



Geospatial Support for UN Operations

UNRCC Asia & the Pacific



UN Cartographic Section

Cartographic Section
Department of Field Support
United Nations

Page 1



Agenda

- **UN Cartographic Section**
 - Area of Responsibility
 - Field Mission Geo Operations
- **Challenges & Limitations**
 - UN Secretariat and its Missions
 - UN Peace Operations
 - Limitation & Constraint
- **Strategy**
 - Capacity Building
 - Partnership
- **International Boundary Issues**
- **Questions & Answers**





UN Cartographic Section

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)
- ⇒ Provide program management 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



UN Cartographic Section

Cartographic Section

Boundary & Demarcation Projects

- CNMC
- IKBMP
- AUBP
- UNIBED
- Sudan
- Cyprus
- Iraq

Geo Support

- Security Council Secretariat
- Map making
- International boundary issues

Geo Operations

- UN peace operations
- UN Field missions
- Plans & policies
- Collaboration

GIS Centre (UNLB, Italy)

- Base map & geo-data production
- Terrain analysis
- Geo-data repository
- Training

Regional Service Centre

GIS Centre (Entebbe, Uganda)

Mission GIS

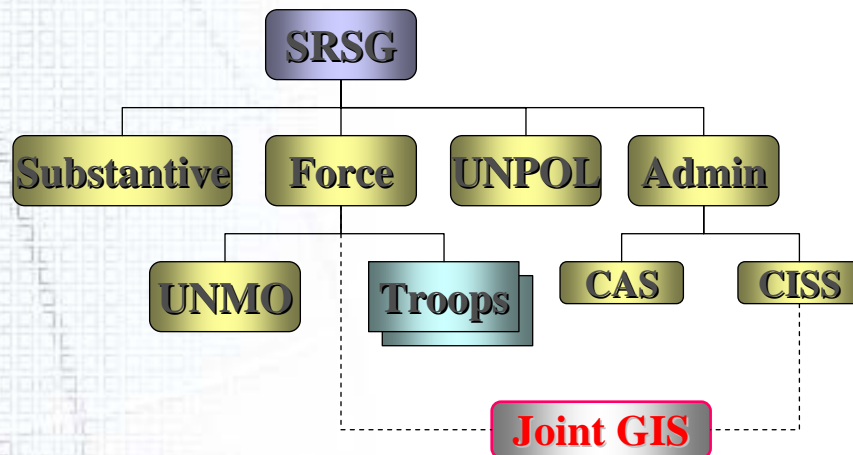
- MINURSO Western Sahara
- MINUSTAH Haiti
- MONUC D.R. Congo
- UNDOF Golan Heights
- UNIFIL Lebanon
- UNMIL Liberia
- UNMIS Sudan
- UNMIT Timor Leste
- UNOCI Ivory Coast
- UNAMID Darfur
- MINURCAT Chad & C.A.R.
- UNAMA Afghanistan
- UNSOA Somalia

GIS experts in UNHQ & Peace Operations
2009: 180~200 staff
2010: 200~220 staff



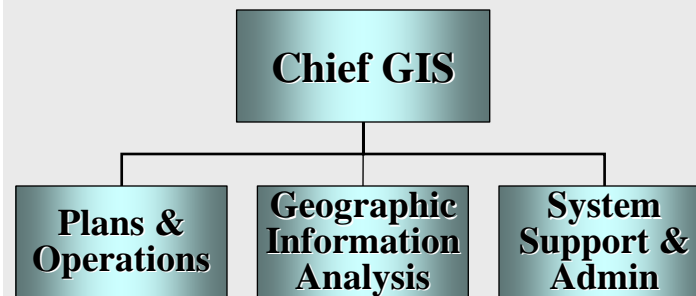
Field Mission Geo Operations

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



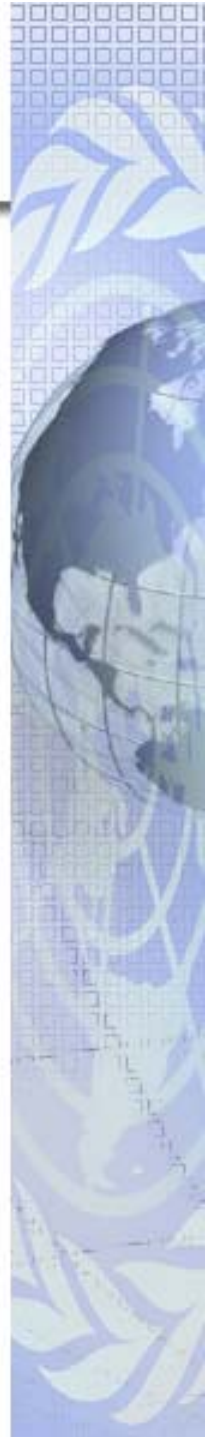
Section/Unit size varies according to mission mandate, strength, size of area of operation, etc.

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



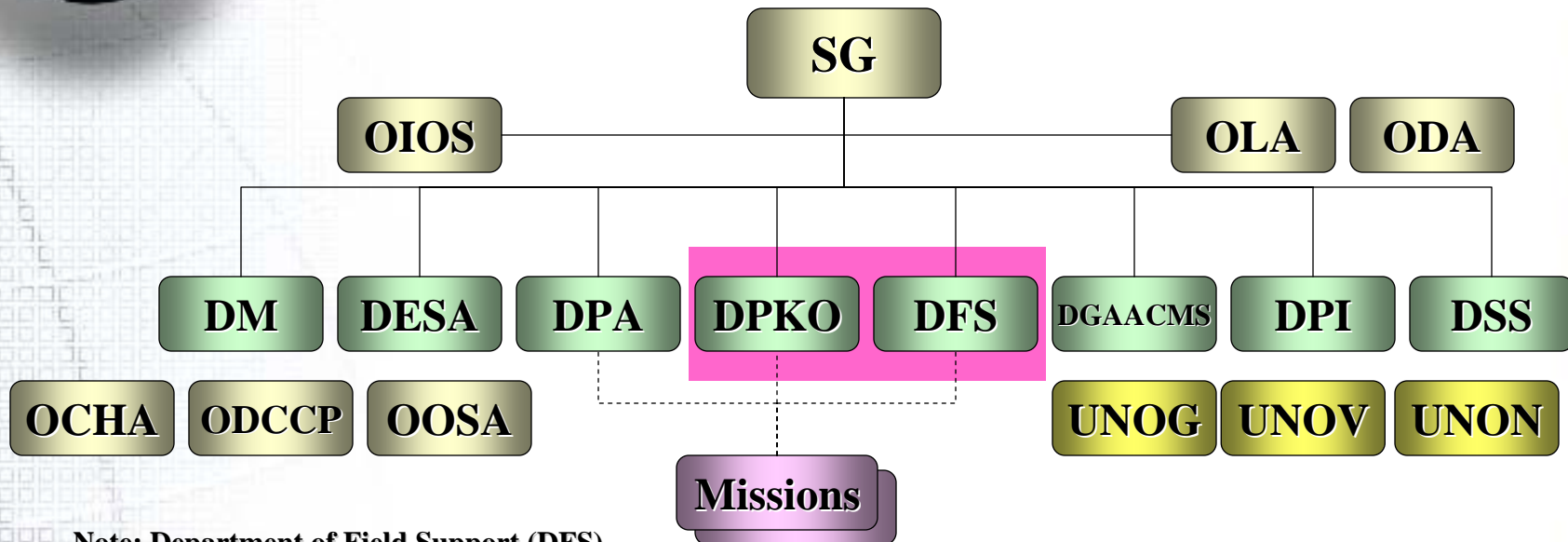


Challenges & Limitations





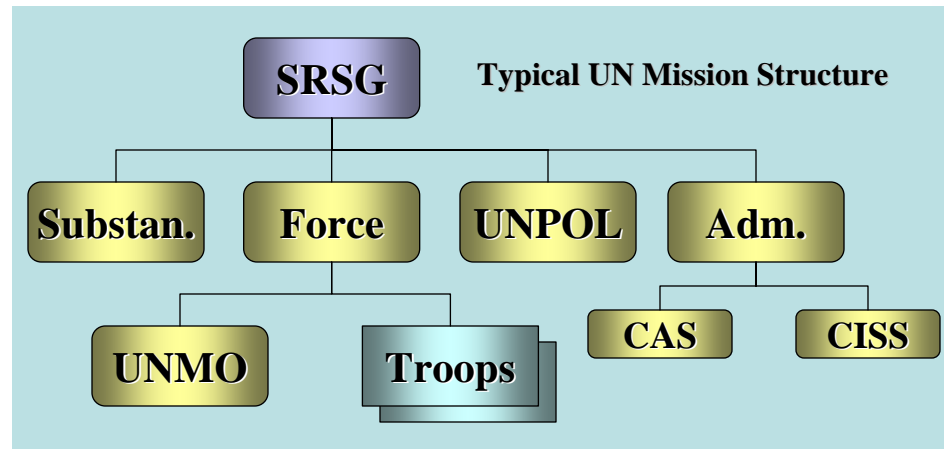
UN Secretariat & its Missions



Note: Department of Field Support (DFS)
has established on 1 July 2007



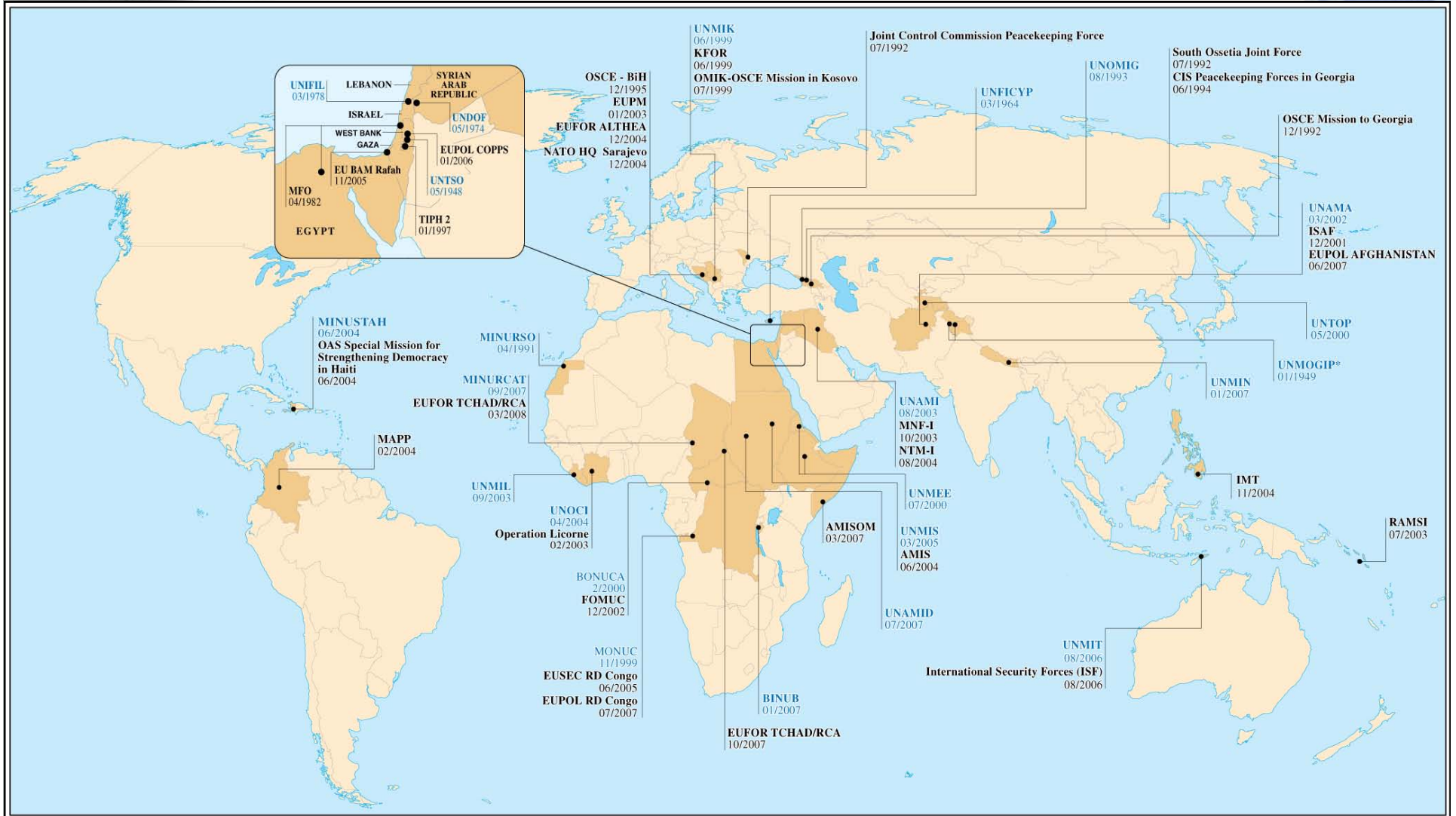
UN Cartographic Section



UNRCC-AP, Bangkok 2009

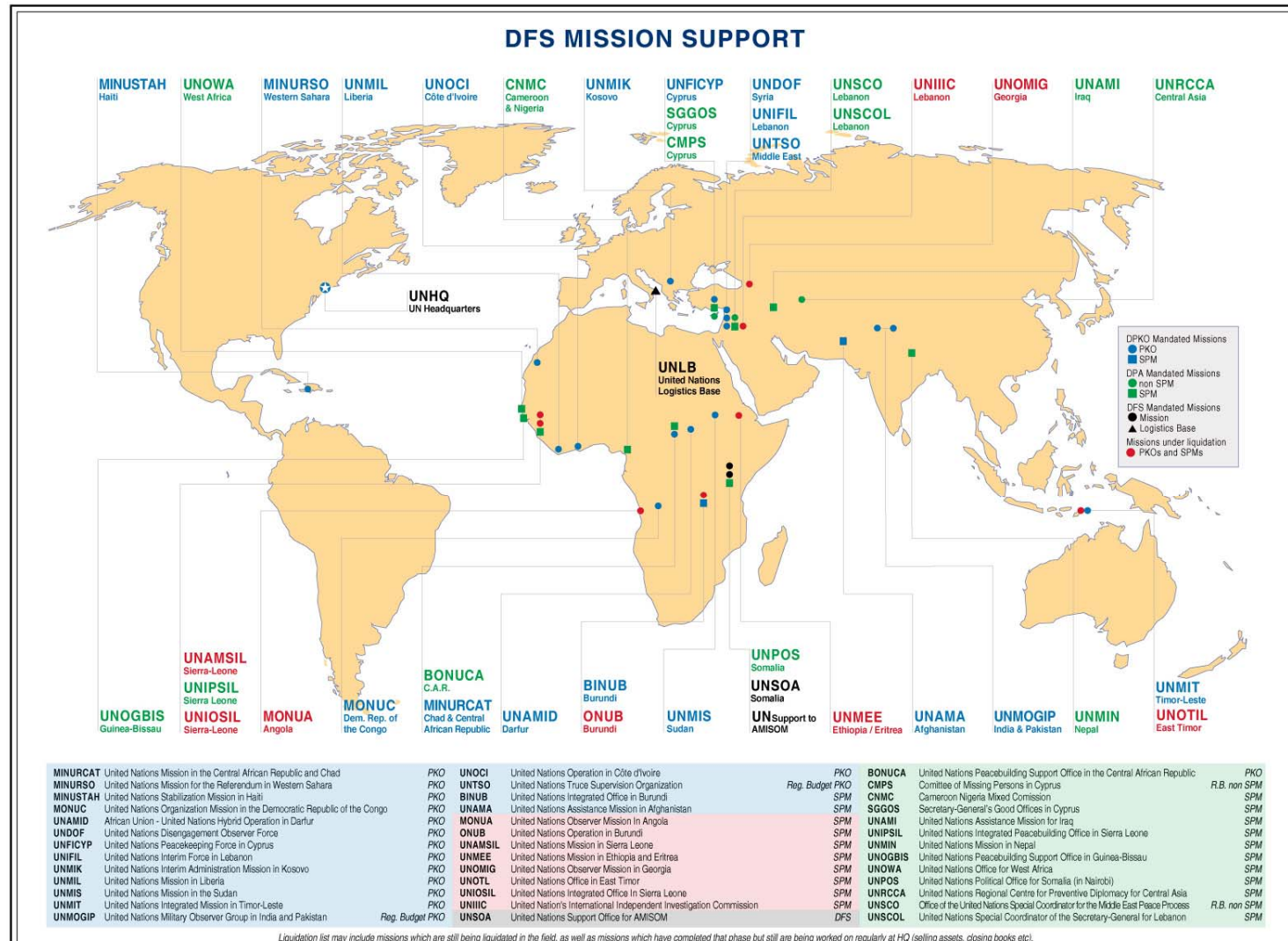


Peace Operations 2009



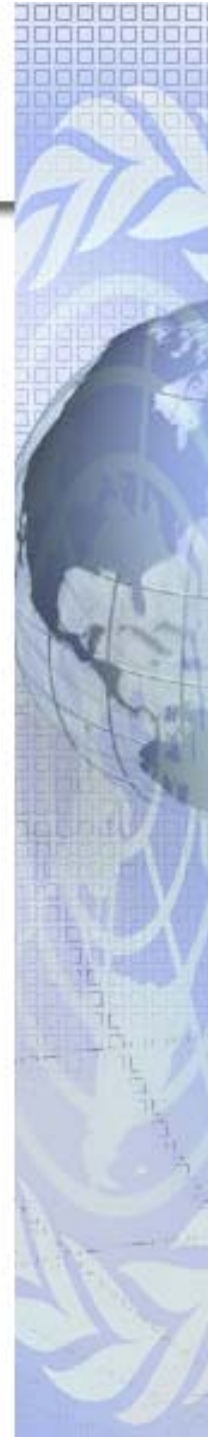


UN Field Missions 2009



UNITED NATIONS
Map No. 4370
October 2009

Department of Field Support
Logistics Support Division
Cartographic Section



UN Peace Operations statistics

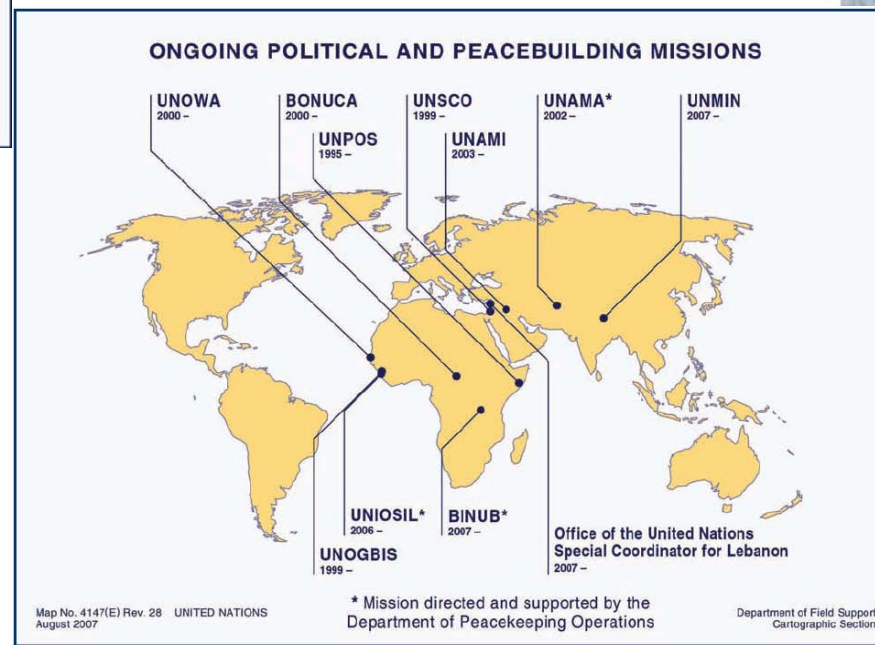


Personnel

	PKO	PBO
• Current Operations:	16	16
• Military (troops & observers):	98,413	563
• Police (individuals + formed):	17,287	-
• Troops & Police Contribute Nations:	120	-
• Civilian staff in missions:	27,147	4,994
• Civilian staff in HQ:	1,945	-
• Total:	144,792	5,557
• Budget:	\$8,6B	\$387M

Peacekeeping Financial Aspects

- Approved resources (Jul 2009 – Jun 2010): **\$8.6 billions**
- Approved resources (Jul 2008 - Jun 2009): **\$7.0 billions**
- Approved resources (Jul 2007 - Jun 2008): **\$6.3 billions**
- Total cost of operations since 1948: **\$56.0 billions**

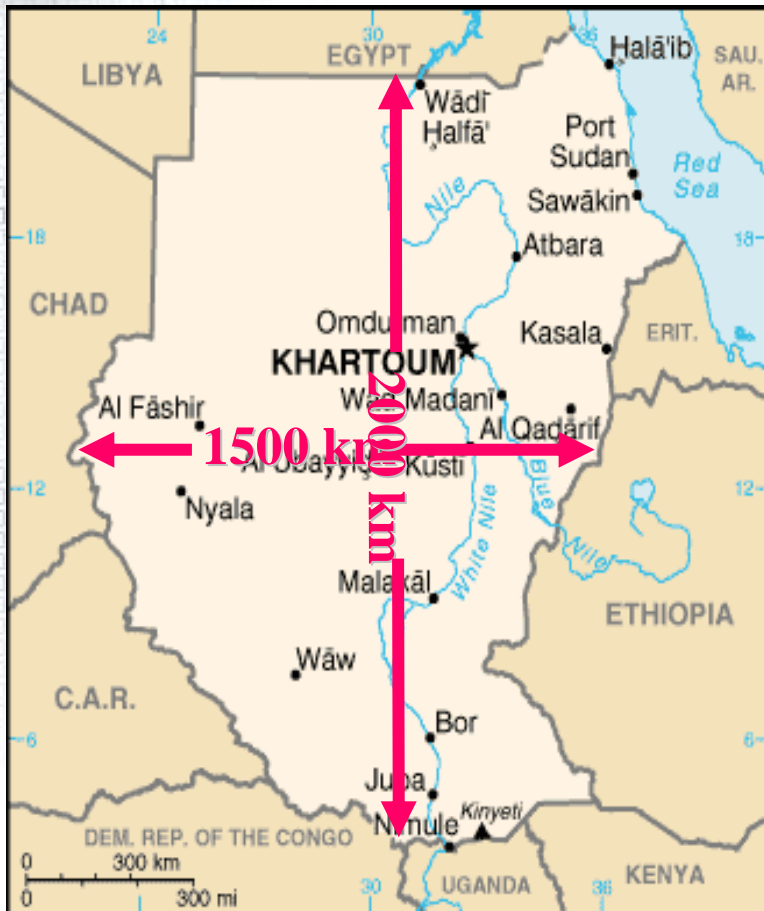




UN Missions in Sudan

Map requirements

- 1:250,000: 170 sheets
- 1:100,000: 900 sheets
- 1:50,000: 3,600 sheets
- 1:10-20,000: 200 sheets
- Total: 4,870 sheets**





UN Missions in Sudan

Gap analysis (Operational implication):

As of April 2005

Requirement	Map scale	Data Availability			
		Paper maps	Vector data	Digital elevation	Satellite imagery
Overview Strategic plan	1:1,000,000	ONC available, outdated	DCW avail, outdated	DEM/DTED-0 available	LandSat NaturalVue
Strategic & operational	1:500,000	TPC, Russian, Swiss - outdated	Not available. Darfur, Nuba	DEM/DTED-1 available	
Operational	1:200,000 1:250,000	Sudan, Russian - outdated. JOG not completed.	Not available except partial		Not available
Tactical	1:100,000	Russian/Sudan - partial, not avail, outdated.	Not available		
MilObs/CivPol	1:50,000	Not existence.	Not available	EROS	
City & Street	1:20,000	Not existence. Khartoum, Port Sudan			QuickBird IKONOS



Force Commander's voice

“Geographic Information has been noted to be the soldier's most important weapon - second only to his gun.

....

The mission experienced a lot of operational set backs initially, because there were no topographical maps for accurate operational planning or orders and hence, it was easy for the Rebels who were more familiar with the country's topography to ambush foreign Peacekeepers who knew little about their Area of Operational Responsibilities and had no Maps.”

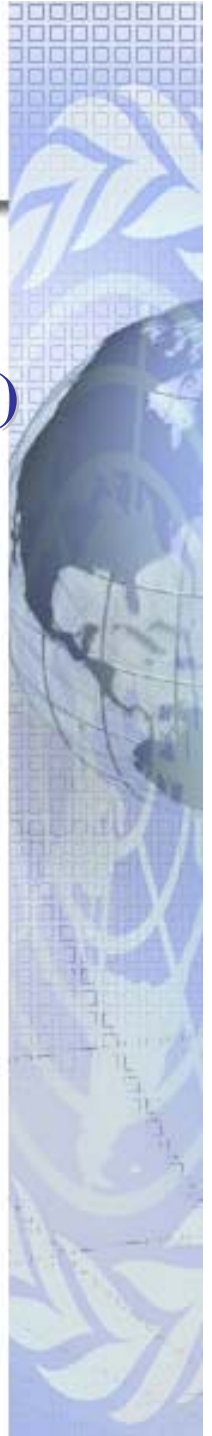


*Lt.Gen. Daniel Opande, Force Commander UNAMSIL
UNAMSIL Press release, 22 Oct 2002*



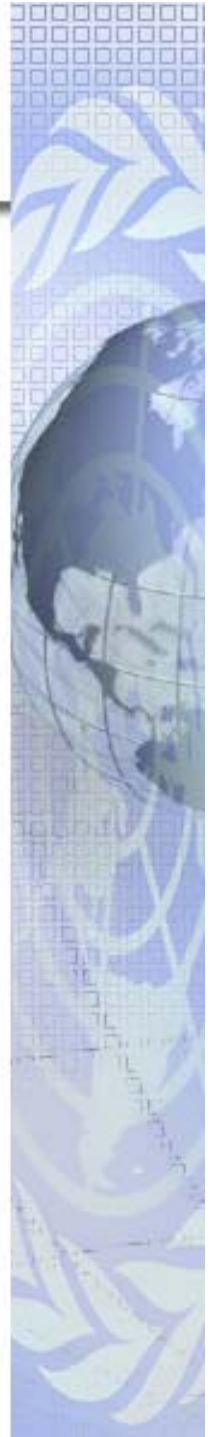
Limitation & Constraint

- **Limited Support & Resources**
 - **Lack of Governance (structural & information flow)**
 - **Lack of Staff: 180-200 (HQ: 20-30, Missions:160-170)**
 - **Lack of Geo infrastructure & capacity**
- **Critical shortfalls on Mission Start-up**
 - **Global coverage, **mostly underdeveloped areas****
 - **Long lead-time for resource generation**
 - **Surge GIS/Mapping demands to start-up a mission**
- **No Magic for Instant Mapping**
 - **Lack of base maps (particularly **Vector** maps)**
 - **Outdated maps, limited coverage**
 - **Minimal verified data**





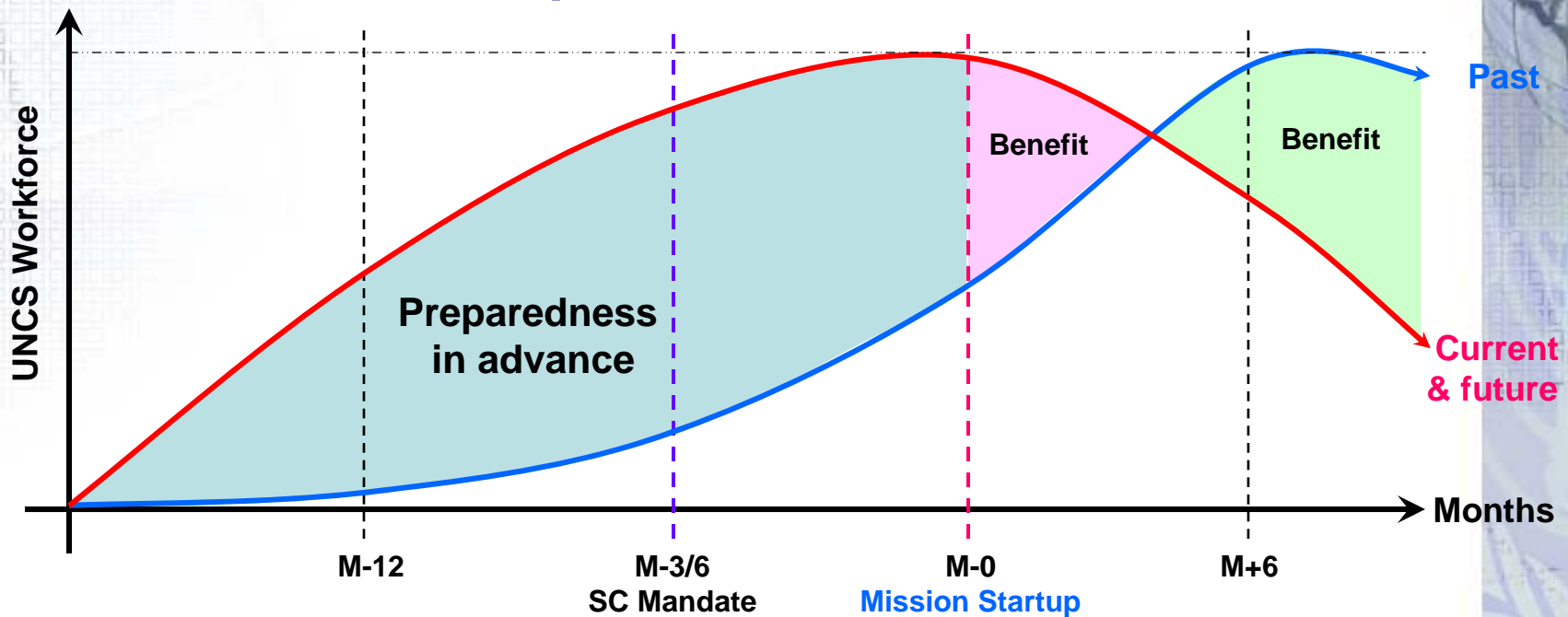
Strategy



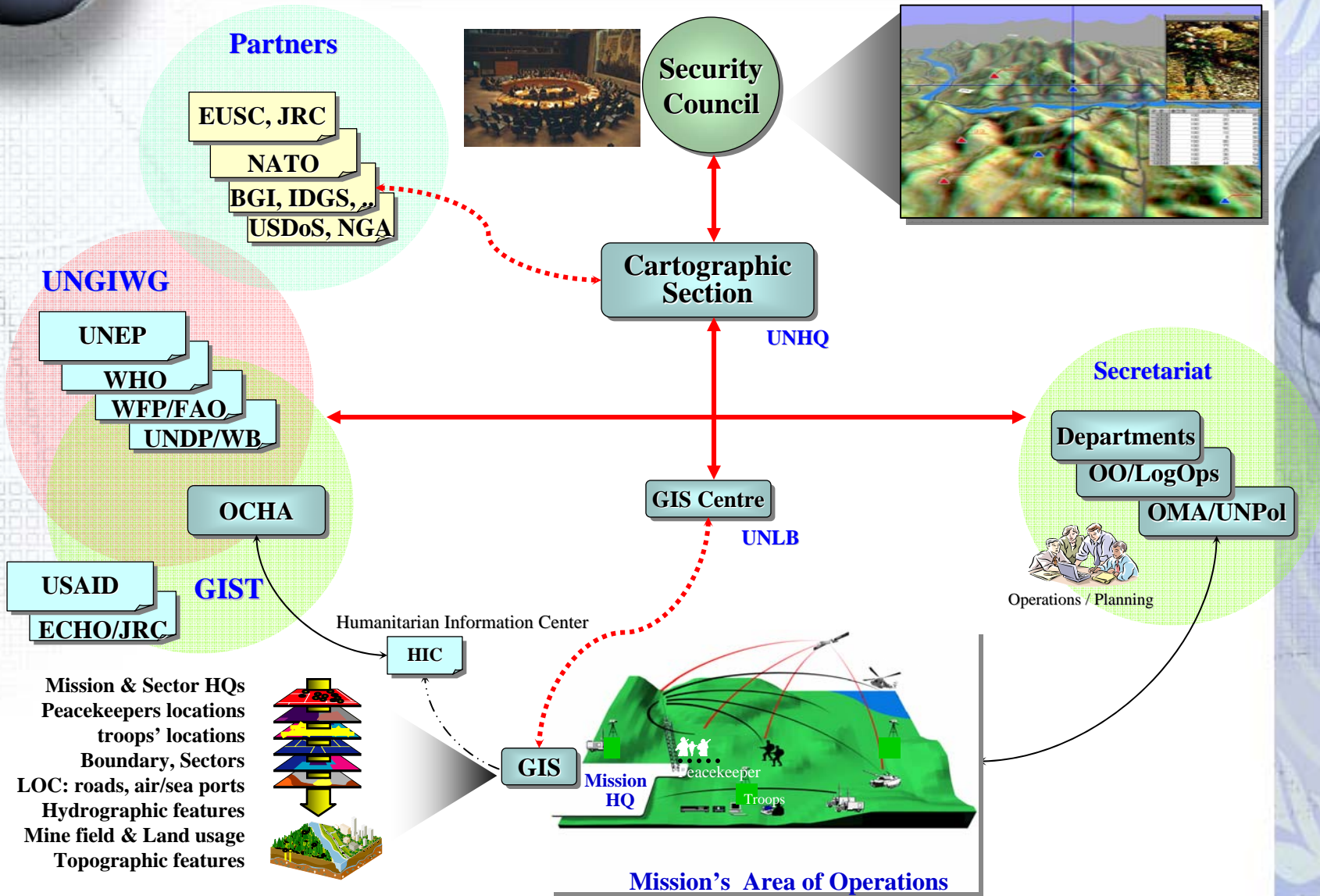


Strategic Preparedness

- Capacity building
- Planning & Preparing in advance
- Strategic partnership & alliances
- Pre-training
- Team spirit

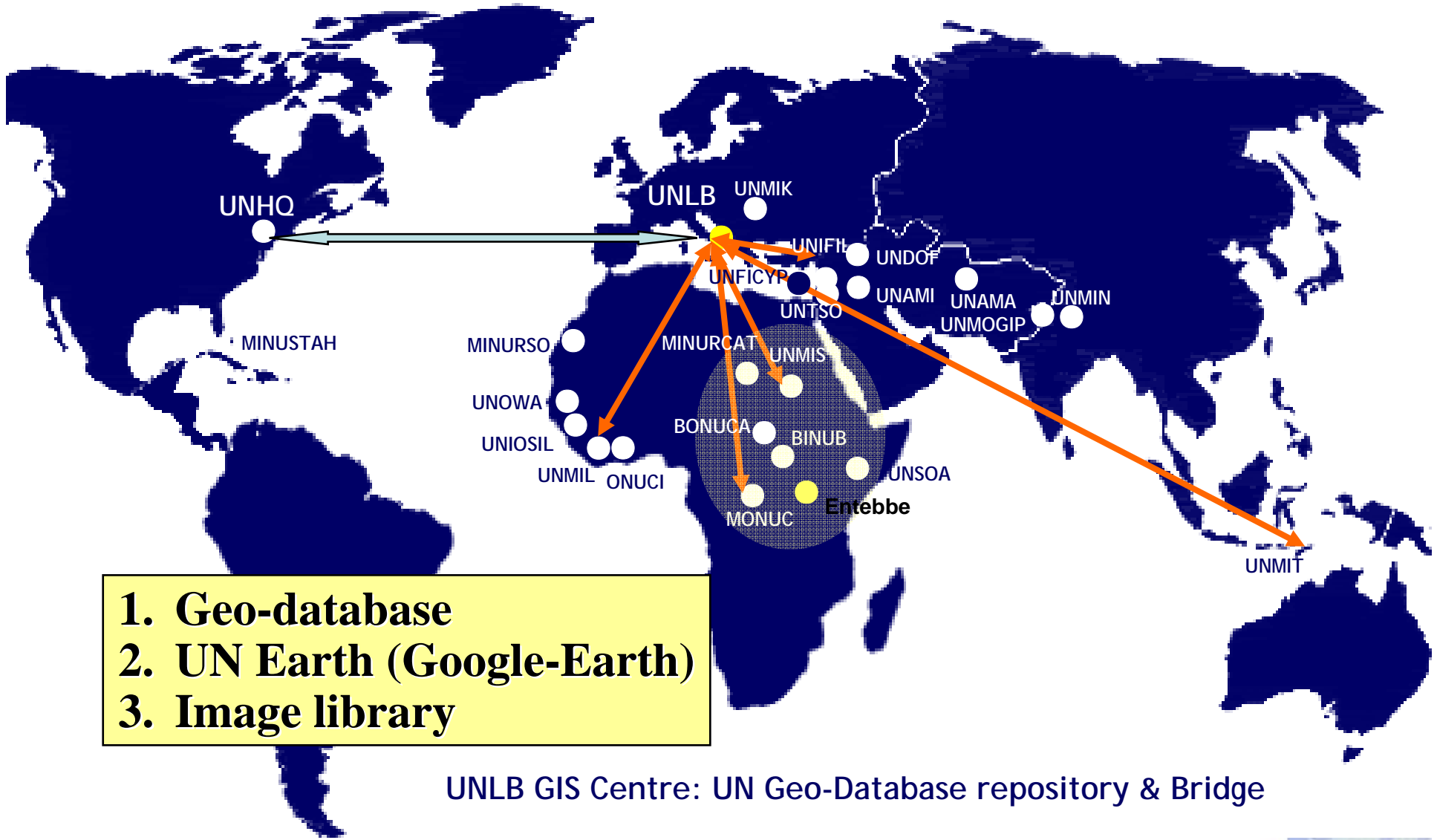


Concept of Geo Operations





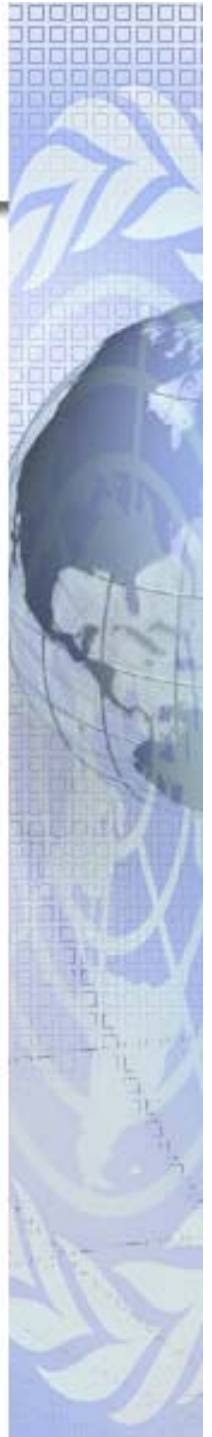
4 Tiers: UNHQ-UNLB-RSC-Missions





Capacity Building

- . **Established GIS Centre (Oct 2007)**
- . **Mapping (Vmap2) projects (UNDOF, UNIFIL, Darfur, DRC, Somalia)**
- . **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)**
- . **UN World Map**
- . **SOPs & Guidelines, Community of Practice**
- . **Established Systems Contracts – ESRI, MDA Geo, SPOT**
- . **Operation & System architecture**
- . **GIS start-up: Strategic deployment stocks (SDS) & GIS Rapid Deployable Module (containerized)**
- . **Application developments: Field Reporting Tool, Security warden system, Election, Tracking & Monitoring, etc.**





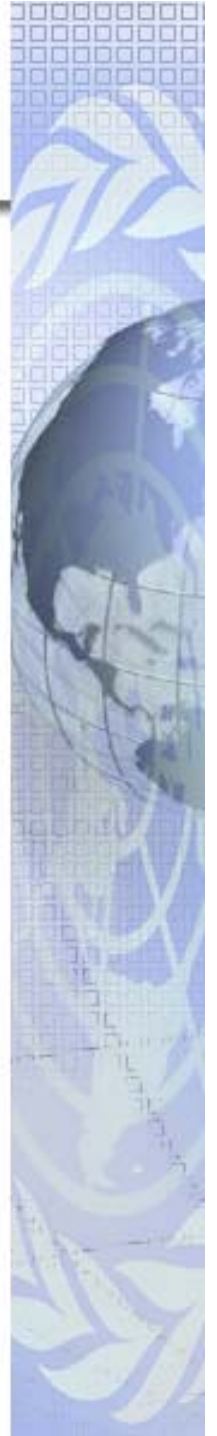
Partnership & Alliances

- 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 (revitalizing)

- . 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



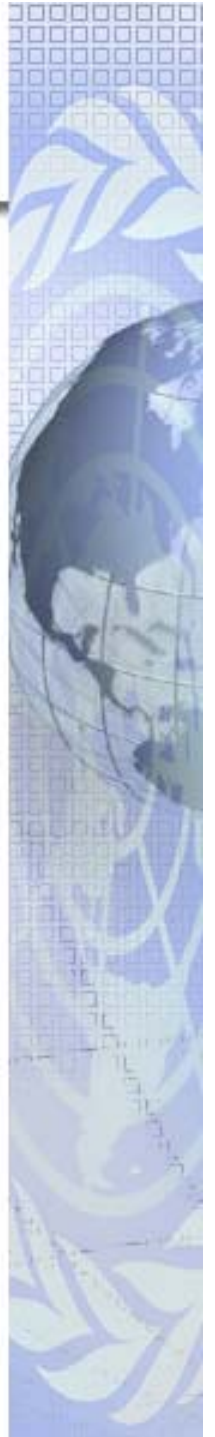


Furthering Partnership

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**





UNGIWG (UNSDI)

UN Geographic Information Working Group: 28 March 2000

2000-2002: UN Cartographic Section

2003-2004: UNEP + WHO

2005-2006: WFP + FAO

2007-2008: UN OCHA + UNHCR

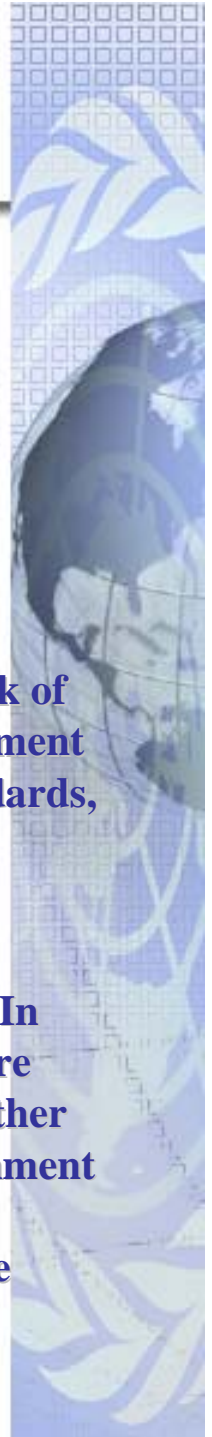
2009-2010: UN OOSA + UN ECA

Objective:

“to promote the use of geographic information for better Decision-making.” a network of professionals working in the fields of cartography and *geospatial information* management science to address common geospatial issues - maps, boundaries, data exchange, standards, naming conventions, and location.

UNSDI:

The agencies of the UN system deliver more services in more places than ever before. In order to do so, the UN agencies produce data and information which they need to share among themselves, with member states, non-governmental organizations, as well as other institutions. From peace-keeping to humanitarian relief and pandemics, from environment to economic development, the ready availability and cost-effective management of dependable *geospatial information* is central to raising the operational efficiency of the United Nations .





GI Support Team (GIST)

Foundation: July 1998 (UN OCHA)

UN/OCHA, UN/DPKO, UNHCR, WB, UNICEF, WFP, FAO, USAID, EU/ECHO, WHO, ITOS (U. of Georgia), DEPHA, VVAF

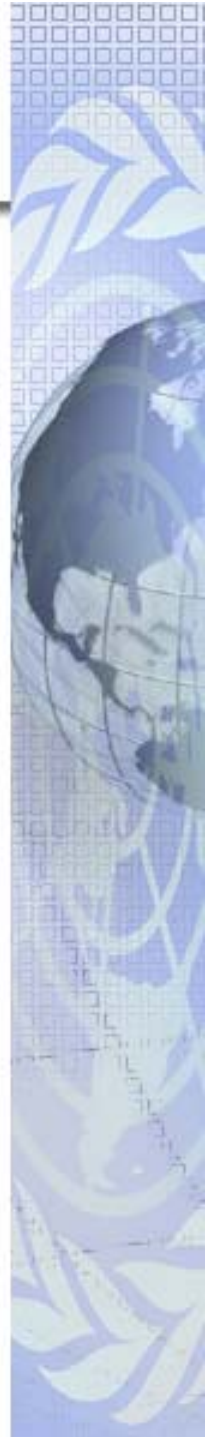
Objective:

“rapidly strengthening humanitarian information coordination preparedness and response efforts around the world.”

a group of technical and operational experts from humanitarian agencies with disaster management, humanitarian assistance and coordination mandates – and an interest and capacity in information management. The group seeks to enhance the use of geographic information, data standards and information sharing to improve emergency preparedness and response.

Activities: disaster recovery & humanitarian relief operations

- Tsunami**
- Earthquake, Eruption, flooding, etc.**
- Humanitarian activities**





Global Impact & Vulnerability Alert System (GIVAS)

Background:

- **G20 Summit in London: called UN to establish an effective mechanism to monitor the impact of the crisis on the poorest and most vulnerable.**

Objective:

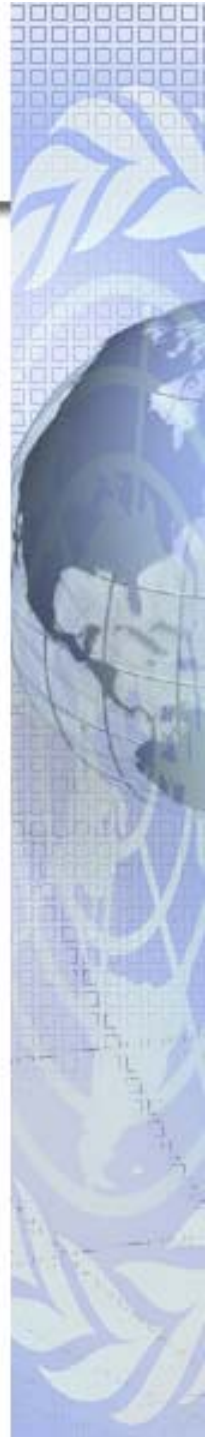
- **To provide early indications of how an exogenous shock, like the financial crisis, is affecting the economic, social and political welfare of the most marginalized populations and countries.**

Geo Support:

- **Global geo-data**
- **Global interoperable geo-infrastructure**
- **Spatial analysis, and interface with the existing systems**

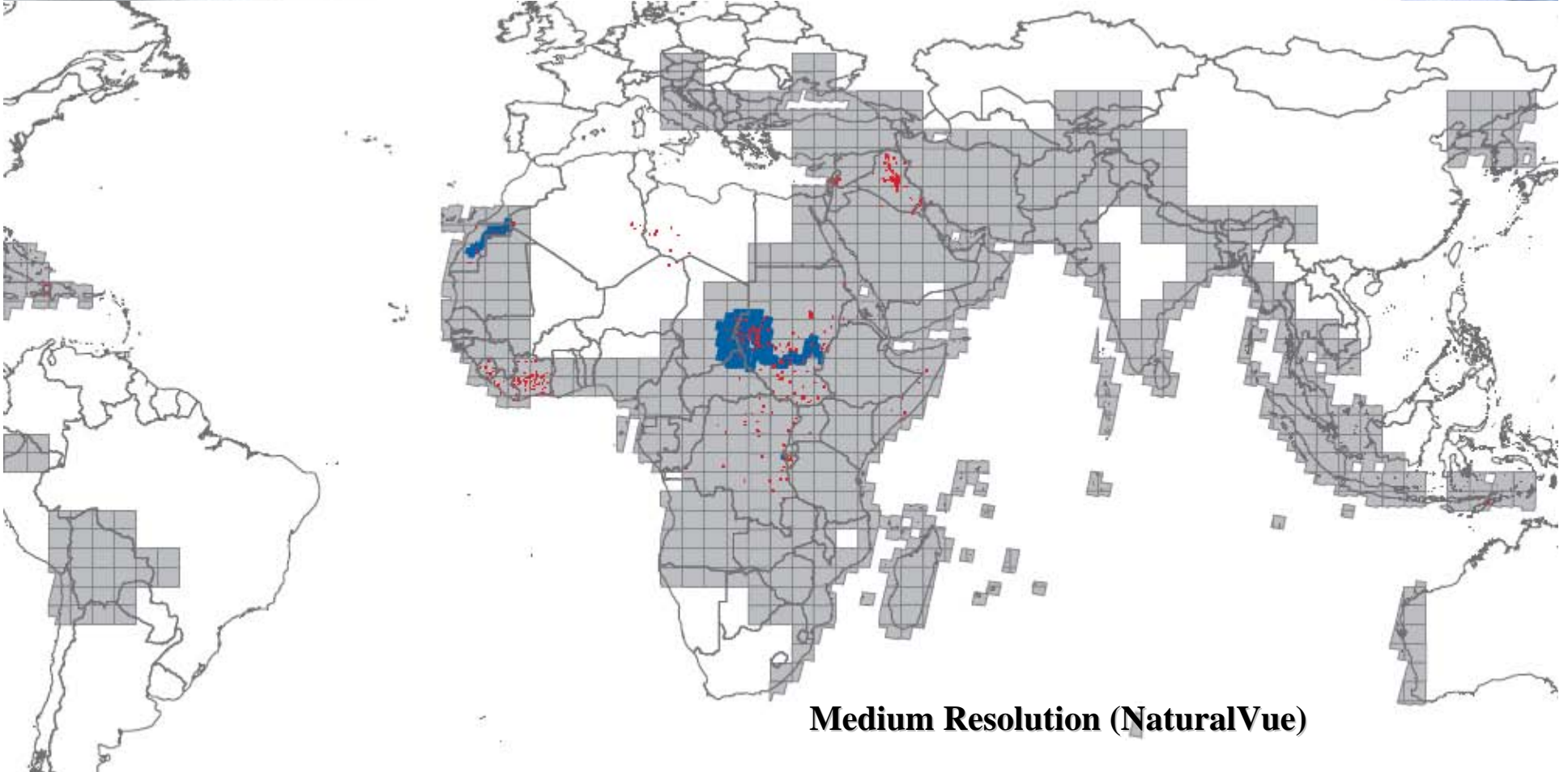
Major Geo Participants:

- **UNCS (focal point), UNEP, FAO, UNHCR, etc.**

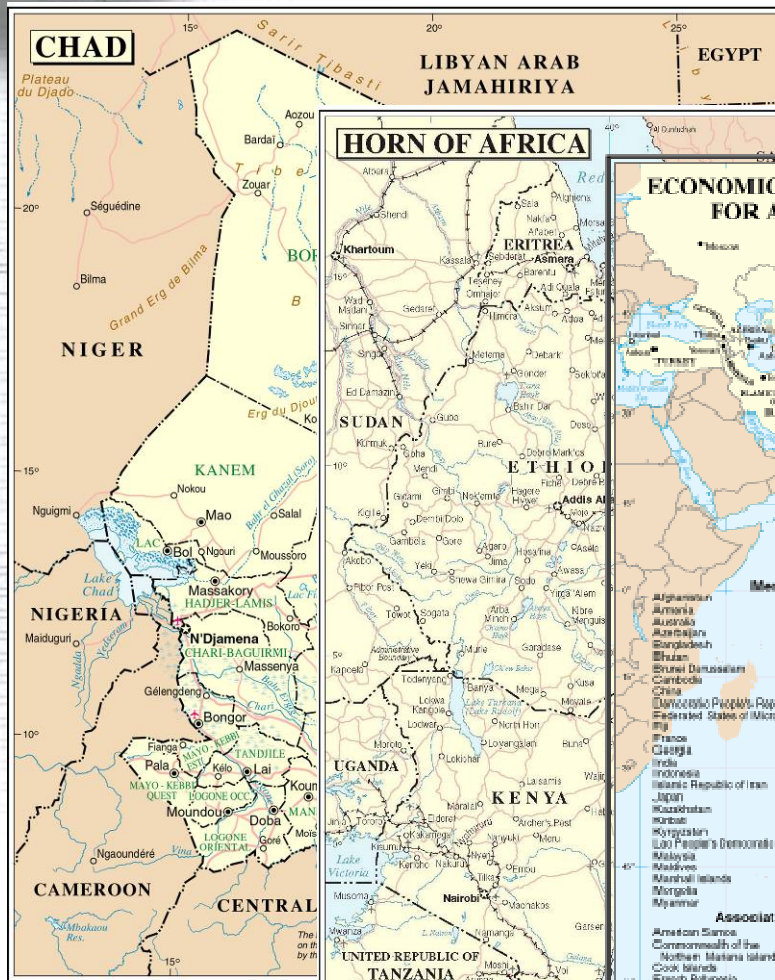




UNCS Satellite Imagery

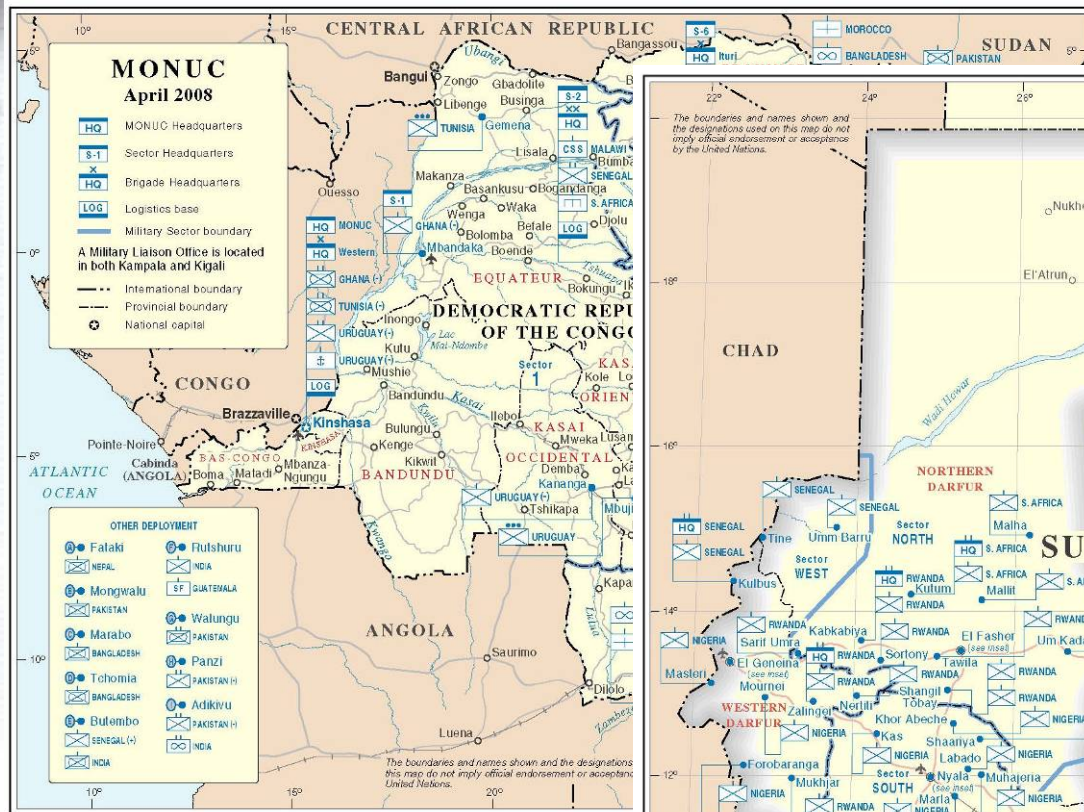


Country Profile Maps

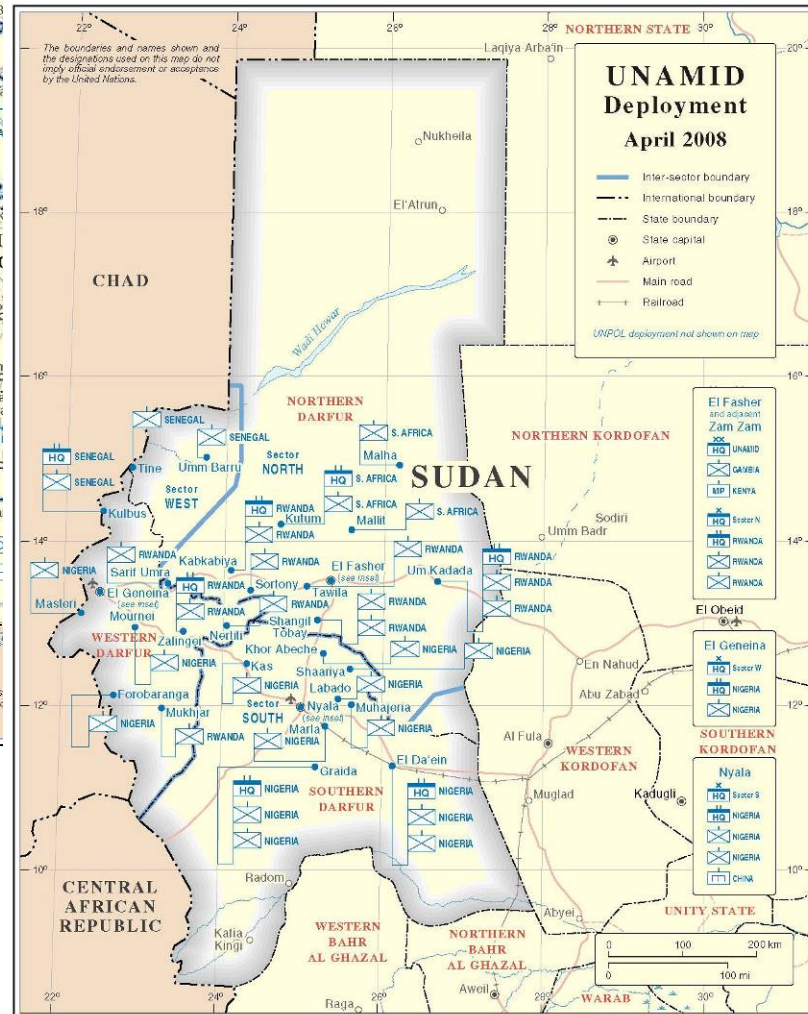




Peacekeeping Deployment Maps

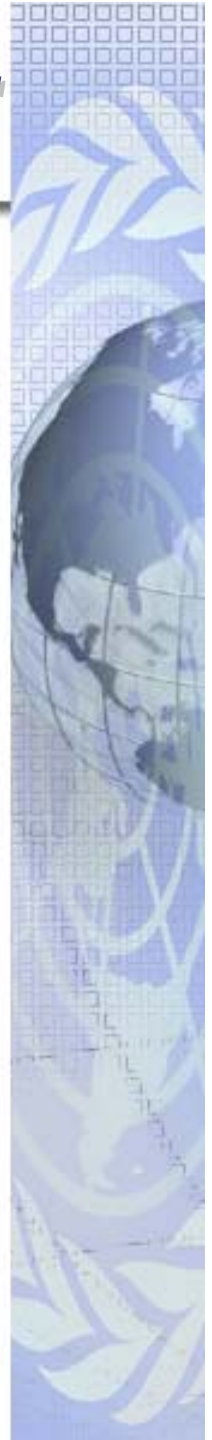


Map No. 4121 Rev. 09 UNITED NATIONS
April 2008 (Colour)



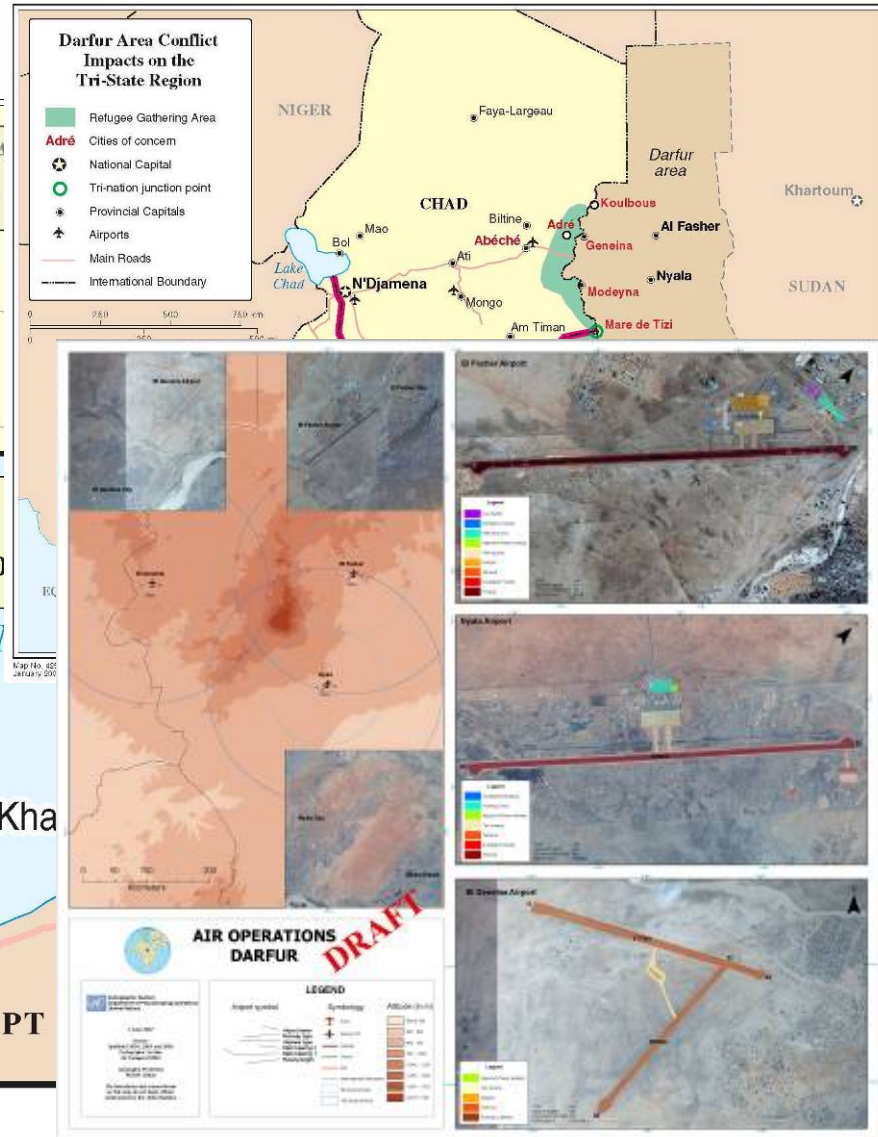
Map No. 4327 UNITED NATIONS
April 2008 (Colour)

Department of Field Support
Cartographic Section



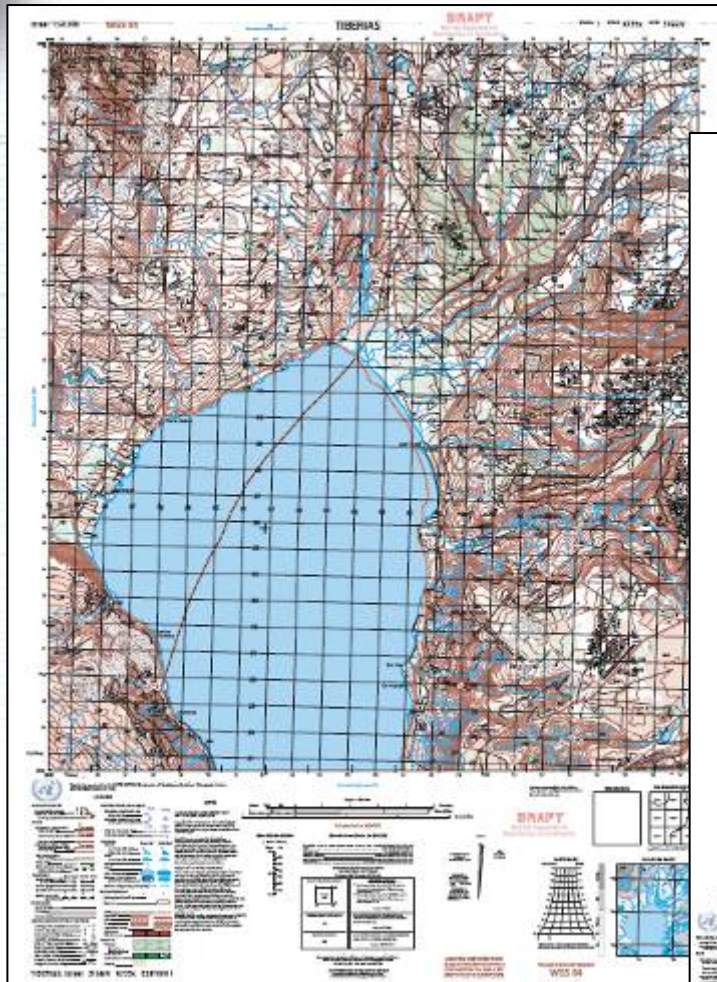


Situation Analysis

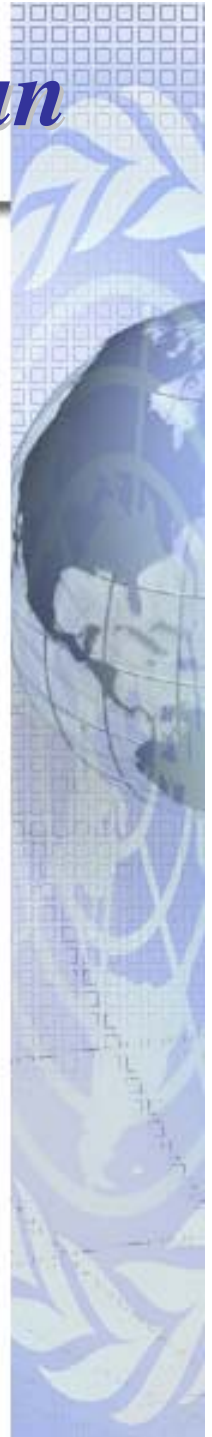
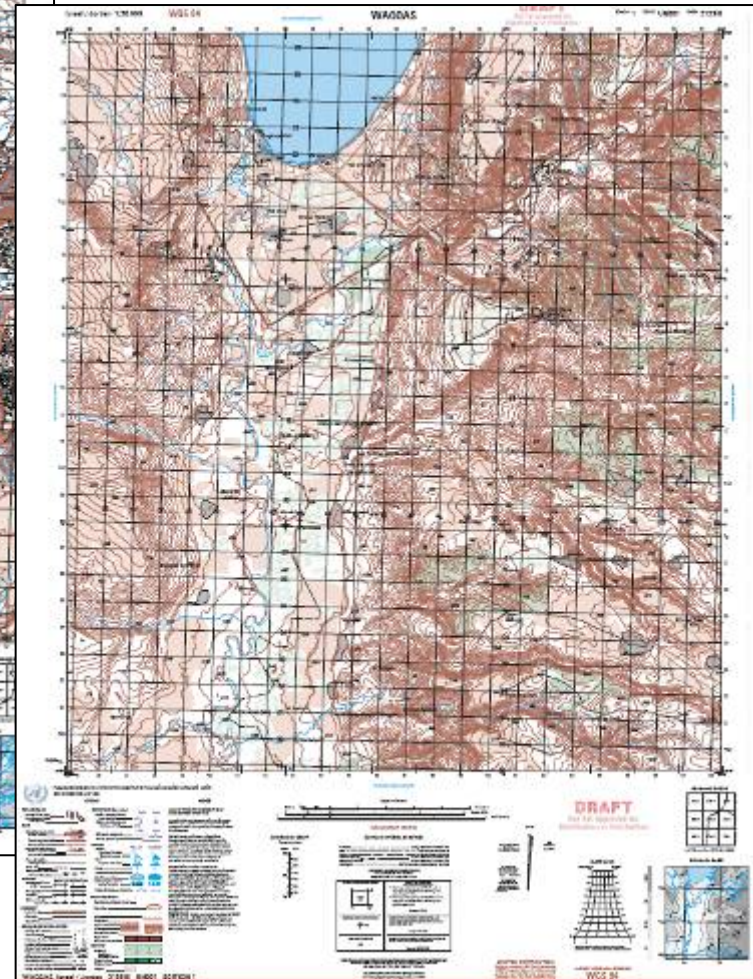




Mapping & GeoDB (Vmap2) - Golan



Golan Heights



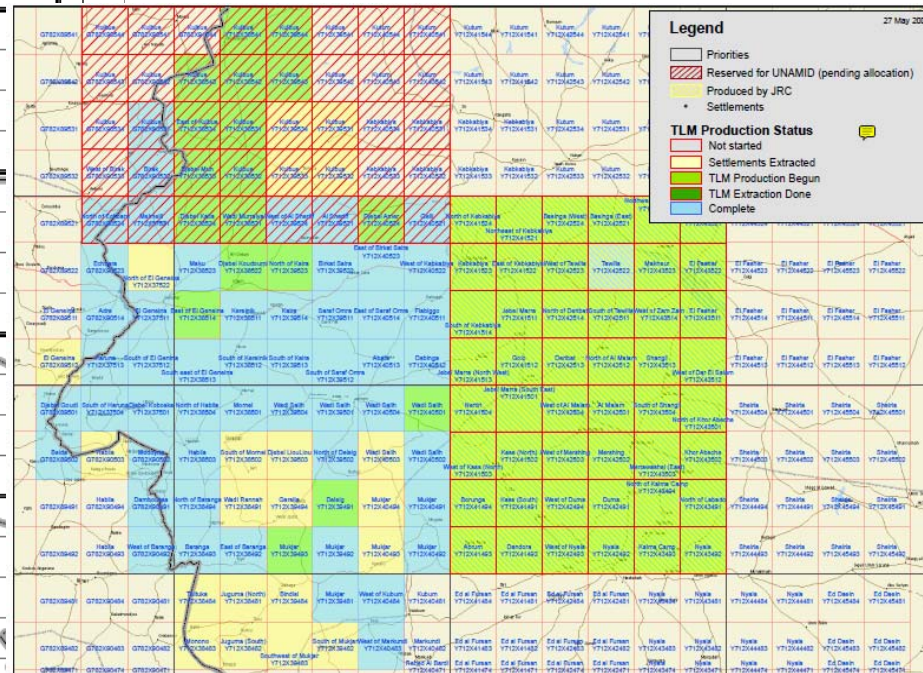
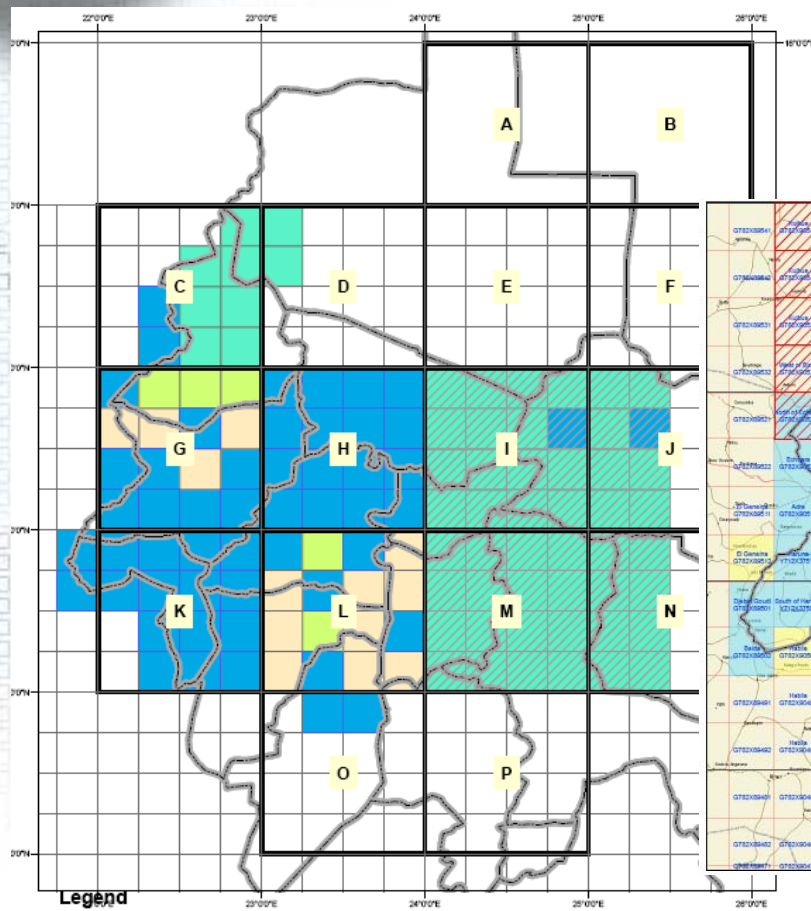


Mapping & GeoDB (Vmap2) - Darfur

Duration: 3 years (2008-10)

Scope: 11~16 cells

Source: SPOT-5 & Reference 3D Image map → TLM → GeoDB



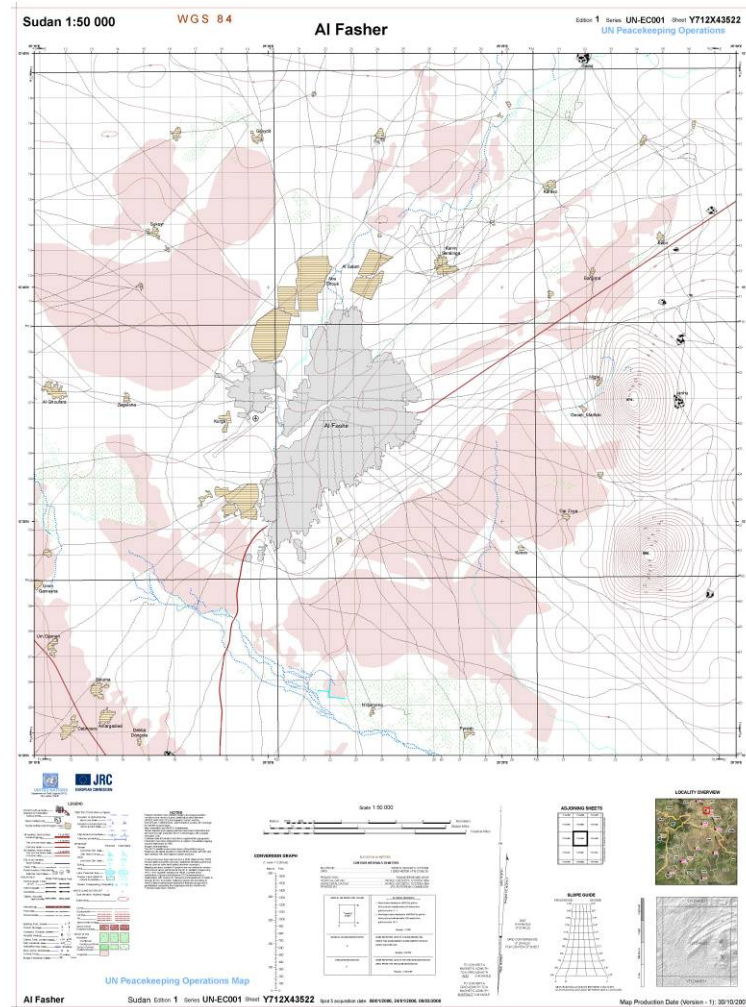
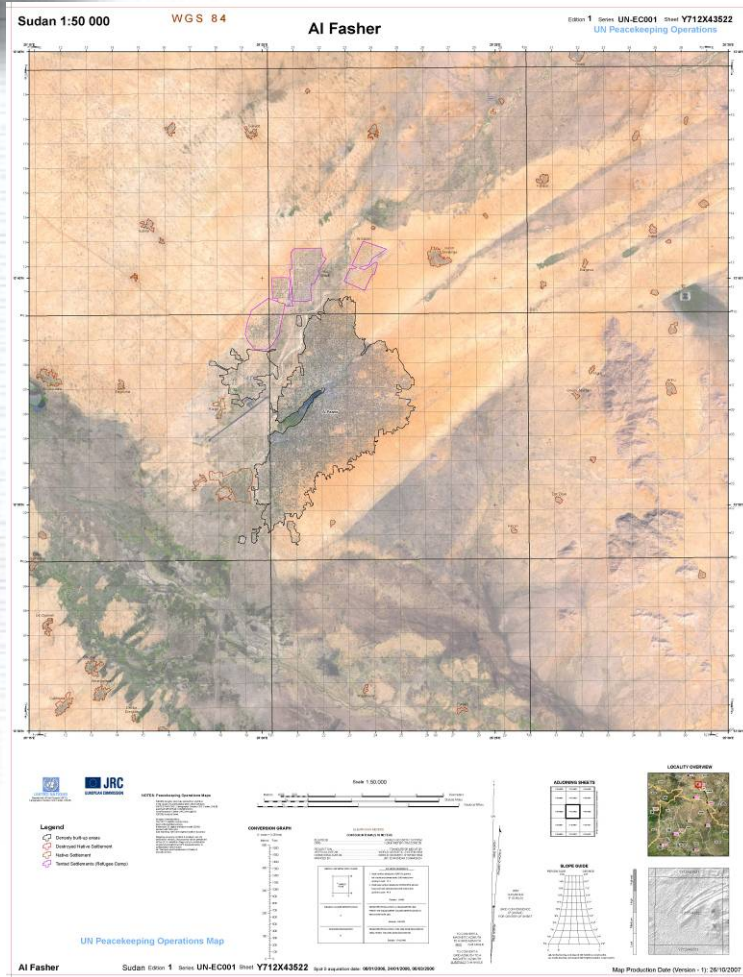
TLM production status

TLM completed with Q/C: 63 maps

TLM completed without Q/C: 47 maps



Mapping & GeoDB (Vmap2) - Darfur



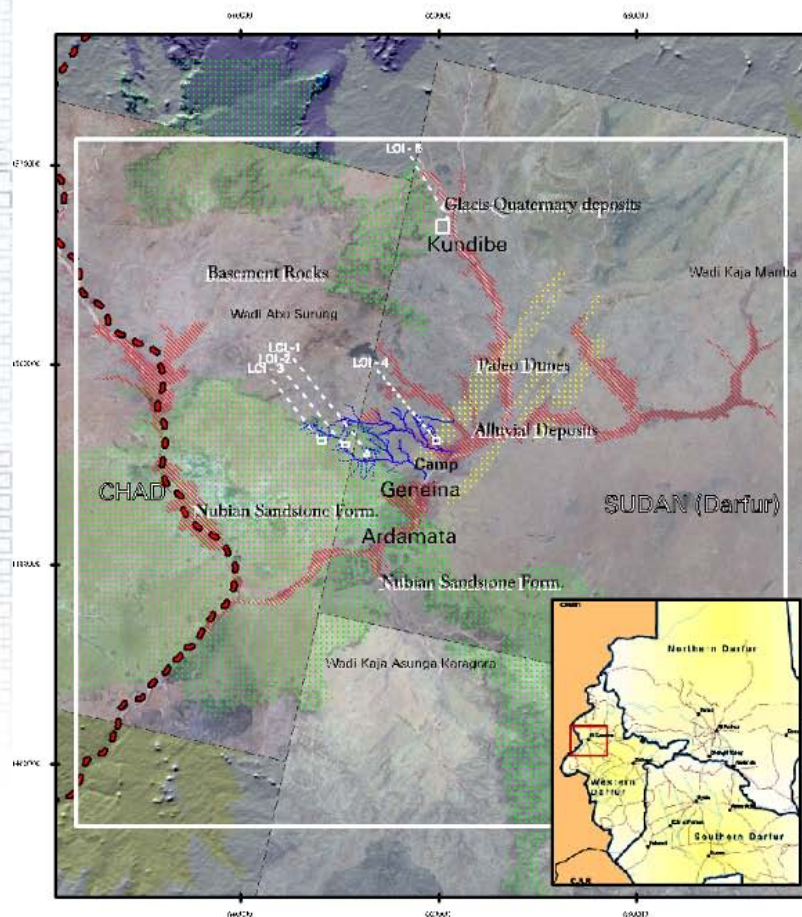


Ground Water Analysis

GROUNDWATER STUDY: SELECTION OF LOI's FOR SURVEYS & DRILLING

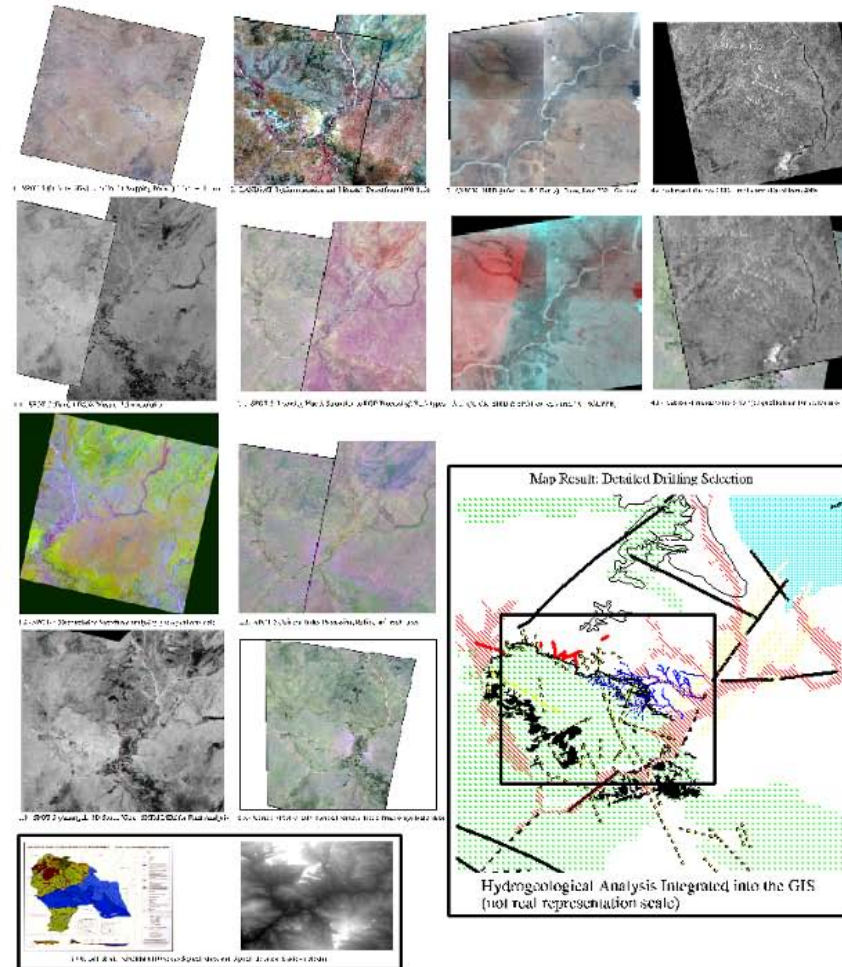
Dossier: TAGW-0701-CSDPKO
Thematic Application-Groundwater 2007
UN DPKO Cartographic Section

AL -GENEINA, Darfur (SUDAN): AREA OVERVIEW



Spot-5 Satellite data and preliminary geological analysis
LOIs (Locations of Interest) for groundwater drilling

GIS and SATELLITE DATA : Data Sources and Processing Workflows



Map Portal

United Nations Peace Operations - Windows Internet Explorer

http://intranet.dpkp.un.org/dpko/pages/WorldMap.aspx

UNITED NATIONS PEACE OPERATIONS

2009 60 1949

HOME UN WEBSITES PEACEKEEPING RESOURCES ORGANIZATIONAL STRUCTURE SITEMAP Document Search go

[advanced search]

Maps

Click on a region for more maps

Maps Available: **Select**

- World in 1945
- World in 2000
- World profile
- Political Operations
- Police Contributing Countries
- Troop Contributing Countries
- Peacekeeping Operations Deployment
- Troop Contributors to Non-UN missions
- Asset Contributing Countries
- Military Observer Countries
- Top 20 Troop Contributors
- Top 20 Police Contributors

North America

Oceania & Australia

Top Twenty Troop Contributors to UN Missions

Administrative Login | Contact Us | Copyright, United Nations, 2006 | Terms of Use | Privacy Notice | Document Library Updated : 7 Apr 2009



UN-EC Gazetteer

JRC Gazetteer - Windows Internet Explorer
http://dma.jrc.it/services/gazetteer/?cc=CD&g=global&q=abidjan

fuzzyg UN/EC Gazetteer
Search over 7,000 places in the world. The search is sped up by using fuzzy logic. Find Place: [abec] [Chad] [Search] [More Options]

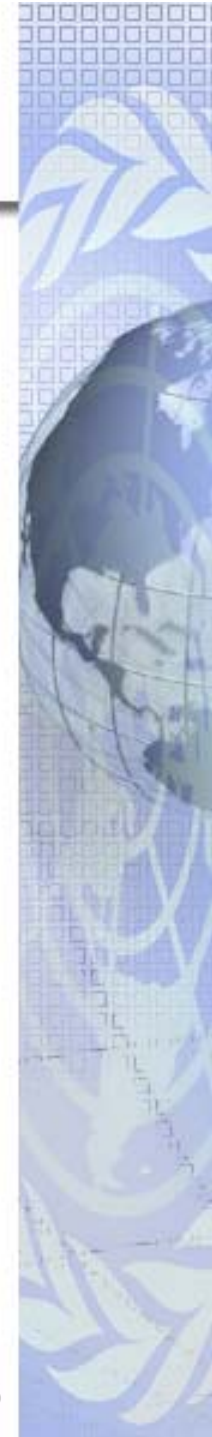
Results for abeché
You can interactively explore the area around a place. Click on 'See on map' to center the map on the place in Google Earth or in the Digital Atlas.

Open DMAExplorer	Abéché, Préfecture de seat of a first-order Coordinates (lat/long): Decimal degrees: 13.8 Degrees, minutes, seconds: 13 48 00 N 14 50 00 E
Open Google Earth	Abécher, Préfecture de seat of a first-order Coordinates (lat/long): Decimal degrees: 13.8 Degrees, minutes, seconds: 13 48 00 N 14 50 00 E
Open DMAExplorer	Abéché, Préfecture de airfield --AIRF Coordinates (lat/long): Decimal degrees: 13.8 Degrees, minutes, seconds: 13 48 00 N 14 50 00 E
Open Google Earth	Abéré, Préfecture de intermittent stream --S Coordinates (lat/long): Decimal degrees: 11.4 Degrees, minutes, seconds: 11 24 00 N 14 50 00 E
Open Google Earth	Atélé, Préfecture de hill --HLL Coordinates (lat/long): Decimal degrees: 16.6 Degrees, minutes, seconds: 16 36 00 N 14 50 00 E
Open Google Earth	Arkéné, Préfecture de well --WLL Coordinates (lat/long): Decimal degrees: 14.6 Degrees, minutes, seconds: 14 36 00 N 14 50 00 E
Open Google Earth	Akenné, Préfecture de well --WLL Coordinates (lat/long): Decimal degrees: 14.6 Degrees, minutes, seconds: 14 36 00 N 14 50 00 E
Open Google Earth	Arkéné, Préfecture de area --AREA Coordinates (lat/long): Decimal degrees: 14.2 Degrees, minutes, seconds: 14 12 00 N 14 50 00 E
Open Google Earth	Am Seleg, Préfecture de well --WLL Coordinates (lat/long): Decimal degrees: 13.3666667 / 16.7666667 Degrees, minutes, seconds: 13 22 00 / 16 46 00
Open Google Earth	Adesie, Préfecture de Chari-Baguirmi, Chad ★★☆☆☆

European Commission Joint Research Centre Digital Atlas
CRITECH
Public Tools help
View full map or 3D
Goto
Select a country
Enter a city
Coordinate: lat/lon
Zoom and Move
Scale
1:7,1867
Info and Analysis
Print & Open map
Expert Tools

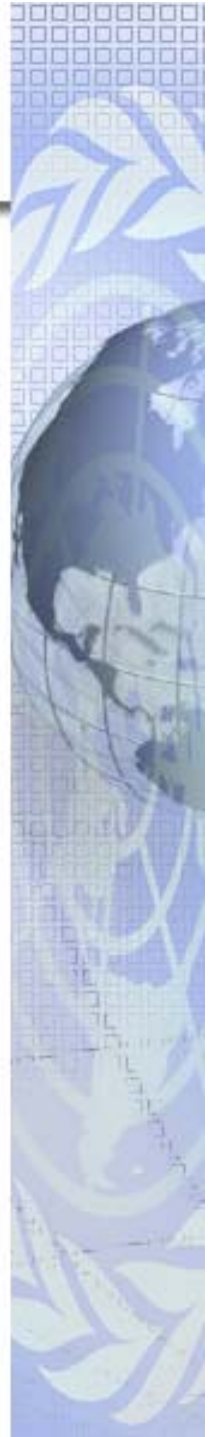
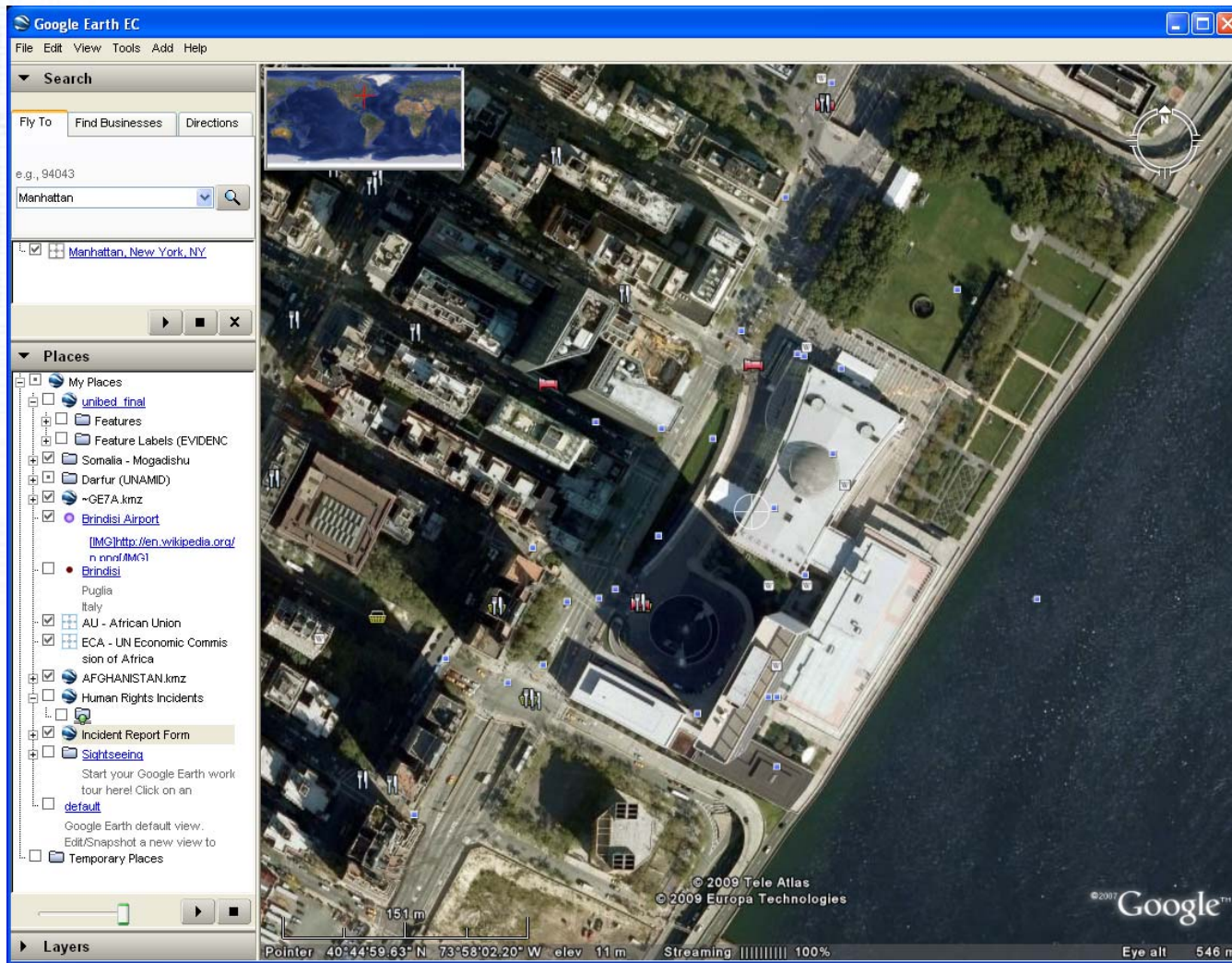
CHAD
Abéché (Approximate location)
Western Darfur SUDAN

Disclaimer & Copyright notice | Contact us | www.jrc.ec.eu.int | see.jrc.it



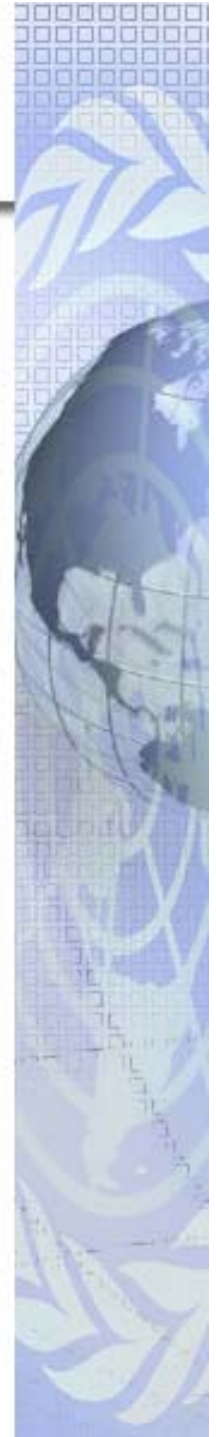


UN Earth (GE Enterprise)





UNmap (1:10, 5 & 1 millions)





Security Warden Information System



Location (6)	Last Name	First Name	Address	Guesthouse ID	Mobile	Call Sign	Location	Section	Warden	Recruit	Blood	Warden Name	Type	Photo	Emergency	GlobalID
	ZABOU	Yasim	13st Wazir Akbar Khan, next to UNHCR Guesthouse	NA	700182734	KQ 41	Kabul	SRSG Political	*	?	A+	Zulfiqar Bhat	I			{E668A3C-E584-4C6B-A9A0-304EF0902E71}
	GAWA	Yoshiko	13st Wazir Akbar Khan, next to UNHCR Guesthouse	NA	700093884	NO 211	Kabul	Field Support	Amir	?	A+	Zulfiqar Bhat	I			{7663D5EA-455E-4B17-80A8-F33A2F99AFA5}
	DOHA	Saji	13st Wazir Akbar Khan, next to UNHCR Guesthouse	NA	799772577	SK 085	Kabul	Human Rights	*	?	G+	Zulfiqar Bhat	I			{E8C2545B-A584-42CF-A364-B14A8D669E44}
					798139209	NO 211	Kabul		*	?	G+	Zulfiqar Bhat	I			{2F1F9D70-59B1-4C32-8534-8DDCF92D3DCB}
					798204730	NO 211	Kabul	General Service	*	?	A6+	Zulfiqar Bhat	I			{E85E989C-4663-493D-8CE6-22C40E7CF67}

UNIFIL SOC - Edit staff location

Map Contents:

- WebEdsSOC
- Staff accommodation
- WebEdsSOC
 - Village names
 - Roads
 - LAF Positions
 - UNIFIL positions
 - Villages
 - Blue Line
 - UNIFIL Sectors
 - UNIFIL Battalions
 - Sea
 - Urban area
 - Tyrr
 - South Lebanon B&W

Edit staff accommodation

Staff accommodation 320

StaffId: 025945

LastName: FRANCESCO

Firstname: Manca

Address: Hotel Napoleon

MobilePhone:



ERP - Resource Management

The screenshot displays a web-based GIS application interface. The main map shows the DRC region with various locations and flight routes. A search window is open, displaying a table of search results for binoculars.

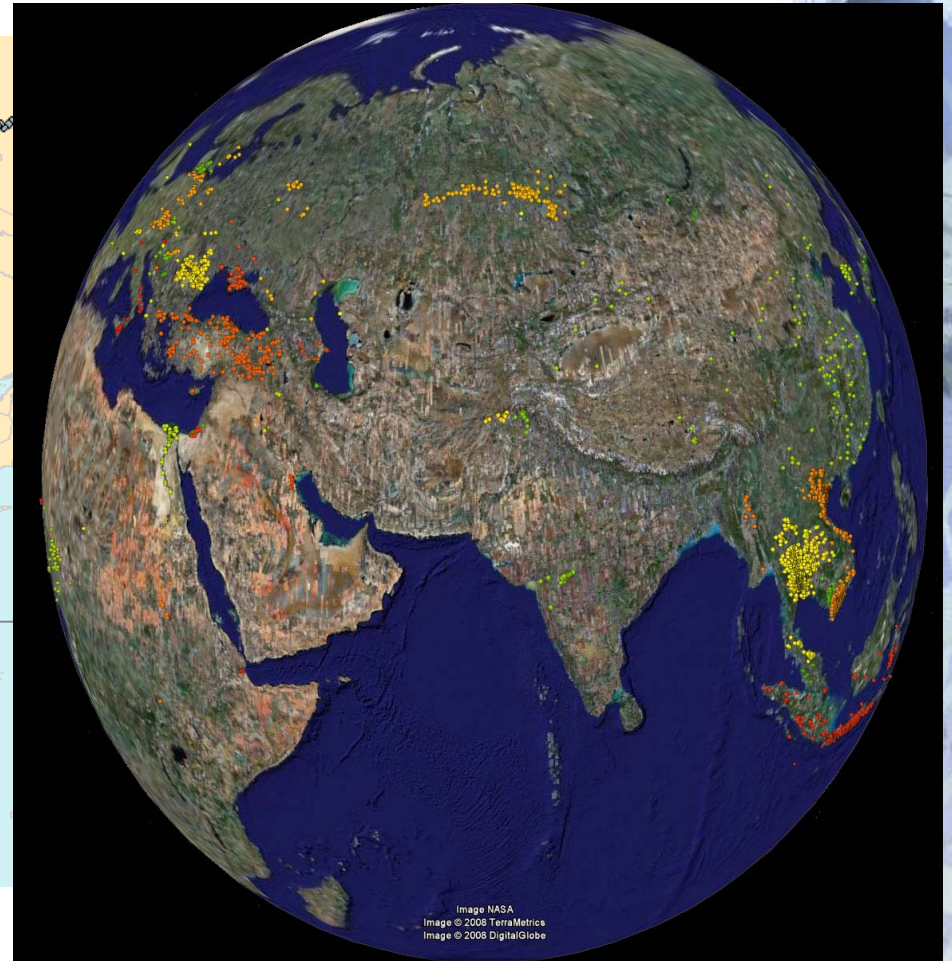
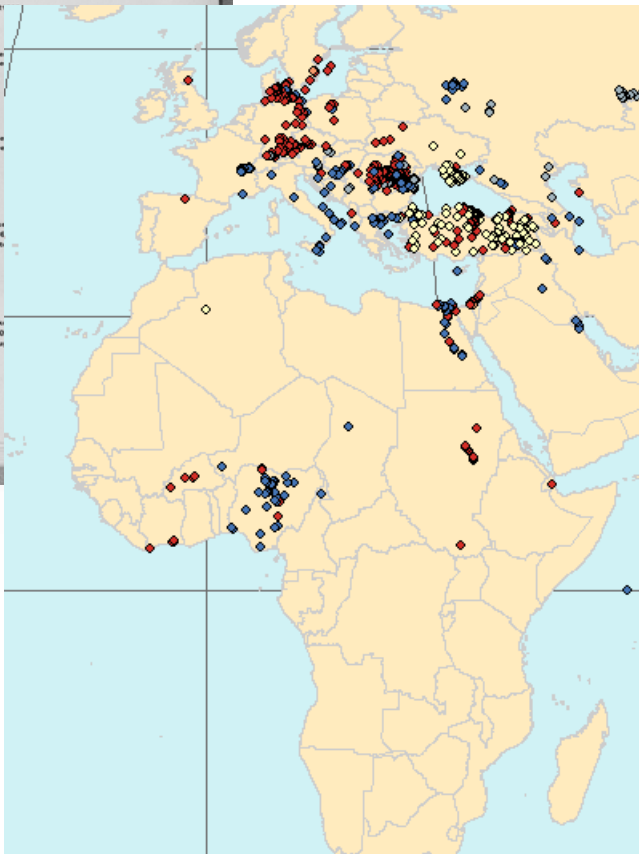
Search Results Table:

Location	Description	> 1	> 1	Year(Val)	Mon
SENI	BINOCULAR	22		\$1,735.70	2
BUKAVU	BINOCULAR	1		\$76.81	0
DUNIA	BINOCULAR	37		\$6,593.30	2
OOMA	BINOCULAR	13		\$4,806.70	0
KALEMIE	BINOCULAR	7		\$1,282.00	0
KANANGA	BINOCULAR	10		\$1,393.81	0
KAMINA	BINOCULAR	2		\$331.40	0
KISANGANI	BINOCULAR	24		\$1,776.70	3
KINSHASA	BINOCULAR	45		\$41,445.10	1
LUBUMBASHI	BINOCULAR	42		\$2,799.40	0
MBANDAKA	BINOCULAR	3		\$1,048.00	0
MBUTI MAYI	BINOCULAR	3		\$4,588.80	0
KINDU	BINOCULAR	18		\$2,021.00	0
BANDUNDU	BINOCULAR	3		\$1,660.90	1
ENTEBBE	BINOCULAR	1		\$65.70	1

Bird Flu Analysis



285	Aceh	Outbreak Summary ID:196 Country:Indonesia Ethnic: Aceh SubDistrict: Aceh Utara
Location: Outbreak Date:01/10/2005 25:Destroyed :Slaughtered :Culled :Vaccined		
2005-10:when		
Point Id:285		
coordinates 97.821147390002 5.159027		
286	Aceh	Outbreak Summary ID:200 Country:Indonesia
Location: Outbreak Date:01/10/2005 1:0a		
2005-10:when		
Point Id:286		
coordinates 95.3258333 5.5616667		
287	Aceh	Outbreak Summary ID:309 Country:Indonesia
Location: Outbreak Date:01/09/2005 3:0a		
2005-09:when		
Point Id:287		
coordinates 96.002944965 5.077914437		
288	Adana	Outbreak Summary ID:1786 Country:Turks
Location: Duzce Outbreak Date:15/01/2006		
Cases:5:Deaths: 0:Destroyed 233:Slaughtered		
2006-01-15:when		
Point Id:288		
coordinates 35.49832811 37.02754249		
289	Adiyaman	Outbreak Summary ID:1640 Country:Turks
Location: Caybasi Outbreak Date:07/01/20		
Cases 20:Deaths 20:Destroyed 2383:Slaughtered		
2006-01-07:when		
Point Id:289		
coordinates 38.25 37.75		





International Boundaries

- Boundary delimitation & demarcation

- EEBC (Eritrea-Ethiopia)
- CNMC (Cameroon-Nigeria)
- IKBDC/IKBMP (Iraq-Kuwait)
- Blue Line (Lebanon-Israel)

- Technical assistance

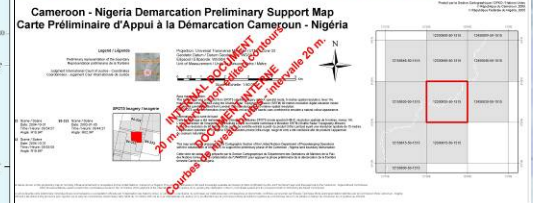
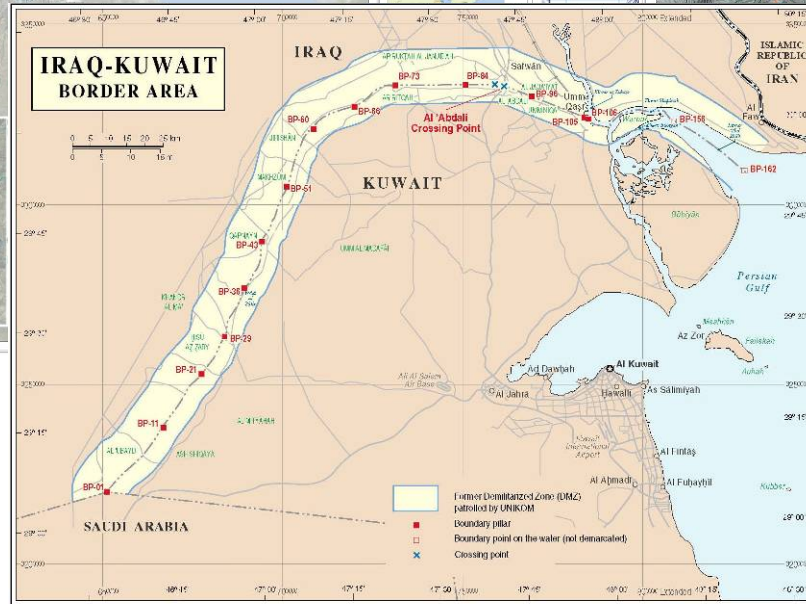
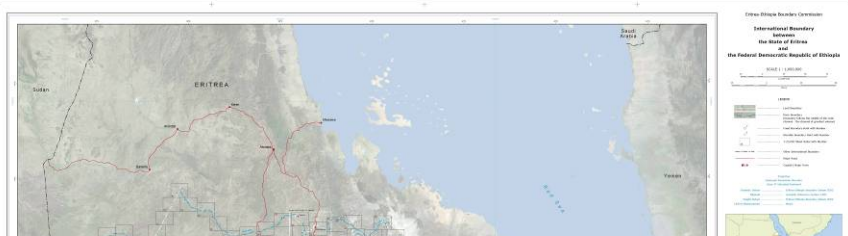
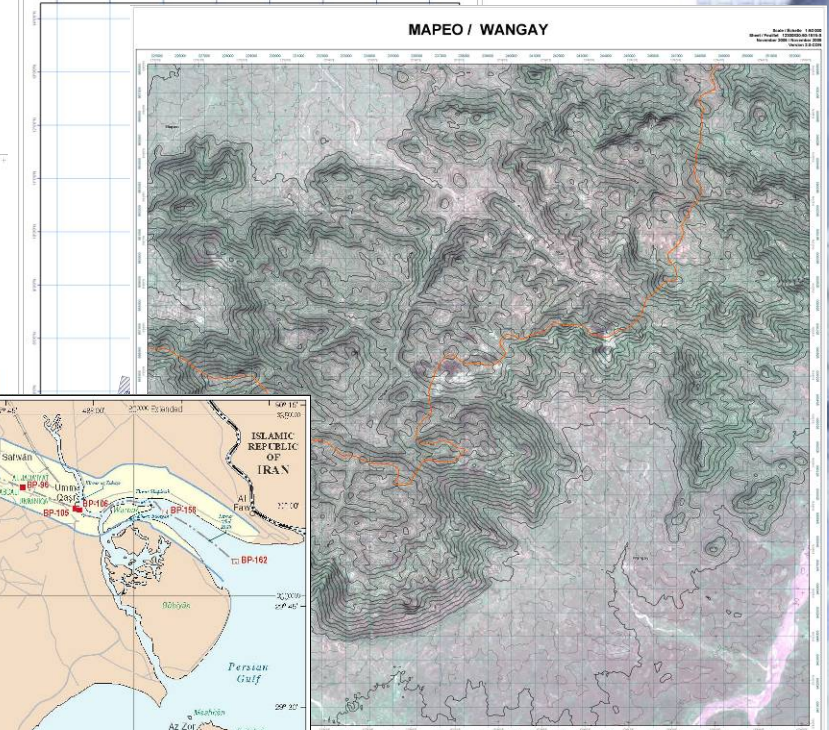
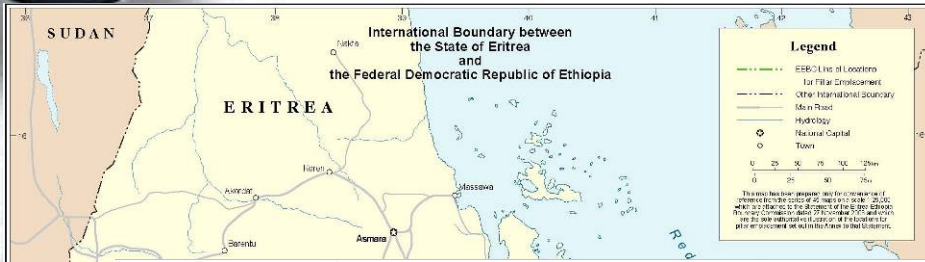
- AU Border Program
- North-South Sudan
- Iraq disputed internal boundaries
- Green Line (Cyprus)

- Capacity building

- Boundary Information System
- Cooperation with major players



International Boundaries





Boundary Information System

Collection of evidence ...

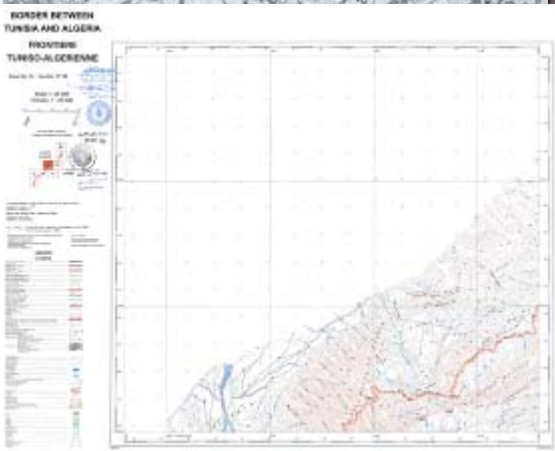
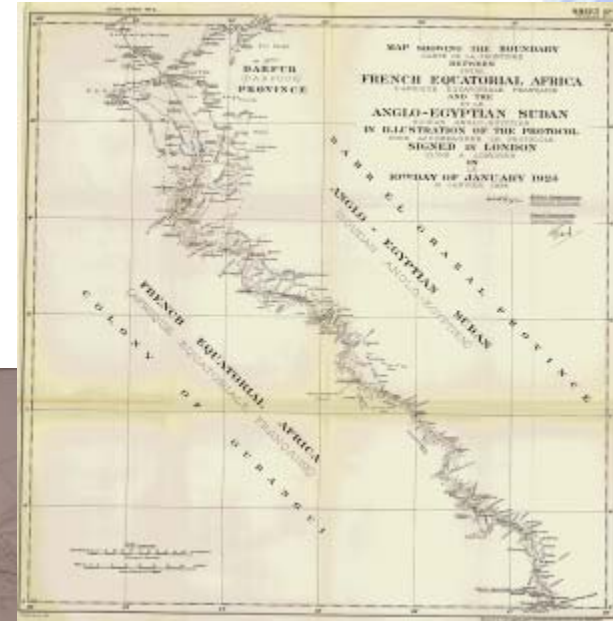
Other source: Chad - Sudan boundary



International Court of Justice
Benin Niger boundary decision



League of Nations
Togoland Boundary Commission



UN Treaty Section
Tunisia Algeria boundary treaty



UN Treaty Section – Malawi Mozambique boundary treaty



League of Nations
Libya and Egypt boundary treaty

UN Cartographic Section

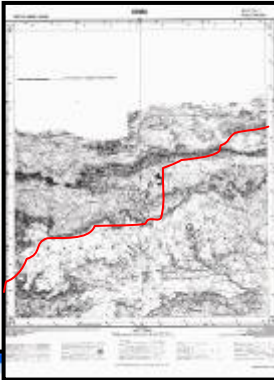
UNRCC-AP, Bangkok 2009




Boundary Information System

Interpretation & digitization ...

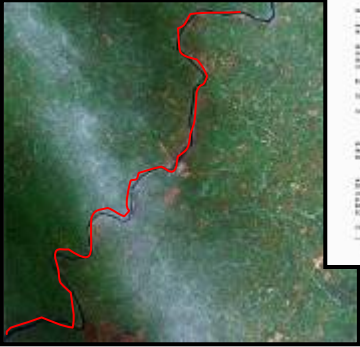
Treaty maps




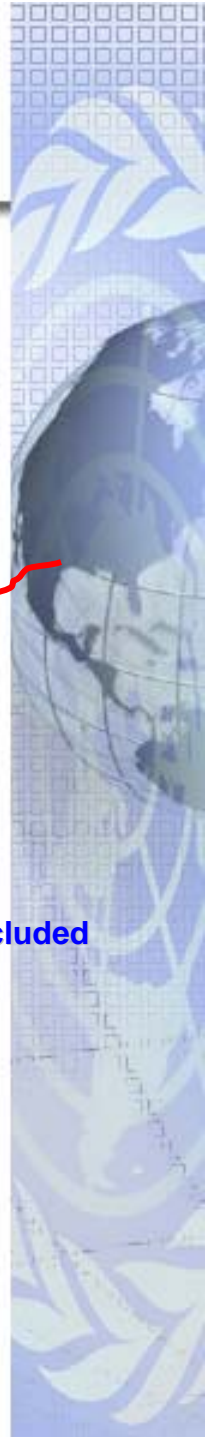
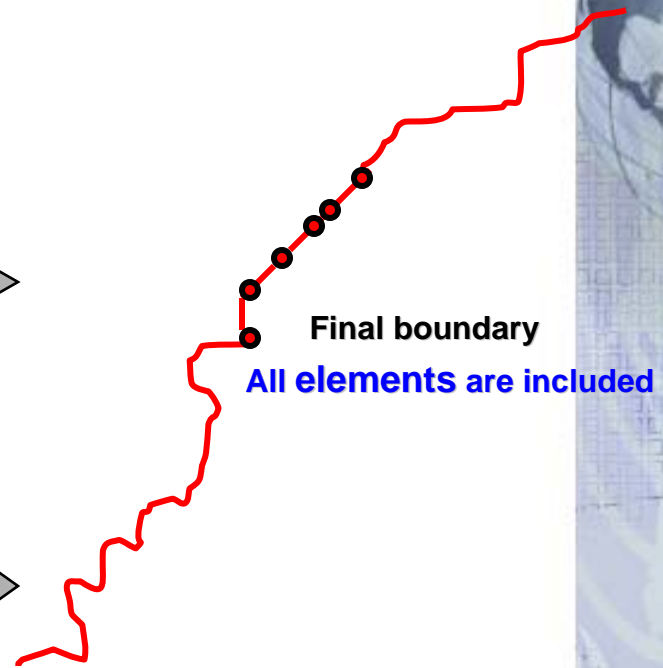
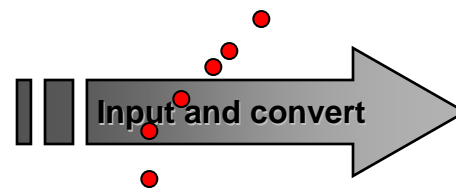
Treaty coordinates



Supporting evidence



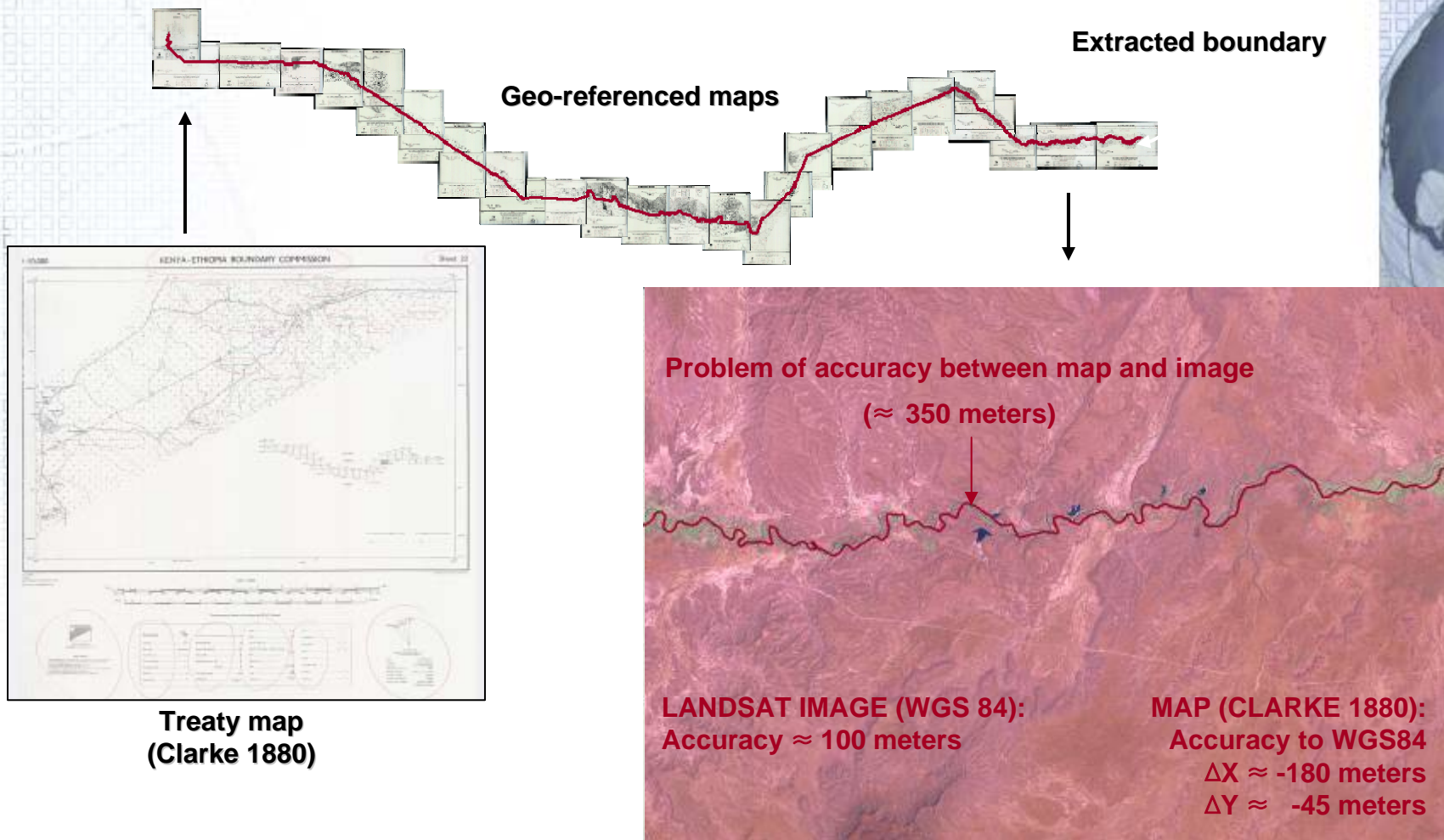
Treaty text



Boundary Information System

Interpretation & digitization ... (Kenya – Ethiopia)





Thank you



Kyoung-Soo Eom
Chief Cartographic Section
United Nations
eom@un.org
+1 (212) 963-0221

