



Core Global or Geo-Spatial Databases (CGDB)



FAO-SDRN Poverty Mapping Project Group (PMPG)
United Nations Geographic Information Working Group (UNGIWG)
Broader Geo-Spatial User Community

An Inventory and Comparison of Globally Consistent Geo-Spatial Databases and Data Libraries

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SDRN led FAO component of the Poverty and Food Insecurity Mapping Project



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The African Water Resource Database

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Introduction

The African Water Resource Database (AWRD) is a comprehensive database of water resources in Africa. It provides a detailed overview of the continent's water resources, including rivers, lakes, and reservoirs. The database is designed to support water resource management and planning in Africa.

Methods

The AWRD data was derived from a combination of satellite imagery, ground-based surveys, and existing data sources. The data was processed and analyzed using GIS software to create a comprehensive database of water resources in Africa.

Results

The AWRD database provides a detailed overview of the continent's water resources, including rivers, lakes, and reservoirs. The database is designed to support water resource management and planning in Africa.

Discussion

The AWRD database provides a detailed overview of the continent's water resources, including rivers, lakes, and reservoirs. The database is designed to support water resource management and planning in Africa.

Major River Systems & Coresets on the Central Image Map

The AWRD database includes a detailed overview of the continent's major river systems and coresets. The database is designed to support water resource management and planning in Africa.

AWRD Data Overview and MODIS Satellite Image Map

The AWRD database provides a detailed overview of the continent's water resources, including rivers, lakes, and reservoirs. The database is designed to support water resource management and planning in Africa.

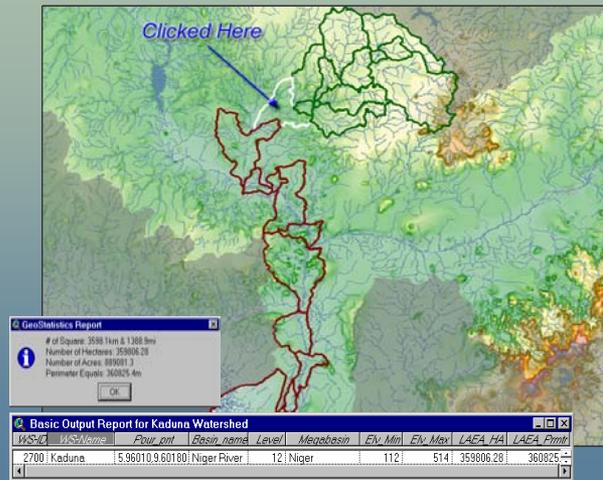
Conclusion

The AWRD database provides a detailed overview of the continent's water resources, including rivers, lakes, and reservoirs. The database is designed to support water resource management and planning in Africa.

Nominal scale of Central Image Map 1:12 500 000

Food and Agriculture Organization of the United Nations

The AWRD Uses a Watershed or Basin approach that is also applicable to any Polygonal feature such as Administrative Units

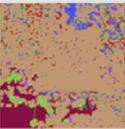
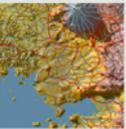


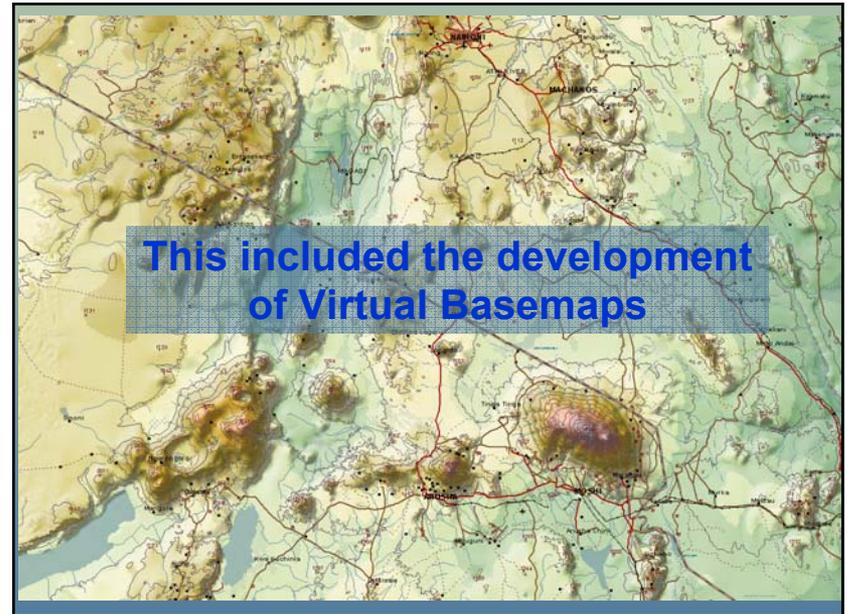
Watershed statistics viewer



Leading to a common framework for the development of data management systems and the development of a framework for the integration of information in the DCW/Map0

Table 8.1.5: Processing Overview of AWRD

 <p>Raw VMAP0 Tile</p>	<p>The structural organization & storage methods with which each of the three global source databases are encoded has limited their adoption within the international development community. The AWRD has addressed this issue by creating seamless data layers from the source data libraries for continental Africa & organizing them into database compilations accessible via an overall interface. The AWRD has been designed as a foundation set of data and decision support tools for meeting the integrated water resources management & reporting requirements of FAO and its cooperators.</p>	
 <p>Raw GLOBE Tile</p>	 <p>Three Raw Source Databases</p>	 <p>One Possible Pre-Classified Output</p>
 <p>Raw GNS "Tile"</p>	<p><u>Processing Guidelines</u></p> <ol style="list-style-type: none"> 1. Mosaicing 2. Source Comparison 3. Error Resolution 4. Source Consolidation 5. Re-Encoding 6. Documented 	<p><u>Output Deliverables</u></p> <ol style="list-style-type: none"> 1. Seamless 2. "Corrected" 3. Value-Added 4. Pre-Classified 5. Meta-Documentation 6. Public Domain



FAO Inventory and Comparison of Globally Consistent Geo-Spatial Databases and Data Libraries

The FAO CGDB Inventory attempts to itemize data sources which can be used to support general base mapping, emergency preparedness & response, and potential analytical sources of geo-spatial data for the PMPG, the FAO as a whole and the UN.

The inventory builds and expands on the 16 core data layers identified by the UNGIWG CGDB Task Force and is designed to provide a baseline for UNGIWG and the FAO Poverty Mapping Project Group to build on. The inventory is also potentially unique in that it:

- Categorizes each CGDB layer into one of ten topical indexes*
- Identifies potential global baseline framework data libraries and other sources in both the public domain and from commercial sources*
- Evaluates the sources identified by accessing, processing, and determining the estimates of the level of effort required to make the data comparable and directly useable in relation to each CGDB layer*

Framework Data Layers Evaluated

The NGA Gazetteer–GEOnet Names Server (GNS) Database
The Vector Smart Map Level 1 1:250,000 Data Library
Digital Chart of the World and Vector Smart Map Level 0 – 1:1m Data
Relational World Data Bank II 1:3m Database in Shapefile format v1.1
UNCS Quick Impact 1:5m and 1:10m Scale Databases
GTopo30, Globe, SRTM-30as, SRTM-3as, SRTM-1as, Aster DEM
NASA ~1980 (80m), 1990 (28.5m), ~2000 (15m) Orthorectified Imagery
GPW and related efforts, and LandScan
Hydro1k, GLLC-IGBP, and Others

Topical Index of Baseline CGDB Layers

Boundaries: Coastal, Administrative, and Areas of Special Interest

Human Health: Boundaries and Facilities

Human Population: Population Centres and Distribution

Transportation: Roads, Railways, Airports, Harbours, and Navigation Routes

Bathymetry and Elevation Databases

Geophysical: Geology, Geo-Morphology, Seismic, Hydro-Geology, and Soils

Surface Hydrology: Waterbodies & Water Points, Drainage, and Watersheds

Satellite Imagery, Orthorectified Mosaics, Land Cover & Vegetation Data

Climatic Data: Temperature, Rainfall, and Atmospheric/Emissions

4. Boundaries: Coastal, Administrative, and Areas of Special Interest

4.1 Coastline and Related Maritime Databases or Layers

4.1.1 Coastline Polygonal Data

4.1.2 Polygonal Maritime Waterbodies

4.1.3 Point Data Layer of Maritime Islands

4.1.4 Linear Maritime Features

4.2 Political country, administrative, disputed areas,
and park polygonal boundaries

4.2.1 First Order/AD1 Level Country and Political Boundary Data Layers

4.2.2 Combined International AD1 & Subnational AD2

Administrative Boundary Data Layers

4.3 Areas of Dispute, Conflict, and Landmine Dispersal

4.4 Parks, Conservancies, and Protected Areas

5. Human Health: Boundaries and Facilities

5.1 Human Health Infrastructure and Statistical Databases

5.2 Health Facilities

5.3 Health Statistics and Epidemiological Databases

6. Human Population: Population Centres and Distribution

6.1 Population Centres and Distribution Databases

6.1.1 Public domain datasets of populated places containing name attributes

6.1.2 Commercial and other populated place databases with population estimates

6.2 Population Census, Distribution, and Density Databases

6.2.1 CGEIC 1990 Global Population Distribution Database

6.2.2 CIESIN Global Population of the World (GPW3)

6.2.3 Oak Ridge National Laboratory's LandScan (ORNL)

6.2.4 Comparison of Available Population Distribution Databases

7. Transportation: Roads, Railways, Airports, Harbours, and Navigation Routes

7.1 Roads Data Layers

7.1.1: Comparison of Available Roads and Related Transport Structural Features

7.2 Railway Line, Station, and Marshalling Yard Databases

7.3 Airport, Airfield, and Heliport Databases

7.4 Harbour Databases

7.5 Navigation Routes

8. Bathymetry and Elevation Databases

8.1 Vector Bathymetric Contour, Gazetteer, and Ocean–Sea Databases

8.1.1: NGA–WVS+ 1:3m Polygonal and Linear Bathymetric Contour Data Layers

8.1.2 NGA–VMap0 1:1m Scale Bathymetric Contour Data Layer.

8.1.3 NGA–GNS Gazetteer of Named Maritime–Underwater Locations

8.1.4 NGA–VMap0 Polygonal Ocean–Seas Data Layer

8.1.5 Other Maritime or Undersea Vector Databases

8.2 Global Raster Combined Bathymetric and Terrestrial DEM Databases

8.2.1: NOAA–ETopo2 Bathymetry and Terrestrial DEM

8.2.2 USGS Global GIS Database, Bathymetry/Terrestrial DEM Data Layer

8.2.3 Estimated LOE for Raster DEM processing and Image Backgrounds

8.3 Vector Terrestrial Contour and Spot Elevation Data Layers

8.3.1: NGA–DCW/VMap0 Hypsographic–Elevation Data Layers

8.3.2: Integration of the VMap0 Airport Elevation attribute with Vmap0 Spot Elevations

8.4 Terrestrial Digital Elevation Models (DEMs)

8.4.1: Terrestrial DEMs Based Primarily on NGA–DTED Data

8.4.2: Hydrologically Filled DEMs

8.4.3: Terrestrial DEMs based on Space Shuttle Radar Topography Mission (SRTM)

8.4.4: Terrestrial DEMs based on TERRA–ASTER Satellite Imagery

8.4.5: Processing of Ancillary Slope, Aspect, Greyscale, and Hillshade Data Layers

8.4.6: Graphical Overviews and Comparisons

- 9. Geophysical: Geology, Geo-Morphology, Seismic, Hydro-Geology, and Soils
 - 9.1 General Geological, Mineral, Oil, and Gas Resource Databases
 - 9.1.1 The Geologic Age Data Layer
 - 9.1.2 The Geologic Provinces Data Layer
 - 9.1.3 The Ore Deposits Data Layer
 - 9.1.4 The Mines Data Layer
 - 9.1.5 The Oil and Gas Fields Data Layer
 - 9.2 Geo-Morphology and Physiographic-Surface Databases
 - 9.3 Earthquake, Seismic, and Volcanism Databases
 - 9.3.1 Earthquake and Seismic Databases
 - 9.3.2 Volcanism Databases
 - 9.4 Hydro-Geological Databases
 - 9.5 Soils Databases

10. Surface Hydrology: Waterbodies & Water Points, Drainage, and Watersheds

- 10.1 Surface Waterbody (SWB) Databases or Libraries
 - 10.1.1 Cartographic Surface Waterbody (SWB) and Wetlands Databases
 - 10.1.2 Limnological Databases of Surface Waterbodies
 - 10.1.3 Satellite Image Derivative Databases
- 10.2 Drainage and Flow Routing Databases or Libraries
 - 10.2.1 Cartographic Source Databases of River Drainage
 - 10.2.2 DEM Derivative Flow Routing Databases
 - 10.2.3 River Gauge Monitoring and Runoff Databases
- 10.3 DEM Derivative Watershed and River Basin Databases
 - 10.3.1: World Resources Institute (WRI) Watersheds of the World
 - 10.3.2: GIWA Terrestrial & Large Marine Ecosystems
 - 10.3.3: Hydro1k Six-Level Watershed Model
 - 10.3.4: Creation of Intermediate Resolution WS-Model Consistent with the VMap0
- 10.4: Connectivity & Encoding Issues Related to Drainage Networks & WS-Models
 - 10.4.1: Connectivity
 - 10.4.2: Methods Used to Encode Hydrological Networks
 - 10.4.3: Ranking or classification schemes
 - 10.4.3: Topological encoding schemes

11. Satellite Imagery, Orthorectified Mosaics, Land Cover & Vegetation Data

11.1 Satellite Image Mosaics and Orthorectified Imagery

11.1.1: Issues Related to the Use of NASA's Orthorectified
Image Library for Base Mapping

11.2: Satellite Derivative Land Classification and Vegetation Databases

12. Climatic Data: Temperature, Rainfall, and Atmospheric/Emissions

12.1 Temperature Databases

12.1.1 Maritime Temperature Databases

12.1.2 Terrestrial Temperature Databases

12.1.3 Surface Waterbody Temperature Databases

12.2 Rainfall Databases

12.2.1 Precipitation based on monitoring stations

12.2.2 Precipitation extrapolated to a grid format

12.2.3 Precipitation derived from satellite based resources

12.3 Wind Speed

12.4 Water Vapour Pressure/Relative Humidity

12.5 Potential Evaporation

12.6 Atmospheric and Global Emissions Databases

Topical Section not fully completed

Thank You!