Paper Number: 1448

Geological Mapping of Costa Rica: a further step for standardization of geological map at 1:50 000 scale of Central American

Huapaya, A.S.[1]

[1]Directorate of Geology and Mine; San José – Costa Rica, Apdo. 10.104-1000; shuapaya@minae.go.cr

---

As almost everyone would understand, the geological map is the essential knowledge to start any research in planning of use of the territory, in the planning and building of urban and transport infrastructure, in the research of metallic and no-metallic mineral resources, in the knowledge and prevention of natural disaster, in the evaluation and exploration of hydric resources, in environmental geology and others evaluation.

Since 2008, the Directorate of Geology and Mine (DGM) of the Ministry of Environment and Energy of Costa Rica, through inter-institutional cooperation and international technical cooperation with the Czech Geological Survey, started the program of geological map of Costa Rica at 1:50 000 scale, which involves the geological map construction of 135 topographic sheets same scale. In spite of our poor budget, the 1:50 000 scale program is currently in progress with nearly 18% of the total surface (51 000 km2) already covered. The digital geologic maps of Costa Rica contains lithology, age, tectonic, GIS database structure and a format. Consist of three parts: the map itself, an explanatory text and related documentary materials.

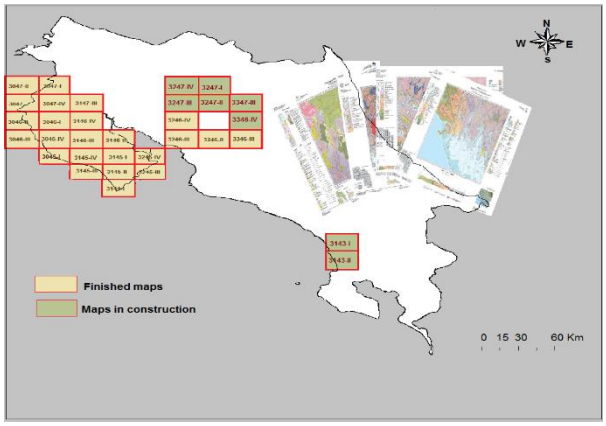

Figure 1: Coverage of Costa Rica by geological maps

Geological maps of Costa Rica are the final product of a series of activities, starting up with the preliminary morphotectonic study using air photographs (provided by other Costa Ricans institutions: CENIGA; IGN, SNIT) and satellite images taken from free software, construction of topography and digital models to the field verification. Then continue the field work with that allows to register information directly from the outcrop or points of reference and the field sampling.

Then we proceed to the analysis of samples (petrography, radiometric dating and other dating methods, whole-rock geochemical characterization, X-ray powder diffraction, scanning electron microscope and others) and as final is made data processing, data interpretation and digital construction of geological maps in GIS database structure.

About quality control, the DGM has elaborated the instruction notes for the construction of geological maps at 1: 50 000 scale (it is unique in Central America). At present this document is being improved according international standards with help of technical cooperation of Geological Surveys of Ibero-america and Europe. Is important say that Costa Rican program of geological maps, represent a further

step for the standardization of Central American geological cartography at 1:50 000 scale, initiative that emerged in 12th Geological Congress of Central America, Managua, Nicaragua 2015.

References:

[1] Žáček V et al. (2012). In: *Geología y Estratigrafía de la hoja 3246-II Miramar*: Rev. Geol. de América Central, 47:7-54

[2] Denyer P et al. (2014) Cartografía Geológica de la Península de Nicoya: Editorial UCR 2014: 207 pp.

[3] Huapaya S & Rojas V (2012): Mapa Geológico de la Hoja Naranjo (3346-III) 1:50 000, República de Costa Rica: Imprenta Nacional: 1 p.