

June 3, 2024

News and notes

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

Geopolitics

- [Canada, U.S. co-invest in critical mineral exploration.](#)
- [Trinidad court recognizes ConocoPhillips' \\$1.3 billion claim against Venezuela.](#)
- So how are those sanctions working out? [Russia's Largest Oil Company Reports Doubling in Q1 Net Profit.](#)

Research and News

- Petrology: [Origin of Early Triassic Hornblende Gabbro from the Yunkai Massif, South China: Constraints from Mineral and Bulk-Rock Geochemistry.](#)
- More petrology: [Melt infiltration in a crystal mush and pegmatoid formation in the platiniferous Merensky Reef, Bushveld Complex, South Africa.](#)
- Geophysics, the magnetic poles are wandering: [Non-Geophysical Interhemispheric Asymmetries in Large Magnetic Field Residuals Between Swarm Observations and Earth Magnetic Field Models During Moderate to Quiet Geomagnetic Conditions](#); Phys.org summary [here](#).
- [Geochemical Pathways Defined by Predictive Regolith-Landform Models Using TanDEM-X Data in the Tanami Region, Australia.](#)
- More geochemistry: [A baseline for the Sn isotopic composition of the upper continental crust.](#)
- Fluvial geology: [Modulation of evapotranspiration and stream runoff by weathered bedrock in arid and semi-arid mountains](#); Phys.org summary [here](#).
- Spoiler, it involves worms: [Trends in estuarine pyrite formation point to an alternative model for Paleozoic pyrite burial](#); Phys.org summary [here](#).
- [Watch "This Volcanic Arc Remained Hidden Until Now" on YouTube.](#)

Geological History

- [Multi-proxy record of the Austrian Upper Triassic Polzberg Konservat-Lagerstätte in light of the Carnian Pluvial Episode](#); Phys.org summary [here](#).
- Ancient earthquakes, plate tectonics, and metamorphism: [Garnet fracturing reveals ancient unstable slip events hosted in plate interface metasediments.](#)
- [Retraversing the Highs and Lows of Cenozoic Sea Levels.](#)

- Time evolution of a volcanic field: [The spatial distribution and evolution of volcanic vents in monogenetic fields in active extensional tectonic setting: Examples from the northern Main Ethiopian Rift \(Ethiopia\)](#).
- [New U-Pb zircon tuff ages and revised stratigraphic correlations in the Superior craton during the Great Oxidation Episode \(GOE\)](#).
- More on the GOE: [Earth's oldest terrestrial red beds as direct evidence for the Great Oxidation Event ca. 2.3 Ga](#).

Sedimentology

- Sediments, earthquakes, and tsunamis: [Testing Megathrust Rupture Models Using Tsunami Deposits](#); Phys.org summary [here](#).
- [Eocene to Miocene sediment provenance features and evolution history of the western slope area in the Xihu Sag of the East China Sea Continental Shelf Basin](#).
- Precambrian: [Geometrical restoration of a late Neoproterozoic depositional framework and an intrabasinal unconformity in the Laurentian margin Dalradian Supergroup, Grampian Highlands, Scotland](#).
- More Precambrian: [Neoproterozoic marine chemical sediments as archives of Hadean silicate differentiation](#).
- [Bayhead delta succession as a stratigraphic marker of sea-level changes during the early to late Holocene – the Nakdong valley of south-eastern Korea](#).
- [Pore Structure and Heterogeneity Characteristics of Coal-Bearing Marine–Continental Transitional Shales from the Longtan Formation in the South Sichuan Basin, China](#).

Plate Tectonics

- [Kinematics of the Clarke River Shear Zone \(northeastern Australia\) and implications for the tectonic evolution of the Tasmanides](#).
- [The importance of continents, oceans and plate tectonics for the evolution of complex life: implications for finding extraterrestrial civilizations](#); Phys.org summary [here](#).
- [Miocene vanishing of the Central American Seaway between the Panamá Arc and the South American Plate](#).
- [Tectonic trigger to the first major extinction of the Phanerozoic: The early Cambrian Sinsk event](#); Phys.org summary [here](#).
- [What Controls Early Restraining Bend Growth? Structural, Morphometric, and Numerical Modeling Analyses From the Eastern California Shear Zone](#).
- [Formation and Evolution of the Pacific-North American \(San Andreas\) Plate Boundary: Constraints From the Crustal Architecture of Northern California](#).

Paleontology

- [A geometric morphometric protocol to correct postmortem body arching in fossil fishes.](#)
- Iron particles in fossilized micro-organisms: [Primordial magnetotaxis in putative giant Paleoproterozoic magnetofossils.](#)
- [The scimitar-cat *Homotherium* from the submerged continental shelf of the Gulf Coast of Texas;](#) Phys.org summary [here](#).
- [A new Late Triassic sauropodomorph dinosaur from the Mid-Zambezi Basin, Zimbabwe;](#) Phys.org summary [here](#).
- 45,000 years old: [Edmonton boy finds ice age horse tooth fossil at Parkland County sports park.](#)
- Paleontology and spectroscopy: [A new legacy: potential of zooarchaeology by mass spectrometry in the analysis of North American megafaunal remains;](#) Phys.org summary [here](#).
- Evolution in the Holocene: [Solving the 250-year-old mystery of the origin and global spread of the German cockroach, *Blattella germanica*;](#) SciTechDaily summary [here](#).
- Evolution and biochemistry: [Primitive purine biosynthesis connects ancient geochemistry to modern metabolism;](#) Phys.org summary [here](#).
- [Microvertebrates from the basal Rhaetian Bone Bed \(Late Triassic\) at Lavernock, South Wales;](#) Phys.org summary [here](#).
- Don't steal fossils: [I Made a Bad Mistake, Letters of Apology to the Petrified Forest.](#)
- Own your own dinosaur: [World's largest stegosaurus skeleton to be auctioned for millions;](#) sorry, behind a paywall; related story: [Dinosaur hunter stumbles across million-dollar find.](#)
- [An extinct north American porcupine with a South American tail;](#) Phys.org summary [here](#).
- [The last ceratosaur of Asia: a new noosaurid from the Early Cretaceous Great Siberian Refugium;](#) Phys.org summary [here](#).
- Normalization of deviance: [When Abnormality Becomes Perennial in a Reduced Population: The Case of *Altudostephanus longicostis* gen. et sp. nov. \(Valanginian Ammonites, South-Eastern France\).](#)

Geology of Ore Deposits

- [A reinterpretation of the mineralization processes involved in the formation of the Tomnadashan sulfide deposit, Loch Tay, Scotland, UK.](#)
- [Polyphased gold enrichment as a key process for high-grade gold formation: Insights from the 10 Moz Jundee-Bogada camp \(Yilgarn Craton, Western Australia\).](#)
- [Paleozoic orogenic gold mineralization from metamorphism of volcanic sequences in the North Qinling terrane \(central China\): Insights from the Yindongpo gold deposit in the Tongbai area.](#)

- [Tracing the magmatic-hydrothermal evolution of the Xianghualing tin-polymetallic skarn deposit, South China: Insights from LA-ICP-MS analysis of fluid inclusions.](#)

Mining and Energy

- Refining Technology: [Overview on Hydrometallurgical Recovery of Rare-Earth Metals from Red Mud.](#)
- [Deep-sea nickel hits battery grade for The Metals Co.](#)
- [Why Australia's iron ore project is doomed.](#)
- Côte d'Ivoire: [Endeavour Mining begins commissioning Lafigue gold mine.](#)
- [The amount of copper needed to build EVs is 'impossible for mining companies to produce'.](#)
- [Second Northern Ontario gold company retracts drill assay results.](#)
- [Tens of billions of dollars in gold flows illegally out of Africa each year, a new report says.](#)
- [Arizona Lithium starts production drilling at Prairie project in Saskatchewan.](#)
- [Fracking wastewater has "shocking" amount of clean-energy mineral lithium.](#)
- [Active Coal Mines Might Be Key to the Renewable Revolution.](#)
- [Jim Warren: Reports of the impending death of petroleum have been greatly exaggerated.](#)
- [Is a Tipping Point Approaching for America's Most Prolific Oil Basin?](#)
- United States Energy Information Administration: [Our U.S. summer natural gas consumption forecast for electric power matches 2023 record.](#)
- [Small modular nuclear reactors get a reality check in new report.](#)
- Saskatchewan: [Moe says Estevan will be site of SMRs, continuity of workforce key to keeping current power plants running.](#)

Environmental Geology and Hydrogeology

- Remediation research: [Solidification/stabilization of lead-contaminated soil using alkali-activated volcanic ash.](#)
- More remediation: [Environmental cleanup continues at 'Canada's worst mining disaster' in Timmins.](#)
- [Lawyers to Plastics Makers: Prepare for 'Astronomical' PFAS Lawsuits.](#)
- Contaminant hydrogeology research: [Experimental and Numerical Study of Radioiodine Sorption and Transport in Hanford Sediments](#); Phys.org summary [here](#).
- [Spatiotemporal patterns of groundwater over South Korea](#); Eureka Alert summary [here](#).

- **Free books** from the Groundwater Project: [Hydrogeologic Characterization of Fractured Rock Formations](#) and [Vadose Zone Monitoring for Hazardous Waste Sites](#).

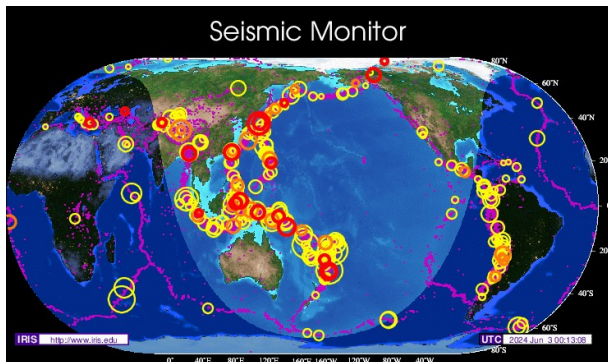
Glaciers and Climate Change

- Glacier research: [A modified viscous flow law for natural glacier ice: Scaling from laboratories to ice sheets](#); Phys.org summary [here](#).
- [Early aerial expedition photos reveal 85 years of glacier growth and stability in East Antarctica](#); Phys.org summary [here](#).
- What could go wrong with deliberating modifying the climate: [Honest dialogue is needed to help build consensus around solar radiation modification technology](#).
- [Is collapse of the Atlantic Ocean circulation really imminent? Icebergs' history reveals some clues](#).
- [Heinrich event ice discharge and the fate of the Atlantic Meridional Overturning Circulation](#); behind a pay wall, Phys.org summary [here](#).

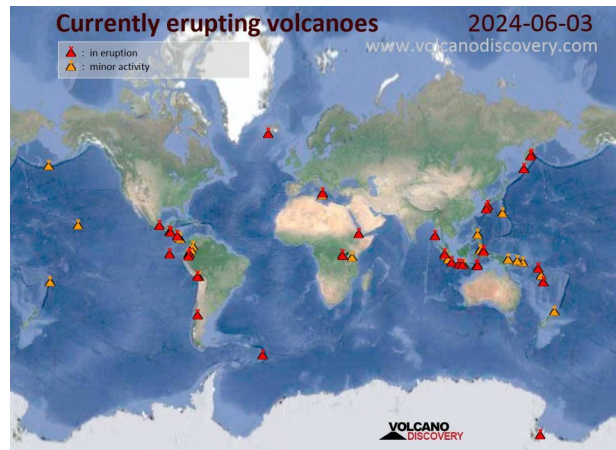
Neat Geological Places to Visit

- [This Ontario geological treasure of rolling red rocks formed 450 million years ago](#).
- Glacier Bay National Park: [A Geological Wonderland in Alaska](#).

Volcanoes, Earthquakes and Geohazards



[Seismic Monitor](#)



[Active Volcano Map](#)

- United States Geological Survey (USGS) Volcano Watch: [Beyond the lava: Mauna Loa's deformation story](#).
- USGS Yellowstone Volcano Observatory: [Using radioactive radium to better understand Yellowstone's hydrothermal system](#).
- [Smithsonian / USGS Weekly Volcanic Activity Report](#).

- Iceland:
 - ["Flowing at a much faster speed than we've seen before";](#)
 - [Iceland Volcano Springs To Life With Dazzling Red Lava Streams \(PHOTOS\);](#)
 - [Lava spews from Icelandic volcano;](#)
 - Livestream on YouTube: [New Volcanic Eruption in Grindavik, Iceland";](#)
- Hunga Tonga–Hunga Ha’apai, the gift that keeps on giving:
 - [The 15 January 2022 Hunga \(Tonga\) eruption: A gas-driven climactic explosion;](#)
 - [The impact of the Hunga Tonga–Hunga Ha’apai volcanic eruption on the Peruvian atmosphere: from the sea surface to the ionosphere;](#)
 - [Long-term climate impacts of large stratospheric water vapor perturbations;](#) summary in The Conversation [here](#).
- [Explosive 2018 eruptions at Kīlauea driven by a collapse-induced stomp-rocket mechanism;](#) sorry, behind a paywall; ABC News summary [here](#).
- Landsat images: [White and Black: Unveiling the Secrets of Saudi Arabia’s Volcanic Giants.](#)
- [Euro-Mediterranean Seismological Centre](#)
- [Earthquakes Monitoring Live Worldwide.](#)
- [M5.9 earthquake shakes Simeulue, Indonesia;](#) USGS summary [here](#).
- Earthquake research: [Co-Occurrence of Low and Very Low Frequency Earthquakes Explained From Dynamic Modeling.](#)
- More earthquake research: [Geological fingerprints of deep slow earthquakes: A review of field constraints and directions for future research.](#)
- Geohazards, landslides: [More than 670 feared dead in Papua New Guinea landslide, UN agency says;](#) related: [Barrick’s Porgera mine operating without restriction after landslide.](#)

Upcoming Events

- If you are in Calgary for the Stampede: [Bootleggin’ Breakfast 2024](#), Calgary, AB, July 9 & 11, 2024, plus [Stampede After Parties Announced!](#)
- [Goldschmidt 2024, August 18-24, Chicago IL](#), organized by the Geochemical Society and the European Association of Geochemistry.
- [Groundwater Week 2024](#), December 10-12 in Las Vegas, Nevada.

June 3, 2024

Geology and the Fate of Societies – Dominican Republic



Figure 1a – The Dominican Republic
Credit: CIA World Factbook, public domain



Figure 1b – Location -The Dominican Republic
Credit: CIA World Factbook, public domain

A familiar destination for sun-starved tourists from the Northern Hemisphere, the [Dominican Republic](#) occupies the east 2/3 of the island of [Hispaniola](#) in the [Caribbean Sea](#). The west 1/3 of Hispaniola is occupied by [Haiti](#). To the north, in the [North Atlantic Ocean](#), are the [Turks and Caicos Islands](#); to the east, across the Caribbean, is [Puerto Rico](#); and to the south, also across the Caribbean are [Aruba](#), [Curaçao](#), [Columbia](#) and [Venezuela](#). According to the [Central Intelligence Agency](#) (CIA) [World Factbook on the Dominican Republic](#), the country has a total area of 48,670 square kilometres (km²) of which 48,320 km² is land and 350 km² is water.

The government of the Dominican Republic is a unitary [presidential republic](#). The current President is [Luis Abinader](#) and the Vice President is [Raquel Peña de Antuña](#). The [Congress](#) consists of a [Senate](#) and a [Chamber of Deputies](#). The Capital and largest city in the Dominican Republic is [Santo Domingo](#) (pop. 4,274,651 in the metropolitan area).

Also according to the CIA World Factbook, 10,815,857 people live in the Dominican Republic. Of those approximately 10.8 million people: 70.4% are of [mixed ancestry](#); 15.8% are considered [Black](#) (i.e. of [African ancestry](#)), 13.5% are [White](#) (of [European ancestry](#)); and the remaining 0.3% are other. [Spanish](#) is the official language of the Dominican Republic spoken by 98% of the population. [Haitian Creole](#) is the largest minority language; [French](#) and [English](#) are common as second languages in the tourist areas. About 50.2% of the Dominican population identify as [Evangelical Christian](#); 30.1% are [Roman Catholic](#); and the remaining either have no religion, 18.5%, or are unspecified, 1.2%. About 84.4% of the

population lives in urban areas. 95.5% of the population can read and write and the average person spends 14 years in school.

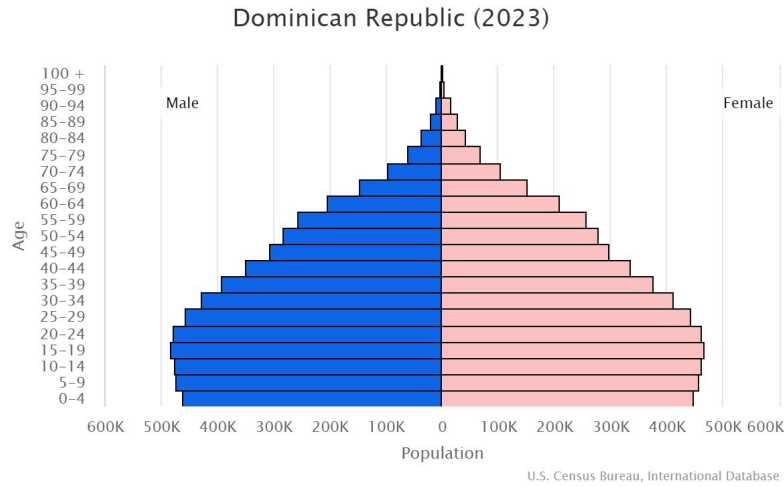
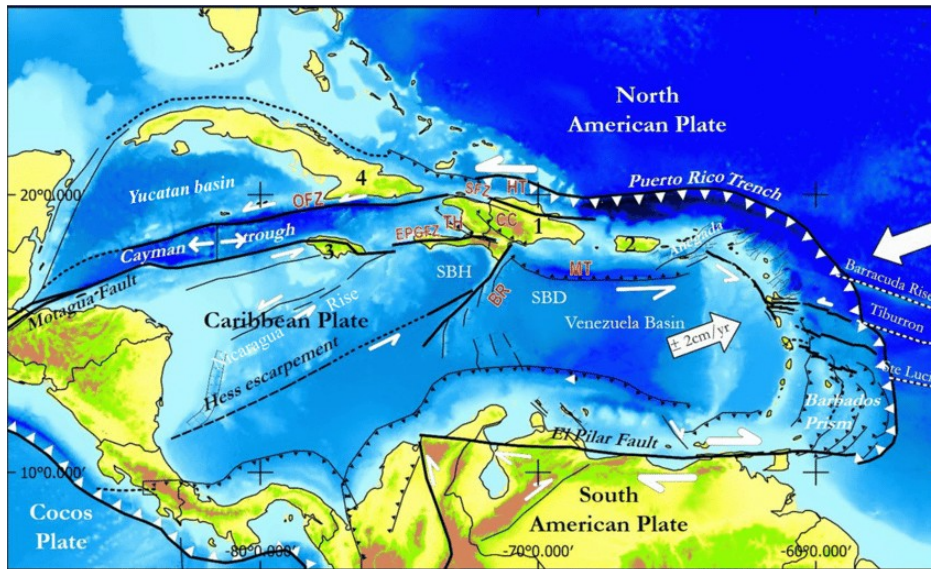


Figure 2 – Demographic Profile of the Dominican Republic
Credit: U.S. Census Bureau, International Database, public domain

The [demographic profile of the Dominican Republic](#) shows a population that has a stabilized growth rate. It has a fairly young population, about 25.5 % of the population is under 14 and the mean age is 29.2 years for both sexes. The total fertility rate is 2.13 births per woman; the annual growth rate is 0.7%; and the life expectancy at birth for both sexes is 71.9 years.

Geology



Location of Hispaniola on the present-day tectonic map of the Caribbean region (modified from Pindell and Kennan 2009).
 BRFZ: Beata ridge fault zone; CC: Central Cordillera; EPGFZ: Enriquillo-Plantain-Garden fault zone; HT: Hispaniola trench; MT: Muertos thrust; OFZ: oriental fault zone; SBH: sub-basin of Haiti; SBD: sub-basin of Venezuela; SFZ: Septentrional Fault Zone; TH: Trans-Haitian thrusts; 1: Hispaniola; 2: Puerto Rico; 3: Jamaica; 4: Cuba

Figure 3 – Tectonic Setting of Hispaniola
Credit: Figure 1 in Terrier & Bertil, 2021

The [geology of the Dominican Republic](#) can be best understood by first looking at the tectonic setting for the Island of Hispaniola. Hispaniola rests on the [Caribbean Plate](#), which is separated from the [North American Plate](#) by a system of faults forming a [transform or strike-slip boundary](#). This system of faults includes the [Enriquillo–Plantain Garden](#) fault zone in eastern Hispaniola. The North American Plate is subducting under the Caribbean Plate in the [Puerto Rican Trench](#) and its western extension called the Hispaniola Trench. The centre of Hispaniola has the [Central Cordillera](#), to the north of which is the [Septentrional Fault Zone](#). To the southwest of the Central Cordillera are the [Trans-Haitian Trust Zones](#) and to the southeast of the island is the [Muertos Trust Zone](#).

For a thorough summary of the tectonic setting of the Island of Hispaniola, check out; Terrier-Sedan, M., Bertil, D., 2021, *Active fault characterization and seismotectonic zoning of the Hispaniola island*. *J Seismol* 25, 499–520. <https://doi.org/10.1007/s10950-021-09985-0>; Figure 3 was extracted from that report.

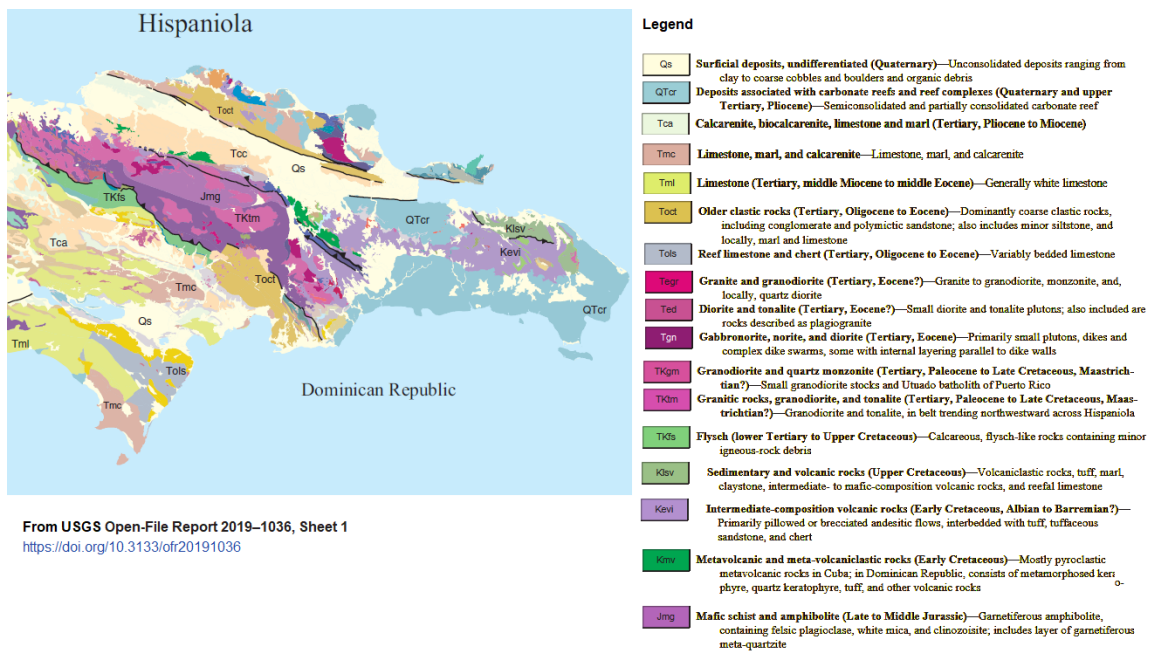


Figure 4 – Geology of Eastern Hispaniola
Credit: modified from USGS Open-File Report 2019-1036, public domain

The geology of the Dominican Republic is a tectonic collage of fault bounded [igneous](#), [metamorphic](#), and [sedimentary](#) rocks formed in an island arc setting. The oldest rocks are [Late Jurassic](#) to [Cretaceous](#) age with more recent [Paleogene](#) and [Neogene \(Tertiary\)](#) igneous rocks accreted onto the older deposits. Finally, overlying the igneous rocks are sedimentary rocks: [clastic](#) assemblages, coral reef complexes and more recent, [Quaternary](#) aged, unconsolidated materials.

The USGS has an excellent report on the geology of the Greater Antilles Island in Wilson, F. H., Orris, G., and Gray, F., 2019, *Preliminary geologic map of the Greater Antilles and the Virgin Islands: U.S. Geological Survey Open-File Report 2019–1036*, pamphlet 50 p., 2 sheets, scales 1:2,500,000 and 1:300,000, <https://doi.org/10.3133/ofr20191036>. The two map sheets and the accompanying pamphlet give a pretty thorough description of the geology of Cuba, Hispaniola and Puerto Rico. Figure 4 is an extract of the geological map in Sheet 1 of that report.

Resources

Agriculture



Figure 5 – Sugarcane Plantation in the Dominican Republic
Credit: Bree, Creative Commons Attribution-Share Alike 2.0 Generic license

According to the CIA World Factbook, 51.5% of the land in the Dominican Republic is used for agriculture (16.6% [arable land](#), 10.1% [permanent crops](#), and 24.8% [permanent pasture](#)); about 2,980 km² of the arable land is [irrigated](#). Of the remainder, 40.8% is forest and 7.7% has other uses, including urban areas.

Major agricultural products in the Dominican Republic are [sugarcane](#), [bananas](#) and [plantains](#), [papayas](#), [rice](#), [dairy products](#), [avocados](#), [watermelons](#), [pineapples](#), and various [vegetables](#). Livestock raised in the country include [cattle](#), [goats](#), [pigs](#), [sheep](#), and [poultry](#). Statistics from the United Nations Food and Agriculture Organization on food production in the Dominican Republic can be found [here](#).

Another source of animal protein is the offshore fishery. According to the [FAO](#), there are about 8,000 fishermen and more than 3,000 fishing vessels in the Dominican Republic, most of which, 98%, are small scale i.e. artisanal. Major species landed include [albacore](#), [Atlantic sailfish](#), [Atlantic thread herring](#), [Caribbean spiny lobster](#), [King mackerel](#), [mulletts](#), [Nurse shark](#), [conchs](#), [wrasses](#), [hogfishes](#), and [yellowfin tuna](#). Some of these are caught by commercial fishermen and some in the [thriving sports fishery](#). Almost all the fish caught are consumed domestically.

A typical home in the Dominican Republic will spend 26.8% of household expenditures on food, according to the CIA World Factbook. According to the [FAO](#), 52.1% of the population suffered from moderate to severe food insecurity in 2020 to 2022 and 6.3% of the population was deemed undernourished in the same period.

Forestry



Figure 6 – Hispaniolan Pine Forest

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

As noted above, 40.8% of the land in the Dominican Republic is forest. As an island, the Dominican Republic forests contain a wide variety of endemic species, [one study](#) lists some 81 species of plants endemic to the Dominican forests. [Another report](#) indicates that of the Dominican Republic's 15,669 known plant species, 4,881 (31 percent) are endemic and 806 (five percent) are considered in some degree of danger of extinction. There are apparently [seven types of forest ecosystems](#), the most important of which are the [Hispaniolan moist forests](#), [Hispaniolan dry forests](#), [Hispaniolan pine forests](#). The [World Bank](#) claims that sustainable forest management is paying off for local farmers. Statistics on forest production from the FAO are found [here](#).

Mineral Production



Figure 7 – Barrick Gold's Pueblo Viejo mine in the Dominican Republic

Credit: [Ben Depp](#), © Canadian Dimension

Metallic mineral production in the Dominican Republic consists largely of the production of copper, gold, nickel, silver, and zinc. Industrial mineral commodities produced in the country includes cement, clay, gypsum, sand and gravel, and stone. [Bauxite deposits](#) are found in the Dominican Republic, however according to the USGS, there is no current production. Similarly, while there was [some petroleum production](#) in the 20th Century, there is none currently. [Recent studies suggest](#) that there is potential for oil deposits in the country. Statistical data on mineral production in the Dominican Republic from the USGS can be found [here](#).

Two of the biggest mining operators in the Dominican Republic are Canadian owned [Barrick Gold](#) and [Falcondo](#), owned by [Americano Nickel Limited](#). Barrick Gold operates the [Pueblo Viejo](#) gold mine and Falcondo operates the [Falcondo](#) ferronickel mine. Other mines include [Cerro de Maimon](#) copper/gold mine, owned by the Dominican government's [Corporación Minera Dominicana](#) and the [Las Lagunas Project](#), operated by Australian owned [Panterra Gold Limited](#).

At least one commentator, [Owen Schalk](#) of [Canadian Dimension](#) magazine, considers the involvement of Canadian companies in the mining business in the Dominican Republic to be imperialism. There is some truth to that claim, foreign investors cannot be expected to always have the best interests of the locals in mind when they develop a mining property. As well, mining projects often come at [considerable cost](#) to the local people and environment. However, to be realistic, the capital and expertise required to develop mines is often not available in small countries like the Dominican Republic and foreign investors, wherever they come from, will only invest if they can expect a return. Without the foreign investment, the resource would remain undeveloped and the Dominicans all the poorer for it. In the end, it becomes a trade off.

Figure 8 links to an interactive map of mines and mineral deposits in the Dominican Republic.

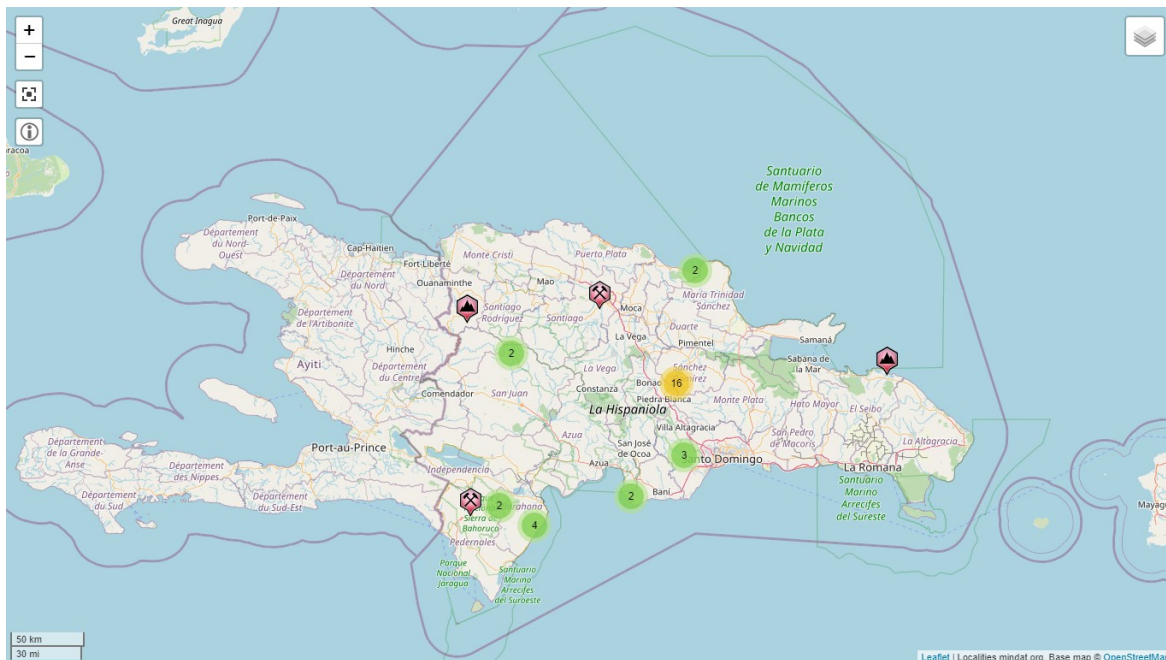


Figure 8 – Interactive Map of Mineral Deposits, Dominican Republic
Credit: ©Mindat.org

Climate

Köppen climate types of the Dominican Republic

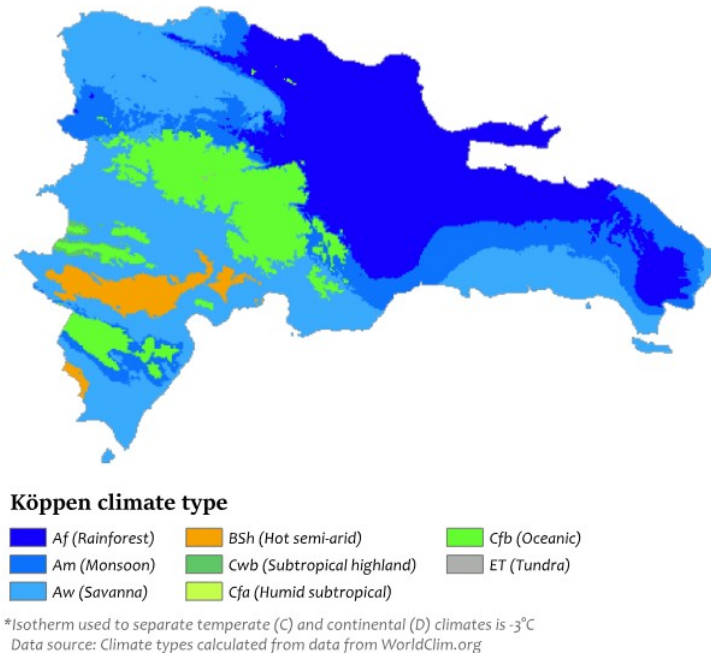


Figure 9 – Köppen Climate Map of the Dominican Republic

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

The CIA World Factbook describes the climate of the Dominican Republic as tropical maritime with little seasonal temperature variation but seasonal variation in rainfall. The Köppen climate map for the Dominican Republic, however, shows a more complex variety of climates on the island that vary with elevation and rainfall patterns. The climate zones in the Dominican Republic include:

- Tropical rainforest climate ([Af](#));
- Tropical monsoon climate ([Am](#));
- Tropical savanna climate ([Aw](#));
- Hot semi-arid climate ([BSh](#));
- Subtropical highland climate ([Cwb](#));
- Humid subtropical climate ([Cfa](#));
- Oceanic climate ([Cfb](#)); and
- On the mountain tops, tundra climate ([ET](#)).

As I mentioned at the beginning of this posting, the Dominican Republic is a favourite [winter vacation destination](#). Travel advisories [here](#) and [here](#) warn against high levels of crime in the DR. Also, the

border with Haiti is closed due to ongoing disorder in that country. If you still want to go this winter, lots of people do, check out the [Climates to Travel](#) and [Lonely Planet](#) websites.

History and Geopolitics

History – Conquest, Colonialism, and Civil War



Figure 10 – Christopher Columbus Claims a New Land for Spain
Credit: L. Prang & Co., Boston, 1893, [public domain](#)

The original inhabitants of Hispaniola at the time of European discovery were the [Taino](#) who were organized into [five separate chiefdoms](#). In 1492, an expedition led by [Christopher Columbus](#) discovered the island and claimed it for the [Spanish Crown](#). The arrival of the Spanish was a disaster for the Taino, who despite stiff resistance to the Spanish conquistadors, were destroyed by European diseases such as [smallpox](#) and [measles](#).

The Spanish established a [plantation economy](#) in their colony, with Spanish planters as the “elite” and slaves as the workforce. Originally, the workers were enslaved Taino, but they didn’t live long, and the Spanish then brought in [African slaves](#). Many Spaniards married (or just had children with) Taino and/or African women, leading to the current large mixed race population.

A [conflict in Europe](#) between Spain and [France](#), resolved by the [Peace of Ryswick](#), resulted in France acquiring the western third of Hispaniola in 1697. The Spanish lost the entire island to France in the [Peace of Basel](#) in 1795. This did the French little good since a [revolt among the Haitians](#) that began in 1791 led to the French being kicked out of the island in 1804. The Spanish [re-occupied](#) their part of Hispaniola, called Santo Domingo, until 1821 when the local elite revolted against their Spanish masters and established the what they called [Spanish Haiti](#). Next door the French Haitians took advantage of the disorder, conquered the Spanish speaking part of the island, and [ruled it till 1844](#).

The mixture of French and Spanish speaking people in a common state was inherently unstable and in 1844, the Spanish speaking inhabitants of Eastern Hispaniola [revolted against their French speaking](#)

[rulers](#). This revolt that led to ongoing conflicts between the French and Spanish speaking parts of Hispaniola that lasted until 1856.

After the war with the Haitians was concluded, it was difficult for the Spanish speaking elite in the new Dominican Republic to come to a peaceful settlement. In 1862 one faction took control and invited the [Spanish Crown](#) to take control of the country. That didn't last long, and another [war of independence](#) restored independence in 1865.

Things never really settled down and various dictatorial regimes ruled the Dominican Republic into the 20th Century. One dictator, [Buenaventura Báez](#), offered to [sell the country to the United States](#) in 1869. A couple of Presidents were assassinated in factional strife that led to [civil war in 1911](#). Although resolved by negotiation, the Americans found it necessary to send in the Marines to establish order in Santo Domingo in 1916. The [Americans occupied the Dominican Republic](#) until 1924, leaving a military dictatorship in charge when they left. In 1930, [Rafael Leonidas Trujillo](#) took control of the Dominican Republic and ruled it until 1961. Trujillo's rule was harsh and he was assassinated by Dominican dissidents on May 30, 1961. He had made a lot of enemies.

Following Trujillo's death, in a subsequent election [Juan Bosch](#) was elected President in 1962 only to be overthrown in a [coup d'etat in 1963](#). Demonstrations and another civil war led to another American intervention in the form of [Operation Powerpack](#). Near the end of the [American occupation](#), an election was held under American supervision and [Joaquin Balaguer](#), a close American ally, was elected President. Balaguer held office until 1996. Since then, the Dominican Republic has been relatively peaceful with the usual democratic churn in their politics – a better outcome than periodic civil war separated by harsh dictatorships.

Geopolitics – Living Next to a Failed State



Figure 11 – Haitian / Dominican Republic Border

Credit: [Jos1950](#), [Creative Commons Attribution-Share Alike 4.0 International](#) license

Having settled their [internal governance](#), the Dominican Republic has been able to build a [fairly modern economy](#). However not is all peace and good order. Right next door is Haiti, a country that has become a [failed state](#). In response to the migration of refugees, the Dominican Republic has strengthened security along their border with Haiti and are [restricting the movement of people](#) into their country from Haiti. As of mid-2023, the [United Nations Refugee Agency](#) has [documented 312,000 Haitian refugees and asylum-seekers worldwide](#) and the Dominican Republic has no desire to take in any more than they have to. Given the history that the Dominican Republic has had with Haiti, this is somewhat understandable. The troubles in Haiti continue today and are likely to do so for sometime in the future. The Dominicans are hoping to keep [the chaos](#) out of their country.

One big geopolitical reality for the Dominican Republic is the [United States](#). The United States [takes a keen interest](#) in what happens in the Caribbean region. The countries of the Caribbean, including the Dominican Republic, have a deep and close relationship with the United States. Whatever happens, the Dominican Republic is going to have to maintain a peaceful relationship with the United States if they want to avoid the fate of now impoverished [Cuba](#). Also, tourists are unlikely to come to a country that is not at peace. For the American part, they have will always retain the option of intervening in the affairs of the Dominican Republic, if they perceive it to be in their interests. It is not like they [haven't done so in the past](#).



Figure 12 – Punta Cana, a Peaceful Resort

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Another critical geopolitical fact for the Dominican Republic is that they are entirely dependent on imports to meet their need for petroleum: no oil – no modern economy. While there is potential for local oil and gas production, that will be many years down the road. In the meantime, they are importing oil

from wherever they can get it. The Dominican Republic is trying to [establish Guyana as a regular supplier](#) to their refineries. However, this puts them into the developing [territorial conflict between Venezuela and Guyana](#), a conflict that is essentially about oil. Again, more uncertainty awaits for the Dominican Republic.

That kind of winds up this quick look at the Dominican Republic. For another take on the Dominican Republic, check out this video on YouTube, he covers some stuff that I didn't discuss here: [Political and Cultural Geography of the Dominican Republic](#).

Follow up in 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.