GROUNDWATER AND SOCIETY: 60 YEAR OF IAH
TOPIC 8, Session 8.03

Evaluation of the groundwater potentialities of the Yaounde (Cameroon) fissured hard rock aquifers

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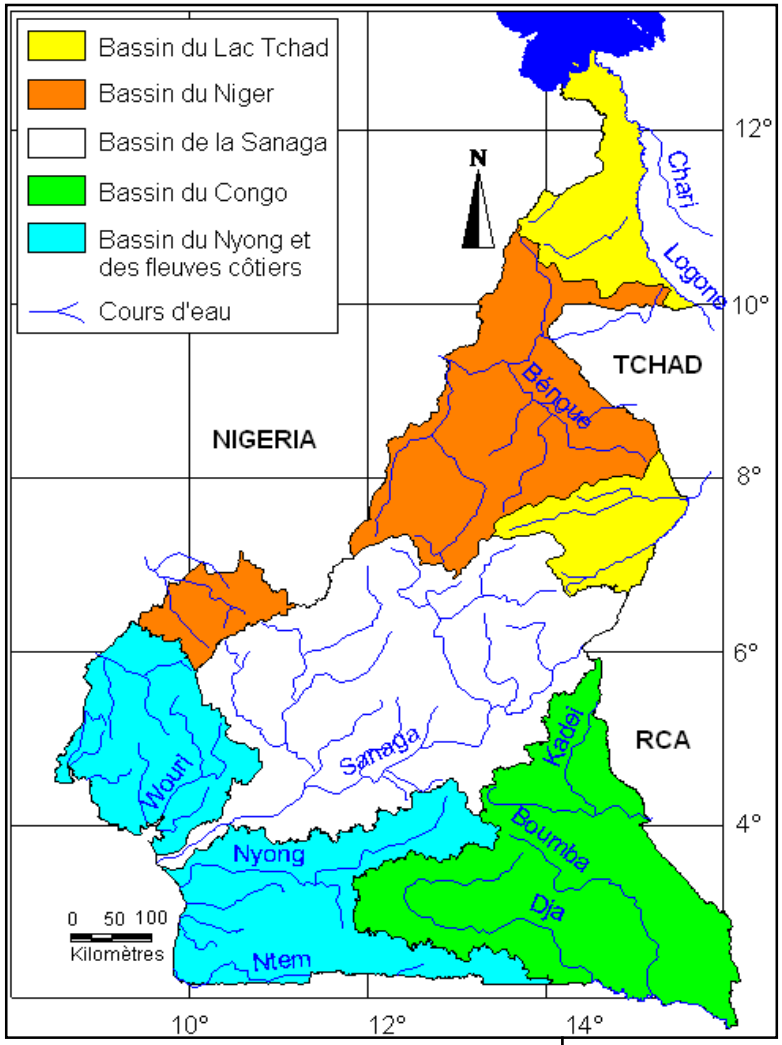
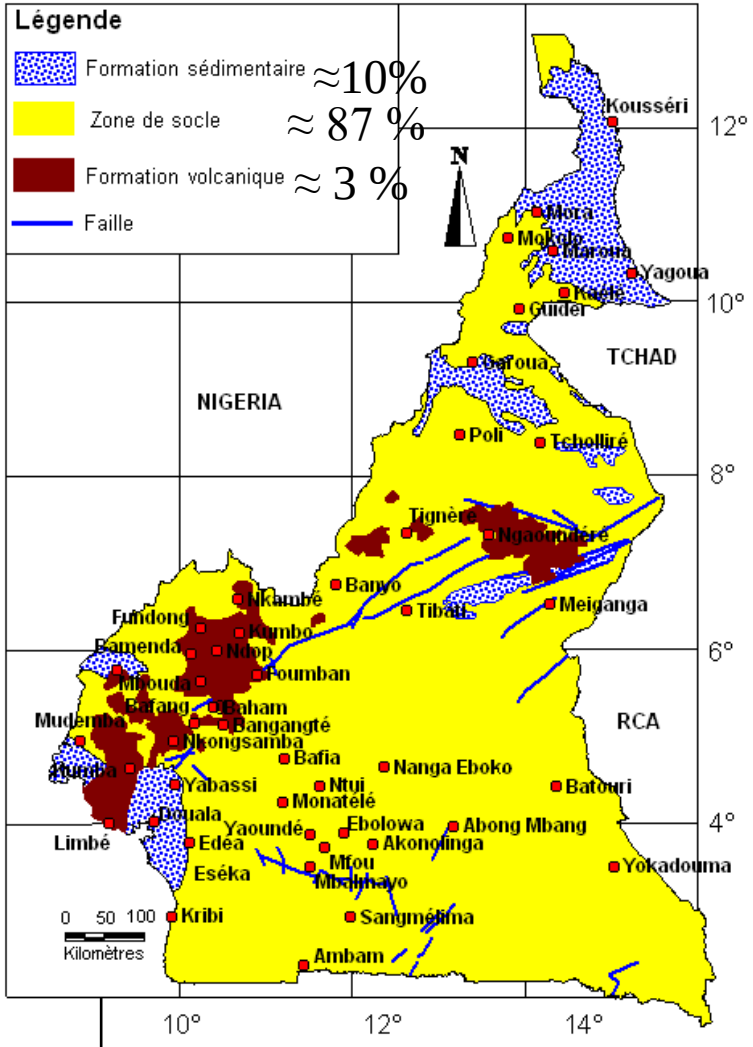
Introduction



Hydrographic watersheds

Estimated bulk water ≈ 265 km³/an



Hydrogeologic units

Estimated bulk water ≈ 56 km³/an

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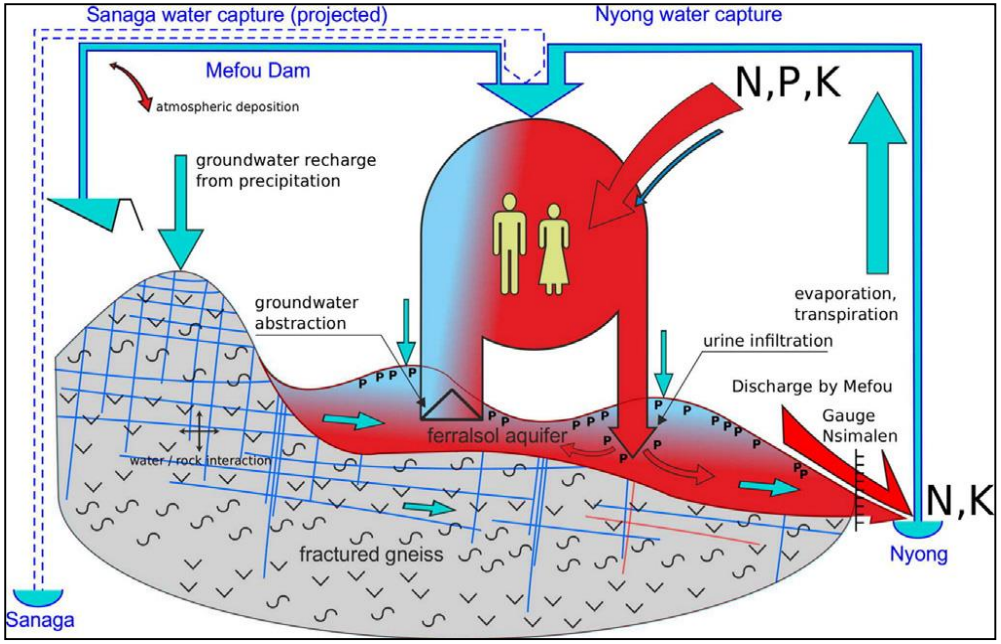
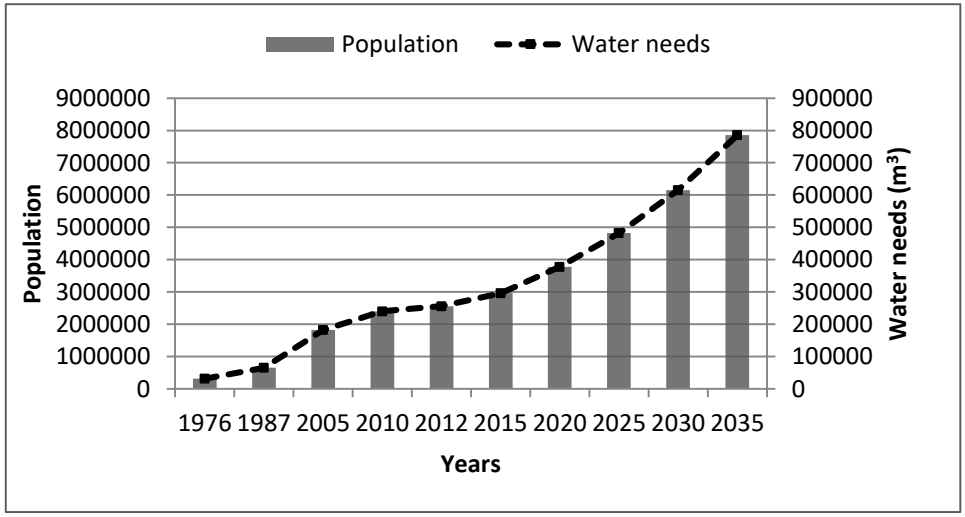
INTRODUCTION



Water supply system in the Yaounde city (Kringel et *al*., 2016)



Relationship between population and water needs

1- Rising needs:

Average requirement=250 000 m^3/j;

Rush hours=300 000 m^3/j ;

Actual production station: 97 500 m^3/j

2- Hydroclimatic and anthropogenic factors:

- Water intake level:

early december 2011 =6.80 m;

4.00 m in january 2012

- Low montly and interannual discharges:

(-9 % , Ndam Ngoupayou et *al*., 2009)

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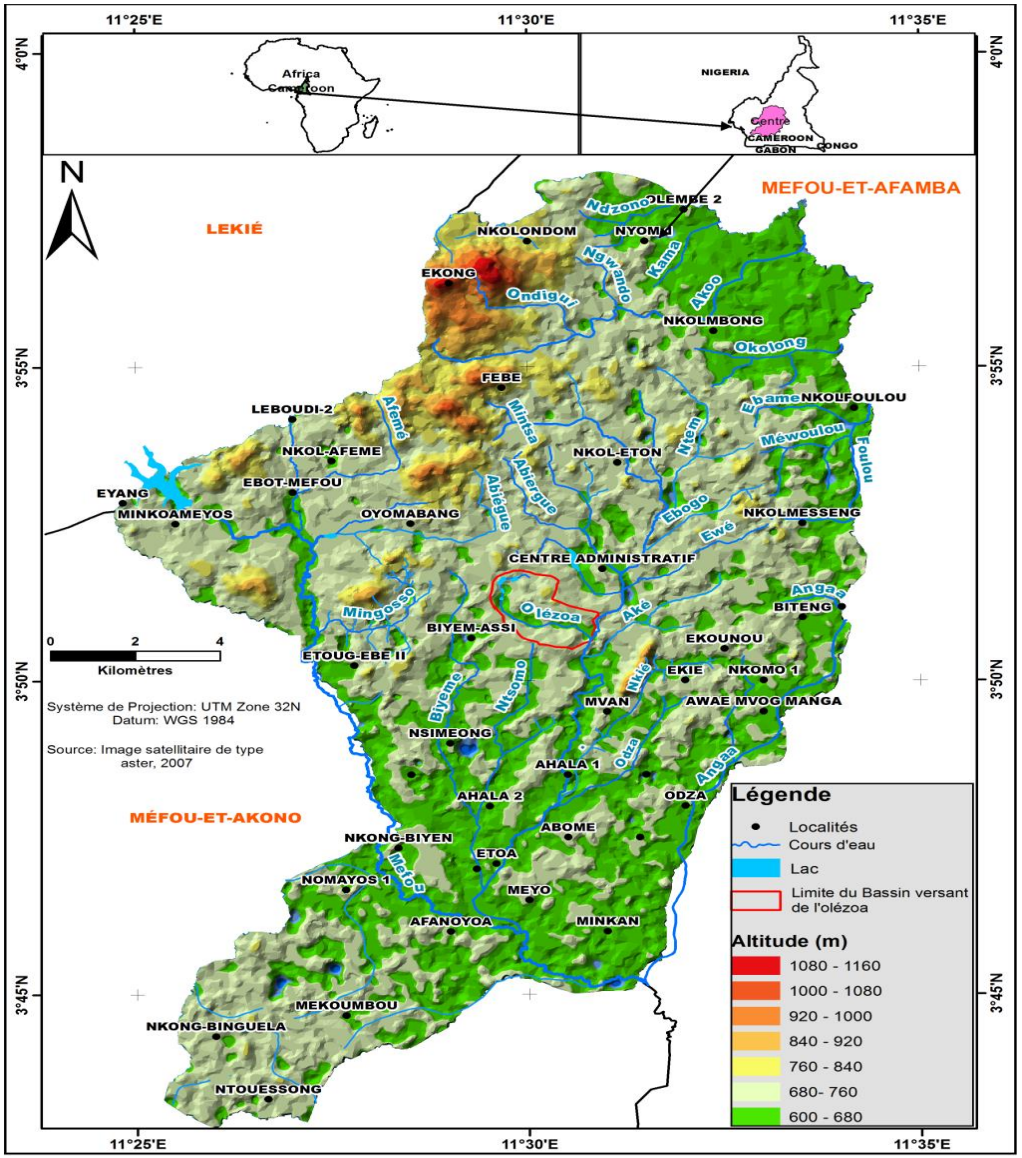
GEOGRAPHIC AND GEOLOGICAL SETTING



Orohydrography of the Yaounde region

Equatorial climate:

Annual average pluviometry: 1600 mm

Annual average temperature: 24°C

Morphology:
Residual reliefs at west (altitude 800 at 1200 m);

« Yaounde tray », average altitude 750 m.

Hydrography: Denditric drainage networck:
Tributary of Nyong and Sanaga watersheds at south-east and North-west recpectively

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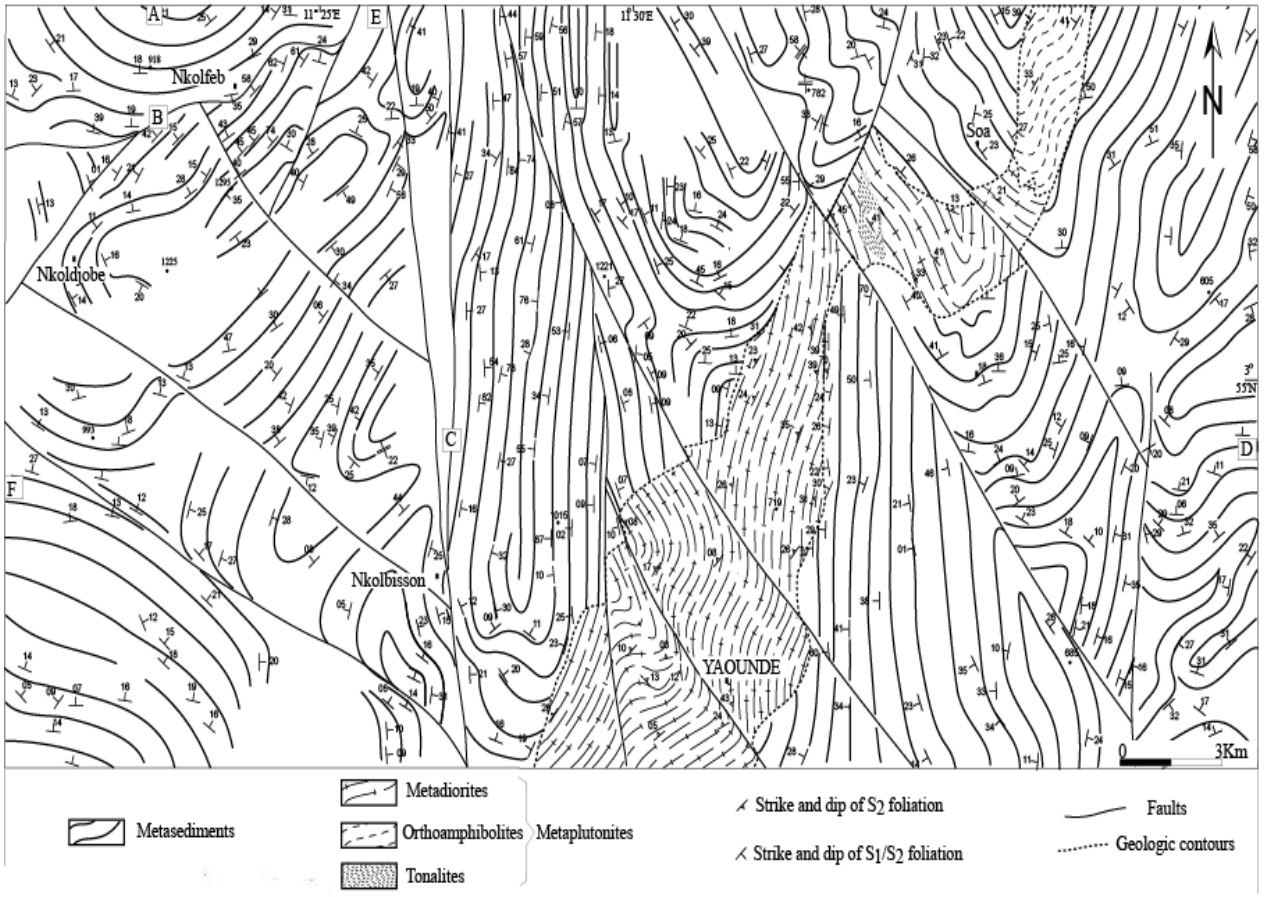
GEOGRAPHIC AND GEOLOGICAL SETTING

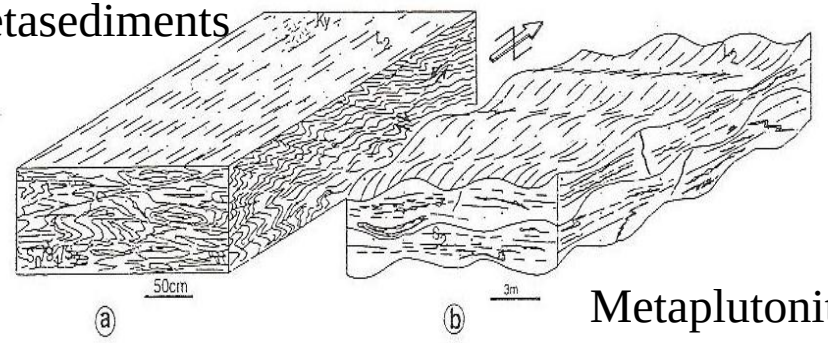
- Panafican rocks (600-500 Ma)
- 03 ductile deformation phases: D1, D2 and D3

D1 and D3 compressional phases (E-W at NW-SE); 01 D2 extensionnal phase (N-S at NE-SW)

- 01 brittle deformation phase (D4): N-S, NW-SE et NE-SW



Metasediments



Metaplutonites

Geological map (Mvondo et *al.*, 2003; 2007)

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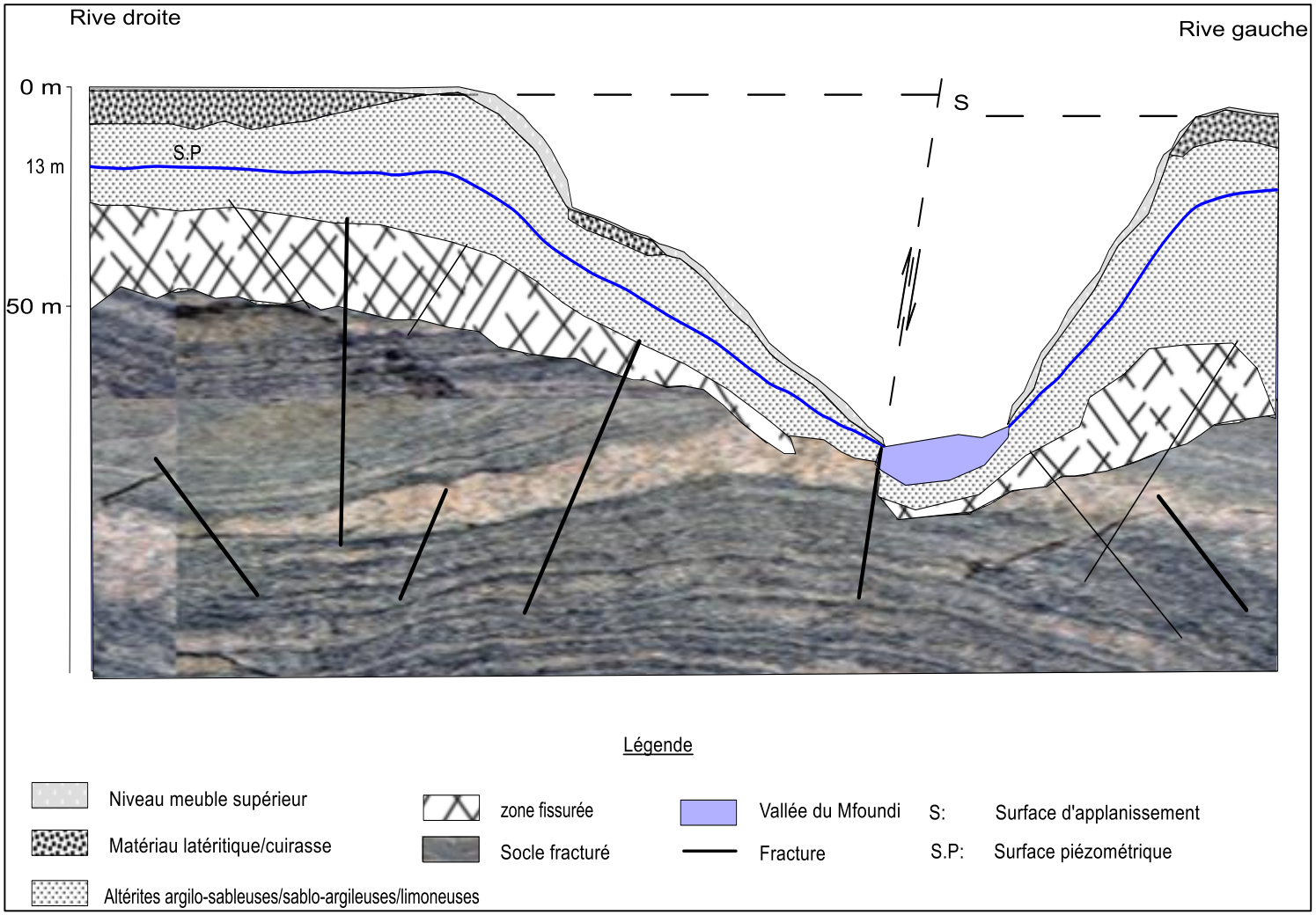
GEOGRAPHIC AND GEOLOGICAL SETTING



Weathering mantle in the Mfoundi watershed

Soils type: ferrallitic; Hydromorphic;

Stage organization of crust iron areas

Ancient weathering (700-780 m altitude;

« Recent weathering » > 780 m altitude

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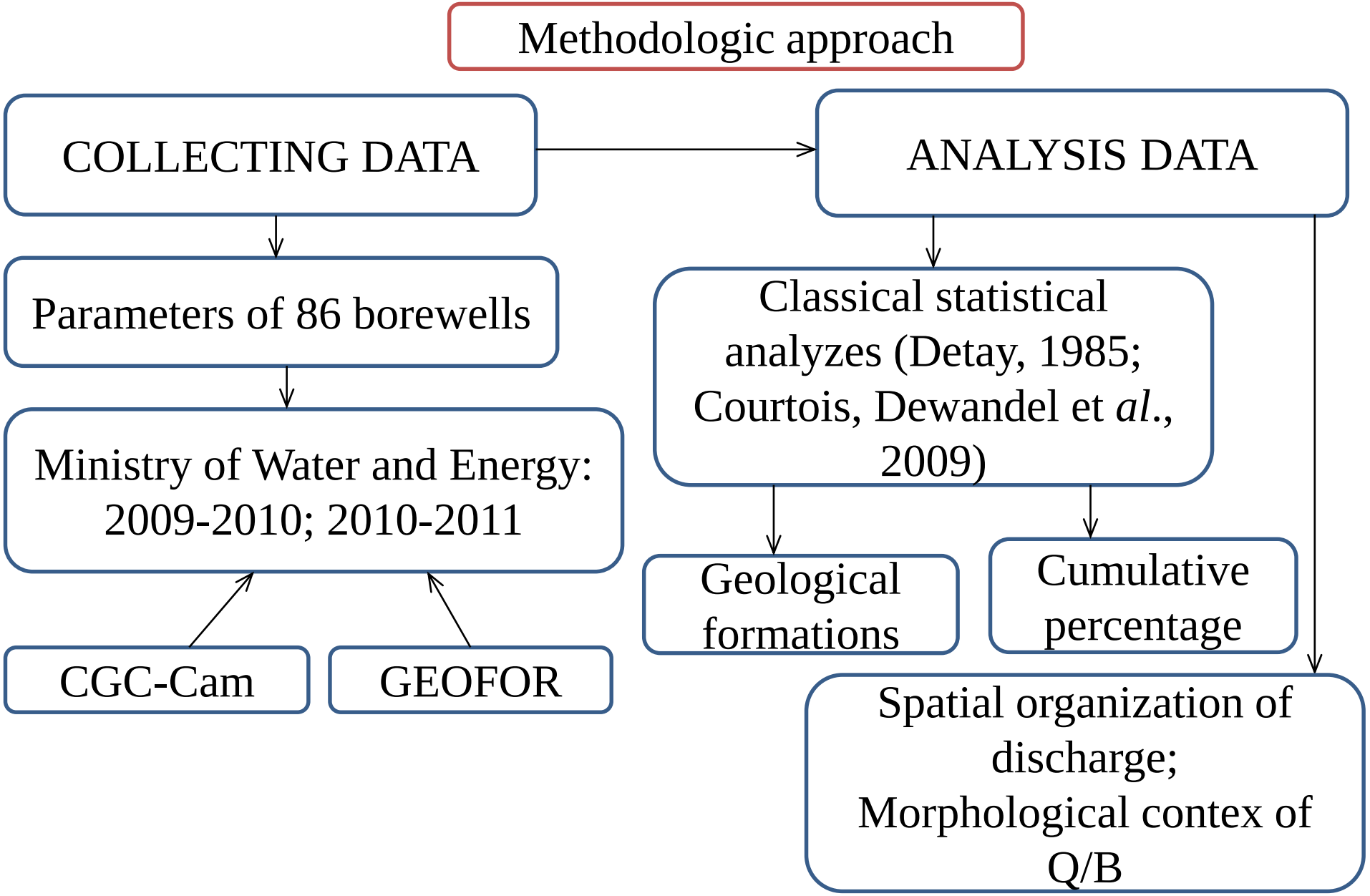

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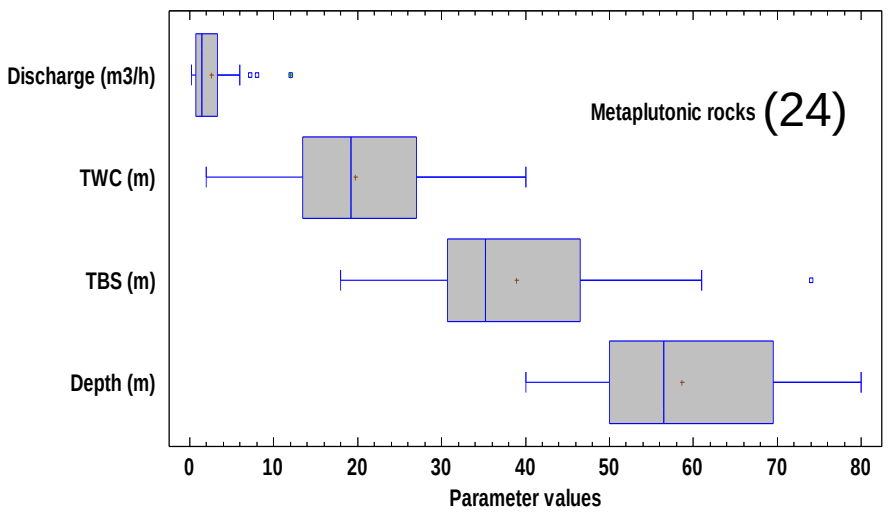
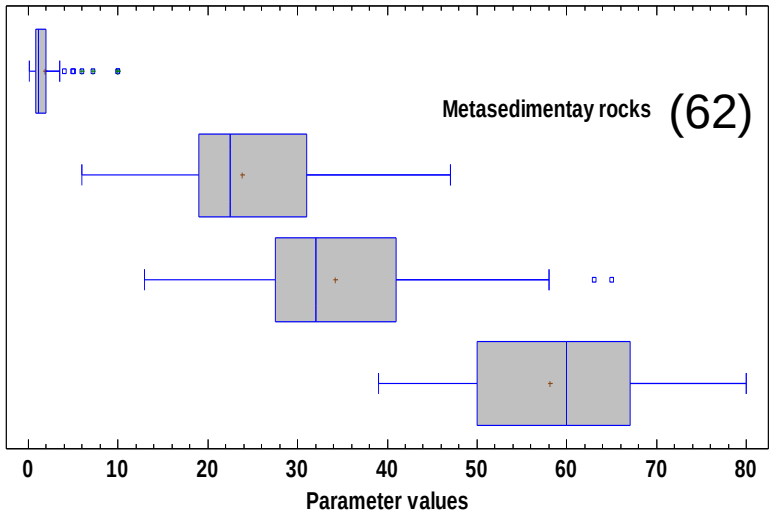
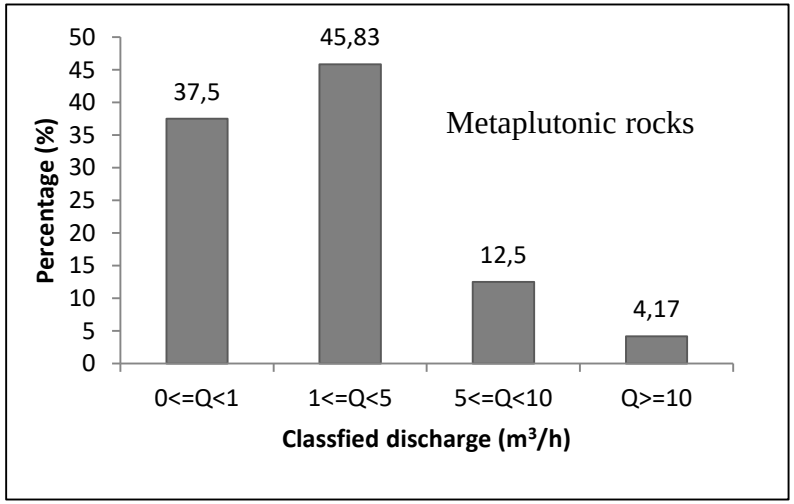
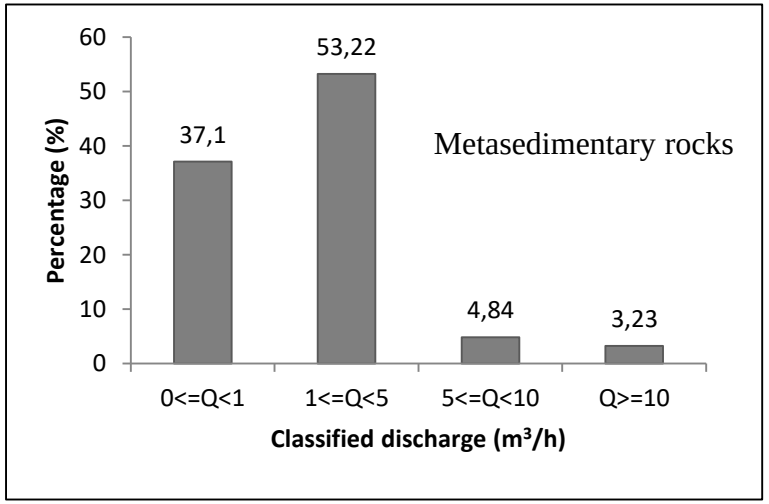
Results





TWC : thickness of weathering cover; TBS: thickness of below of the saprolite





Productivity of geological formations

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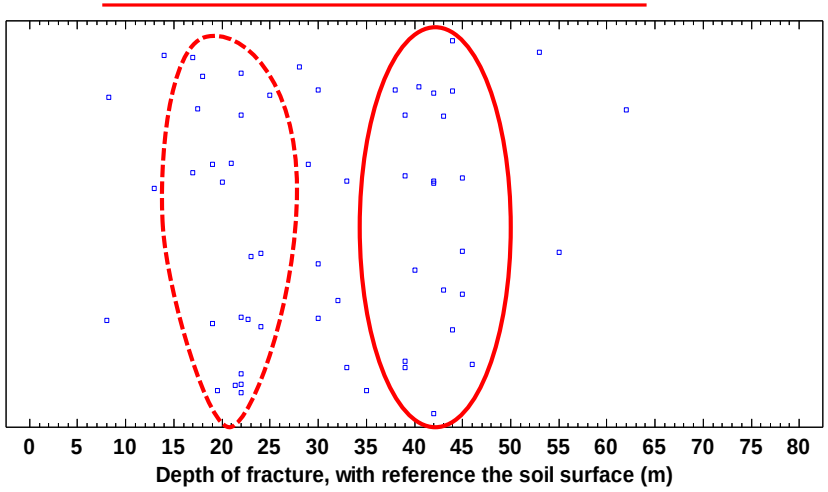

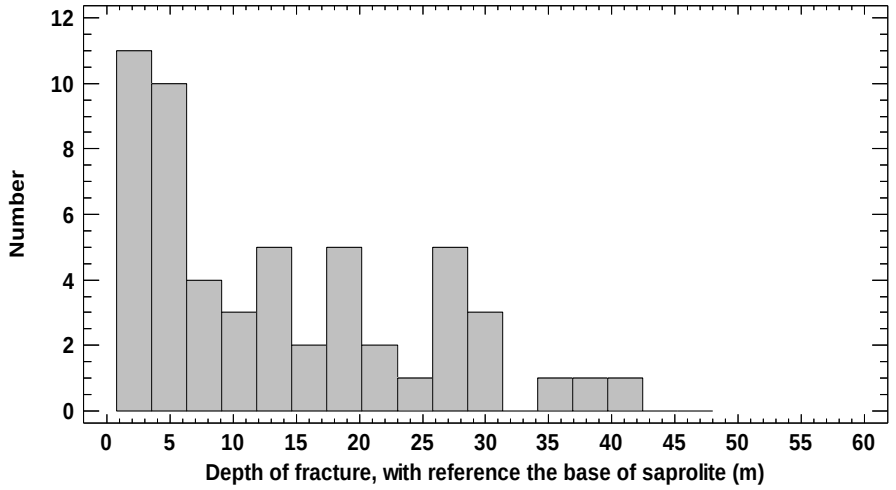

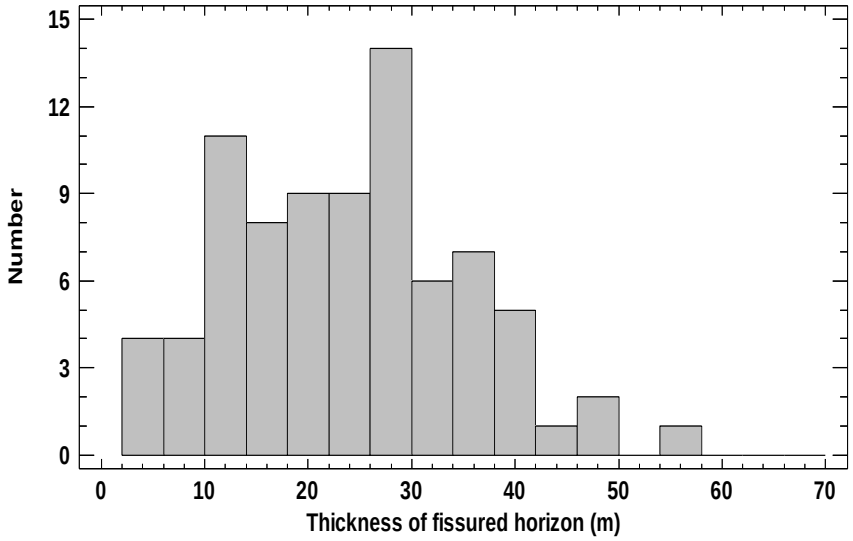

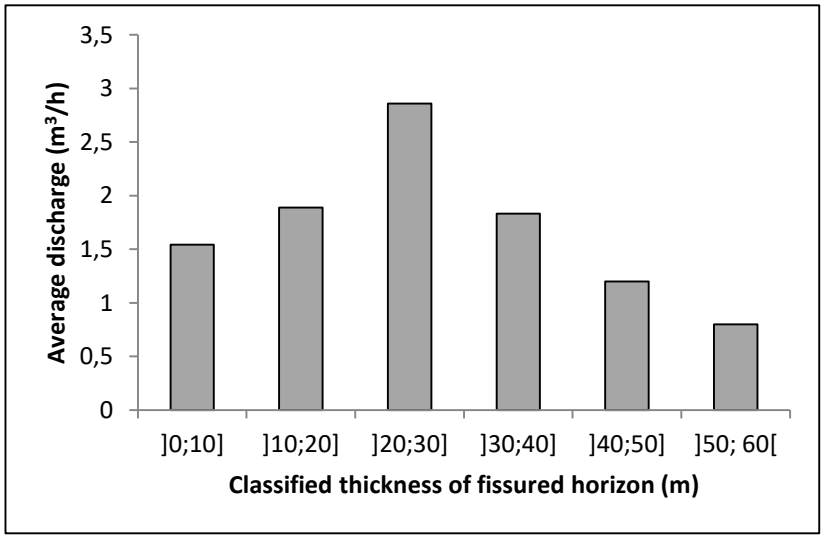

Zonation of the fissured hard rock

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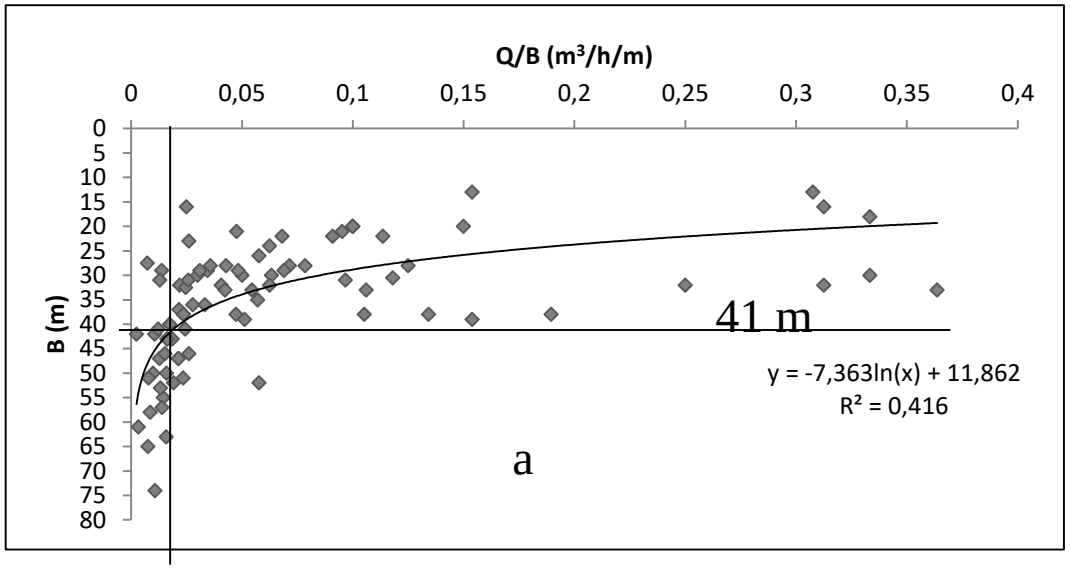

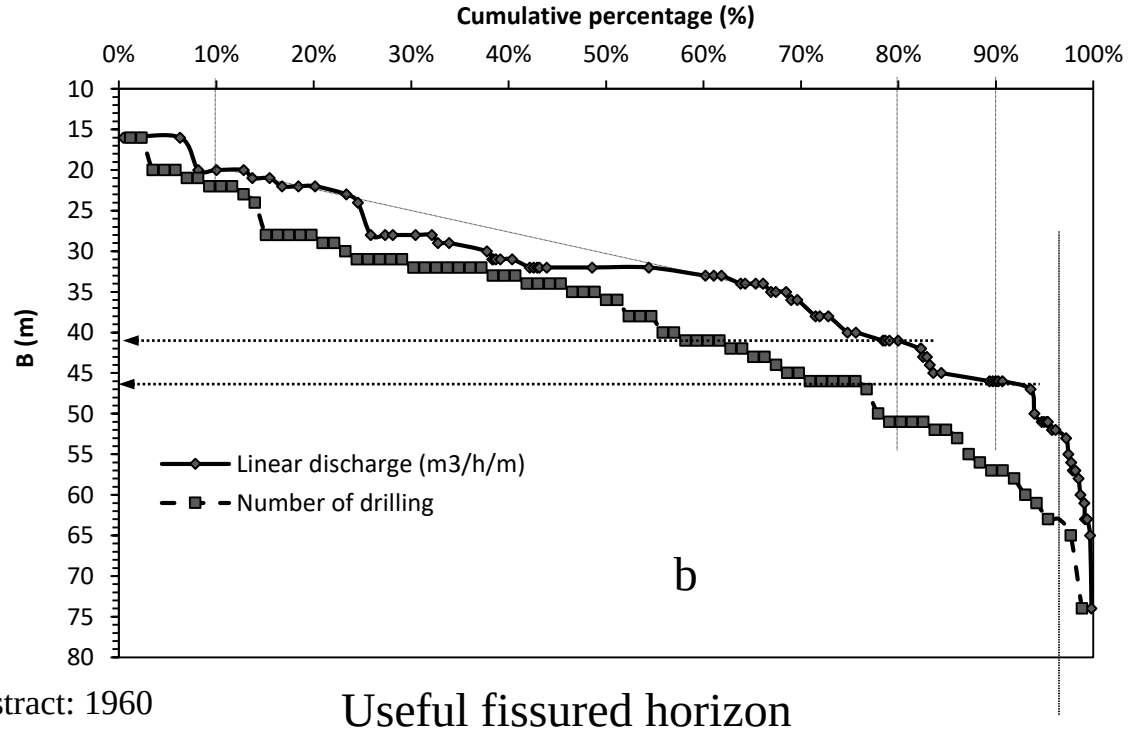

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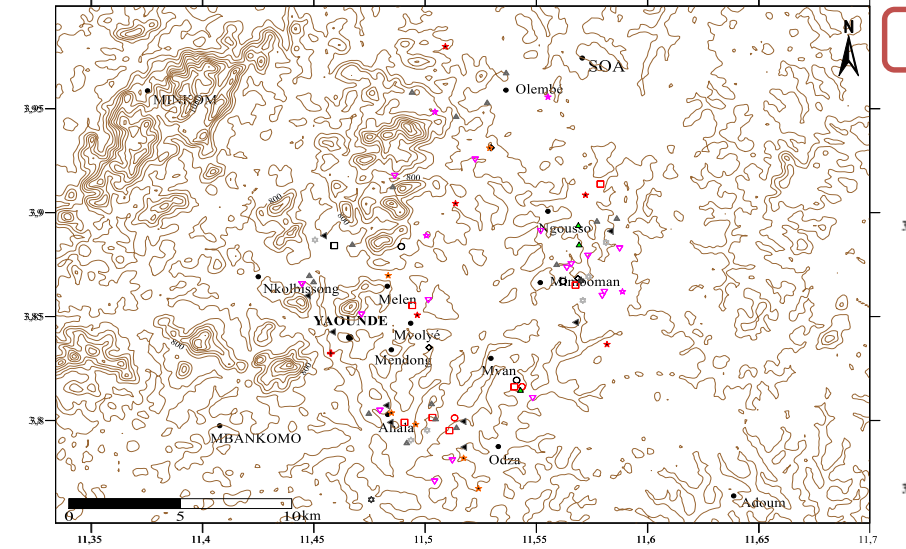
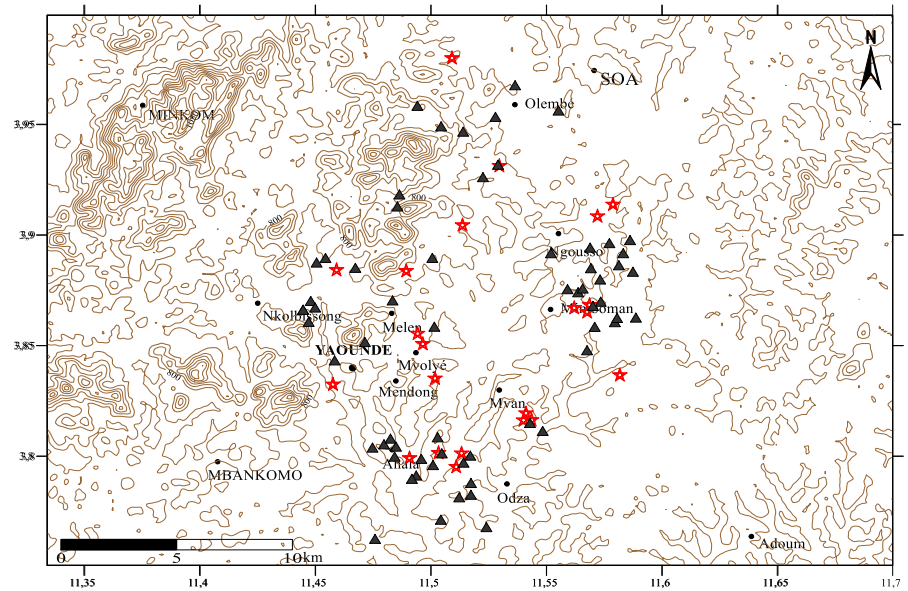
Useful fissured horizon

Results



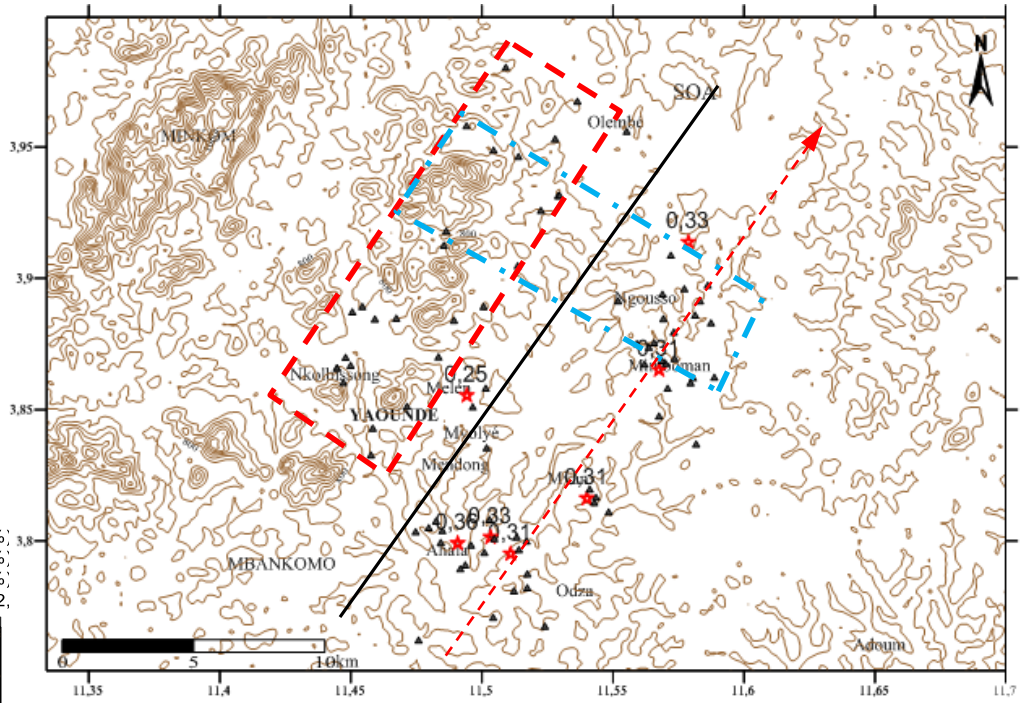
LEGEND

- Localities
- Q/B=0,10 (5,88%)
- Q/B=0,11 (3,53%)
- Q/B=0,12 (1,18%)
- Q/B=0,13 (2,35%)
- Q/B=0,15 (3,53%)
- Q/B=0,19 (1,18%)
- Q/B=0,25-0,36 (8,23%)
- Q/B=0,00-0,01 (18,82%)
- Q/B=0,02 (20%)
- Q/B=0,03 (10,59%)
- Q/B=0,04 (4,71%)
- Q/B=0,05 (7,06%)
- Q/B=0,06 (7,06%)
- Q/B=0,07 (3,53%)
- Q/B=0,08-0,09 (2,



LEGEND

- Q/B>0,1 m³/h/m (26%): average dischage=4,84 m³/h; average Q/B=0,18 m³/h/m
- Q/B<0,1 m³/h/m (74%): average discharge=1,06 m³/h; average Q/B=0,03 m³/h/m



LEGEND

- Q/B>0,2 m³/h/m (8,24%): average discharge= 7,86 m³/h; average Q/B=0,31 m³/h/m
- Q/B<0,2 m³/h/m (91,76%): average discharge=1,51 m³/h; average Q/B=0,05 m³/h/m

NW: high altitude (Q/B<0.2)

SE: low altitude (Q/B>et <0.2)

Q/B<0.2: SW-NE and NW-SE

At Q/B> 0.3: SW-NE

Spatial distribution of Q/B in relationship with the morphology

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