

## ESA ISO and XMM-Newton Archives Inter-Operability and VO services

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**Abstract.** The ISO Data Archive (IDA) and XMM-Newton Science Archive (XSA) are usually accessed through a dedicated and powerful Java user interface available from any browser. To allow the access to external applications and expert or normal users that need to retrieve data directly from the archive bypassing the Java User Interface, an integrated Archive Inter Operability system (AIO) has been developed for XSA and IDA. This paper describes the general inter-operability services that this system provides as well as the specific VO standards services like SIAP that are already supported.

### 1. Introduction

Within the ESA's Science Operations and Data System Division, the Archive Development Team in Villafranca, Spain is responsible of developing and maintaining ESA Scientific Archives. For the ISO Data Archive (IDA<sup>1</sup>) and the XMM-Newton Science Archive (XSA<sup>2</sup>), the standard way to access to these ESA archives is through a powerful Java User Interfaces.

To allow the access to external applications and expert or normal users that need to retrieve data directly from the archive bypassing the Java User Interface, an integrated Archive Inter Operability system (AIO) has been developed for XSA and IDA.

The general AIO services are:

- Postcard Server (URL)
- Product Server (URL)
- Product Server (Socket)

Later on, we have adapted our AIO inter-operability services to comply to the new VO standards, in particular to SIAP (Simple Image Access Prototype).

VO SIAP compatible AIO services are:

- Image Query
- Image Retrieval

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<sup>1</sup><http://www.iso.vilspa.esa.es/ida>

<sup>2</sup><http://xmm.vilspa.esa.es/xsa>

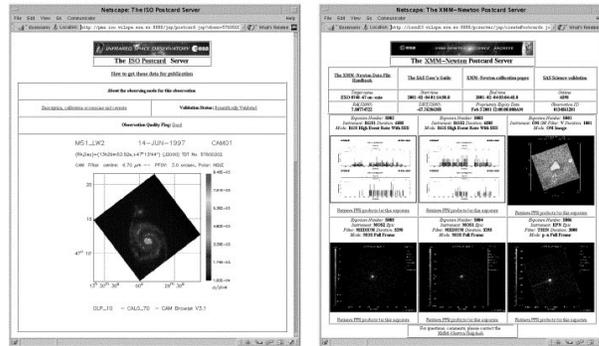


Figure 1. ISO and XMM-Newton Postcard Servers.

## 2. General AIO Services

The IDA and XSA Archive Inter-Operability (AIO) systems allow external applications or archives to access directly the ISO and XMM-Newton data products bypassing the standard User Interfaces which require interactions with a human being.

- Full documentation about how to use these services can be found at:
- ISO : <http://pma.iso.vilspa.esa.es:8080/aio/doc>
  - XMM-Newton : <http://xsa.vilspa.esa.es:8080/aio/doc>

### 2.1. Postcard Server (URL)

The Postcard Server is accessible via a URL for each observation that returns an HTML page containing a quick-look view of the data products for that observation together with links to relevant documentation and links to the products themselves (via the Product Server). Example of the Postcard Servers are given in Figure 1.

The Postcard Server is already used by various archives such as CDS, Aladin, IRSA, ADS, HEASARC.

### 2.2. Product Server (URL)

The Product Server is accessible via a URL that returns an HTML page with the link to the FTP server where the requested data have been put. After a few seconds, the data products download via FTP is initiated. Alternatively, by setting an extra parameter, the data products can be downloaded directly without going to the FTP server. This is particularly interesting for applications like Aladin who wants to request the products for future display. Various parameters in the URL define the level of data products that is requested by the user.



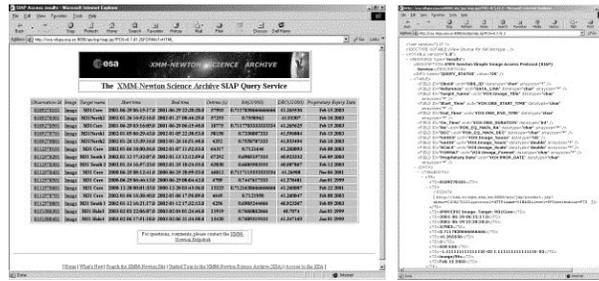


Figure 3. XMM-Newton SIAP Cone Search, HTML and VOTABLE results

Data Archive and XMM-Newton Science Archive. An example of the SIAP cone search for XMM-Newton is given in Figure 3.

### 3.2. SIAP Image Retrieval

The AIO SIAP Image Retrieval is using the standard AIO product server in a URL mode to pipe directly the standard data products to the requesting client. The default data products to be returned correspond to the highest level of automatically processed products.

## 4. Conclusions

The ISO Data Archive and XMM-Newton Science Archive offer flexible and powerful Inter-Operability services which allow to access directly archive metadata and data products.

These services are already compliant to the recent VO standard Simple Image Access Protocol and we have as well adapted them to support Simple Spectra Access by using similar mechanism.

These services are already widely used by ESA instrument experts and by external archives and applications and we foresee a more extensive use in the coming era of the Virtual Observatory and inter-operable archives.

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