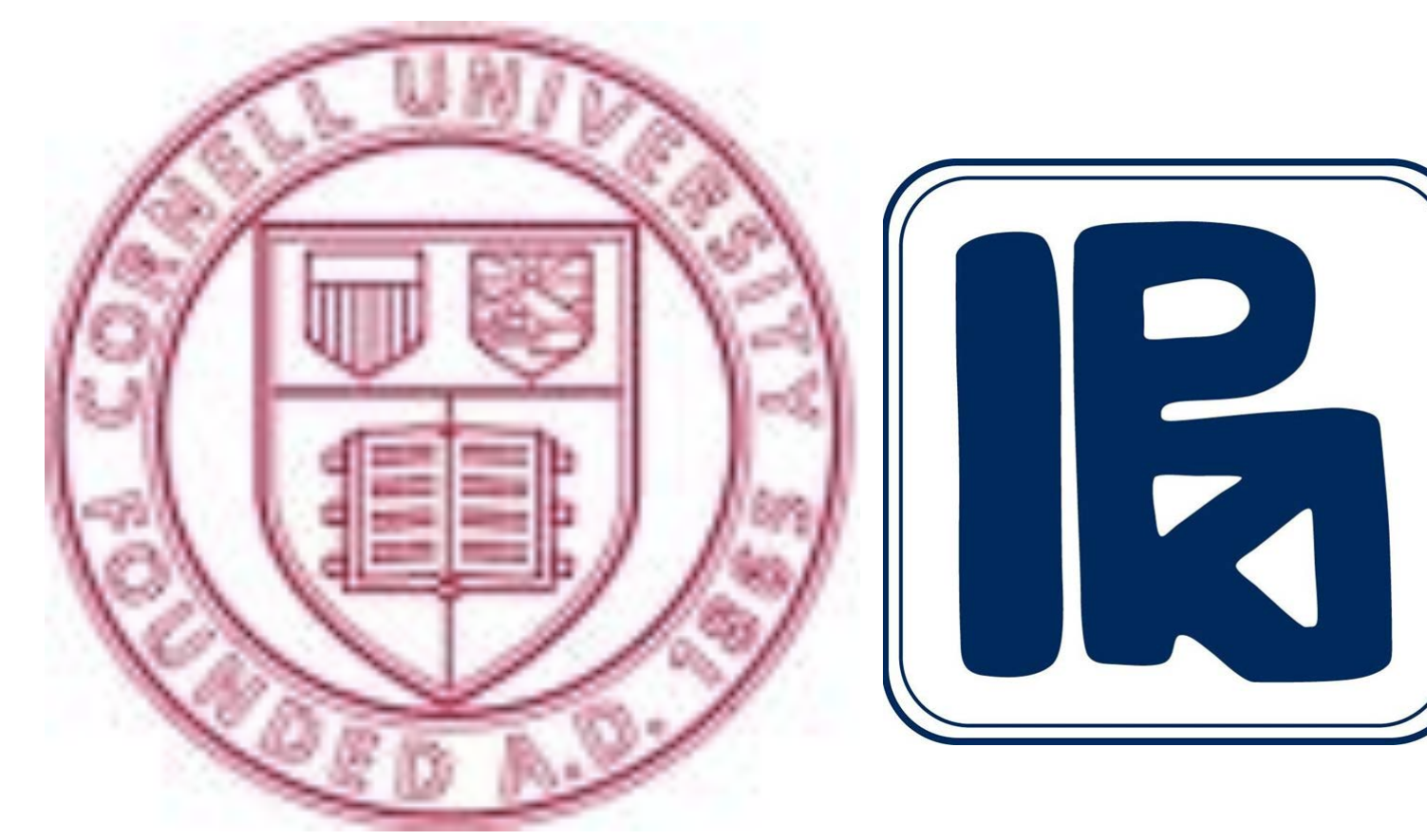


BUILDING ENVIRONMENTS: DENDROCHRONOLOGY AND CULTURAL HERITAGE IN CYPRUS

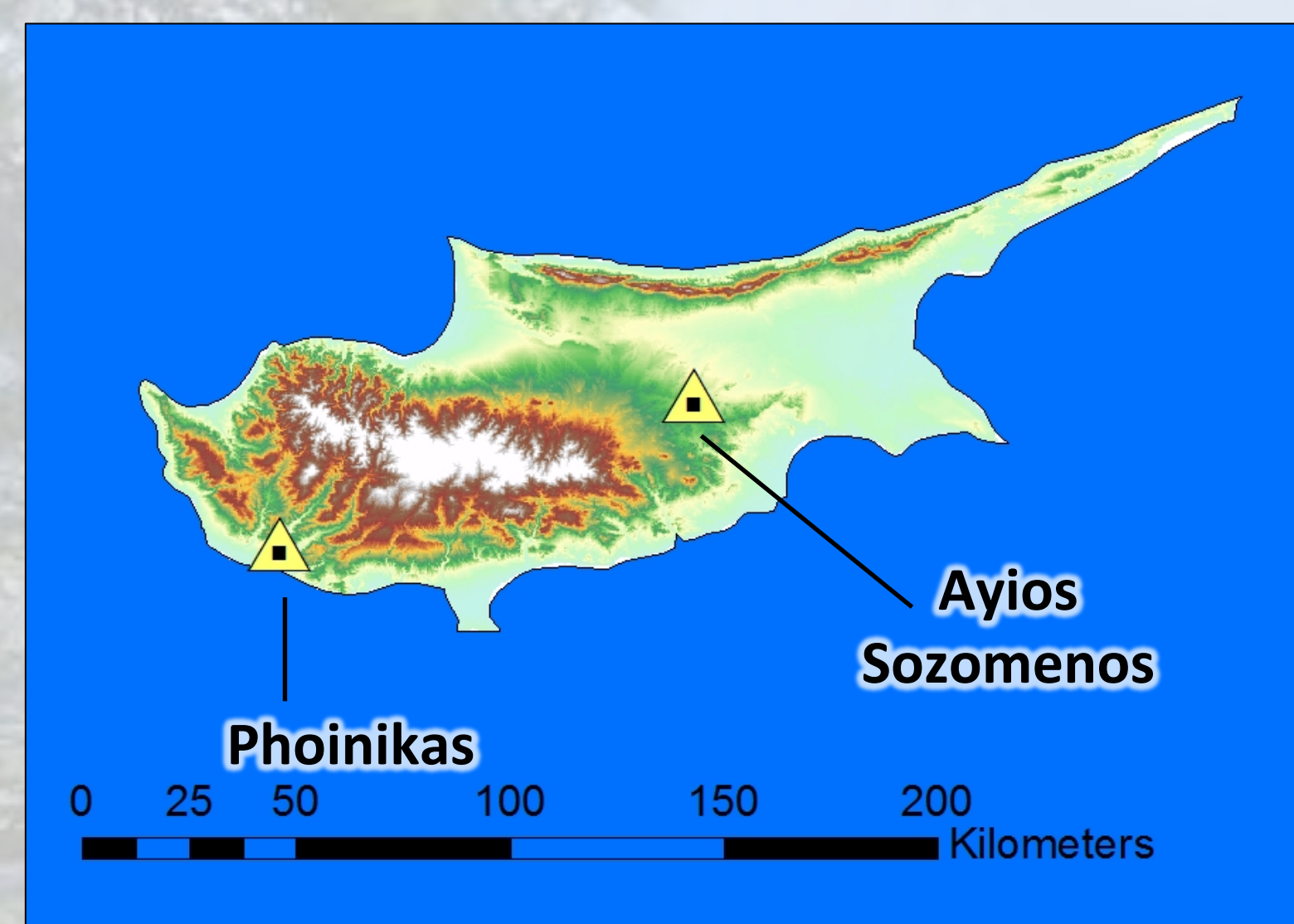


Cornell University: Brita Lorentzen,
Sturt W. Manning, Amanda Gaggioli
Cyprus Institute: Nikolas Bakirtzis,
Marina Faka, Ropertos Georgiou

INTRODUCTION

The Cornell Tree-Ring Laboratory, with the Cyprus Institute, is mapping, documenting, and dendrochronologically (tree-ring) dating buildings in multiple historical villages abandoned during Cypriot Greek-Turkish inter-communal strife during the 1960s-70s. Our main aims are to:

1. Obtain precise construction dates for buildings in these villages, in order to gain information about the settlement history of these villages during a frequently neglected period of history on Cyprus
2. Use dendrochronological timber sourcing to learn about Ottoman-era forest use and environmental history in Cyprus



We concentrate here on the results from two villages, Ayios Sozomenos and Phoinikas (above). Both settlements trace their foundation to the Middle Ages and are associated with Lusignan (1191–1489) and Venetian rule (1489–1571) over Cyprus. During the period of Ottoman rule in Cyprus (1571–1878) both villages became settled by Turkish-Cypriot majorities, enjoying growth through the British period (1878–1960) and foundation of the Republic of Cyprus, until their inhabitants deserted them during the hostilities that led to the *de facto* division of the island in 1974.

METHODS

- Cut sections or drilled cores of building timbers were sampled at both villages, and their contexts marked with dGPS.
- Sample tree-rings were measured and chronologies built and dated using standard dendrochronological methods.
- Tree-ring patterns of East Mediterranean species have distinct differences by latitudinal and altitudinal zones. We examined where correlation between our historical timbers and reference chronologies from forests in these different dendrochronological “zones” were strongest, in order to source their likely area of origin (“dendroprovenancing”).



Maps showing correlation between the Ayios Sozomenos Building 1, Group 2 pine chronology and other *Pinus brutia* forest and historical chronologies (above), and the Ayios Sozomenos fortified structure chronology with *Pinus sylvestris* chronologies (right). Correlation is measured by Student's t-value; increasing circle size corresponds to higher correlation.

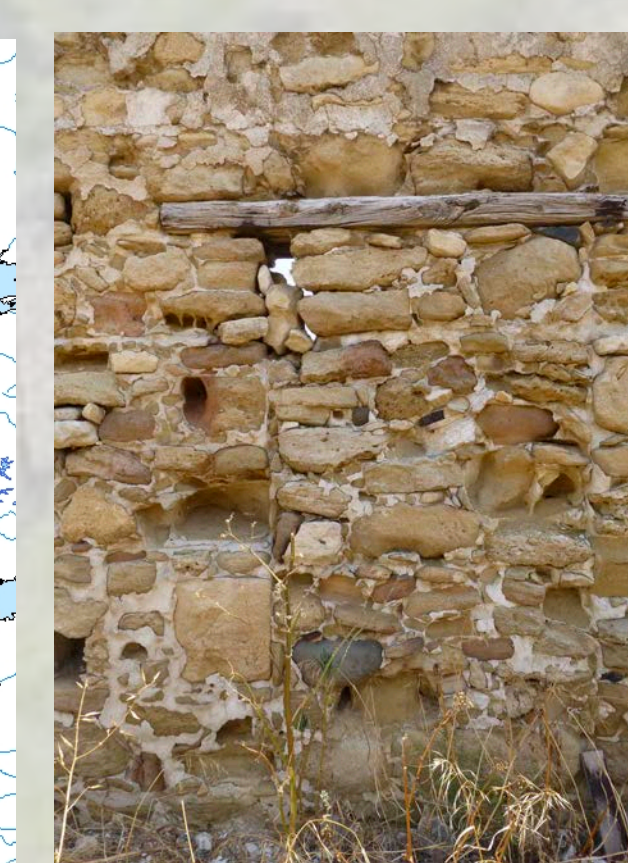
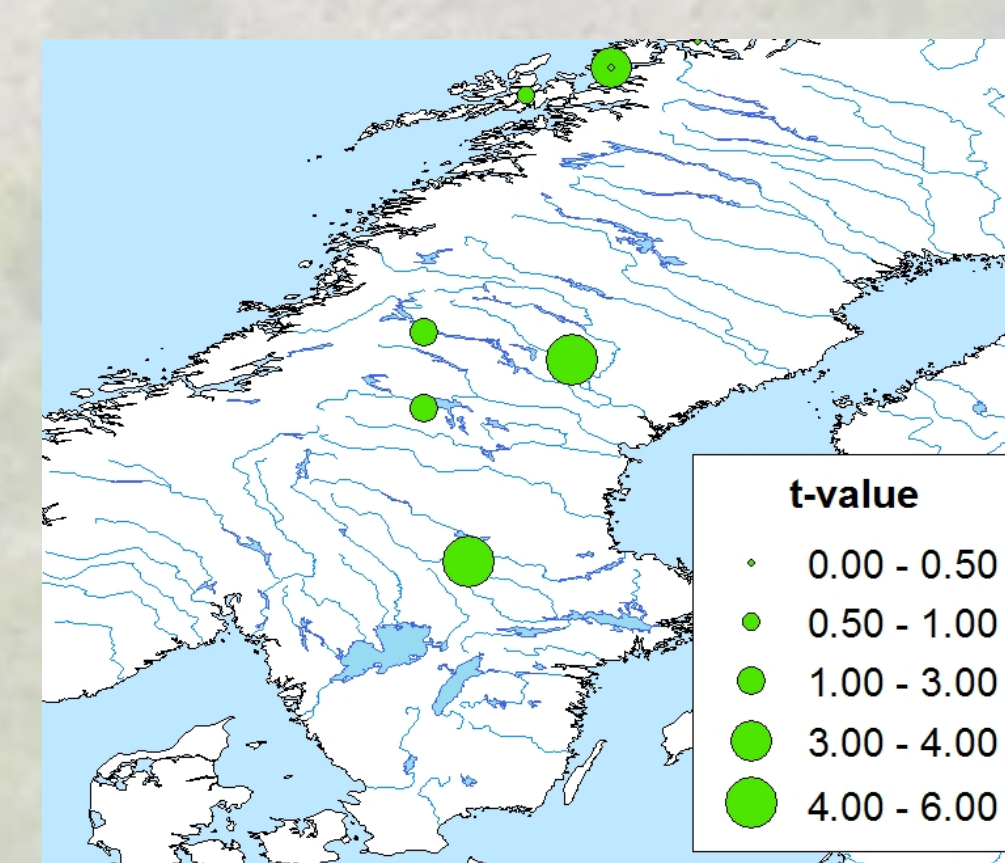
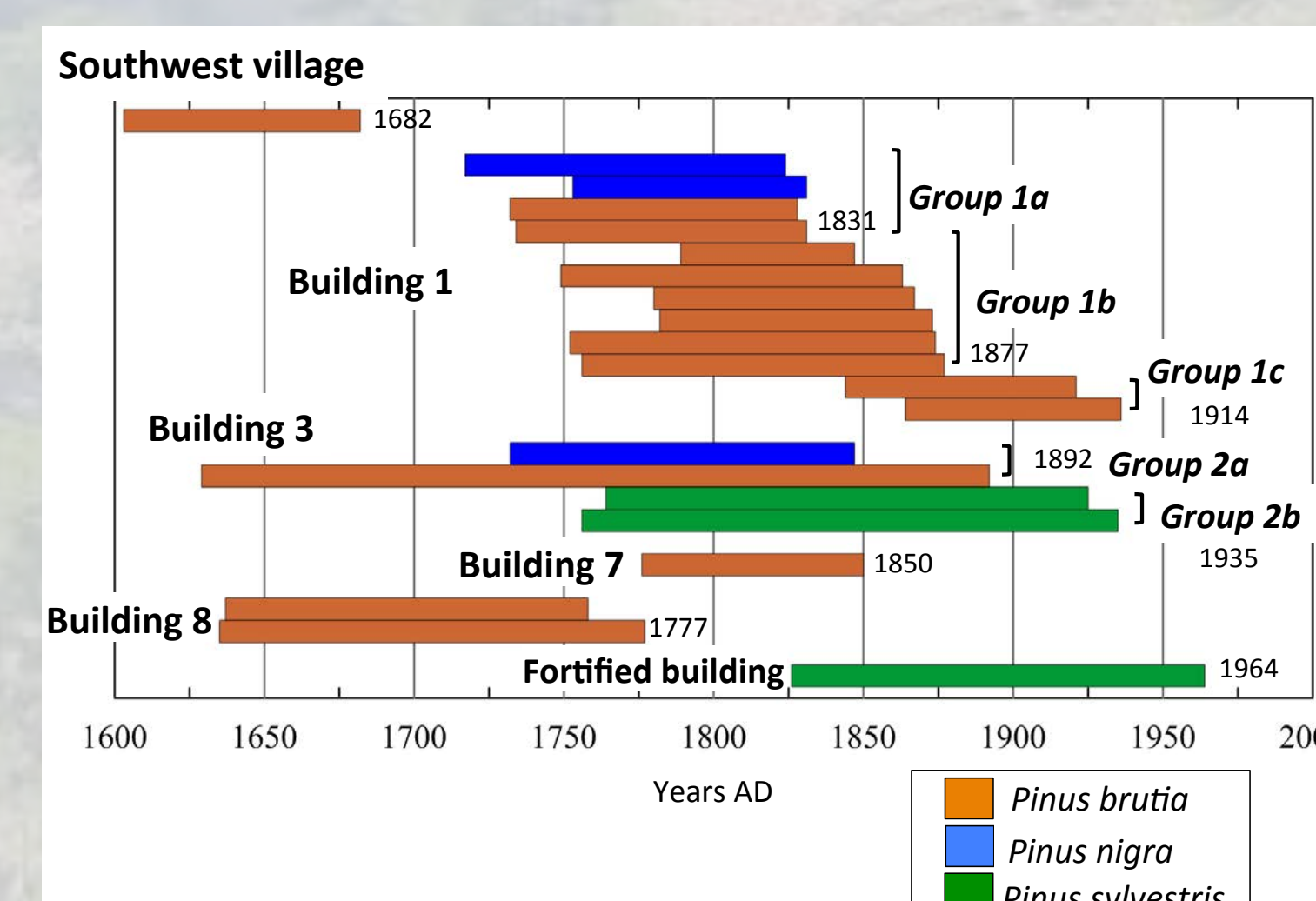
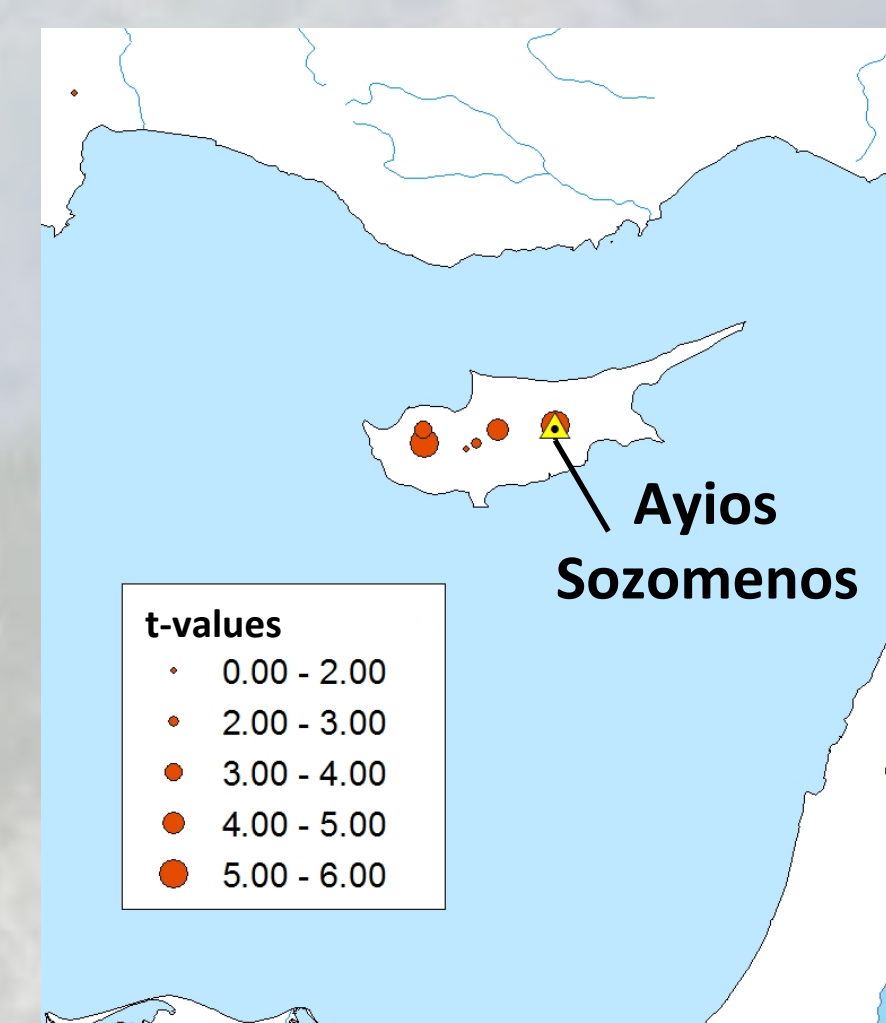


AYIOS SOZOMENOS



We sampled timber from the ruins of 8 mudbrick buildings; the early 16th century Gothic church of Ayios Mamas; a fortified stone building in the western part of the village by the Alikos River, and loose timber near a cistern in the southwest part of the village (left).

- Chronologies were built with wood from 6 sampled areas, and dendrochronologically dated and sourced (*bar graph, below*). None of the samples has preserved bark or the tree's outermost ring, so dates give only a *terminus post quem* for when the timber was cut and used.
- Most sampled buildings were constructed after the mid to late 19th century, although timbers from earlier buildings may have been re-used in Building 1 and near the cistern.
- 19th century timbers are generally local Calabrian pine (*Pinus brutia*) from low to mid-altitude Cypriot forests. High altitude black pine (*Pinus nigra*) was also used.
- Later repairs were made to the fortified building and Building 3 during the mid-20th century when doorways and windows were strengthened and blocked because of heavy inter-communal fighting prior to village abandonment. These timbers are machine-cut Scots pine (*Pinus sylvestris*) sourced to Scandinavia.



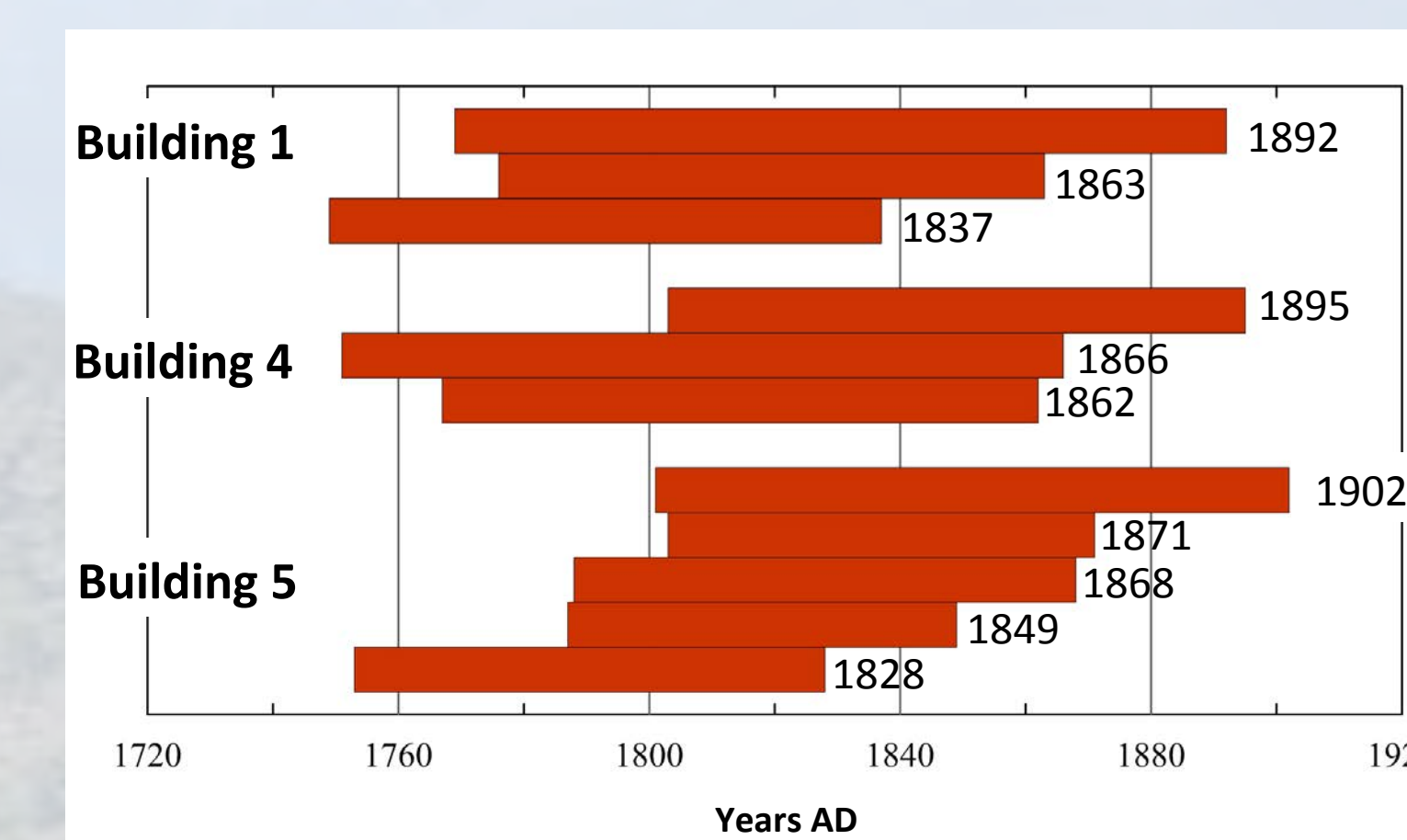
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PHOINIKAS

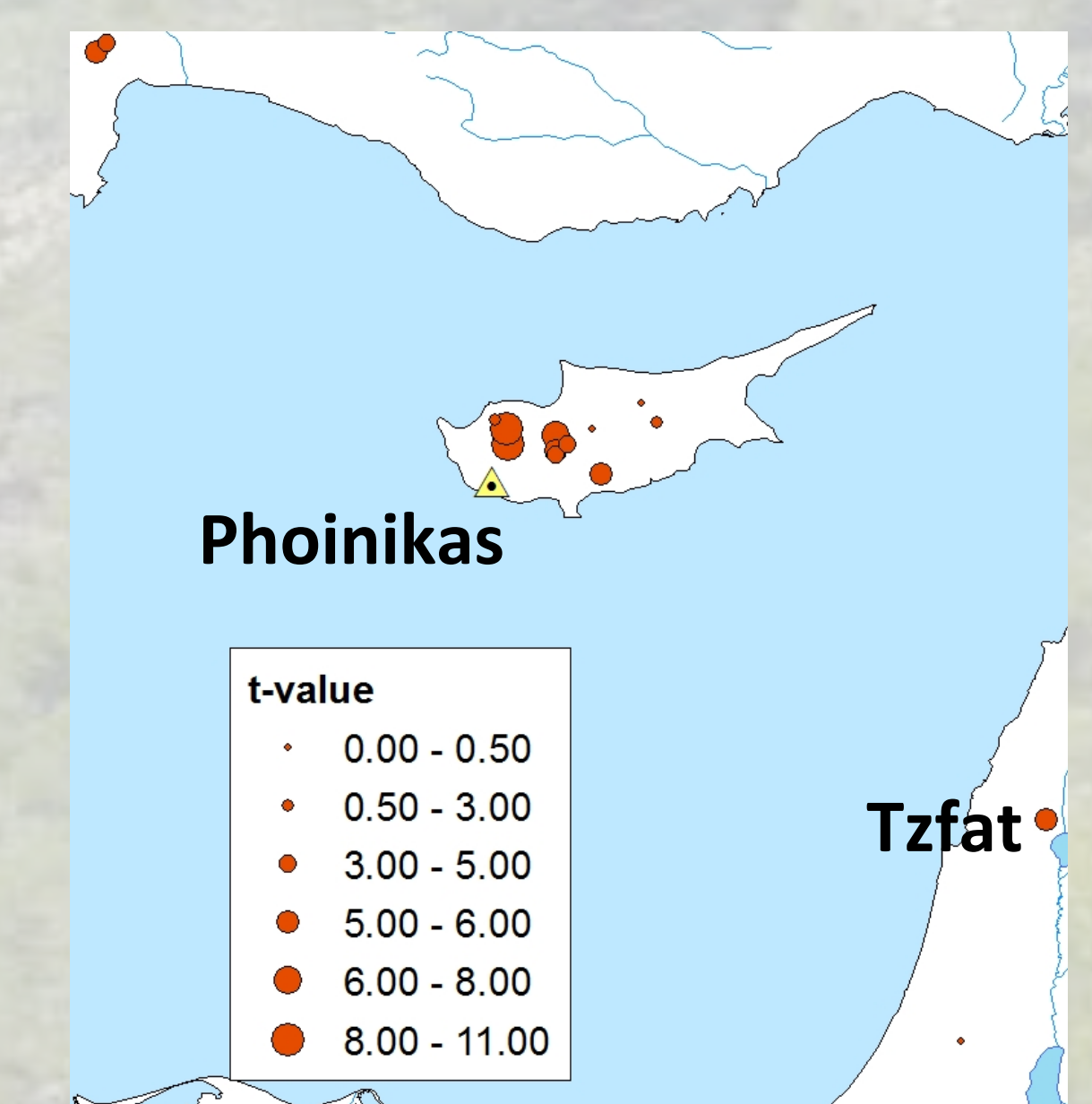


Phoinikas village ruins, part of which are underwater from construction of the Asprokremmos dam.



Building 1 rubble stone masonry, interior arch, and roof timbers.

- None of the samples has preserved bark or the tree's outermost ring, so dates give only a *terminus post quem* for when the timber was cut and used.
- The Phoinikas tree-ring chronologies show that Buildings 1, 4, and 5 were constructed after the late 19th century–early 20th century (*bar graph, above*).
- All dated timbers are Calabrian pine (*Pinus brutia*) sourced to mid to high-altitude Cypriot forests, most likely from pine forests just north of the village in the Troodos massif.
- The Phoinikas pines come from the same dendrochronological zone as imported late 19th century *Pinus brutia* timbers from Tzfatz in northern Israel.



Map showing correlation between the Phoinikas pine chronology and other *Pinus brutia* forest and historical chronologies. Correlation is measured by Student's t-value; increasing circle size corresponds to higher correlation.

DISCUSSION

- Most building in both villages occurred ca. the late 19th–early 20th century, a period of population increase and growth also documented in British census records.
- Until the mid-20th century, builders generally chose easily accessible Calabrian pine wood from local forests, which is also the dominant wood species in archaeological charcoal assemblages on Cyprus.
- Future work will include mapping and dendrochronological analysis of additional abandoned villages structural analysis of earlier archaeological evidence, study of Medieval, Ottoman, and British period textual sources, and interviews with former village inhabitants to document fully this largely forgotten era of Cypriot cultural heritage and environmental history.