

Mediterranean examples

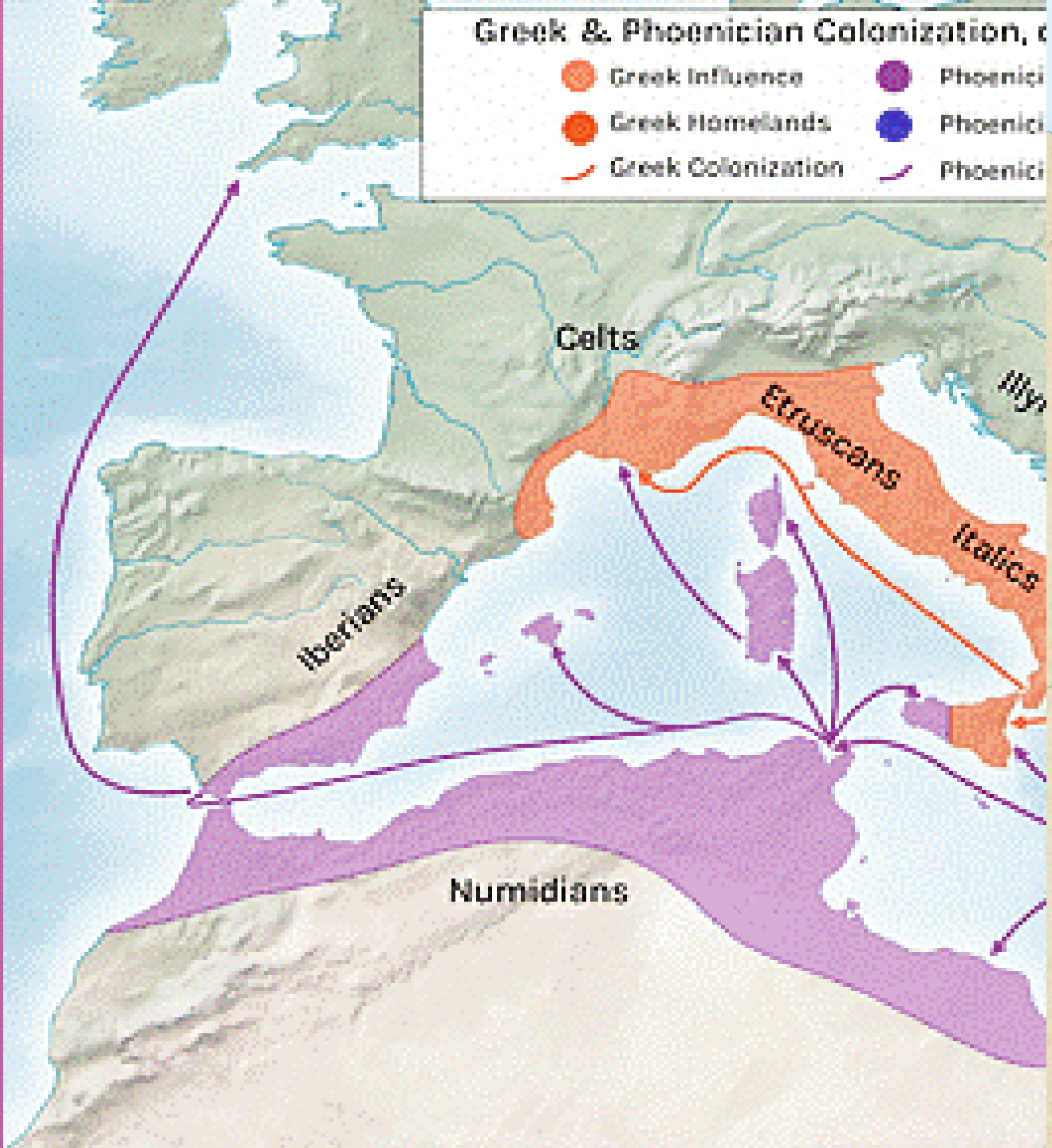
- Theme for Week 3 - *Are we capable of learning from our past mistakes OR are we bound to repeat the same mistakes?*
 - *What makes today different than the Iron Age?*
 - *How does responsibility play a role?*
- Short week, so we will skip the Friday Quiz - Content from this week will show up next week. Take notes and ask questions to prepare.

Ancient Egypt & Natural Resources



Greek & Phoenician Colonization, c. 700-500 BCE

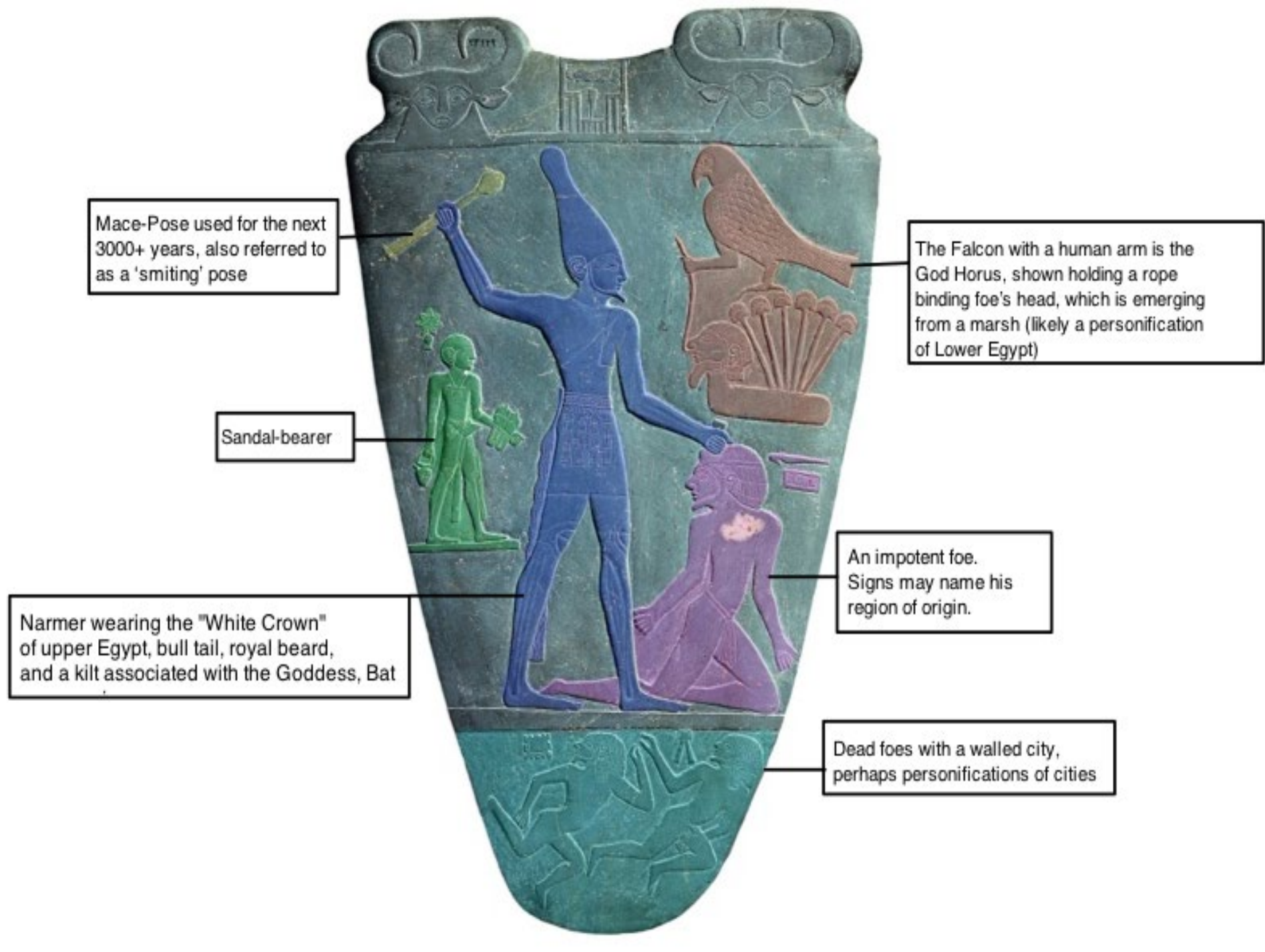
- Greek Influence
- Greek Homelands
- Greek Colonization
- Phoenician Influence
- Phoenician Homelands
- Phoenician Colonization



MEDITERRANEAN SEA



Narmer Platte



Mace-Pose used for the next 3000+ years, also referred to as a 'smiting' pose

The Falcon with a human arm is the God Horus, shown holding a rope binding foe's head, which is emerging from a marsh (likely a personification of Lower Egypt)

Sandal-bearer

Narmer wearing the "White Crown" of upper Egypt, bull tail, royal beard, and a kilt associated with the Goddess, Bat

An impotent foe. Signs may name his region of origin.

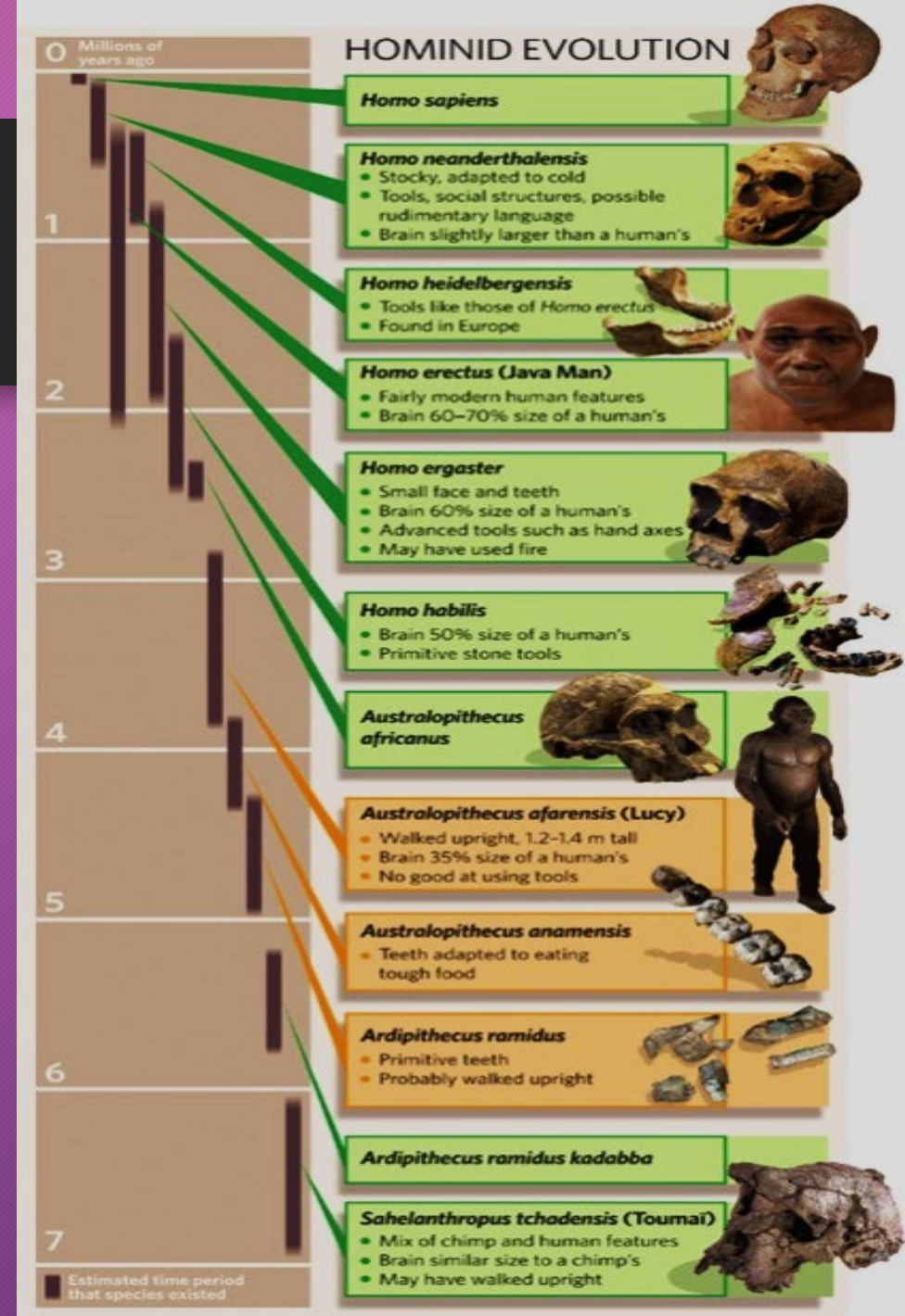
Dead foes with a walled city, perhaps personifications of cities

Hieroglyphs



Geoarchaeology

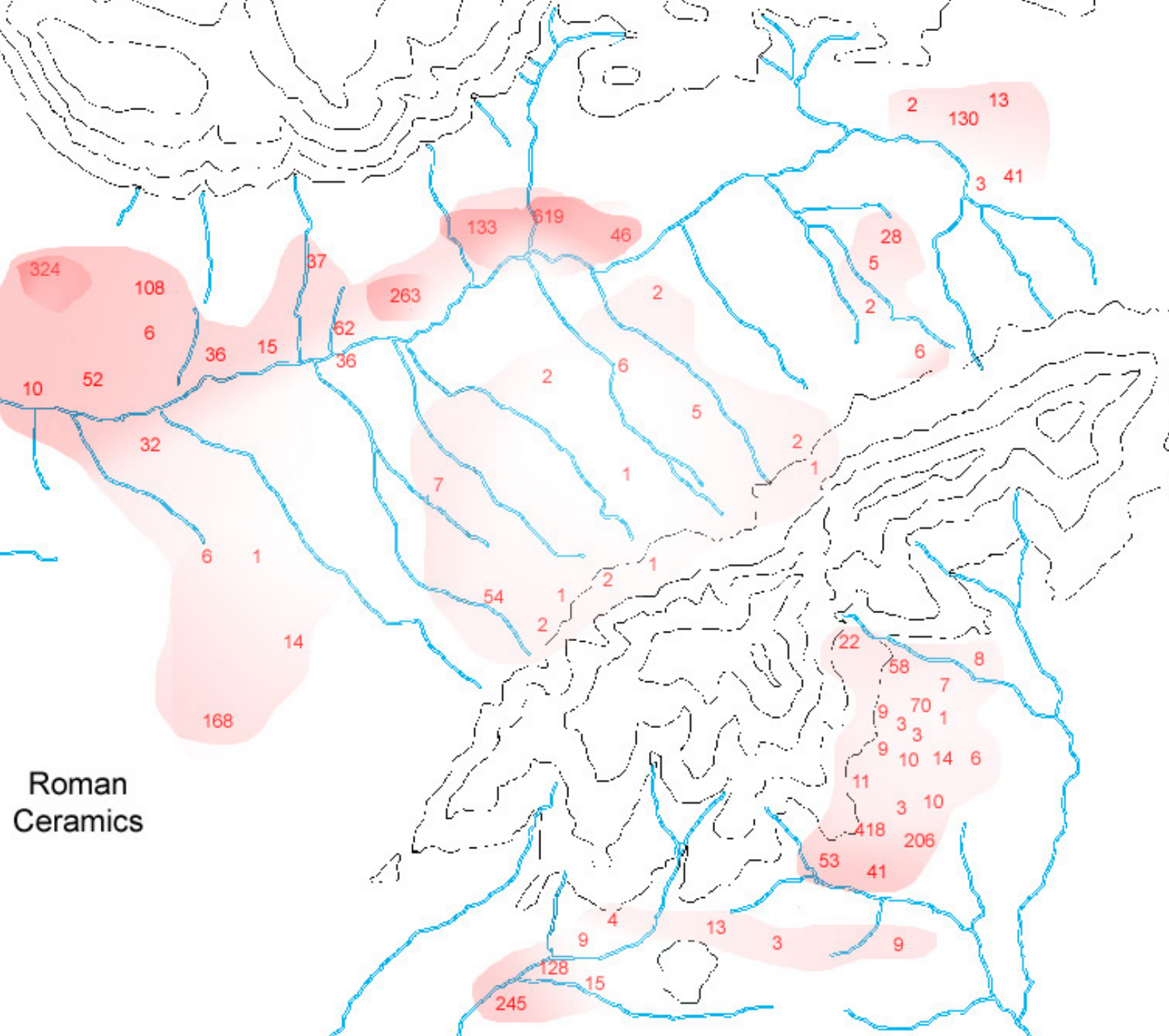
- Earth history combined with human evolution...
- Study of natural resources as a basis for the interpretation of landscape evolution, climate change and the human modifications.



Geology and Archaeology are diverse fields

- Survey
- Excavation
- Interpretation
 - Osteology
 - Seriation
 - Archaeometry
 - Lithics
 - Monuments
 - Pollen
 - DNA









Archaeometry

- Applied/laboratory geoscience towards the characterization of archaeological sediments and cultural material capable of leading to provenance, prospecting, and dating/chronology...



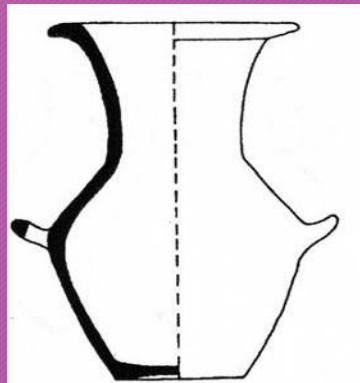
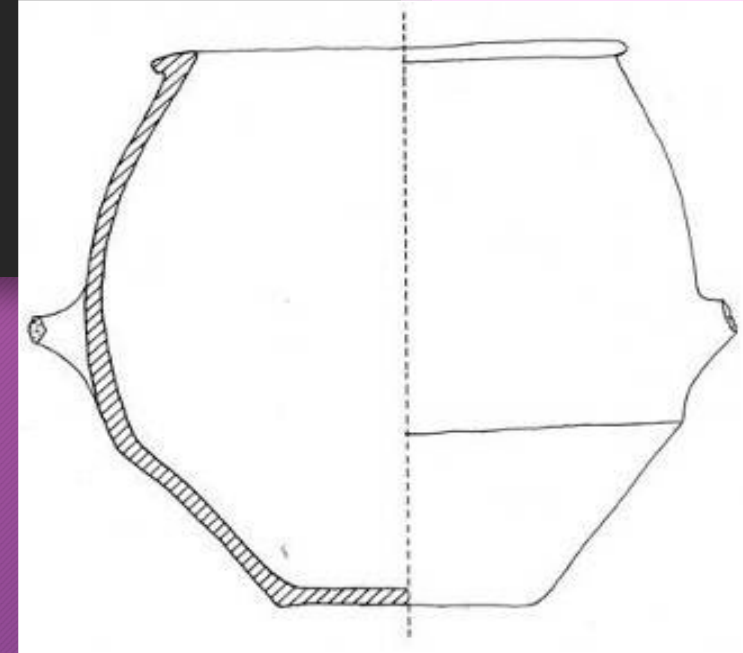
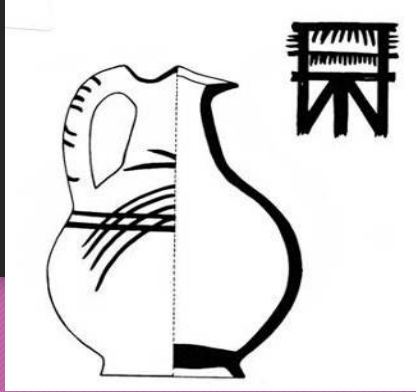
Multi-component Analyses

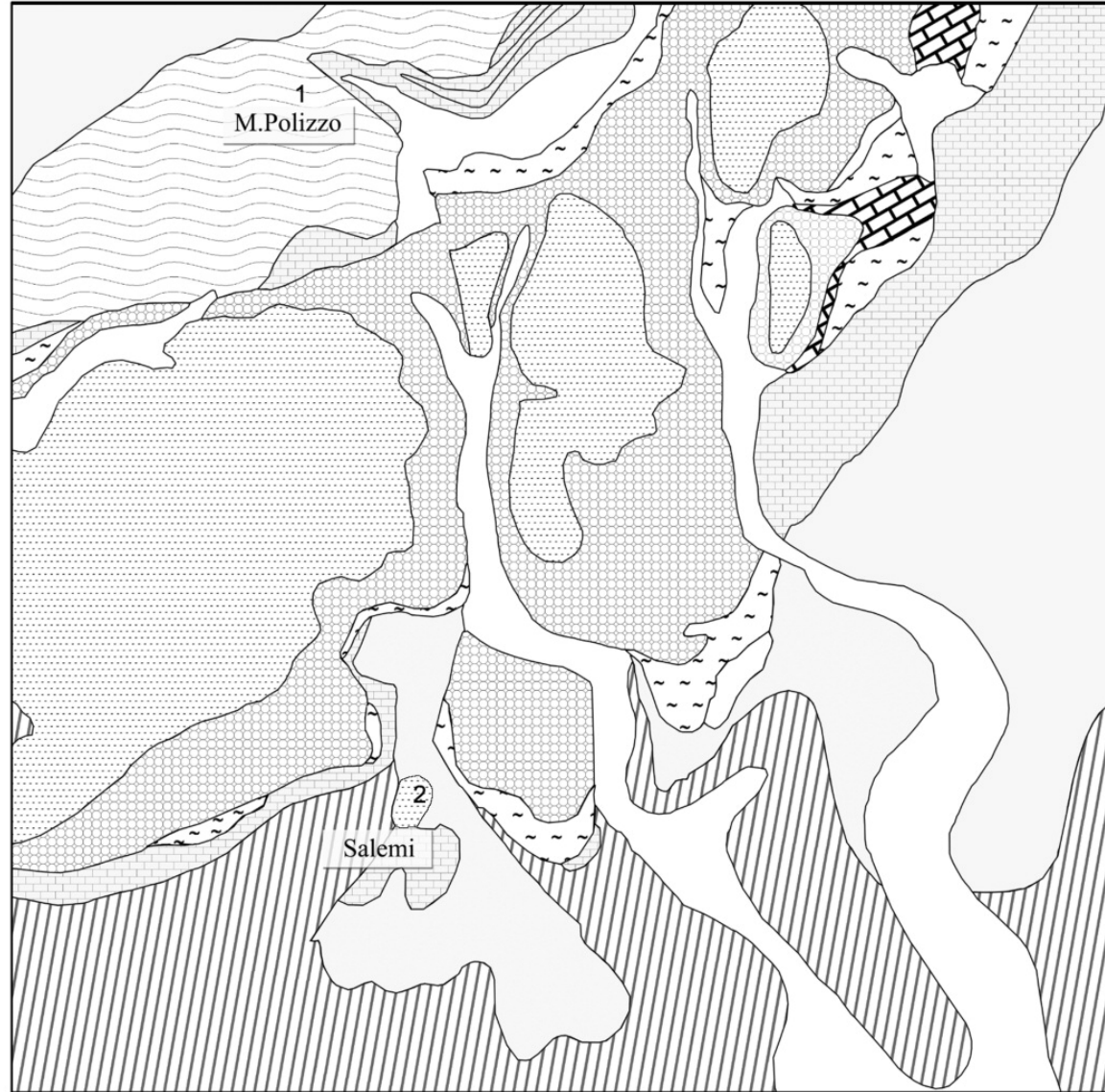
- Physical
 - Characterization, color, residue, drawing, photography,
 - Petrography - composition, relative counts (n=500), packing, fabric, fossils, temper Id.
- Chemical Composition
 - XRD, XRF, NAA
- Experimental
- Statistics



Source Process Form/Function Preservation Interpretation

CERAMICS

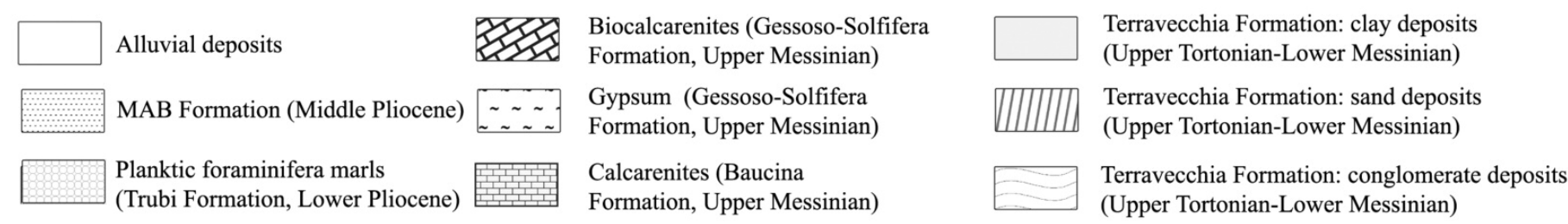


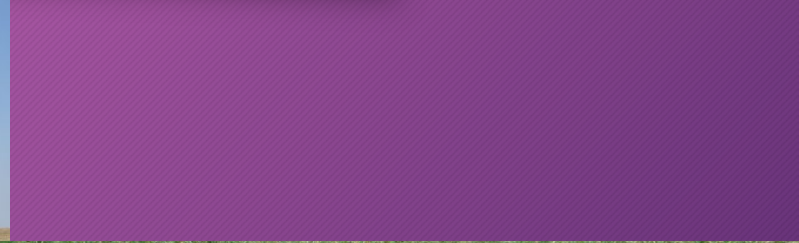
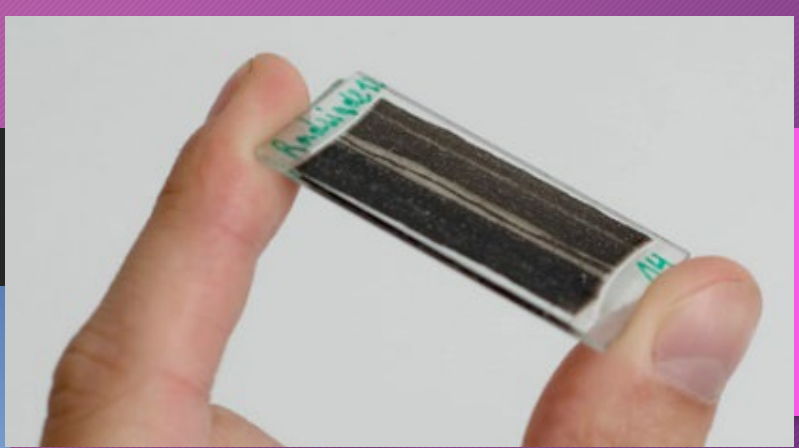


1) Terravecchia Formation sampling point

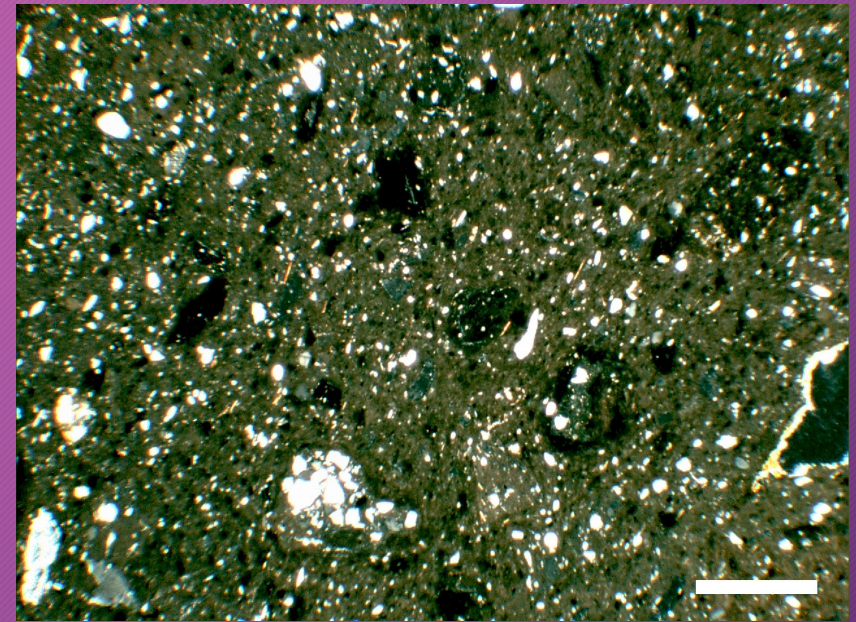
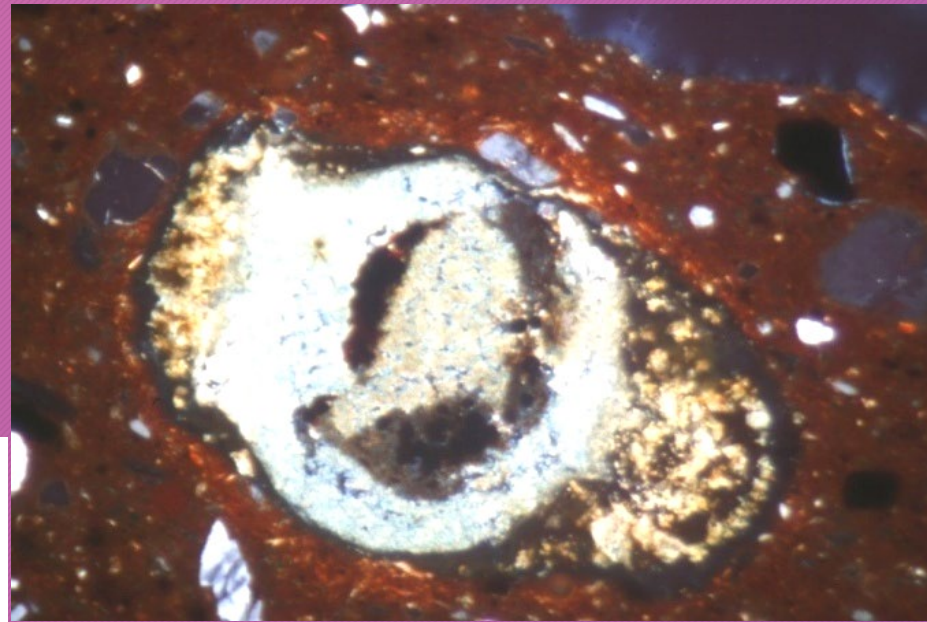
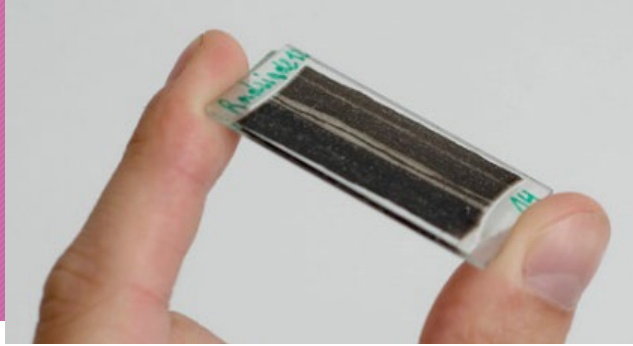


2) MAB Formation sampling point

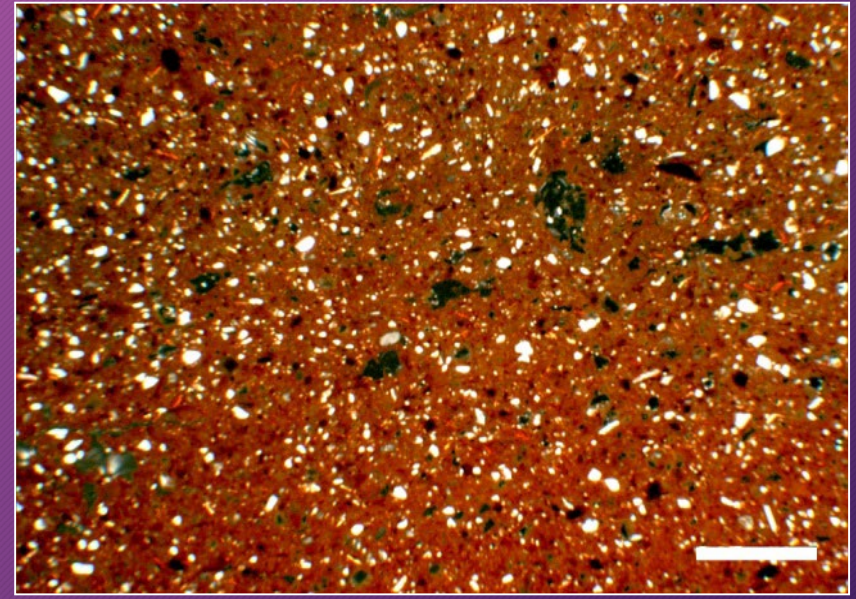
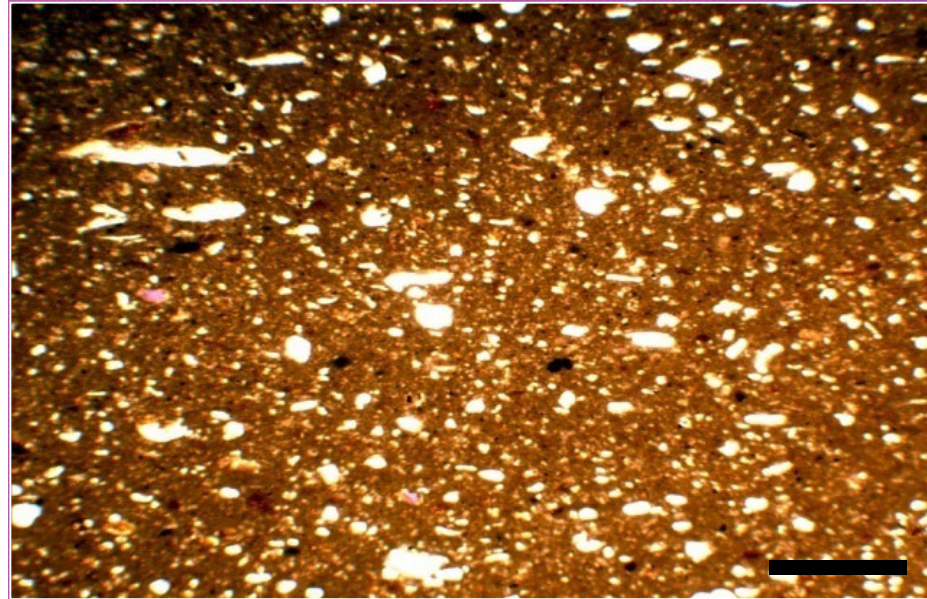


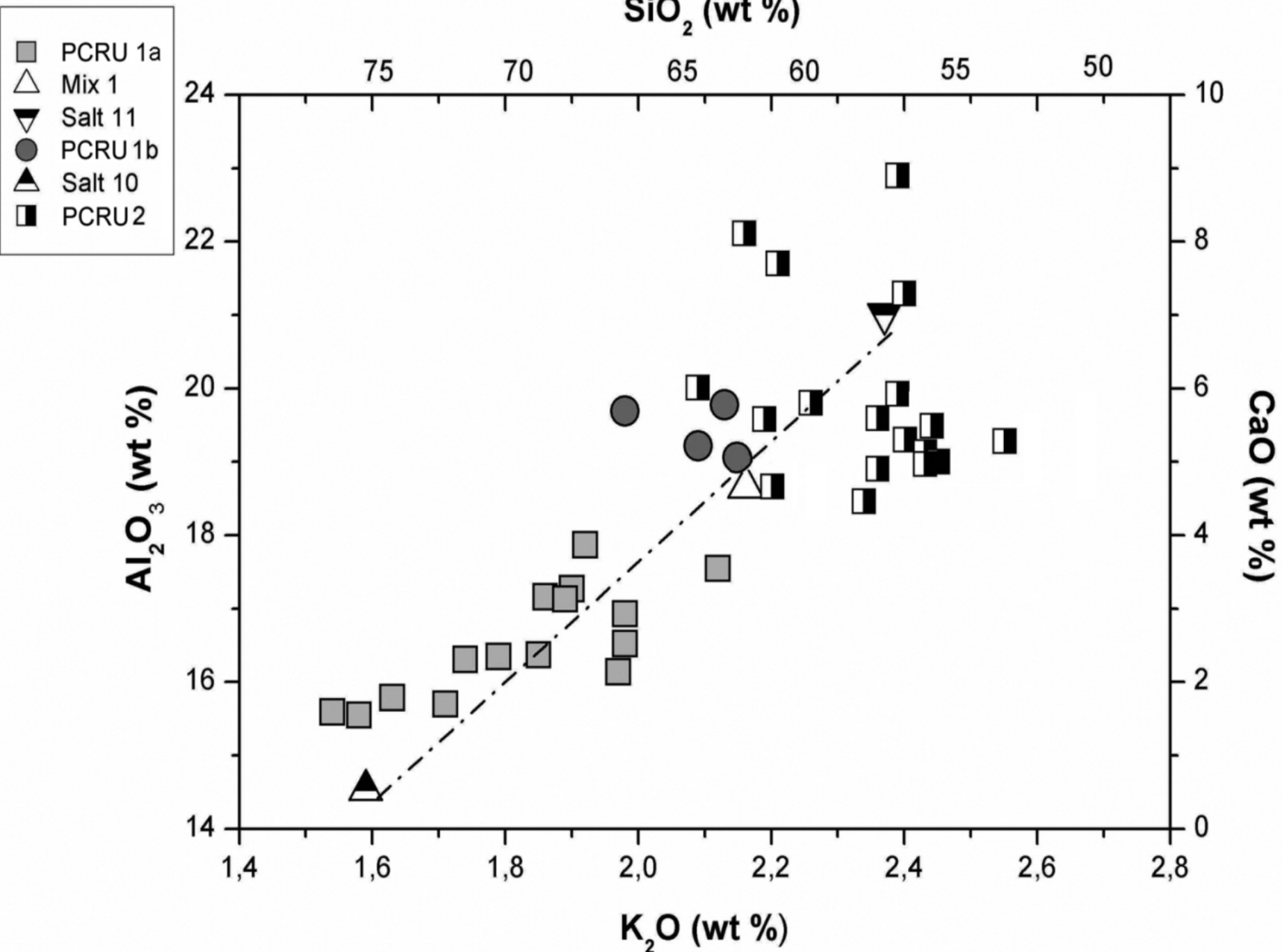


Petrograph



5mm





- 92% ceramics = Terravecchia Fm.
- Monte Polizzo = Production center (7-4th century BC)
- Advanced technology = mixed sources
- 8% ceramics = regional imports

Geoarchaeology

1. Characterizes the development of the archaeological record and its products (material culture)
2. Predicts an archeological sites original context, secondary alterations, and preservation through geologic knowledge and principles (e.g. preferential discovery and documentation)
3. Provides modern civilizations a historical context, so that (ideally) we learn from the successes and mistakes of our ancestors with respect to how we interact with our environments.

APHIC CHART

Stratigraphy

v 2022/02



Eonothem / Eon
Erathem / Era
System / Period

Series / Epoch

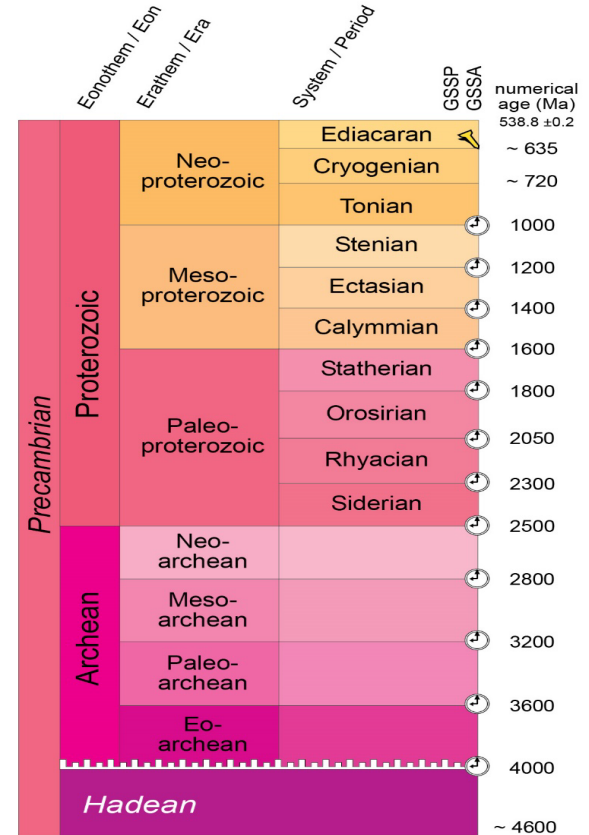
Stage / Age

GSSP

numerical age (Ma)

Quaternary	Holocene	U/L	Meghalayan	GSSP	present			
		M	Northgrippian					
		L/E	Greenlandian					
	Pleistocene	U/L	<i>Upper</i>	GSSP	0.0117			
		M	Chibanian					
		L/E	Calabrian					
			Gelasian					
		Pliocene	U/L			Piacenzian	GSSP	3.600
			L/E			Zanclean		

372.2 ± 1.6
382.7 ± 1.6
387.7 ± 0.8
393.3 ± 1.2
407.6 ± 2.6
410.8 ± 2.8
419.2 ± 3.2
423.0 ± 2.3
425.6 ± 0.9
427.4 ± 0.5
430.5 ± 0.7
433.4 ± 0.8
438.5 ± 1.1
440.8 ± 1.2
443.8 ± 1.5
445.2 ± 1.4
453.0 ± 0.7
458.4 ± 0.9
467.3 ± 1.1
470.0 ± 1.4
477.7 ± 1.4
485.4 ± 1.9
~ 489.5
~ 494
~ 497
~ 500.5
~ 504.5
~ 509
~ 514
~ 521
~ 529
538.8 ± 0.2



Mesozoic	Cretaceous	Lower	Cenomanian	100.5	
			Albian	~ 113.0	
			Aptian	~ 121.4	
			Barremian	~ 129.4	
			Hauterivian	~ 132.6	
			Valanginian	~ 139.8	
			Berriasian	~ 145.0	
Paleozoic	Carboniferous	Pennsylvanian	Upper	Gzhelian	303.7 ± 0.1
				Kasimovian	307.0 ± 0.1
			Middle	Moscovian	315.2 ± 0.2
			Lower	Bashkirian	323.2 ± 0.4
			Upper	Serpukhovian	330.9 ± 0.2
			Middle	Visean	346.7 ± 0.4
			Lower	Tournaisian	358.9 ± 0.4

Cambrian	Series 2	Guzhangian	~ 500.5
		Drumian	~ 504.5
		Wuliuan	~ 509
		Stage 4	~ 514
	Terreneuvian	Stage 3	~ 521
		Stage 2	~ 529
		Fortunian	538.8 ± 0.2

Units of all ranks are in the process of being defined by Global Boundary Stratotype Section and Points (GSSP) for their lower boundaries, including those of the Archean and Proterozoic, long defined by Global Standard Stratigraphic Ages (GSSA). Italic fonts indicate informal units and placeholders for unnamed units. Versioned charts and detailed information on ratified GSSPs are available at the website <http://www.stratigraphy.org>. The URL to this chart is found below.

Numerical ages are subject to revision and do not define units in the Phanerozoic and the Ediacaran; only GSSPs do. For boundaries in the Phanerozoic without ratified GSSPs or without constrained numerical ages, an approximate numerical age (~) is provided.

Ratified Subseries/Subepochs are abbreviated as U/L (Upper/Late), M (Middle) and L/E (Lower/Early). Numerical ages for all systems except Quaternary, upper Paleogene, Cretaceous, Triassic, Permian, Cambrian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012), those for the Quaternary, upper Paleogene, Cretaceous, Triassic, Permian, Cambrian and Precambrian were provided by the relevant ICS subcommissions.

Colouring follows the Commission for the Geological Map of the World (www.ccgw.org)



Chart drafted by K.M. Cohen, D.A.T. Harper, P.L. Gibbard, N. Car (c) International Commission on Stratigraphy, February 2022

Holocene into the Anthropocene



0.00001 %

Global Change
International Geosphere-Biosphere Programme Issue 78 ■ March 2012

ANTHROPOCENE
The geology of humanity

Urban expansion
No signs of slowing

Natural catastrophes
2011 breaks records

GLOBAL IGBP CHANGE International Geosphere-Biosphere Programme

www.igbp.net
Earth-system science for a sustainable planet

ICSU

DATE CHART

BC 5000 4000 3000 2000 1000 0 AD 1000

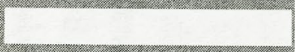
4300
BCE



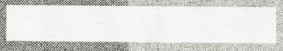
EGYPTIANS

SUMERIANS

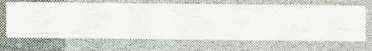
30 BCE



HITTITES



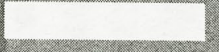
ASSYRIANS



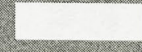
ISRAELITES



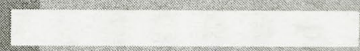
ACHAEMENIDS



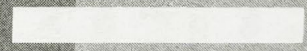
MINOANS



MYCENAEANS

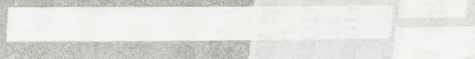


GREEKS



ETRUSCANS

625 BCE



ROMANS

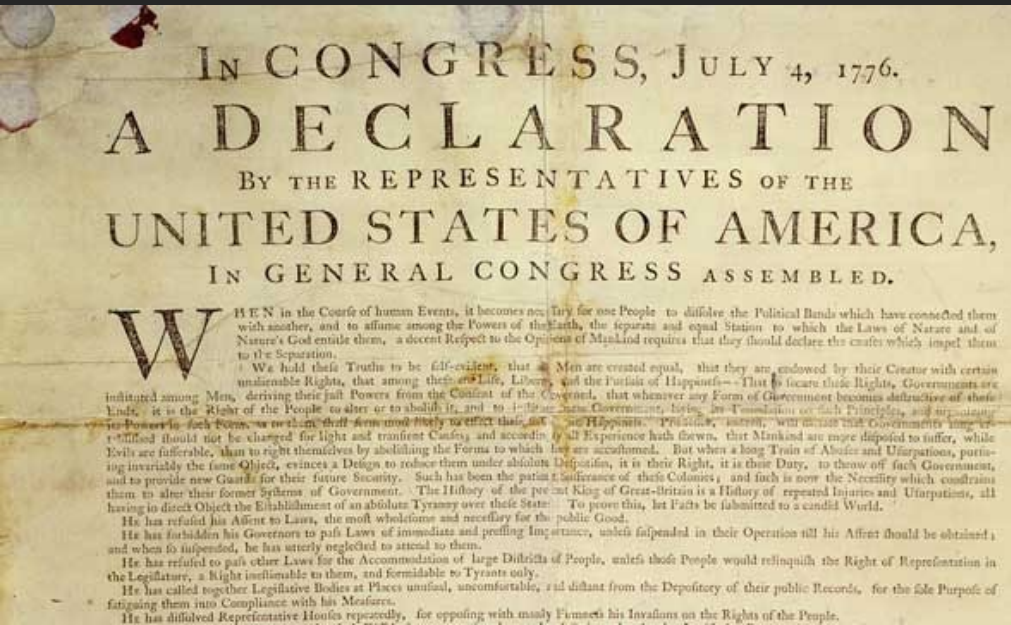
EASTERN
EMPIRE

WESTERN
EMPIRE

ANCIENT
NEAR EAST

476 CE

The United States of America

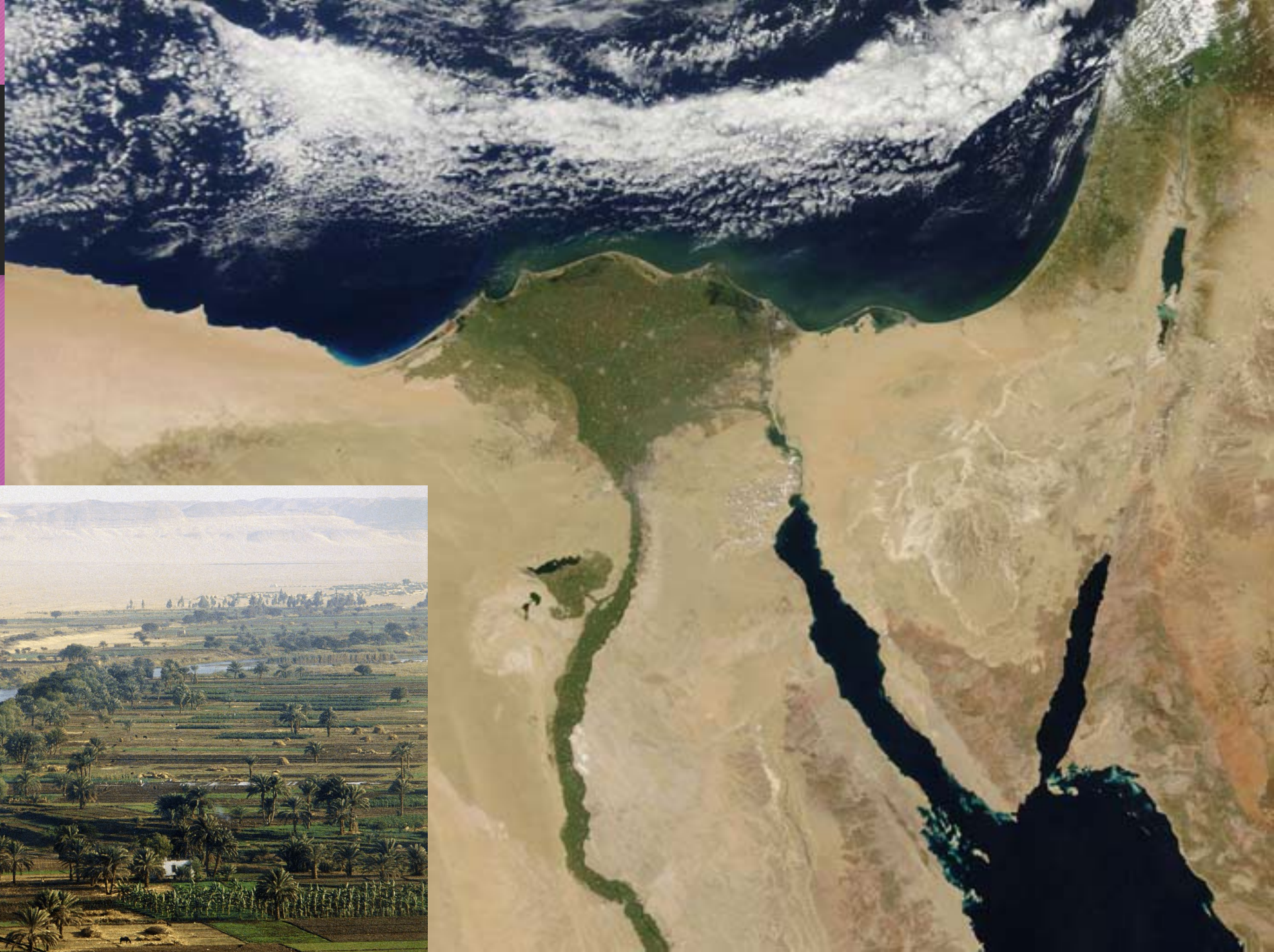


2877 CE

6046 CE

Natural Resources

1. The Nile River



Nilometer



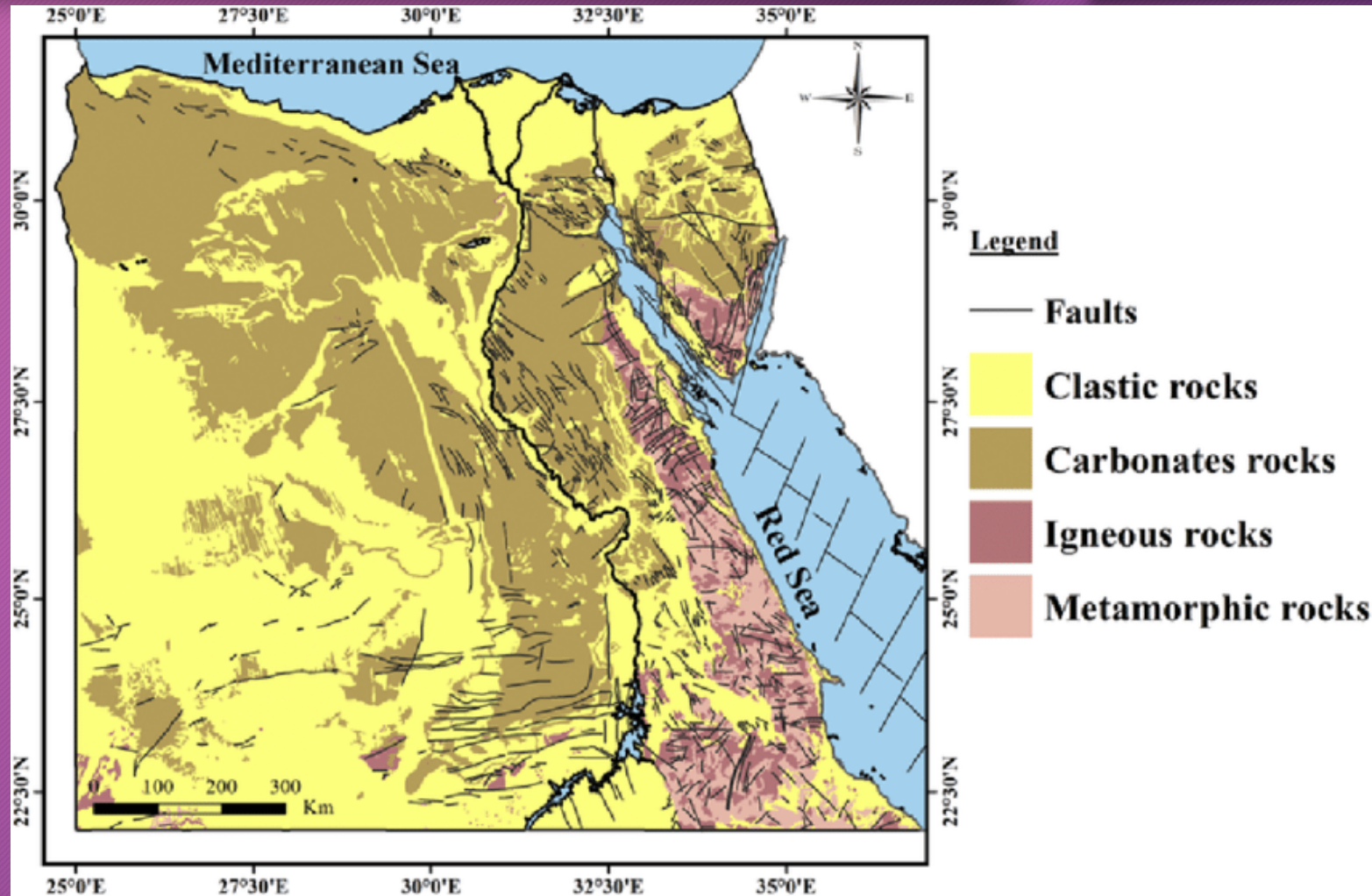
Minerals, rocks and sediments

Building

Ornamental

Gem

Utilitarian

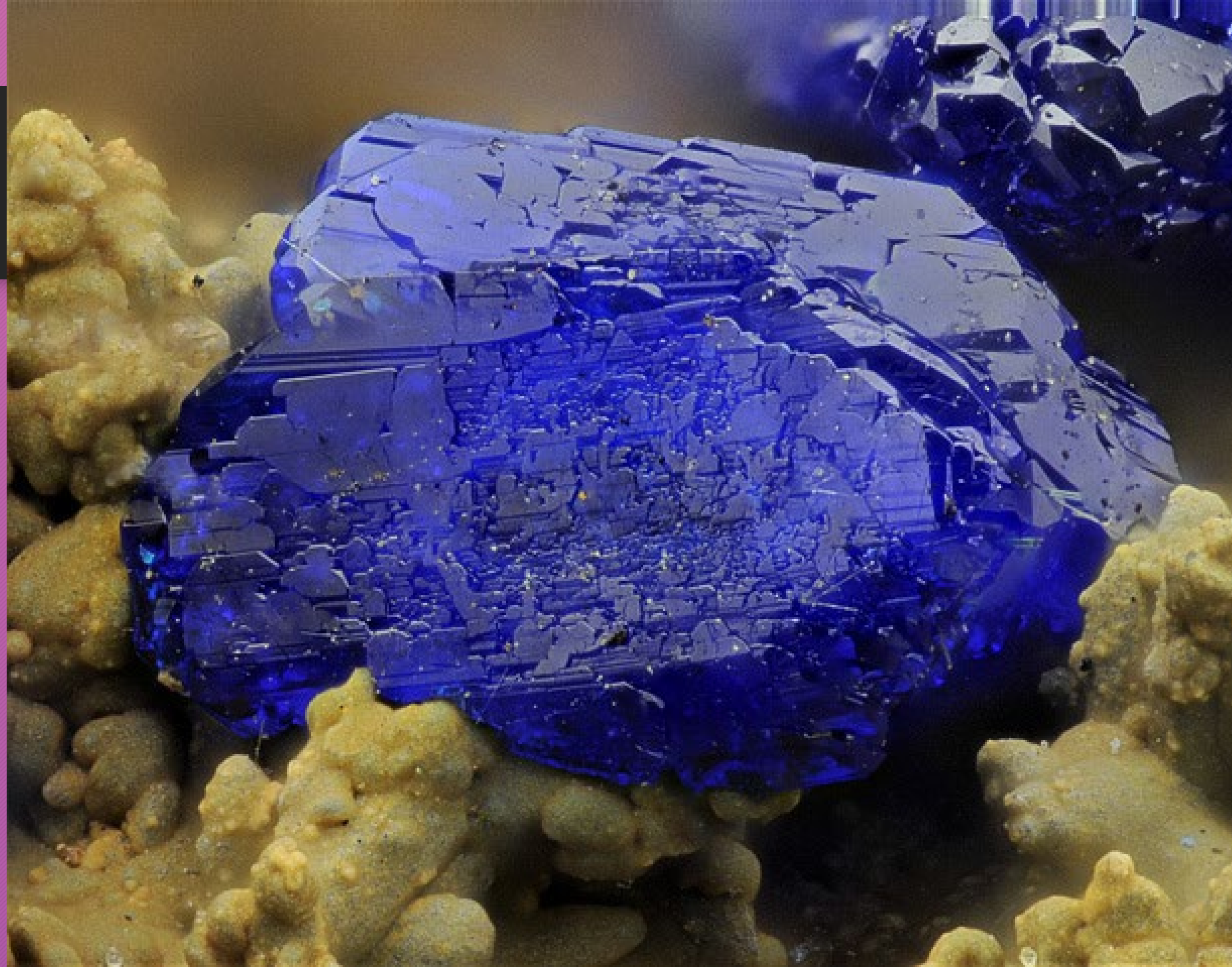
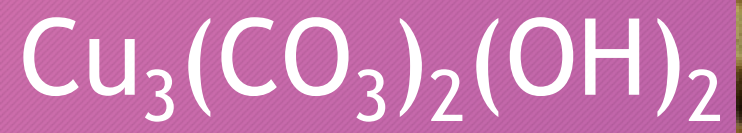




Galena PbS



Azurite



Orpiment
- As₂S₃





Cinnabar - HgS

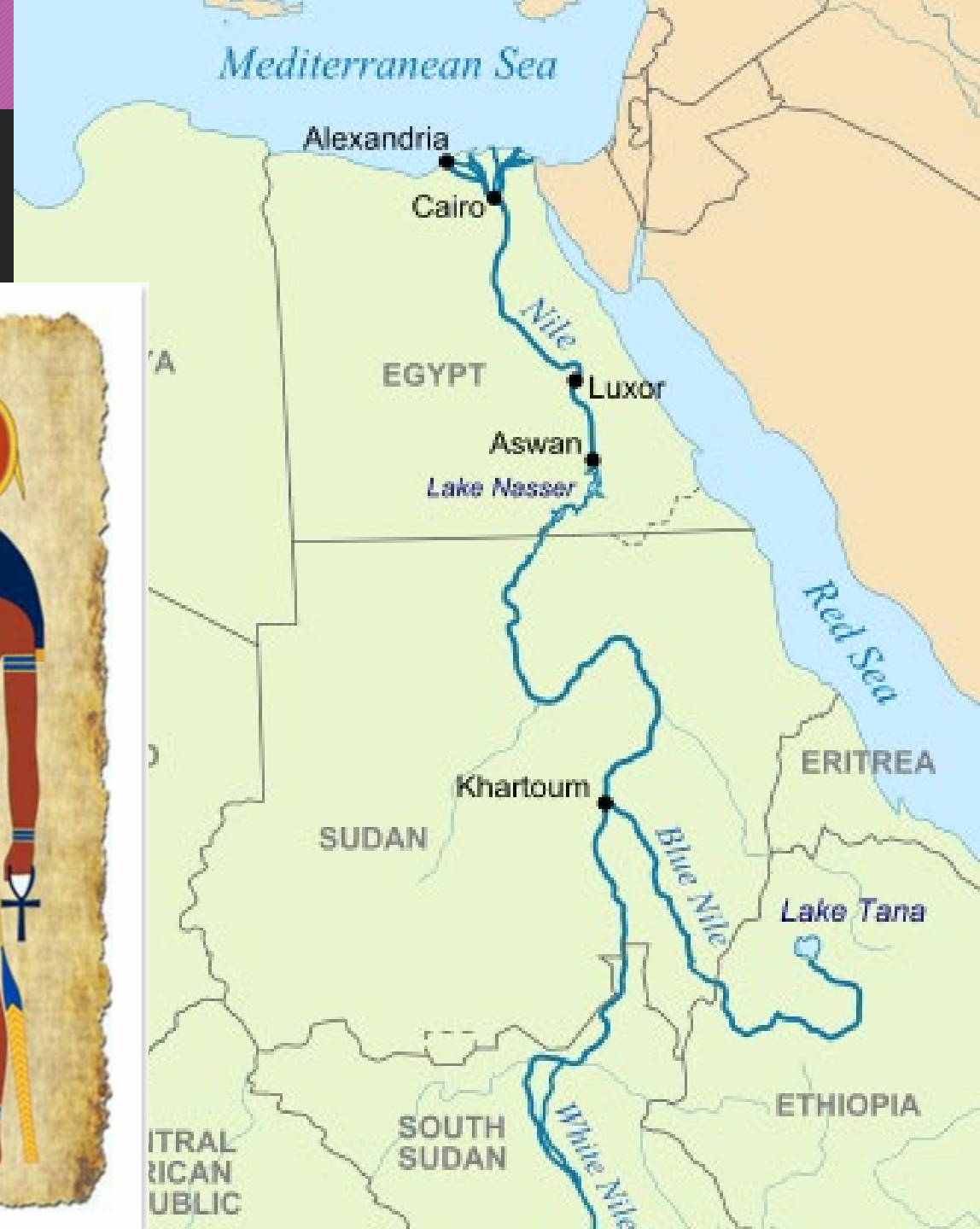
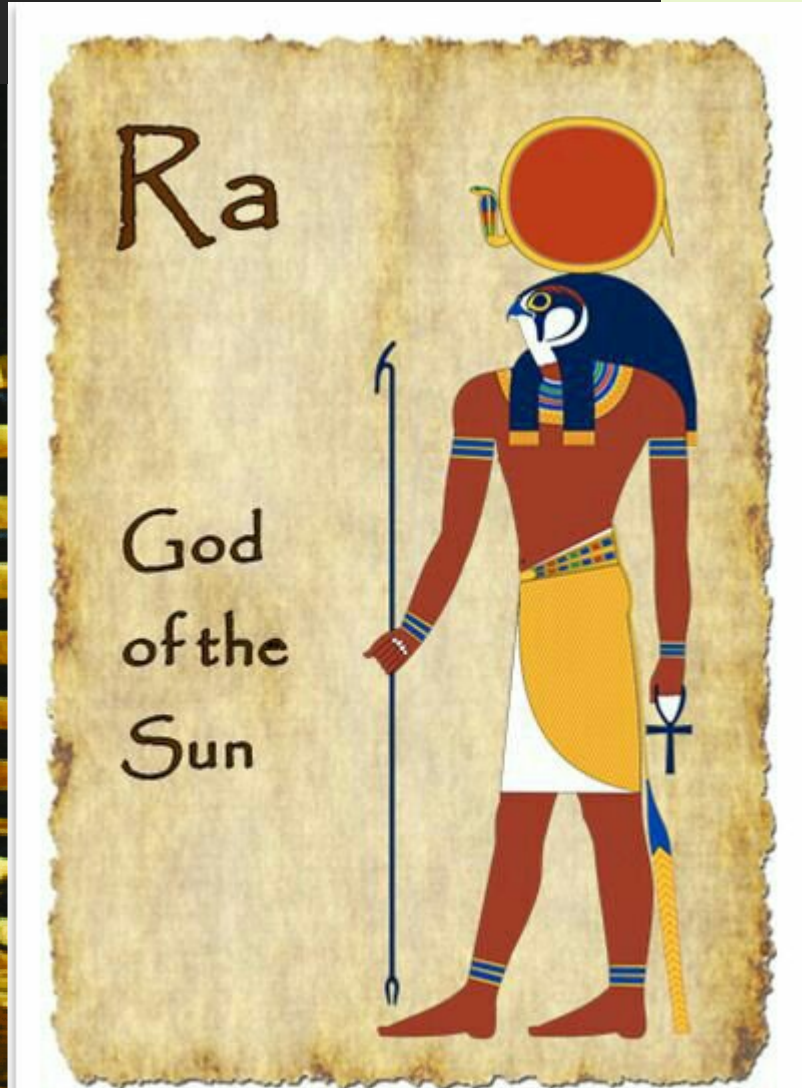




Salt , natron



Gold and Copper



Helena & Constantina



Flint / Chert

