



Establishment of a Partnership in Geo-spatial Information

by

**The Ministry of Foreign Affairs of Italy
Directorate General for Development Cooperation**

and

**The United States Agency for International
Development**

Report of Recent Accomplishments in Technical Cooperation including
"The Bamako Workshop"

Objectives of Cooperation:

1. Support and strengthen the capacity to develop, integrate, analyze, disseminate, and use geo-spatial information
2. Make information available and accessible to policy-makers and resource managers
3. Improve livelihoods and sustain resources
4. Encourage good governance with transparency and incorporation of local interests
5. Establish a Geo-spatial Information Partnership for the African continent

The Bamako Workshop as an Example →

Applications of Coarse to High Resolution Satellite Imagery for Land Productivity Assessment & Management

6th – 17th February 2006

Bamako, Mali

Larry L. Tieszen
USGS/EROS

Facilitators and Trainers

AGRHYMET: Issoufou Alfari

RCMRD: Erick Khamala

SADC/RRSU: Blessing Siwela

ICRISAT: Pierre C. Sibiry Traore

USGS/EROS: Gray Tappan, Jim Rowland,

Mike Budde

GLCN Regional Coordinator: André Bassole



RCMRD



- ◆ **Workshop Elements:**
 - **Funded by USAID, USGS, Participants**
 - **Organized and Implemented by USGS, Africa Regional Centers (AGRHYMET-Niamey, RCMRD-Nairobi, RRSU-Gabarone), and ICRISAT**
 - **Hosted by ICRISAT-Bamako**
 - **35 participants from FAO, IAO, UNEP, CGIAR Centers, CILSS, African countries,**

Participants



◆ **Workshop Targets:**

- **Assessments of changes in land cover and land use**
- **Impacts of management and climate on carbon and climate change**
- **African scientists who will benefit from using remote sensing and geo-spatial information in agriculture, environmental management, natural resource management, biodiversity, land productivity, and food security**

- ◆ **Workshop Approach:**
 - Expert leaders from USGS and Regional Centers
 - Remote Sensing data includes MODIS, AVHRR, Landsat, Corona, aerial photography
 - Field analysis supplements image interpretation
 - Identification of national needs and "the way forward" in a Planning Meeting

Field Validation of Image Interpretation

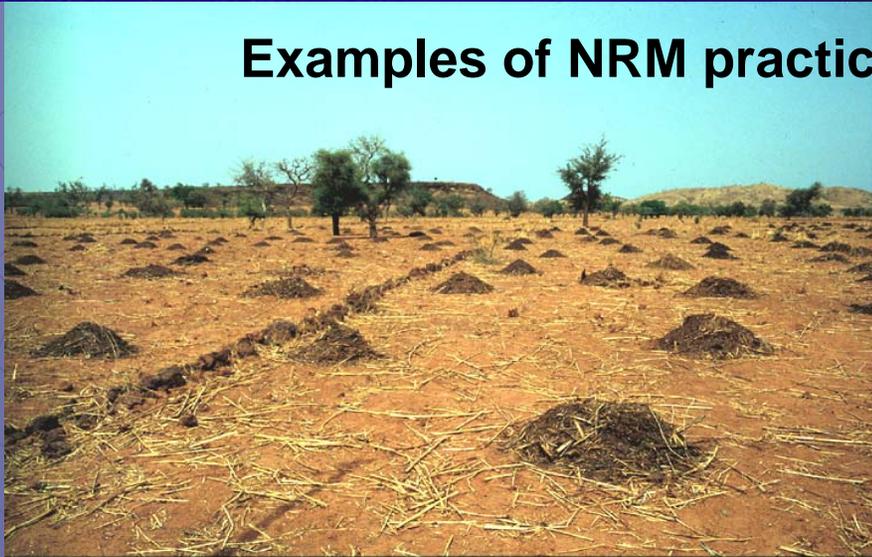


Image Interpretation; ICRISAT Laboratory



Sahel Field Validation with Gray Tappan, USGS-EROS

Examples of NRM practices in northern Burkina Faso.



Improved soil fertility (compost)



Use of planting pits (zai)

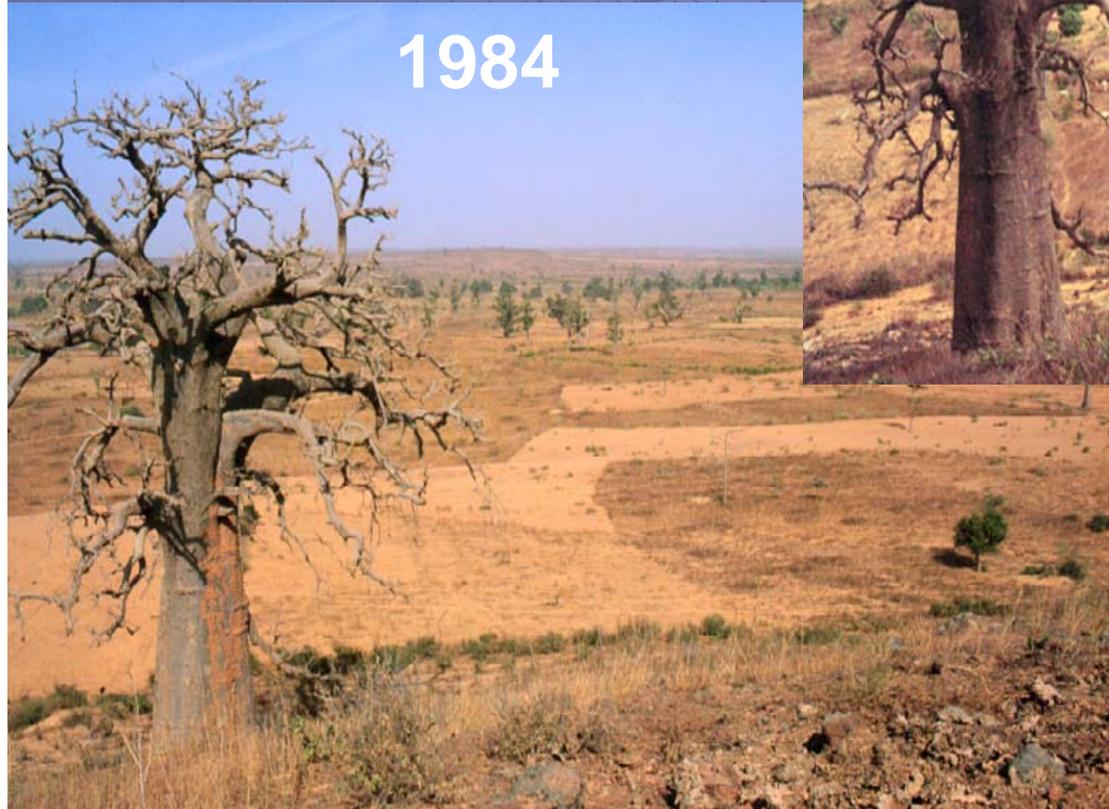


Rock bunds on the contour



Water retention by bunds

Monitoring Natural Resources in Senegal:
Diversification of Production
(Monitoring Site 586)



Decline in Biodiversity in Senegal (Monitoring Site 403)

Woody Species at Site 403 – Mar. 1984

Combretum micranthum
Combretum nigricans
Combretum glutinosum
Bombax costatum
Adansonia digitata
Acacia macrostachya
Acacia polyacantha
Gardenia ternifolia

Grewia bicolor
Lannea acida
Lonchocarpus laxiflorus
Sclerocarya birrea
Sterculia setigera
Strychnos spinosa
Feretia apodanthera
Boscia angustifolia
Guiera senegalensis
Pterocarpus lucens



1984

Woody Species at Site 403 – Feb. 1994

Combretum micranthum
Combretum nigricans
Combretum glutinosum
Bombax costatum
Acacia macrostachya
Adansonia digitata
Grewia bicolor
Sterculia setigera
Boscia angustifolia
Guiera senegalensis
Pterocarpus lucens



1994



- ◆ **Planning Meeting:**
 - Detailed presentation of FAO-Global Land Cover Network (GLCN)
 - Review
 - ◆ Data availability,
 - ◆ Land cover and applications projects and plans
 - ◆ Modes of cooperation
 - ◆ National to Regional to Continental plans
 - Resolutions
 - Project Formulation = WALCAP (West Africa Land Cover Applications Program)



WALCAP (West Africa Land Cover Applications Program) *The Way Forward:*

- ◆ The resolutions from the Bamako Workshop conveyed a strong consensus among participants and representative organizations to move forward with an integrated plan to be implemented in West Africa CILSS and ECOWAS countries. This plan has the following scientific and development components:
 1. Undertake collaborative and integrated land cover mapping combined with detailed “wall to wall” land cover change on a national basis with consistency across all countries,
 2. National projects will be implemented as resources are obtained and capacity is attained and will start with Senegal, Burkina Faso, Benin, and Ghana in 2006,
 3. Land cover mapping will be based on the GLCN standard with L7 or L5 data from 2005 or 2006. Land cover change will be based on Corona data supplemented with Landsat imagery, aerial photography, and ground data where possible,

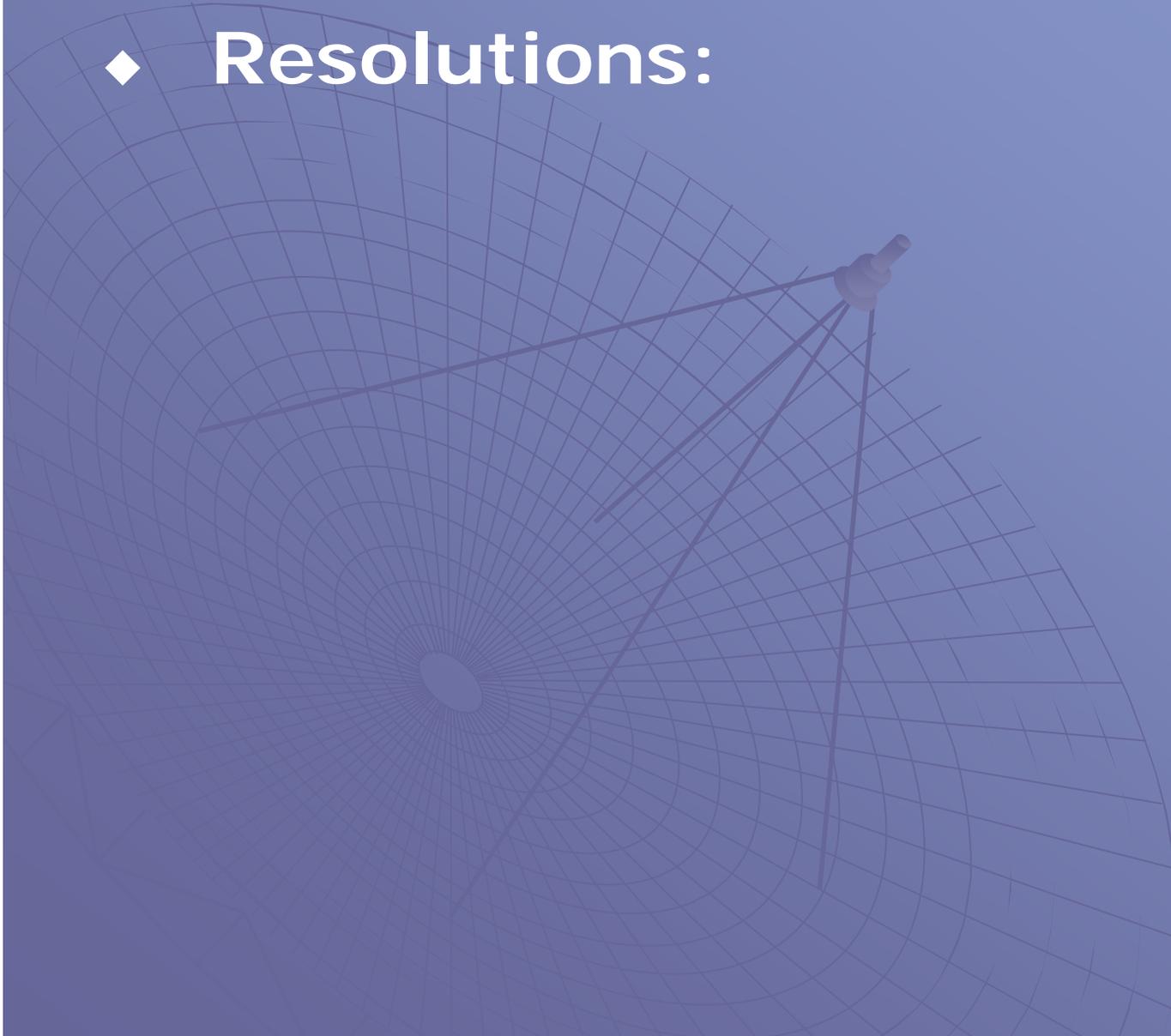


WALCAP (Cont.) *The Way Forward:*

4. Analyses and products will be joint activities implemented with national partners in a strong training and capacity building program,
5. Projects will produce integrated databases in an accessible map and information serving system with on-line query capabilities, data delivery, and, perhaps, modeling,
6. Projects will produce final syntheses in electronic and hard copies for distribution,
7. Products will form the basis for detailed briefings at national levels to aid national interpretations, management planning, and policy formulation,
8. Products will aid applications for biodiversity, carbon and climate change, land degradation assessment, natural resource management, food security, and other ecosystem services and goods,
9. The integrated projects will be implemented in support of national action plans, the NEPAD, the Millennium Development Goals, the Africa Climate Change Network, and as a hallmark GEOSS contribution for Africa.



◆ Resolutions:

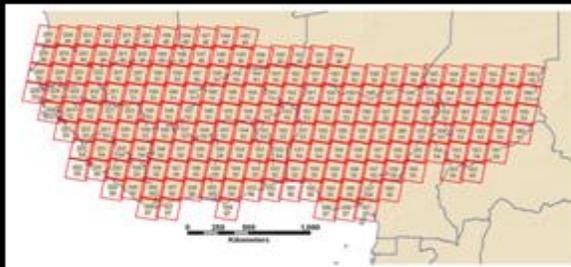




Regional Remote Sensing Centers – Africa Partners

AGRHYMET Regional Centre

GeoCover (1970s, 1980s, 2000)
+ Landsat archive (EROS) +
MODIS/ ASTER/ SRTM data

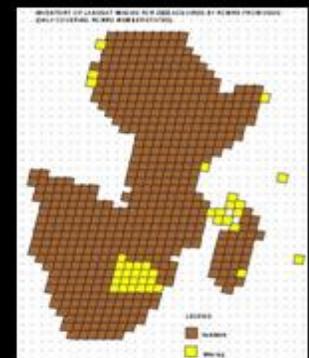


Regional Centre for Mapping of Resources for Development

Landsat 1990s

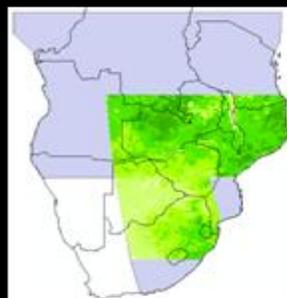
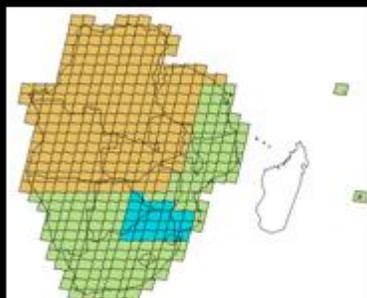


Landsat 2000



SADC Regional Remote Sensing Unit

Landsat (1970s/90s, 2000); MODIS NDVI



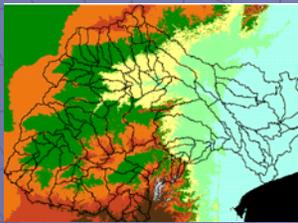
EROS Support to Regional Remote Sensing Centers

- collection/dissemination of RS data
- Landsat, SRTM, MODIS, ASTER
- training in applications of RS data

Supported by USAID, USGS-LRS, EROS

Four Examples of Training Manuals

Section Two Elevation and Analysis Extent



Training Center
U.S. Geological Survey
Center for Earth Resources
Observation and Science (EROS)
Sioux Falls, South Dakota, USA

Guide des Formations Végétales en Afrique de l'Ouest



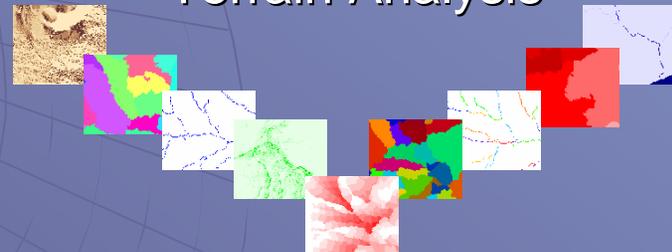
Training Center
U.S. Geological Survey
Center for Earth Resources
Observation and Science (EROS)
Sioux Falls, South Dakota, USA

Applications of Coarse to High Resolution Satellite Imagery for Land Management



Training Center

Section Three Terrain Analysis



Training Center



Significant Training Workshops:

Hydrologic Modeling with RS and GIS

Developed "Training Manual for the Geospatial Stream Flow Model" (GeoSFM), May 2005 – 95 pp, including 8 step-by-step exercises

Developed "Geospatial Stream Flow Model (GeoSFM) Users Manual, May 2005 – 140 pp, draft version, with final edits to be finished shortly

Technical Manual in preparation

Over 200 workshop (powerpoint) slides being updated

Classification Land Cover

Developed training manual for W.Africa land cover classification (version française) – 24 pp, including vertical and oblique aerial photography

Land performance workshop in Bamako, Mali (Feb. 2006)

Collaboration with AGRHYMET, CGIAR (ICRISAT, IWMI), RCMRD, RRSU, USAID, FAO/GLCN, UNEP

ArcIMS-Clearinghouse workshop with CSE (Centre de Suivi Ecologique) in Dakar, Senegal (date TBD).



Significant Data Distribution:

- ◆ **Landsat data for 1972, 1986 and 2000** distributed to Regional Centers for distribution to constituent countries
- ◆ **Corona** satellite photography of ca. 1400 frames in digital format eventually to cover all of West, East, and Southern Africa
- ◆ Reprocessed AVHRR time series data
- ◆ **MODIS**
- ◆ **SRTM 90m source data** processed
- ◆ **SRTM 30m derived products**
- ◆ **Aerial Digital, Video, and other**

"The Bamako Workshop"

