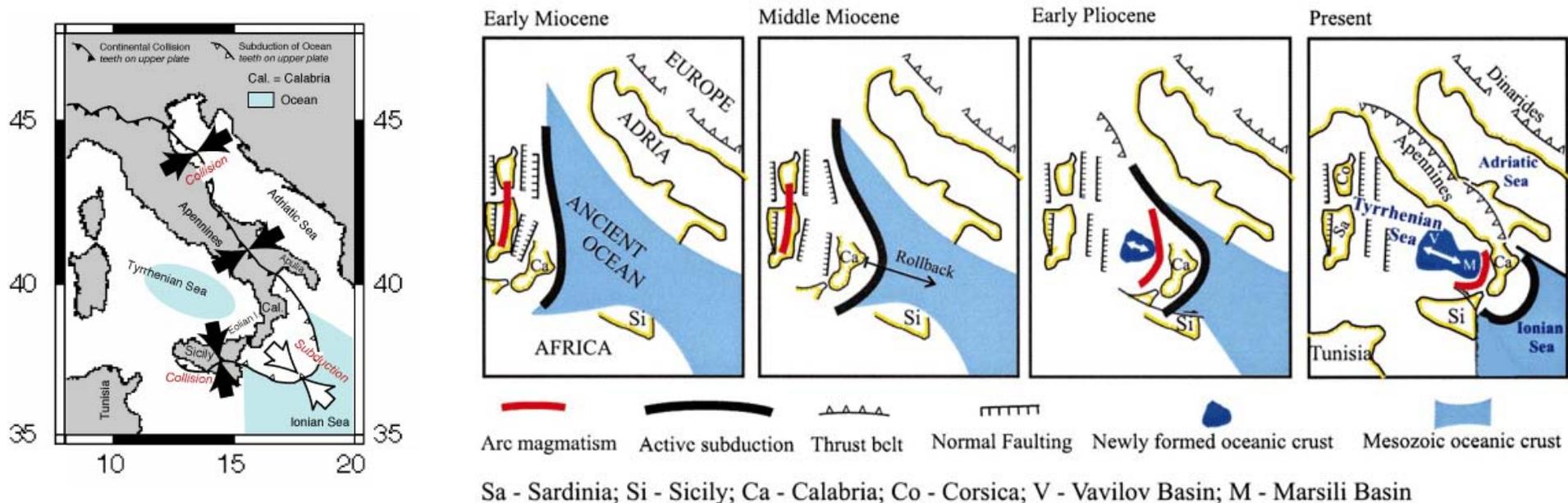


CAT/SCAN: Calabria-Apennine-Tyrrhenian / Subduction-Collision-Accretion Network

A Joint American-Italian Project to Monitor Earthquakes on the Most Active Seismic Belt in Italy



The rapid southeast advance of the Calabrian Arc, with subduction ahead and extension behind, is believed to be driven by rollback -- the retreat of the subduction zone due to the sinking of the old Mesozoic seafloor of the Ionian Sea. In panel one, we see the geometry about 15 million years ago. Calabria is attached to Sardinia and an old deep ocean exists where the Tyrrhenian Sea is today. In the next panel, eastward rollback of the trench is in the process of splitting off Calabria from Sardinia. By 3 million years ago (third panel), the advance of Calabria is consuming the old sea floor. Behind it arc magmatism is creating the volcanic arc of the Aeolian Islands. The separation of Calabria and Sardinia has also resulted in the creation of new oceanic crust. *The northern part of the subduction zone has collided with Italy creating the Apennine mountains.* The last panel shows the modern configuration. Today, as most of the arc collides with the Adriatic/Apulian continent along the Apennines, oceanic subduction continues only at Calabria. Or does it? Some consider Calabrian subduction to have been stopped by the collision of the continental landmasses. Others argue that subduction and the advance of the remaining arc continues, with the plate tearing along its margins and Mount Etna lying along one of the proposed tears. In any case, the collision of the subduction zone with the European margin has formed the Apennines along the length of Italy. Calabria, the remaining piece of the subduction zone is wedged between Sicily and Peninsular Italy. It is uncertain if this collision has halted the advance of Calabria, or whether Calabria, or a piece of it, will continue its advance into the Ionian Sea.

Modified from Gvirtzman, Z. and A. Nur, Residual topography, lithospheric structure and sunken slabs in the central Mediterranean, Earth and Planetary Science Letters v. 187, 117-130, 2001.

SOURCE: http://www.ideo.columbia.edu/news/reports/2004/CATSCAN/story_catscan01.htm