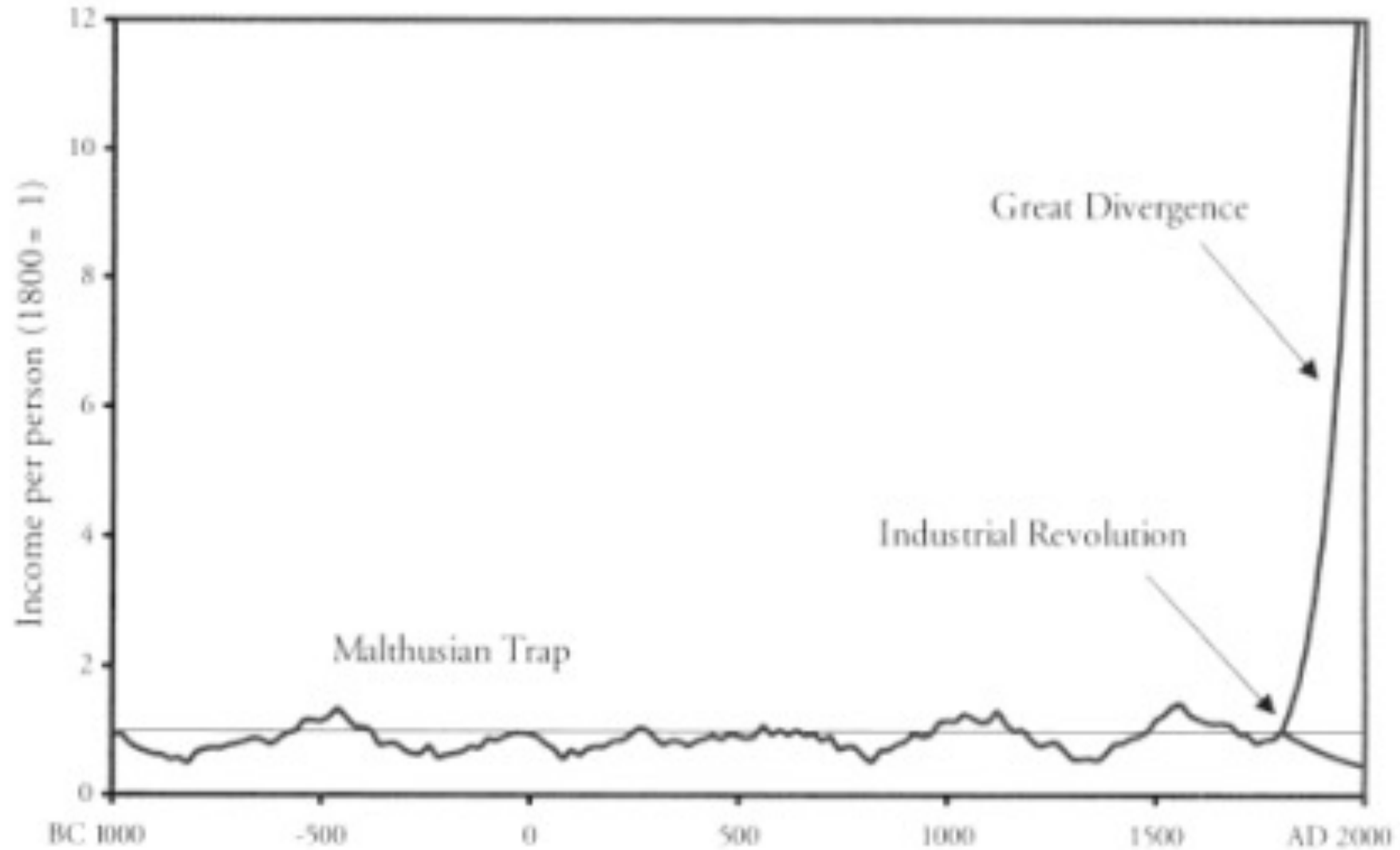# Economic development in antiquity: The Greek world, 800-300 BCE

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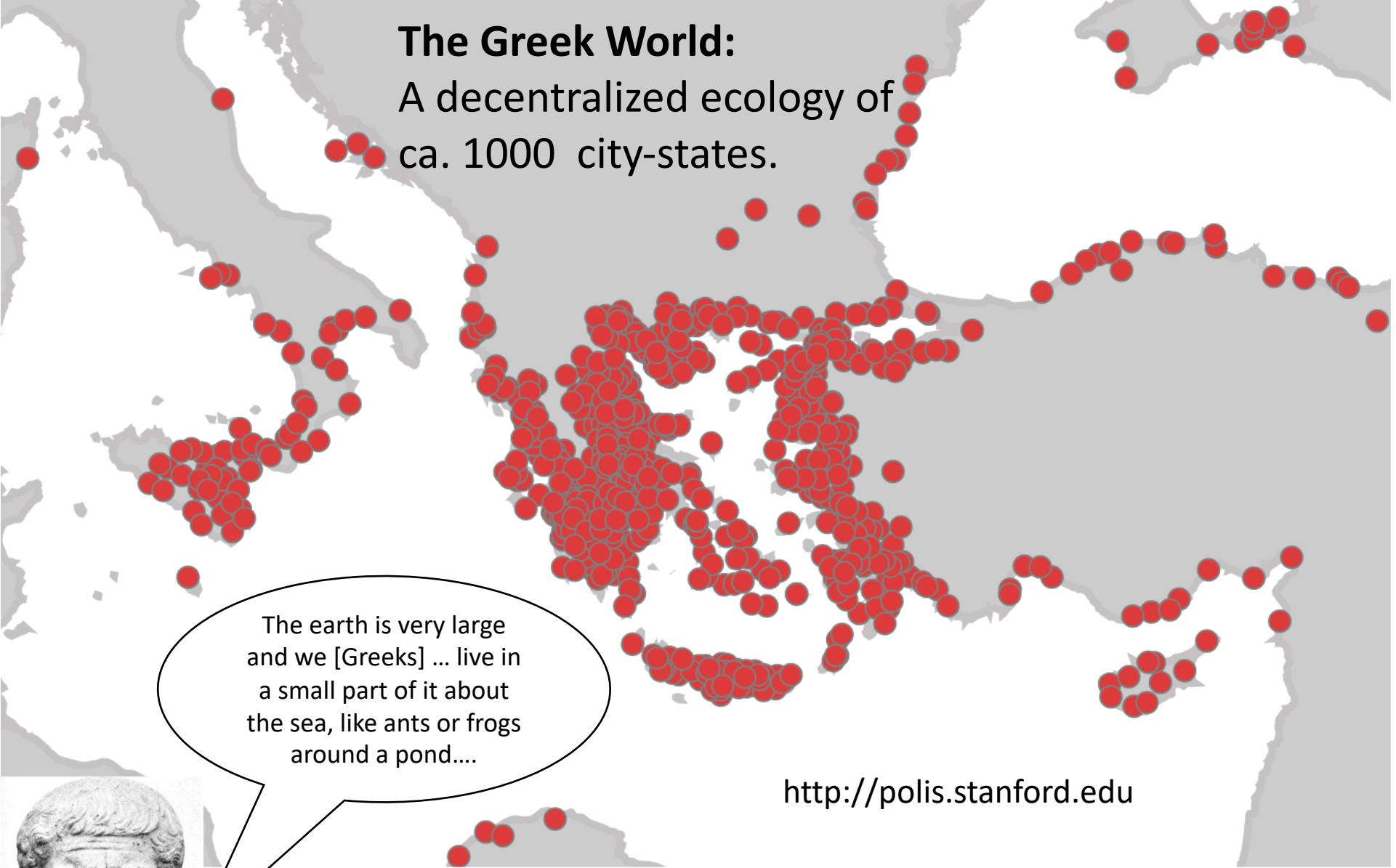# Premodern economic development. Why bother?

Efflorescence (Goldstone 2002)

- Certain premodern societies saw measurable economic growth and related cultural flowering (followed by regression to mean)
- Greece from about 800 to 300 BCE is an early, comparatively long-lasting, and well-documented example (Morris 2004, Ober 2015)
  - Highly and persistently influential cultural artifacts (texts, art, ideas)
- Paper's claim: Greek case illuminates the relationship between institutions, cultural norms, and growth
  - Geography/climate was necessary for growth, but not sufficient
  - Technological change was limited
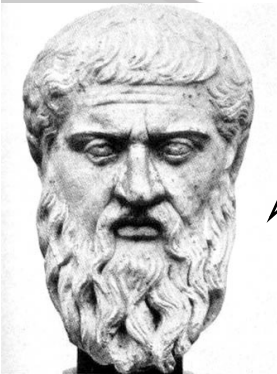 - Institutional development was remarkable and is well documented

The Greek World:
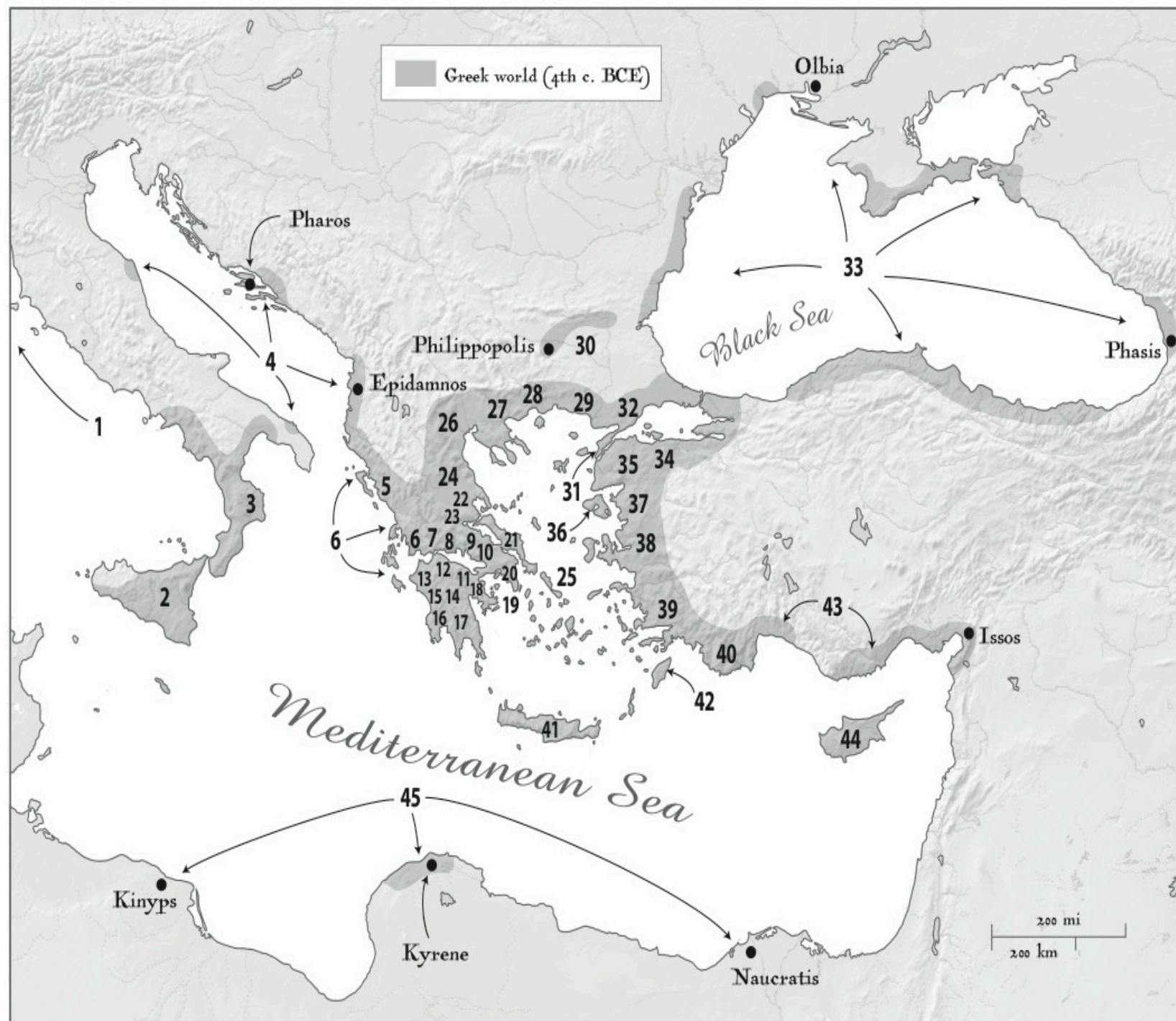A decentralized ecology of
ca. 1000 city-states.

The earth is very large and we [Greeks] … live in a small part of it about the sea, like ants or frogs around a pond….

http://polis.stanford.edu

Plato *Phaedo* 109b

The Greek city-state ecology

Dark shading: Greek world, ca. 350 BCE

45 regions
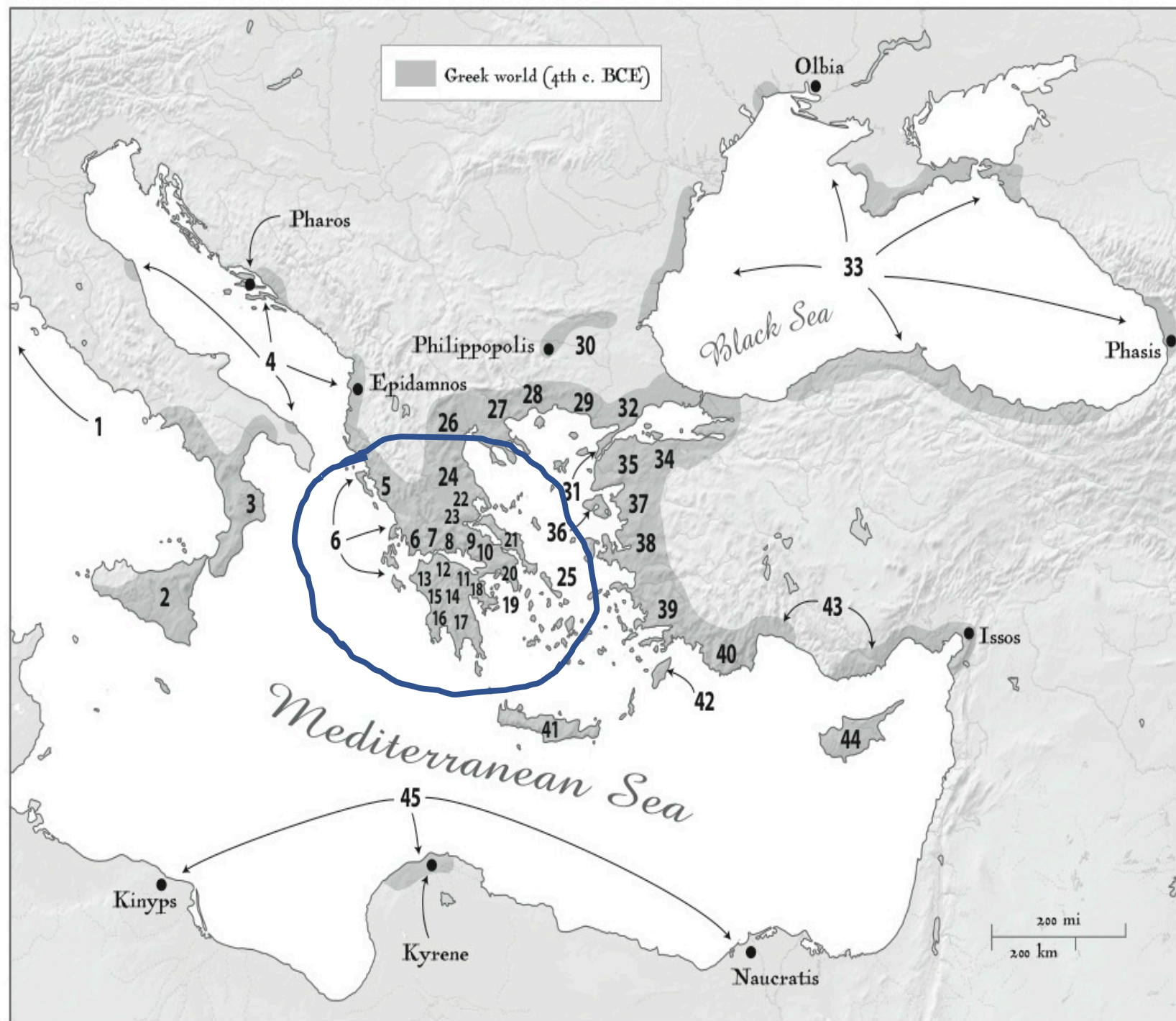
The Greek city-state ecology

"Core Greece" is roughly regions 7-25.

Core Greece is a subset of the Greek world/city-state ecology

Core Greece = territory occupied by Greek state in 1890 (not Crete or Macedonia)

Archaeological data is better and more consistent for Core Greece
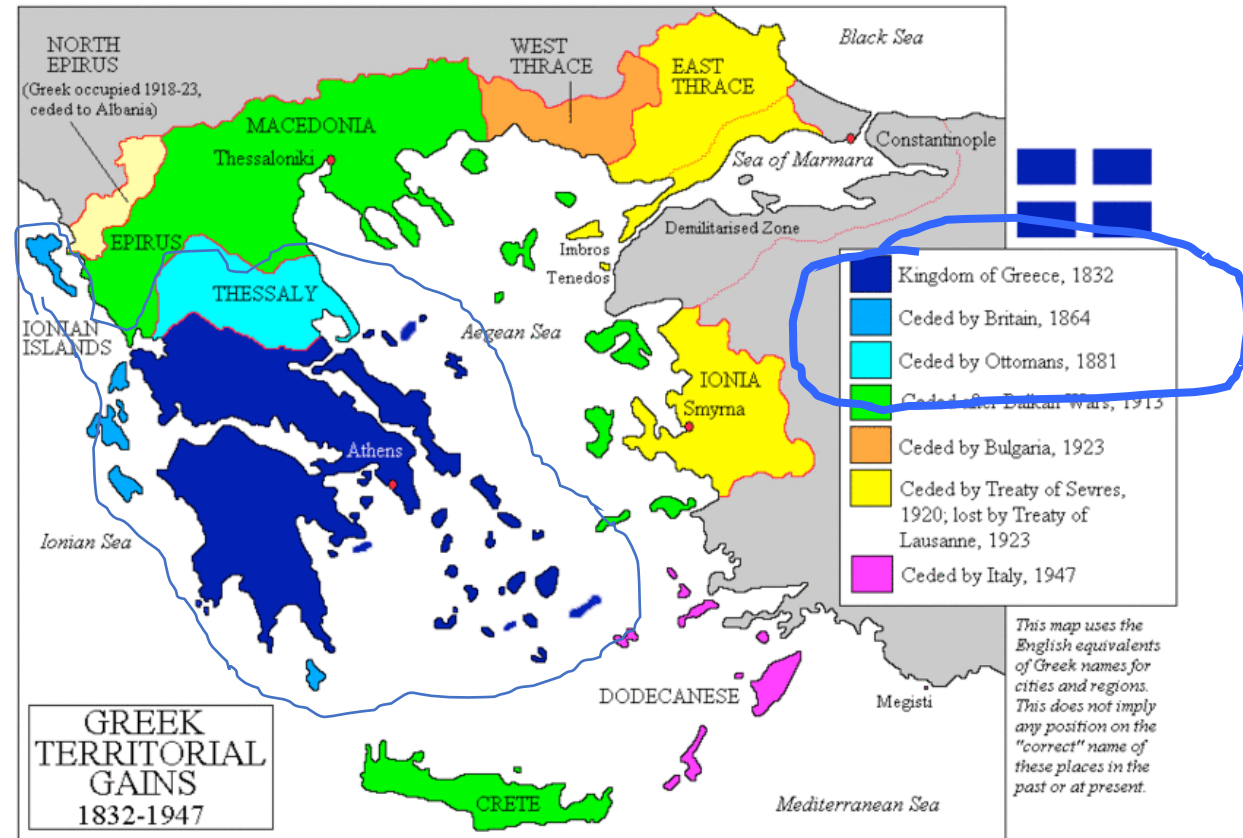
Greek world = subset of Mediterranean climate zone

Olive producing

Greek World: Mountainous topography

Geography: elevation of individual poleis

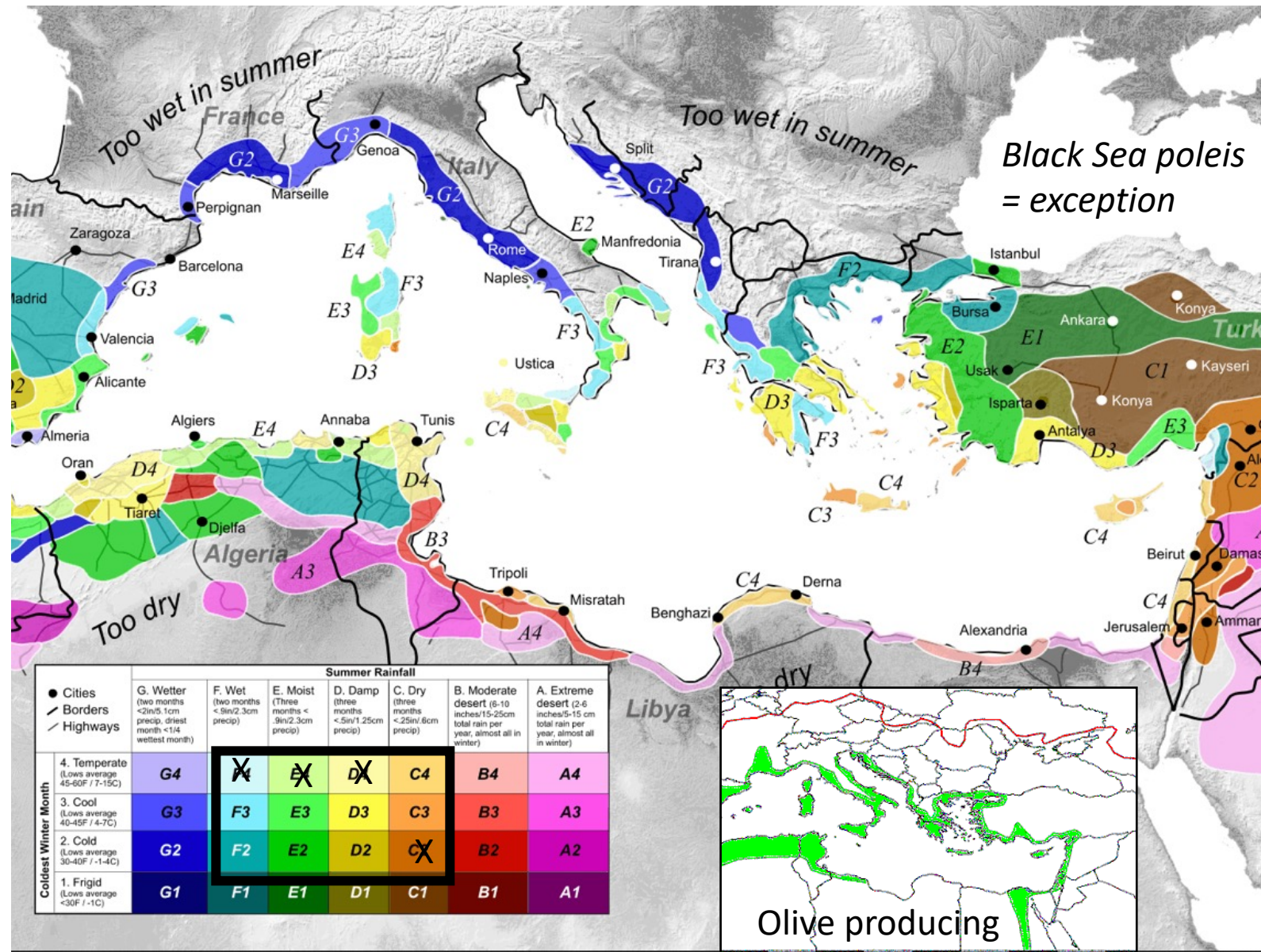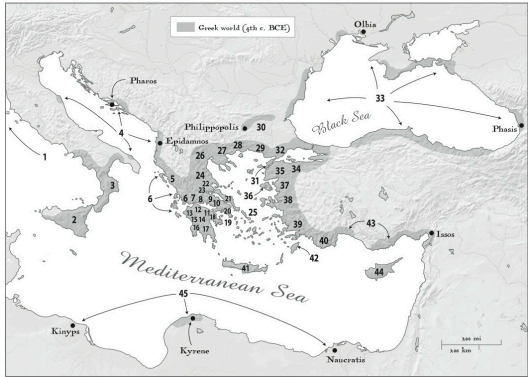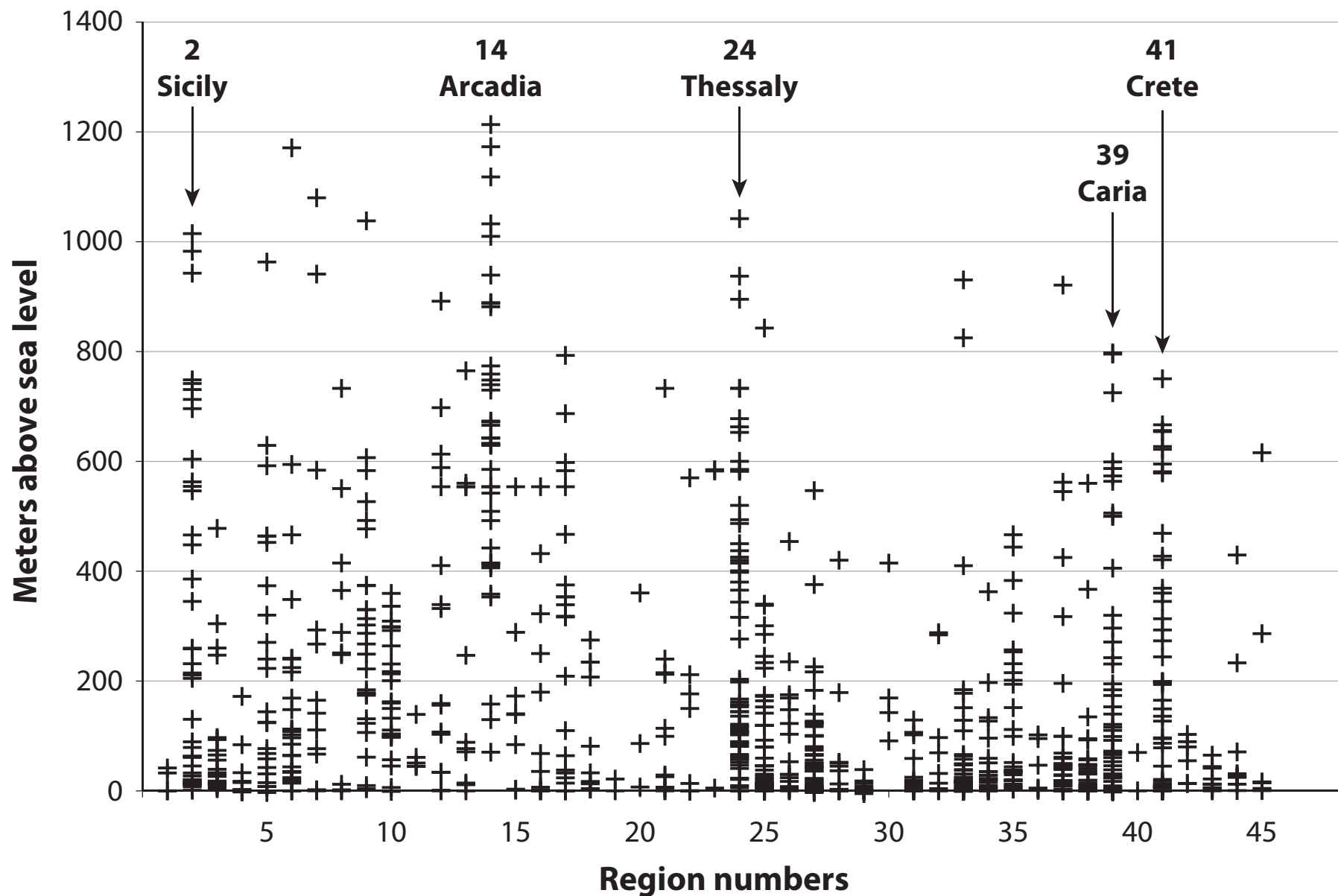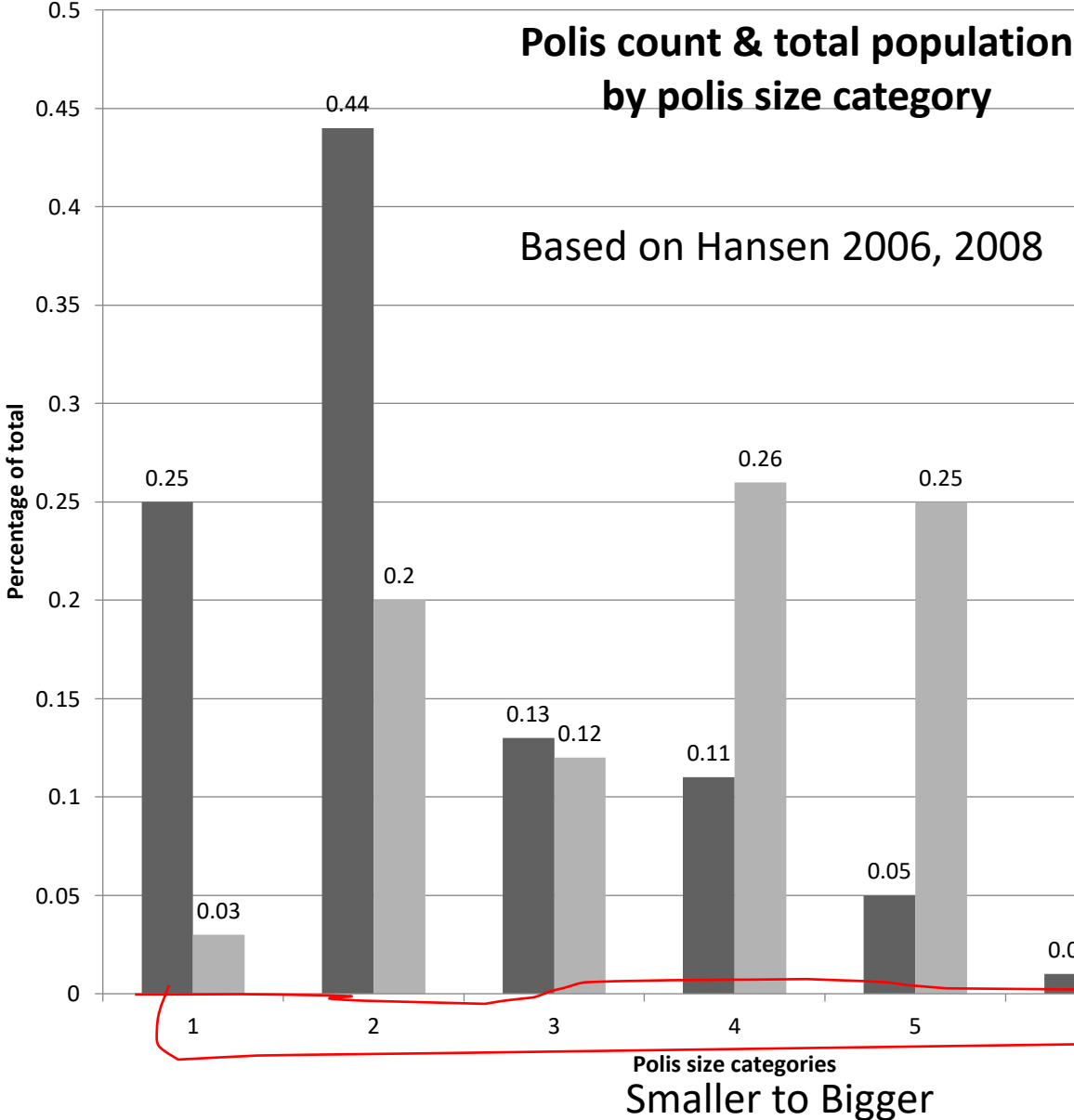# Populations of poleis (n = 1100)

Most poleis are small
Pop 1-7k
#1-3

But most Greeks live in medium to large poleis
Pop. 17-150k
#4-7)

Polis count & total population by polis size category

Based on Hansen 2006, 2008

Polis size	Area km²	Estimated Population range	Estimated average population
1	25 or less	525-2500	1000
2	25-100	875-10,000	3500
3	100-200	3500-25,000	7,000
4	200-500	7000-50,000	17,000
5	500-1000	17,500-75,000	35,000
6	1000-2000	35,00-100,000	65,000
7	Over 2000	75,000-250,000	150,000

■ Polis count
■ Total population

Chart — Percentage of total vs. Polis size categories (Smaller to Bigger)

- Category 1: Polis count 0.25, Total population 0.03
- Category 2: Polis count 0.44, Total population 0.2
- Category 3: Polis count 0.13, Total population 0.12
- Category 4: Polis count 0.11, Total population 0.26
- Category 5: Polis count 0.05, Total population 0.25
- Category 6: Polis count 0.01, Total population 0.08
- Category 7: Polis count 0.003, Total population 0.05

Change over time:
More people

Greece, total population (in millions), 1000 - 300 BCE

Population Estimates:
ca. 300 BCE:
Hansen 2006, 2008
ca. 1000 BCE:
S.C. Murray 2013
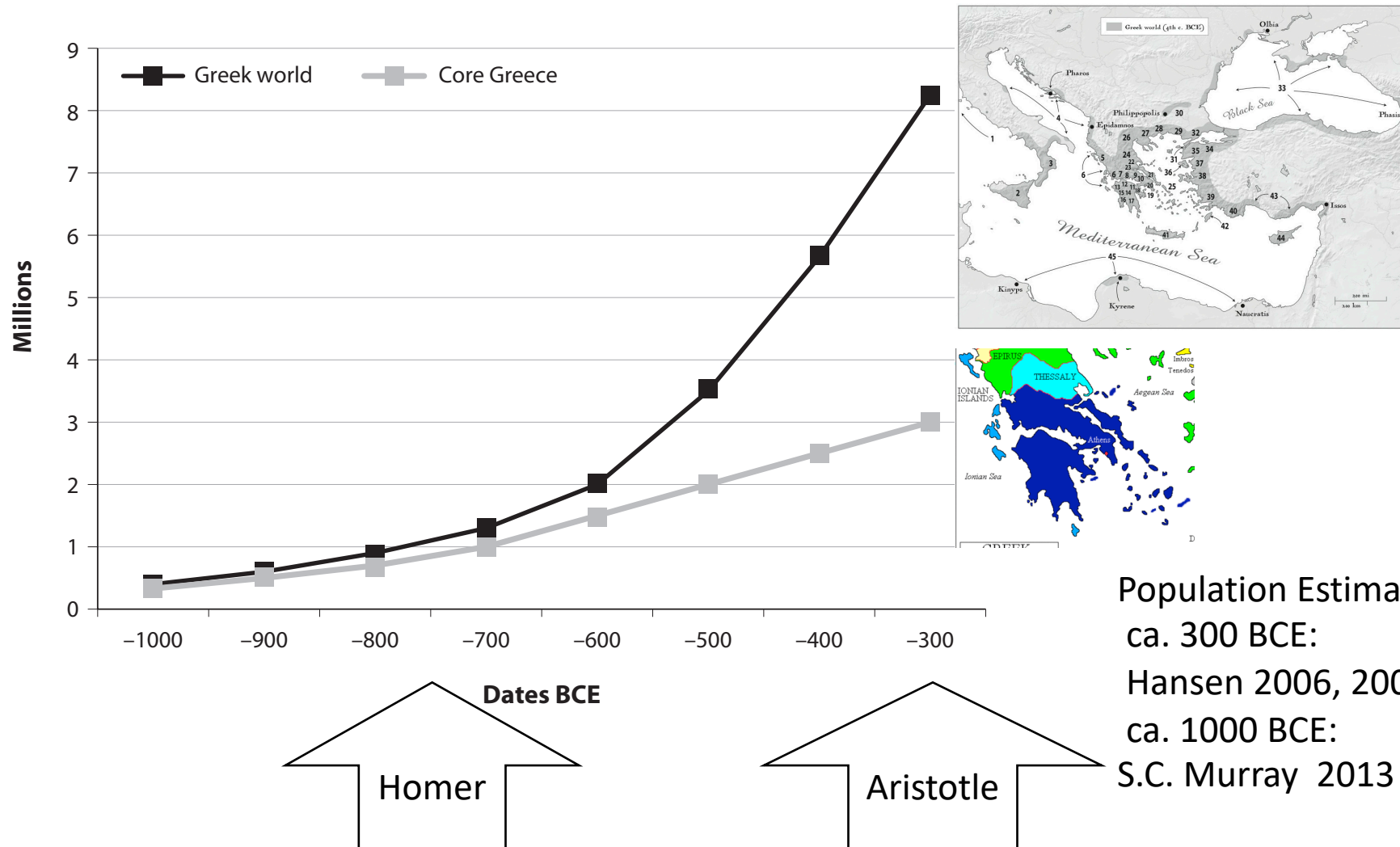
Core Greece. Development index, 1300 BCE to 1900 CE.
Population & consumption estimates
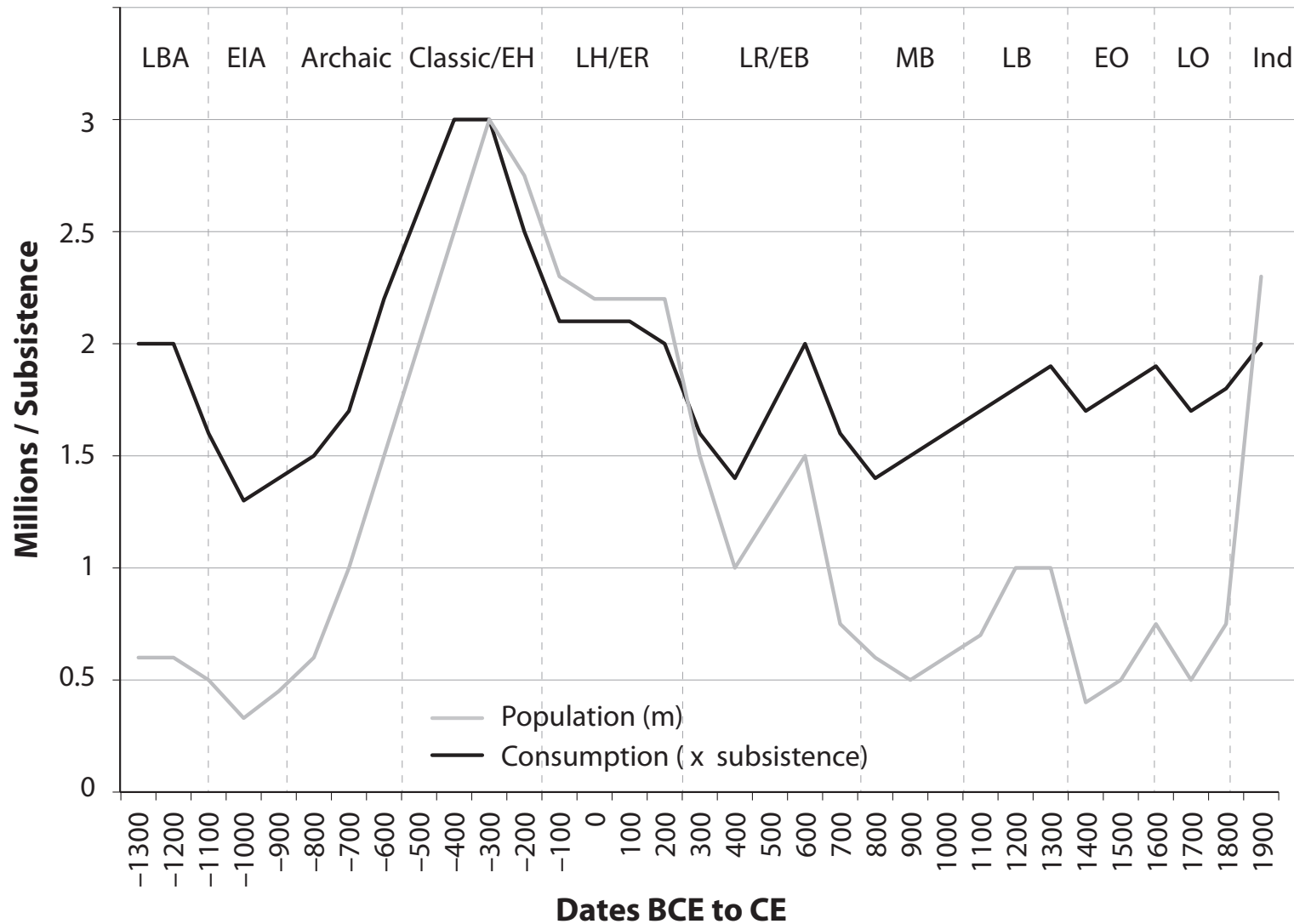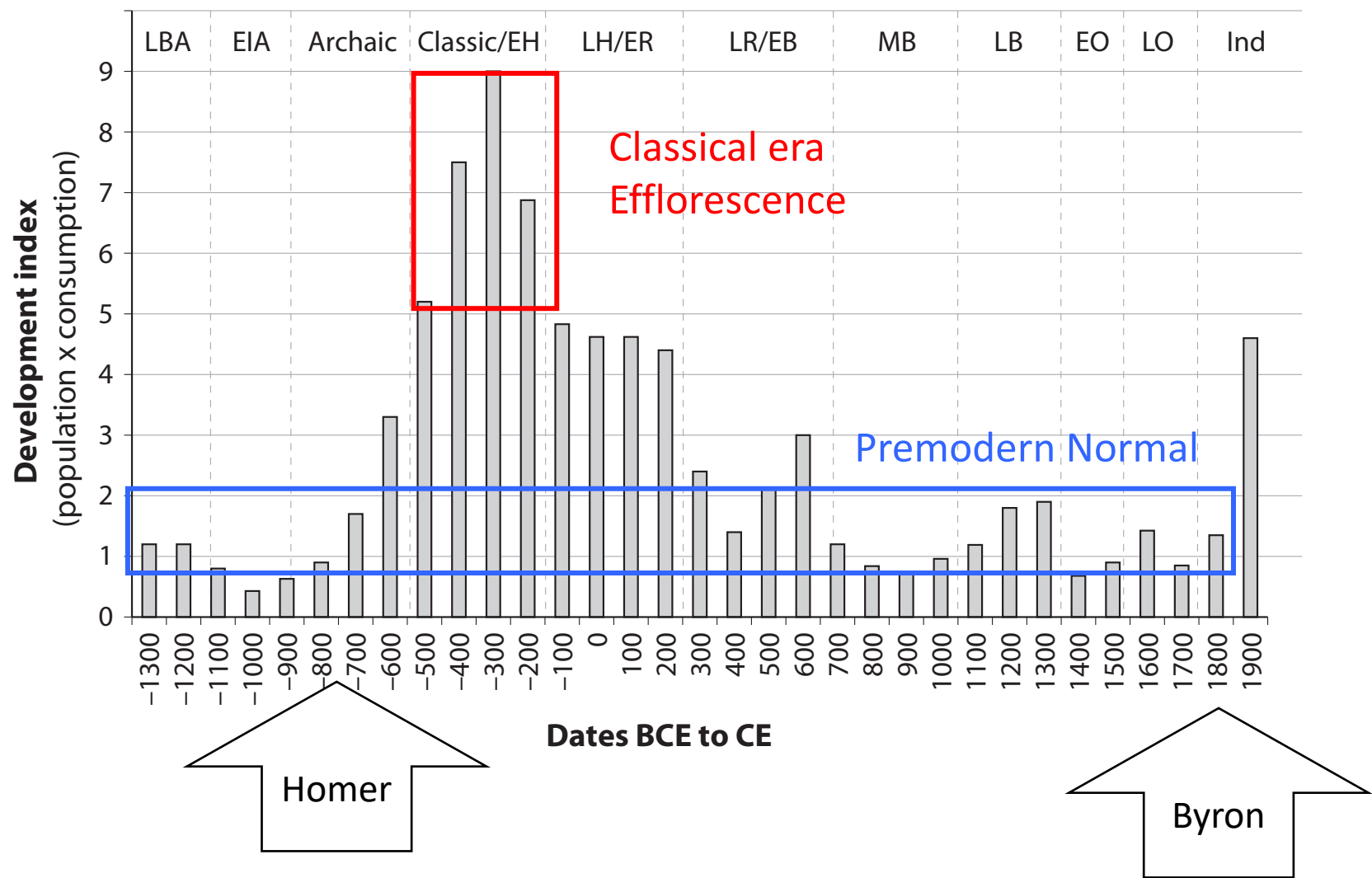
Core Greece. Development index, 1300 BCE to 1900 CE.
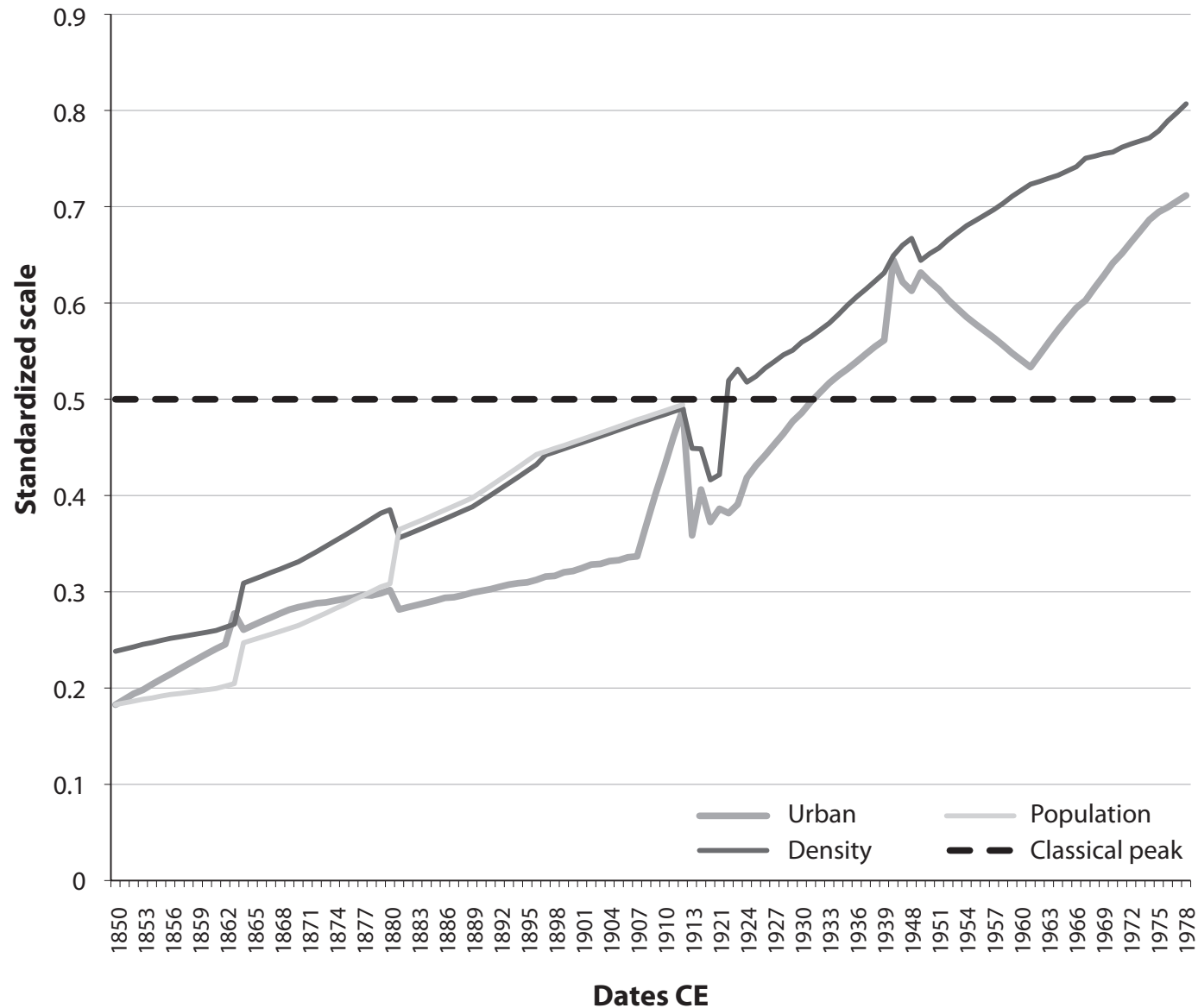(Population (m) x Consumption (subsistence = 1)

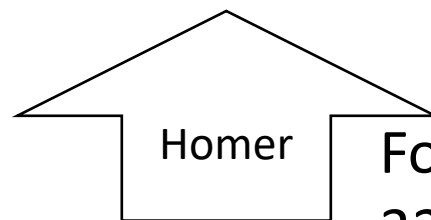# Modern Greek development lags Classical peak until early 20th century

More investment in civic infrastructure.
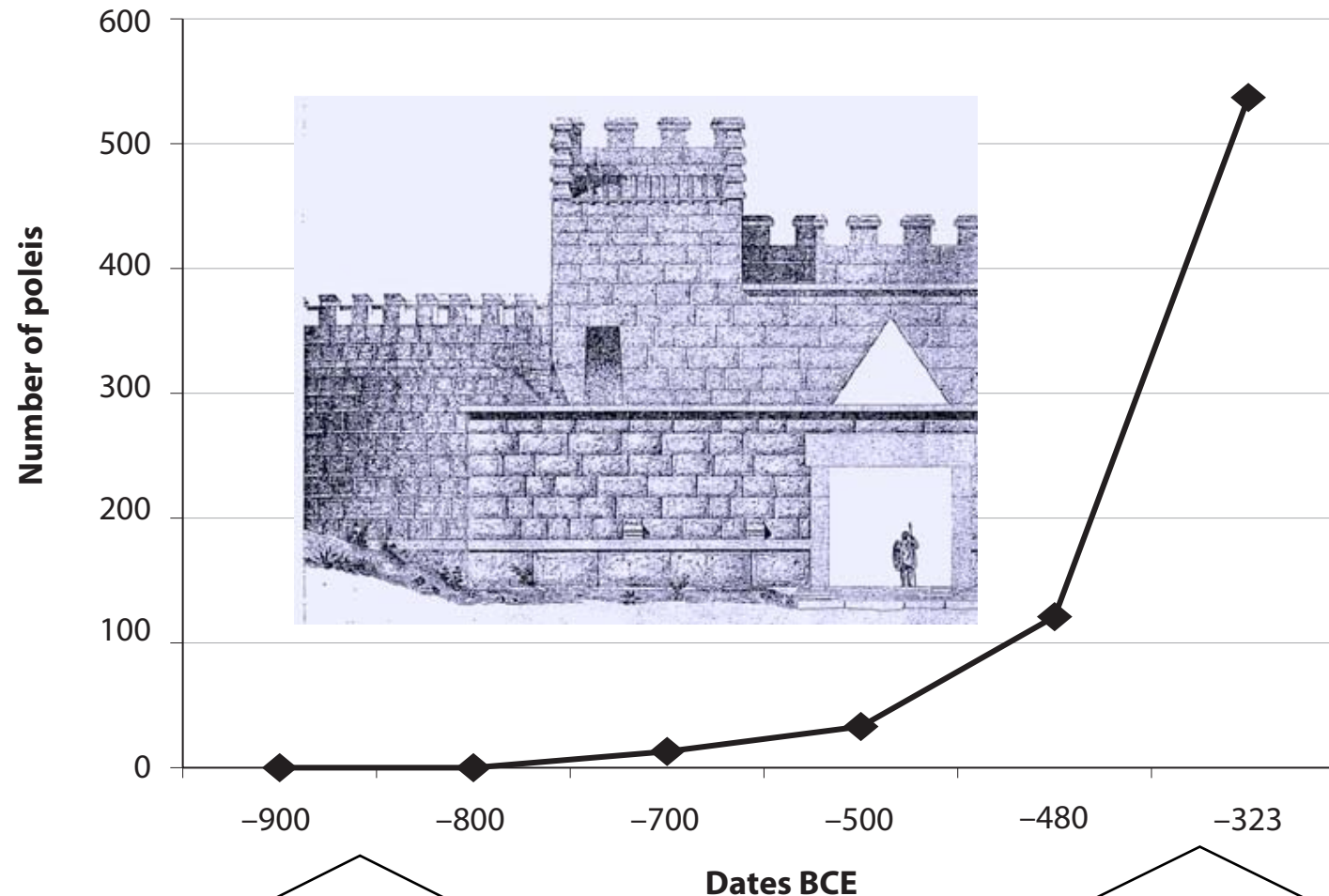
Fortified poleis, 900 to 323 BCE

Homer

Aristotle

Data: Frederiksen 2011, *IACP*
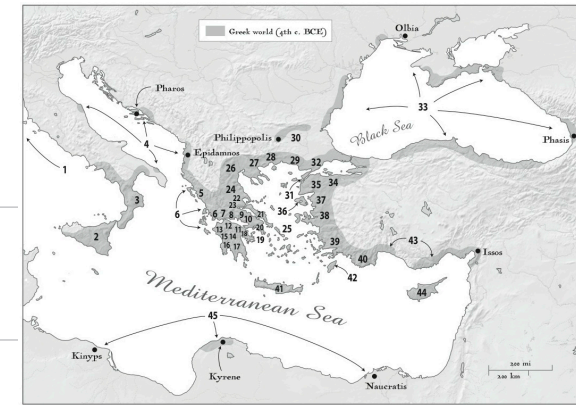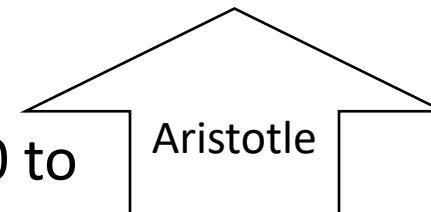
Summary of proxy-indicators of relative economic growth in the Greek world, 800-300 BCE. **Minimal conclusion: enough growth to demand explanation**

	Start date (TI)	End date (T2)	Multiplier (T2/T1)
Population	**9th**	**4th**	**10-20**
House floorplan	9th	4th	3.5
Household goods	9th	4th	5-10
Per capita consumption	**9th**	**4th**	**1.5-2**
Aggregate growth	**9th**	**4th**	**15-20**
Names (Attica)	6th	4th	14
Hoard size, median	6th	4th	2
Hoard size, average	6th	4th	4
Coins in hoards	5th	4th	3
Hoards, number	5th	4th	2

How high was the Classical Peak?
Wages of non-skilled workers

Table 3. Athens and Holland, wheat wages

Athens	Pay (dr/day)	Wheat price (dr/medimnos)	Wheat wage (liters/day)	Multiplier x survival
Athens 5th BC	1	6	9	2.6
Athens 4th BC	1.5-2.5	5-6	13-16	3.7-4.6
Holland 16th-18th CE			10-17	2.9-4.9

Note: Based on Scheidel 2010.

Income Inequality. Athens ca. 330's BCE

Athens 330's BCE

Gini = 0.37
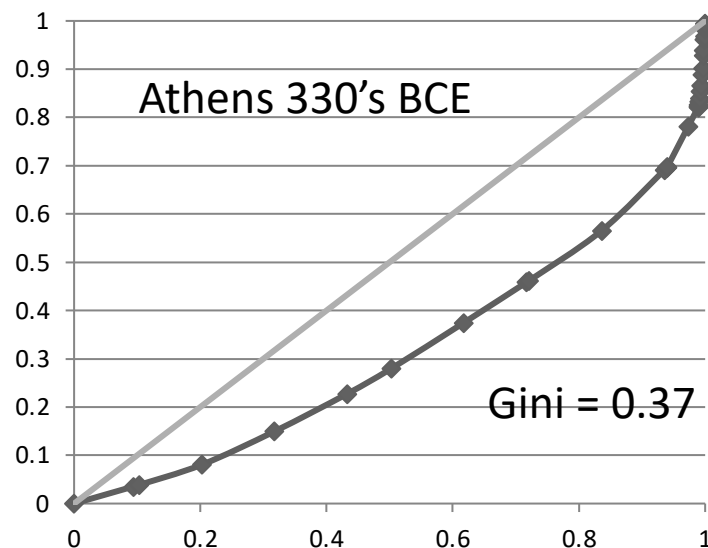
Inequality extraction ratio
% of maximum feasible inequality

Higher = more unequal.

(method, and data for all but Athens: Milanovic and Williams 2010)

Preindustrial average	77
Roman Empire 14 CE	75
Holland 1561	76
France 1788	76
England & Wales 1688	57
Athens late 4th BCE	53

(After Milanovic, Lindert, and Williamson 2010)

Fig. 2. *Pre-industrial Inequalities: Estimated Gini Coefficients, and the Inequality Possibility Frontiers*

Economic outcomes ↑
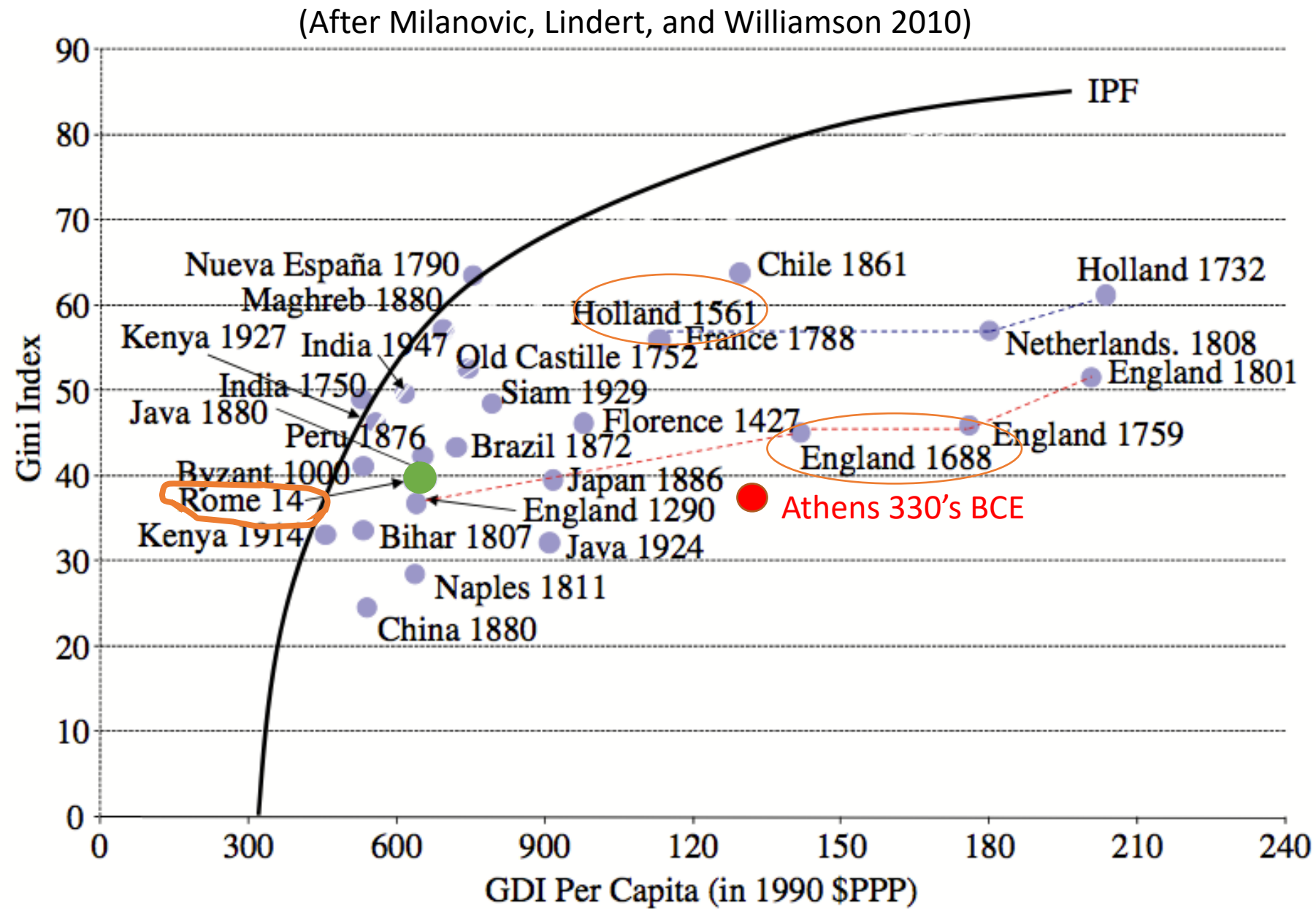
V

Efflorescence
Economic growth, Creative destruction
Stock of knowledge, High culture

↑

IV

Specialization
Exchange
(information, goods, services)
Learning, Emulation
Mobility, Mobilization

Behavioral choices ↑

III

Capital investment
(human, social, material)
Low transaction costs

→

Innovation
(technology, institutions)
Rational cooperation

Political inputs ↑

II

Fair rules for citizens in
citizen-centered states
(not monarchy)

Competition among states with
shared background culture
(not unitary empire)

I

Nature
Geography, resources, climate
Severity, duration, and timing of collapse
Human capacity for decentralized cooperation

Features of the Greek city-state ecology

- City-states were *states* – laws, military capacity, taxation authority – background norm of state independence.

- Ecology of *competing* states was *decentralized* – no imperial hegemon

- Institutional *experiments* and *emulation* of successful institutions –> *convergence* (coinage, federalism, Athenian model: democracy)

- *Rational cooperation* among states (federalism, alliances, trade)

- *Umbrella culture* (language, religion) lowers transaction costs, facilitates mobility.

Cultural assumptions: motivation & behavior

- A Greek "Folk Theory" of instrumental rationality
  - Widely held belief that individuals and groups are motivated by self-interest; expected utility maximization informs strategic choices of individuals.
  - Socrates: "All persons deliberately choose, out of what is available to them, what they think is most advantageous to themselves, and they do this." (Xenophon, *Memorabilia* 7.6).
- Folk Theory explains
  - How self-conscious choices drive political and economic behavior (and provokes a philosophical critique of instrumentalism)
  - Design of incentive-compatible political and legal institutions.

Why is any of this news?

- Dominant century historiography on the economy of the ancient Mediterranean world is sociological – Weberian and/or Marxist.
  - Notably Sir Moses Finley (*The Ancient Economy).*
- Rejection of quantification as impracticable or anti-humanistic.
- Archaeological evidence ignored as irrelevant, too dispersed, too specialized
- Motivated reasoning leads to biased selection of primary texts and simple misreading of literary and documentary evidence.
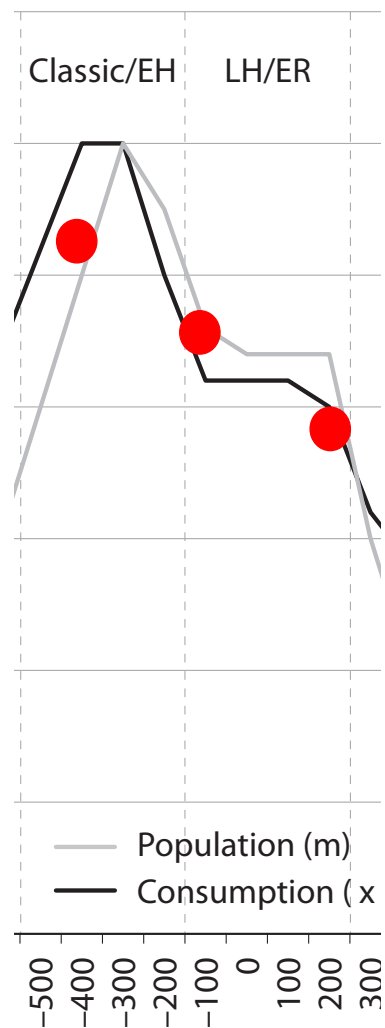
Why, where, & when regression to the mean?
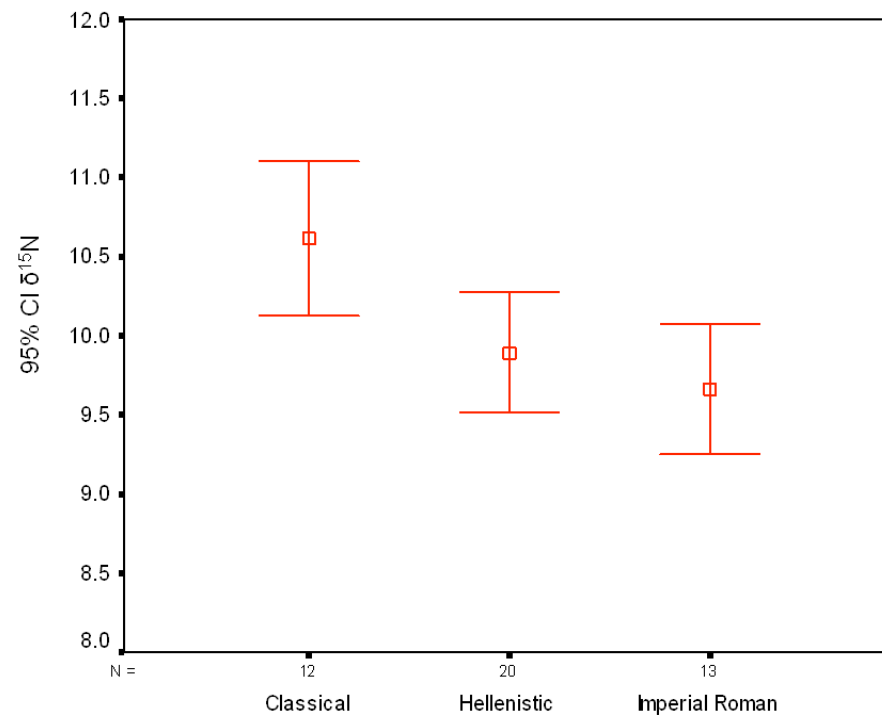
Core Greece.
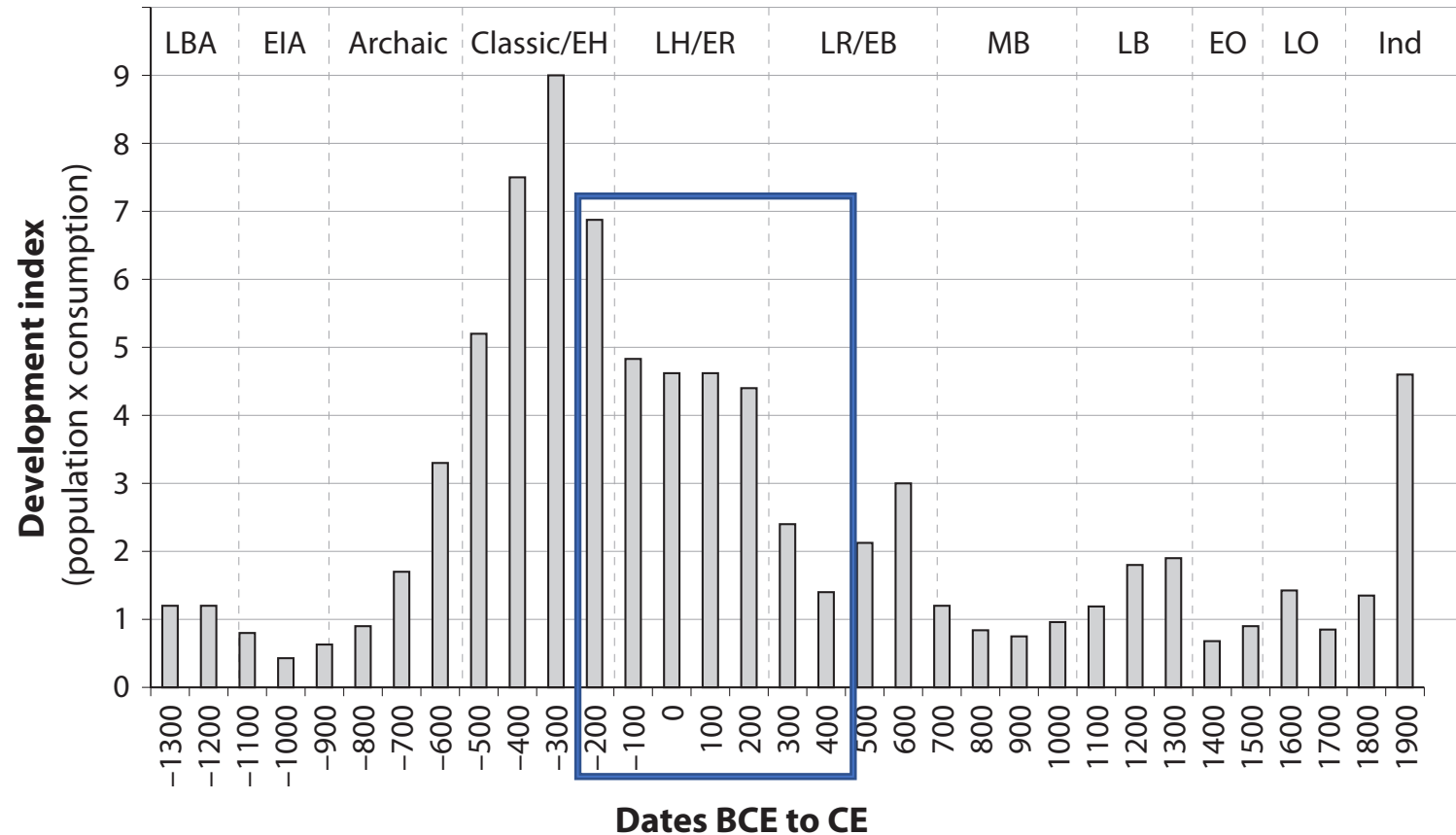
Core Greece. Development index, 1300 BCE to 1900 CE.
Estimated population (millions) x consumption (multiples of subsistence)
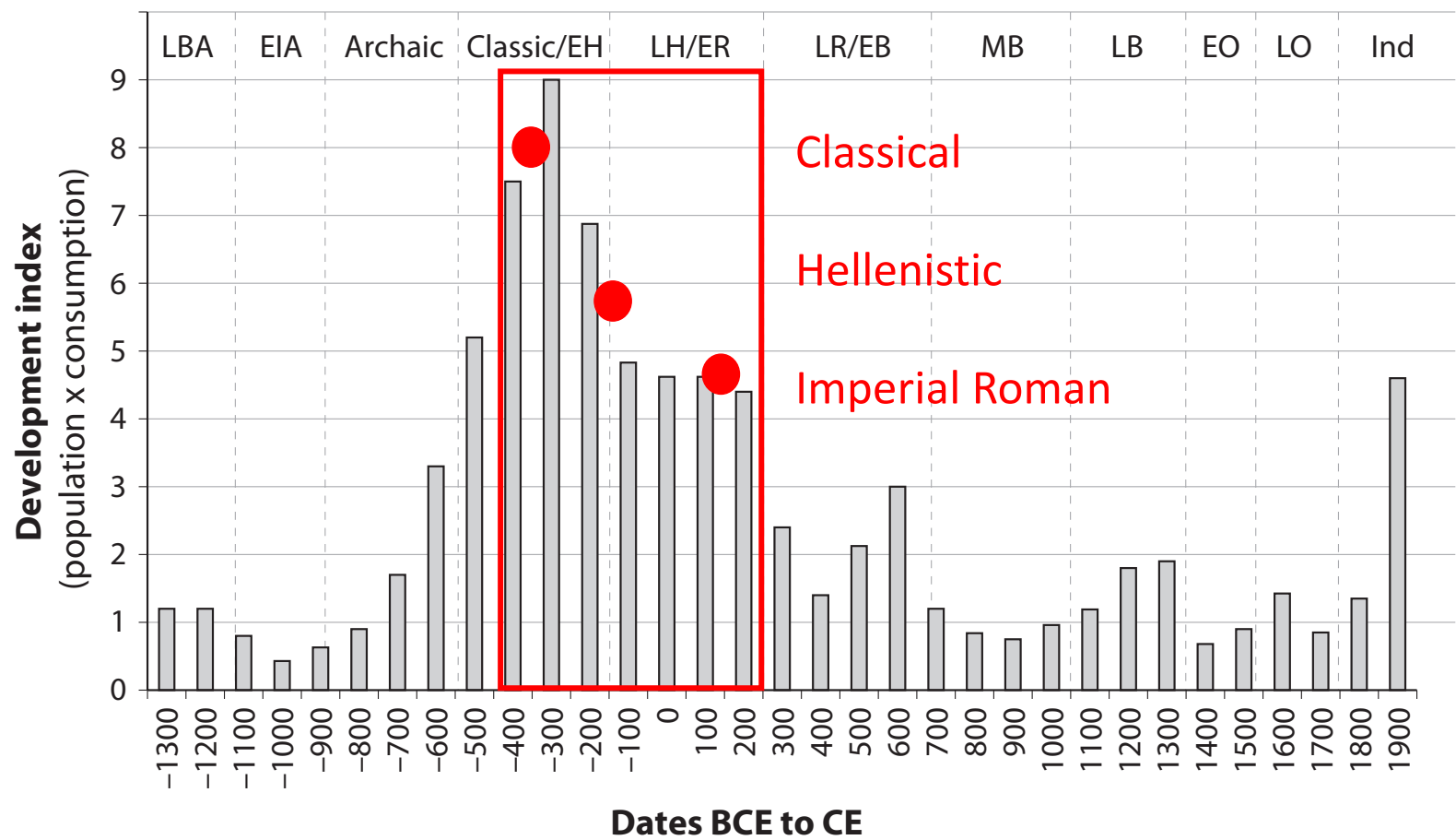
Development index, Ca 400 BCE – 200 CE.

## Lagia 2015. Protein intake in Athenian diet. Ca, 400 BCE – 200 CE

Classic/EH   LH/ER

Population (m)
Consumption (x

-500 -400 -300 -200 -100 0 100 200 300

95% CI δ^{15}N

12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0

N =   12   20   13
   Classical Hellenistic Imperial Roman

Temporal comparison of mean δ^{15}N
(high values = better nutrition)

Why, where, & when regression to the mean?

Hypothesis.
Rome conquest:
Costs of increased
political centralization
exceed benefits of
market integration
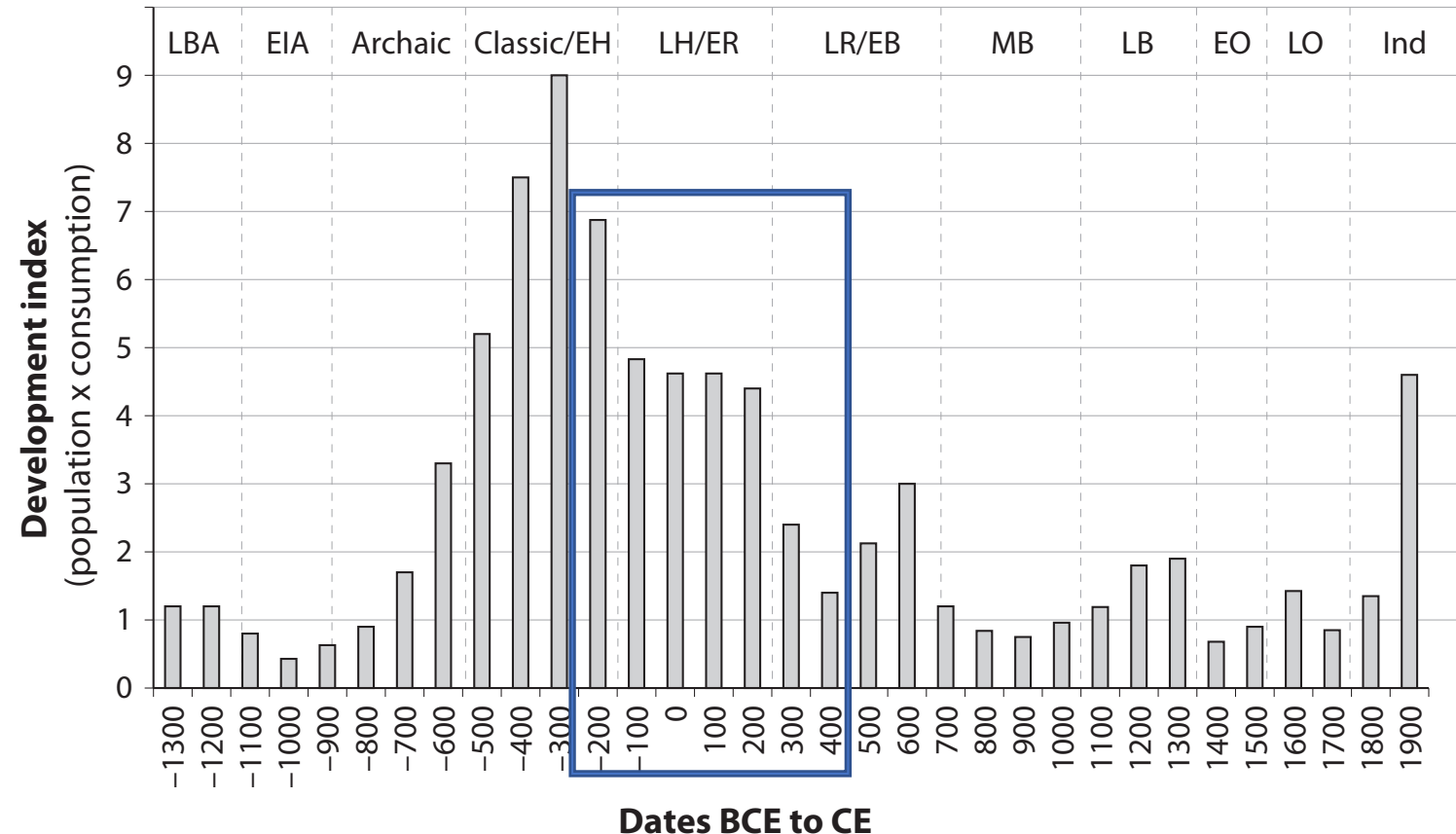
But note that demographic & economic decline appears *later* in Greek-speaking western Asia (Ma in progress) –> varying impacts across polis ecology

JOSIAH OBER

THE
RISE AND FALL
OF
CLASSICAL
GREECE

The Greeks and the Rational

THE DISCOVERY OF PRACTICAL REASON

Josiah Ober