Tectonic Framework of Northwestern South America and the Caribbean. Modified after: Hey (1977), Lonsdale & Klitgord (1978), Case *et al*. (1984), Adamek *et al*. (1988), Hardy (1991), Zamora & Litherland (1993), Meschede *et al*. (1998), Gutscher *et al*. (1999), Audemard *et al*. (2000), Barckhausen *et al*. (2001), MacMillan *et al*. (2004), Giunta *et al*. (2006), and Escuder Viruete *et al*. (2006). Vector values of the relative plate movements were taken and adapted from GPS data of Mora *et al*. (2014) and Protti *et al*. (2012). **Active oceanic rifts:** (1) Cayman, (2) Galápagos, (3) Ecuador, and (4) Costa Rica; **inactive oceanic rifts:** (5) Malpelo and (6) Buenaventura; **oceanic trenches and active subduction zones:** (7) Middle America, (8) Colomboecuatoriana, and (9) Caribbean; **oceanic trenches and inactive subduction zones:** (10) Puerto Rico; **accretionary prisms-deformed belts:** (11) Los Muertos, (12) Lesser Antilles, (13) Caribbean, and (14) Panamá; **transform fault zones:** (15) Septentrional-Oriente, (16) Motagua-Swan, (17) Celmira-Ballena, (18) Jordan, (19) Panamá, (20) Hey, (21) Yaquina, (22) Grijalva, and (23) Los Roques**; oceanic normal faults:** (24) Pedro Bank and (25) Hess; **continental plate faults:** (26) Simarúa, (27) Cuisa, (28) Oca, (29) El Pilar, (30) Santa Marta, (31) Algarrobo, (32) Cauca-Almaguer, (33) Boconó, (34) Espíritu Santo, (35) Bucaramanga, (36) Palestina, (37) Murindó, (38) Otú, (39) La Salina, (40) Silvia-Pijao, (41) San Jerónimo, (42) Mistrató, (43) Guaicáramo, (44) Meta, (45) Istmina Fault Zone, (46) Garrapatas, (47) Ibagué, (48) Algeciras, (49) Pallatanga-Pujili, (50) Peltetec, and (51) Cosanga; **independent lithospheric blocks:** (52) Coiba Microplate.

Localization map of Colombia in South America

Physiographic Map of Colombia. Main physiographic subregions of Colombia: (1) serranía de Jarara, (2) Guajira Peninsula, (3) sierra nevada de Santa Marta, (4) serranía de Perijá, (5) serranía de Los Motilones, (6) serranía de San Lucas, (7) serranía de Abibe, (8) sierra nevada del Cocuy, (9) serranía del Baudó, (10) Llanos Orientales–Orinoquía, (11) serranía de Los Paraguas, (12) Eastern Cordillera, (13) Central Cordillera, (14) Western Cordillera, (15) serranía de La Macarena, (16) serranía de Naquén, (17) serranía de Chiribiquete, (18) Amazonía; **Geographic places of frequent reference in the Colombian geological literature:** (19) Lower Magdalena Valley, (20) Santander Massif, (21) Middle Magdalena Valley, (22) Floresta Massif, (23) Quetame Massif, (24) Upper Magdalena Valley, (25) Garzón Massif, and (26) Guiana Shield.

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GEOLOGICAL MAP OF COLOMBIA 2020

Compiled by:

Jorge GÓMEZ TAPIAS and Nohora Emma MONTES RAMÍREZ

Scale 1:1 000 000

Lithologic pattern chart

Quaternary volcanoes of Colombia

1	San Diego Volcano	21	El Morro Volcano
2	El Escondido Volcano	22	Laguna del Buey Volcano
3	Romeral Volcano	23	El Pensil Volcano
4	Cerro Bravo Volcano	24	Granates Volcano
5	Nevado del Ruiz Volcano	25	Sotará Volcano
6	Paramillo del Cisne Volcano	26	Cutanga Volcano
7	Nevado de Santa Isabel Volcano	27	Petacas Volcano
8	Paramillo de Santa Rosa Volcano	28	Doña Juana Volcanic Complex
9	Paramillo del Quindío Volcano	29	Las Ánimas Volcano
10	Nevado del Tolima Volcano	30	Morazurco Volcano
11	Cerro Machín Volcano	31	Galeras Volcano
12	Guacharacos Volcano	32	Bordoncillo Volcano
13	Nevado del Huila Volcano	33	Campanero Volcano
14	Puracé Volcano	34	Sibundoy Volcano
15	La Palma Volcano	35	Mujundinoy Volcano
16	Paletará Volcano	36	Azufral Volcano
17	Pan de Azúcar Volcano	37	Cumbal Volcano
18	Yerbabuena Maar	38	Cerro Crespo Volcano
19	Santa Leticia Volcano	39	Cerro Negro Volcano
20	Merenberg Volcano	40	Chiles Volcano

Geological conventions

Fault	Anticline
Inferred fault	Plunging anticline
Concealed fault	Doubly plunging anticline
Strike-slip fault, right-lateral offset	Inverted anticline
Concealed strike-slip fault, right-lateral offset	Overturned anticline
Strike-slip fault, left-lateral offset	Plunging overturned anticline
Concealed strike-slip fault, left-lateral offset	Syncline
Thrust fault or reverse fault	Concealed syncline
Inferred thrust fault or reverse fault	Plunging syncline
Concealed thrust fault or reverse fault	Doubly plunging syncline
Normal fault	Overturned syncline
Inferred normal fault	Concealed overturned syncline
Concealed normal fault	Plunging overturned syncline
Lineament	Volcano

Abstract

The Grupo Mapa Geológico de Colombia is attached to the Dirección de Geociencias Básicas of the Servicio Geológico Colombiano (SGC). Its aim is to perform periodic and updated versions of the national geological map with the available geological information. The first edition of this map was published in 2007; the second, in 2015; and this, the third, is released in 2020.

This third edition of the Geological Map of Colombia (GMC) was updated with the geological maps of the following sheets published by the SGC at a scale of 1:100 000: 41, 42, 46, 53, 54, 56, 57, 63, 67, 71, 73, 74, 77, 78, 81, 83, 84, 87, 88, 91, 92, 94, 95, 107, 118, 122, 123, 138, 141, 142, 154, 158, 173, 174, 177, 178, 197, 198, 216, 217, 218, 219, 220, 220BIS, 229, 233, 234, 235, 236, 237, 238, 239, 239BIS, 256, 257, 258, 258BIS, 275, 276, 277, 277BIS, 284, 285, 298, 299, 304, 305, 309, 318, 319, 320, 324, 325, 327, 329, 330, 340, 341, 342, 346, 347, 348, 349, 351, 362, 363, 369, 370, 371, 372, 373, 385, 391, 392, 393, 394, 409, 413, 415, 416, 417, 418, 432, 433, 434, 435, 436, 437, 450, 451, 452, 453, 454, 455, 456, 466–481, 467–482, 468, 469, 470, 471, 472, 473, 483, 484–495, 485, 486, 496, 497, 498, 499, 508, 509, and 510. It is worth noting that the map was updated with the data of around 400 papers published in peer–review journals from October 2014 until December 2019 and the chapters that make up the four volumes of *The Geology of Colombia* multivolume book.

The units represented on the map are chronostratigraphic and were grouped according to age and lithology. For the age, the "International Chronostratigraphic Chart 2020" was used as a reference and for the lithological division, rocks and deposits were differentiated. The rocks were represented in accordance with their principal types into igneous, metamorphic, and sedimentary with volcaniclastic rocks as a separate type. The deposits were subdivided according to the type of deposit into paludal, alluvium, volcanoclastic, glacial, terrace, alluvial fan, pyroclastic, dune, and swamp. Igneous rocks were classified by the environment of formation into volcanic, hypabyssal, and plutonic and according to their composition into ultramafic, mafic, intermediate, and felsic. Metamorphic rocks were separated by their grade of metamorphism into very low, low, medium, and high grade; also, the high–pressure ones and, by their economic importance, the marbles were differentiated. The sedimentary and volcanoclastic rocks were grouped consistent with the main environment of accumulation. The former were classified as continental, transitional, continental–transitional, continental–transitional–marine, transitional–marine, and marine; while the latter were classified into continental, continental–transitional, and marine.

The GMC 2020 was carried out at a scale of 1:1 000 000 from the generalization in ArcGIS 10.6 of the Geological Atlas of Colombia 2020 at a scale of 1:500 000. The chronostratigraphic units, faults, and folds were adjusted with the shaded relief image of Colombia produced at a scale of 1:100 000 and created for this purpose.

The GMC 2020 consists of two sheets. The former being the map and the second the map legend. The first one, which contains the geological map as its main element, includes the islands of Colombia that, due to the distance that separates them from the mainland and their small size, are displayed as insets at a scale of 1:100 000. Furthermore, this sheet displays the insets of the sketch of Tectonic Framework of Northwestern South America and the Caribbean; Localization Map of Colombia in South America; Physiographic Map of Colombia, showing the main physiographic features and the location of geographic sites frequently quoted in geological studies; Recommended citation; Cartographical sources of the base map; Abstract, Geological conventions; Quaternary volcanoes of Colombia; Lithological pattern chart; and corporate credits and author listing.

The GMC 2020 includes the layers of chronostratigraphic units, faults, folds, volcanoes, and tectonics. The users can consult the map in different formats: GIS (File Geodatabase, MXD, style), PDF, and TIFF.

Recommended citation

Gómez, J. & Montes, N.E., compilers. 2020. Geological Map of Colombia 2020. Scale 1:1 000 000. Servicio Geológico Colombiano, 2 sheets. Bogotá.

Cartographical sources of the base map

Simplified and modified after IGAC (2006)

Cartographical parameters

Conformal Transverse Mercator Projection
Datum Magna
Bogotá Zone Origin
Origin of geographical coordinates: 74° 04' 39.0285" W 4° 35' 46.3215" N
False origin (plane coordinates, meters): X = 1 000 000 Y = 1 000 000


Eon
Era
Period
Epoch
Age
Ma
Legend
Holocene Q2
Pleistocene Q1
Piacenzian n8
Zanclean n7
Messinian n6
Tortonian n5
Serravallian n4
Langhian n3
Burdigalian n2
Aquitanian n1
Chattian e9
Rupelian e8
Priabonian e7
Bartonian e6
Lutetian e5
Ypresian e4
Thanetian e3
Selandian e2
Danian e1
Maastrichtian k6
Campanian k5
Santonian k4
Coniacian k3
Turonian k2
Cenomanian k1
Albian b6
Aptian b5
Barremian b4
Hauterivian b3
Valanginian b2
Berriasian b1
Upper J3
Middle J2
Lower J1
Upper T3
Middle T2
Lower T1
Permian P
Carboniferous C
Devonian D
Silurian S
Ordovician O
Cambrian
Neoproterozoic NP
Mesoproterozoic MP
Paleoproterozoic PP
Quaternary (Q)
Pliocene (N2)
Miocene (N1)
Neogene (N)
Oligocene (E3)
Eocene (E2)
Paleocene (E1)
Paleogene (E)
Upper (K2)
Lower (K1)
Cretaceous (K)
Jurassic (J)
Triassic (T)
Cenozoic (CZ)
Mesozoic (MZ)
Paleozoic (PZ)
Phanerozoic (PH)
Proterozoic (PR)
San Andrés and Providencia