

Towards a Regional Geographic Data-Sharing Network in the Himalayas

Zhu Yunqiang, State Key Laboratory of Resources and Environmental Information System, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, zhuyq@igsnr.ac.cn
Rajan Bajracharya, System Analyst, MENRIS, ICIMOD, rbajracharya@icimod.org

Spatial information is assuming greater significance in the fields of climate change, ecosystem assessment, disaster management, and livelihood improvement. However, the availability of such information for mountain regions is limited, because observation networks focused on mountains are few. Even when data are available, access is often difficult because clear data-sharing policies and standards are lacking. Mountain

areas need special attention because of their distinct spatial-temporal characteristics and remoteness, and it is often necessary to map information on mountain areas in three dimensions. Furthermore, many issues of mountain development are transboundary in nature. Data and information from different countries need to be harmonised to support integrated analysis for science-based policy and decision making.

Figure 1: Homepage of the Mountain GeoNetwork (<http://geoportal.icimod.org:8080/geonetwork>)

The screenshot displays the Mountain GeoNetwork homepage. At the top, there is a banner image of a mountain range with the text "Mountain GeoPortal" and the ICIMOD logo. Below the banner is a navigation menu with options like "About ICIMOD", "Programmes", "News & Events", and "Information Resources". The main content area features a search interface with the following elements:

- What?** Search fields for "What?", "Title", "Abstract", and "Keywords".
- Where?** A map of the Himalayan region with coordinate input fields: "lat (min) 39.341", "long (min) 59.5329", "lat (max) 16.1502", and "long (max) 106.148".
- Map type:** Checkboxes for "Digital", "Hard copy", "Interactive", and "Downloadable".
- Search accuracy:** Radio buttons for "Precise" and "From" to "To" date range.
- Restrict to:** Dropdown menus for "Catalog" (set to "- Any -") and "Category" (set to "- Any -").
- Options:** "Sort by" set to "Relevance", "Output" set to "Full", and "Hits per page" set to "10".
- Buttons for "Search", "Reset", and "Hide advanced options".

On the left side, there is a sidebar menu with categories such as "AudioVideo", "Case studies, best practices", "Datasets", "Maps & graphics", "Posters", "Publication_CD", "Satellite_Images", "Downloads", "GeoNetwork Leaflet", "GeoNetwork user manual", "Google Earth Footprint", "Feedback & Comments", and "User Login" with fields for "Username" and "Password".

Himalayan Spatial Data Infrastructure (H-SDI)

Spatial data are becoming increasingly important to support policy and decision making in the Hindu Kush-Himalayan (HKH) region. Spatial data infrastructure (SDI) is a framework for organising and managing geographic information, metadata, users, technology, and tools to provide efficient and effective access and use for multiple purposes. SDI is being promoted at the global, regional, and national levels to fill the gaps in data, data standards, and data-sharing protocols to avoid duplication and to facilitate optimal use of spatial information. Himalayan Spatial Data Infrastructure (H-SDI) is an important framework for ICIMOD and its network of partners for data discovery, access, and use. ICIMOD is promoting H-SDI and working with national partners on key components, including the proper definition of data, international standardisation, and appropriate data-sharing mechanisms. These activities have fostered a distributed and decentralised regional data-sharing network. Participation by more partners in ICIMOD's member countries will result in an effective data-sharing network in the region.

Mountain GeoPortal

ICIMOD's Mountain GeoPortal (<http://geoportal.icimod.org>) is a collaborative effort to build and share geographic resources in the HKH region. The Mountain GeoNetwork (Figure 1) is an open-source metadata management system integrated within the Mountain Geoportal. The Mountain GeoNetwork aims to facilitate the standardisation and sharing of geographic data in the HKH region, forming a virtual community of practice. It is designed so that ownership of data is clearly defined, proprietary rights to databases are protected, and data policy issues are addressed and integrated. The system provides a regional gateway to geo-information resources, contributing to the realisation of one of the key goals of H-SDI.

Way forward

Over the last decade, awareness of SDI has grown considerably in the HKH region. A number of initiatives are already under way to develop national SDIs and other regional data-sharing platforms, such as e-GeoScience to facilitate cooperative research in northeast Asia and the Digital Asia Network initiated by the Japan Aerospace Exploration Agency (JAXA) and Keio University. Several international organisations are promoting scientific data sharing across countries on

Earth System Science and the Sharing of Scientific Data in China

Earth system science seeks to integrate various fields of academic study to understand the Earth as a system. It looks at the interaction between the atmosphere, hydrosphere, lithosphere, and biosphere. Therefore, it requires basic datasets for each discipline of earth science, as well as interdisciplinary, multi-scale, and cross-regional datasets. However, in China these data resources are scattered across many different sectors and organisations and are therefore difficult to share to support the study of Earth system science. The consequences include sub-optimal use of data resources and duplicated efforts in the production of data. Therefore, the Ministry of Science and Technology has launched a scientific initiative to share Earth system science data across different organisations.

The Earth system scientific data sharing network has become one of most influential data sharing portals in China (Figure 2). It has one main centre and 14 sub-centres, including five discipline sub-centres, eight regional centres, and one synthesis centre. The network is constructed and operated by the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences, united with more than 40 other institutes and universities. It has been one of nodes of the Mountain GeoNetwork since 2007.

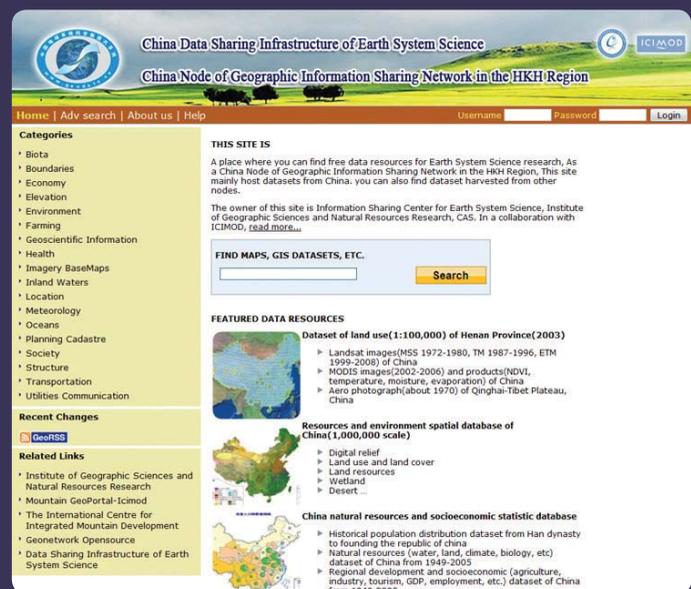


Figure 2: Homepage of Earth system scientific data sharing network (<http://159.226.111.8:8080/geonetwork>)

a regional or global basis, including the World Data Centers (WDC), the World Meteorological Organization (WMO), and the Food and Agriculture Organization of the United Nations (FAO). In the HKH region, ICIMOD's Mountain GeoPortal, as a decentralised network of users and providers of information, is an important step in establishing a regional SDI.