

The logo for FOSS4G 2006, featuring a stylized red and white graphic that resembles a ribbon or a stylized letter 'G'.

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Web-based hill slope erosion database for watershed management

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For a reservoir watershed management project in Taiwan a spatial database has been established. The database contains information about landslides, soil samples, and also stores geo-referenced air photographs and other geographic information. The UMN Mapserver solution enables viewing, zooming and querying of spatial information in different GIS formats in a web browser. The web based application was developed to enable easy access to the different spatial information layers needed for integrated watershed management.

The Watershed GIS Mapserver solution is based on a combination of Apache Web Server and the UMN Mapserver. The flexible Mapserver solution was used in this case to display and enable querying of spatial information that was collected for an almost 700km² large watershed in Taiwan. Supported vector formats are: ESRI shapefiles, PostGIS, ESRI ArcSDE and many others via OGR. Raster formats supported: TIFF/GeoTIFF, EPPL7 and many others via GDAL. Vector data is used for sub watershed boundaries, streams, roads, sample points and landslides. While raster data is used to display digital elevation model data in GRASS raster format, land use maps and air photographs in GeoTIFF format.

When querying sample points, attribute information is shown in a template providing details about caesium-137 (¹³⁷Cs) activity in soil samples, date of sampling, coordinates and elevation and when present also the number of erosion pins. In the near future the calculated and actual erosion rate for each sample location will be added. Photographs taken during the sampling can be viewed as well as a graph showing the depth distribution of ¹³⁷Cs activity in profile samples. For landslides the landslide area is shown in the template. In the future the web-based spatial watershed database will show variation in erosion rates across the watershed. A training will be given to watershed managers to instruct office personnel how to use the system. The author believes the use of FOSS GIS software enables flexible and cost-effective implementation of this and other GIS applications in government and non-profit organizations.

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