Ellen: I enjoyed seeing the Santorini basement blueschist facies metasedimentary rocks that the volcanics later erupted through because it helped put the entire region into better context. Basement rocks are often not exposed, so it was refreshing to actually see/touch the rocks that the volcanic sequence piled onto. We see those same blueschist facies metasedimentary rocks in Crete, just instead of volcanics erupting later, those metasedimentary rocks compose the stacked thrust sheets closer to the convergent margin. The same metasedimentary units are shown in very different tectonic settings; Santorini as an active volcanic arc that is further from the trench and experiencing less compression and extension from subduction and slab rollback, and Crete as formerly a region of brittle-ductile shortening closer to the trench that is now extending.

Bart: - Still not sure on the significance of lag breccia - it's rocks that weren't entrained in the density current and followed ballistic trajectories, but what do they tell us? Is it something to do with the height/energy of the eruption column?
- At Santorini we saw abundant evidence for the tectonic stress field affecting igneous processes - the Kameni and Kolumbo lines parallel regional tectonic fabric. What about the effect of the volcano on the localized stress field?
- Crete was structurally really interesting (and also complicated). Some of the material we looked at in the seminar conceptualized it as a rigid block behind the weak, actively deforming Mediterranean Ridge complex, but from the field it's clearly active and extensional. It would be helpful to look again at Crete in the regional deformation setting, but it provides a useful constraint on the forces active in Aegean tectonics.

Dylan Carlini: I would say one observation that really drove home the idea of tectonics in Crete was the fault scarps that we saw. The first fault scarp that had been dated to multiple events demonstrated the magnitude of force involved in creating the grabens and half grabens that make up much of western Crete. The second scarp we saw (the ancillary, vertical one) that Doug postulated had rotated as the large graben descended gave a sense of scale for the amount of slip we were discussing. It's one thing to talk about slip, it's another to see it firsthand. Additionally, the earthquake simulator was helpful (and fun) in looking at the immediate effects of slip.

Marisa: I benefited from looking at the different eruptive units on Santorini and appreciating the structural control the Kameni line had on where eruptions were taking place. It encouraged me to think more about how a magma chamber is interacting with the hot rock it's residing in (in contrast to the smaller scale crystal/melt interaction space I usually think in).

Kathy Trafton: Seeing the dikes in the caldera wall was perhaps the most illuminating aspect of the trip. I used to visualize dikes not so much as sheets, but as squished cylinders. Being able to see them in multiple orientations in cross section made it click!

Miles: For Crete I think actually seeing the Plattenkalk and Tripolitza units was very helpful to understanding what these nappe stacks look and how they might develop. I was looking around after and found a paper with the figure below that was helpful to visualize. Seeing the striking relief on Crete and the evidence in the gorge for rapid uplift really puts into context the 2 km of uplift in the last 4 Ma. Its interesting to think about why Crete in particular underwent this rapid uplift but adjacent parts of the subduction zone did not.

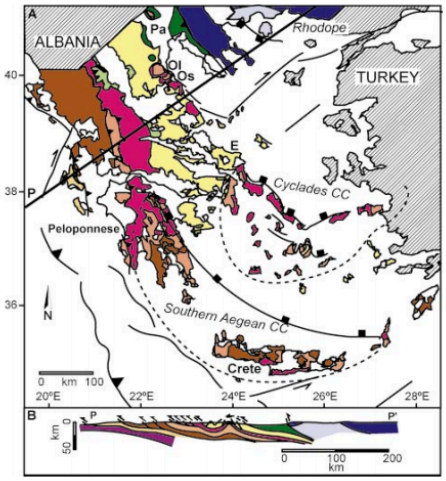


Figure 1. A: Geological map of Aegean, modified after Bornovas and Rontogianni-Tsiabaou (1983) and Jolivet et al. (2004). E—Evia; Ol—Mount Olympos; Os—Mount Ossa; Pa—Païkon window; CC—core complex. B: Schematic cross section of Aegean nappe stack along profile P-P′. See Figure 2 for key.

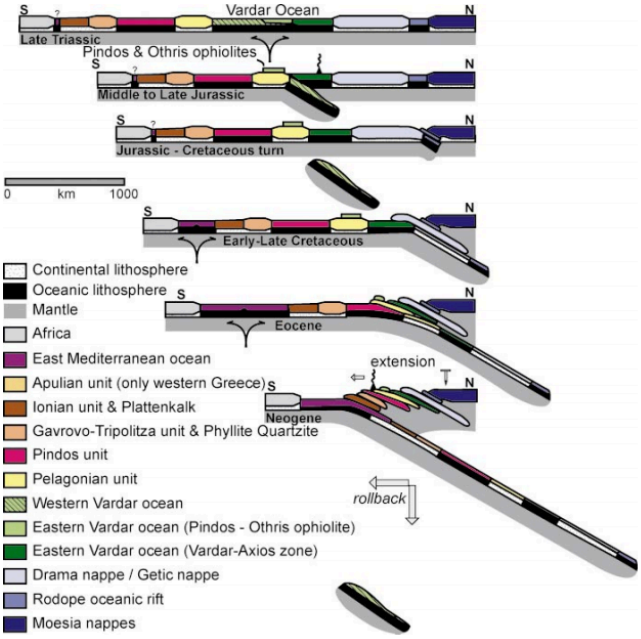
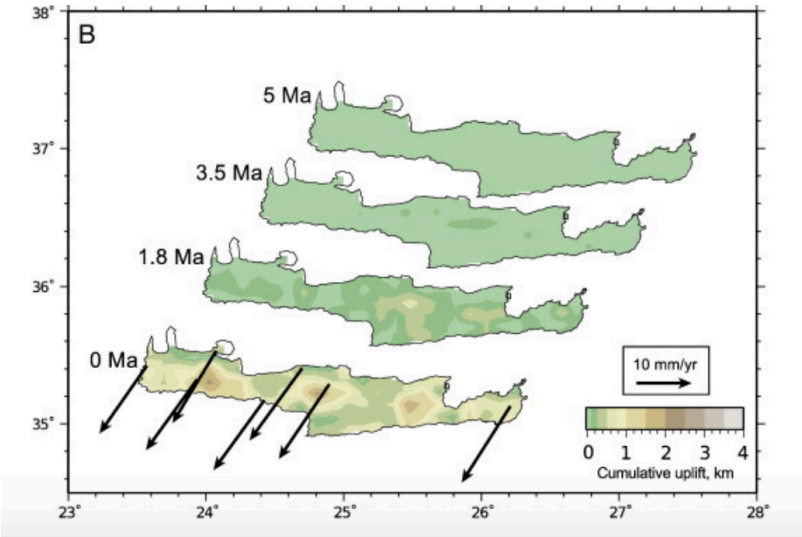


Figure 2. Schematic overview of development of nappe stack and subduction during Alpine orogeny in Greece.



Brennah: We read about the diversity of Santorini's eruption styles and its explosive cycles. The eruption cycles include periods of lava extrusion that build up the volcano, pumice falls and pyroclastic flows, and violent eruptions causing caldera collapse. I was surprised however, at how the Kameni islands reflect the same diversity. I expected it would be difficult to distinguish different Kameni events in the field, but it was fairly easy to separate flow deposits. The Kameni's have also experienced explosive activity, (The 726 pumice eruption reached parts of Asia), as well as periods of quiescence. The Kameni's have shorter period cycles of extrusion and eruptions that reflect the long eruptive cycles of Santorini as a whole.

Gillean: Observing the number and size of the dikes that cut through Peristeria volcano at the narrowest portion of the caldera wall was remarkable. While I knew that the regional stress field exerted a primary control on the evolution of Santorini, witnessing the dikes in this portion of the island helped me conceptualize that notion. Moreover, I found the alignment of the dikes with the NE-SW trend of the Kolumbo Line fascinating.

Ben: i). I was impressed with the violence of phases III and IV of the Minoan eruption. These showed bomb impacts as well as extremely large lithics. To erupt 2 km^3 of lithics (as Evi said for proto Kameni islands) is incredible and requires a substantial amount of excavation. These lithics were substantially larger than others that I have previously seen at other volcanoes. It really underlies the effect of phreatomagmatic eruptions.

ii). I was impressed with the preservation of fault scarps on Crete. It was amazing to me to see so many clear and obvious fault scarps. I guess this is just a testament to the extremely active tectonics, but it was not something that I was really expecting to see. These fault scarps really helped to outline how faulting has shaped the island on a large scale but also on a smaller basin formation scale.

Larry: 1. According to the orientational similarity of volcanic islands (Christiana, Santorini, Koloumbo), intrusive dykes, and Coloumbo normal fault, it seems like the volcanism, distribution of basement rocks, thickness of basin-fill, and even the shape of Santorini caldera are all strongly controlled by Coloumbo fault system. Understanding the stratigraphic relationship between sediments (tuffaceous layers) inland and within caldera, and the history of bedding tilt could help us to understand not only the paleogeography before Minoan eruption, but also the crustal deformation

history during collapse of caldera. This might give another approach to understand the variation of Vp Vs speed in shallow depth.

2. Lots of Miocene growth strata (sediments accumulated during related fault activities) can be found in half-graben basins of Crete. The records of bedding tilt, onlapping contact (unconformities), thickness variation of sediments could give better constrains on time and spatial change of the normal fault activities and the amount of crustal deformation (extension). In addition, the depositional environment (water depth) analysis could give a constrain about amount of isostatic/tectonic uplift. Those might be the key to understand the roll-back rate of subducting slab and solve the debate of "what makes the extension and uplift in modern Crete".

3. Following point 2, thermochronology analysis in the Miocene-Pliocene sediments and metamorphic bedrocks can help us understand the exhumation and denudation history of Crete.

I am not familiar with publications in these regions, some of idea above might have been done or working on. Just trying to propose them which should be different from other cool seismologists, petrologists, and geomorphologist. Ha!