training and field visit

Training on Data Transmission and Retrieval

The SAWAN web site and database system was designed and built at Sandia National Laboratories, USA, in conjunction with other environmental monitoring projects. The goal was to design a core data storage and processing system that could handle diverse and disparate semi-structured data from various sources in one consistent and manageable format.

Since 2002, the water quality data collected under SAWAN's transboundary water quality monitoring programme has been uploaded directly to the system using Internet technology. The users reported several problems encountered in the system while uploading and viewing the data. A hands-on training in online data transmission and retrieval were organised to enhance partners' know-how of the technical details of the SAWAN web site and database system, and thus help avoid such problems in the future. The data collecting partners, CMC, and ICIMOD participated in the session.

The structure and operational details and other technical aspects of the web site and database system were described. The SAWAN database is designed to run on the SQL 2000 Server. The database schema comprises five major types of object. The relationship between them is shown in Figure 2.

- Elements: an element represents a single data value such as a measurement
- Collections: a group of elements associated with a given time
- Sources: represents the source of the data
- Element types: helps consistently define the types of data stored in the elements
- Source types: helps consistently define types of sources

As a first step towards the complete transfer of the web site to ICIMOD from CMC, a test bed (http://sawan.icimod.org.np) was created on the ICIMOD server. Web interfaces were provided that use Active Server Pages (ASP) with Python as the scripting language. Supporting software packages and some modules like Python 2.3 or later, Win32all (Win32 modules for Python 2.3 version 2001) or later, and Microsoft XML 4.0 were installed on the ICIMOD server.

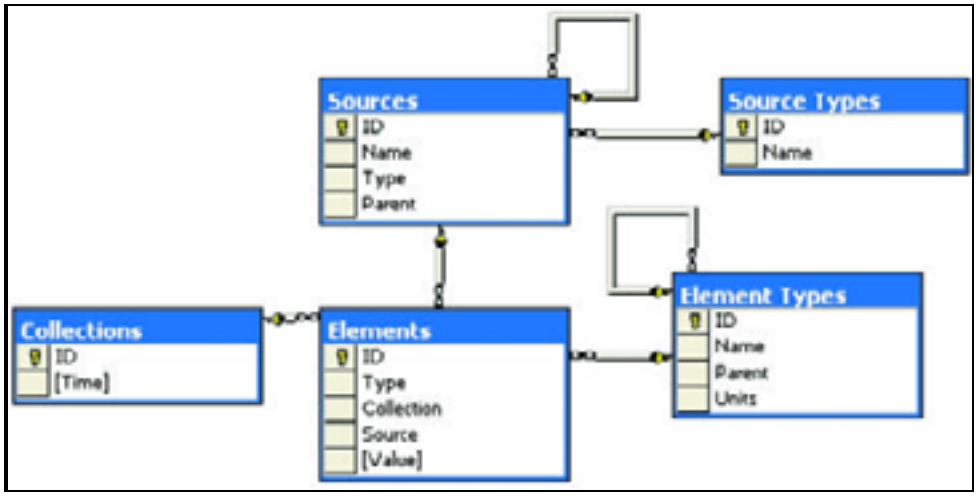

Figure 2: **SAWAN database objects relationship**

The partners used the test bed for hands-on exercises in data transmission and retrieval in the web site. Major issues discussed during the session included:

- changes required in data display,
- edit/delete option for submitted data to be possible only through webmaster,
- submitted data requiring proper validation at source when there is no restriction on, submitting data for any location by a registered user.

It was agreed to upgrade the system based on these issues and suggestions.

Field Trip to ICIMOD's Demonstration and Training Centre Site

A field trip to ICIMOD's Demonstration and Training Centre Godavari site was organised on the last day of the workshop. The site is located on the southern slopes of the Kathmandu Valley. It covers an area of 30 hectares with an elevation ranging from 1550 to 1800masl. The main purposes of the site are to test, select, and demonstrate different technologies and practices useful for integrated mountain development, natural resource management, and sustainable farming practices; to train farmers and those who work with them; and as a repository for plant germplasm resources. Current activities at the site include vegetation and soil management; water management; income generation through high-value cash crops, horticulture, and beekeeping; livestock; biodiversity; renewable energy technologies; community outreach; scientific research; and training and dissemination.

Water management and conservation techniques that have been tested at the site include water collection reservoirs and gravity sprinkler irrigation; natural spring water harvesting; rainwater harvesting; stone-lined and grass-lined waterways; shelter/protection belts; contour hedgerows of nitrogen-fixing plants to reduce runoff and soil loss; and drip irrigation. Sustainable harvesting of water, including rainwater, can contribute markedly to resolving the challenge of water scarcity for hill and mountain households.

The participants were very interested in the appropriate technologies that were demonstrated, particularly the water harvesting techniques for water conservation.