

OPEN FORIS INITIATIVE

OPEN SOURCE TOOLS AND METHODS
FOR FOREST MONITORING

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Ecuador

FAO Forestry



www.fao.org/forestry

Open Foris Initiative

Enabling multi-purpose forest monitoring, reporting and management

Design & Planning

Sampling & protocol design
Field computer setup
Field map production

Data Collection

PC-based data entry
Mobile data collection

Data Processing and Map production

Data validation & QA
Result calculation & analysis
GIS/RS analysis

Dissemination & Reporting

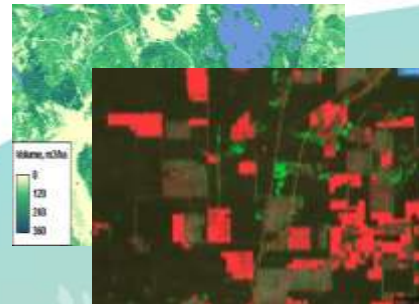
1. International Reporting: UNFCCC, GHG, REDD+, FRA
2. National policies
3. Local level planning

Management Information Systems

Policy and operational management

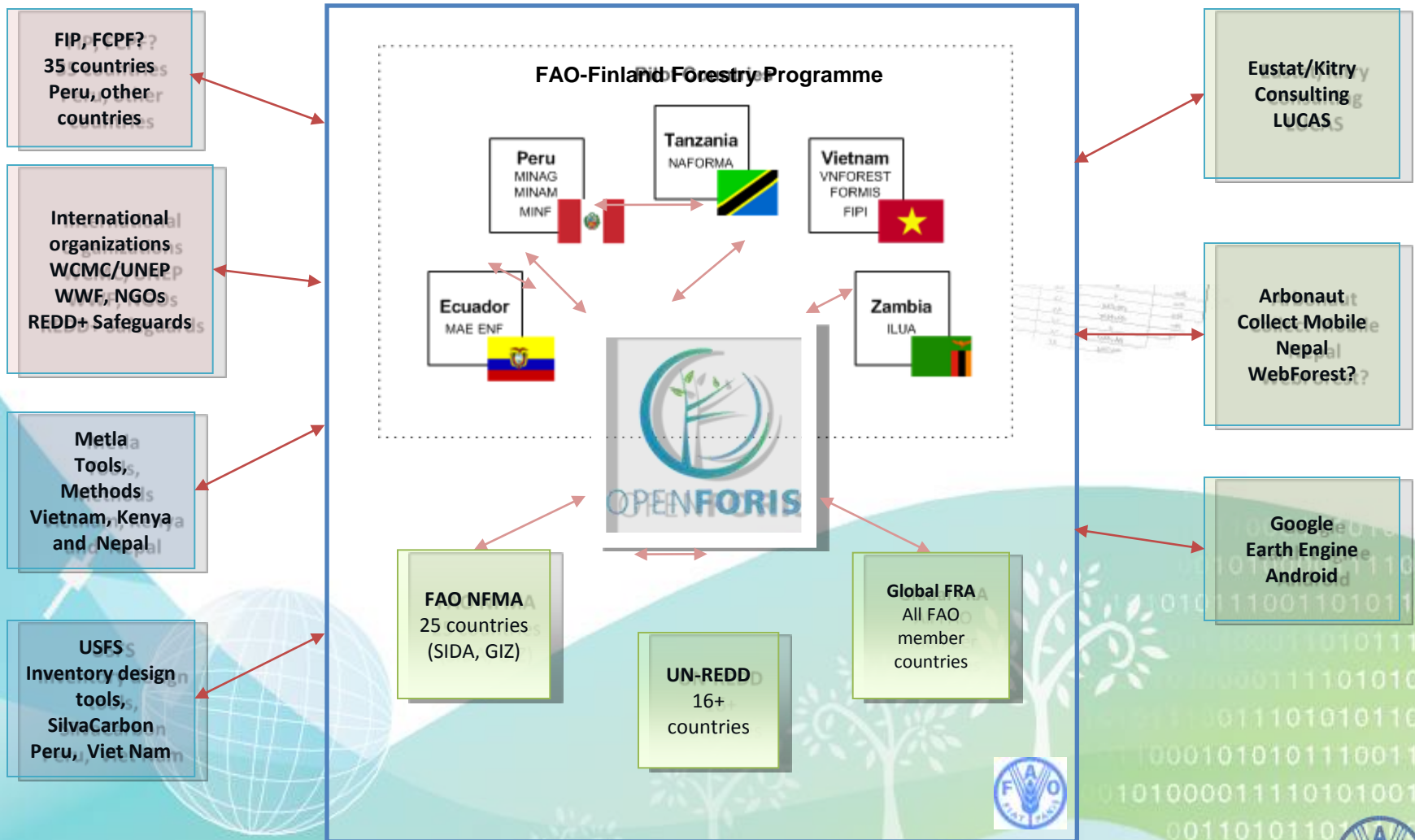
Local level planning

Participatory management planning



FAO Forest Monitoring , Information Systems and Management Support

Open Foris



Open Foris

COLLECT

GEOSPATIAL TOOLKIT

Data Cleansing Cluster 181_235 Form Version: BP 28.12.2010 - SE 26.12.2010 Application Version: 2.9.1

Cluster Plot Key Informant Interview Household Surveys

Form checked LYANGALA,J.M 11/03/2011

Data entered PAITON,A.KALIAG 20/10/2011

Data cleaned

Region 010 Ruwama

District 001 Tunduru

Crew no. 5

Map sheet(s) NFM 0223

Accessibility 0 Accessible

Vehicle location UTM Zone 37S

Photo  Browse Remove

GPS Y (Northing) 8715892

GPS X (Easting) 344395

GPS model

High precision GPS Y

Direction to 1st plot deg

Distance to 1st plot m

Time study Date Start time End time

11/03/2011 11:30 16:15

Remarks the cluster falls on game controlled area as a hunting block for tanzania big game safari company.

Back to list Save

CALC

Unsaved query (1) x

Cubes

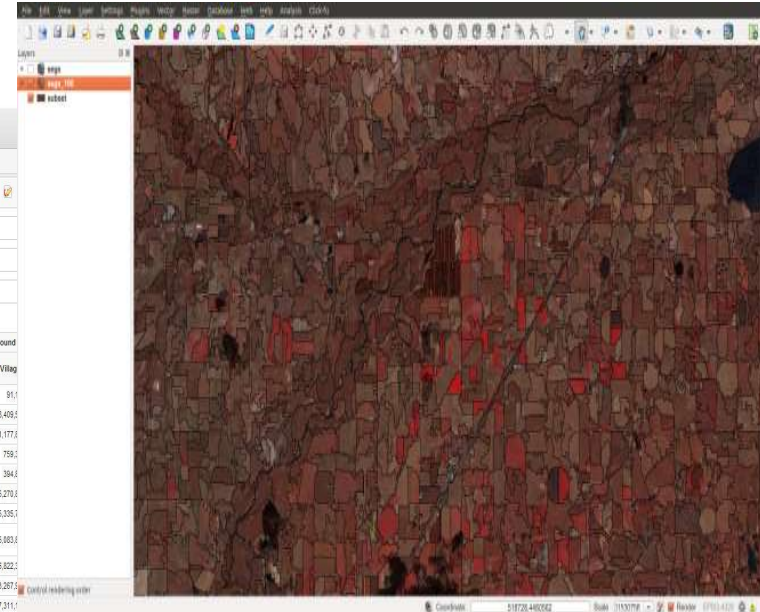
Tree

Columns Above Ground Biomass Ownership Type

Rows Vegetation Type

Filter

Vegetation Type	Above Ground			
	No Data	Central government land	Local government land	Village
No Data	36,986,00130	640,880,71458		91,1
Forest Humid Montane		61,792,779,83886	6,377,465,21674	8,469,1
Forest Lowland	287,863,97680	30,336,121,90083	7,165,891,59554	31,177,1
Forest Mangrove		3,964,991,13583		759,1
Forest Plantation	5,336,07441	4,204,687,95333	277,126,46310	384,1
Woodland Closed (>40%)	595,448,33429	155,841,363,59154	36,790,210,24685	115,270,1
Woodland Open (0-40%)	900,100,78380	322,801,682,93297	63,508,953,49327	445,335,1
Woodland Scattered cropland (unspecified density)	11,200,92107	841,646,39857	727,272,28650	15,063,1
Bushland Thicket		2,123,427,11442	232,821,23268	6,822,1
Bushland Dense	170,537,37753	8,778,830,27484	4,343,267,35407	13,267,1
Bushland Scattered cultivation		113,170,44884		7,311,1
Bushland Emergent trees		830,987,65364	1,140,720,17887	1,851,261,2127
Bushland Thicket with emergent trees	9,903,00343	4,460,445,45716		1,294,748,14688
Bushland Open	125,248,90213	13,131,191,98442	860,911,32534	8,860,912,78629
Grassland Wooded		9,525,258,15733	-1,561,459,47977	7,638,208,96647
Grassland Bushed		296,884,99004		693,443,74966
Grassland Scattered cropland		142,843,78280		337,301,91888
Grassland Open		473,882,79892	138,554,98466	386,874,29131
Cultivated land Agro-forestry system		71,917,29679		763,659,51773
Cultivated land Wooded crops	21,450,65626	471,365,67417		2,480,518,39869
Cultivated land Herbaceous crops	262,224,94059	445,079,34716	23,119,63488	3,323,759,01096





Cluster **Plot** **Key Informant Interview** **Household Surveys**

Form checked	11/03/2011
Data entered	11/03/2011
Data cleaned	20/10/2011

Region Ruvuma

District Tunduru

Crew no.

Map sheet(s)

Add

Accessibility Accessible

Vehicle location
UTM Zone

Photo 

GPS Y (Northing)

GPS X (Easting)

GPS model

High precision GPS

Direction to 1st plot deg

Distance to 1st plot m

Time study

Date	Start time	End time
11/03/2011	11:30	16:15

Add

Remarks



Open Foris Calc (first prototype)

Unsaved query (1) x

Cubes

Tree

Dimensions

- ▶ AOI
- ▶ Accessibility
- ▶ Catchment
- ▶ Erosion
- ▶ Grazing
- ▶ Health
- ▶ Land Use
- ▶ Mgmt Proposal
- ▶ Nwfp
- ▶ Origin
- ▼ **Ownership Type**
 - (All)
 - Ownership Type
- ▶ Shrubs Coverage
- ▶ Soil Structure
- ▶ Soil Texture
- ▼ **Species**
 - (All)
 - Species
- ▶ Undergrowth Type
- ▼ **Vegetation Type**
 - (All)
 - Vegetation Type

Measures

- ▼ **Measures**
 - Above Ground Biomass
 - Below Ground Biomass
 - Volume (m3)
 - Volume per ha (m3 / ha)



Columns: Above Ground Biomass Ownership Type

Rows: Vegetation Type

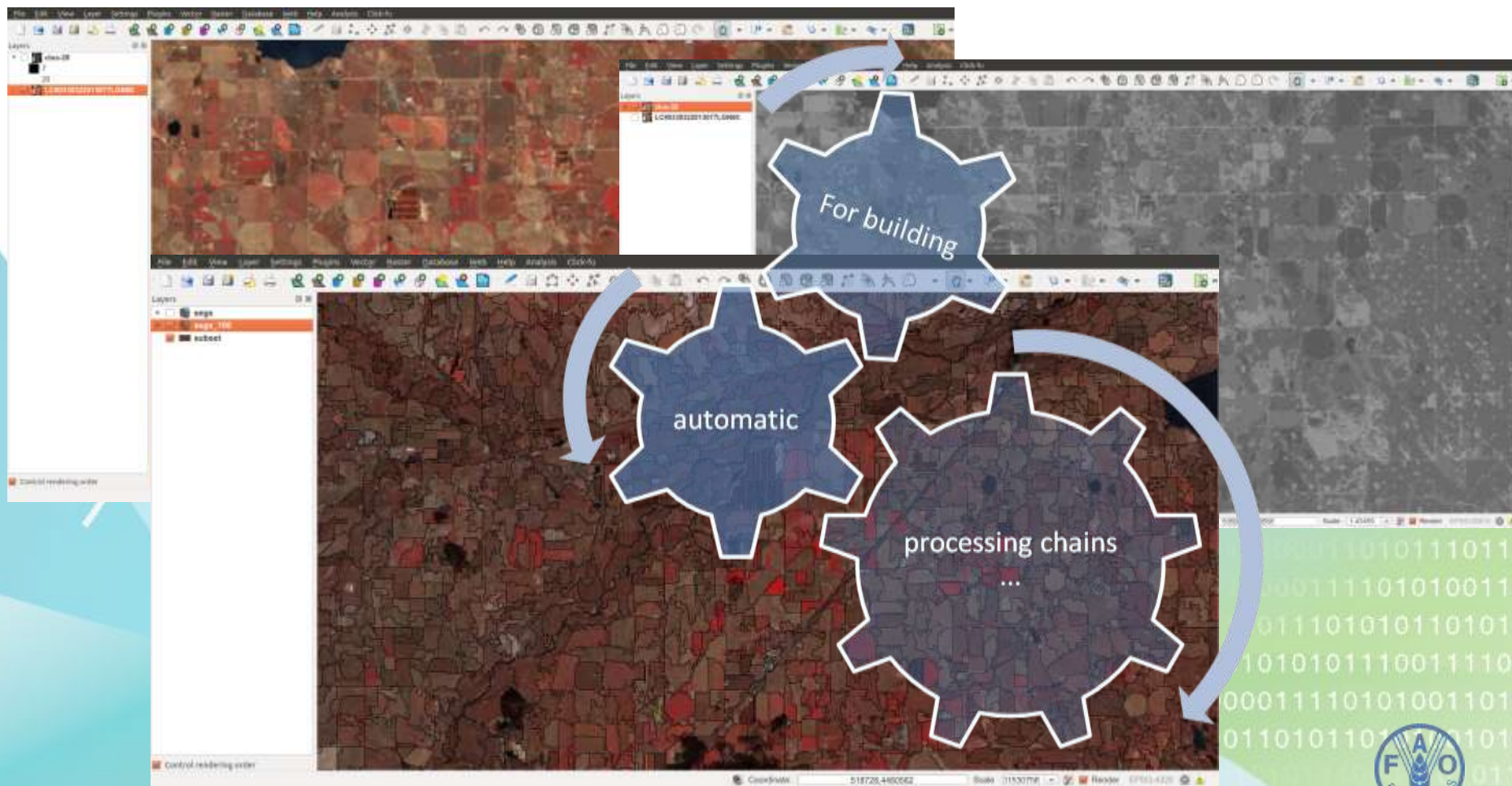
Filter

Rows: 31 Columns: 8 Duration: 0.01s

Vegetation Type	Above Ground Biomass						
	No Data	Central government land	Local government land	Village land	Private land	General land	Not known
No Data	36,966.00130	640,808.71458		91,160.02581	86,947.85692		
Forest: Humid Montane		61,792,779.83866	8,377,465.21874	8,409,558.62797	2,525,261.05885	1,083,773.18629	19,224.18222
Forest: Lowland	287,863.97090	30,336,121.90083	7,165,691.50554	31,177,849.82985	1,474,658.56284	7,109,017.47916	175,206.20544
Forest: Mangrove		3,994,091.13563		759,307.92255	39,386.92112		
Forest: Plantation	5,336.07441	4,204,687.95333	277,126.46317	394,826.18939	5,837,745.57425		274,580.14857
Woodland: Closed (>40%)	505,448.33429	155,841,363.50154	36,790,200.24565	115,270,817.04236	13,171,025.21336	26,864,783.69927	197,116.26512
Woodland: Open (10-40%)	900,100.78380	322,901,682.93297	63,506,953.49327	445,335,762.11717	33,764,533.52689	57,181,590.25137	1,110,842.21162
Woodland: Scattered cropland (Unspecified density)	11,280.92107	841,648.39057	727,272.28850	15,083,879.66151	13,318,504.34054	80,765.58039	
Bushland: Thicket		2,123,427.11442	232,921.22926	6,822,328.25323	1,424,320.01881		37,100.47441
Bushland: Dense	170,537.37753	8,778,830.27484	4,343,257.35437	13,267,962.35791	2,780,598.56710	577,137.31692	254,915.57695
Bushland: Scattered cultivation		113,170.44664		7,311,193.08072	3,176,673.79415		
Bushland: Emergent trees		830,967.85364	1,140,720.17897	1,651,351.25127	831,531.90320	41,891.78574	
Bushland: Thicket with emergent trees	9,903.06343	4,468,445.45710		1,294,749.14688	44,995.03334	300,422.28060	
Bushland: Open	125,246.90213	13,131,191.98442	860,911.32534	8,980,912.78629	3,420,342.89510	674,327.19387	
Grassland: Wooded		9,525,258.15733	1,561,459.47577	7,636,289.96647	3,326,033.64917	1,191,164.96588	41,677.19360
Grassland: Bushed		296,864.99904		693,443.74996	141,794.32402	327,225.97999	
Grassland: Scattered cropland		142,648.79260		337,301.91860	1,155,860.65846	6,479.70007	
Grassland: Open		473,892.79892	139,504.56456	386,974.29131	291,340.67891	181,181.56901	
Cultivated land: Agro-forestry system		71,917.29679		783,058.51773	9,314,353.78052		



Command line prototype tools for geospatial data processing



This examples uses first released Landsat Data Continuity Mission collected at 1:40 p.m. EDT on March 18 and available at www.nasa.gov.



Change mapping in Paraguay in collaboration with UN-REDD and FAO Global FRA





Land-Use and Land-Cover assessment in Zambia

Google Earth

File Edit View Tools Add Help

Search

Fly To Find Businesses Directions

Fly to: g, 1043

Places

- Legend
- Plot 6652
- Plot 6675
- Plot 6796
- Plot 6794
- Plot 6919
- Plot 6923
- Plot 6930
- Plot 6933
- Plot 7066
- Plot 7073
- Plot 7079
- Plot 7345
- Plot 7352
- Plot 7354
- Plot 7483
- Plot 7764
- Plot 7767

Layers Earth Gallery

- Primary Database
- Borders and Labels
- Places
- Photos
- Roads
- 3D Buildings
- Ocean
- Weather
- Gallery
- Global Awareness
- More

1) Zoom to a plot location
 2) Assess Land Use in the center point of the square
 3) Count the number of points falling on that land use (p1)
 4) Count number of those points falling on trees (p2)
 5) Crown cover = $p2/p1 * 100$
 6) Click somewhere within the polygon
 7) Click appropriate land use buttons
 8) Click appropriate Crown Cover button
 9) Select a folder where to save the results (do NOT change the suggested file name!)

FAO-Finnish Programme

MINISTRY FOR FOREIGN AFFAIRS OF FINLAND

LAND COVER TYPE - ILUAI ZAMBIA

Forest Type

- By Grassland
- By Lowland
- By Woodland
- Forest Woodland

CROWN COVER

- 0 - 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- 40 - 50%
- 50 - 60%
- 60 - 70%
- 70 - 80%
- 80 - 90%
- 90 - 100%

Image resolution

- Very High
- Medium
- Coarse

Human impact

- High
- Medium
- Low

Image © 2012 DigitalGlobe
 © 2012 Google

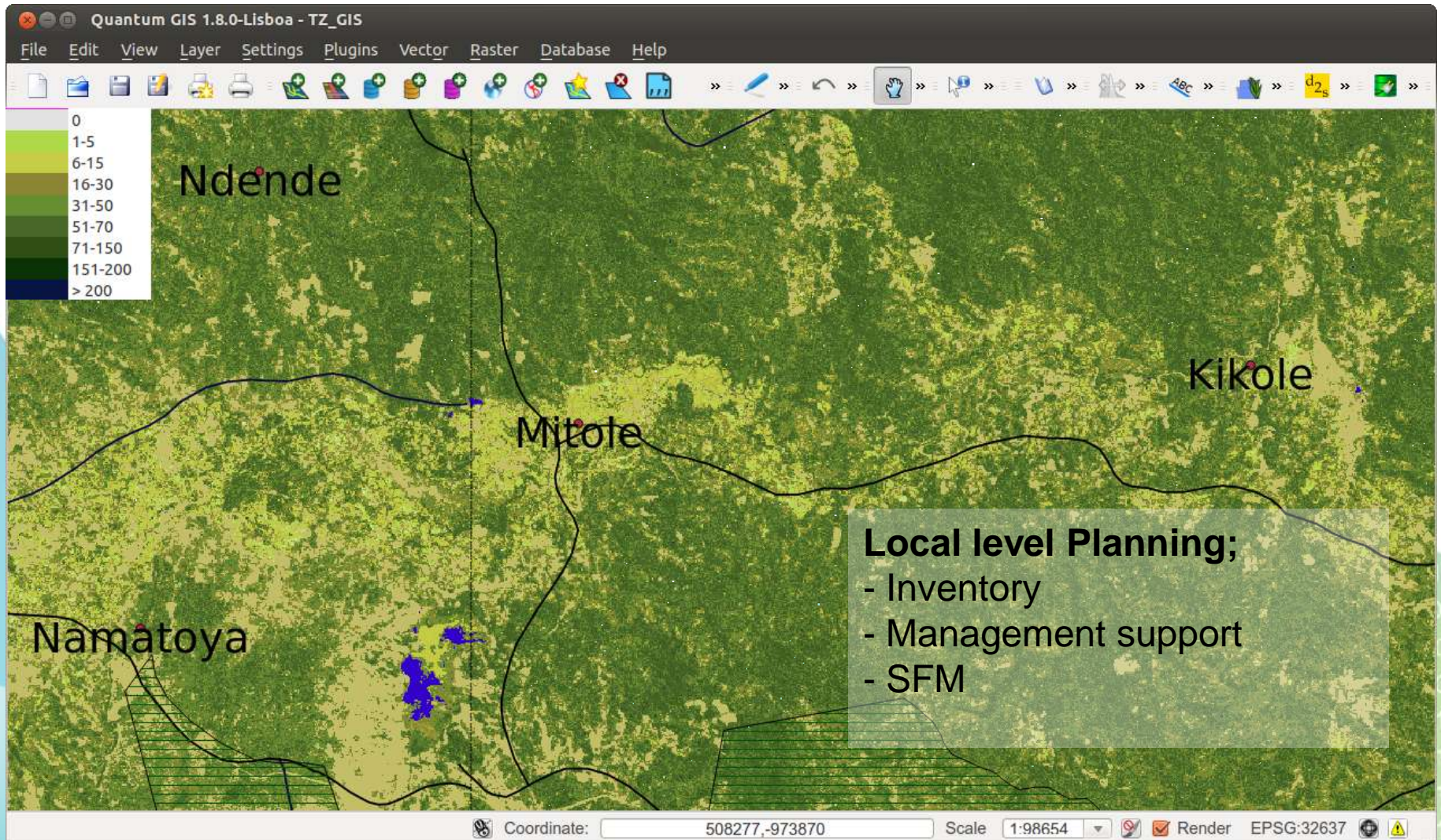
Google earth

Imagery Date: 4/13/2005 1972

13° 00' 1.84" S, 27° 36' 04.68" E elev. 1207 m

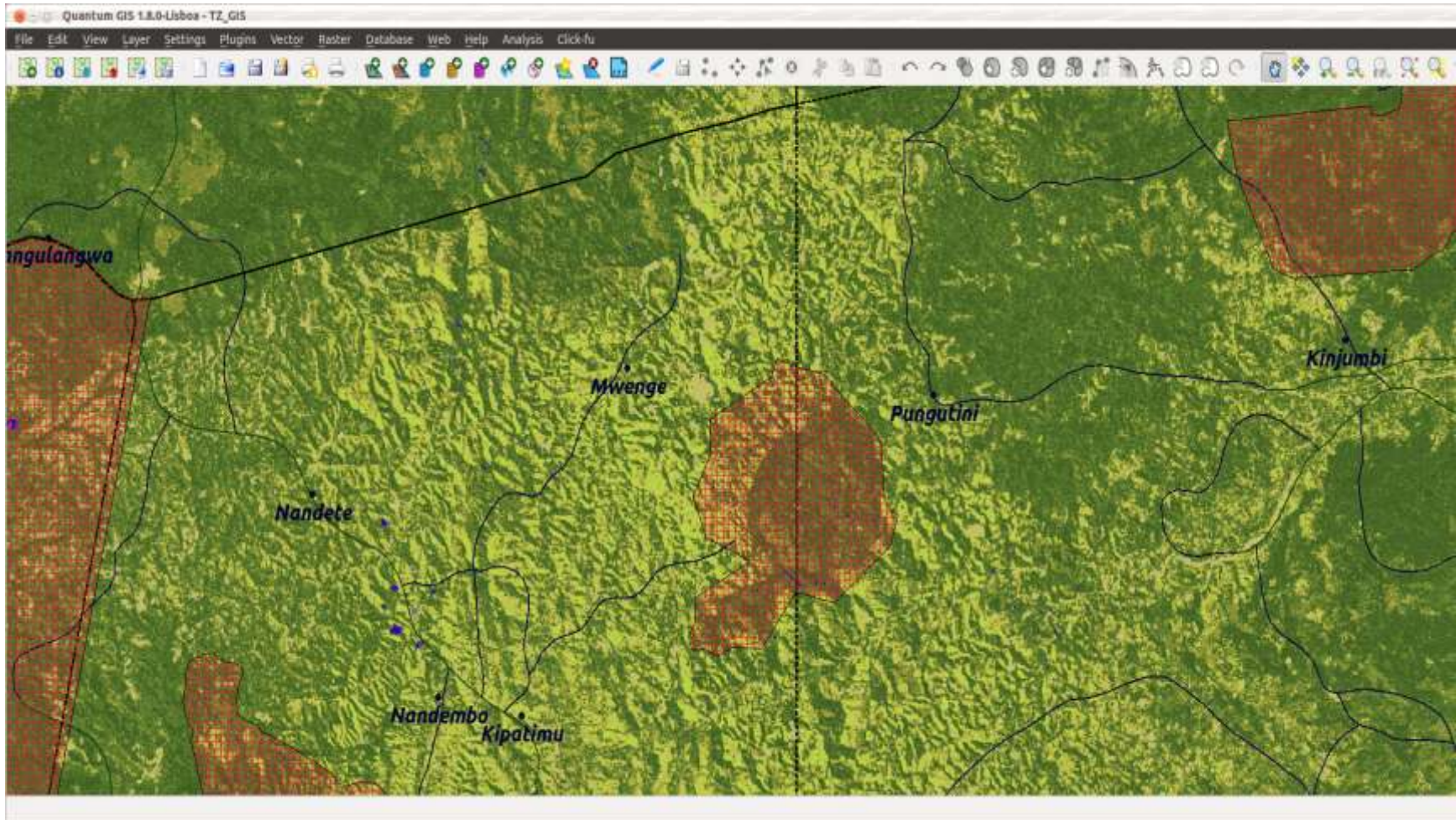
Eye at 1.74 km

Multi-Source Forest Inventory



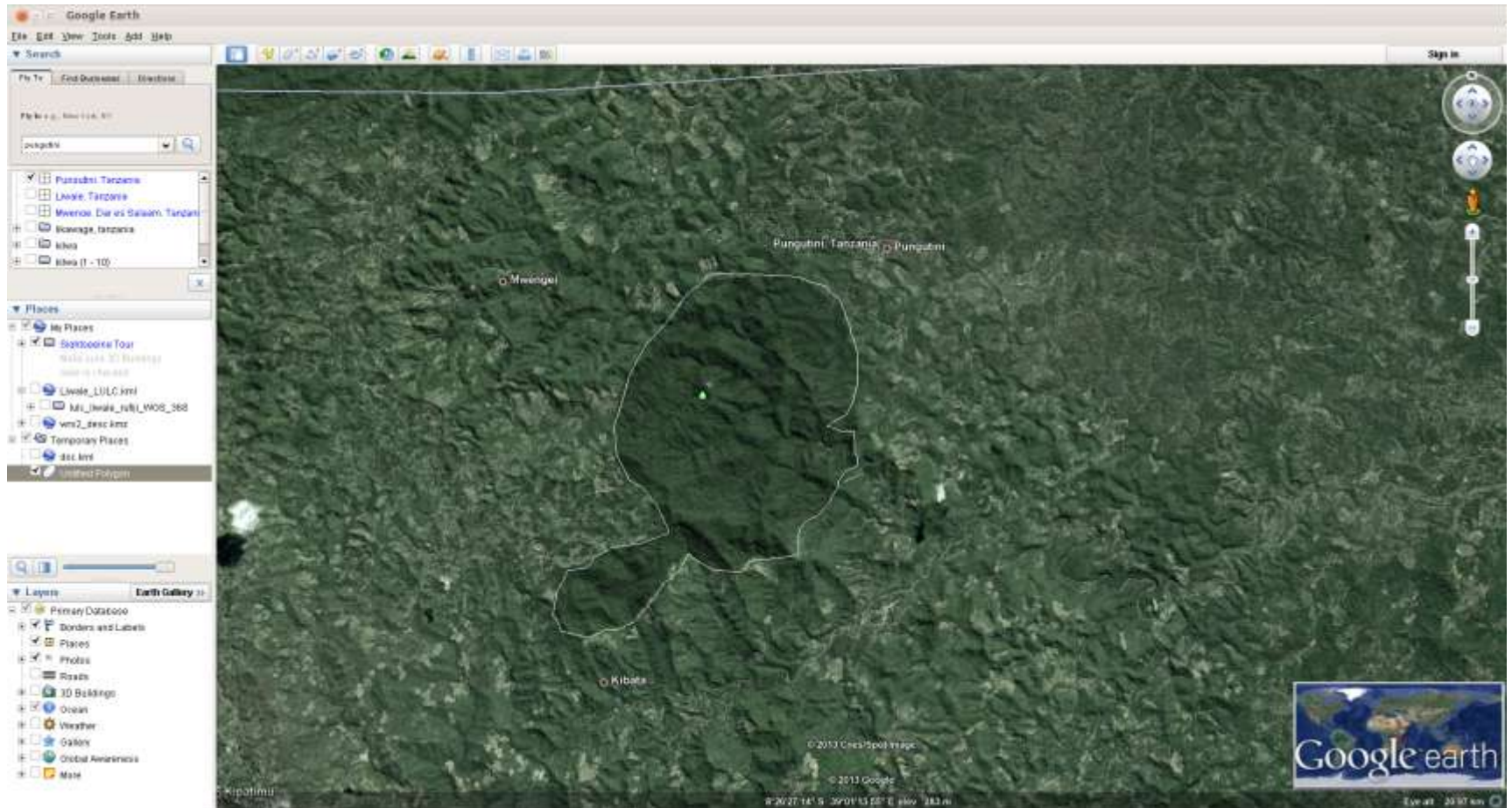


Local level planning, Tanzania





OPENFORIS GEOSPATIAL TOOLKIT



FAO Forestry

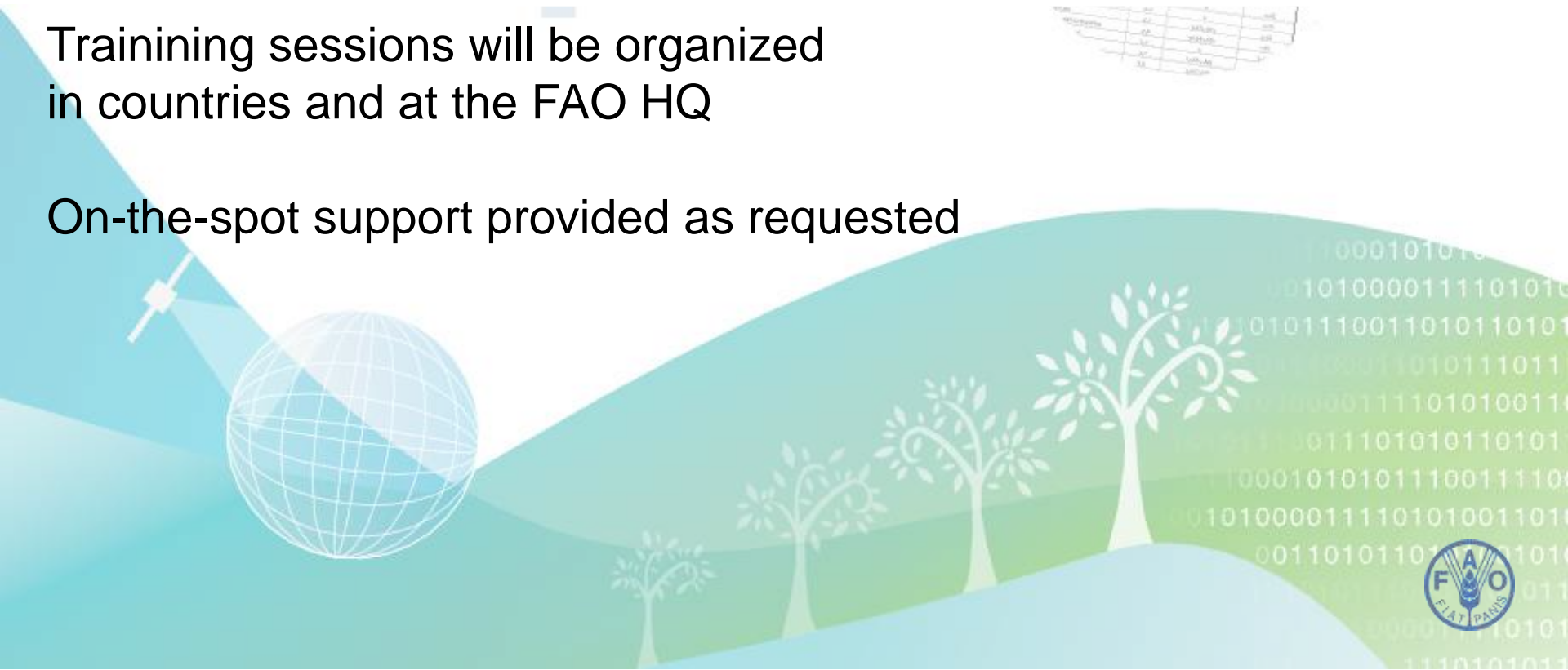
Future aspects

Open Foris Development will continue

All tools will and their source code will always remain free

Training sessions will be organized
in countries and at the FAO HQ

On-the-spot support provided as requested





www.openforis.org



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