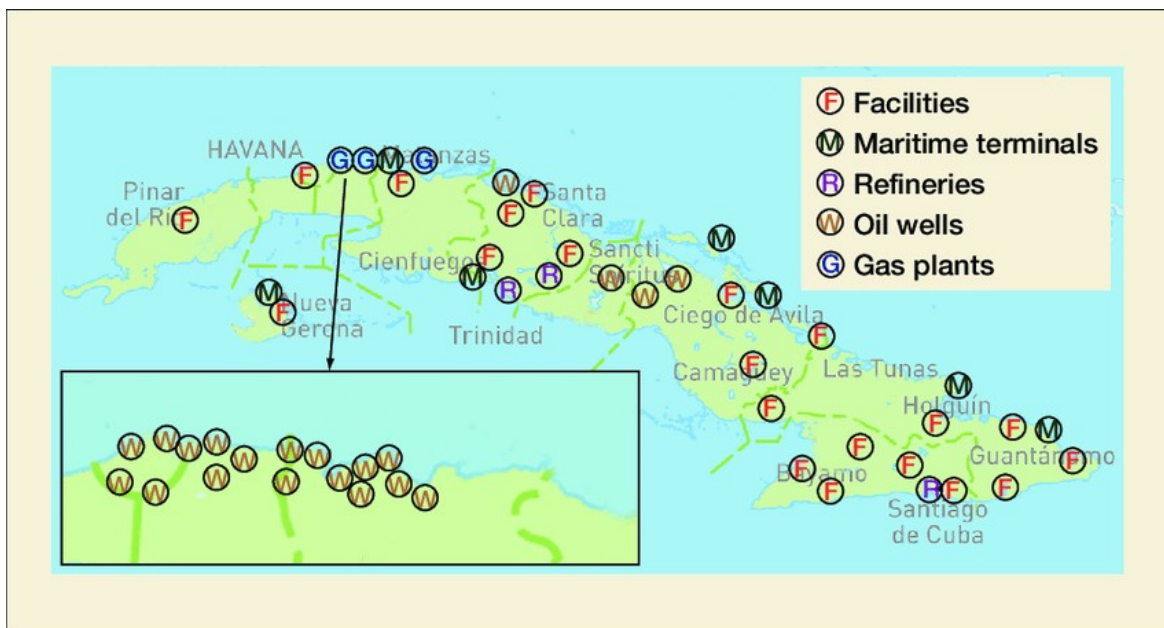


Figure 9 – Unión Cuba Petróleo (CUPET) Infrastructure and Facilities
Credit: Figure 1 in [Sánchez, A. P., 2017](#)

Climate

The climate in Cuba is tropical and is moderated by trade winds. In general, the dry season is from November to April) and the rainy season is from May to October.

The main climate zone, as shown on Figure 10 are:

- [Af, tropical rainforest](#);
- [Am, tropical monsoon](#);
- [Aw, tropical savanna](#);

- Along the southeast coast: [BSh, hot, arid steppe](#); and
- Temperate climates in the highlands: [Cwa, Cwb, Cfa, Cfb](#).

Köppen-Geiger climate classification map for Cuba (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 10 – Köppen-Geiger Climate Classification Map for Cuba

Credit: Beck et al, 2018, Creative Commons Attribution-Share Alike 4.0 International license

While Cuba has been a favourite travel destination for people from cold northern countries for some time now. [Until recently](#), Americans were restricted from travel there. If you want to go there you might want to consider these travel advisories [here](#), [here](#) and [here](#). Food shortages in the country are now affecting the tourist resorts. If you still want to go, to check out these sites at [Climates to Travel](#) and [Lonely Planet](#).

History and Geopolitics

Quite a History

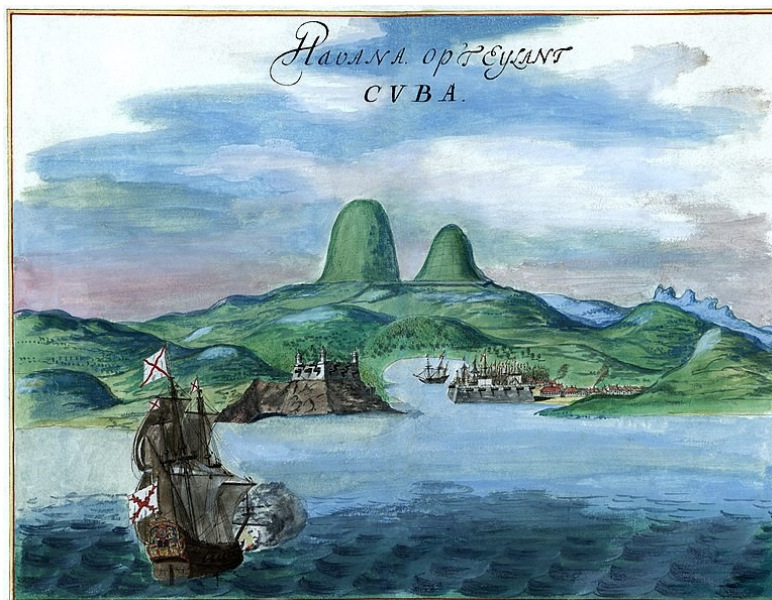


Figure 11 – Havana Harbour, ca. 1639

Credit: Johannes Vingboons (1616–1670), public domain

The history of Cuba can be summarized in a few main episodes:

- The pre-colonial period;
- Cuba under the [Spanish Empire](#);
- The Cuban [struggles for self-determination](#) and the [Spanish-American War](#);
- Independent Cuba until 1959;
- The Cuban Revolution of 1959 and the [Marxist rule of Fidel Castro](#);
- Cuba after Castro.

The original inhabitants of Cuba, going back to at least 4,000 BC, were the [Guanajatabey](#), [Taíno](#) and [Ciboney](#). These people arrived in Cuba by migration north along the [Caribbean island chain](#) from [South America](#).

Beginning in 1492, with the voyages of [Christopher Columbus](#), Spanish adventurers came to Cuba and conquered it. The Spanish monarchs sent administrators, [Spanish governors](#) and [Viceroy of New Spain](#), to rule in Havana but basically the Spanish conquered the natives, parceled out the land among themselves, and set about living a life as [hidalgos](#) on [encomienda](#). The encomienda planters raised cash crops, such as sugar cane and tobacco, using the original inhabitants as labour. When those original inhabitants [died out](#), the Cuban hidalgos imported [African slaves](#) to work the fields. In addition to the planters, other Spaniards settled in Cuba as tradesmen and merchants. The planters' children, sometimes referred to as [Creoles](#), together with the richer merchants made up the elite of Cuban colonial society.

Spanish rule in Cuba was not entirely peaceful. As part of the Spanish Empire, Cuba was involved in Spain's wars. In 1628, a [Dutch fleet](#) led by [Piet Heyn](#) plundered Havana harbour. In 1662 English [pirates](#) led by [Christopher Myngs](#) briefly occupied [Santiago de Cuba](#). In 1741, during the [War of Jenkins' Ear](#), a British fleet led by Admiral [Edward Vernon](#) captured [Guantánamo Bay](#) before being driven out by Spanish troops and tropical diseases. During the [Seven Years' War](#), a [British expedition](#) occupied Havana until the Spanish traded Florida to the British in the peace settlement.

More serious though, was the on-going internal dynamic between the Spanish authorities and the local Cuban elites. This dynamic, where the local Cuban elite sought positions for themselves, their offspring, and political supporters ran headlong into the interests of the Spanish authorities, who had an interest in finding positions for themselves, their offspring, and political supporters. The thing is, the Spaniards had the right to make the appointments to fill the administrative positions in Cuba, much to the annoyance of the local Cuban elites who wanted the positions for themselves. This tension resulted in ongoing disputes culminating in at least three uprisings: the [Ten Years' War](#) (1868–1878); the [Little War](#) (1879–1880), and finally an outright [Cuban War of Independence](#) (1895–1898).

The Cuban independence war was eventually subsumed into the [Spanish–American War](#). As a result of losing that war, the Spanish withdrew from the island in 1898. The [American military ruled](#) Cuba until 1902, when Cuba attained formal independence and the [Republic of Cuba](#) was born.

The new Cuban Republic had many problems. The first President, [Tomás Estrada Palma](#), was also an American citizen and set about to establish close trade and diplomatic relations with the United States, a situation that enriched Palma and his cronies. Palma's regime collapsed, however, and the United States [re-occupied the country](#) from 1906 until 1909. The next series of Cuban leaders were all veterans of the independence war. In a situation common throughout Latin America, the Cuban elite dominated politics and arranged things to enrich themselves. In this intense inter-elite competition, the leaders at the top became despotic to protect their positions and political corruption became the rule. In 1952, military dictator (previously elected President 1940-1944) [Fulgencio Batista](#) took over and [established an order](#) marked by harsh repression of his opponents.



Figure 12 – Hotel Nacional de Cuba, ca. 1955
Credit: Hotel Nacional de Cuba, [public domain](#)

Between 1906 and 1959, Cuba, and especially its elites, benefited from the close trade relations with the United States. Cuban exports of sugar and tobacco products, especially those famous Cuban cigars, as well as other commodities, enriched many in the country.

During [alcohol prohibition](#) in the United States, many made fortunes [selling Cuban rum](#) to thirsty Americans. After the end of [World War II](#), many [shady characters](#) (such as [Meyer Lansky](#)) who made money selling Cuban rum during prohibition, [invested in hotels and casinos](#) in Cuba to profit off of the tourist trade. Cuba gained a reputation as “[America's whorehouse](#)”. It was not to last.

One of the problems of a corrupt system set up to enrich elites is not so much the poor who pay for it – nobody really cares about them – but the losers within the elite social class who have the skills to overthrow what is arguably an unjust situation. One of these [elite aspirants](#), the son of a wealthy landowner, [Fidel Castro](#), successfully led his followers in the [Cuban Revolution](#) that overthrew the Batista regime in 1959.



Figure 13 – Fidel Castro and His Men in the Sierra Maestra

Credit: Unknown author, [public domain](#)

The intellectual fashion for revolutionaries in the 20th Century was [Marxist-Leninism](#) and Castro was a devout follower of this creed. This put him at odds with the merchant class in Cuba, many of whom [fled to the United States](#) and lobbied American lawmakers to “do something” about this outrageous Communist. Seeing hostility from the USA, [Castro turned for help to the Soviet Union](#), landing him, and Cuba, right in the middle of the [Great Power struggle between the USA and the Soviet Union](#).

The people in the United States who wanted to get rid of Castro repeatedly tried to have him removed, most notably in the [Bay of Pigs](#) incident and in the [continuous efforts of the CIA to assassinate him](#) (some [633 attempts in all](#)). Castro undoubtedly owed his life not only to good fortune and the ineptness of his would-be assassins, but also the diligent efforts of a [Soviet trained security service](#).

The response of Castro’s regime to the attempted overthrow and assassination was to invite, or allow, the Soviet Union to place nuclear armed missiles in Cuba. This action, the [Cuban Missile Crisis](#) of 1962, could have ended badly for all parties, least of all Cuba, [which could have become a radioactive desert](#). Fortunately, cooler heads prevailed and the crisis was settled with the [removal of the missiles from Cuba in exchange for removal of American missiles from Turkey](#).

Castro’s rule in Cuba was similar to many other Marxist regimes. On the plus side, they brought in universal education and health care, thus partly raising the standard of living for the poorest in society. Everyone worked and, for a while, there was food enough for everyone. On the negative side, the Marxists drove out the merchant class who took with them their portable wealth, and more importantly, their business contacts with the USA. [Trade with the Soviet Union](#) made up for some of the lost business,

but the old Soviet Union was a poor trade partner compared to the USA. Also on the negative side, was the petty corruption that [Communist functionaries](#) indulged in. If you pointed this out there was a good chance you could end up a [political prisoner](#), as did thousands.

Rule by the Cuban Communists continues to this day. Despite the [fall of the Soviet Union](#) in 1991, the continuing [delegitimization of Communism](#), and the [death of Castro](#) in 2011, the Marxist regime in Havana continues to cling on to power. The inefficiencies of Marxist economic arrangements, and continuing difficulties trading with their nearest market, the USA, have led to a [continued immiseration of the Cuban people](#), a cosmic irony given that the Cuban Revolution was sold as antidote to the poverty suffered by ordinary people under the previous regime. Meanwhile, the [Cuban exiles in Miami](#) continue to plot the overthrow of the Communist regime and [support](#) the frequent [protests](#) against the regime.

Geopolitics of A Marxist Paradise



Figure 14 – Eastern Façade of the Capitol in Havana, Cuba

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

To say that Cuba is in a pickle would be an understatement. They are [short of food](#). There have been [angry protests](#), only quieted by the [promise](#) of improving the food situation. The obvious answer, to change the Marxist inspired central economic planning regime may not be a good option for the Cuban leaders. They remember what happened when [Gorbachev loosened up in the old Soviet Union](#). Maybe they will make wise choices, maybe they won't.

Communists seem to have a problem with the hard limits of nature, they seem to think that Marxist-Leninist theory supersedes the [Laws of Thermodynamics](#). If Cuba is at or beyond its current [carrying capacity](#) with regards to food production and population, the solution is obvious. Find something to sell and buy more food on the open market and/or find a way to increase food production. Central planning regimes are notoriously bad at this kind of thing, more often than not they [create famine](#). A few free market incentives might do wonders. As it is, [private farms currently supply 70% of the food produced in Cuba](#) and they could do more, given incentives to do so.



Figure 15 – Protests in Havana against the government of Cuba, July 2021

Credit: [14ymedio](#), [Creative Commons Attribution 3.0 Unported](#) license

Internal problems aside, Cuba is also in a pickle with regards to its external relations. Cuba's most reliable ally, [Venezuela](#), is having [problems of their own](#). It remains to be seen if Venezuela can be of any further help to Cuba, given its own troubles. Cuba [seems to get along well](#) with their other neighbours in Latin America, but they all have their own problems. Still, Cuba is comparatively better off than one of its neighbours, Haiti, which has become a [real failed state](#).

The elephant in the room, as always in Latin America, is the [United States](#). As you can guess from the history of Cuba, they have had a [complicated relationship](#), especially [since 1959](#). Cuba would almost certainly benefit from a normalization of trade relations between the two countries, but suspicion of the USA in Cuba and the influence of the Cuban exile lobby in the USA might make that difficult.

There is lots of opportunities for missteps in American policy toward Cuba and making the right decisions is difficult. Americans [often misunderstand Cuba](#) and decision makers tend to rely on the admittedly biased opinions of the Cuban exiles. Also, it is hard to get candid opinions from people in Cuba, the security services have a long reach. The [history of American involvement in Cuban affairs](#) doesn't give much room for optimism.

So, right now the situation in Cuba is in flux. If the leadership is unable to resolve the most pressing issues, such as food supply, things could get ugly very quickly. There are probably plenty of elite aspirants within the [Communist Party](#) or the [Cuban military](#) or even the security service (someone might be inspired by the example of former security official [Vladimir V. Putin](#)) who figure that they can do a better job than the current leadership. The [selection pressures](#) that winnow out less adept political schemers, such as those locked up or killed for political offences, almost certainly ensures that those at the top of the elite in Cuba have the skills to pull off a successful coup, should they see it as necessary.

Let's hope that the Cubans can resolve their issues peacefully but, if they can't, let's hope that the bloodshed is kept to minimum. That kind of wraps things up for Cuba. Follow up on the links 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.