

## DESIGNING A NETWORK OF WEATHER RADARS FOR THE CENTRAL AMERICAN REGION

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### 1. INTRODUCTION

As an initiative for reducing the vulnerability of the Central American region from disasters of hydro meteorological nature, the Regional Committee for Hydraulic Resources (in Spanish, the CRRH, a specialized agency of the Central American Integration System, in Spanish the SICA) has developed a project for a Central American Radar Network (CARN). This paper describes the technical characteristics of such a network, characteristics that can be also valid for similar radar networks located in the tropics.

The technical requirements desired for each radar in the network are stated in CRRH-SICA (2001), and these are based on the microphysical characteristics of the local precipitation (Campos et al., 2001). It is also presented a preliminary configuration of the CARN coverage, including the criteria considered for the election of each site. Some operational aspects of the CARN, such as data transmission and distribution, are discussed as well.

### 2. PROPOSED SITES AND REQUIREMENTS

It is proposed a network of 10 S-band weather radars, two of which already exist. In case the radar that now operates at Panama could not be integrated easily to CARN, it is then recommended to locate an alternative site at Cerro Santo Domingo (or nearby the city of Colón).

The requirements for CARN involve a maximum range (for reflectivity) of at least 230 km, for each radar. The recommended sites has been identified as following

Radars already operating at the Region:

Panamá:	Cerro Ingeniero	8°48'	79°33'
Belice:	Belice	17°32'	88°18'

Radars to be installed: (approx. positions)

Panamá :	Cerro Sto. Domingo	9°30'	79°35'
	Las Palmas	8°20'	81°30'
Costa Rica:	Cerro Buenavista	9°34'	83°46'
Nicaragua:	Puerto Cabezas	14°10'	83°20'
	San Marcos	12°00'	86°40'
	Corn Island	12°10'	83°00'
Honduras:	Catacamas	14°50'	85°50'

El Salvador:

Cerro Guazapa                      13°50'    89°20'

Guatemala:

Alto Cuchamatanes                15°30'    91°30'

The design of CARN is presented in Figure 1.

For the data management, products generation and distribution, it is recommended to centralize the operations at one site (Costa Rica). The data generated at each site will arrive to this operational center through satellite link. The forecast products will be generated there and then distributed to each user (e.g., the Central American meteorological and hydrological services) through the Internet.

### 3. CURRENT STATUS

The sites mentioned before are tentative, and they are now being evaluated *in situ*, in order to confirm that they meet the characteristics necessary for operation.

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### References

Campos et al., 2001: Radar properties of tropical rain found from distrometer data at Costa Rica. *Proceedings of the 30<sup>th</sup> International Conference on Radar Meteorology*. Munich, Germany.

CRRH-SICA, 2001: *Instalación de una Red de Radars Meteorológicos en el Istmo Centroamericano*. 30 pág. más anexos. [Available at *Secretaría Ejecutiva CRRH-SICA, P.O. Box 21-2300 Curridabat, San José, Costa Rica.*]

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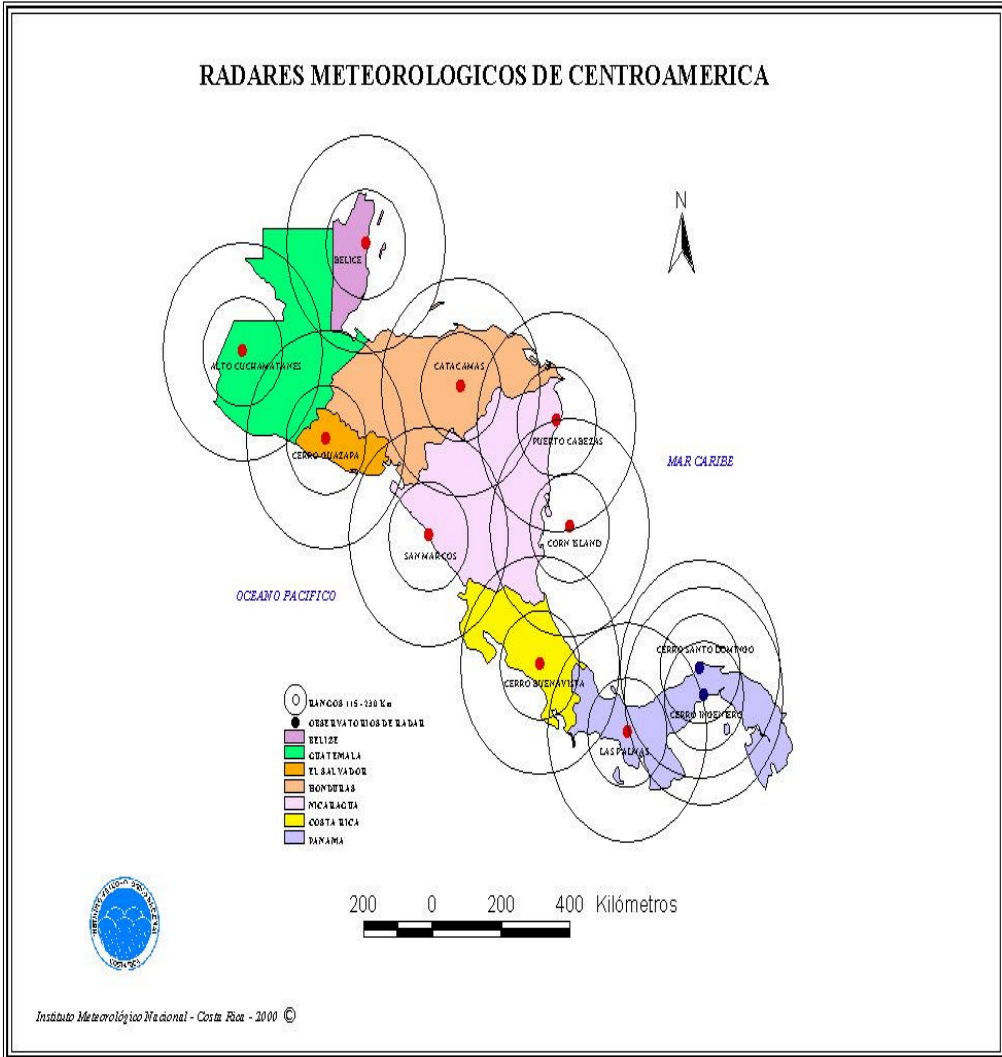


Fig. 1. Proposed design of CARN.