Geoarchaeological evidence of multiple climatic and anthropic triggers driving the breakdown of the Terramare civilization (Bronze Age, Northern Italy)

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Archaeological excavation carried out under the authorization of MiBACT
The Terramare Culture of the Po Plain (N Italy)

Complex material culture

Subsistence based on intensive agriculture and herding
The Terramare culture in the Po plain covered the Middle (BM) and Recent (RB) Bronze Age, and disappeared before the transition to the Final Bronze Age (FB).

Cremaschi and Gallinaro, in press
The Terramare Culture of the Po Plain (N Italy)

Settlement type and facilities for water management
The Terramare Culture collapsed at ~1170 BCE

What are the reason(s) of the collapse of the Terramare society?

- Social transformation?
- Population relocation?
- Climate/environmental changes?
The Terramare Culture collapsed at \(~1170\) BCE

What are the reason(s) of the collapse of the Terramare society?

During the Successo-Terra Project, we investigated two archaeological sites:

- The Terramara Santa Rosa di Poviglio in the Po plain
- The Bronze Age archaeological site of San Michele di Valestra in the Apennines

Same cultural horizon, but different environments and different adaptations
Terramara Santa Rosa di Poviglio

Villaggio Grande (VG): final Middle BA, apogee in the Recent BA

Villaggio Piccolo (VP): founded in the Middle BA

Mele et al., JAS 2013
Key geoarchaeological evidence: the hydraulic system

Wells providing water for domestic use and productive activities

Water management and land use in the terramare and a possible climatic co-factor in their abandonment: The case study of the terramara of Poviglio Santa Rosa ( northern Italy)

Mauro Cremaschi*, Chiara Pizzi*, Verauka Valorechi*
Key geoarchaeological evidence: the hydraulic system

The number and depth of water wells increase towards the Recent BA.

This suggests the progressive lowering of the water table.
Key geoarchaeological evidence: the hydraulic system

The infilling of the moat formed for a long time and preserves polled data covering most of the life of the site.
Key geoarchaeological evidence: the hydraulic system

The infilling of the moat formed for a long time and preserves polled data covering most of the life of the site.

Increase of pasturelands

Cremaschi et al, QSR 2016
Key geoarchaeological evidence: the hydraulic system

Pollen data suggest the spreading of dry pastures that corresponded to (i) a land use change under dry climate conditions and (ii) the abandonment of cultivation
Mountain Bronze Age settlements as comparison

Preliminary evidence from the San Michele di Valestra site
Mountain Bronze Age settlements as comparison

Preliminary evidence from the San Michele di Valestra site
The stratigraphic record is preserved below a rock fall.
No environmental crisis in the mountain?

Mountain Bronze Age settlements as comparison

Continuity in the settlement at San Michele di Valestra site from the Bronze Age to the Iron Age

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Looking for independent climatic proxy: the Mussina cave
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A speleothem covering the Terramara cultural trajectory

- Huge decrease of the growing rate
- C and O indicate wet environmental conditions during most of the Terramare trajectory (especially the beginning)
- A decrease in rainfall between 3.2 and 3 ka BP (end of the trajectory)
Looking for independent climatic proxy: the Mussina cave

Data suggest other phases of marked rainfall decrease, but only the second event may have impacted the Terramare culture.

- Less intense climatic changes?
- Does climate change impacted on a society suffering strong demographic (and settlements) increase?
Po Plain Vs. Apennines: contrasting evidence (and response)

Geoarchaeological, pollen, and climatic proxy data suggest:

- Wet conditions helped the increase of settlements
- Overgrazing + demographic explosion: negative mix
- Unbalanced use of natural resources
- Collapse and/or relocation of populations in the plain.
- Resilience of population in the mountain.
- No climatic determinism!
Thank you!