Geospatial Support for UN Operations *

* Prepared by the Cartographic Section, Department of Field Support, United Nations
Geospatial Support for UN Operations

UNRCC Asia & the Pacific

Cartographic Section
Department of Field Support
United Nations

Agenda

• UN Secretariat and its Missions
• Cartographic Section
  - Area of Responsibility
  - Geo Operational Concept
  - Field Mission Geo Operations
• Major developments
• Capacity Building
• Partnerships
• International Boundary Issues
• Questions & Answers
Note: Department of Field Support (DFS) has established on 1 July 2007.
Personnel

- Peacekeeping operations since 1948: 63
- Current Operations: 16
- (Peace-building administered by DPKO): 3
- Uniform personnel: 87,957
- Countries contributing troops/polices: 119
- International civilian staff: 5,177
- Local civilian staff: 12,461
- UN Volunteers: 1,908
- Total (16 peacekeeping): 107,503
- Total 19 operations: 109,571

Total cost of operations since 1948: $54.0 billions

Approved resources:
- Approved resources (Jul 2009 – Jun 2010): $8.1 billions
- Approved resources (Jul 2008 – Jun 2009): $7.1 billions
- Approved resources (Jul 2007 – Jun 2008): $5.3 billions

Peacekeeping Financial Aspects
**Objective:**

*Cartographic Section* provides geographic support to the full range of United Nations Operations

**Principal duties:**

- Provide accurate and timely geospatial information in support of the decision-making and operational needs of
  - the Security Council and the UN Management
  - the Secretariat
  - direct support to UN Peace Operations (DPKO, DPA & DFS)
- Coordinate & support of Field Mission GIS operations
- Provide technical assistance on International Boundary issues

**Areas of Responsibilities**

**HQ Geo Support**
- Country profile maps, Peacekeeping force deployment maps
- Map production for SG report, briefing, publication, etc.
- Map clearance for UN publication, including geographical names & boundary depiction
- Maintain geo-database, including imagery & gazetteers
- Timely exchange of geo-information between the field and UNHQ
- Provide technical advice and solutions on geospatial matters
- Collaborate with UN agencies & strategic partners on data sharing

**International Boundary issues - research & technical support**
- Maintain International Boundaries Information System

**Mission Geo Support**
- Manage field mission GIS programme
- Start-up mission GIS sections/units
- Produce base maps, planning/operation maps & geo-databases
- Perform geospatial/terrain analysis and other special analysis
- Provide global backup of geo-databases and manage global GIS assets
- Conduct geo training
**Cartographic Section**

GIS experts in UN Peace Operations
- **2009:** 170–190 staff
- **2010:** 200–220 staff

**Field Mission GIS Section**

Joint GIS
- Chief GIS
- Plans & Operations
- Geographic Information Analysis
- System Support & Admin

Section/Unit size varies according to mission mandate, strength, size of area of operation, etc.

UNAMA (Afghanistan): 2 staff
UNOCI (Ivory Coast): 8 staff
UNMIS (Sudan): 24 staff
UNAMID (Darfur): 42 staff

**Typical UN Mission Structure**

SRSG: Special Representative of the Secretary-General
Substantive: Political & Civil Affairs, Human Rights, etc.
UNPOL: UN Civilian Police
UNMO: UN Military Observer
CAS: Chief Administrative Services
CISS: Chief Integrated Support Services

**Joint GIS**

Chief GIS
- Plans & Operations
- Geographic Information Analysis
- System Support & Admin

**UN Field missions**
- Plans & policies
- Collaboration
- Terrain analysis
- Geo-data repository
- Training
Concept of Geo Operations

1. Geo-database
2. UN Earth (Google-Earth)
3. Image library

4 Tiers: UNHQ-UNLB-RSC-Missions

UNLB GIS Centre: UN Geo-Database repository & Bridge
- **Capacity building**
  - Established GIS Centre (Oct 2007)
  - Mapping (Vmap2) projects (UNDOF, UNIFIL and Darfur)
  - Terrain Analysis and Groundwater Assessment
  - UN-EC Gazetteer system
  - UN Geo-database
  - UNmap (1:1, 5, 10 millions)
  - UN Earth (Google Earth enterprise system)
  - UN Image Library
  - Map portal (UN Internet & Intranet)
  - Field Reporting Tool (for data collection & verification)
  - UN World Map
  - SOPs & Guidelines
  - Established Systems Contracts – ESRI, MDA Geo, SPOT
  - Operation & System architecture
  - GIS start-up: Strategic deployment stocks (SDS) & GIS Rapid Deployable Module (containerized)

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- **Strategic Partners**
  - UN Geographic Information Working Group (UNGIWG)
  - Geographic Information Support Team (GIST)
  - Interagency collaboration on the field
  - EU Satellite Centre (EUSC)
  - EC Joint Research Centre (JRC)
  - NATO Geo Section
  - France (BGHMO), EUFOR–Chad/CAR
  - US State Dept (Office of Geographer & Global Issue)
  - Italy (DGS), US NGA, Netherlands, Belgium, …
  - G-MOSAIC (EU funded GMES initiative)
  - Multinational Geospatial Co-production Program (MGCP)

- **Other partners**
  - ISO/TC211 Geographic Information/Geomatics
  - Open GIS Consortium (OGC)
  - Global Spatial Data Infrastructure (GSDI)
  - International Steering Committee for Global Mapping (ISCGM)
  - Committee on Earth Observation Satellite (CEOS)
  - National Mapping Agencies
Furthering Partnership

To meet the Operational needs effectively & timely fashion within the given resource/capacity.

“Avoid duplications, enhance synergy by cooperation”

- Sharing geo-data, knowledge & experience
- Geo-data co-production (Darfur, Somalia, etc)
- Joint Task Force
- Joint Projects (e.g., evacuation, water source)
- Cross-training & education
- Technology exchange
- Staff exchange
- Other areas

Country Profile Maps
Mapping & GeoDB (Vmap2) - Darfur

Duration: 3 years (2008-10)
Scope: 11-16 cells
Source: SPOT-5 & Reference 3D

Image map → TLM → GeoDB

TLM production status
TLM completed with Q/C: 63 maps
TLM completed without Q/C: 47 maps

Legend:
- TLM (in green)
- Q/C (in red)
- Reference (in blue)
- Image map (in black)

UN Cartographic Section
UNRCC-AP, Bangkok 2009
Mapping & GeoDB (Vmap2) - Golan Heights

Ground Water Analysis

GROUNDWATER STUDY: SELECTION OF LOIs FOR SURVEYS & DRILLING

UN Cartographic Section  UNRCC-AP, Bangkok 2009  Page 21

UN Cartographic Section  UNRCC-AP, Bangkok 2009  Page 22
UN Earth (GE Enterprise)

UNmap (1:10, 5 & 1 millions)
Bird Flu Analysis

International Boundaries

- **Boundary delimitation & demarcation**
  - EEBC (Eritrea-Ethiopia)
  - CNMC (Cameroon-Nigeria)
  - IKBDC/IKBMP (Iraq-Kuwait)
  - Blue Line (Lebanon-Israel)

- **Technical assistance**
  - AU Border Program
  - North-South Sudan
  - Iraq disputed internal boundaries
  - Green Line (Cyprus)

- **Capacity building**
  - Boundary Information System
  - Cooperation with major players
Boundary Information System

Interpretation & digitization …

Input and convert

Digitization

Final boundary
All elements are included

Interpretation & Digitization

Treaty maps

Treaty coordinates

Supporting evidence

Treaty text

Problem of accuracy between map and image
(≈ 350 meters)

LANDSAT IMAGE (WGS 84):
Accuracy ≈ 100 meters

MAP (CLARKE 1880):
Accuracy to WGS84
δX = -180 meters
δY = -46 meters

Geo-referenced maps

Extracted boundary

Boundary Information System

Interpretation & digitization … (Kenya – Ethiopia)

Treaty map
(Clarke 1880)
Thank you