Comparison of active participation in access of data and products for States Signatories that host IMS facilities and those that do not.

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Introduction

By December 2014, there were a total of 303 International Monitoring System (IMS) facilities being continuously sustained for data collection (stations) and analysis/quality control (laboratories). This is close to 96% of the total of 337 facilities, when complete, that will be monitoring the planet for signs of nuclear explosions, see Figure 1.

The IMS has been placed under the authority of the Provisional Technical Secretariat (PTS). All monitoring facilities of the IMS are owned and operated by the States hosting or otherwise taking responsibility for them in accordance with the Protocol. Each State Party has the right to participate in the international exchange of data and has access to all data and products made available to the International Data Centre (IDC). All facilities, except for the auxiliary seismic stations, are currently funded for operation and maintenance for either testing and evaluation prior to certification or for post-certification activities (PCA).

We compare the average volume of data retrieval for States Signatories that host IMS facilities against those that do not. Increase between 2006 and 2014 in data and products access is also investigated to show what group has exhibited greater increase. Benefits for hosting IMS facilities are also shown for auxiliary stations since these stations receive no financial support from the PTS.

Statistics also show to what extent no funding for auxiliary stations have on access for those countries that are hosting only these type of stations, thereby having to source for alternative financial backing.

Suggestions,emanating from the statistics, are provided on how such states can be encouraged to access data and products.

Further investigation, shows that there is a huge difference with the statistics of those states that host IMS facilities. The states hosting only auxiliary seismic stations pale in comparison with those with PCA facilities, see Fig. 3. This may be due to available resources for PCA stations, which provides for a paid cadre of staff dedicated to verification related issues.

The states hosting only auxiliary seismic stations, however, do slightly better when compared to those hosting no IMS stations at all. Generally, according to Fig. 4, the former have a slight edge in accessing data via AutomCRM and subscriptions. There has been a downward trend in subscription via email for data and products over the years, see Fig. 5. This has been compensated with a rising trend in NDCs opting to receive continuous data which they then process themselves. This has been greatly so with the countries which only host auxiliary seismic station since they are permitted to receive their own auxiliary stations. Some of these auxiliary seismic stations have actually seen improvement in data availability for reception at the IDC due to separate arrangements which have been made with parent networks like IRIS to provide closer cooperation and assistance for operations of the facilities. See Fig. 6.

In related posts (Phiri et al., 2013, 2015) it has been shown how emerging NDCs targeted through Capacity Building activities have achieved significant gains offered by the provision of capacity building system equipment, NDC software and training by the PTS.

Conclusion

On average, countries hosting IMS stations are benefiting from their active role under the treaty by advancing their NDC capacities faster than those not hosting IMS stations. Statistics have shown that between 2005 and 2014, States Signatories host IMS facilities have increased their share of access to data and products from 1:1 to a ratio of nearly 7:1 to those who do not host any facilities. Although the CTBTO does not meet costs of operating and maintaining IMS auxiliary station facilities, the States Signatories that host these as the only IMS facilities, these have shown a persistent desire to access data and products. Efforts to assist this later group and those NDCs in countries that do not host IMS facilities show promise for improving the readiness and capacity to increase access. These efforts include targeted capacity building measures and efforts by parent networks for auxiliary seismic stations in improving data availability capacity.

Fig. 1 Certified IMS Network, 31 December 2014 in 73 countries with Senior Signatory Accounts

Fig. 2 Share of Data Volume for States Parties Hosting IMS Stations vs those without

Fig. 3 Average Data Volumes per country (GB)

Fig. 4 Data requests for Countries with Auxiliary Station vs those without

Fig. 5 Effect of Continuous data reception on Subscriptions for Countries with Auxiliary Station vs those without

Fig. 6 Benefits from hosting IMS Auxiliary stations

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