Web-based hill slope erosion database for watershed management

By Sander Borghuis

Hydrotech Research Institute,
National Taiwan University,
Taipei, Taiwan

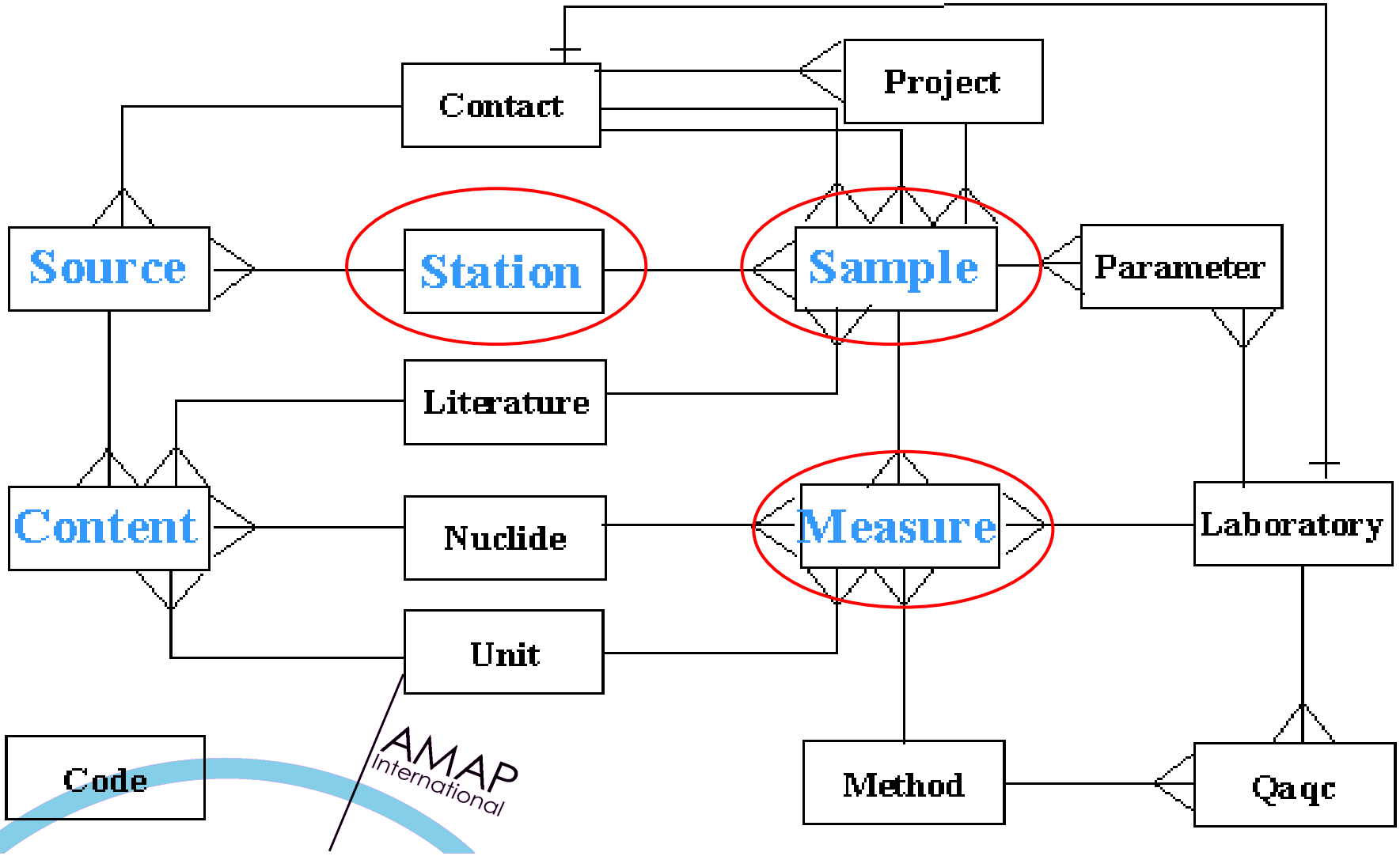
財團法人台灣水利環境科技研究發展教育基金會

Outline of my presentation

GIS UMN Map server:

1. Description of the GIS map server
2. Update the map server or add extra layers
3. ‘Hands-on’ practice

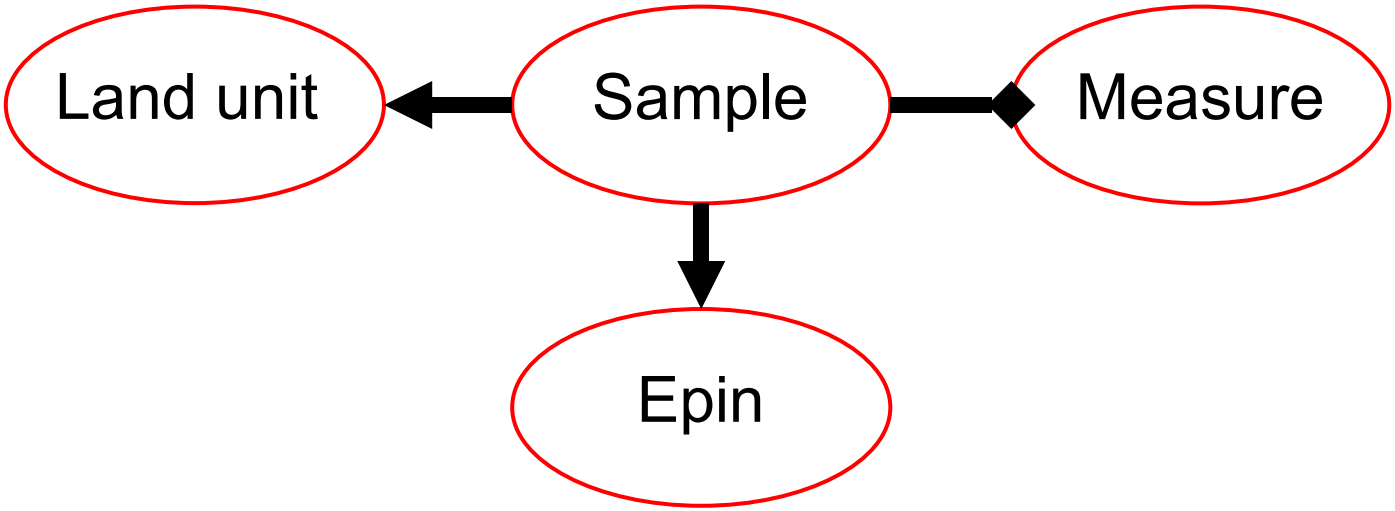
Database structure



AMAP international

Data Centre for Radioactivity

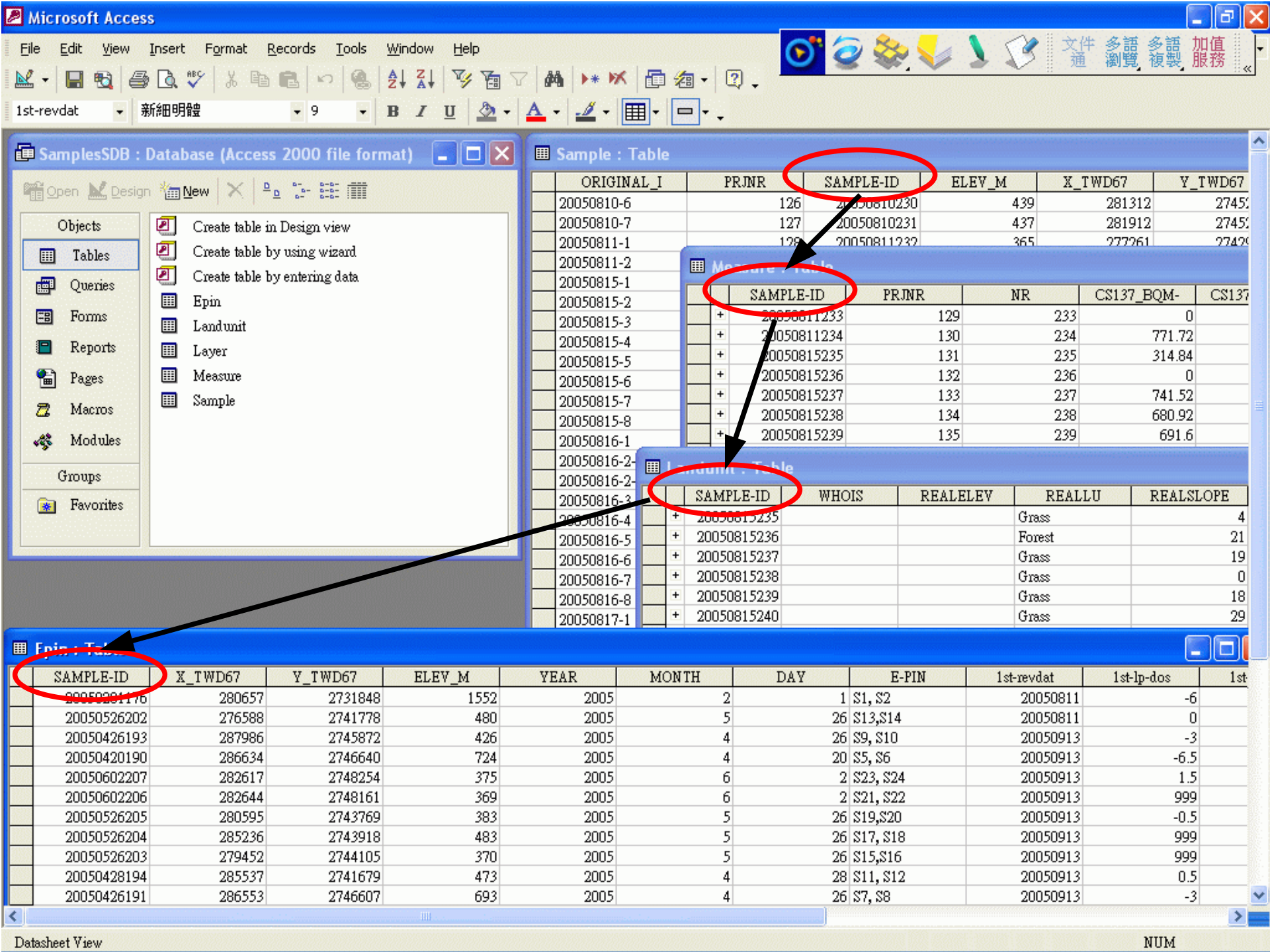
Database structure



Sample database

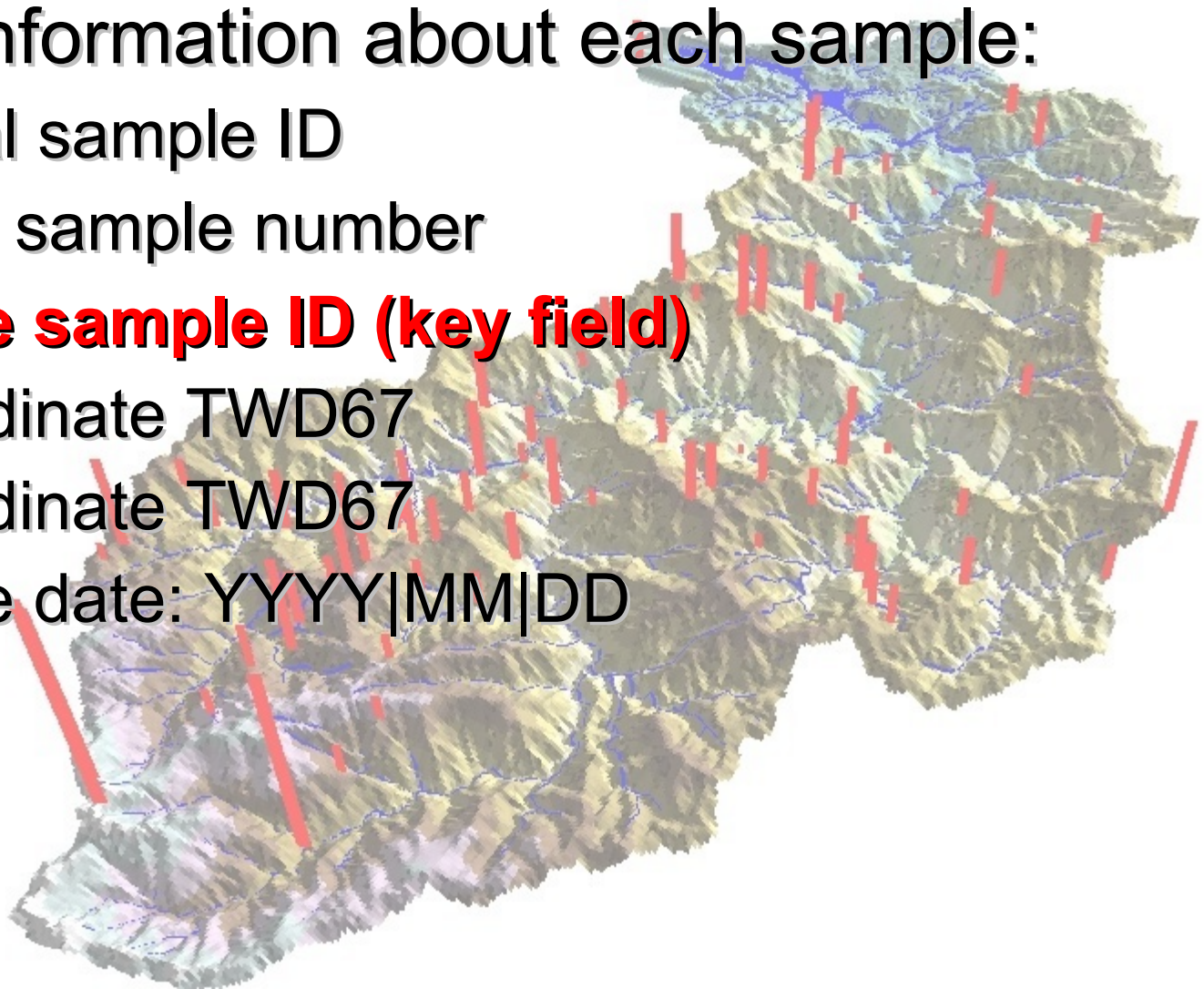
- Now Access, intention to move to → OpenOffice 'Base' database:

- Four tables connected by a sample ID:
  1. Sample
  2. Measure
  3. Land unit (sample site)
  4. Erosion pin


Microsoft Access
File Edit View Insert Format Records Tools Window Help
SamplesSDB : Database (Access 2000 file format)
Open Design New
Objects
Tables
Queries
Forms
Reports
Pages
Macros
Modules
Groups
Favorites
Create table in Design view
Create table by using wizard
Create table by entering data
Epin
Landunit
Layer
Measure
Sample
Sample : Table
ORIGINAL_I PRJNR SAMPLE-ID ELEV_M X_TWD67 Y_TWD67
20050810-6 126 20050810230 439 281312 2745
20050810-7 127 20050810231 437 281912 2745
20050811-1 128 20050811232 365 277261 2742
20050811-2
20050815-1
20050815-2
20050815-3
20050815-4
20050815-5
20050815-6
20050815-7
20050815-8
20050816-1
20050816-2-
20050816-2-
20050816-3
20050816-4
20050816-5
20050816-6
20050816-7
20050816-8
20050817-1
SAMPLE-ID PRJNR NR CS137_BQM- CS137
20050811233 129 233 0
20050811234 130 234 771.72
20050815235 131 235 314.84
20050815236 132 236 0
20050815237 133 237 741.52
20050815238 134 238 680.92
20050815239 135 239 691.6
SAMPLE-ID WHOIS REALELEV REALLU REALSLOPE
20050815235 Grass 4
20050815236 Forest 21
20050815237 Grass 19
20050815238 Grass 0
20050815239 Grass 18
20050815240 Grass 29
SAMPLE-ID X_TWD67 Y_TWD67 ELEV_M YEAR MONTH DAY E-PIN 1st-revdat 1st-lp-dos
20050526202 276588 2741778 480 2005 5 26 S13,S14 20050811 0
20050426193 287986 2745872 426 2005 4 26 S9, S10 20050913 -3
20050420190 286634 2746640 724 2005 4 20 S5, S6 20050913 -6.5
20050602207 282617 2748254 375 2005 6 2 S23, S24 20050913 1.5
20050602206 282644 2748161 369 2005 6 2 S21, S22 20050913 999
20050526205 280595 2743769 383 2005 5 26 S19,S20 20050913 -0.5
20050526204 285236 2743918 483 2005 5 26 S17, S18 20050913 999
20050526203 279452 2744105 370 2005 5 26 S15,S16 20050913 999
20050428194 285537 2741679 473 2005 4 28 S11, S12 20050913 0.5
20050426191 286553 2746607 693 2005 4 26 S7, S8 20050913 -3
Datasheet View
NUM

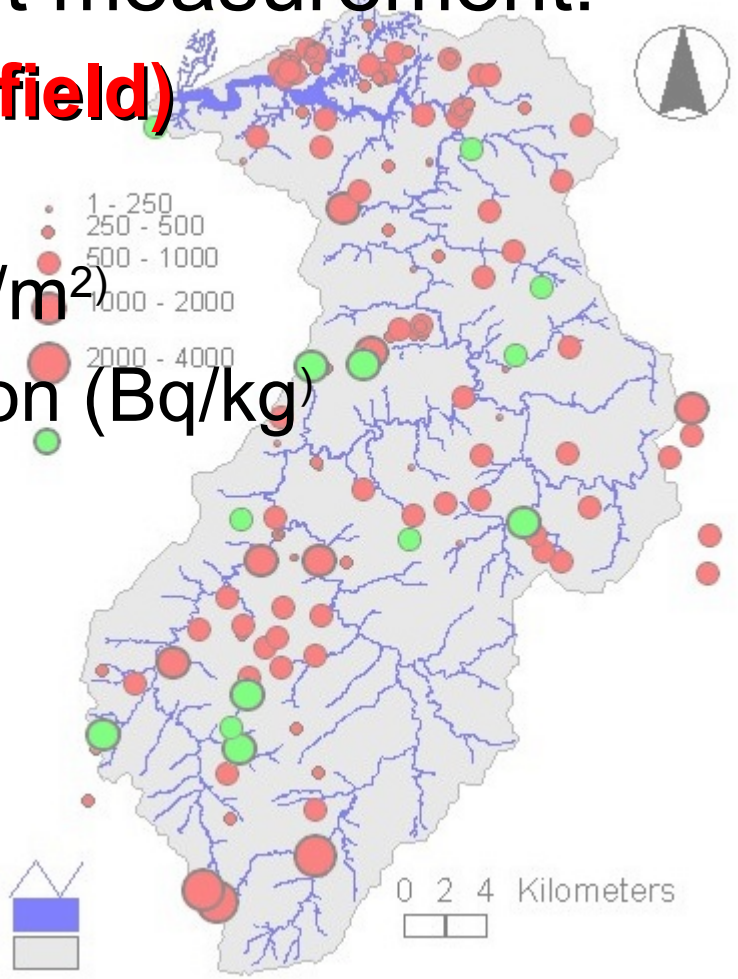
Samples table

- Stores information about each sample:
  1. Original sample ID
  2. Project sample number
  3. **Unique sample ID (key field)**
  4. X coordinate TWD67
  5. Y coordinate TWD67
  6. Sample date: YYYY|MM|DD



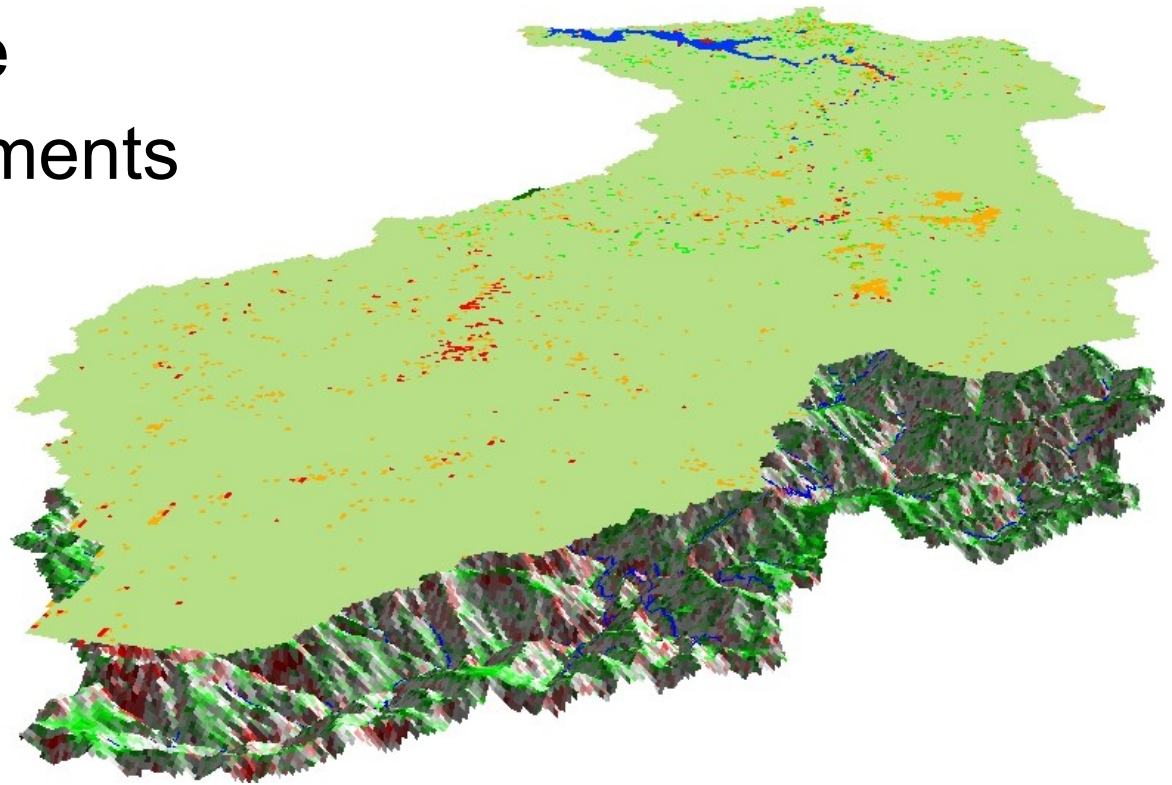
Measure table

- Stores information about measurement:
  - **Unique sample ID (key field)**
  - Sample project number
  - ^{137}Cs activity density (Bq/m^2)
  - ^{137}Cs activity concentration (Bq/kg)



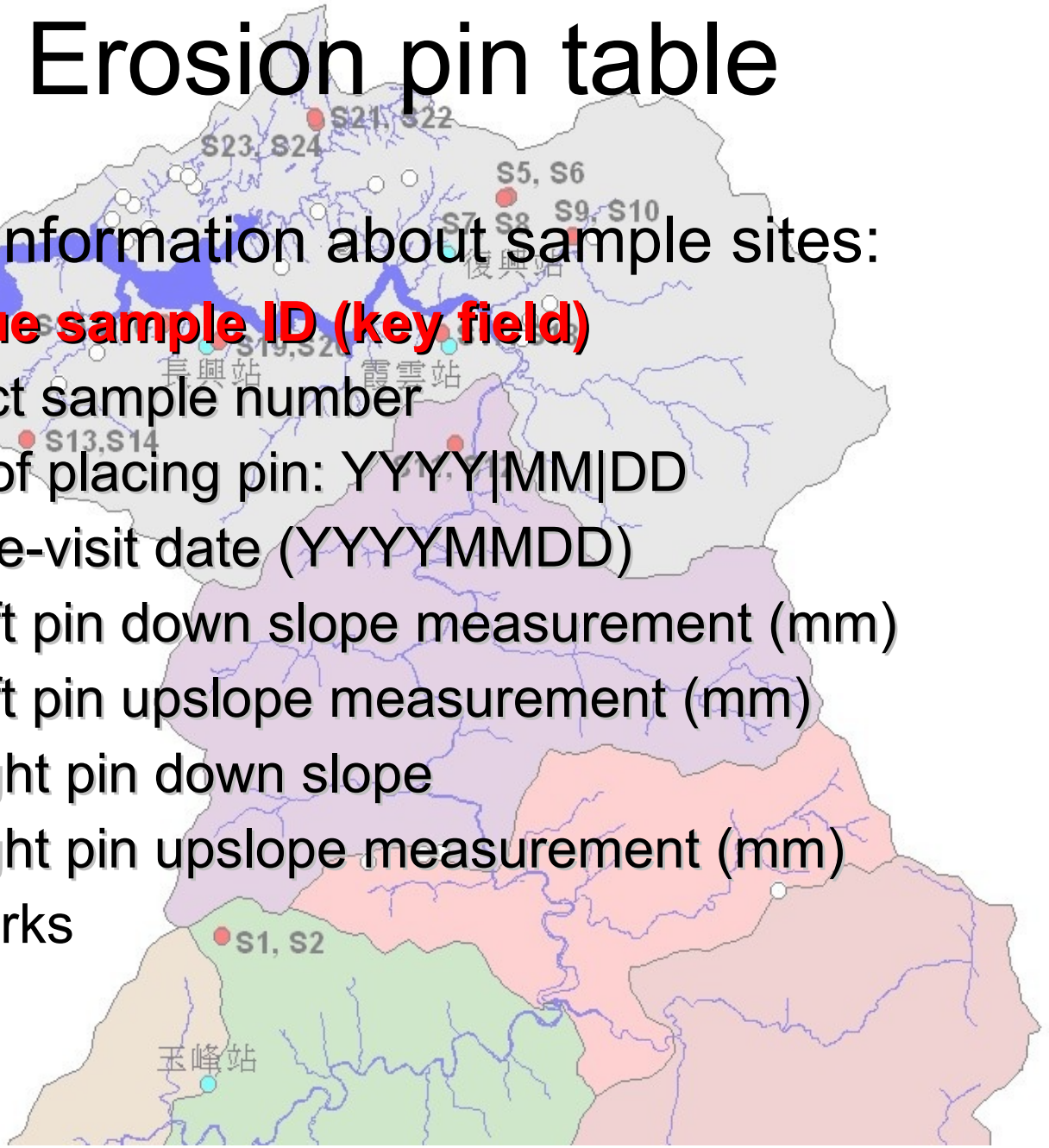
Land unit table

- Stores information about sample sites:
  - **Unique sample ID (key field)**
  - Land use
  - Slope
  - Comments



Erosion pin table

- Stores information about sample sites:
  - **Unique sample ID (key field)**
  - Project sample number
  - Date of placing pin: YYYY|MM|DD
  - First re-visit date (YYYYMMDD)
  - 1st left pin down slope measurement (mm)
  - 1st left pin upslope measurement (mm)
  - 1st right pin down slope
  - 1st right pin upslope measurement (mm)
  - Remarks



石門水庫集水區地理資訊查詢系統/Shihmen reservoir watershed GIS Database

UMN Map Server

- Open Source map server developed by University of Minnesota through the NASA-sponsored ForNet project
- Enables viewing, zooming and querying of different GIS formats in a web browser:
  - # vector formats supported: ESRI shapefiles, PostGIS, ESRI ArcSDE and many others via OGR
  - # raster formats supported: TIFF/GeoTIFF, EPPL7 and many others via GDAL

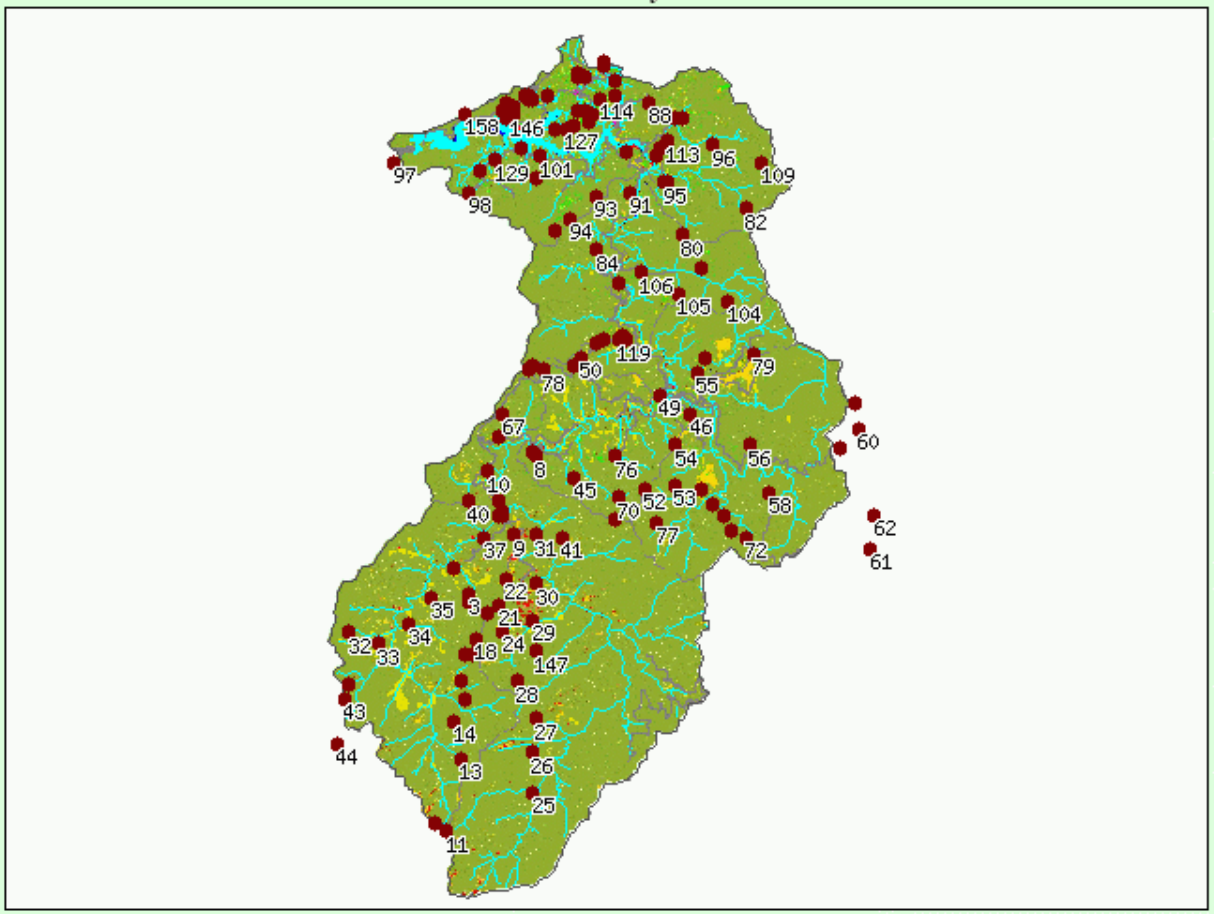
GRASS - UMN/MapServer - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://140.112.190.136/cgi-bin/mapserv.exe?mode=browse&layer=reservoir&layer=rivers&layer=subwaters&layer=roads{ Go yers umn mapserver

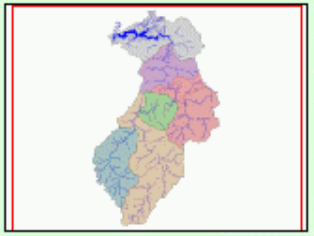
OpenGIS 2005 | De website van het KNMI | [Mapserver-users] Itemquery - g... | GRASS - UMN/MapServer | MapFile Reference - MapServer 4.6

Shihmen study area



Soil samples
Watershed boundary
Roads

Reference map:



Refresh/Query

Choose layer(s) to display:

- [x] Reservoir
- [x] Rivers
- [x] Subwatersheds
- [x] Roads
- [x] Samples
- [ ] Land use labels (map scale > 1:25 000)
- [x] Land use 1997
- [x] Aere landslides
- [ ] Soil erosion
- [ ] Elevation contours

- (•) Browse maps
- ( ) Query Cs-137 samples and landslides

- ( ) Zoom in (2x)
- (•) Pan
- ( ) Zoom out (-2x)

Find: babys | Find Next | Find Previous | Highlight | Match case

Done

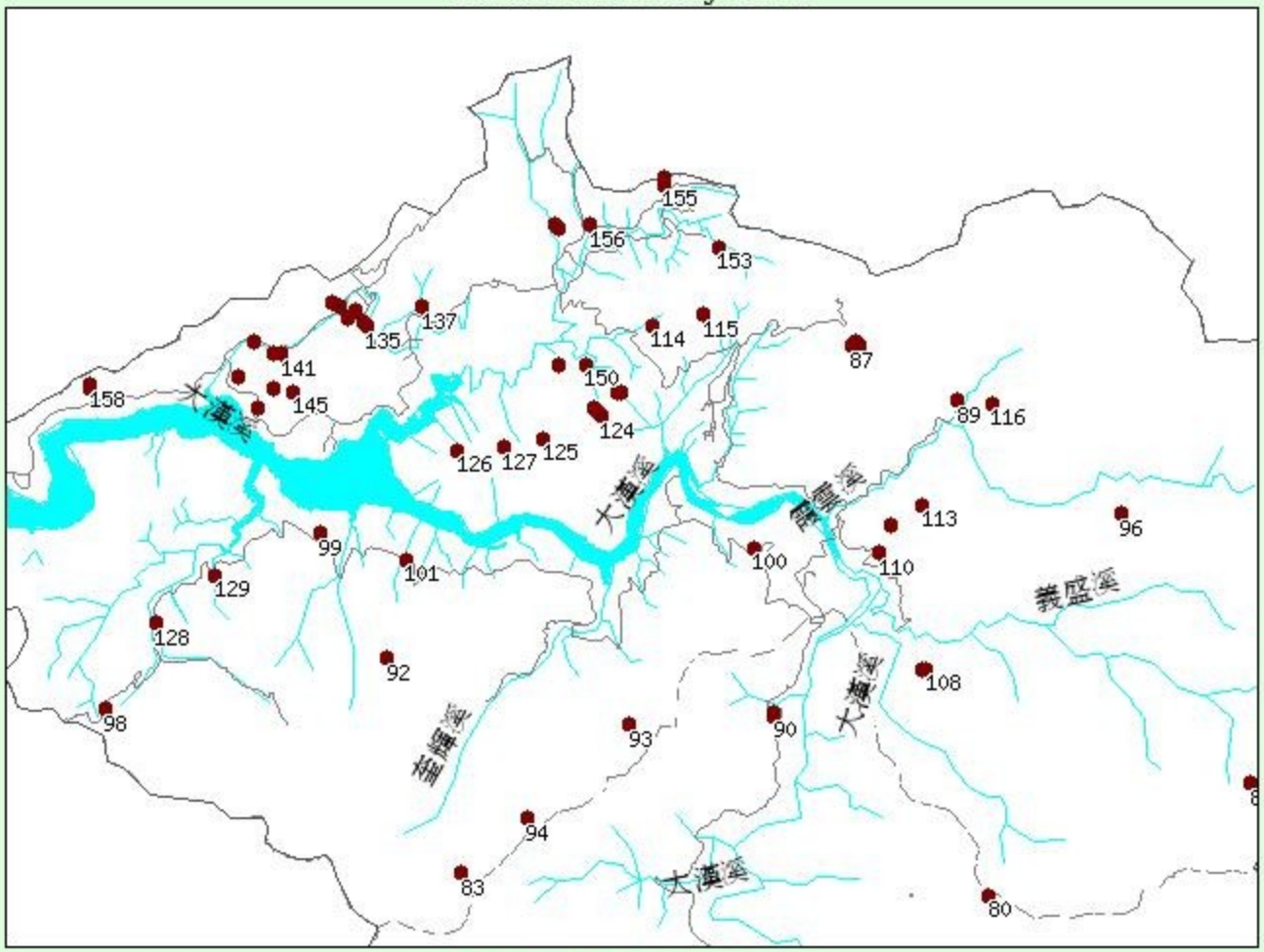
GRASS - UMN/MapServer - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://140.112.190.136/cgi-bin/mapserv.exe?mode=browse&img.x=322&img.y=169&layer=reservoir&layer=rivers

Getting Started Latest Headlines

Shihmen study area



0 0.6 1.2 1.8 km Legend

Reference map

reference map

Refresh/Query

Choose layer(s

- [x] Reservoir
- [x] Rivers
- [x] Subwatershe
- [x] Roads
- [x] Samples
- [ ] Land use labe
- [ ] Land use 199
- [ ] Aere landslid
- [ ] Soil erosion
- [ ] Elevation con

- (•) Browse maps
- ( ) Query Cs-137

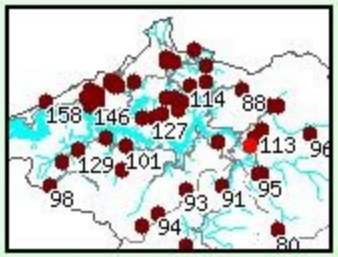
- (•) Zoom in (2x)
- ( ) Pan
- ( ) Zoom out (-2x

Full map

Powered by:

Query information for sample no.: 110

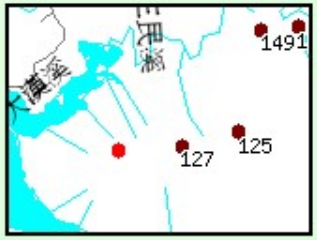
QUERY TWD67 COORDINATES	ACTIVITY DENSITY	LOCAL SLOPE	LANDUSE	EROSION PINS	YYYY/M/D
E=286932, N=2743836	665 Bq/m2	ca. 50	Forest	-S25,S26-	2005/8/3





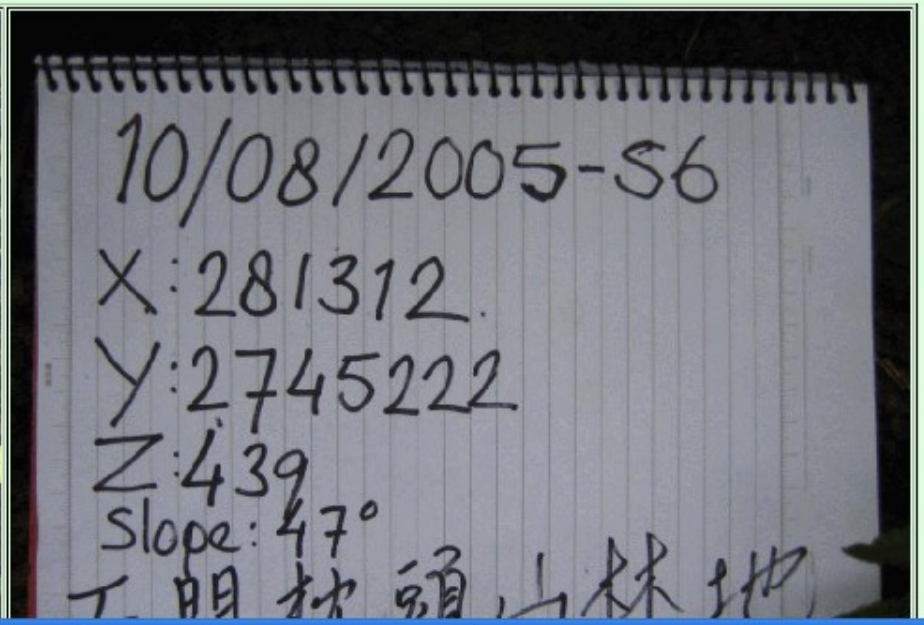

Photos and depth distribution of sample 110. Move mouse over photo to see another view, CLICK on photo to go back to th


QUERY TWD67 COORDINATES	ACTIVITY DENSITY	LOCAL SLOPE	LANDUSE	EROSION PINS	YYYY/M/D
E=281312, N=2745222	0 Bq/m2	ca. 47	Forest	--	2005/8/10

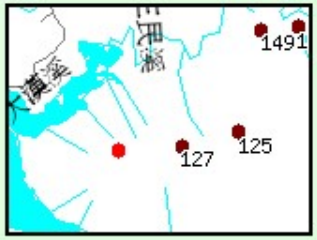




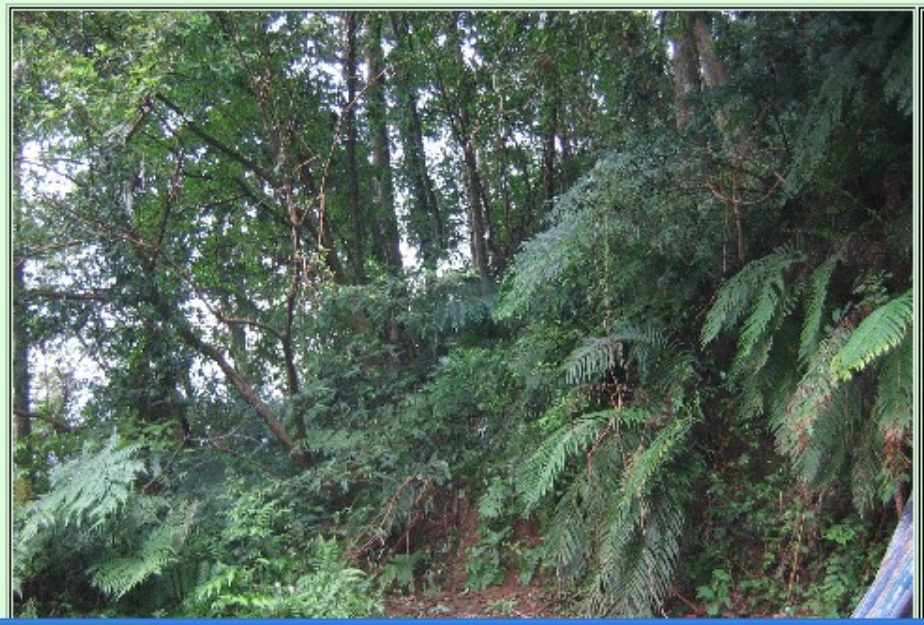

Photos and depth distribution of sample 126. Move mouse over photo to see another view, CLICK on photo to go back to the map.

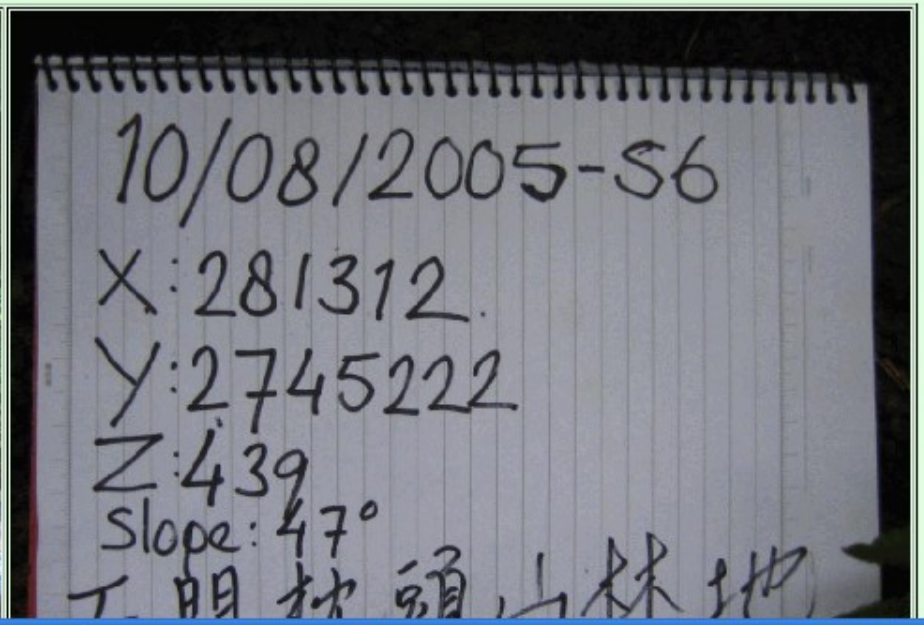


QUERY TWD67 COORDINATES	ACTIVITY DENSITY	LOCAL SLOPE	LANDUSE	EROSION PINS	YYYY/M/D
E=281312, N=2745222	0 Bq/m2	ca. 47	Forest	--	2005/8/10



Photos and depth distribution of sample 126. Move mouse over photo to see another view, CLICK on photo to go back to the map.





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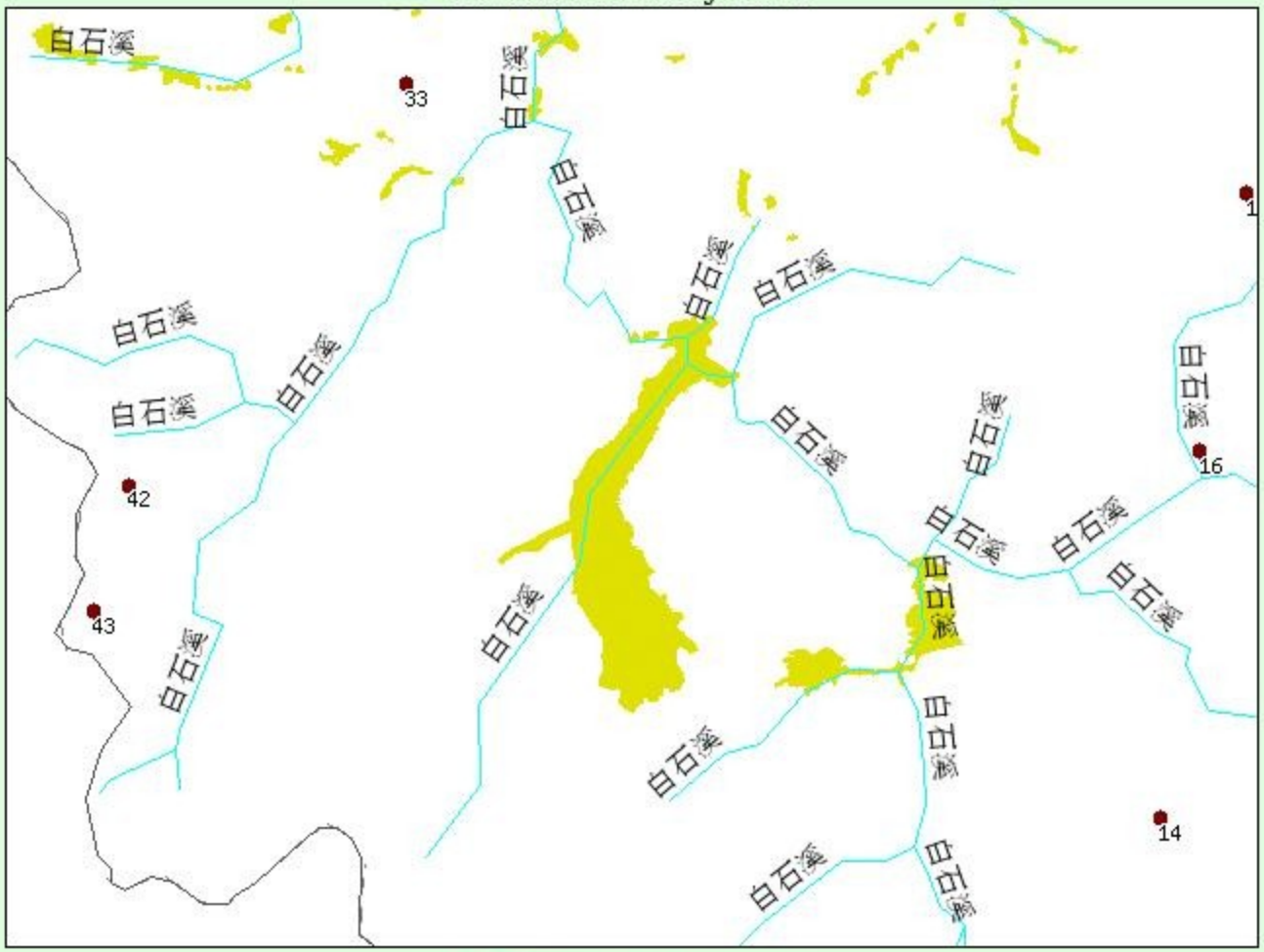
http://140.112.190.136/cgi-bin/mapserv.exe?mode=browse&img.x=217&img.y=370&layer=reservoir&layer=rivers

Getting Started Latest Headlines

Shihmen study area



0 0.2 0.4 0.6 km Legend

Reference map

reference map

Refresh/Query

Choose layer(s

- [x] Reservoir
- [x] Rivers
- [x] Subwatershe
- [x] Roads
- [x] Samples
- [ ] Land use labe
- [ ] Land use 199
- [x] Aere landslid
- [ ] Soil erosion
- [ ] Elevation con

- (•) Browse maps
- ( ) Query Cs-137

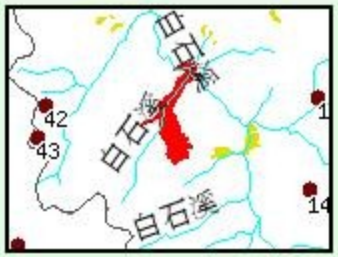
- ( ) Zoom in (2x)
- (•) Pan
- ( ) Zoom out (-2x

Full map

Powered by:

Query information for landslide no.: 193

QUERY TWD67 COORDINATES	AREA	ELEV LOW	ELEV HIGH	LOCATION
E=272616, N=2714091	918689 m2	ca. 1385 m	ca. 2265 m	境界山



BACK

謝謝你