

### 3.1.1 Training of Trainers (ToT): Workshops with key institutions' extension officers, and development partners to build capacity to access and use climate services.

## ACRONYMS AND ABBREVIATIONS

CDT	IRI's Climate Data Tool
ENACTS	Enhancing National Climate Services
IDEAM	National Met Service
INSIVUMEH	National Meteorological, Hydrological and Seismological Service
Windows	Operative System developed by Microsoft.
Linux	Open-source operating system modelled on UNIX.
Python	Interpreted, object-oriented, high-level programming language.
SQL	Structured Query Language, programming language designed for eliciting information from databases.

#### **ENACTS-CDT:**

In the current fiscal year (2020-2021), INSIVUMEH and IDEAM completed the implementation of the ENACTS methodology. ENACTS combines satellite data with local station data, improving the local capacities of the National Met Services in relation to precipitation and temperature datasets. The last step to implement ENACTS required the National Met Services, as local experts, to quality-control and interpolate the local data using diverse statistical methods available in the CDT toolkit.

Due to the COVID-19 restrictions and lockdowns in both countries, the IRI-team organized teleworking sessions during the year until IRI completed the training of the CDT modules needed for creating a first ENACTS version of gridded datasets of temperature and rainfall, using most of the stations available in the country. During the virtual training sessions, the following modules were taught:

**CDT Installation:** this module covered all the computational technical features needed for installing the CDT tool kit in Windows and Linux environments.

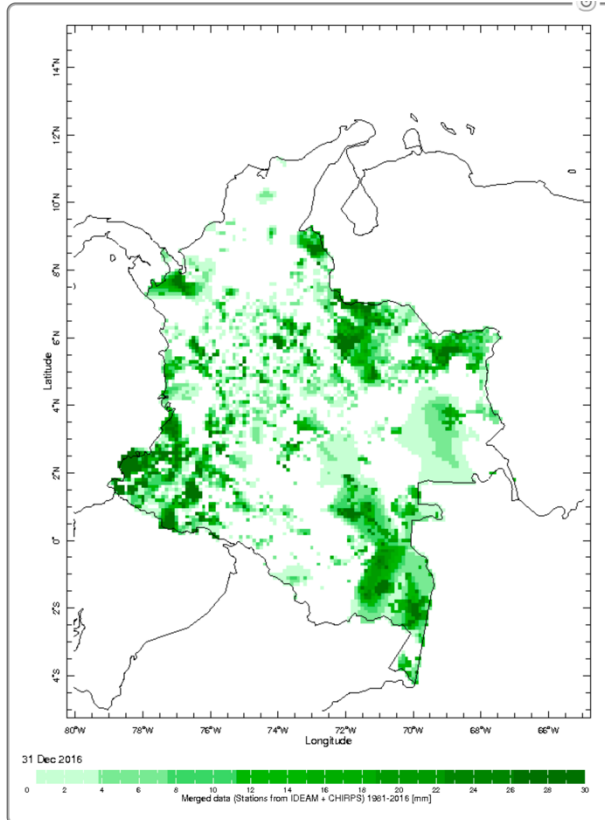
**CDT local stations format:** on it, the participants learned how to organize the information of the local station in a form compatible with the CDT format. Also, the IRI-team worked together with each institute for creating an intermediate tool (a software in Python code or SQL) for converting their own stations' format to a CDT-compatible time format.

**CDT navigation:** the IRI team taught the participants how CDT is organized, where to find each option available, menus, when to use the visualization tool, how to export or import data, and how to save the workplace, etc.

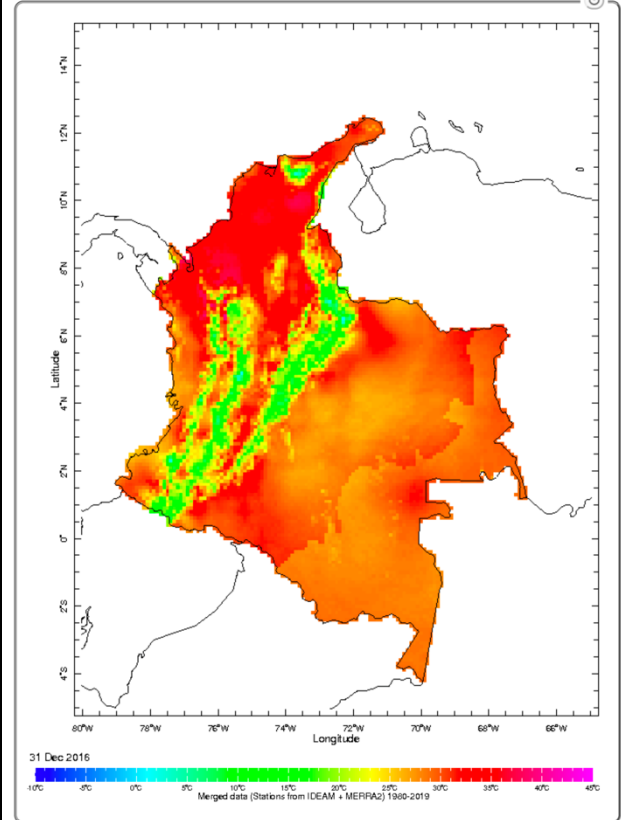
**CDT data preparation:** covered the training on how to set up the workplace according to the data provided by local stations, special and temporal domain definitions, download of the elevation data, satellite data of each variable (precipitation and temperatures), political border data, etc.

**CDT quality control:** in this module, the IRI-team taught the participants how to use CDT for generating reports of false zeros, wrong coordinates, and outliers contained in their local stations' data. In each step, the participants reviewed report by report and made adjustments if needed. After the participants completed that verification, they learned how to apply the homogenization methodology with CDT, and generated new local improved stations data.

**CDT Gridding:** Participants learned how to produce and apply BIAS correction over the satellite data using their local stations' data generated at the end of the quality control process. Participants also learned to apply interpolation methodologies and generated the first version of their gridding dataset (for precipitation and temperatures), combining local and satellite data tailored to each institutions' (INSIVUMEH and IDEAM) needs.

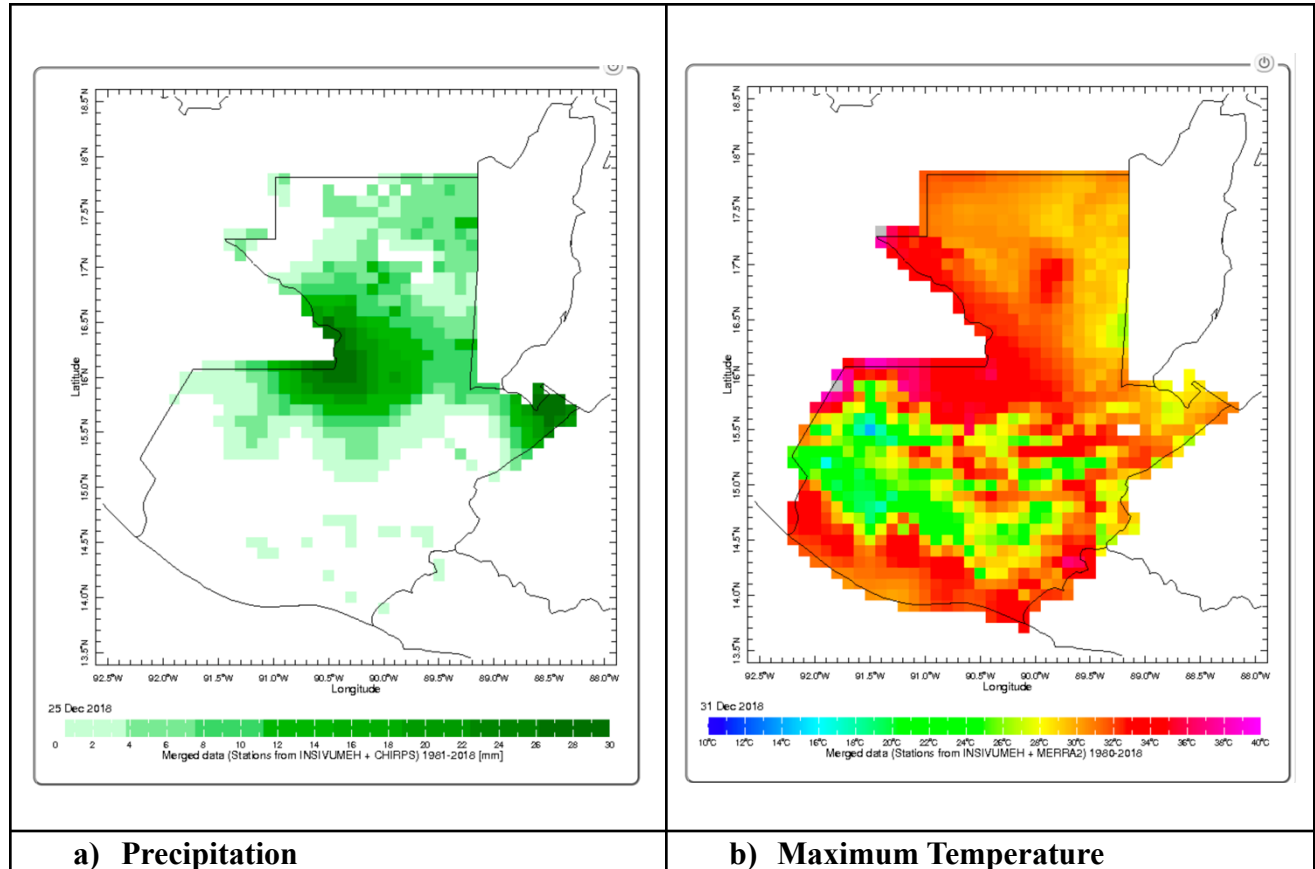


**a) Precipitation**



**b) Maximum Temperature**

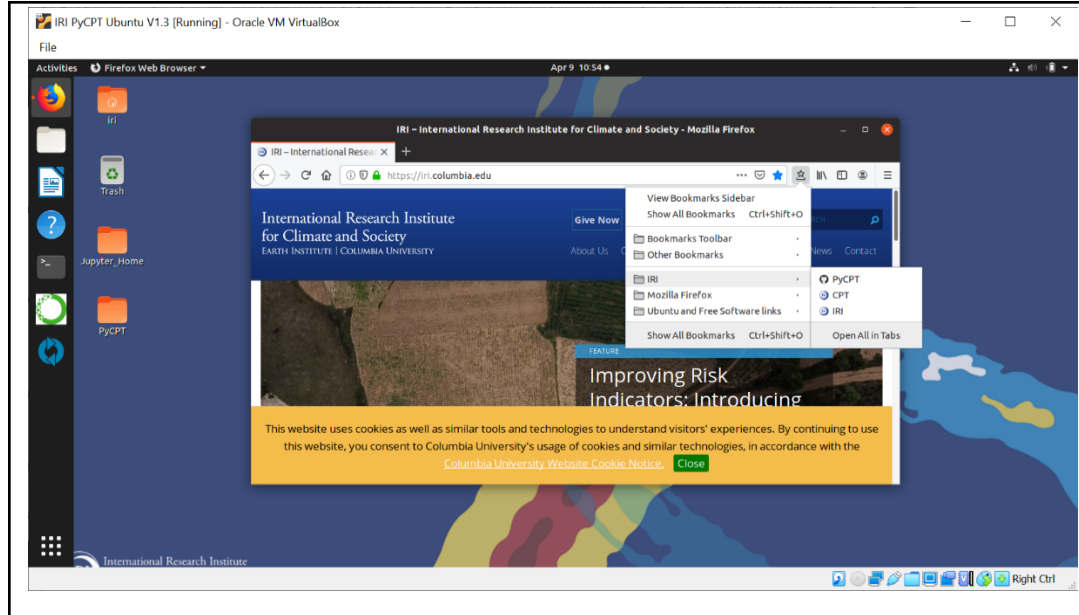
1. Gridded dataset generated by ENACTS methodology from Colombia.



# 1. Gridded dataset generated by ENACTS methodology from Guatemala

## Ubuntu PyCPT

During the reporting period, IRI and INSIVUMEH jointly participated in four new Central American NextGen trainings. One of the topics supported by IRI was the setup and installation of the software tools needed for PyCPT uses. During the training, participants learned how to install and use Ubuntu-IRI\_PyCPT. The IRI team also provided a new version of the Ubuntu-IRI\_PyCPT manual with new features implemented.



## 2. Ubuntu-IRI\_PyCPT