Combating witchcraft beliefs by accessing and reconstructing the history of heavy rainfall-triggered landslides and related hazards in the Bamumbu region, south west Cameroon

by

Tangumonkem E.T., and GHOGOMU R. T

(ett032000@utdallas.edu)

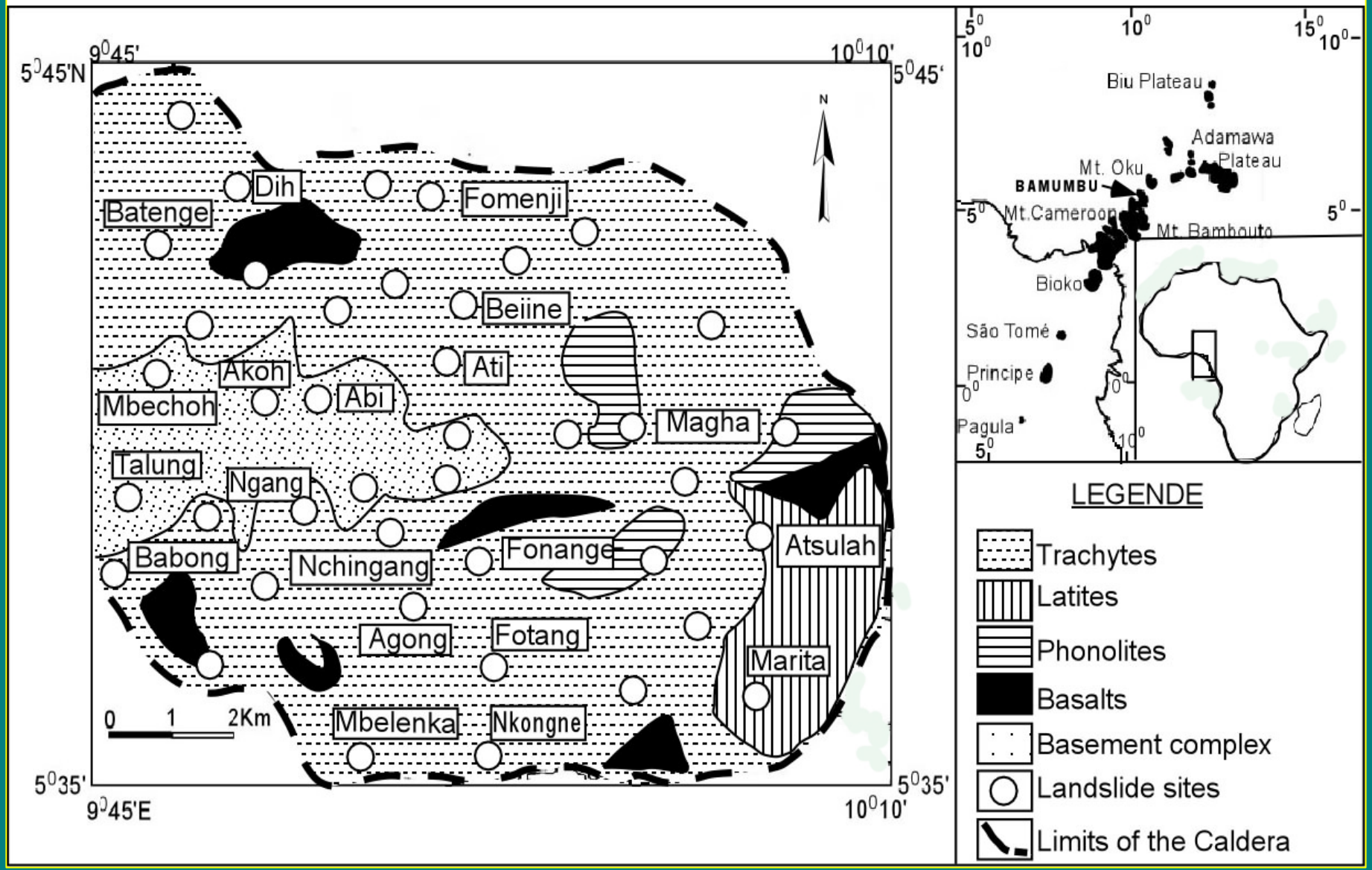
Outline

- Objectives
- Summary of reconstructed landslide history
- Main features of the landslides
- Causes
- Witchcraft beliefs
- Impact
- Conclusion

OBJECTIVES

- Establish the relationship between the geology of the area and landslides
- Show that rainfall is the triggering mechanism
- Combat witchcraft beliefs
- Raise awareness among the scientific community about these natural hazards

Location of study area



Summary of reconstructed landslide history

Year	Month	Settlement	Rainfall	Impact
1954	September	Nchingang Ngang	Undetermined	River Meyi changed its course
1956	September	Beiine	3days	3 deaths
1957	September	Fomenji	2 days	12 deaths
1973	August	Fonenge	Undetermined	1death
1992	September	Fomenji, Abi	Undetermined	House, roads and bridges,
1994	September	Fotang, Fomenji,	3 days	6 bridges destroyed
1998	August	Magha, Akoh, Abi	4 days	21,200,000 FCFA
2003	July	Magha	2 days	21deaths,132,houses,20000 homeless,13 bridges Meyi changed its course.

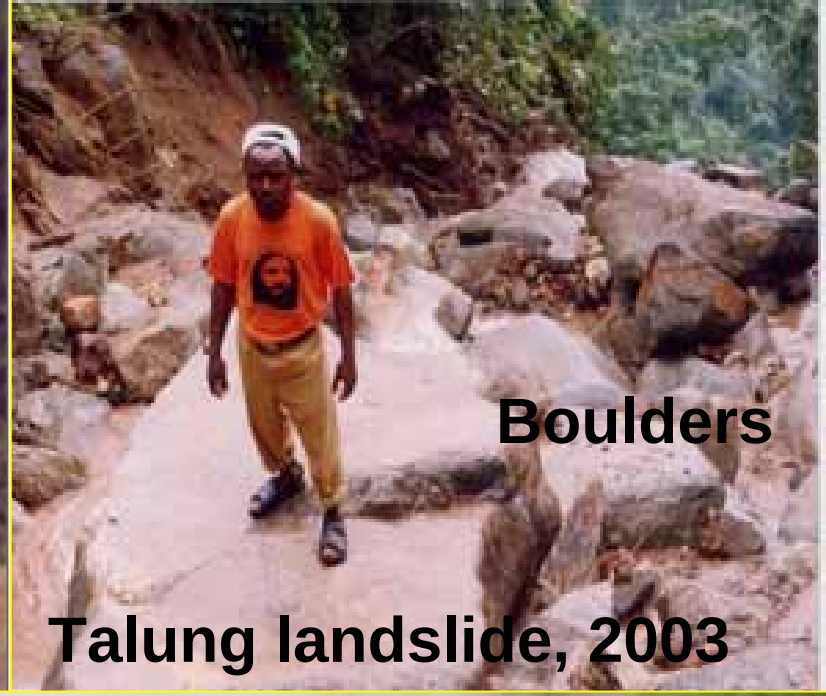
Main features

- Occur abruptly
- Ground tremors are felt during the event
- Descend at tremendous speed 5-20m/s
- Carry huge boulders and floating logs
- Deposit mud, silt, sand and boulders

General characteristics of landslides

Location & Relief	General Description	Geology	Materials deposited
Close to the bottom of the caldera, 85% of the slope 60^0-85^0	Scarp 10m - 20m. Bed rock exposed at almost every site and streams are very common. Sides 10m - 15m deep. Length 10m -700m.	Weathered granites and trachytes. Ferrillitic soils and andosols, involved.	Boulders, rock particles, sand and silt 256mm-0.004mm, logs. Almost all the materials washed and deposited in the streams below and finally into river Meyi
Rim of the caldera slope 80% of the slope 15^0 -20^0	Scarp 30m - 110m wide and 10m-600m long. No exposed bed rock in approximately 95% of all landslide sites. Sides generally 5m-10m deep.	Weathered tracyhtes and phonolites. Clay and andosols involved.	Soil and silt


Scarp
Boulders
Babong landslide, 1998


Boulders
Talung landslide, 2003


Magha landslide, 2003

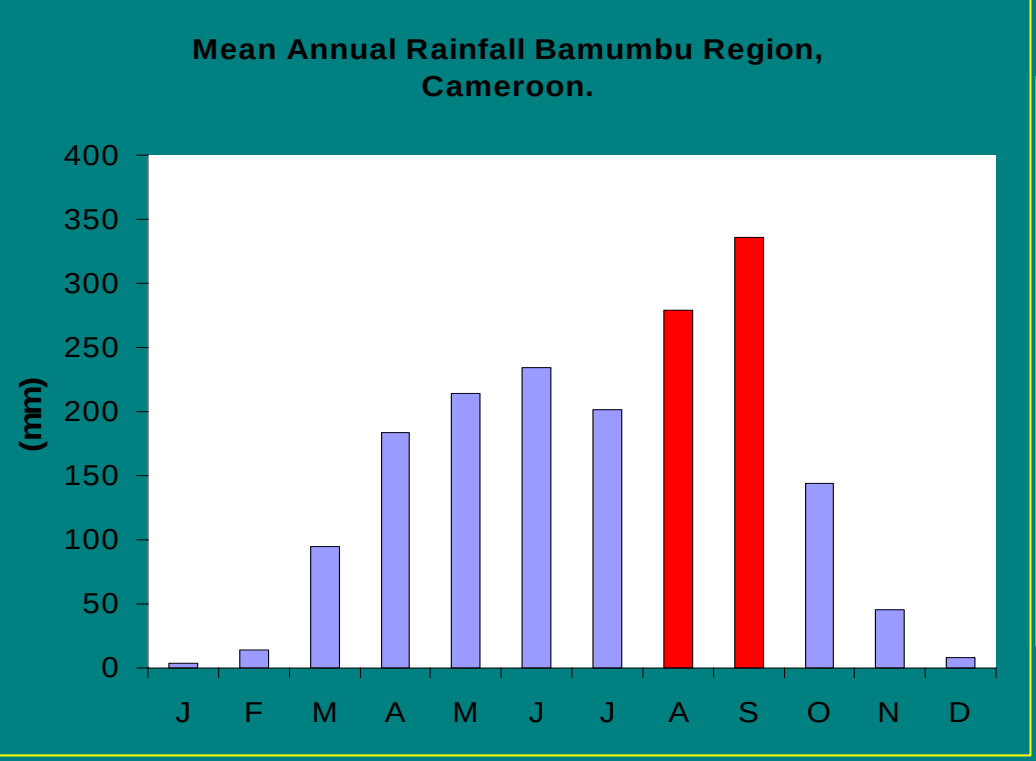
CAUSES

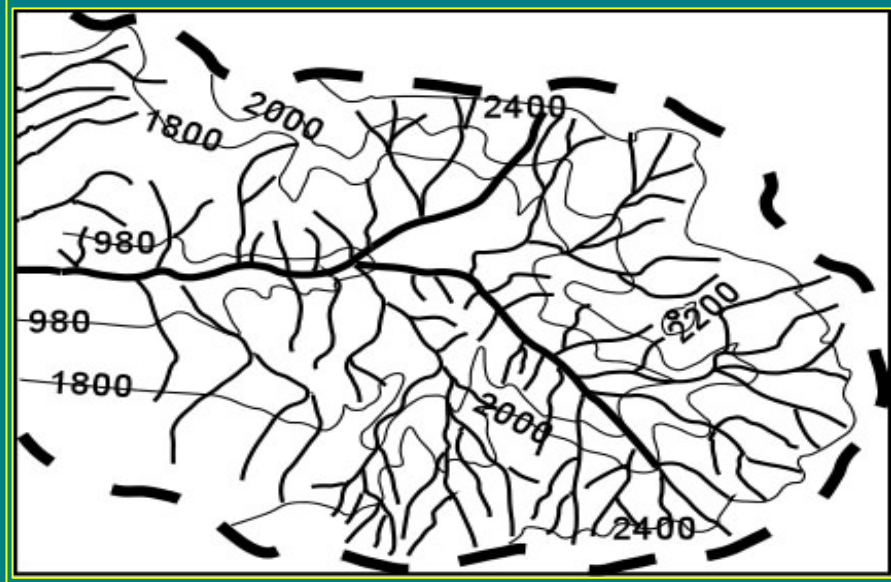
- Step slopes approximately 15°- 85°
- Availability of loose sediments
- High rain fall
- Deforestation
- Poor agricultural practices for example the “ankara system”

Very steep slopes

Nchingang landslide,1998

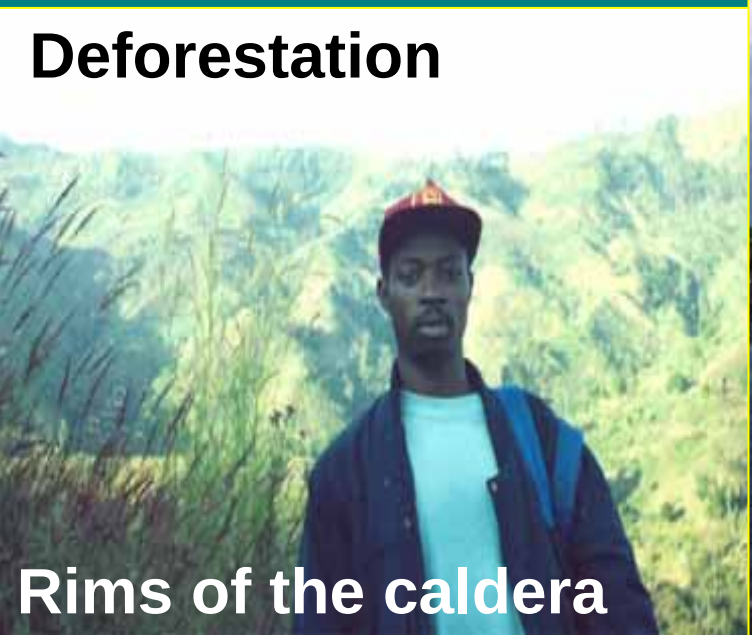
Babong landslide,2003



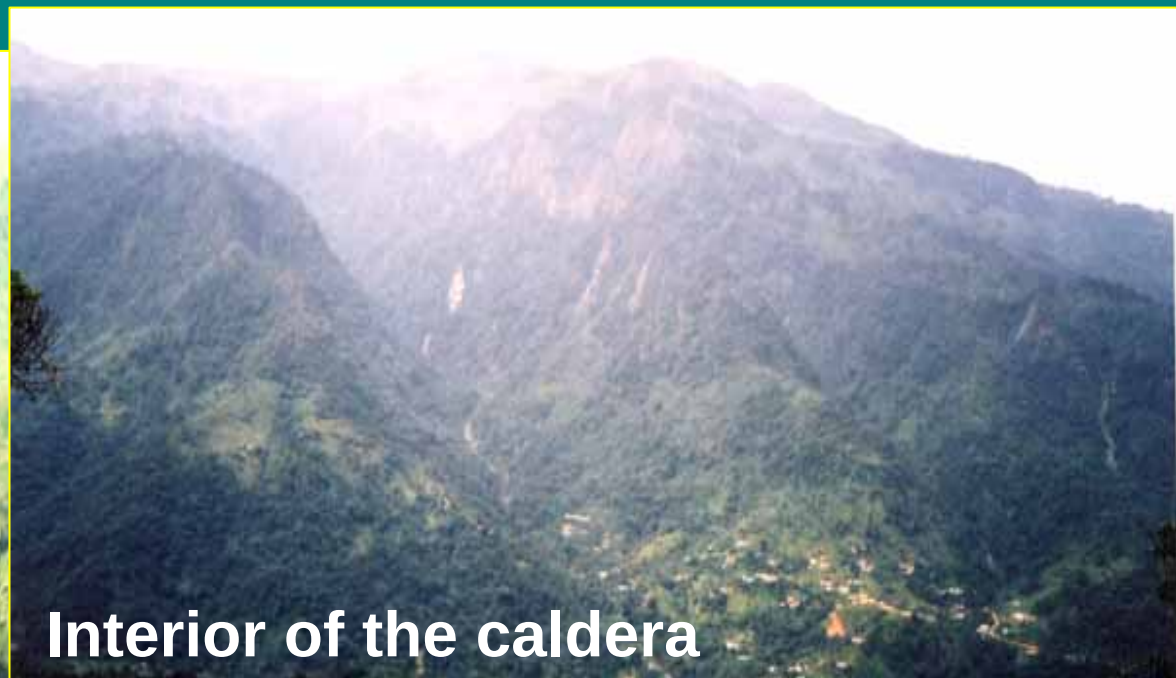


Relief and hydrology

Deforestation



Rims of the caldera



Interior of the caldera

Witchcraft beliefs

- Landslides and floods are caused by witches who transform into “ totems”
- These “totems” take the form of crabs, pythons and bats
- Fertile soils are washed from the caldera by witches from other villages to increase the fertility of their soils
- Food and other items destroyed during landslide and flood events are collected by inhabitants of other villages
- Witch doctors have the ability to stop the witches from causing these hazards

IMPACT

- Loss of human lives
- Destruction of houses, rendering thousands homeless
- Destruction of infrastructure and interruption of communication
- Rural Urban migration, and drastic population drop
- Destruction of biodiversity
- Destruction of livestock (cattle, pigs, sheep, goats, etc)
- Destruction of cash and food crops (cocoa, coffee, cola nuts, raffia palms oil palms, yams, cocoyams, bananas and plantains, etc)
- Ugly scars on the environment
- Flooding and related devastation

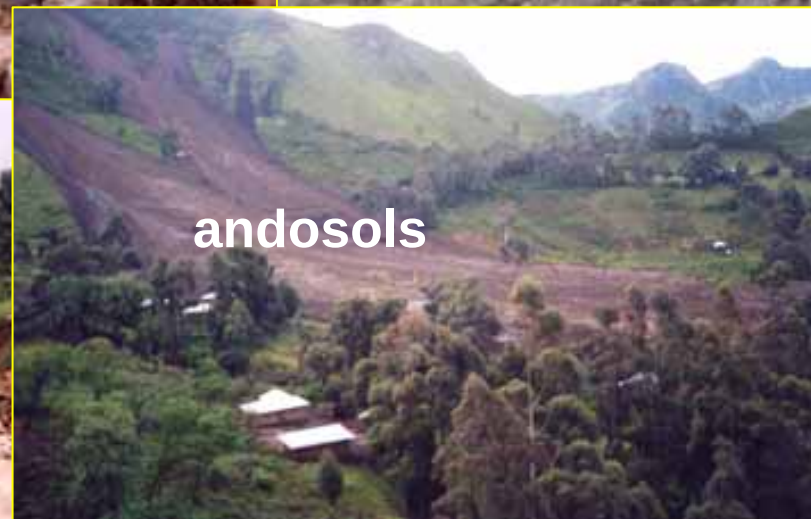
Reoccurrence of landslide on the same site

Akoh landslide, 1998

Akoh landslide, 2003

Babong landslide, 1998

Mbechoh landslide,2003



Some of the dead Magha,2003

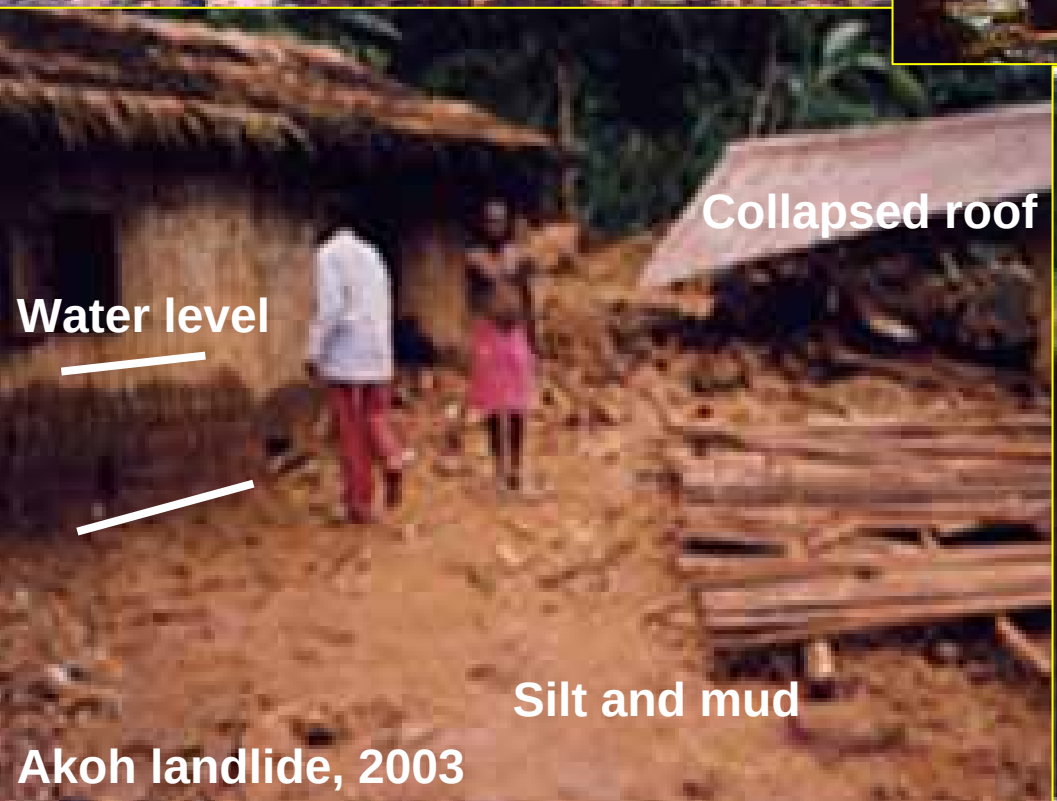
Searching for the dead Magha, 2003

Mourning the dead Magha, 2003

Dead livestock Mgha, 2003


Homeless
Akoh landlide, 1998


Collapsed roof
log
Boulder
Stream


Collapsed roof
Water level
Silt and mud
Akoh landlide, 2003


Football pitch
15m

Flood impact

Bridge, 1988

Same area, 2003

Ceremonial ground, 2002

Ceremonial ground, 2003

Flood impact

Some flood Victms

Debris deposited by river Meyi

CONCLUSION

- Landslides and flood related hazards are natural and directly related to the geology of the area
- Heavy rainfall is the triggering mechanism
- Bed rock is exposed at most landslide sites at the bottom of the caldera.
- No bed rock is exposed at most landslide sites close to the rim of the caldera
- Reoccurrence of landslides on old landslide sites
- Population believe witchcraft is a cause
- The most effective way to combat witchcraft beliefs is through education
- There is need for further research in the area, so that a hazard map can be drawn

The area is still beautiful

Mt. Magaha

Main livelihood