

Ways to improve the COCONet GPS array along the Caribbean/South-America plate boundary

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Abstract

Because of fears related to the current political regime in Venezuela, country within which most of the southern boundary of the Caribbean plate takes place, the proposed GPS network design for COCONet does not include sites on Venezuelan territory, though it is well established that data from permanent GPS sites in northern South-America are crucial to fully achieve many of the scientific and social goals of the project. Here I shall discuss about the feasibility to install and maintain an economy- and science-based number of COCONet permanent GPS stations on Venezuelan territory. I find this feasibility to be highly positive throughout agreements with autonomous universities involved in Earth sciences in Venezuela (Simón Bolívar USB, Zulia LUZ, Oriente UDO, Los Andes ULA), as well as with other research institutions including the Instituto Geográfico de Venezuela Simón Bolívar (IGVSB). IGVSB is the national organization that legally rules the geodesy in Venezuela and together with LUZ and UDO is currently operating four GPS permanent stations in Maracaibo and Coro (western Venezuela), Caracas (north-central Venezuela) and Cumaná (northeastern Venezuela). The data are freely available over the Internet and the stations could be easily part of the COCONet array. IGVSB, LUZ, ULA and USB have collaborated in the past in projects funded by NSF to USA scientists, and are currently involved in a variety of scientific projects with other universities and research institutions abroad. All this forecasts a feasible and fruitful collaboration with UNAVCO. Finally, I shall briefly present new results regarding the GPS velocity field in western Venezuela and discuss on the tectonic framework and related issues in northwestern South-America, including regional strain partitioning, the GPS slip rate observed for the dextral shear Boconó fault system along the Venezuelan Andes, and the GPS observed rate of convergence across the ranges. These results should help in the design of an optimum GPS array for the southern Caribbean/northern South-American region.