Climate and Human History
Stephan Matthiesen

1. Climate and climate history
2. The Ice Age
3. Farming and City States
4. The Roman Empire
5. Tang and Maya in the 10th century
6. Mediaeval Optimum and Little Ice Age
7. El Niño through the ages
8. Miscellaneous topics
9. Current and future changes
10. Summary and re-cap

Ancient Egypt

- 5500-3100 Pre-, protodynastic
- 3100-2630 Early Dynasties
- 2630-2181 Old Kingdom
- 2181-2040 First Intermediate
- 2040-1782 Middle Kingdom
- 1782-1570 Second Intermediate
- 1570-1070 New Kingdom
- 1070-664 Third Intermediate
- 664-... Persian
  Graeco-Roman
  Arab

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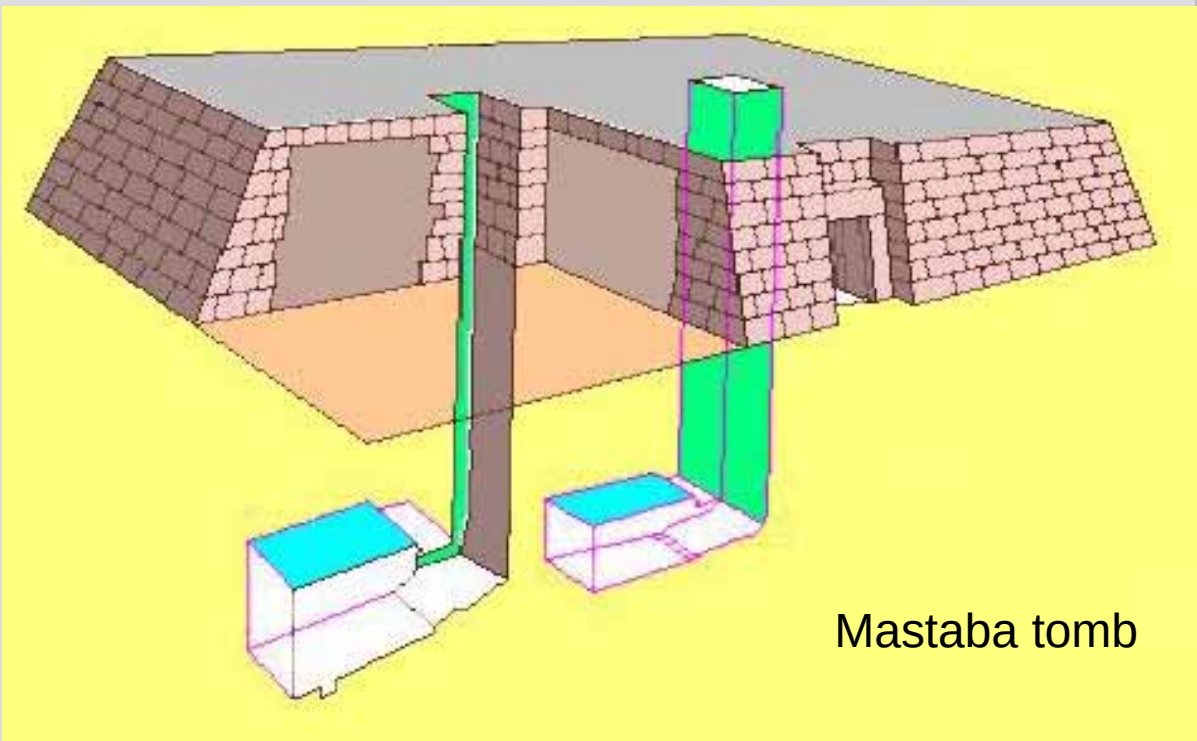

Mastaba tomb

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Hatschepsut
(ca 1479-1458)

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Akhenaten (1353?-1336?) Nefertiti

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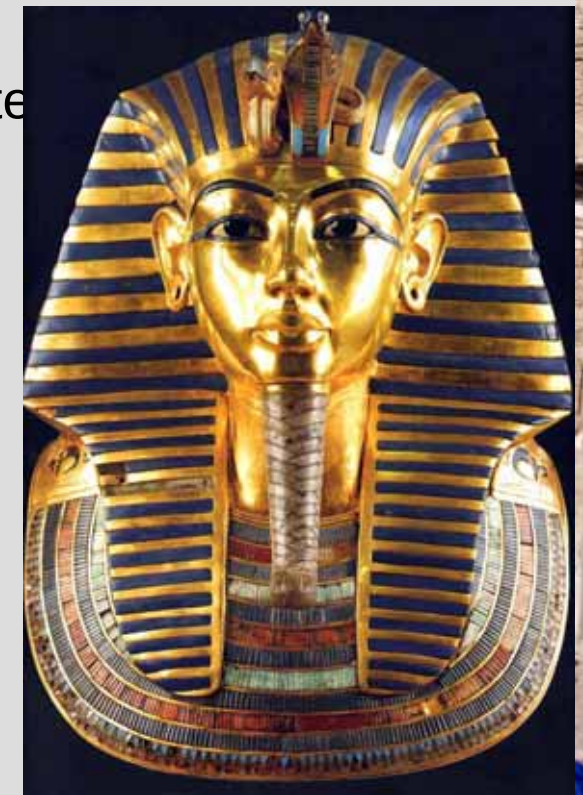
Ramesses II
(1279-1213)



Tutankhamun, 1333-1323

Ankhtifi
Early First Intermediate Period

The Prince, Count, Royal Seal-bearer, Sole Companion, Lector-priest, General, Chief of scouts, Chief of foreign regions, Great Chief of the nomes of Edfu and Hierakonpolis, Ankhtifi, says:

Horus brought me to the nome of Edfu for life, prosperity, health, to re-establish it, and I did (it)...

Ankhtifi
Nomarch of Hierakonpolis

..... the sky was clouded and the earth [...] of hunger on this sandbank of Apophis. The south came with its people and the north with its children; they brought the finest oil in exchange for the barley which was given them. My barley went upstream until it reached lower Nubia and downstream until it reached the Abydene nome. All of Upper Egypt was dying of hunger and people were eating their children, but I did not allow anyone to die of hunger in this nome.

Ankhtifi
Nomarch of Hierakonpolis

I was the beginning and the end of mankind, since nobody like myself existed before nor will he exist; nobody like me was ever born nor will he be born. I surpassed the feats of the ancestors, and coming generations will not be able to equal me in any of my feats within this million of years.

Ankhtifi
Nomarch of Hierakonpolis

The whole country has become like locusts going upstream and downstream (...); but never did I allow anybody in need to go from this nome to another.

I am the hero without equal.

Collapse of Akkad

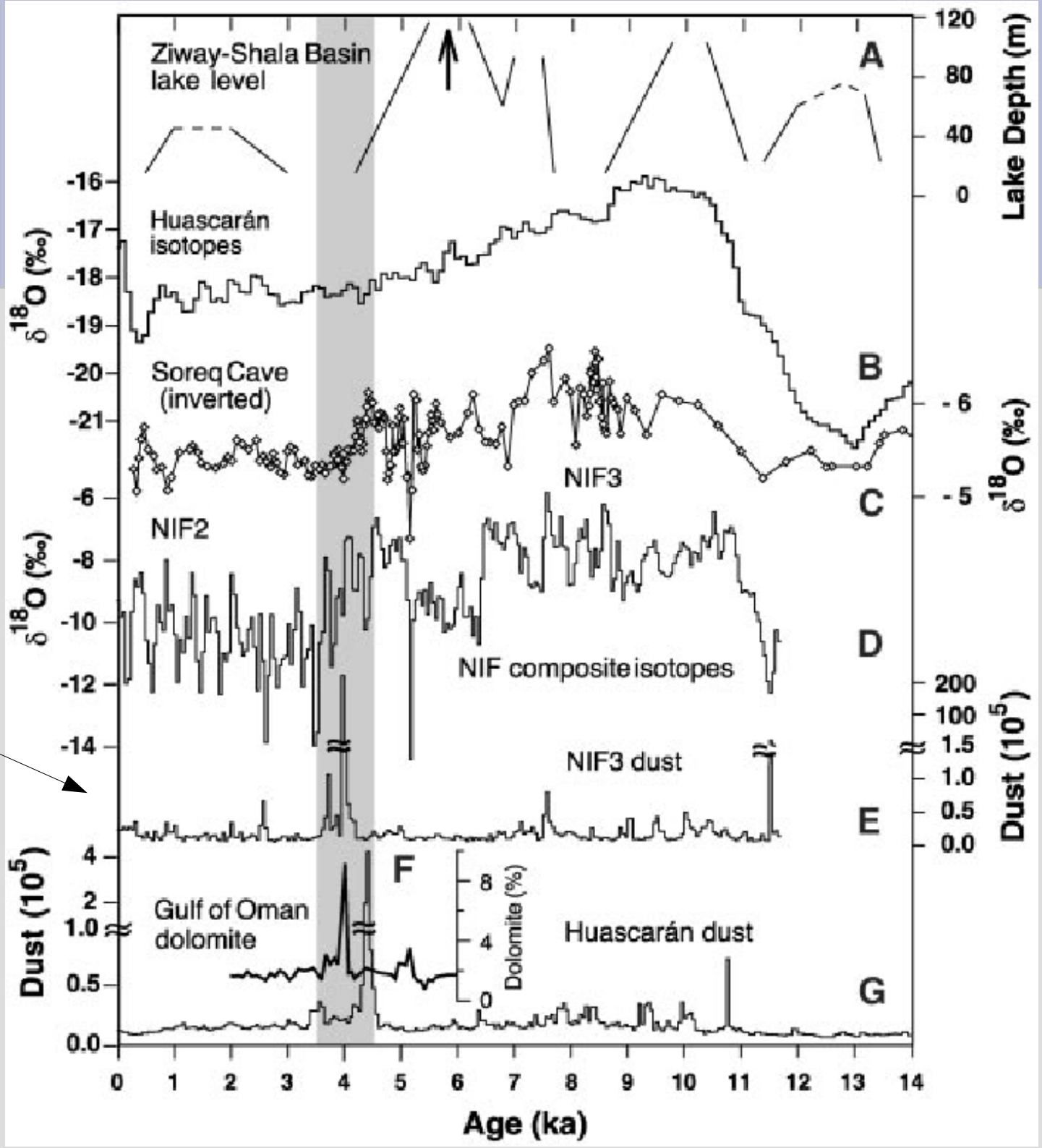
Sumerian King List
about the time after Sharkalishari (ca 2100BC):

Who was king? Who was not king? Igigi the king; Nanum, the king; Imi the king; Elulu, the king— the four of them were kings but reigned only three years. Dudu reigned 21 years; Shudurul, the son of Dudu, reigned 15 years. (A total of) 11 kings reigned 197 years. Agade was defeated and its kingship carried off to Uruk. In Uruk, Urnigin reigned 7 years, Irgigir, son of Urnigin, reigned 6 years; Kudda reigned 6 years; Puzur-ili reigned 5 years, Utu-utu reigned 6 years. Uruk was smitten with weapons and its kingship carried off by the Gutian hordes

Sargon of Akkad
(2333-2279)

Climate

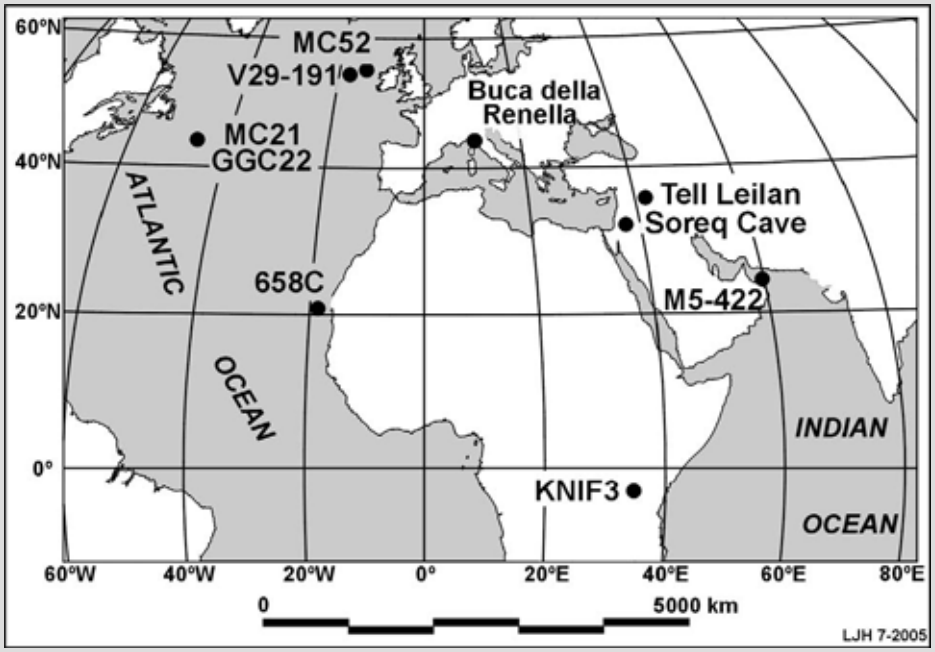
Kilimanjaro
Ice Core records



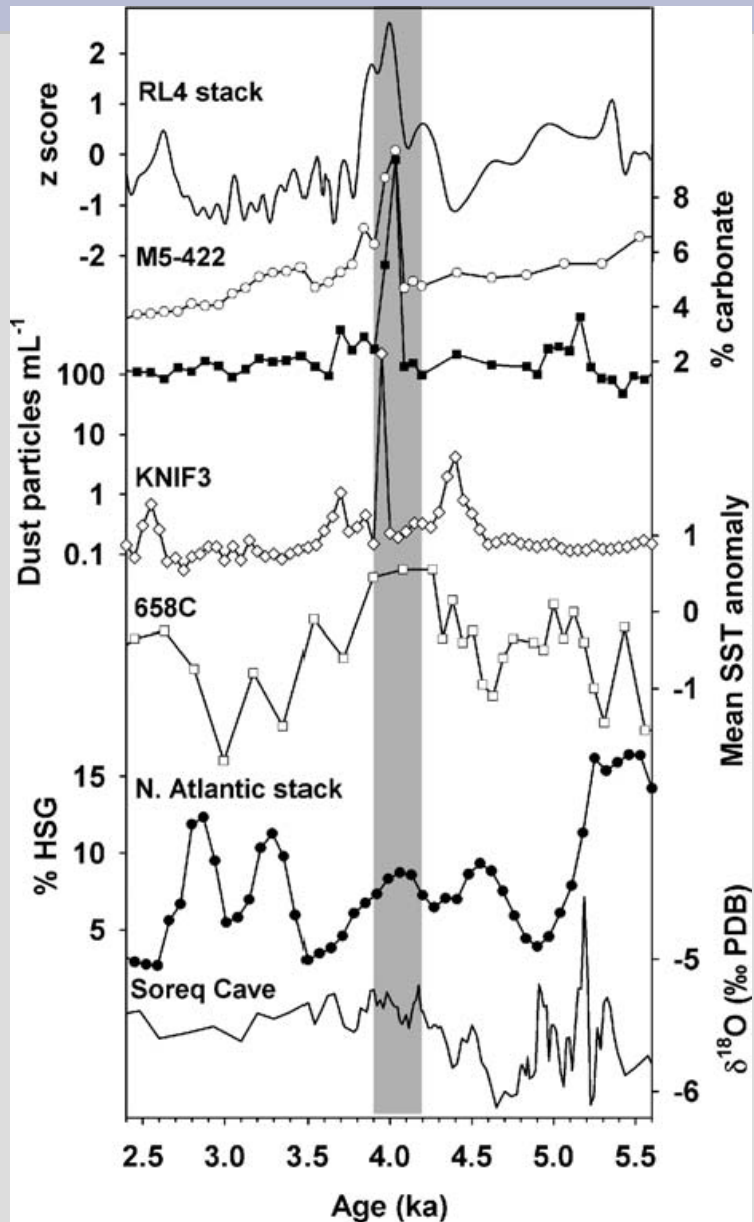
Thompson et al. (2002)

Climate Reconstructions

Drysdale et al. on the civilisation gap of 2100: “(In Syria …) This hiatus is capped by a thin tephra layer, overlain by as much as 1 m of eolian-rich sediments (Weiss et al. 1993).“ (tephra=ash deposits)



Drysdale et al. (2006)



A volcano?
Back to 1993...

The genesis and collapse of third millennium north Mesopotamian civilization.

Weiss, H., Courty, Wetterstrom, W., Guichard, F., Senior, L., Meadow, R., Curnow, A. (1993), Science 261 (5124), 995-1004.

Abstract:
Archaeological and soil-stratigraphic data define the origin, growth, and collapse of Subir, the third millennium rain-fed agriculture civilization of northern Mesopotamia on the Habur Plains of Syria. At 2200 B. C., a **marked increase in aridity and wind circulation, subsequent to a volcanic eruption,** induced a considerable degradation of land-use conditions. After four centuries of urban life, this abrupt climatic change evidently caused abandonment of Tell Leilan, regional desertion, and collapse of the Akkadian empire based in southern Mesopotamia. Synchronous collapse in adjacent regions suggests that the impact of the abrupt climatic change was extensive.

But when you think you have a simple story, then ...

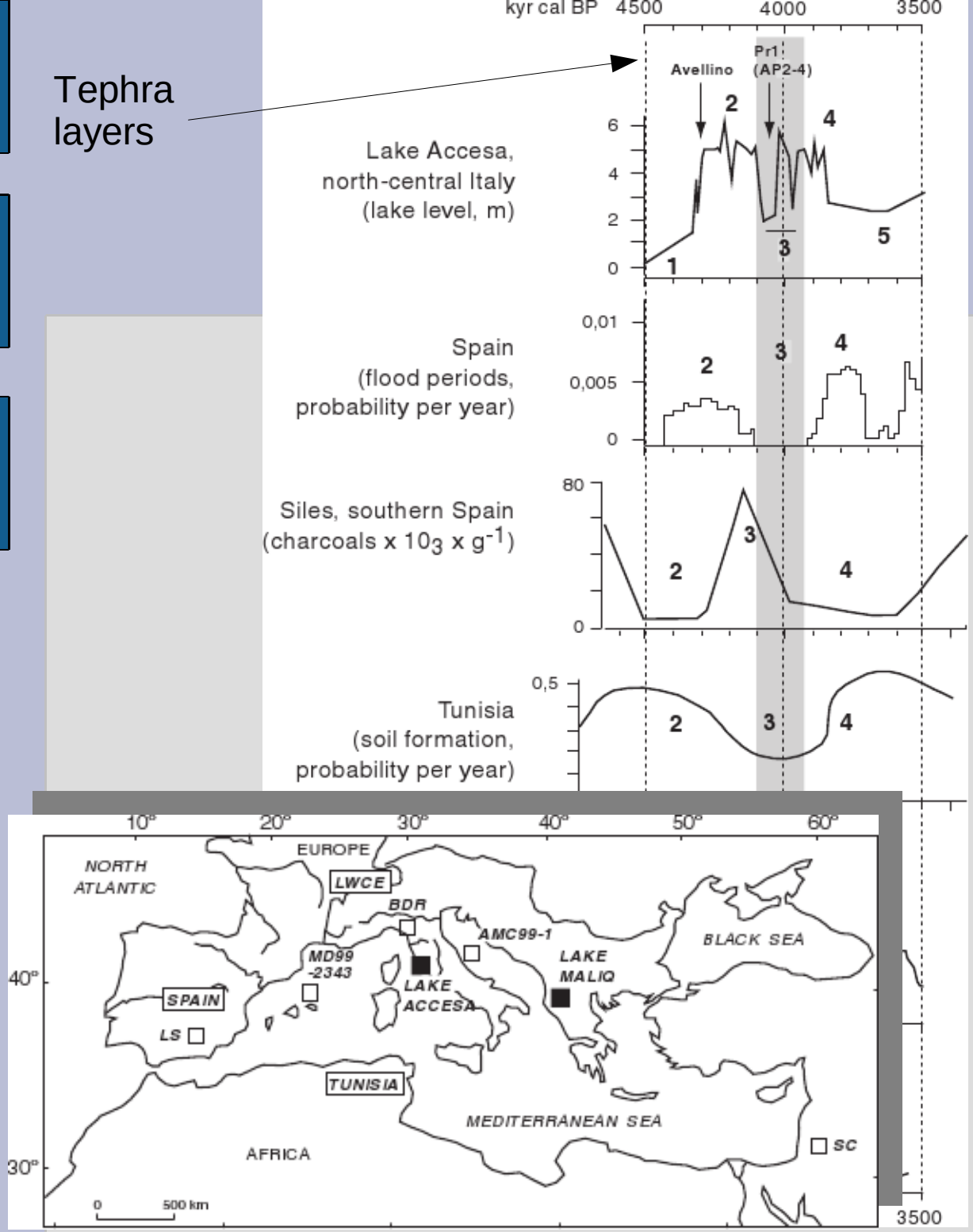
… somebody else writes a paper (September 2009):

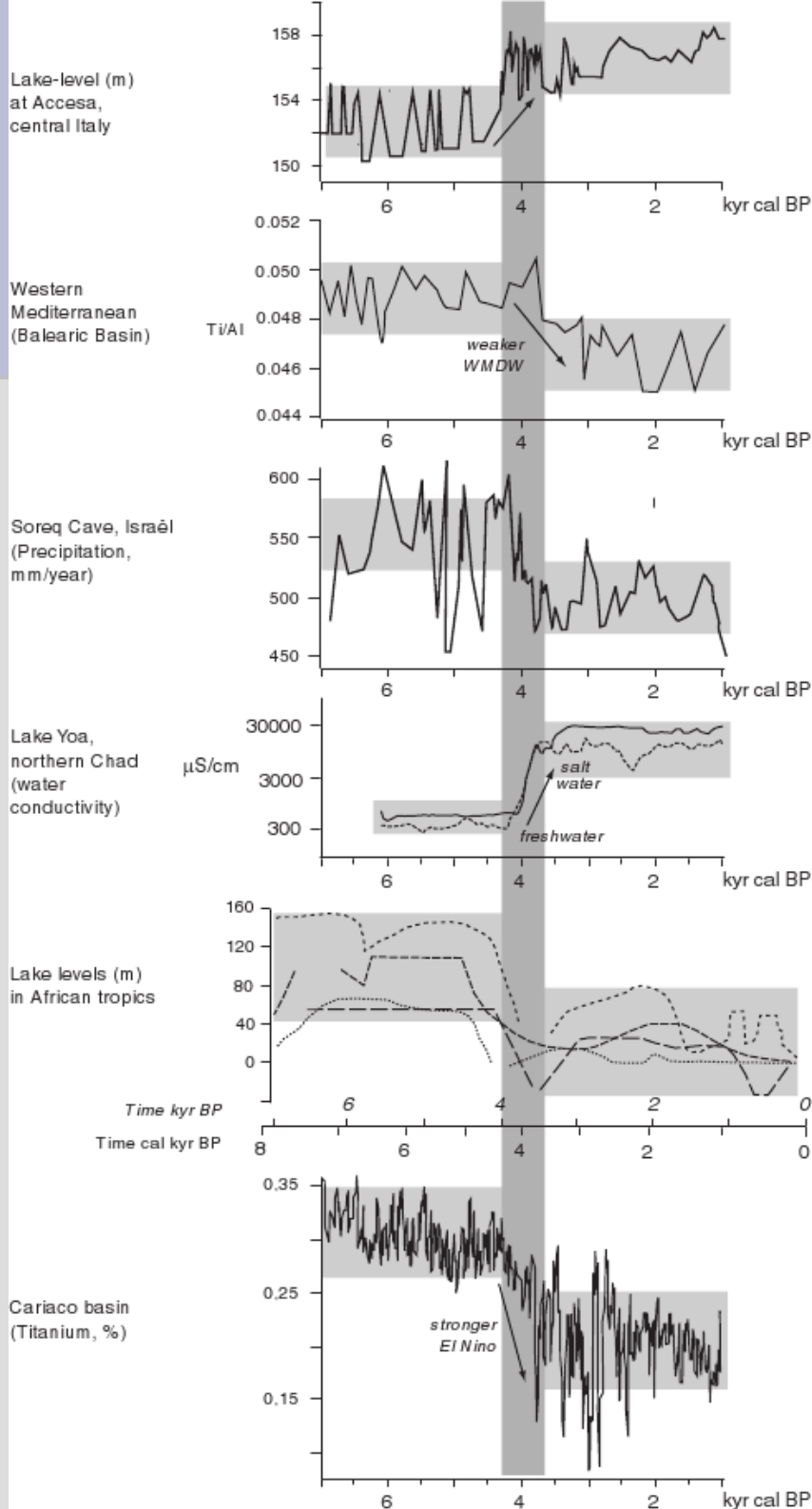
The Holocene 19,6 (2009) pp. 823–833

Possible complexity of the climatic event around 4300–3800 cal. BP in the central and western Mediterranean

Michel Magny,[1]* Boris Vannière,[1] Gianni Zanchetta,[2] Eric Fouache,[3] Gilles Touchais,[4] Lera Petrika,[5] Céline Coussot,[3] Anne-Véronique Walter-Simonnet[1] and Fabien Arnaud[6]

Tephra layers





“Possible complexity ...“

- Tripartite climate oscillation
  - wet: 4300-4100
  - dry: 4100-3950
  - wet: 3950-3500
- Tephra (volcanic deposits)
  - ca. 4300
  - ca. 4050
- “oscillation appears to have developed at a key moment during a crucial transition from mid to late Holocene“
- “better understanding requires further investigation”

Literature

- Drysdale et al. (2006): Late Holocene drought responsible for the collapse of Old World civilizations is recorded in Italian cave flowstone. Geology 34(2), p.101-104.
- Thompson et al. (2002): Kilimanjaro Ice Core Record: Evidence of Holocene Climate Change in Tropical Africa. Science 298, p. 589-593.
- Magny et al (2009): Possible complexity of he climatic event around 4300 – 3800 cal BP in the central and western Mediterranean. The Holocene, 19, p. 823-833
- Hassan, F. (2007): Extreme nile floods and famines in medieval egypt (ad 930–1500) and their climatic implications. Quaternary International 173-174, 101-112.