Increase in volume of data and products accessed by National Data Centers at the IDC over the past decade, 2005-2014.

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As of December 2014, 134 State Signatories were designated as Authorized Users to access IMS data and IDC products from the PTTs. There are four access methods for retrieving data and products from the PTTs. These are: namely, requests via e-mail, subscriptions, IDC secure web portal, and external data service.

There are 3 categories of users:
- Principal Users have access to all IMS data and IDC products through the 4 access methods.
- Regular Users only have access to the data and products of the IDC Secure Web Portal.
- Statutory Operators: including station maintenance personnel may only access station status information and data from their station.

Member States can designate up to 6 humiliating to which those users belong have access to Data and Products. A National Data Center is an organization with technical expertise in the operation and verification technologies of the Comprehensive Nuclear-Test-Ban Treaty standing under the guidance of, as an integral part of national authority.

IMS data are time series data that measure a general motion or a pressure difference from seismic, hydroacoustic and infrasonic sensors and sample point-like signals from radionuclide detection systems.

The IDC processes the data from IMS stations and generates a number of standard products, the first ones automatically and the later after analyst review. Automatic event screening is applied as one of the last steps.

As of 31 December 2014, 1,634 Authorized Users have access to IMS data and IDC products.

**Discussion**

As of December 2014, 134 State Signatories have established Secure Signatory Accounts out of 135 who have signed the Comprehensive Nuclear-Test-Ban Treaty (Figure 1). As can be seen in Figure 2, there is a fairly general increase in access of data and products from all geographical regions, though the largest share is in the two regions of North America and Western Europe (NAWR and East-South-East (EASEP). During the decade in focus, has been an increase in the number of countries accessing data and products in other regions. Figure 3 shows this increase and is most prominent in the other 2 regions, especially Africa and to some extent in Latin America and the Caribbean (LAC). This shows that there is increasing presence of access to data and products from these regions.

Average access has shown a year-on-year increase which has been maintained essentially in the years 2005 to the over 10 Terabyte level of 2012. This high rate is due to the substantial influence of the following factors (see Figure 4):
- 1. The decision by the Working Group in March 2009 to double the daily data volume maximum to 500 MB/day.
- 2. The Global Data Relay satellite and the nuclear accident at Fukushima in May 2011 (Atmospheric Transport modelling was locally limited to the first 24 hours due to the high radiation levels).
- 3. The anticipated DPRK, 12 February 2013 announced nuclear test (Figure 7)

Through these the mapping of the data collected at the IDC (Figure 2), and as the graph in Figure 3 showed that countries individually are experiencing their very own data set, continuously to last 6 years of the decade.

The majority of State Signatories, according to Figure 6, can access the IDC Secure Web to access data and products. This is so average about twice a week. Requesting of data via the web using AutoDRM and subscription was made easier in the recent future and has supported the launch of the web services developed by the previous version. Further increase in the usage of this access method is anticipated.

Receiving of continuous data (Fig 5) is through a simple of subscription, has over the years increased and caught up to the number of states accessing data via subscriptions and email request (AutoDRM). This is showing that the number of states that receive more data to understand everything analysis has steadily been going up.

For the past 6 years, a total of 328 countries have accessed data and products at one time or another during the decade. Of these 77% (246) have consistently accessed data since their establishing of the SSA. However, after registering an initial contraction of the countries that have a SSA but not accessing data in the first three years of the decade, the gap between those that are accessing and not accessing (though with SSA) has increased and remained almost constant for the past 3 years (Figure 8).

Increased capacity building activities like training and provision of equipment to targeted regions like Africa, LAC, Eastern Europe and SSAs have led to increase in access activities (see Poster No T4-A01).

**Conclusion**

Over the 10 years from 2005 to 2014, an increasing number of more States Signatories have established SSAs to access data and products. For example, in Africa, the number of countries accessing data increase four-fold over this period. This increase has sometimes been spurred by events like the drafting of the daily data volume maxim to 500 MB/day, the AutoDRM announcement made in 2009 and the Global Data Relay Satellite and the nuclear accident at Fukushima. Overall, however, the increase has been sustained due to enhanced number of training sessions, workshops, conferences and provision of capacity building equipment to targeted regions. From 45 TB in 2005 to 185 TB in 2014 (see Figure 10) and in total volume of data, this translates to an absolute increase of over 20 times.

This challenge has been keeping all of us to access data in a manner as well as on as many of those that have not yet established SSAs to do so. Seventy three (73%) percent of those countries that have accessed data during this decade, have continued year on year to do so without fail. This shows that there is wide usage of verification regime related data among States Signatories.

**Figure 5. Number of countries having their maximum data usage in a year**

**Figure 6. Number of countries accessing data via subscription, email and AutoDRM.**

**Figure 7. There was increase of data requests after the Global Data Relay satellite and Fukushima event.**

**Figure 8. Number of countries using various methods yearly**

**Figure 9. If a total of 126 countries that have accessed data 2005 to 2014, there are those that only accessed data via subscription**

**Figure 10. Volume of data transferred to the States Signatories (SSAs).**

**Figure 11. Volume of data transferred to the States Signatories (SSAs).**

**Figure 12. Volume of data transferred to the States Signatories (SSAs).**

**Figure 13. Increase in number of countries accessing data per Group (2005-2014)**

**Figure 14. Increase in data usage for decade 2005 - 2014**

**Figure 15. Number of data accesses per year**

**Figure 16. Poster No. T4-1-P11**

**Figure 17. There was increase of data requests after the 2013 DPRK announced tests**

**Figure 18. Poster No. T4-1-P11**