

# Rigorous Estimation of the Coordinates of two new National permanent GNSS networks in Africa: NIGNET (Nigeria) and REPANGOL (Angola)

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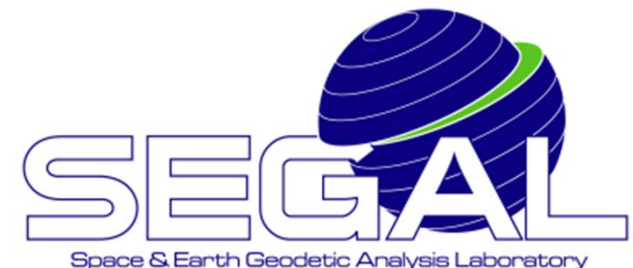
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NIGNET



Nigerian GNSS Network

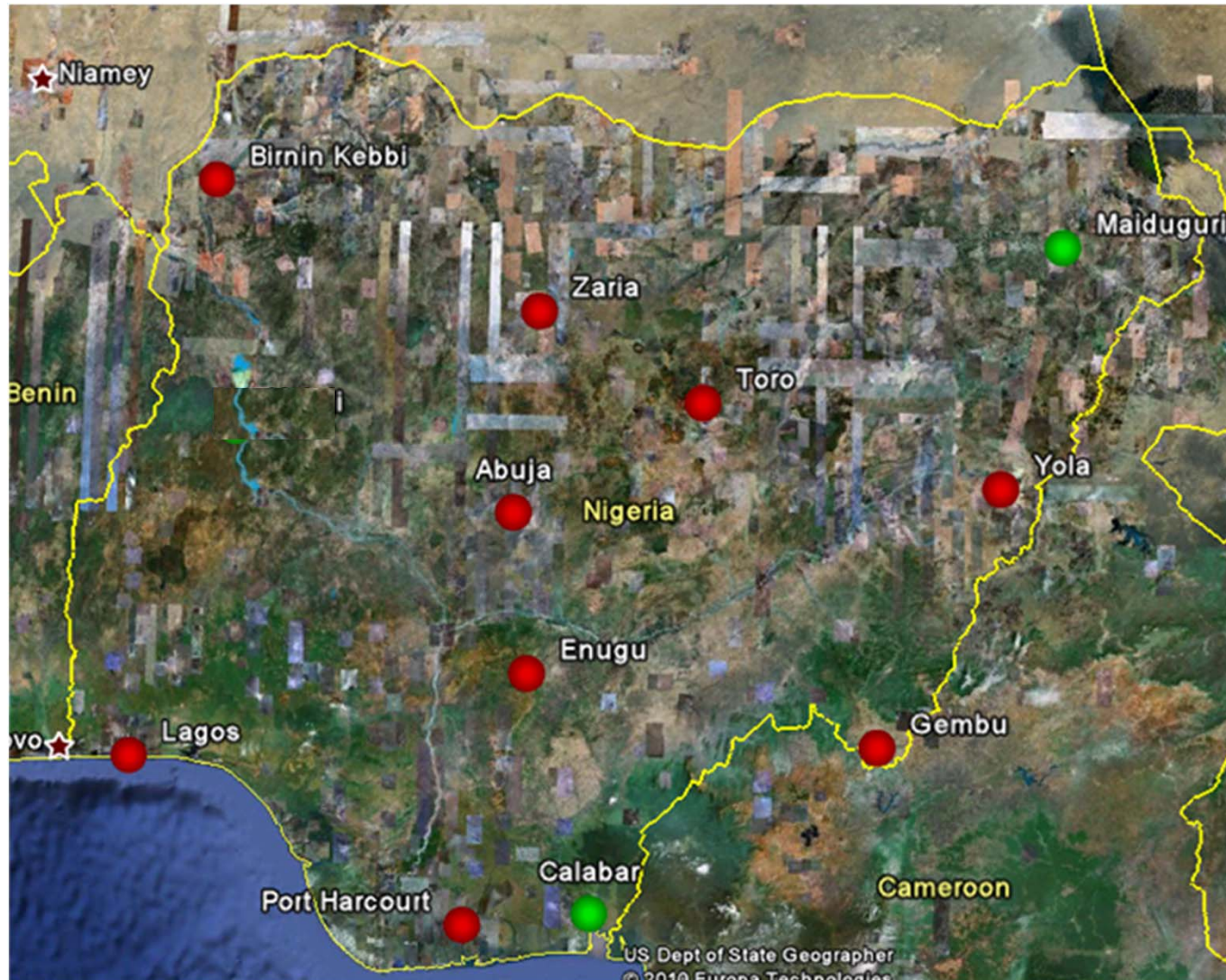


# Reasons to promote NIGNET and REPANGOL

- Adoption of a modern geodetic infrastructure full compatible with the actual techniques of geo-referencing.
- Low quality of the existing network based in observations carried out using old techniques.
- Lack of geodetic beacons with known coordinates in large areas of the country (destroyed or never implemented).
- Compatibility with the reference frames of neighboring countries through the collaboration with international projects, namely AFREF and IGS.



# NIGNET



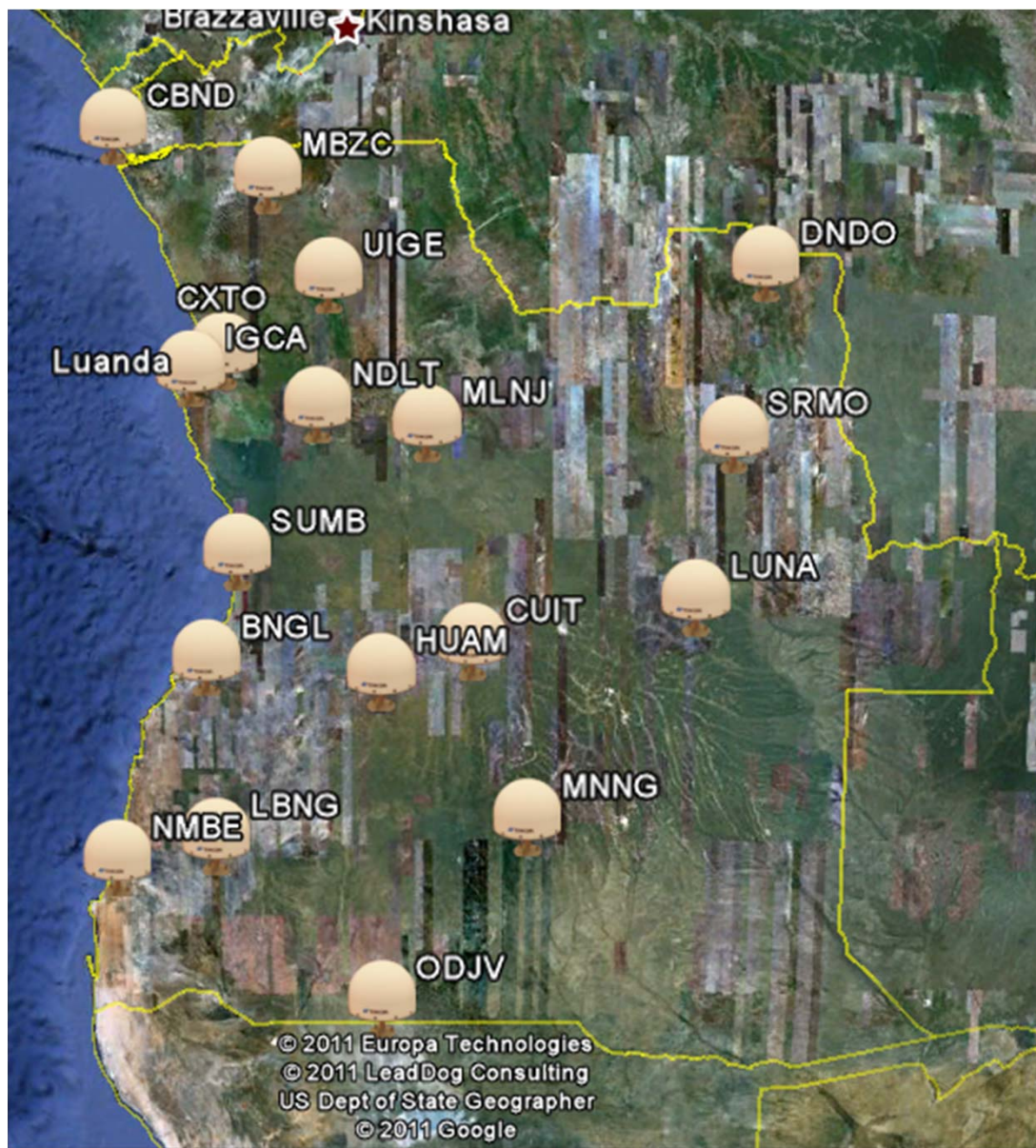
11 stations installed until 2010

2 stations installed in 2011

# REPANGOL

18 Stations

one per capital of province



# Installed Systems



## a) GNSS System –

Nigeria: Trimble NetR8 and NetR9.

Angola: Topcon NetG3A

## b) Router –

communications based on mobile networks (GPRS and 3G). Software developed by SEGAL using VPNs (Virtual Private Network).

## c) Power Management –

Solar panels are used to supply all the necessary power.

In Angola, the streaming of RTK corrections is possible when there is power from the electrical grid (or using an additional battery).

# NIGNET stations – Examples



- State-of-art Receiver+Antenna
- Mobile Communications
- Powered by Panel Solars

# NIGNET stations – Examples



Toro

Exposed Rock

# REPANGOL

## Ondjiva





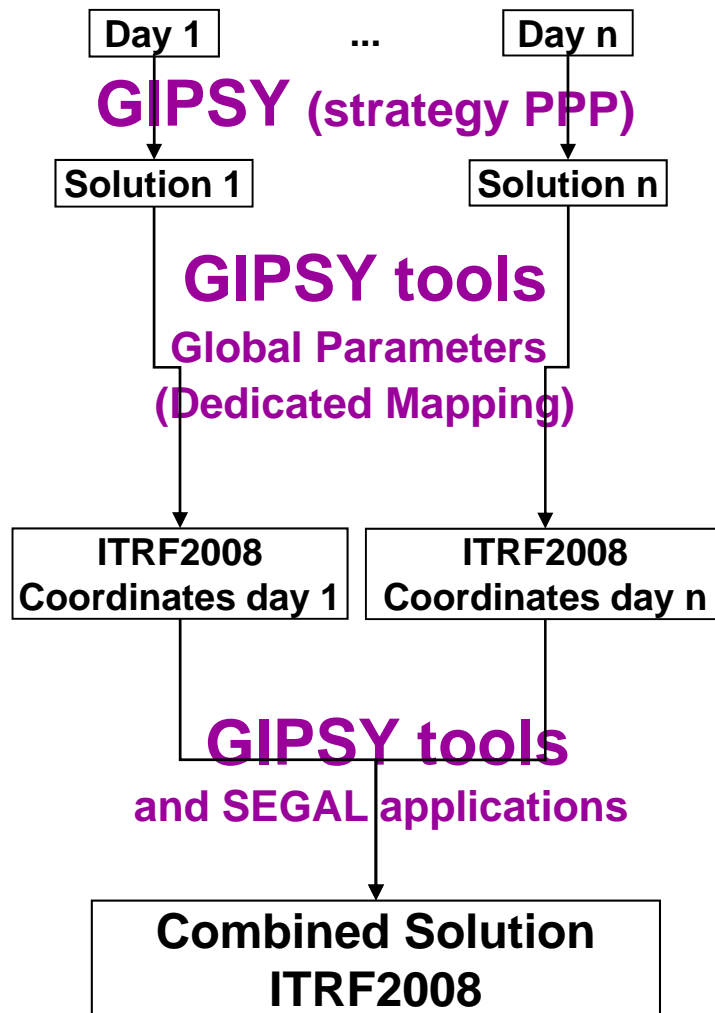
# REPANGOL

## Cuíto

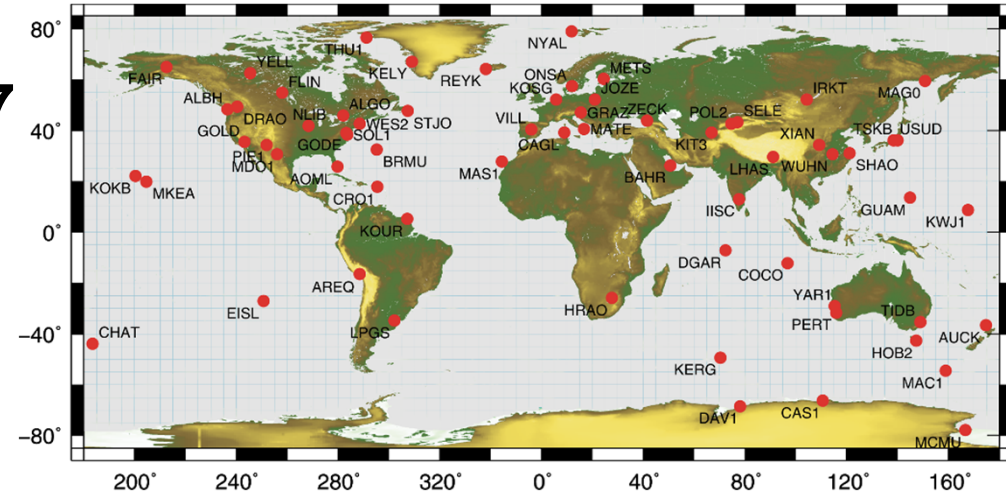


# Methodology GIPSY

## Processing

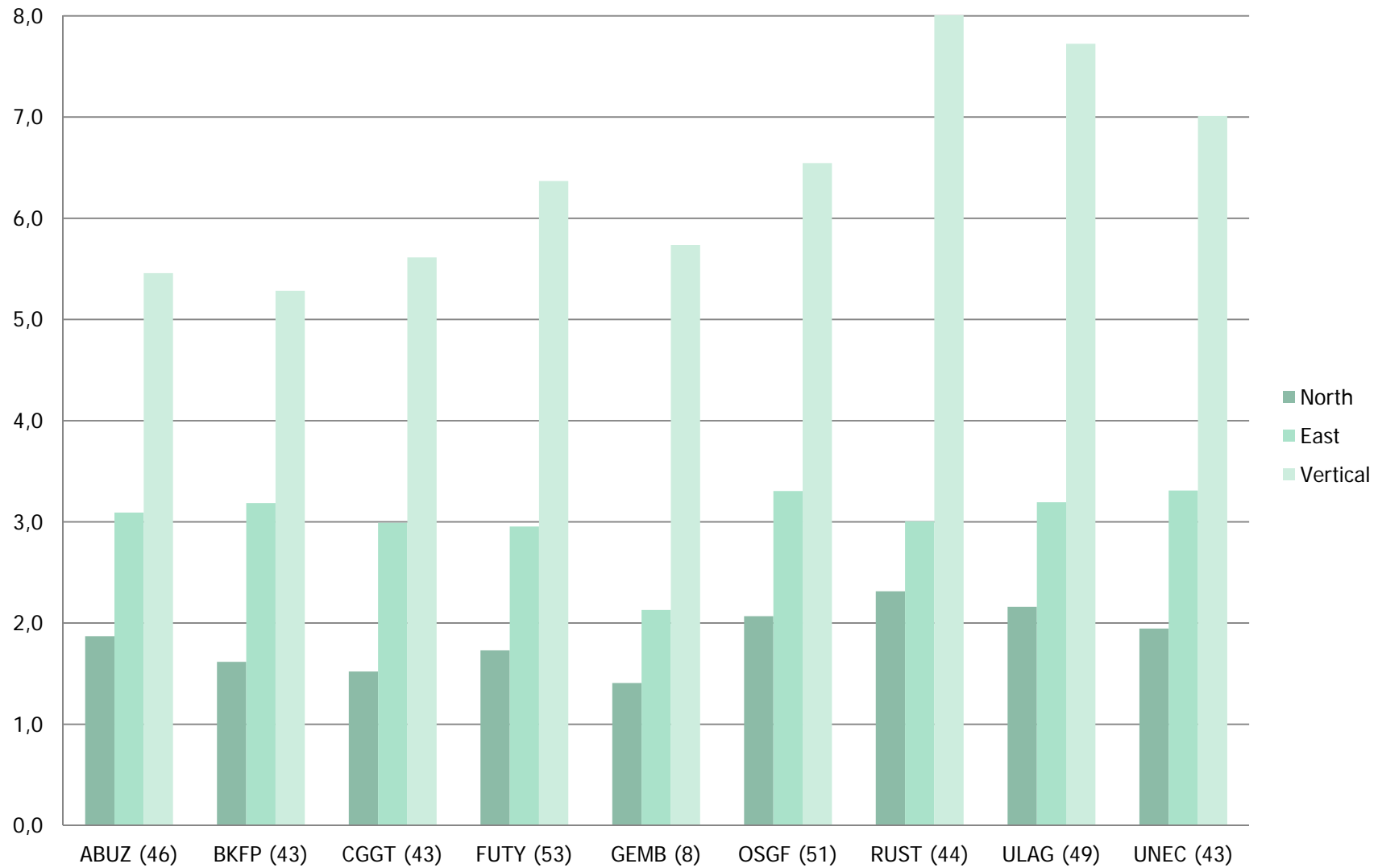


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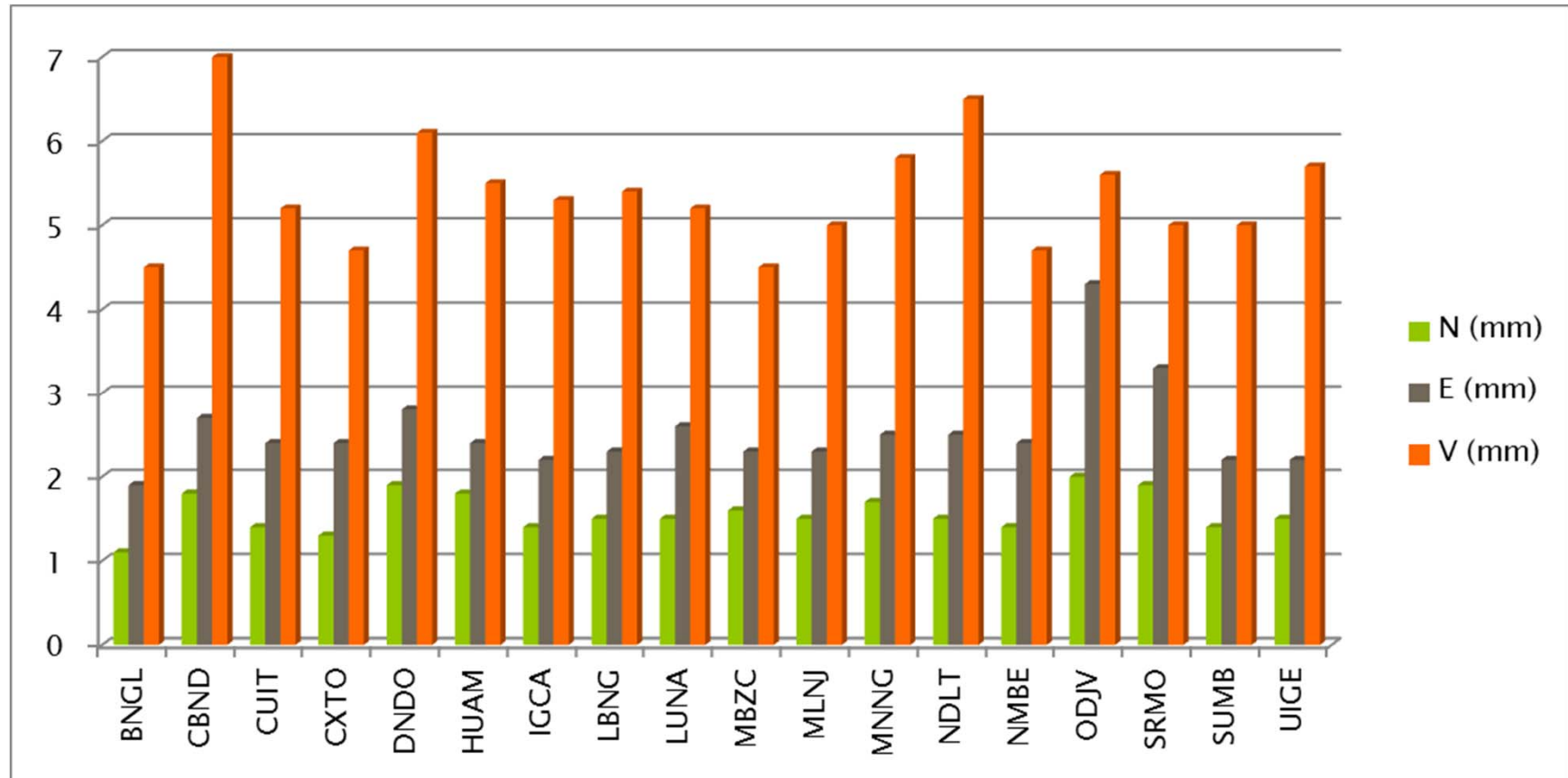
# NIGNET - r.m.s. repeatabilities

## Weekly Solutions

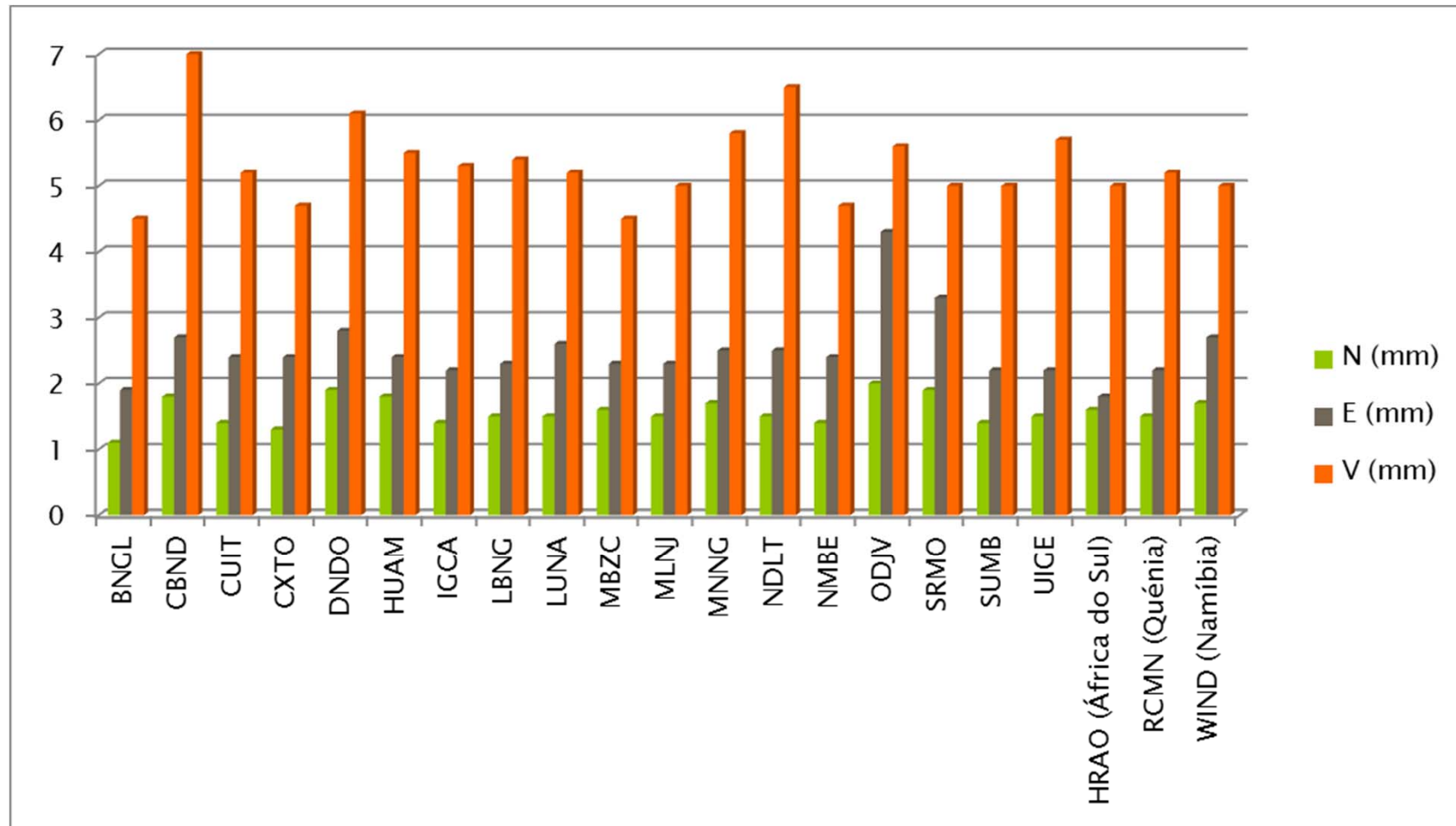


mm (number of weeks used between brackets)

# r.m.s. repeatabilities Weekly Solutions



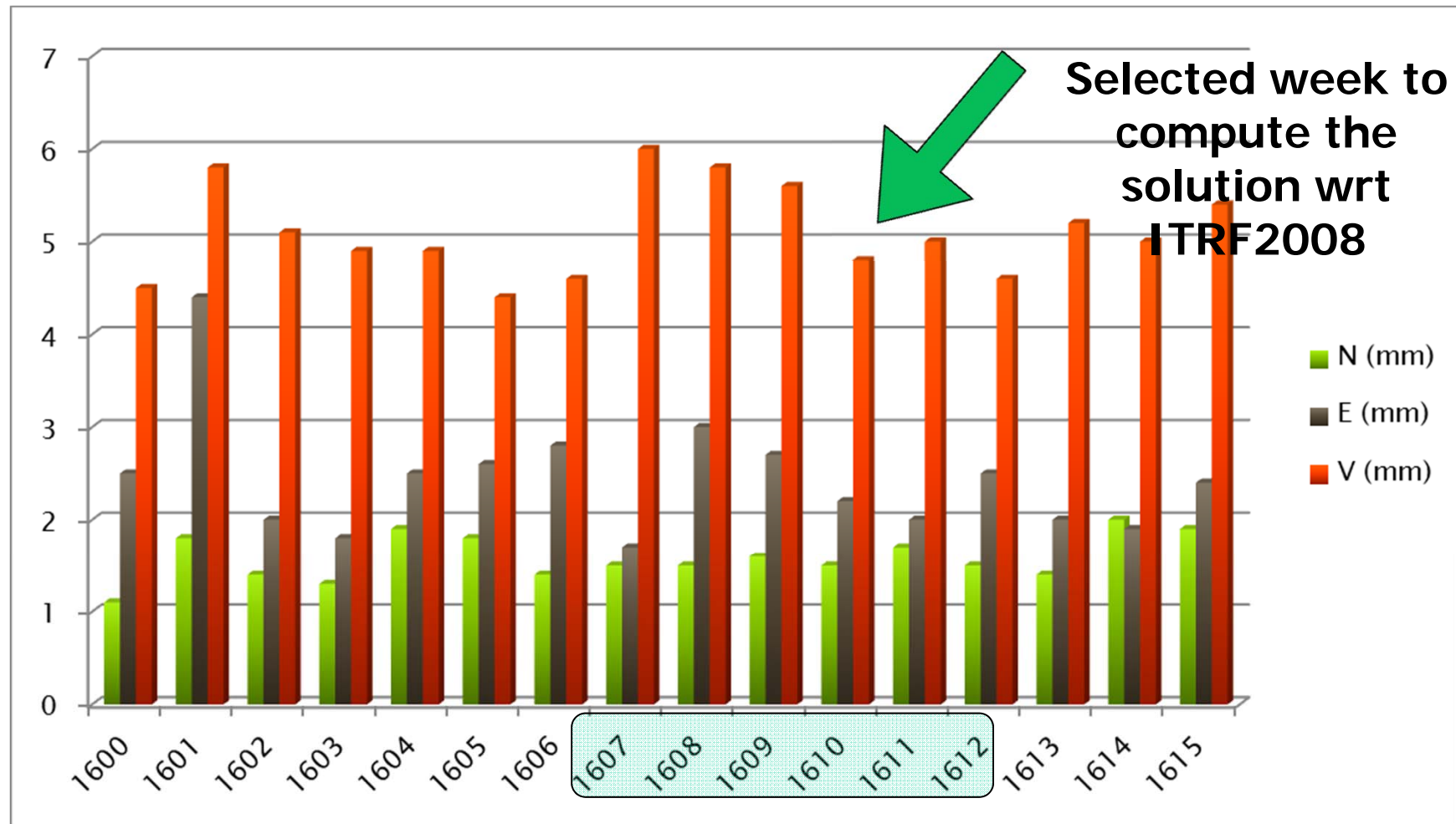
# r.m.s. repeatabilities Weekly Solutions



# r.m.s. repeatabilities

## Weekly Solutions

Weeks with more than 10 weeks selected



Weeks with all stations available

# Questions?



NIGNET



Nigerian GNSS Network

