

SUMMARY

The Volcanological and Seismological Observatory of Costa Rica, National University (OVSICORI-UNA) is a University Institute dedicated to research of volcanoes, earthquakes and other tectonic processes, in order to find useful applications that help society to mitigate the adverse effects of these events to economic and social development.

In 1984, the OVSICORI-UNA initiates the operation of a seismographic and volcanic network designed to monitor seismic and volcanic activity throughout the national territory.

SEISMIC NETWORK OVSICORI-UNA

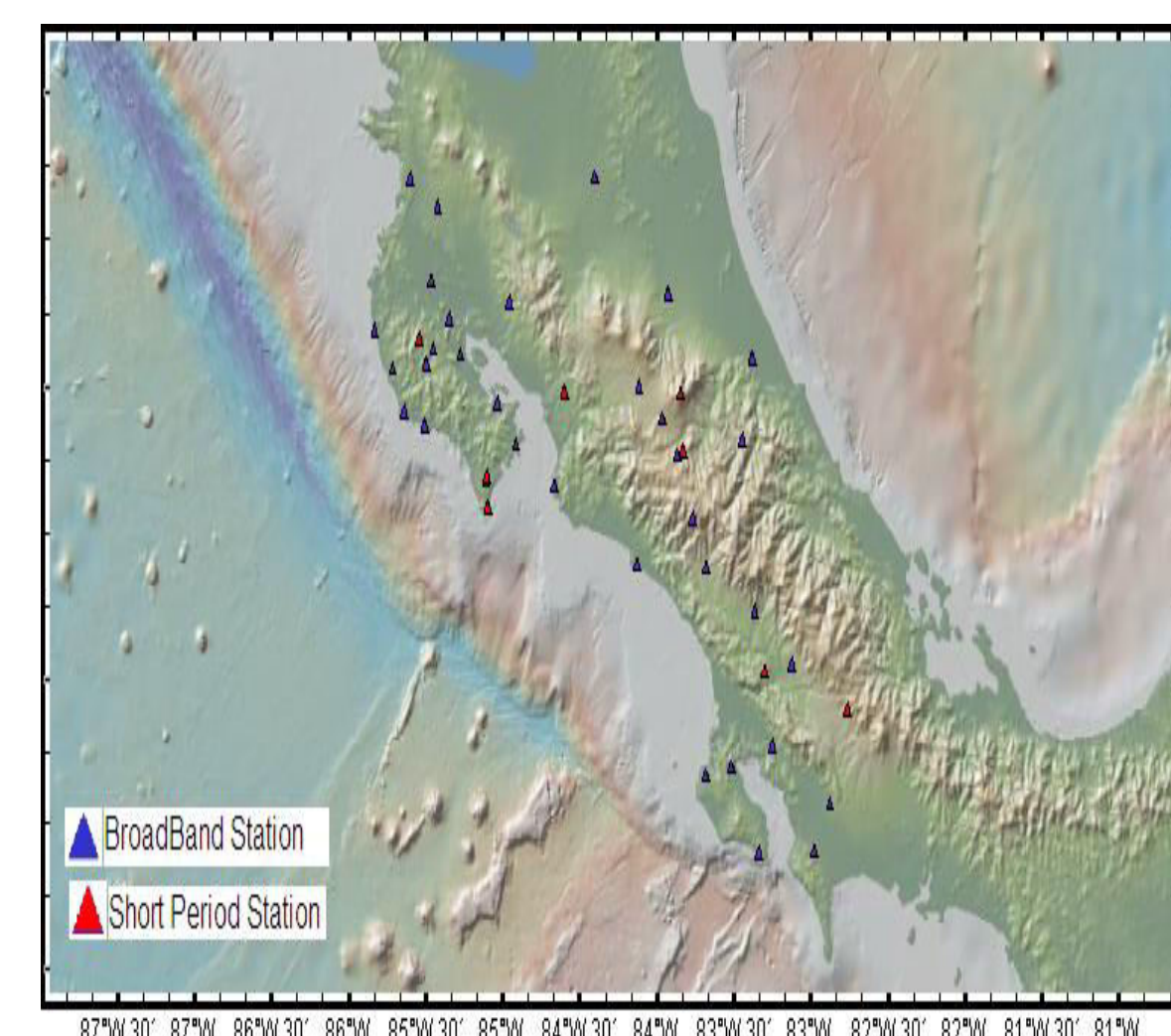


Figure 1. Map Seismic Network

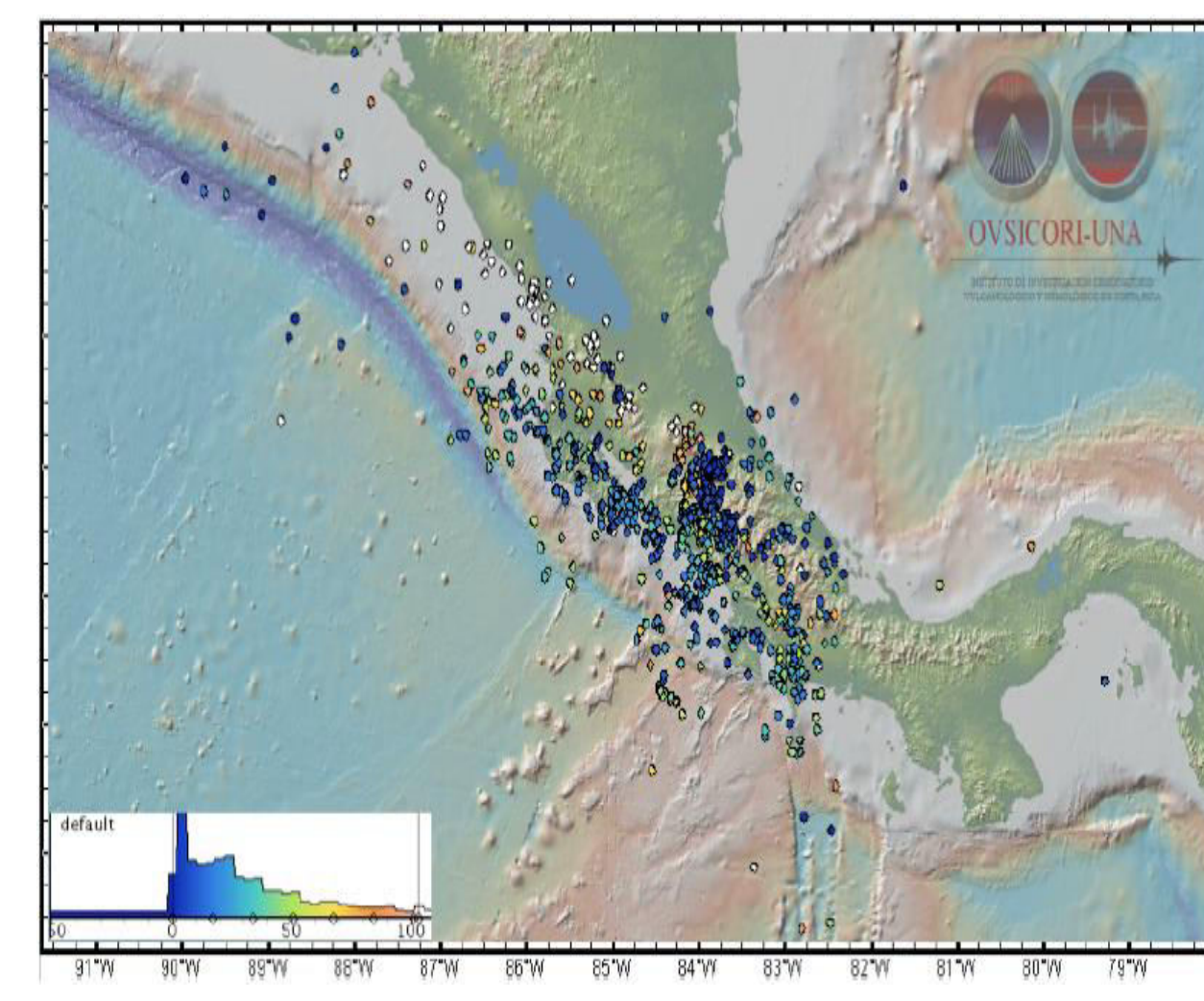


Figure 2. Seismicity February, 2017

Figure 2. The seismic network of OVSICORI located 917 seismic events in the month of February, 2017.

AUXILIARY SEISMIC STATION AS025 (JTS)

The station IMS AS025 (JTS) is located in Juntas of Abangares, Guanacaste, Costa Rica. The station JTS is part of CTBTO – IMS network, OVSICORI network and IRIS/IDA network. Station location 10.2908°N , 84.9525°W.



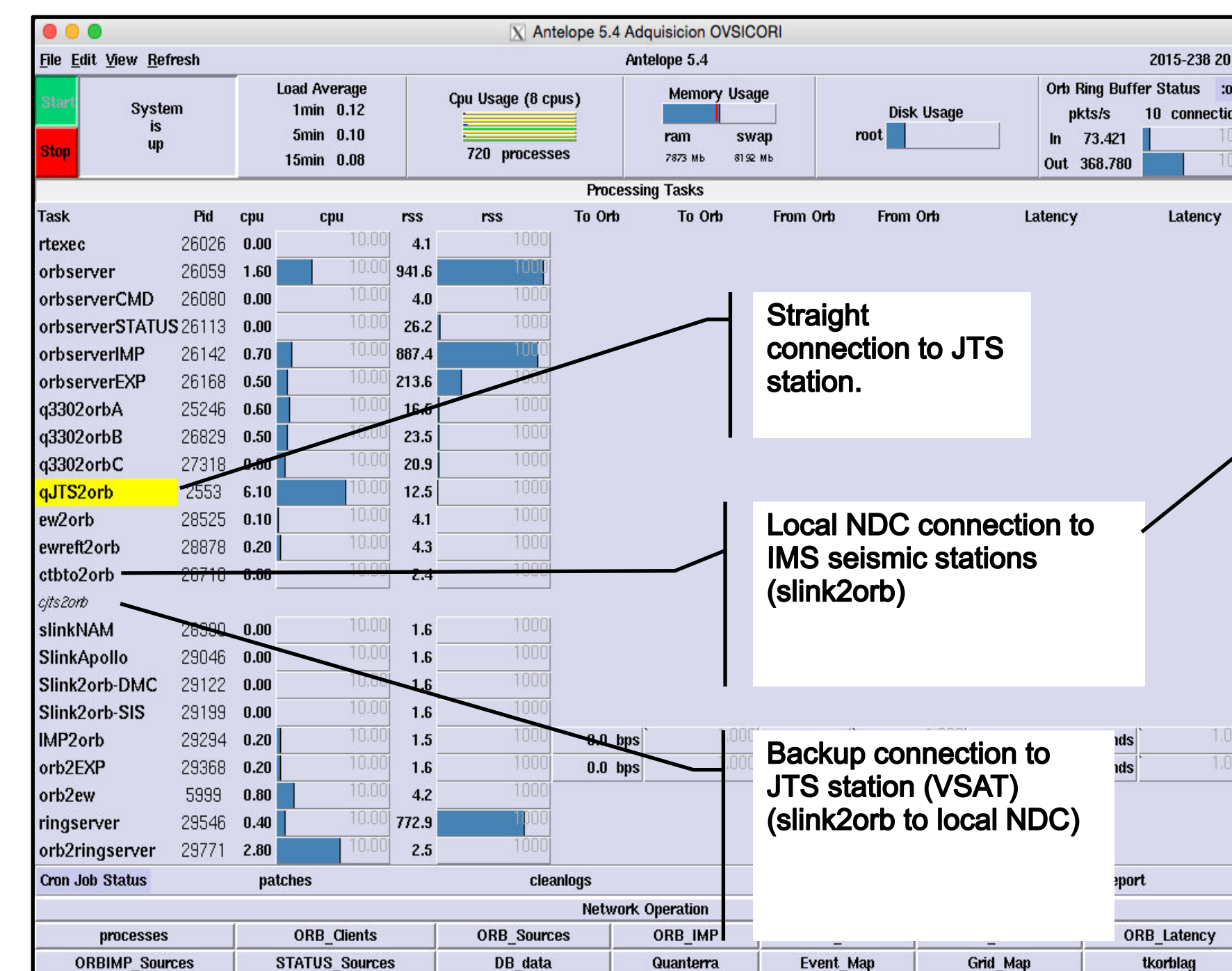
Figure 3. Communications Building



Figure 4. Seismometers STS-2, STS-1, FBA

The auxiliary seismic station AS025 is included in our local seismic network event location to complete a network of 80 seismic broadband stations. This station have a STS-2 seismometer, STS-1 seismometer and FBA-EST accelerometer.

INTEGRATION OF STATIONS OF IMS NETWORK OF THE CTBTO TO THE OVSICORI-UNA NETWORK



Straight connection to JTS station.

Local NDC connection to IMS seismic stations (slink2orb)

Backup connection to JTS station (VSAT) (slink2orb to local NDC)

IMS Stations
CODE | PLACE
PCRV | Venezuela
ROSC | Colombia
BDFB | Brasil

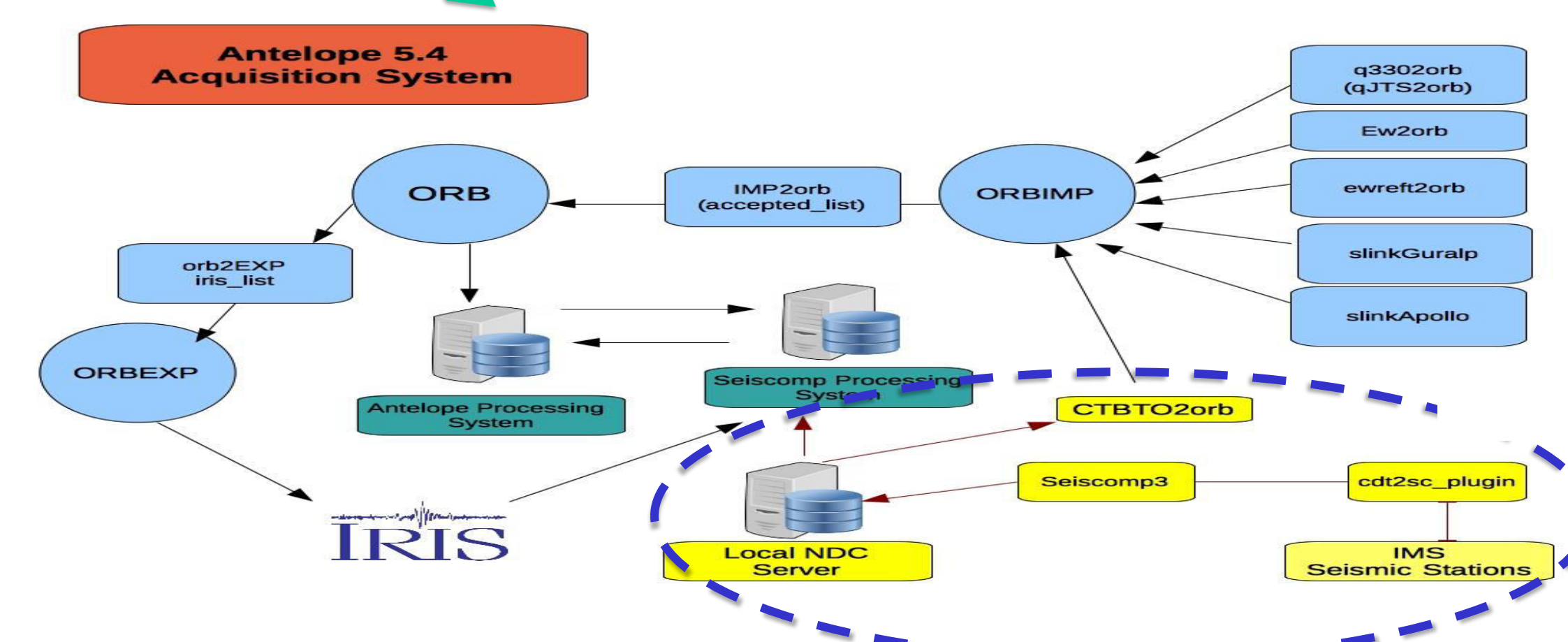


Figure 5. System Integrations of Antelope and SeisComp3

The integration of IMS stations (PCRV, ROSC, BDFB) into the local network is done with the SeisComp3 acquisition system located at the National Data Centre in Costa Rica and integrated into the system of acquisition, automatic location and processing of seismic events using Antelope.

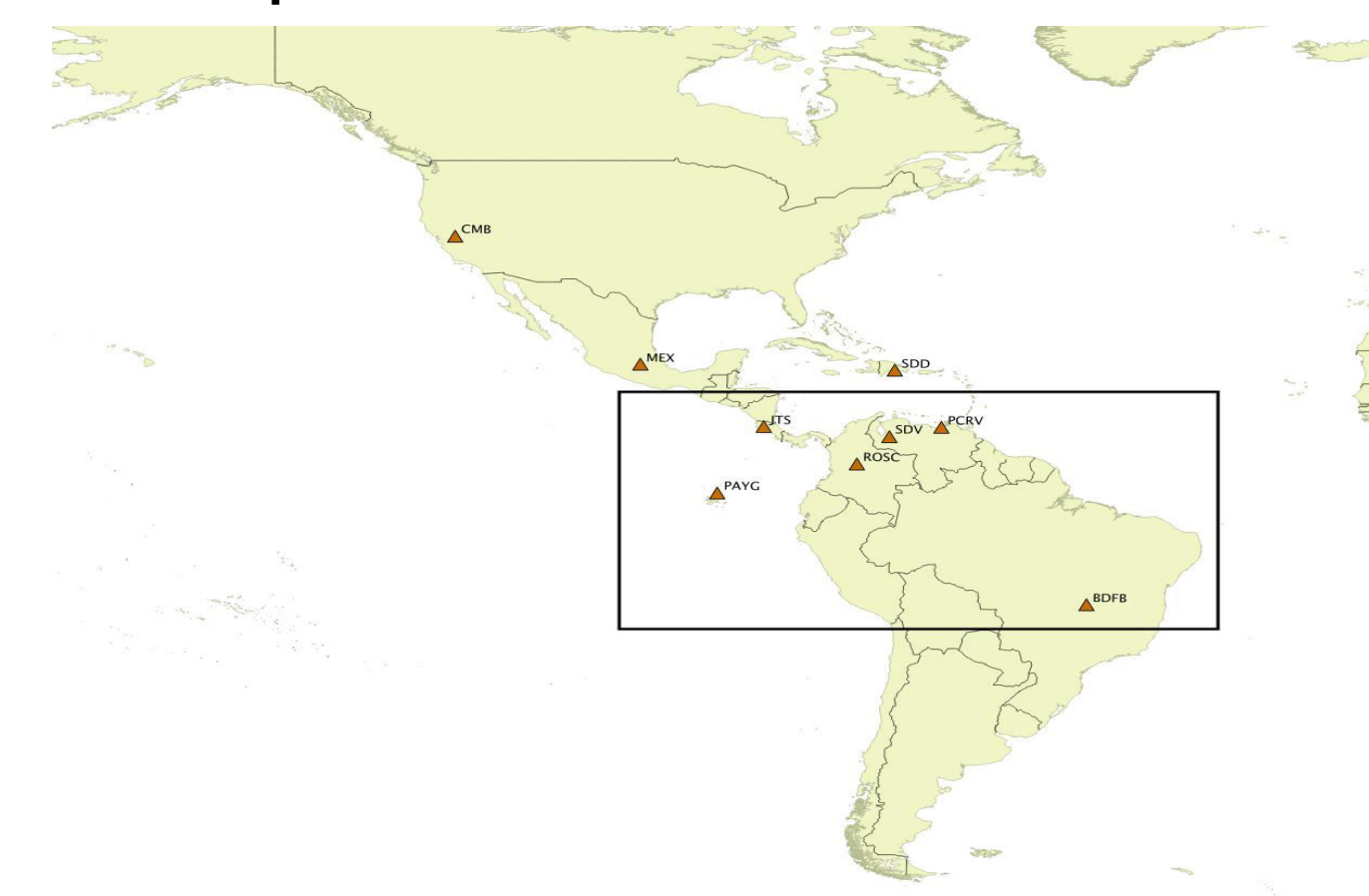


Figure 6. IMS stations CTBTO near to Costa Rica

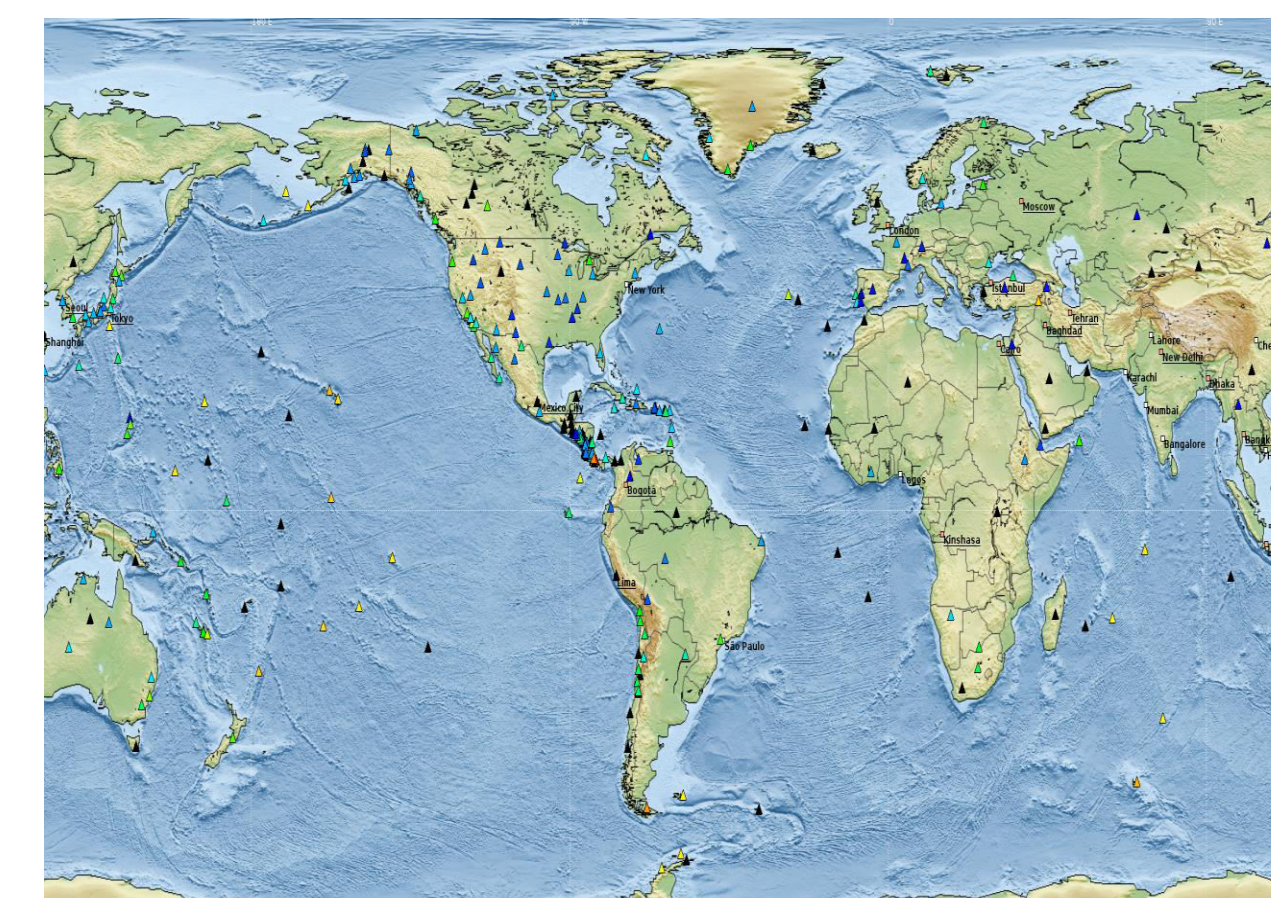


Figure 7. Global Network OVSICORI-UNA

OVSICORI uses the seismic streams of about 350 stations around the world, including the local ones within SeisComp3. Among all the imported stations, there are CTBTO primary and auxiliary stations. Currently, ANTELOPE as well as SeisComp3 use the NDC-Costa Rica seedlink server to stream and process the data of 3 stations.

NATIONAL DATA CENTRE AND SEISMIC EVENTS OVSICORI-UNA

In the part of acquisition server, we are using the Virtualization Technology with VMWARE and NetApp data storage system. High availability is possible with a redundant server architecture in Data Center OVSICORI and National Data Centre CTBTO. In this systems some benefits fault tolerant, data recovery and down time about 5 s. Two data centers have a expanded storage capacity to 100 TeraBytes each side.

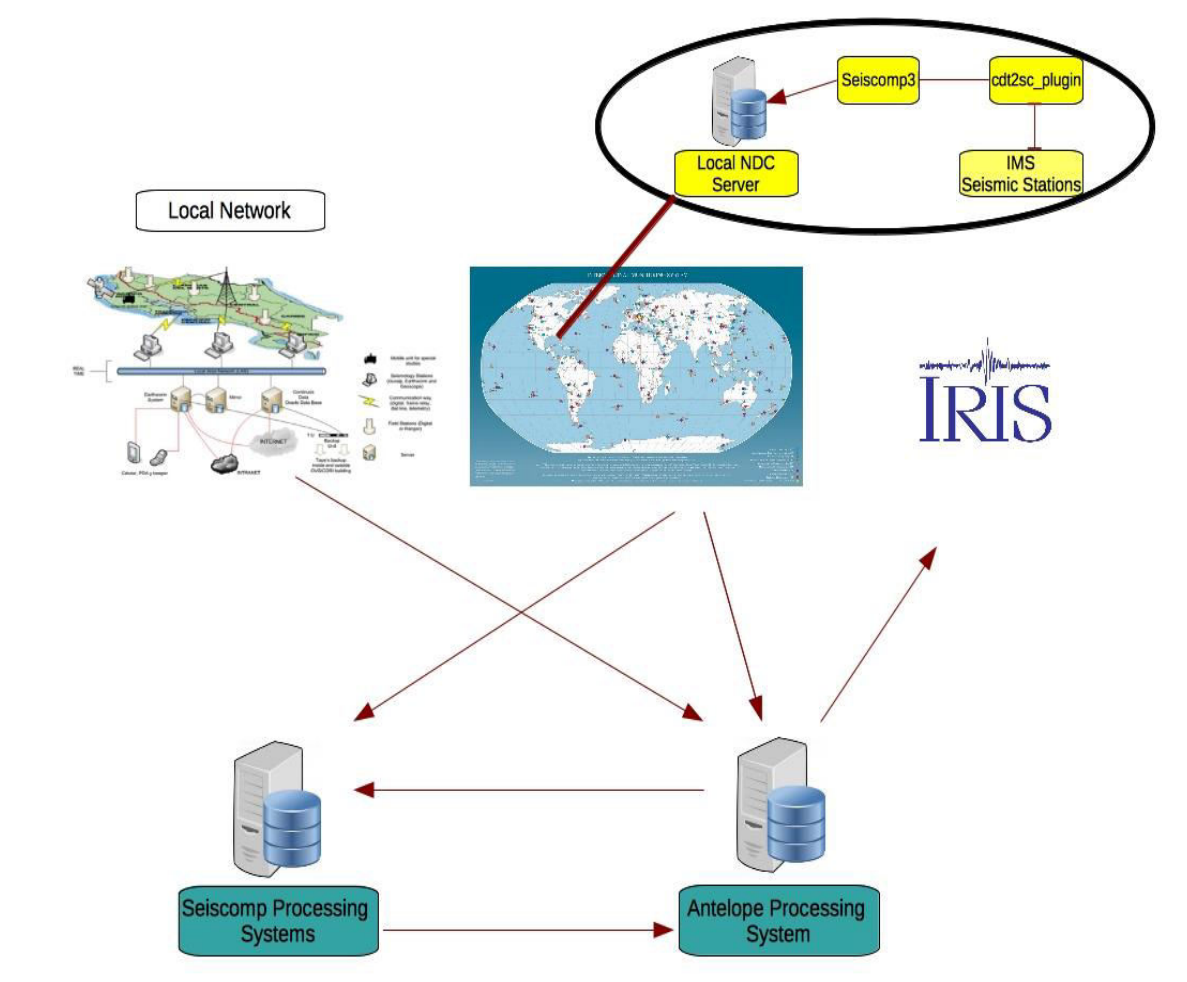


Figure 8. NDC and Data Center Architecture

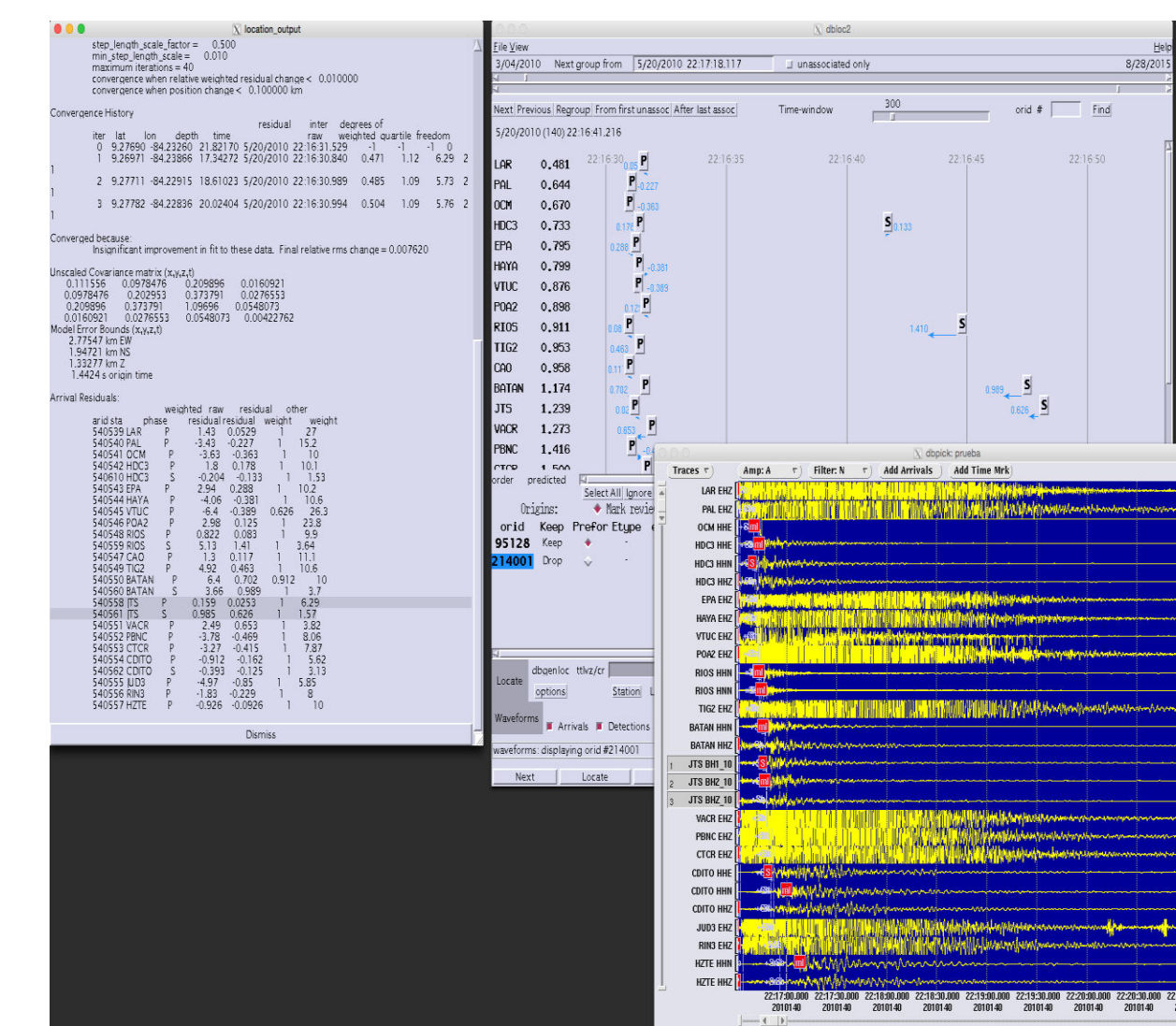


Figure 9. Event May 20th, 2010
Quepos 6.1 MI

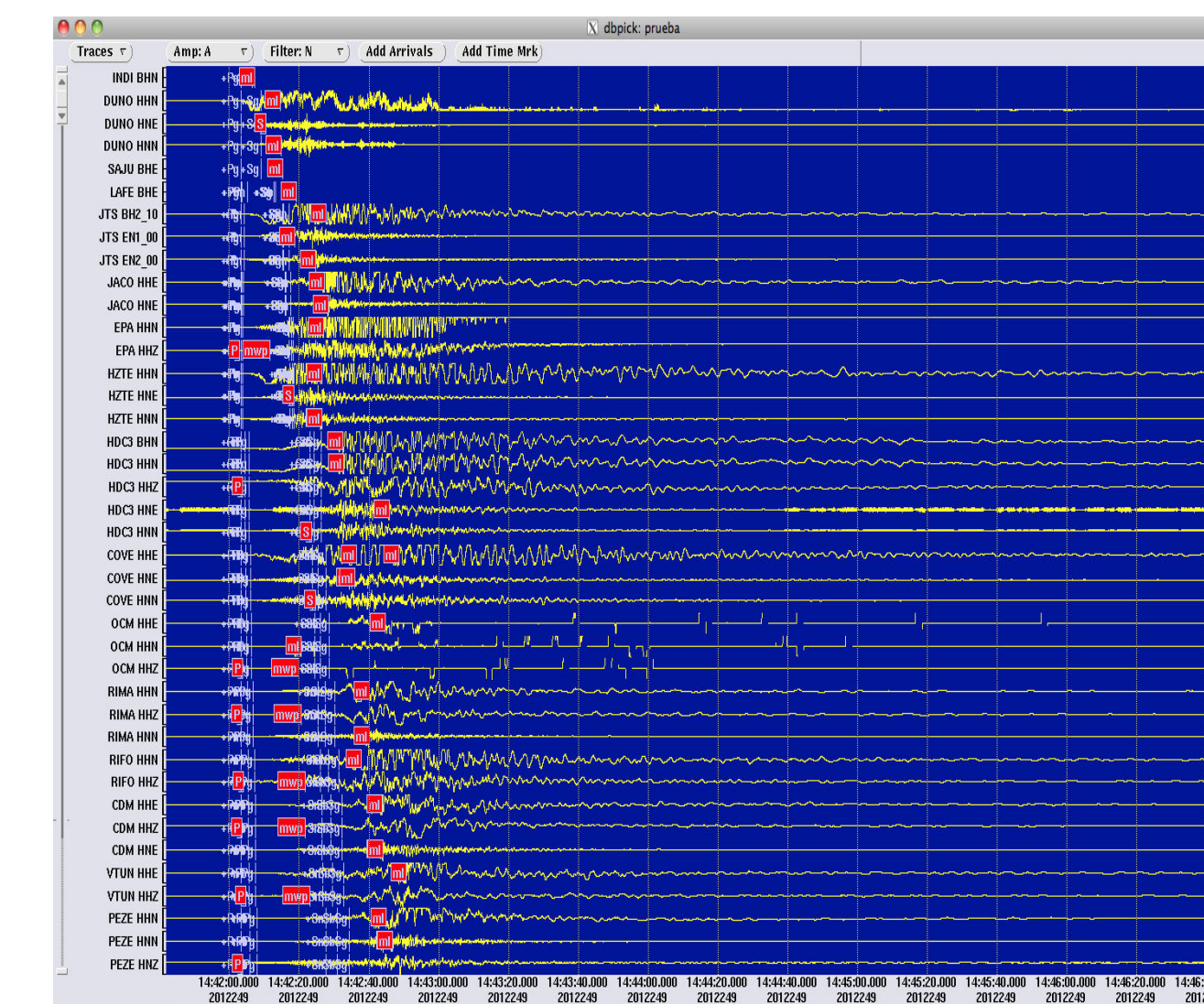


Figure 10. Event Set 5th, 2012
Samara 7.6 Mw

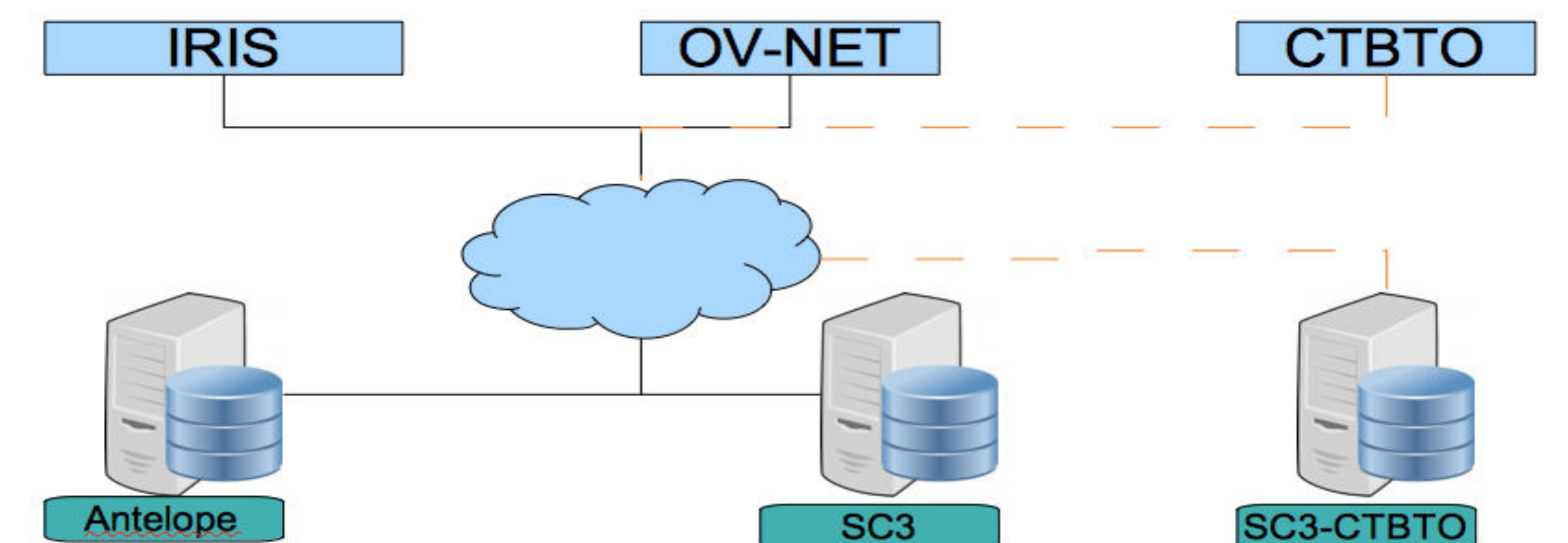


Figure 11. Redundant acquisition systems

The seismic data from OV network, CTBTO, and IRIS are obtained through INTERNET. The data streams of the OV seismic stations have changed from VSAT connection and radio links to INTERNET through the mobile network. It has been identified a possible issue that we might face in case of failure in the seismic data services of OV network and IRIS server. Since there is a current network connection for streaming data for some seismic stations from Vienna to NDC-Costa Rica, we are considering the possibility to deploy a complete automatic processing system in the NDC server using the data of primary and secondary stations.