UNIVERSITY OF ZAMBIA
GEOLOGY DEPARTMENT

GGY 3031 – STRATIGRAPHY AND PALAEONTOLOGY

LAB 2 April – May, 2019

IDENTIFICATION OF STRATIGRAPHIC UNITS AND ROCKS – FIELD WORK CHILELEKA AREA

You are now facing what we call an outcrop on Stations A, B and C.

1. Name the rocks exposed on this outcrop starting with the oldest at the three Stations A, B and C.

2. I remind you that STRATIGRAPHY is a science of rock strata i.e. study of rock strata, including layered igneous and metamorphic rocks. – Which igneous and metamorphic rocks can you identify on this outcrop of Stations A, B and C.

3. Stratigraphers are more concerned with:
   (a) age relationships of strata – Name the rocks from the oldest to the youngest at each station A, B and C.
   (b) successions of beds – Name the stratigraphic units you can observe, again from the oldest to the youngest at each station A, B and C?
   (c) local and world-wide correlation of strata – Can these units be correlated from Station A, B and C? If so is this local or world-wide – explain briefly?
   (d) stratigraphic order – outline the stratigraphic order that you have observed?
   (e) chronological arrangement of beds in the geologic column – from your knowledge of the geologic column – In which eon, era and period are we in at Station A, B and C?

4. Lithostratigraphy - that element of stratigraphy which is concerned with the organisation of strata into units based on their lithologic character –
   (a) What are the lithologic characters that you observed at the three Stations (A, B, and C)
   (b) What units have these characteristics helped you to define at each station (A, B and C) – Name them
   (c) Which ones form formations? Remember formations are mappable units?

5. Biostratigraphy - that element of stratigraphy which is concerned with the organisation of strata into units based on their fossil content.
   (a) What fossil content (types of fossils) were you able to observe at the three Stations (A, B and C)
   (b) What type of trace fossils did you see? Draw a sketch if any?
   (c) Any units you were able to define at each station (A, B and C) – Name them.
   (d) Did you recognize any biofacies or biozones – If any Name them.

6. Chronostratigraphy - that element of stratigraphy which is concerned with organisation of strata into units based on their age relationships.
   (a) What age relationships did you observe at the three Stations (A, B, and C)
   (b) Any units you were able to define at each station (A, B and C) – Name them.

7. Have you been able to define any stratotype, or type section consisting of readily accessible rocks from your examination of the three stations A, B and C. If so which one?

8. It is important to identify and understand the **nature of contacts** between vertically superposed or literally adjacent bodies.
   (a) What contacts have you observed at the three stations A, B and C
   (b) Did you observe any unconformities at the three stations? Name them!
   (c) Draw a sketch to show the following from the three stations A, B and C:
      (i) Conformable contacts
      (ii) Unconformities
      (iii) Bedding planes
      (iv) Bounding surfaces
      (v) Pinch outs
      (vi) Intertonguing
      (vii) Hiatus
      (viii) Diastem
      (ix) Fining upward
      (x) Cyclic sedimentation

9. (a) What processes were responsible for the formation of the rock types observed at the three stations A, B and C. Explain briefly your answer?
   (b) Suggest methods you can use to absolute date them?

10. Is it possible that the sequences that you observed at station A, B and C can be defined as Sequences related to sea level cycles (Hag's definition) or Depositional Sequences of Mitchum, Vail and Thompson (1977) with no linkage to sea level – Explain briefly your answer.

11. Make stratigraphic section of each station A, B and C based on general grain-size and Collect 3 samples from each section (Total 9 samples) that you have to describe in the Lab once you are back at the Geology Department, School of Mines, University of Zambia

ALL THE BEST – END OF THE FIELD LAB