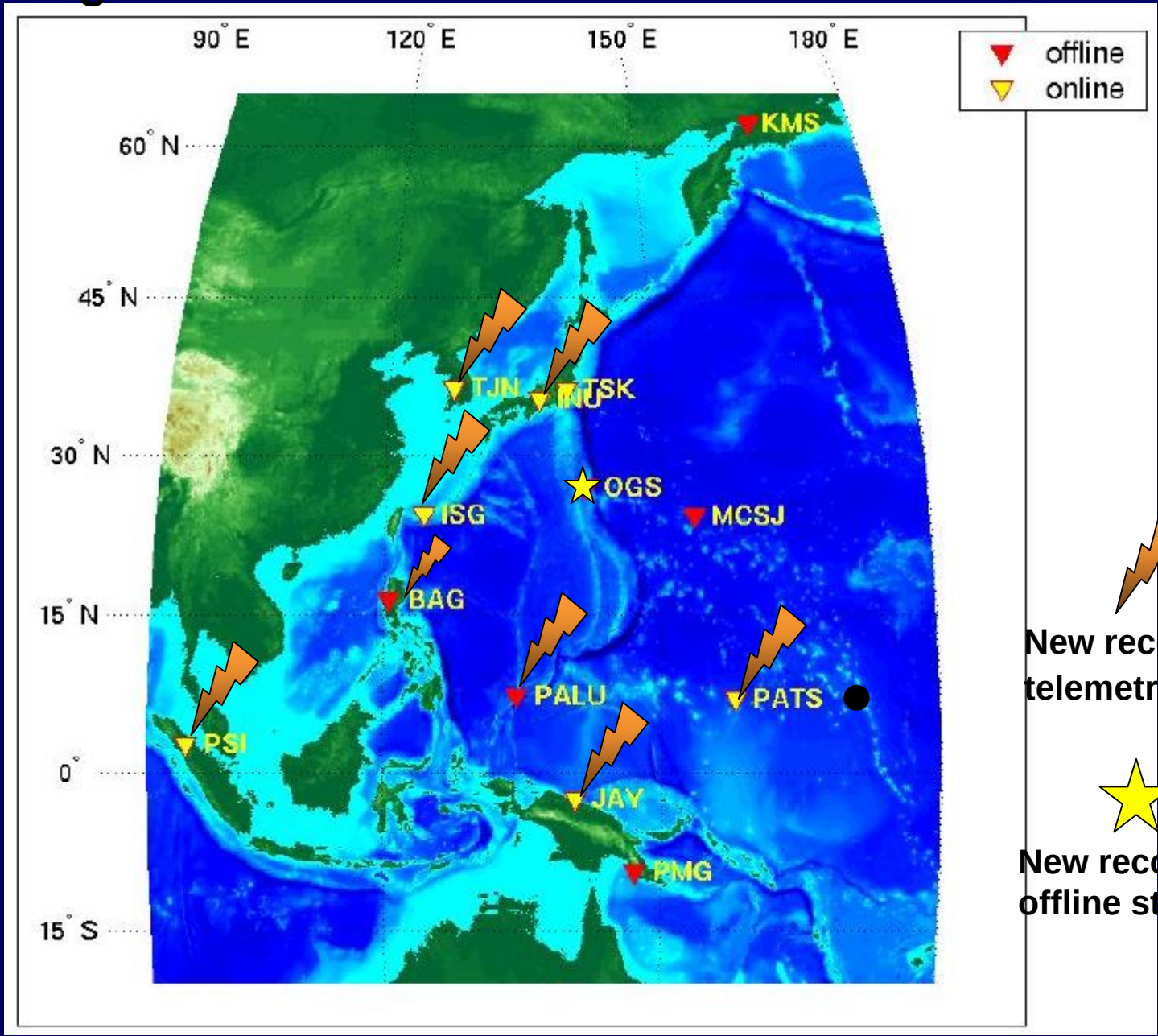
Establishment of data center in Asia and west Pacific area

Seiji Tsuboi

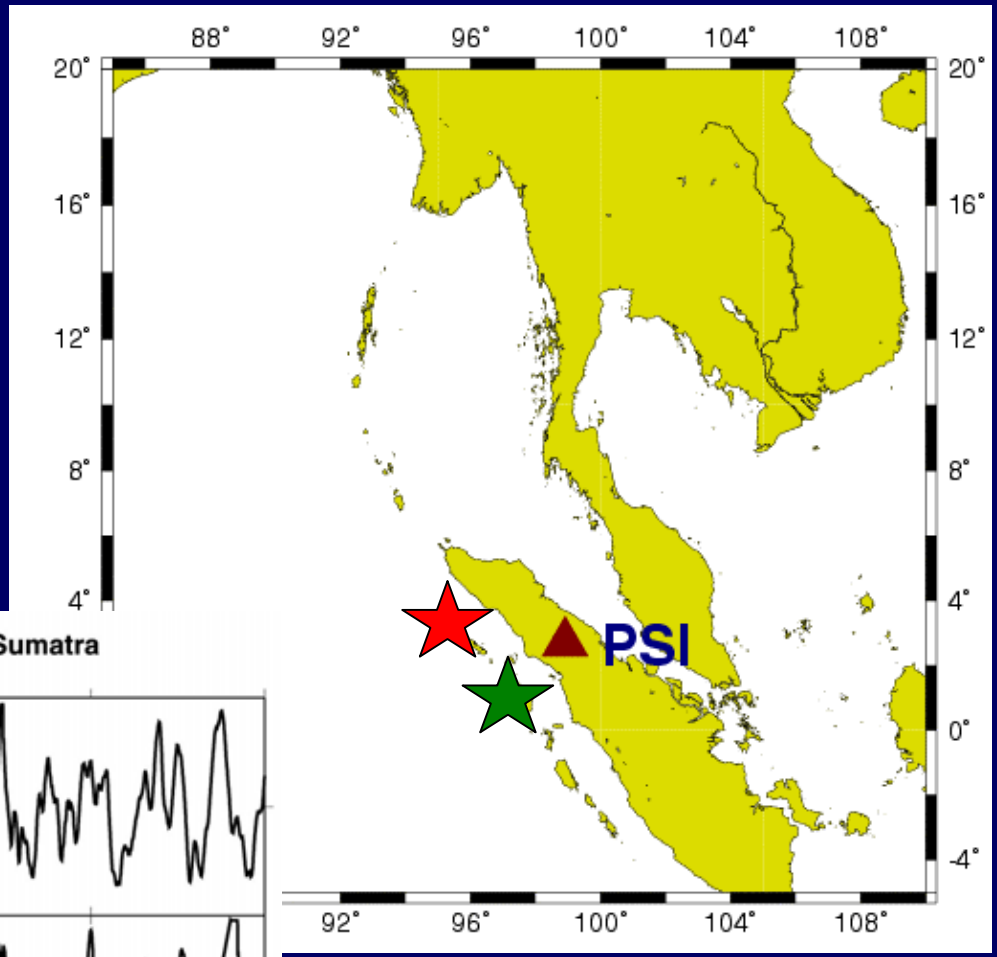
IFREE/JAMSTEC

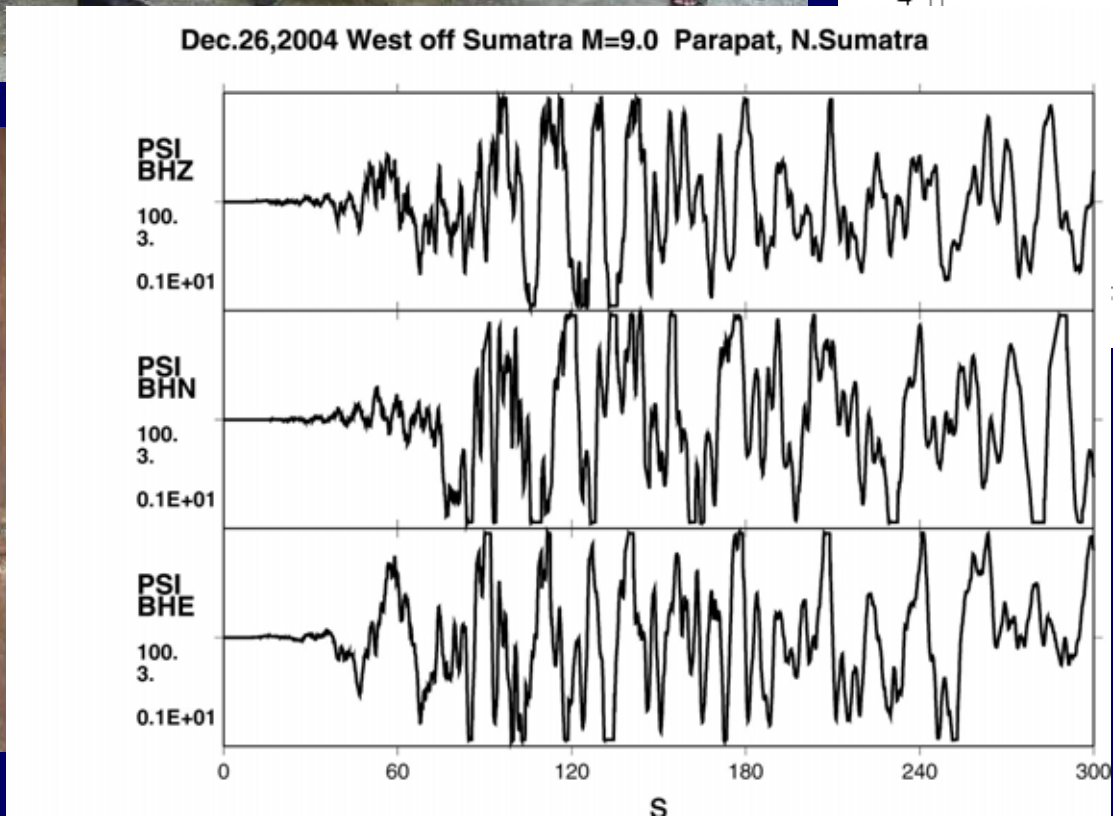
Upgrading status for seismic station



New recorder and telemetric station

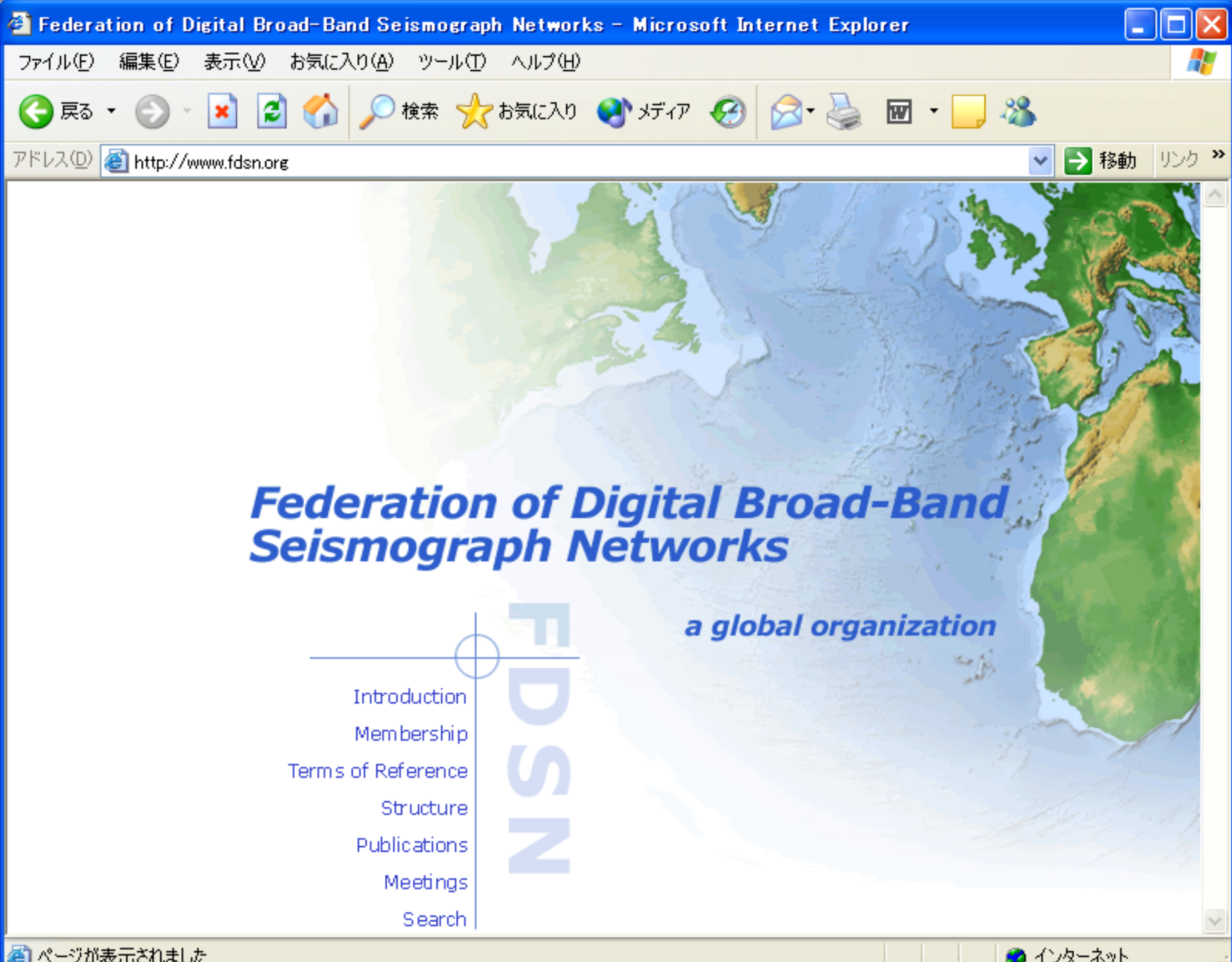
New recorder and offline station



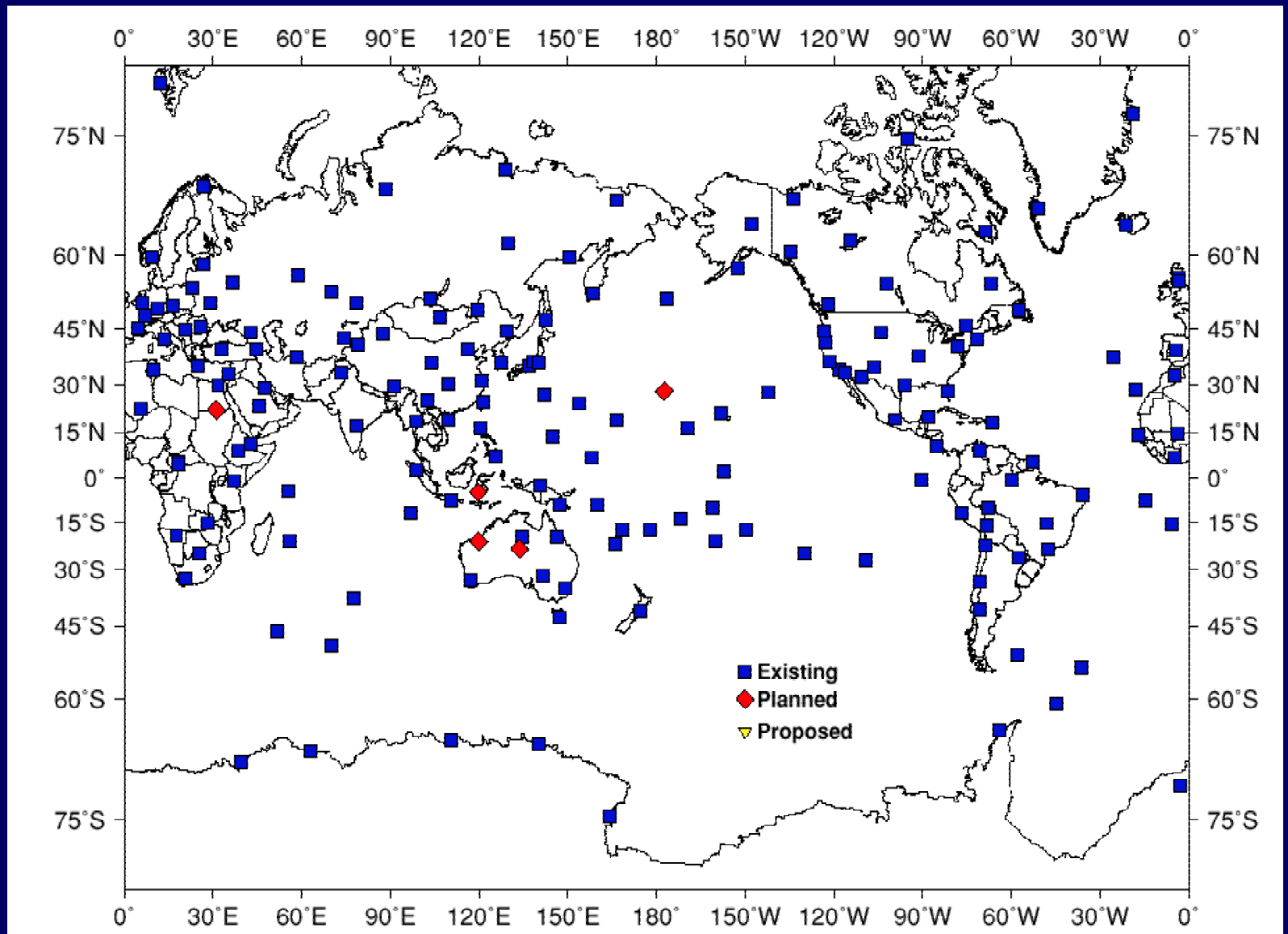


Dec.26,2004 Mw>9

Mar.28,2005 M=8.7


Federation of Digital Broad-Band Seismograph Networks - Microsoft Internet Explorer
ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)
戻る 検索 お気に入り メディア
アドレス(D) http://www.fdsn.org
移動 リンク
Federation of Digital Broad-Band Seismograph Networks
a global organization
FDSN
Introduction
Membership
Terms of Reference
Structure
Publications
Meetings
Search
ページが表示されました
インターネット

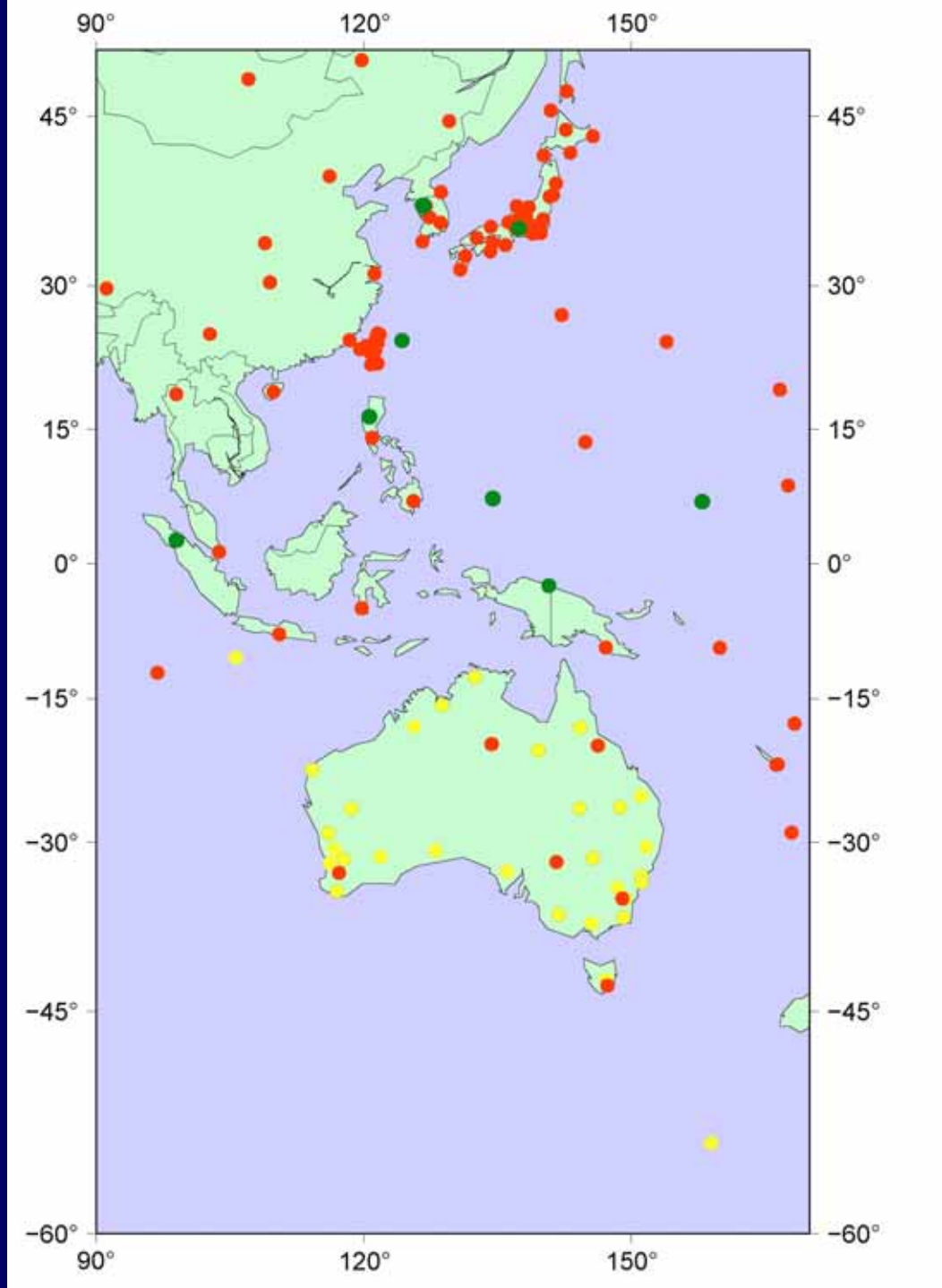
Activities of FDSN WG-1



Realtime data exchange

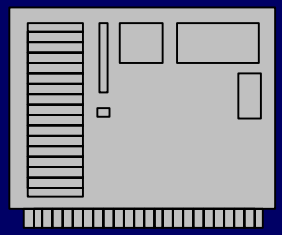
- Realtime data transmission through the internet is common.
- SEED is used as data exchange format even in realtime.
- Software to realize realtime data exchange:
  Antelope, Earthwarm, SEEDlink...

Offline retrieval by NetDC

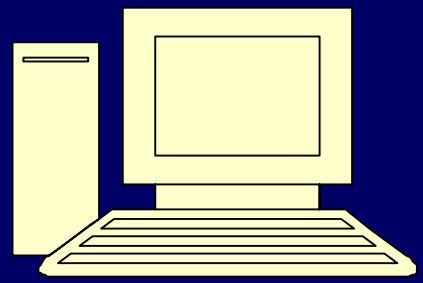


Most of the broadband stations in this area are connected to the internet these days...

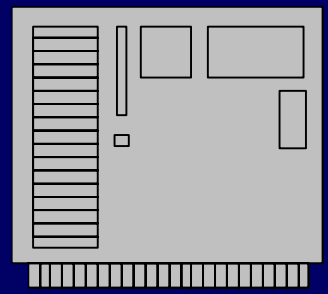
Network Data Center system



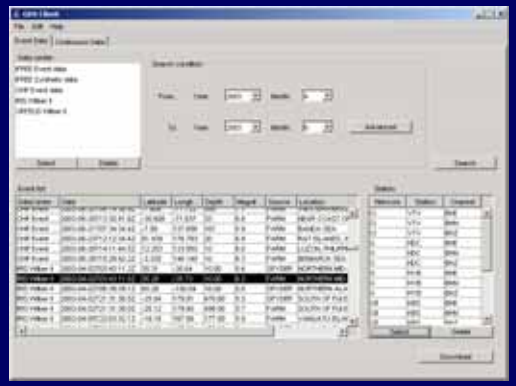
IFREE/JAMSTEC DC



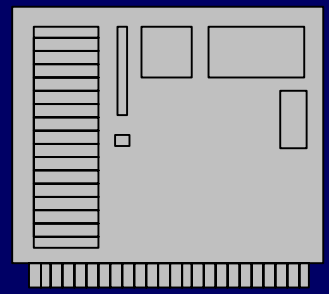
Data Center B



IRIS DMC



Users' PC



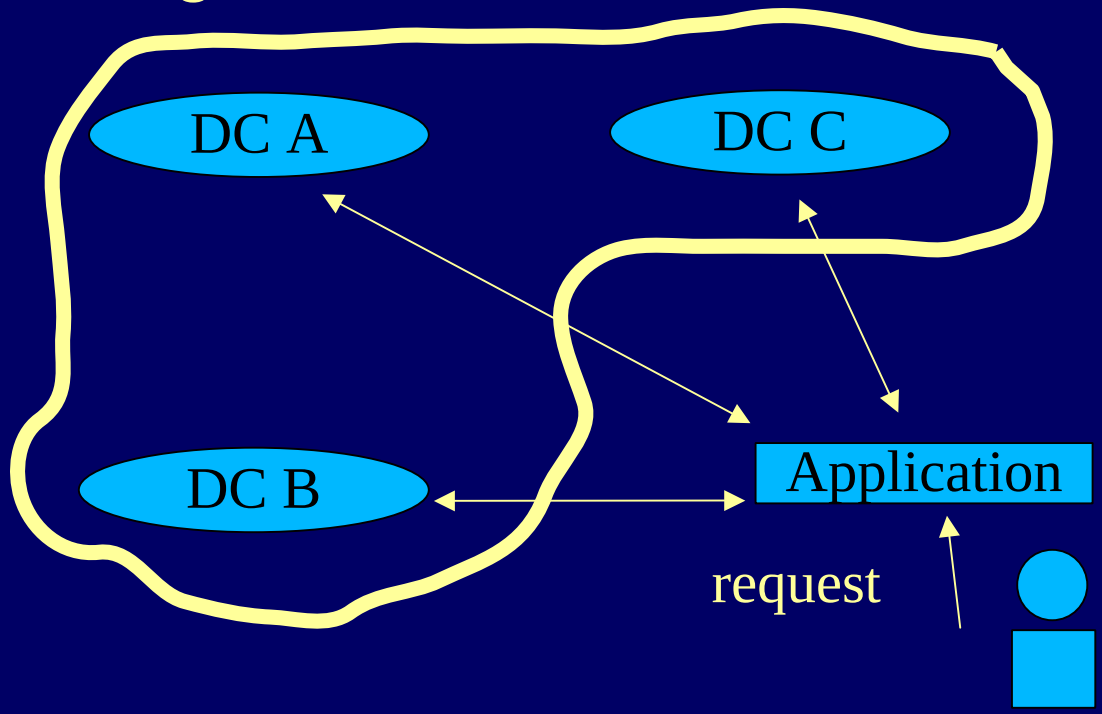
Data Center D

Pacific Region Geophysical Network Data Center of IFREE/JAMSTEC has archived broadband seismograms, geomagnetic, and geodetic data which are recorded by geophysical observation network in northwest Pacific region. These data are distributed through our web site using the Java-RMI based network data center system (Takeuchi et al., 2002). While developing this system we have realized that the current approach has several problems to build network data center system:

- It is necessary to install server software at each data center.
- It is possible that original data source might become obscure.

Geophysical Data Service Client

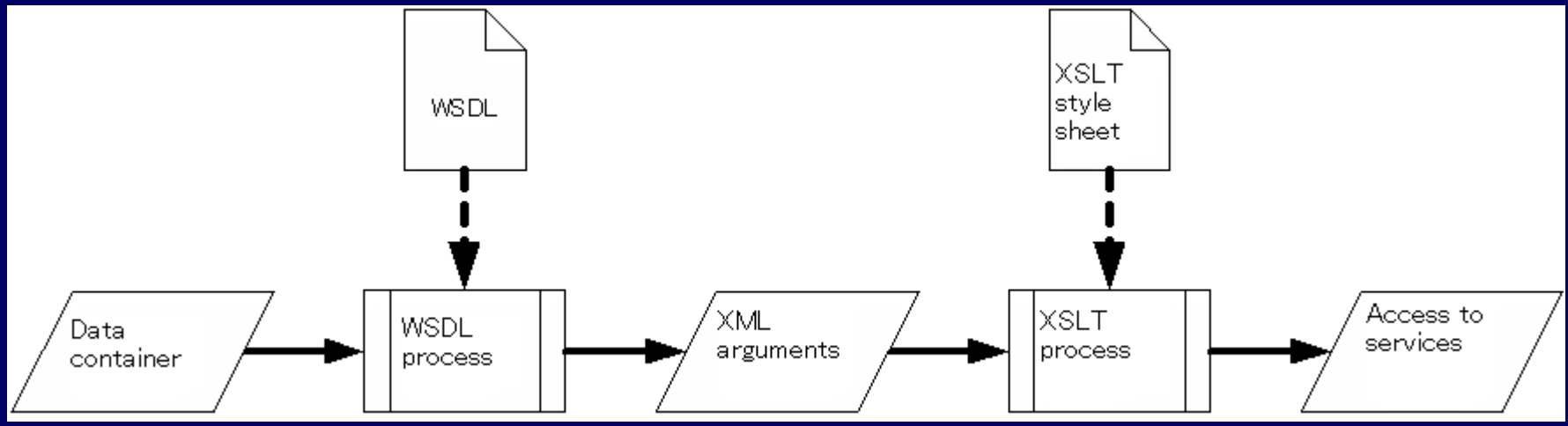
- Using web services technology, differences among data centres are accommodated through WSDL



- **One stop application**

Access to services

- GDS Client uses get and post method of http protocol to access data servers.



To access to other services, it is necessary to prepare WSDL and XSLT files.

GDSClient software

- http://www.jamstec.go.jp/pacific21/

- Following data centers are available through this software
  - IFREE NINJA (Continuous/Event data)
  - OHP DMC NINJA (Cont./Event)
  - IRIS WebRequest(Cont), WilberII(Event)
  - ORFEUS WebRequest, WilberII
  - IFREE Synthetic Seismograms

XML representation of SEED format for extension of current SEED format

XML Representation of SEED format

- eXtensible Markup Language (XML) is a text-based language.
- XML documents use `tags' to establish hierarchical data structure and named values.
- XML can be used for most of all major platforms.
- XML is a basic technology for networking.

Advantages of using XML

- Header structure of SEED is modular, which can be easily represented by XML.
- Data structure of XML is flexible, because length of any fields is not fixed.
- XML has its schema language –XML-Schema, which can be used for validation of XML document.

Design requirements of conversion of SEED to XML representation

- Entities described in the current SEED headers should be identical to those described in XML representation.
- Changes in structures of SEED headers should be as small as possible.
- XML document should have structures that allow validation with XML-Schema language.

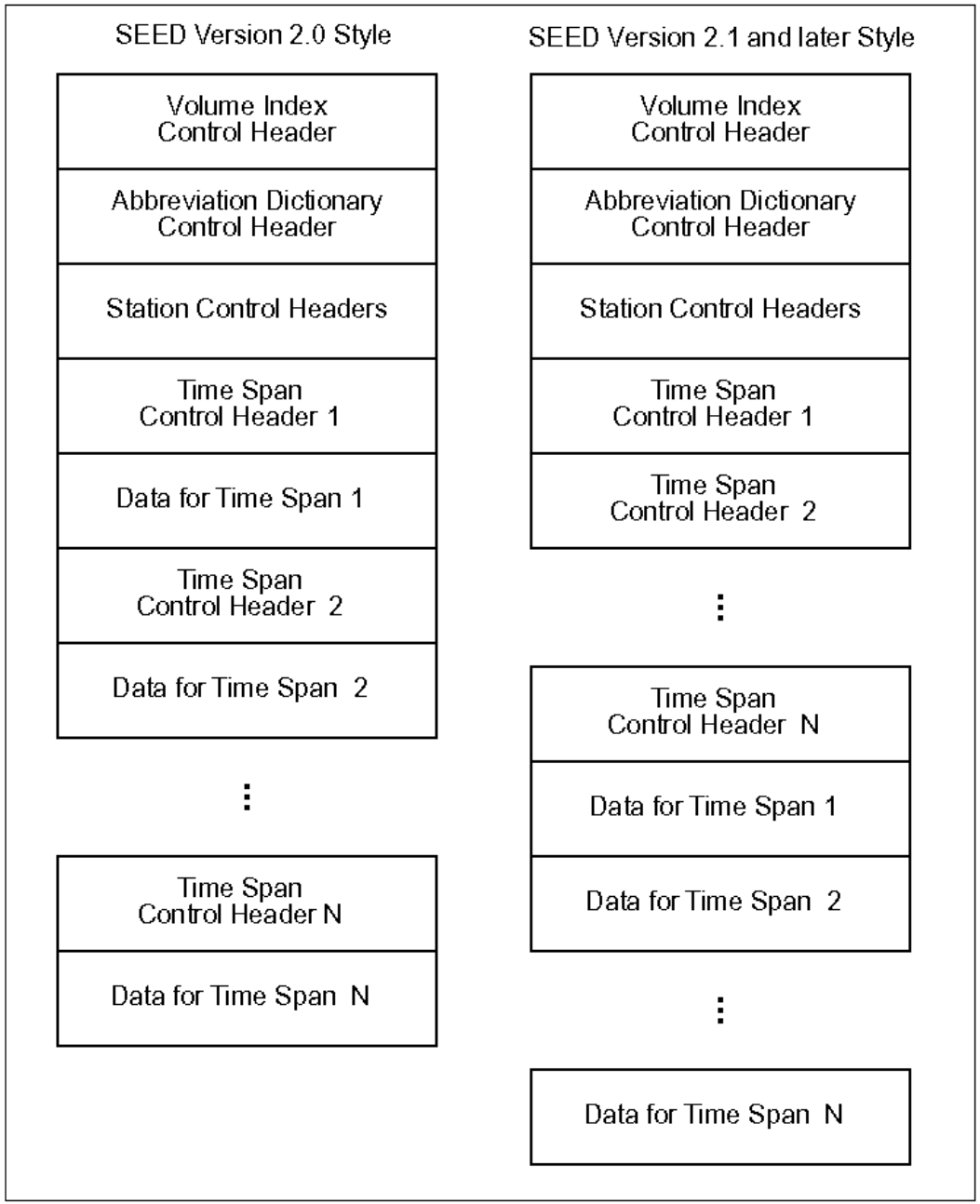


Figure 4: Format Object Organization Within a Logical Volume

Conversion of control header

```
<?xml version="1.0" ?>
<xseed>
  <volume_control_header>
    <!--For blockettes in volume control header -->
  </volume_control_header>
  <abbreviation_dictionary_control_header>
    <!--For blockettes in abbreviation dictionary control header -->
  </ abbreviation_dictionary_control_header >
  <station_control_header>
    <!--For blockettes in volume control header -->
  </station_control_header>
  <timespan_control_header>
    <!--For blockettes in volume control header -->
  </timespan_control_header>
</xseed>
```

Conversion of blockette

Blockette will be represented as follows with blockette name as 'blockette_name', and blockette type as '555',

<blockette_name blockette="555">

    <!-- Fields to be inserted -->

</blockette_name>

'Length' field is not required in XML representation.

Example of conversions: Volume identifier blockette

<volume_identifier blockette=”010”>
<version_of_format >Trial</version_of_format>
<logical_record_length>12</logical_record_length>
<beginning_time>1992-01-01T00:00:00.0000</beginning_time>
<end_time>1992-01-02T00:00:00.0000</end_time>
<volume_time>1993-01-29</volume_time>
<originating_organization>IRIS_DMS</originating_organization>
<label>Data for 1992-01-01</label>
</volume_identifier>

[10] Volume Identifier Blockette

Name:	Volume Identifier Blockette
Blockette Type:	010
Control Header:	Volume Index
Field Station Volume:	Not Applicable
Station Oriented Network Volume:	Required
Event Oriented Network Volume:	Required

This is the normal header blockette for station or event oriented network volumes. Include it once at the beginning of each logical volume or sub-volume.

Sample:

```
010009502.1121992,001,00:00:00.0000~1992,002,00:00:00.0000~1993,
029~IRIS_DMC~Data for 1992,001~
```

	Note	Field name	Type	Length	Mask or Flags
	1	Blockette type 010	D	3	"###"
	2	Length of blockette	D	4	"####"
	3	Version of format	D	4	"## #"
	4	Logical record length	D	2	"##"
	5	Beginning time	V	1—22	TIME
	6	End time	V	1—22	TIME
V2.3	7	Volume Time	V	1—22	TIME
V2.3	8	Originating Organization	V	1—80	
V2.3	9	Label	V	1– 80	

Notes for fields:

1 Standard blockette type identification number.

2 Length of the entire blockette, including the 7 bytes in fields 1 and 2.

3 Version number of the format, currently "V2.3."

4 Volume logical record length, expressed as a power of 2. A 4096 byte logical record would have "12" in this field. Logical record lengths can be from 256 bytes to 32,768 bytes. 4096 bytes is preferred.

5 The earliest time seen in the time span list for this logical volume.

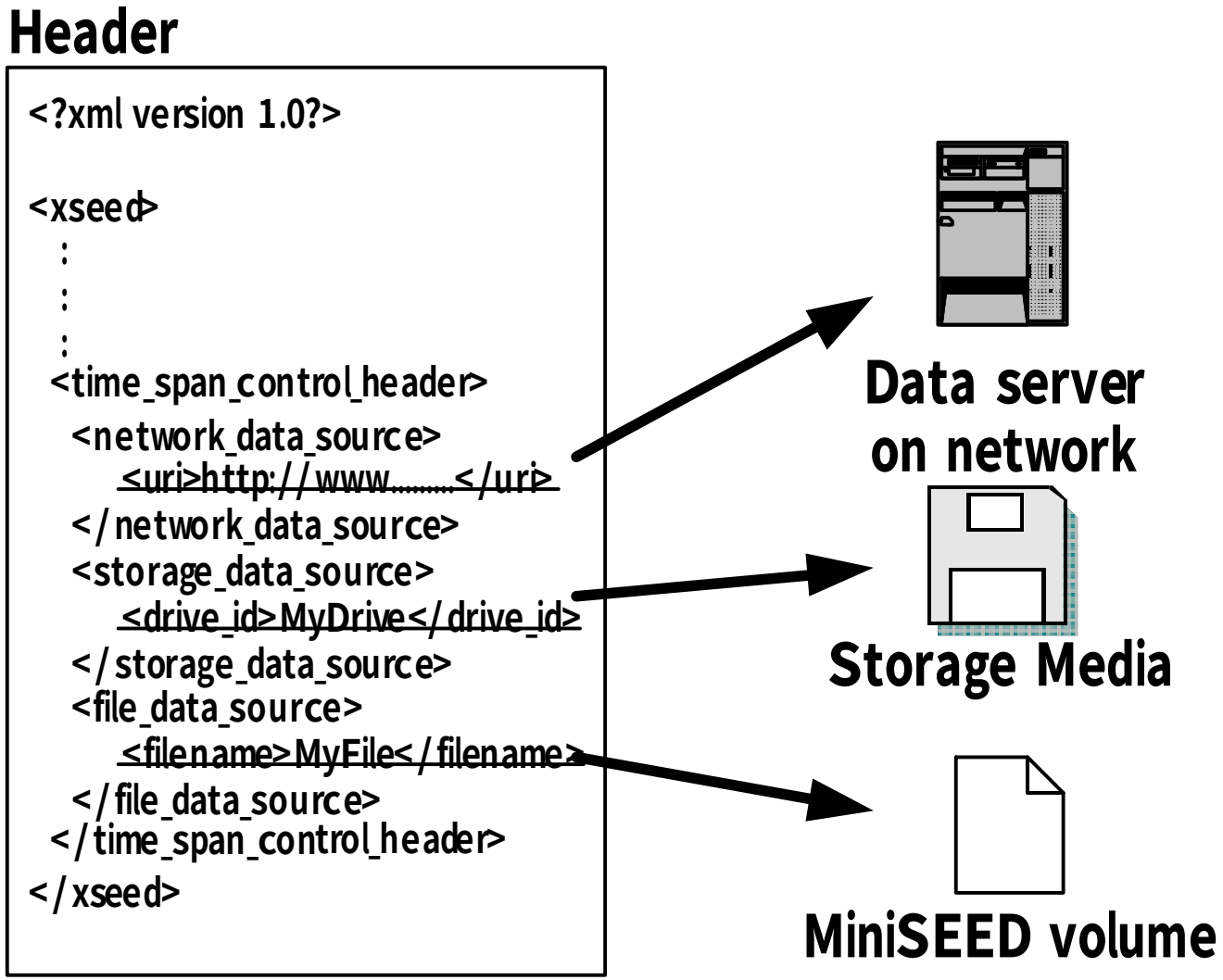
6 The latest time on the logical volume.

7 The actual date and time that the volume was written.

8 The organization writing the SEED volume.

9 An optional label that can be used to identify this SEED volume. For instance a label

Data Records
(1) Separated header file and data

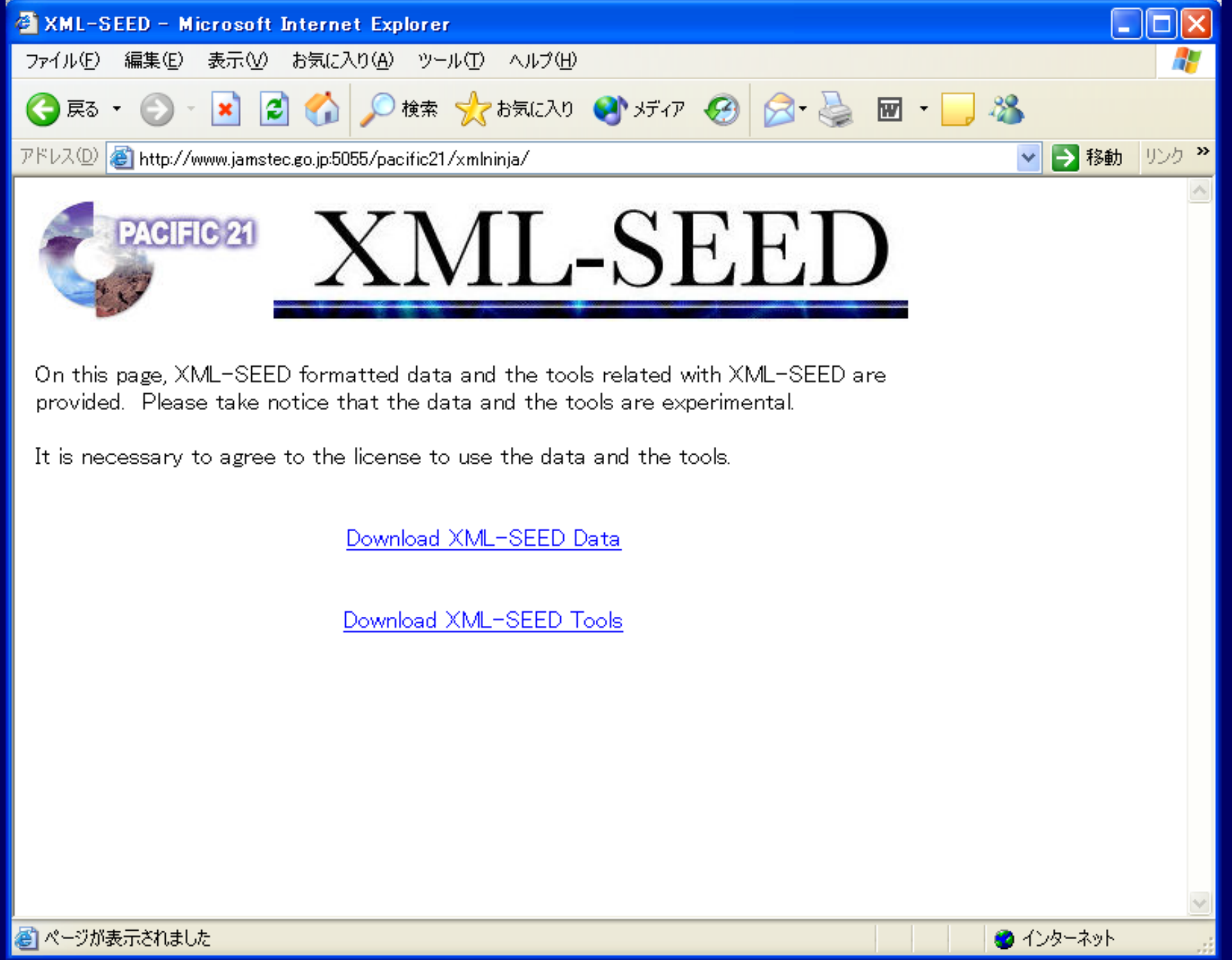


Data records
(2) decoded in base64

<data_records>
<data_record sequence_number="000001">
<data_header>
  header information
</data header>
<chunk data_record_length="4048">
6AMAAAoBDAAAAAAAAAAAAAKpqqr
egAIAREAXQBM/8H/FP/GALoAIxqpaqon
</chunk>
</data record>
</data records>

XML-SEED formatted data are now provided through Pacific21 Data Center

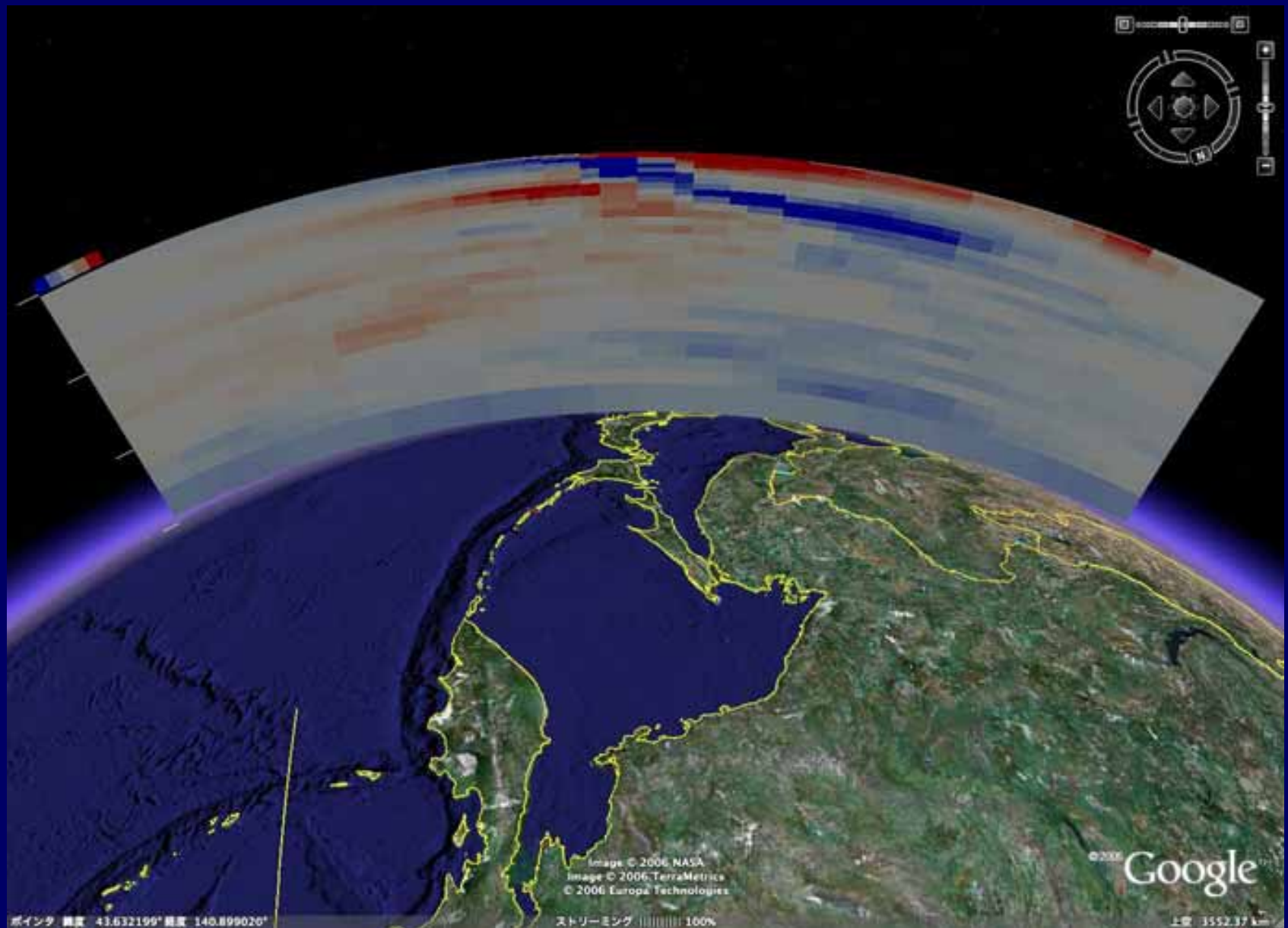
- http://www.jamstec.go.jp/pacific21/xmlninja
- Seismograms are formatted either in format1 (binary mini-seed) or format2 (base64 encoded mini-seed)
- Software to convert full-SEED volume to XML-SEED and to read XML-SEED volume are also provided through the Pacific21 Data Center


XML-SEED - Microsoft Internet Explorer
ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)
戻る
検索
お気に入り
メディア
アドレス(D) http://www.jamstec.go.jp:5055/pacific21/xmlninja/
移動
リンク
PACIFIC 21
XML-SEED
On this page, XML-SEED formatted data and the tools related with XML-SEED are provided. Please take notice that the data and the tools are experimental.
It is necessary to agree to the license to use the data and the tools.
Download XML-SEED Data
Download XML-SEED Tools
ページが表示されました
インターネット

xrdseed

- Reads XML-SEED volumes and output header information and seismograms.
- Based on rdseed
- Runs on Solaris8/SPARC platform.

Google Earth as geophysical data viewer



Summary

- Realtime data exchange

  We will have a symposium on Mar. 22-23 on data exchange in Yokohama, Japan.
- Network Data Center system by using web services
- XML SEED for broadband seismograms

http://www.jamstec.go.jp/pacific21/xmlninja

- XML SEED for synthetic seismograms

http://www.jamstec.go.jp/pacific21/ninja_synth