Developing a SPASE Query Language

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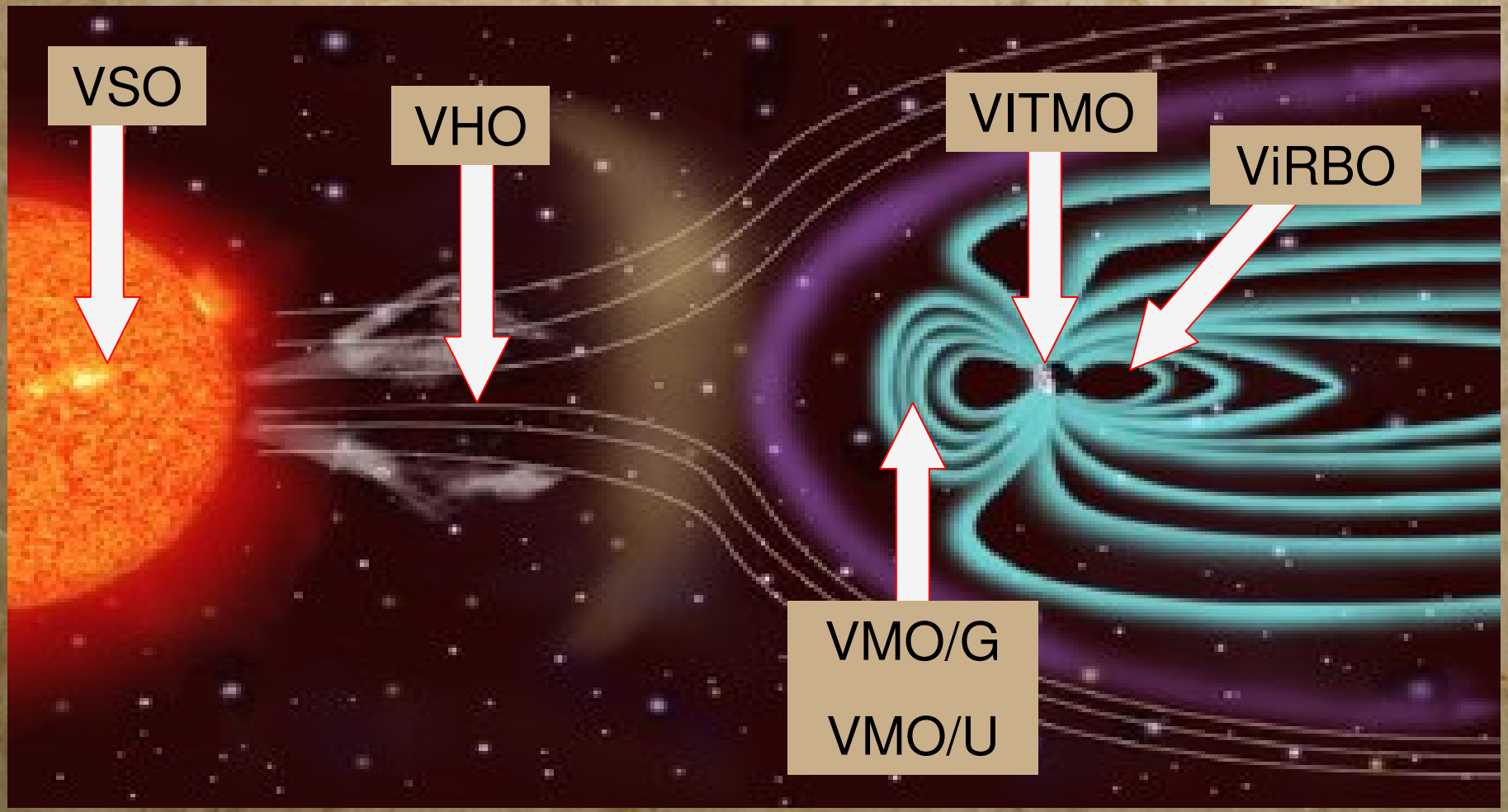
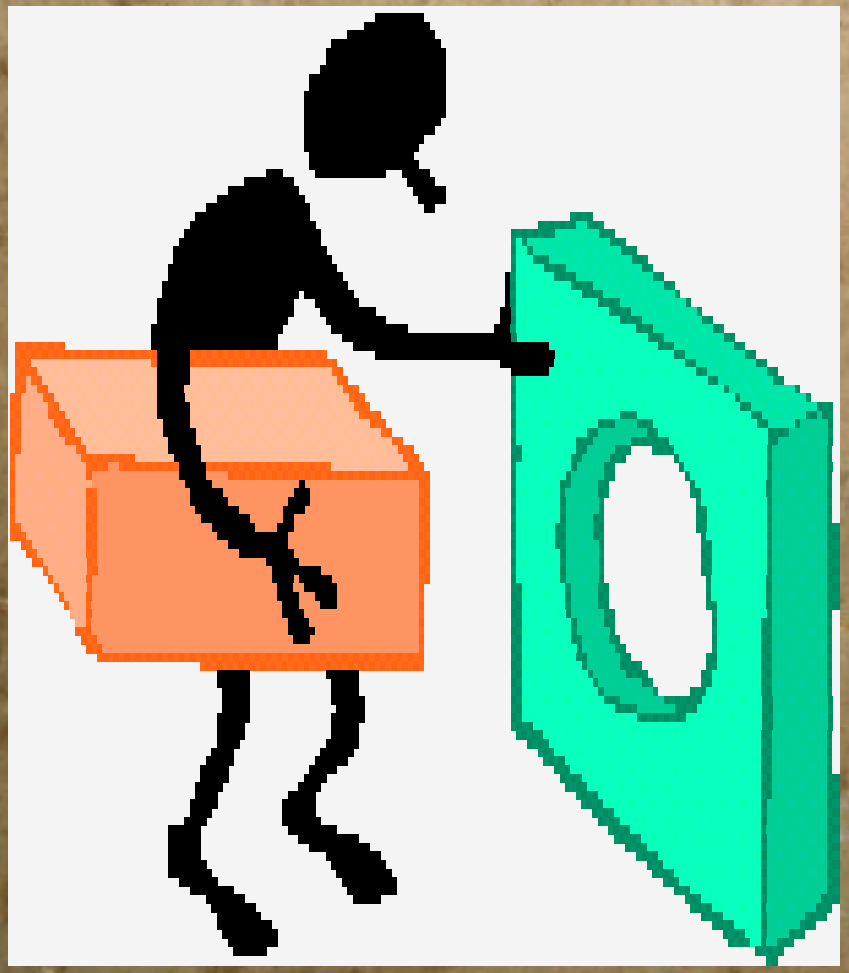
NASA VxO Data Environment



The Problem

Communicating among a number a discipline specific VxOs



- **APIs work well for users in a given discipline**
- **Across Heliophysics a convenient and practical solution is a query language**
- **The astronomical community has a solution which we can learn from - as well as current technologies**

Query Language Solution

- Standardize How to ask Questions
- Upgrades or changes to VxO searches do not affect other VxOs
- Leave VxO Interfaces Intact - Translate between Query Language and VxO interface

Query Language Solution

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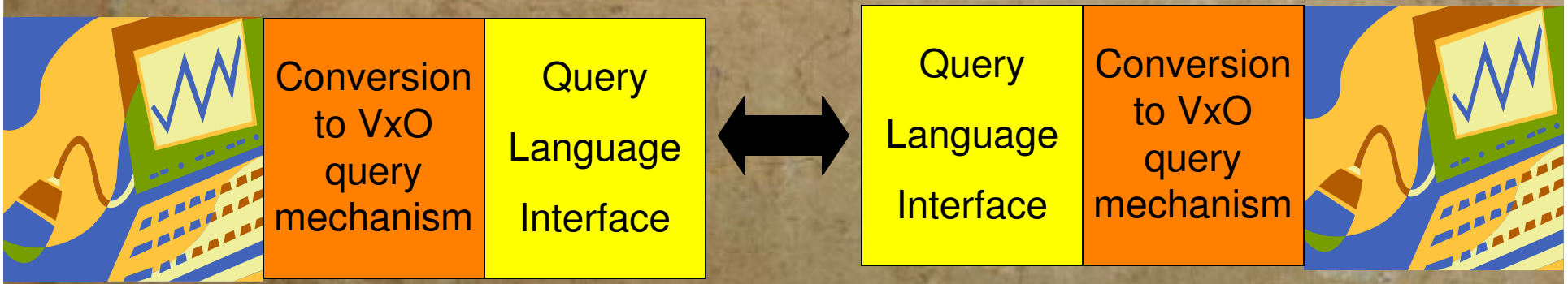


- Standard Set of Terms and Definitions already exists
- SPASE Can Serve as Standard for how to ask questions
- Need to formulate how to use data model to query VxOs

Astronomical Data Query Language

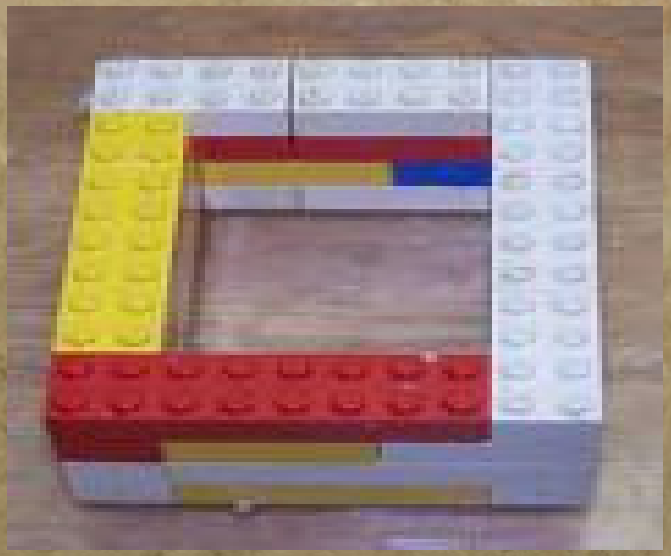
- IVOA's solution to the same problem
- Means of expressing SQL statements in XML
- Could be modified to use SPASE terms

XQuery

- SPASE DOM
- NumericalData/ResourceHeader[ReleaseDate>2005]/InformationURL
- Could publish DOM of popular Extensions

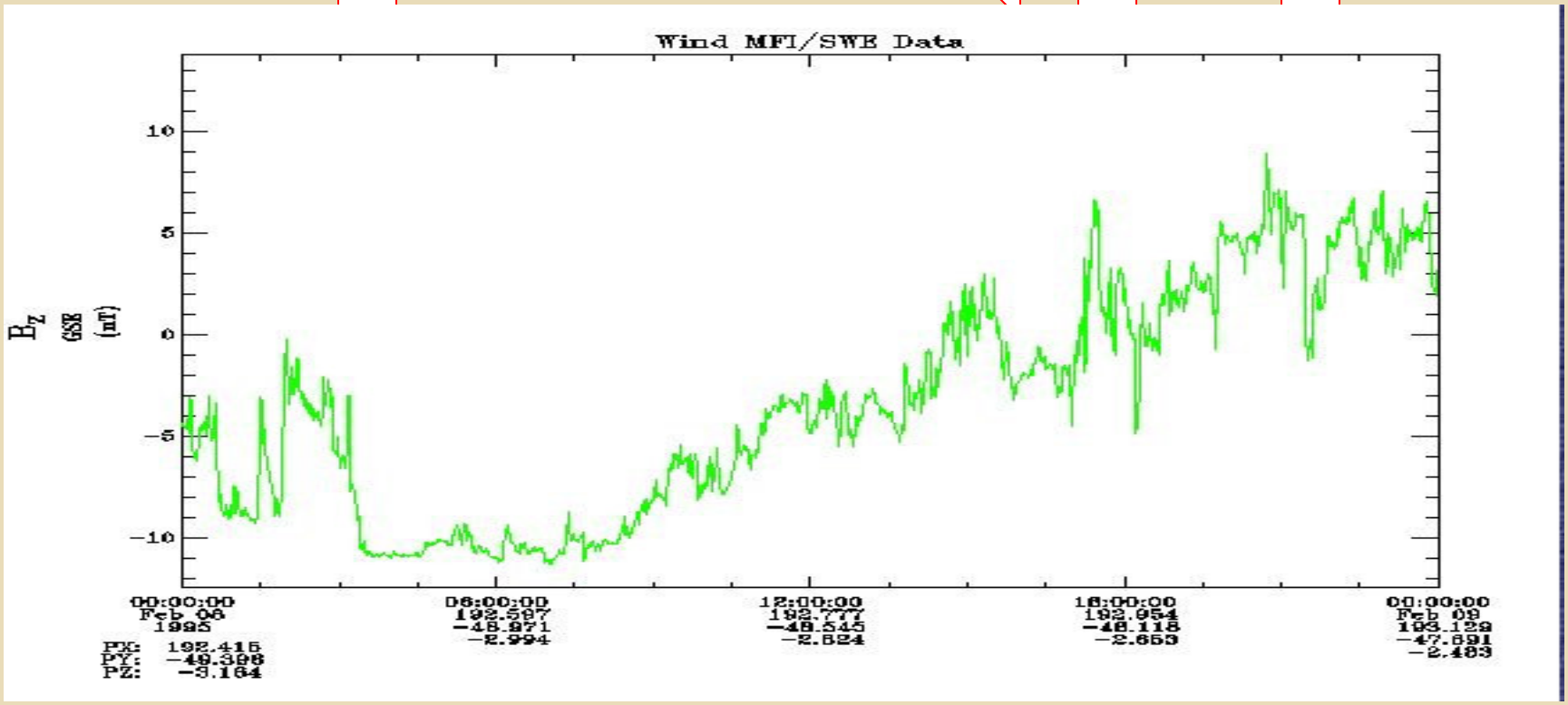
All the pieces are availabe

1. SPASE Data Model
   - standardization
2. Xquery - specifing what we want
3. ADQL - formal representation



Query Message With Constraints

```
<Where>
  <Condition xsi:type="comparisonPredType" Comparison="&lt;">
   <Arg xsi:type="columnReferenceType" Table="NumericalD   a"
    Name="ComponentZ" />
   <Arg xsi:type=   tomType">
    <Literal xsi:t    ="integerType" Value="0" />
```



Processing Query

- Not all VxO are created equally
- Each have unique capabilities
- Query Language should be powerful enough to ask complex questions
- Software should be able to determine what VxO can answer

Use Cases

- As an API for developing VxOs
- To pass a general query to a discipline you are not an expert in
- To develop a common interface for services

Current Status

- Working on a Prototype Implementation using SPASE 1.2.0
- Will Begin Validating Using VHO and VMOs
- Will collaborate with other VxOs
- VSO and VITMO interested in testing once prototype is ready