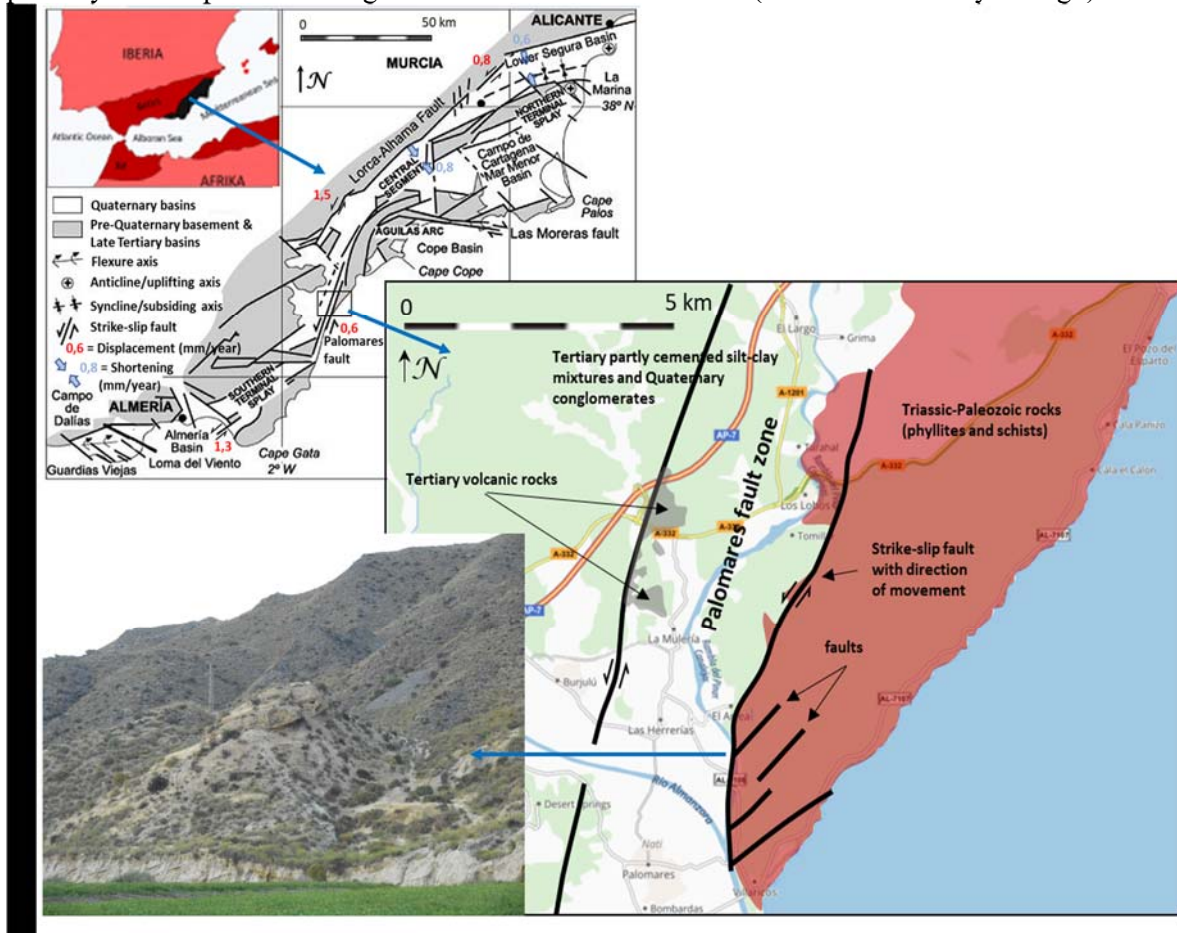


An invitation accepted.

Dr. van de Berg's synopsis.

The Sierra Almagrera is a small mountain range in the Province of Almería. It runs parallel to the Mediterranean coast from Villaricos to Pozo del Esparto, the coastal border between the Provinces of Murcia and Almería. A mere 12 kilometres in length, 4 kilometres in width and with a highest point at 367 metres, the Sierra Almagrera is one of the many ranges within the internal, southern zone of the Baetic Cordilleras.

The mountain range mainly consists of slate-like phyllites and micaceous schists, that originated in a process of metamorphism by high temperature and pressure from a very thick pile of mud that was deposited possibly in a deep ocean during the Paleozoic and Triassic eras (539 - 201 million years ago).



Through crustal movements from the Tertiary to the present day related to the northward continental shift of Africa, currently at a speed of 5 to 6 mm per year, southeastern Spain developed a system of small basins and mountain ranges, among which was the Sierra Almagrera. The southeastern part of this so-called Eastern Betic Shear Zone is moving slowly along fractures (strike-slip faults) to the NE. One of these fractures, the Palomares fault, or rather the Palomares fault zone, runs alongside the Sierra Almagrera, which explains its remarkable, straight, western boundary. The total northeasterly displacement of this mountain range since the oldest evidence of the presence of this fault, 7,2 million years ago, is 16 km (Booth-Rea et al., 2004).

Although the actual speed of movement along the Palomares Fault Zone in course of time decreased, the activity of the faults still causes earthquakes that can be disastrous, such as the one that devastated Vera in 1512.

In the beginning of the Neogene (23 million years ago) most if not all the area now occupied by the Sierra Almagrera was a shallow sea. At some point around 20 million years ago the area started to rise gradually above sea level. This led to erosion of the marine marls covering the metamorphic Paleozoic rocks. The rate of this early rise of the area is not known, but the vertical displacement along the Palomares fault indicate a minimum rise of about 0,06 meter per millennium since 5,2 – 3,6 million years ago (Booth-Rea et al., 2004). This is very modest compared to other mountain ranges that developed in the eastern Betic Shear Zone and explains the relatively low elevation of the Sierra Almagrera. The concomitant subsidence of the adjacent

NEW DISCOVERIES

Palomares fault zone resulted in a tilt of the Tertiary layers near the eastern fault boundary, which can be observed south of El Arteal.

Numerous quartz veins containing metal bearing ores developed in the Sierra Almagrera during the greatest activity of the Palomares Fault Zone in the Messinian (7.24 – 5.33 million years ago; Dyja et al., 2016). The metals consist of lead, some silver, zinc, copper, iron and occasionally traces of gold (Vernon, 2010). The source of the ores were fluids, mainly from brines in Triassic deposits transporting at high temperatures metals dissolved in chemical compounds through the veins upwards from contemporaneous magmatism at depth. Within in the Palomares fault zone a similar source and hydrothermal process was postulated for the silver that was already mined by the Carthaginians and Romans at Las Herrerias (López Gutiérrez et al., 1993).

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