Enhancing the “P” in Participatory-GIS projects to improve social and human capitals: The use of FOSS4G tools in community-based resource management

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RATIONALE

- In recent years, emphasis has been placed on the importance of local participation in community-based resource management (CBRM).

- Participatory GIS (P-GIS) is one such approach which advocates the participation of local stakeholders to generate, analyze and communicate spatial information in managing their local environment.

- However, the prevailing use of commercial GIS softwares in PGIS projects runs contrary to its participatory nature.

OBJECTIVES

- Present the on-going PGIS activities of the LRIS (Land Resource Informtion System) Project which aims to address the mapping needs of an upland community.
- Highlight the participation of local stakeholders on the use of various FOSS4G tools in different stages of the project.
- Share lessons from on-going activities.

Participatory-GIS

Integrates local knowledge and stakeholder perspectives in GIS analysis.

Makes GIS products available for the public to be able to enrich the information, and promotes discussion and readily use of the outputs for local planning

Participation of the local community is encouraged at all levels of the GIS analyses.

Promotes the local ownership of spatial data and better appreciation of products.

FOSS4G

Free and Open Source Software for Geomatics

Makes GIS technology more accessible to users in developing countries by removing the costs related to software purchasing and licensing.

Allows individuals to use software in any situation because the source code is available to those who acquire a program, and the user can view and modify the code to suit their needs.

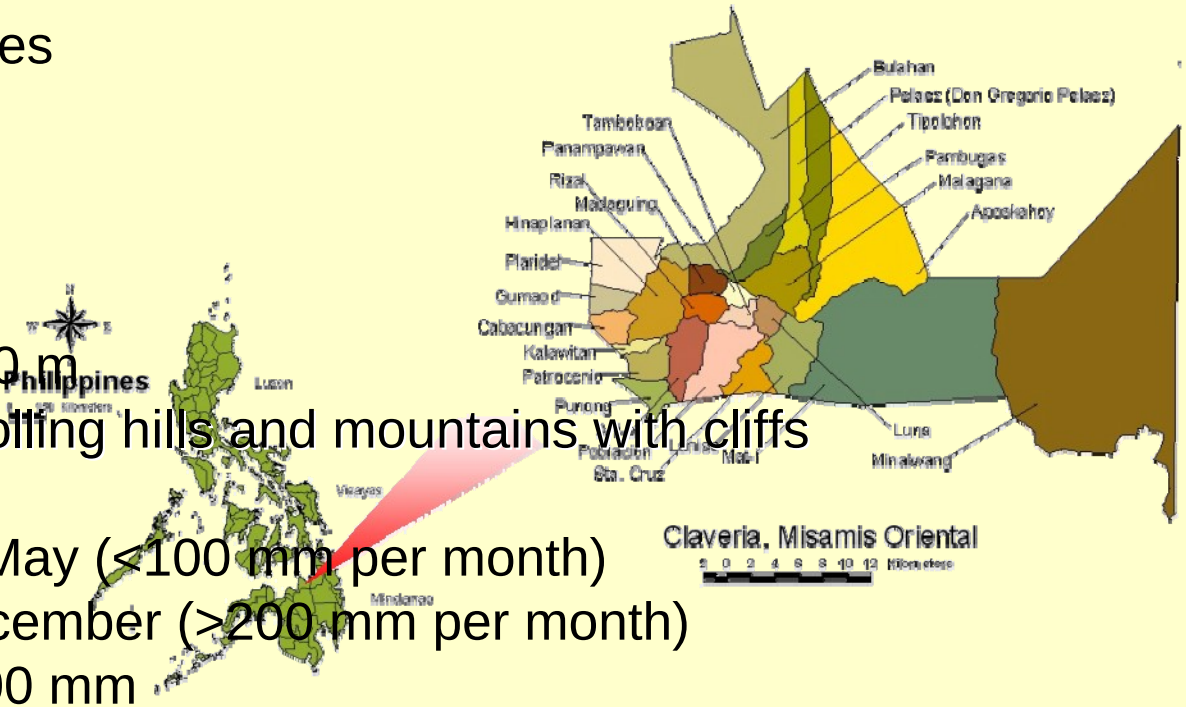
Generally free or cheaper to acquire.

Case study of the PGIS Project in Claveria, Philippines

Mindanao, southern Philippines

Population = 47,000 (2000)
Annual growth rate = 4.62%

Elevation range: 200 to 1,200 m
Rugged topography, gently rolling hills and mountains with cliffs

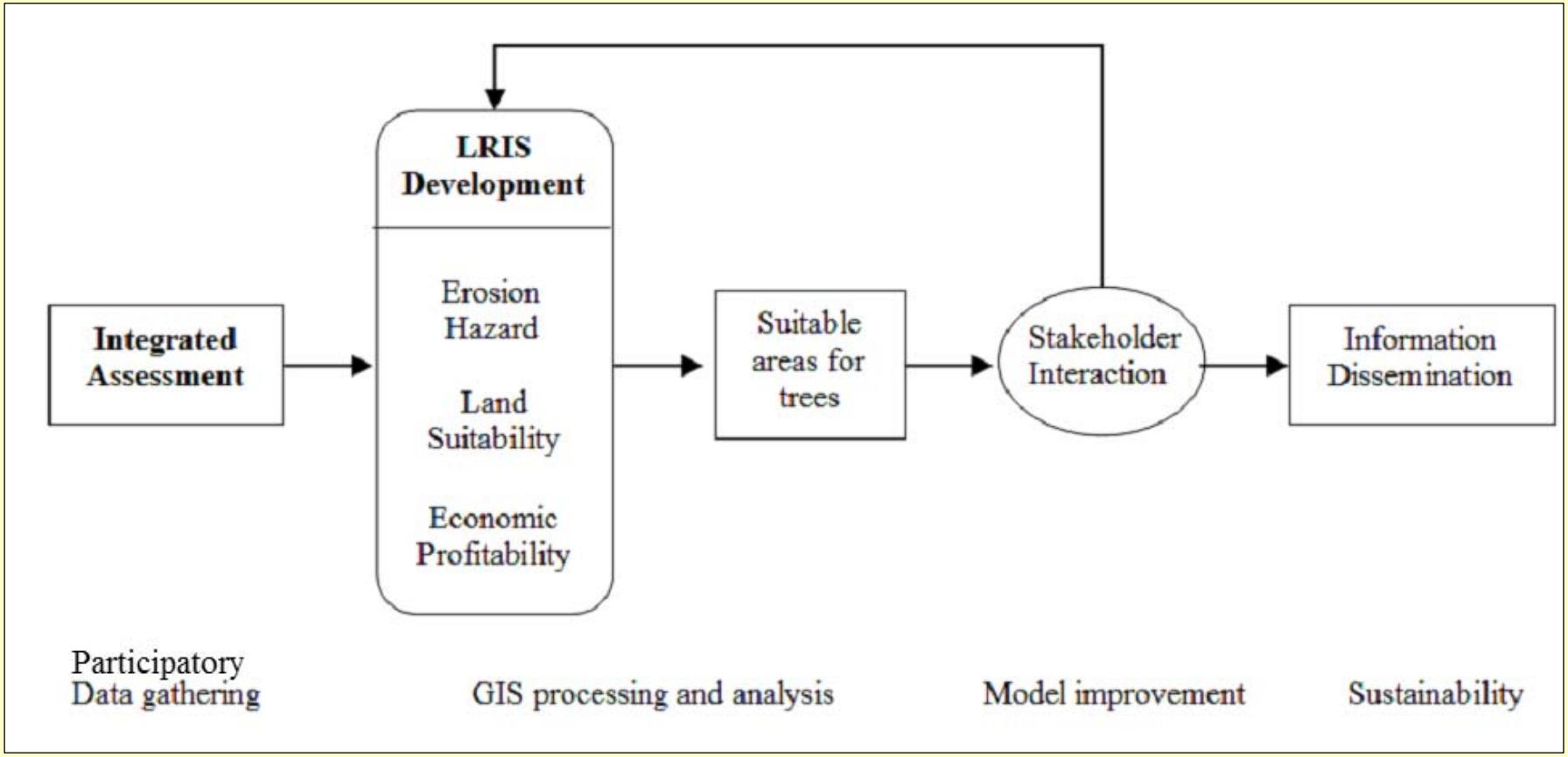


Dry season from January to May (<100 mm per month)
Wet season from June to December (>200 mm per month)
Average annual rainfall = 2000 mm

Predominantly agricultural-based

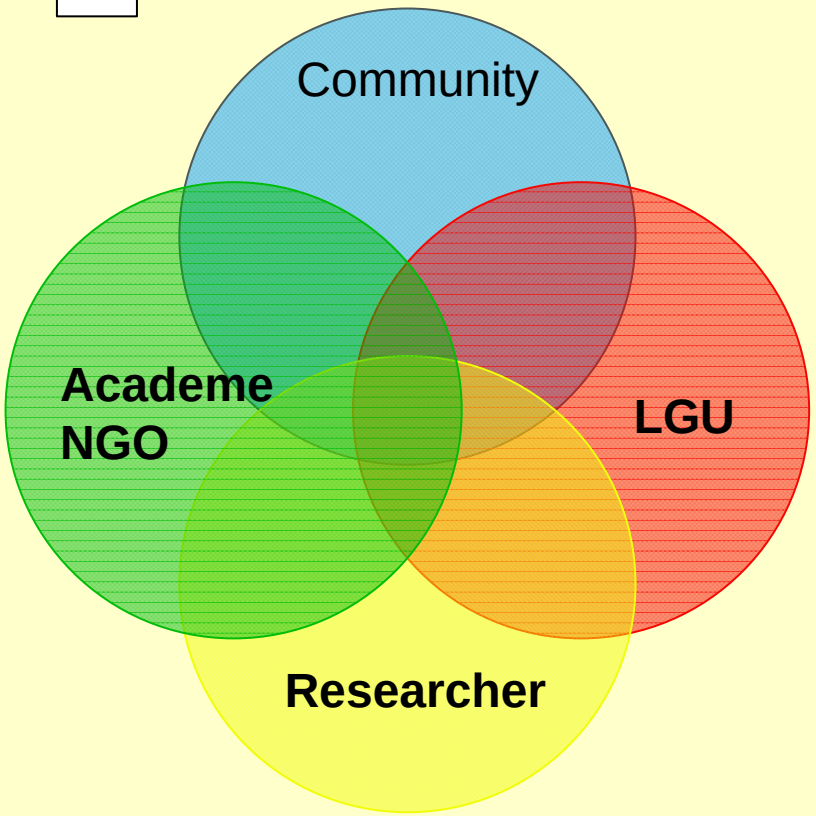
Corn (*Zea mays*), with 51% of the arable land devoted to its production
Tomato (*Lycopersicum esculenta*) and other vegetables, Cassava (*Manihot esculenta*), Coffee (*Coffea sp*.), coconut (*Cocos nucifera*), banana (*Musa sp.*), various trees.

The PGIS process



The participation framework:
Building social capital through social networks

L Local Ecological Knowledge



R Research Experience

S Administrative Support

GIS Innovation I

Participatory activities with stakeholders:
Building human capital through participatory trainings and participatory data gathering.

Activity	Stakeholder
GIS and GPS trainings, GPS Data collection	LGU, Academe, NGO, community members
Design and development of LRIS	LGU, Academe, NGO
Consultative meetings	LGU, Academe, NGO, community members

FOSS4G tools used

Digitization of paper maps:
Wintopo version 1.7 (freeware)

Management of GPS data:
DNR-Garmin version 5.4.1 (MDNR, 2001)

GIS-based activities:
Mapwindow GIS version 4.6 (2008)

Current Outputs

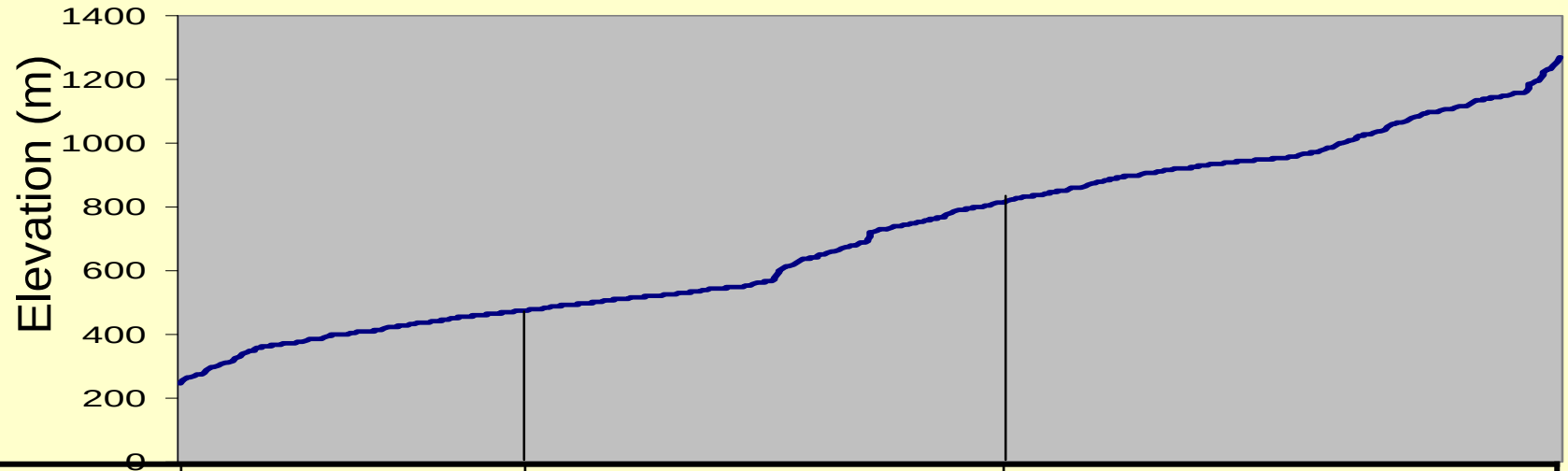
Field-based land use survey:

TopoSequence Analyses of Land-uses

- Participatory data gathering of land uses (GPS).
- Provides a general picture of existing land-uses.
- All information are stored in a relational database.

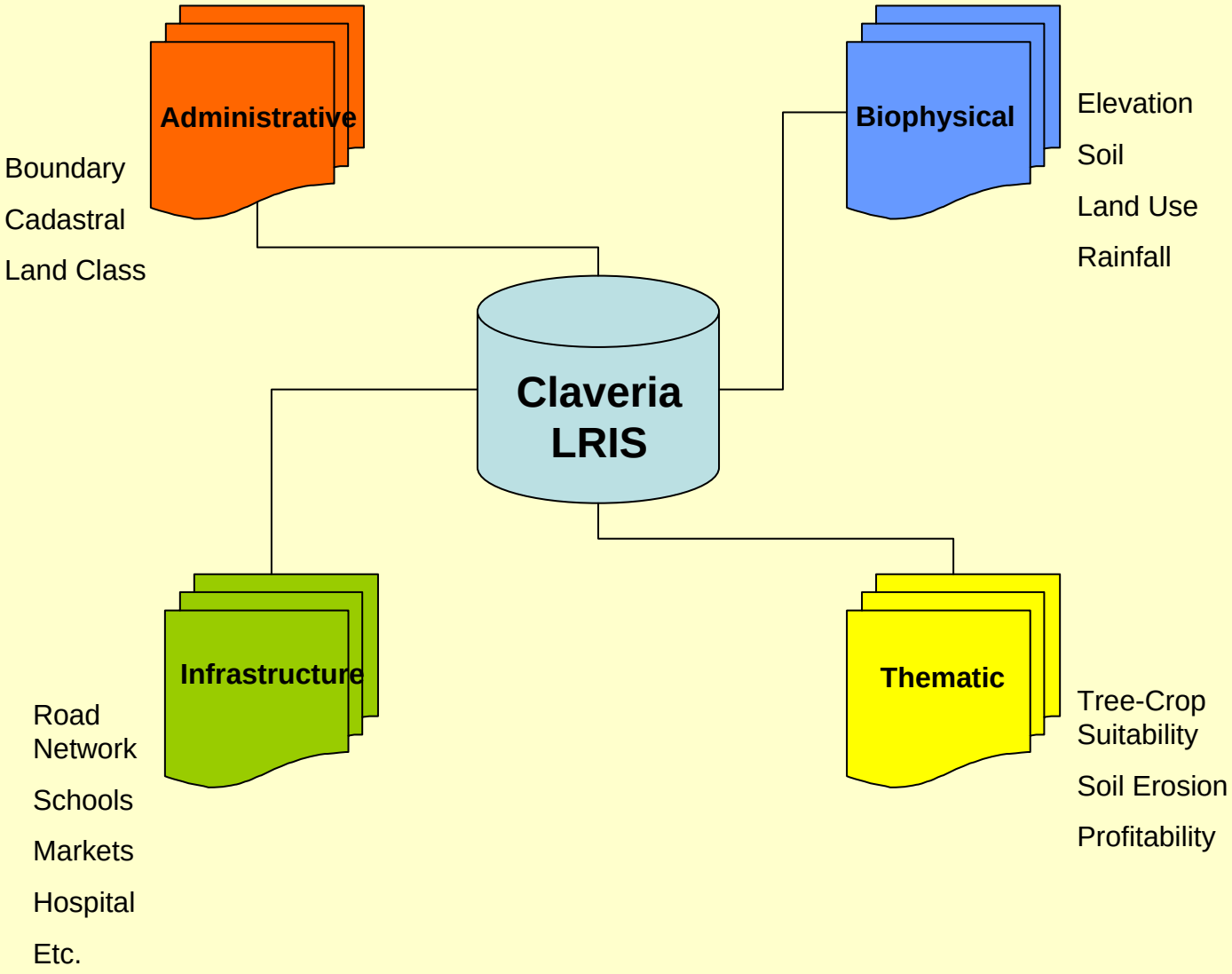
- Preliminary results:
  - Diversity of land uses
  - Trees and crops planted
  - Tenure status of parcels

Preliminary Results:
Diversity of land uses per elevation class

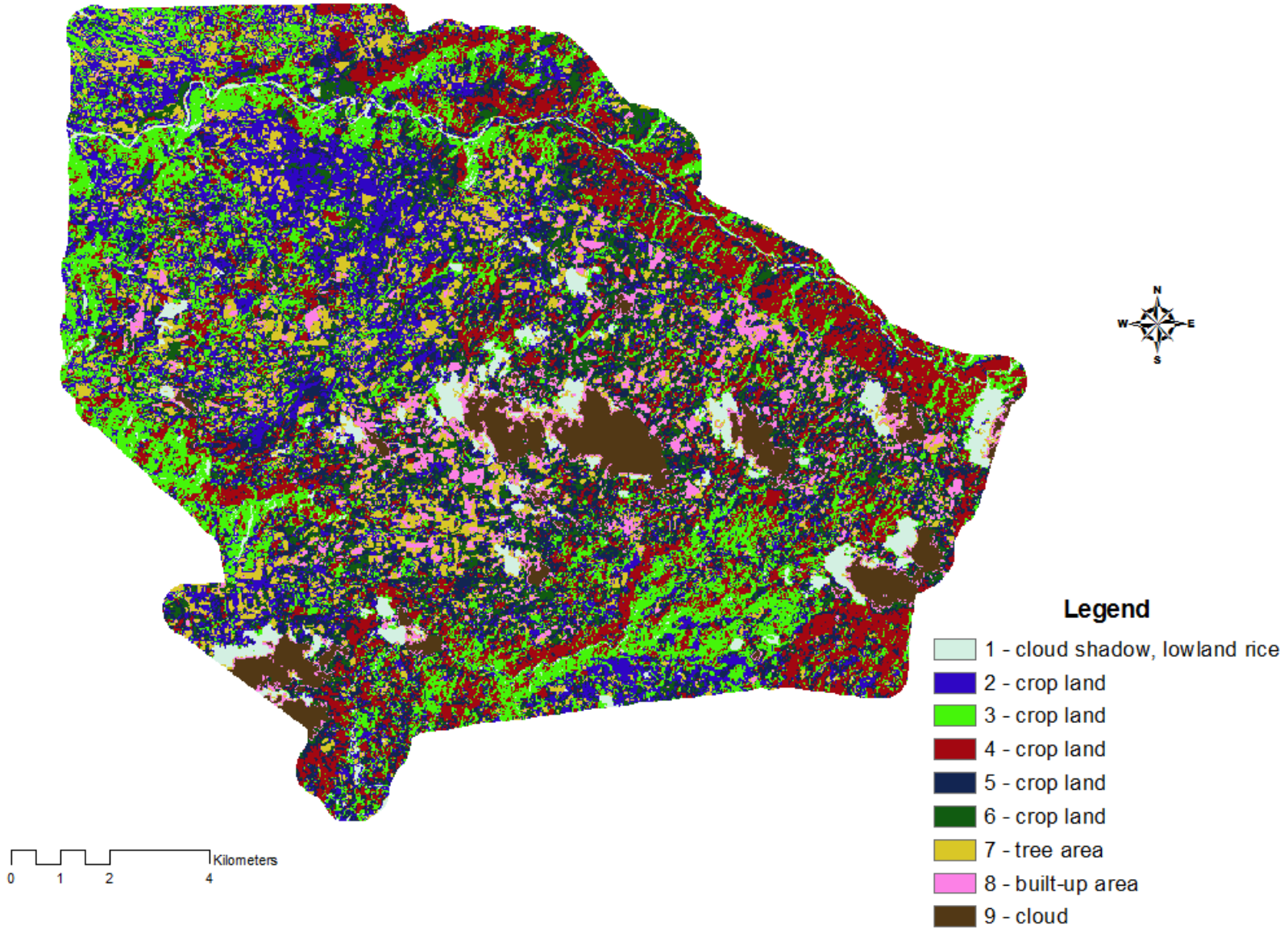


Elevation range (m)	248-515	516-877	878-1270
Land uses	Hedgerow, monocrop, multi-storey, parkland, tree plantation	Hedgerow, monocrop, multi-storey, tree plantation	Hedgerow, monocrop, parkland, tree plantation

Prototype LRIS database



Land Cover Mapping



Papier-mache model of the landscape

Conclusions

The PGIS project aims to promote the enhancement of the participation of stakeholders to improve their social and human capitals by using FOSS4G tools in data gathering and data management.

The use of FOSS4G tools in community-based resource management is the response to the challenge of sustaining PGIS projects that rely on the use of commercial GIS softwares.

Promoting the use of FOSS4G tools in PGIS activities is just one of the many aspects that can enhance the sustainability of GIS-related initiatives.

Aside from the use of FOSS4G, other factors need to be considered, such as strengthening local institutions, sourcing funds and improving access to geospatial data.

Implications for future CBRM Projects

-The project employs a bottom-up approach which involves the stakeholders in the lifecycle of the activities to promote learning and participation which enhances human and social capitals.

-FOSS4G tools are being used to achieve a more cost-effective way of performing GIS activities in the face of limited provision of funds.

-The PGIS approach ensures genuine local custodianship and ownership of the project outputs.

Daghang salamat!
Thank you very much!
Shie-shie ☺