Regional Lightning Detection Networks
Central America

The DTN project for the Lightning Detection Network in Central America is composed of 32 lightning detector sensors in Honduras, Guatemala, Costa Rica, Nicaragua, El Salvador, and Panama, one central processing system in Panama, and one operational center in each country.

What they were up against.

Every year, severe weather conditions cause losses of a large number of goods and human lives in Central America. The CIMHET (Conference of Directors of the Ibero-American NMHSs(i)) has established an action plan that includes the development of a regional warning center of severe hydro-meteorological phenomena in Central America, whose beneficiaries are the NHMS of Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama.

The Spanish Agency for International Development Cooperation (AECID), with funds provided by the European Union, and with the Spanish Meteorological Agency (AEMET) as implementing institution, secured funds for the installation of a Lightning Detection Network in Central America as the first component of this regional warning center.

> **Lightning detection efficiency is better than 95 percent for CG strokes based on 5kAmp stroke peak current amplitude.**

What we did to help.

DTN was selected by AECID as the main contractor for the supply and installation of this Lightning Detection Network in Central America.

The network is based on TOA Systems Ltd. technology. It is composed of 25 new lightning detection sensors and the integration of seven existing sensors in Honduras.

The lightning information is gathered in a central processing system in Panama (SCAL), and six operation systems (SEXP), one at each country.

The Cloud-to-Ground (CG) stroke detection efficiency of the network is better than 95 percent in the whole region based on an average stroke peak current amplitude of 5kAmp. The Intra-Cloud (IC) stroke detection efficiency is better than 80 percent over the primary populated areas of the Central American region, and over 50 percent across the whole region and coastlines. The stroke location accuracy is less than 200 meters RMS inside the sensor network for both CG and IC strokes, and better than 100 meters over the majority of the region.

What the impact was.

The Lightning Detection Network deployed by DTN provides the most accurate lightning data ever available in the region. This new tool available for the NMHSs(i) involved allows:

- The development of new tools and thunderstorm early warning systems to improve the management in case of floods, forest fires, rescue and maritime, and air safety.

- The creation of an independent historical database for the evaluation of the risk of thunderstorms in the region and the creation of risk maps.

- The improvement of weather products created for industry sectors such as; water and wastewater, transport, tourism, and agriculture.

(i) NMHS, National Meteorological and Hydrological Service

❞ **The aim of the regional Lightning Detection Network is to provide a thunderstorm early warning system to improve the management in case of floods, forest fires, rescue and maritime, and air safety in Central America.** ❞

AECID, Spanish Cooperation Agency for International Development