



The Neotectonics of Turkey and its Aetiology

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The neotectonic structures of Turkey are those that came into being after the collision of Arabia with Eurasia in southeastern Turkey. They resulted from a pattern of deformation completely different from that active during the earlier palaeotectonic times. The neotectonic structures of Turkey are reasonably well-mapped and there is little disagreement as to what is where. The existing difference of opinion about them concerns how and why they formed. In the past the analogy of a lemon pip being pushed between two squeezing fingers was popular, but in the last decade or so, the thin-sheet analogy modelling began dominating and the height of eastern Turkey is now being held responsible for the westerly escape of the Anatolian 'Scholle' between the North and East Anatolian faults. While physically attractive, this model runs into insurmountable difficulties when confronted with geological data. It is well-established that much of eastern Turkey was below sea-level until the Serravallian, whereas the North Anatolian Shear Zone had commenced its activity somewhat earlier. By contrast, at the time, western Turkey may have been some 3 km high. This high topography may have contributed to the resurrection of the Hellenic Trench to its south, but it could not have pulled the Anatolian Scholle westward until the Hellenic subduction zone was well-advanced to induce a roll-back and trench suction. We are therefore left, for the time being, with the only option of holding the boundary stresses responsible for governing the initiation of the neotectonic regime in Turkey. Later on, as the plateau in eastern Turkey rose (it is now at an average elevation a.s.l. of some 2.1 km) and western Turkey descended because of distributed extension (average elevation a.s.l. is about 500 m), the westerly escape accelerated as we see from the geological record of the evolution of the North and East Anatolian Faults. Physical reasons for multiple and overlapping events in complex zones of continental collision are usually also multiple and highly variable in time.