The Geology of the Maltese Islands
Geological history of the Maltese Islands

- The rocks started to form about 30 to 25 million years ago.

- Originated on the sea bed where sediment, silt and remains of tiny sea creatures were deposited.

- Rock strata were formed over millions of years through continuous accumulation.
• These rock strata were uplifted for the first time 10 million years ago.

• This uplift was due to pressure exerted by the African plate crashing into the Eurasian plate.

• The Mediterranean sea was cut off from the rest of the oceans 6 million years ago.

△ A satellite image of the Mediterranean Sea
• This caused the drying up of the sea and thus a land bridge emerged connecting the Maltese Islands with Sicily and Europe.

• Several animals migrated to Malta and some of their remains can be found at Ghar Dalam.

• 5 million years ago, at the end of an Ice Age, ice melted and so the sea level of the Atlantic Ocean rose.

• The water spilled into the enclosed Mediterranean sea and the Maltese Islands were again isolated from Sicily and mainland Europe.
• 2 million years ago, the Mediterranean experienced another Ice Age.
• This brought a wetter climate in this region and so river valleys formed in the Maltese Islands.
• Wied Il-Ghasel and Wied Il-Kbir are examples of such valleys.
• The Ice Age ended 10 000 years ago.
• The changing processes have been rather slow till present day.
The Rocks of the Maltese Islands

- All the Maltese rocks are sedimentary.
- Five different rocks were formed.
- These were deposited throughout different geological times in a succession of various rock strata.
- These are:
  - Upper Coralline Limestone (*Il-Qawwi*),
  - Greensands (*Il-Gebla s-Safra*),
  - Blue Clay (*Tafal*),
  - Globigerina Limestone (*Il-Franka*)
  - Lower Coralline Limestone (*Zonqor*).
Upper Coralline Limestone (Il-Qawwi)

Greensands (Il-Gebla s-Safra)

Blue Clay (Tafal)

Lower Coralline Limestone (Zonqor)

Globigerina Limestone (Il-Franka)
Upper Coralline Limestone Plateau
Greensands
Blue Clay
Globigerina Limestone
Lower Coralline Limestone

Qammieh, Malta
S. Bajada
Upper Coralline Limestone

- This is the youngest rock strata.
- It is a very hard rock.
- Terra Rossa soil forms from this rock.
- The UCL is used as spalls for road surfacing.
• It can be found mainly in the northern part of Malta forming typical plateaus

Upper Coralline Limestone plateau overlying Blue Clay slopes

△ Imgiebah

Qammieh

△ Elevated Caves found in the UCL
Greensands

- This rock strata is found underneath the Upper Coralline Limestone.
- It has a greenish-yellow colour and when it is exposed it turns into orange.
- It is the thinnest layer and reaches a maximum thickness of 11 metres at Il-Gelmus in Gozo
- It is friable and contains many fragments of fossils.

Greensands found at Had-Dingli
Blue Clay

• This rock is named after its bluish colour.

• It is very soft and erodes quickly giving rise to cone-shaped slopes.

• This rock can be found in the north western part of Malta and north east of Gozo.

• These slopes are turned into terraced fields with rubble walls to hold the soil in place.

△ Blue clay slopes at Qammieh
Blue Clay is impermeable and so it holds water which can be used for irrigation purposes.
Globigerina Limestone

- This is the thickest layer and can be found in central and the south of Malta.
- It is harder than the Blue Clay but softer than the Upper Coralline Limestone.
• It is extracted from quarries and used for building purposes.

• It is also used for sculpture and decorative work in stone.
Lower Coralline Limestone

- It is the oldest rock layer and forms the base of the entire Maltese rock succession.

- It is generally found exposed on cliff sides facing the sea, such as Ta’ Cenc (Gozo) and Dingli Cliffs.
• It is a very hard rock and thus forms a rugged and sharp pointed land surface.

• It reaches a maximum thickness of 140 metres.

• Its colour ranges from, pale grey to red and buff.

The top layer of the Lower Coralline Limestone is made from a scutella bed.
Conclusion

- The rock succession of the Maltese Islands takes the form of a simple-layered cake.
- Each rock layer has distinct characteristics such as thickness and hardness due to their formation under various conditions:
  - Depth of sea
  - Sunlight
  - Distance from nearest land
  - Direction and force of sea currents
  - Different species of organisms.

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References

• Azzopardi, A. 1995. A New Geography of the Maltese Islands, St. Aloysius College, Malta