

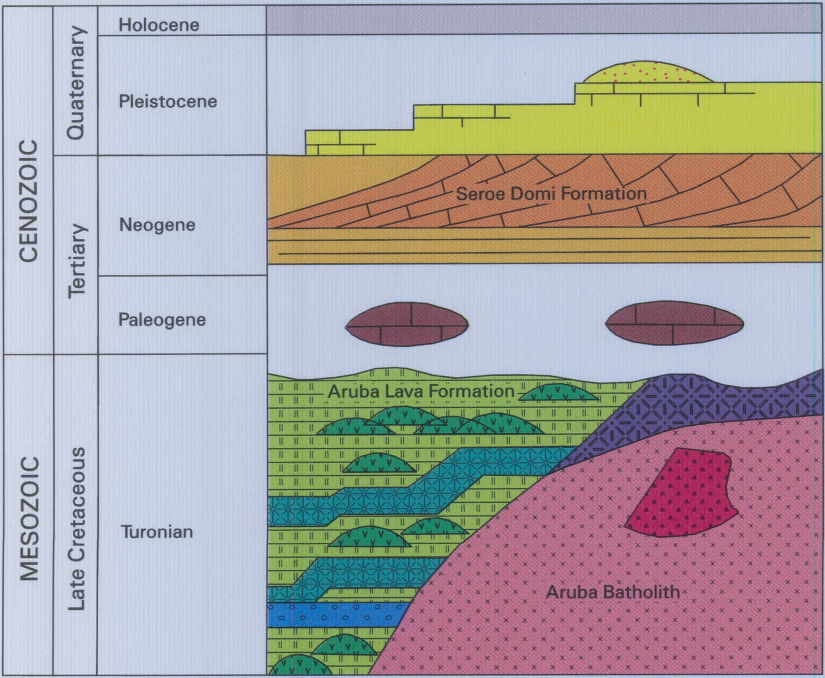
Geological map of
ARUBA

Scale 1 : 50 000



Aruba is situated in the South American - Caribbean Plate Boundary Zone, a disperse transcurent fault system along which the Caribbean Plate moves westward relative to South America. It forms the westernmost of the islands of the Aruba - La Blanquilla Chain, an E-W-running row of small islands and atolls on the Venezuelan continental borderland.

Aruba has a flat to slightly rolling morphology with low hills; the Jamanota in the central part of the island is the highest hill and reaches almost 190 m. Three main morphologic terrains can be distinguished: (1) a gently seaward dipping plain with shallow dry valleys in the (north)western part of the island, flanked in the east and south by (2) a more rugged terrain in the central part. This grades south-eastwards into (3) a southward-dipping plain flanked by limestone terraces at its seassides. The (north)western terrain is formed by the outcrop area of the deeply weathered tonalite, flanked on its western side by a several kilometres wide zone of horizontal bedded to weakly seaward-dipping limestones. Highest hills in this area are formed by the more resistant rocks in the batholith. Drainage of the terrain is largely westwards to south-westwards. The drainage divide is situated near the northeastern coast of the island and forms the northern spur of the more accented terrain in the central part of the island. This terrain developed in the outcrop area of the metamorphosed volcanic rocks of the Aruba Lava Formation, and that of a quartz hornblende gabbro along the northeast coast. The area is crossed by E-W-running, fault-controlled valleys. The morphology of the south-eastern terrain is predominantly defined by caps of Neogene and younger limestones. Quaternary terraces are well-developed in the limestones along the eastern part of the coast near Boca Grandi and Ceru Colorado. Foreereef deposits fringe the south and southwestern coast between Ceru Colorado and the urban center of Oranjestad. The oldest unit exposed on the island is the Aruba Lava Formation, an over 3000 metres thick succession of volcanic and volcanoclastic rocks of basaltic composition. The rocks have been metamorphosed by the intrusion of the batholith. The age of the formation is considered to be Turonian based on imprints of ammonites found in a conglomeratic mudstone. The Aruba Batholith intruded the Aruba Lava Formation. Its main member is a hornblende tonalite. A (quartz)-norite to quartz-hornblende gabbro forms roof pendants of the tonalite. Aruba Lava Formation and the batholith are crossed by numerous dikes. The age of intrusion of the batholith is 85 to 90 Ma; renewed heating of the rocks took place between 73 and 67 Ma. The Aruba Lava Formation and Batholith are unconformably overlain by Cenozoic sediments. The oldest are small erosional remnants of a shallow water limestone of Eocene or Oligocene age. Early Miocene mudstones and sandstones were encountered in a borehole in the centre of the town of Oranjestad, but are nowhere exposed at the surface. The Seroe Domi Formation, which has its main outcrop area along the southern part of the southwestern coast, consists of seaward-dipping limestones with a varying admixture of siliciclastic detritus derived from the rocks of the Aruba Lava Formation and the Aruba Batholith. Basically, the rocks are foreereef deposits, which still show their initial dip of deposition. The Seroe Domi Formation foreereef deposits are exposed because of a slow but gradual uplift of the island since the Middle Miocene. Quaternary marine limestone terraces - reefs, beachrock and eolianites - fringe the island. They are best developed in the south-western part. Recent and subrecent deposits are the non-lithified calcareous beach sands along the northwest coast, the calcareous dune sands of California and Boca Grandi, mud and sand of salinas and alluvial plains, and the coral shingle of the barriers along the southwest coast. The structure of the Aruba Lava Formation and the Batholith is dominated by east-west-running faults. Faulting is accompanied by the development of a strong foliation and schistosity in the rocks bordering the faults. Normal faults of Neogene and Quaternary age related to the uplift of the island are common.



Colophon
Geological data: Compiled by Dirk J. Beets. The map is based on data of Westermann (1932), De Buissonjé (1974), Monen (1982), Stienstra (1991), and newly collected, unpublished data of Henk P. Monen, Gerard Klaver, Arminda C. Ruiz, Eduardo A. Curet Rosalind White and Bruce W. Folke.
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