



SEISMIC MONITORING IN KENYA
BY
Bruce K. Mutegi

KENYA

- **Kenya**, officially the **Republic of Kenya**, is a country in East Africa that lies on the equator. With the Indian ocean to its south-east, it is bordered by Tanzania to the south, Uganda to the west, South Sudan to the north-west, Ethiopia to the north and Somalia to the north-east. Kenya has a land area of 580,000 km² and a population of a little over 43 million residents. The country is named after Mount Kenya, a significant landmark and second among Africa highest mountain peak. Its capital and largest city is Nairobi

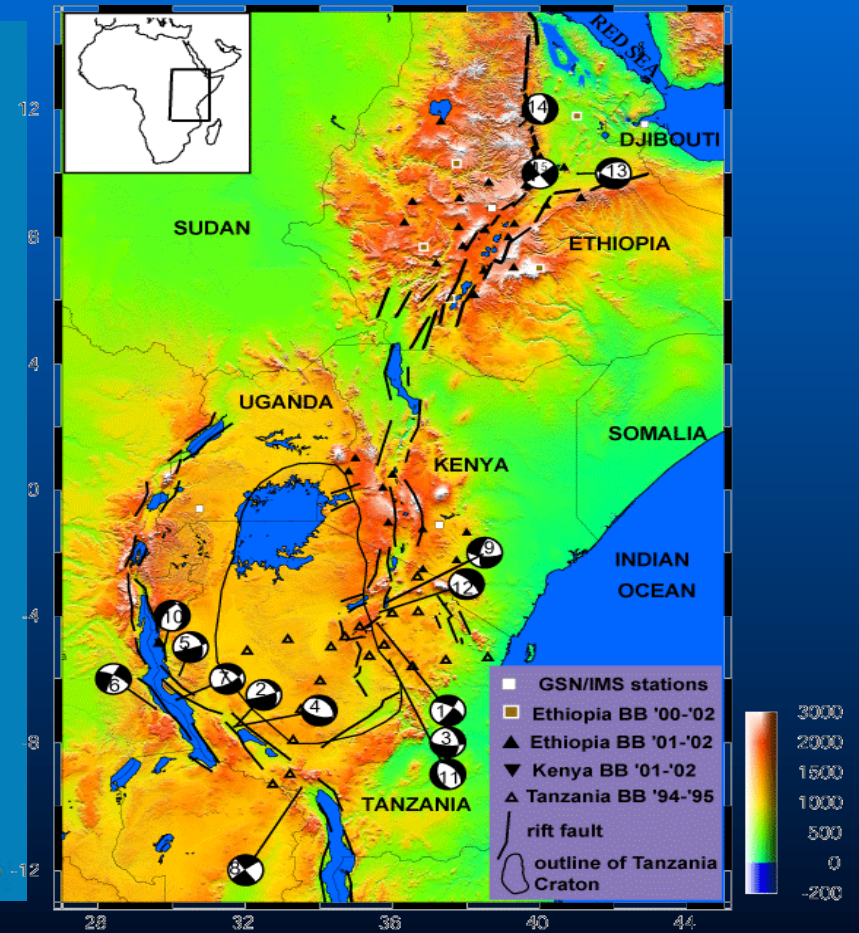


Map of Africa showing
Kenya location



Map of Kenya and her
neighbors

The great rift valley

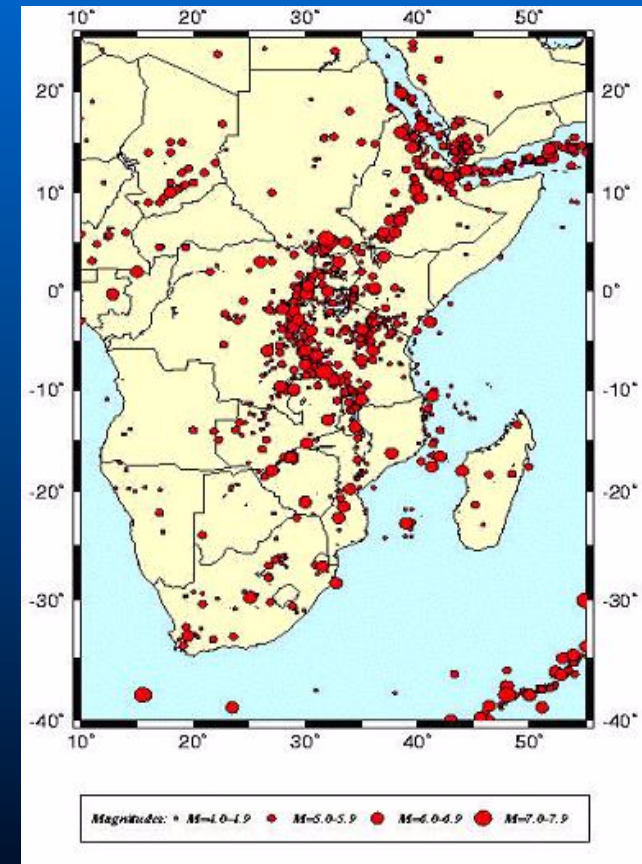


HISTORY OF SEISMIC MONITORING IN KENYA

- 1963:-First seismic station in Kenya: WWSSN (IRIS) station at Chiromo campus
- 1993:-Five additional digital seismic stations
- In 1995 the 1963 station moved to to **KILIMAMBOGO (Kmbo)**.
- 2002:- **Primary Seismic station** installed as part of the Comprehensive Nuclear Test ban Treaty at Kilimambogo
- 2002:- **Infrasound (7 ARRAY STATION)** by at Karura.
- 2010:- One Africa Array **Seismic Station (NAIB)**
- 2012:- Two GFZ-potsdam Stations (**Kibwezi and Lodwar**)
- 2013- 1 Africa array station and
- 2013- 2 International Science Programme stations

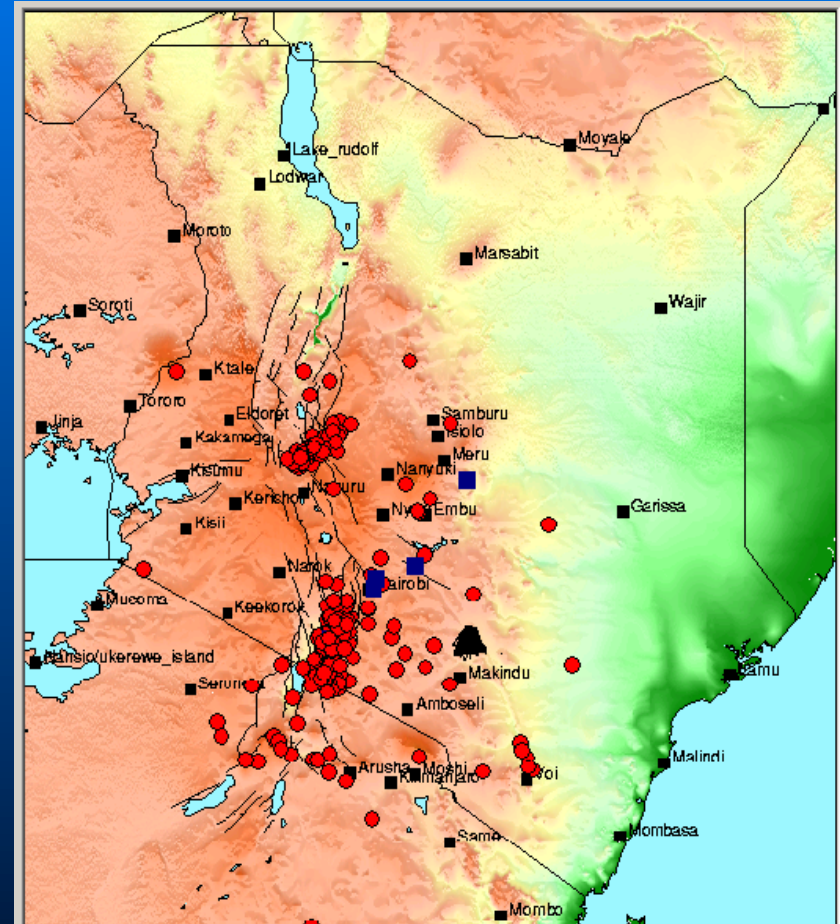
The General seismicity of the East and Southern African

- Kenya is located within the seismically active East African Rift System running from the Afar in the North to Mozambique in the South.
- This is the main source of seismic activity in Africa.

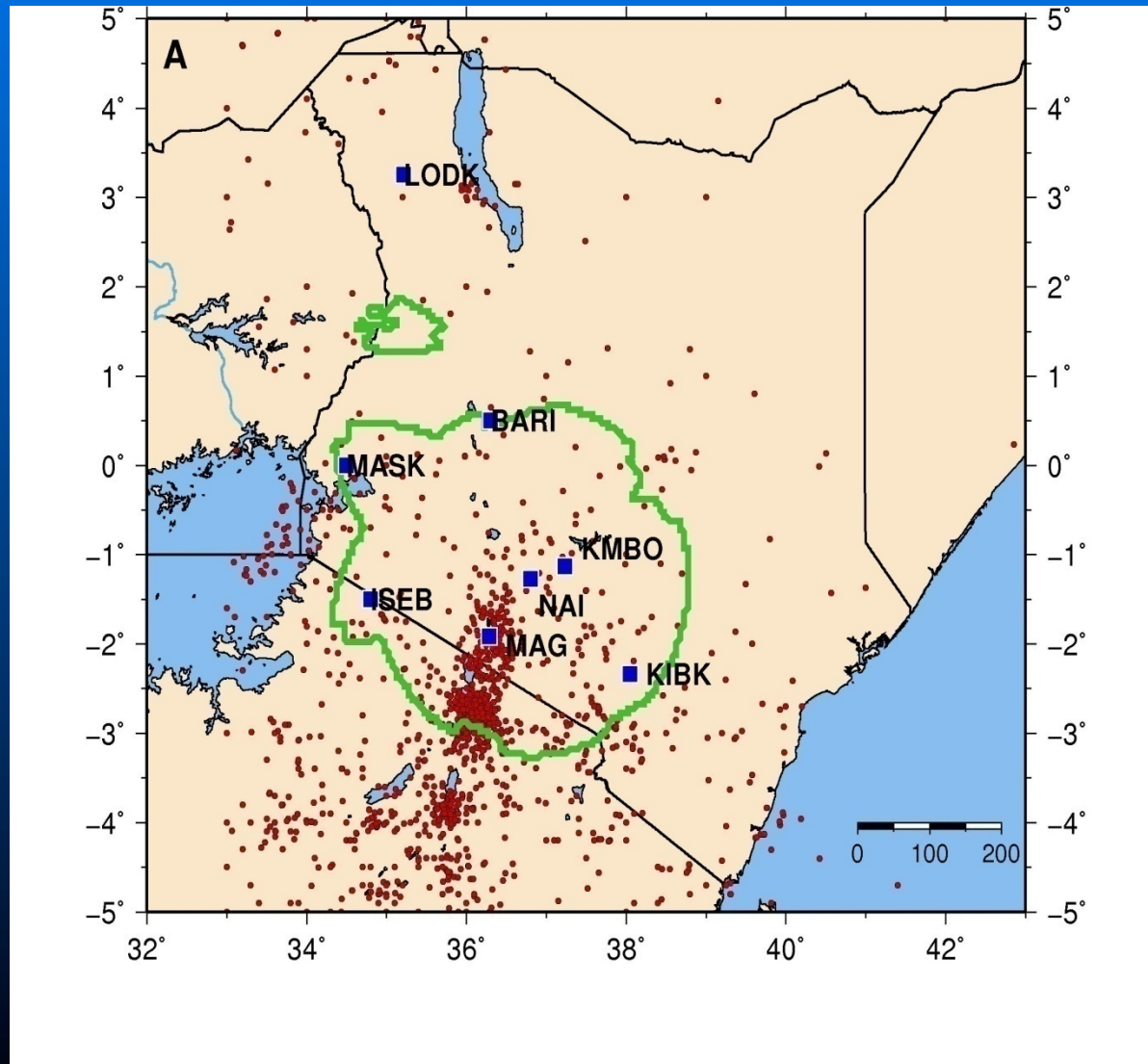


The Seismicity of Kenya

- Kenya's great populations lives to the west and south west of the **KRS**.
Unfortunately the seismic active area cuts right across these populated sections except for Mombasa city.
- However, Mombasa city likewise lies close to the seismically active **Davie Fracture** extending from the Mid-Mediterranean oceanic ridge
- NB. Blue Squares and Black triangle denote the Seismic stations



Current and Proposed Seismic Network for Kenya



The Kilimambogo (PS24) Twin Station

- PS24 is a tunnel type station located in one of Kenya's Game Reserves
- This is a dual station housing both the USGS and the CTBTO stations



VIENNA

The VSAT antenna

UoN



Tunnel Entrance



Equipment Tunnel



KENYA NATIONAL DATA CENTRE

- ❑ Established in 2002

- ❑ Activities and objective of the National Data Centre

- a) Strengthen a seismology and geophysics research and training base at the UoN

- b) Carrying out systematic earthquake studies and mitigation in this region of Eastern Africa which is highly vulnerable to medium and strong earthquake events (Richter scale magnitudes of 4.0 – 6.9)

- c) Act as a nerve centre for regular earthquake monitoring and reporting of seismic hazards through scientific publications, mass media and seismic bulletins.

CURRENT COLLABORATIONS

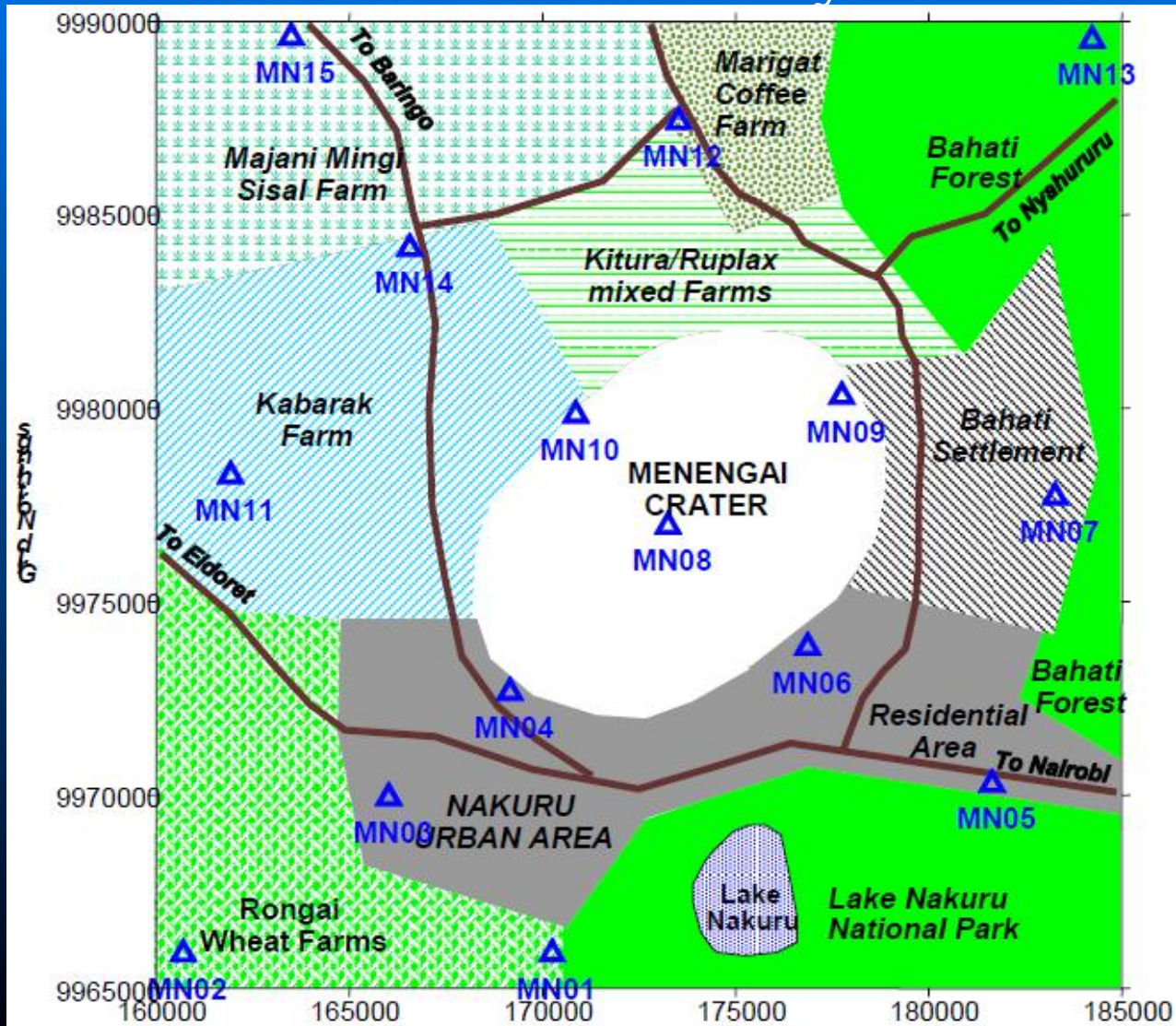
INTERNATIONAL

- The Comprehensive Nuclear Test Ban Treaty Organization
- United States Geological Survey
- GFZ-Potsdam -Germany
- Africa Array
- East and Southern Africa Seismological Working Group(ESARSWG)
- China Earthquake Administration (CEA)

LOCAL COLLABORATORS

- Mines and Geology Department -|MEMR
- Kenya Meteorological Department -|MEMR
- Kenya Electricity Generating Company Ltd
- Geothermal Development Company (GDC)

Seismic installation at Menengai Nakuru by GDC and UON and University of Texas Elpaso



CURRENT RESEARCH

- **CRUSTAL STRUCTURE BENEATH THE TURKANA AREA FROM TELESEISMIC P- WAVEFORM RECEIVER FUNCTIONS ANALYSIS AND ITS APPLICATION TO LODWAR STATION.**

END

THANK YOU