

# THE REMOTE SENSING VIRTUAL LIBRARY ON THE WORLD WIDE WEB

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## ABSTRACT

The World Wide Web (WWW), which is one of the services available on the Internet, is a well-known and rapidly expanding hypermedia in the international educational and research community. The hypermedia is extremely well appropriated as an information system in the remote sensing branch, especially due to the visual style of presentation it provides. The World Wide Web offers a promising opportunity to create distributed virtual libraries. The Remote Sensing Virtual Library has been set up by collecting a very comprehensive index covering the entire remote sensing branch on the WWW server at the Technical Research Centre of Finland. This index comprises four hundred links to WWW servers of research institutes, enterprises, societies and image archives maintaining remote sensing information resources. The Uniform Resource Locator (URL) of the Remote Sensing Virtual Library is <http://www.vtt.fi/aut/ava/rs/virtual/>.

## 1 INTRODUCTION

The World Wide Web (WWW) is a well-known and rapidly expanding hypermedia in the international educational community. Many research institutes and enterprises possessing advanced facilities of information technology have shown increasing interest in hypermedia in their own strategies of marketing, public relations and information gathering. Particularly, institutes and companies offering and exploiting services in the remote sensing branch can be included in this category. Hypermedia is extremely well appropriated as an information system in the remote sensing branch, especially due to the visual style of presentation it provides.

Hypermedia on the Internet offers a promising opportunity to create distributed virtual libraries. By clicking on links gathered onto the virtual library it is possible to access a huge amount of information on the user's own workstation. From the user's point of view those information resources seem to be accessed on one server, although in fact they are physically distributed on several servers all over the world.

## 2 WORLD WIDE WEB VIRTUAL LIBRARY

One of the most comprehensive and well-known distributed subject catalogue is the World Wide Web Virtual Library (URL: <http://www.w3.org/vl/Overview.html>) maintained by volunteers and coordinated by Arthur Secret at W3 Consortium. The W3 Consortium exists to develop common standards for the evolution of the World Wide Web (<http://www.w3.org/pub/WWW/>). It is an industry consortium run by the Laboratory for Computer Science at the Massachusetts Institute of Technology. The WWW Virtual Library Project was started at CERN in Switzerland in 1991. At the moment there are more than one hundred subjects listed on the Virtual Library catalogue from 'Aeronautics and Aeronautical Engineering' to 'Zoos'.

In the beginning of the year 1995 the Remote Sensing Group at the Technical Research Centre of Finland started to collect a remote sensing index which was added to the WWW Virtual Library in May, 1995. The objective of the work was to define and create a clear structure and a comprehensive scope for the Remote Sensing Virtual Library on the WWW.

An important goal was the clear and easy maintenance of the index. If the Virtual Library will get popular it will serve as one part of an international network of information exchange, and help the progress of institutional relations for benefit of the international remote sensing community.

## 3 ORGANISATION OF THE REMOTE SENSING INDEX

The Remote Sensing Virtual Library has been set up by collecting a very comprehensive index covering the entire remote sensing branch on the WWW server at the Technical Research Centre of Finland. This index comprises about four hundred links to WWW servers of research institutes, enterprises, societies and image archives maintaining remote sensing information resources. The Uniform Resource Locator (URL) of the Virtual Library is <http://www.vtt.fi/aut/ava/rs/virtual/>.

The tasks of the creation of the Remote Sensing Virtual Library were defined as follows:

- To define and outline the topics and the index of the Remote Sensing Virtual Library
- To create the Remote Sensing index by searching and collecting the URL addresses needed for the links
- To develop a flexible and easy-to-use procedure of maintenance for the index
- To register the collected index on the World Wide Web Virtual Library.

In the defining process of the Remote Sensing catalogue three main titles were refined as follows:

- What's New
- Organizations
- Other Remote Sensing Information.

These items were organized as three separate HyperText Markup Language (HTML) files accordingly. The item 'What's New' is meant for those regular users who just like to see recently added links. Under the title 'Organizations'

a geographical disposition has been applied. Another choice to classify organizations might be according to the type of organization, but this could lead to some difficulties in interpretation of the type.

Under the title 'Other Remote Sensing Information' currently the following eight items can be found:

- Satellite Data
- Societies
- Conferences
- Documents and Journals
- News Groups and Mailing List Archives
- Other Remote Sensing Lists and Resources
- GIS and Other Related Fields
- Related Fields in Virtual Library.

This pragmatic grouping has proved to be very practical. The title 'Satellite Data' may sound somewhat too promising but anyway, there are several useful sites where to get information about the availability of satellite data. The item 'Documents and Journals' is reserved for official and common documents and electronic publications only, not for technical papers. In the remote sensing community there are several other quite comprehensive and useful lists of links. These resources have been collected under the title 'Other Remote Sensing Lists and Resources'. The outline of remote sensing topics is not always straightforward because of many related fields, the GIS technology being one of the most important. This kind of fields are collected under the titles 'GIS and Other Related Fields' and 'Related Fields in Virtual Library'.

#### 4 MAINTENANCE OF THE INDEX

The original edition of the index has been collected exploiting WWW search engines, such as Lycos. The Remote Sensing Virtual Library provides benefits to the community only if it is maintained up-to-date. Therefore the maintainer of the list wishes welcome all the contributions. The Remote Sensing index is moderated. This means that every suggestion to add a new resource will be checked for the acceptance. The delay of this consideration is less than one week. Additionally, some remote sensing related Newsgroups where new home pages are announced to have been added, are followed constantly by the maintainer. The Virtual Library pages, as almost all other pages throughout the whole Internet are under continuous construction. In that way the remote sensing community gets the latest up-to-date information, and they do have found it useful. During the first ten months of operation the main page of the Remote Sensing Virtual Library has been accessed on an average from about two hundred client computers each day. This proves a wide acceptance and profitability of the index among the international remote sensing community.

#### 5 FUTURE DEVELOPMENT

The actual revision of the Remote Sensing Virtual Library files has been written following the HTML 2.0 specification which has to be considered as *de facto* standard so far. New HTML specifications will not be applied until supporting client software is widely in use. This principle assures a wide compatibility with the most popular web browsers.

The Remote Sensing index comprises already about four hundred unique sites. This sometimes may lead to troublesome navigating through long lists of the catalogue. This inconvenience can be avoided either by breaking the lists into separate files or by adding a search capability to the server. A simple search mechanism would only give hits based on complete company names, but using complex search-mechanisms the user might in the future get the answer to a question such as: show all the private companies working on environmental monitoring in northern Africa using Landsat TM data. The feasibility of both of these eventual improvements will be tested thoroughly before an eventual installation in the future.

The Remote Sensing Virtual Library has already reached an excellent acceptance in the professional community. The Earth Observation Guide and Directory Service (GDS) of the European Space Agency (ESA) and the European-Wide Service Exchange (EWSE) of the Centre for Earth Observation of the European Communities (CEO) have added pointers to the Virtual Library catalogue. In the future, closer integration and coordination of this resource with institutional information systems might be desirable and result in users' benefit.

#### 6 APPENDICES

**Appendix A:** Home Page of the Remote Sensing Virtual Library

**Appendix B:** Sample Page: What's New

**Appendix C:** Sample Page: Other Remote Sensing Information



# Remote Sensing

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Information categorized by subject. See also other subjects. Please mail [Seppo.Vaatainen@vtt.fi](mailto:Seppo.Vaatainen@vtt.fi) if you know of online Remote Sensing information not in these lists.

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## Index

### ● What's New

### ● Organizations

- Europe
- North America
- South America
- Pacific
- Asia
- Africa

### ● Other Remote Sensing Information

- Satellite Data
- Societies
- Conferences
- Documents and Journals
- News Groups and Mailing List Archives
- Other Remote Sensing lists and resources
- GIS and other related fields
- Related fields in Virtual Library



**To the Remote Sensing Group of VTT, Automation, Space Technology**

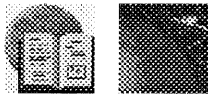
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*Clearinghouse approved*



## What's New

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### March 25, 1996

- Resolution Dependence and Multifractals in Remote Sensing & Geographical Information Systems - Workshop at McGill University, Montreal, Canada, June 11-12, 1996

### March 21, 1996

- Earth Observation Science group at the Department of Physics and Astronomy, University of Leicester

### March 20, 1996

- CIESIN Gateway - The Consortium for International Earth Science Information Network
- The First Australian Data Fusion Symposium (ADFS-96) - Adelaide, South Australia, 21-22 November 1996

### March 19, 1996

- Earth Search Sciences, Inc. - Idaho, U.S.A.

### March 11, 1996

- Earth Observation Magazine - Table Of Contents

### March 8, 1996

- Geomatics at Université Laval - CRG, Centre for Research in Geomatics
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## Other Remote Sensing Information

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### Satellite Data

- **The Satellite Imagery FAQ** - by Nick Kew and co-authors
  - The Satellite Imagery FAQ - in **UK** (Up-to-date revision)
  - The Satellite Imagery FAQ - at Geo Exchange, **Canada**
- AVHRR - Pathfinder Home Page
- CCRS Digital Browse Facility - (Landsat 5, SPOT)
- C.E.N. Digital Satellite Images - (Russian high resolution images)
- DAACs - Distributed Active Archive Centers, EOS/NASA
  - EROS Data Center - The Earth Resources Observation Systems Data Center
- Earth and Space Science Data Systems & Centers by Software Support Laboratory
- EarthWatch, Inc. - Colorado, U.S.A.
- ECSinfo - EOS Data and Information System (EOSDIS) Core System
- EMAC-94/95 Information System - ESA/ESTEC
- EOSAT Home Page
- The ERC Earth Observation Images Database - Environmental Resource Center
- Eurimage - distributor of multi-mission satellite data
  - EiNet - on-line inventory and browse server
- EUS/Guide - EOIS User Interface Software for Guide System, NASDA
- Eyeglass - The Global Imagery Information System
- GDS/ESA - Earth Observation Guide and Directory Service
- Global GRASS CD-ROM Project
- HAPEX SAHEL Information System Server
- ImageNet(sm) - On Line Archive Welcome Page (EOSAT, SPOT Image, Sovinform Sputnik)
- Intermountain Digital Imaging L.C. - Salt Lake City, UT, U.S.A.
- Ionia - "1 km AVHRR Global Land Data Set" Net-Browser of ESA/ESRIN
- ISIS - The Intelligent Satellite data Information System, DLR, Germany
- ISS 2D Browser - Lawrence Berkeley Laboratory
- LEDA - Earth Images Catalogue (Landsat, AVHRR, MOS-1, Nimbus CZCS)
- NASA Landsat Pathfinder - Humid Tropical Forest Inventory Project
- NOAA - 1Data Set Catalog
- OFD - Services of the Austrian Remote Sensing Data Center (Österreichisches Fernerkundungs-Datenzentrum)
- RADARSAT WWW Server - Canadian Space Agency
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*The list continues on the original page*