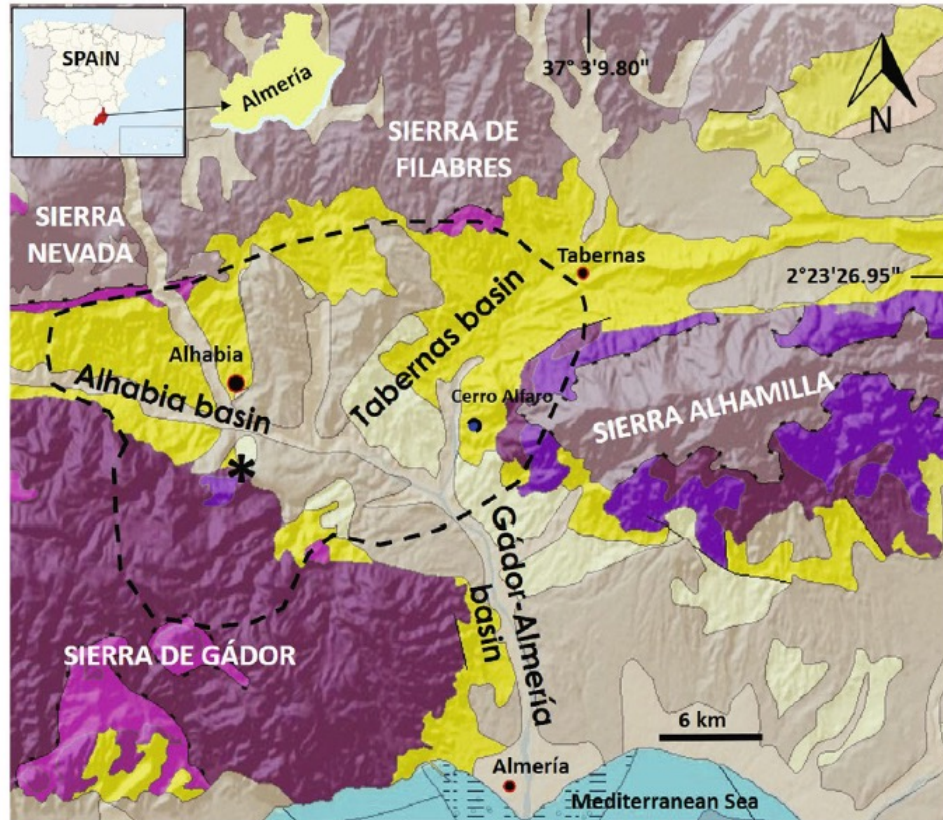


# A possible 5 km impact structure in the Alhabia–Tabernas Basin, SE Spain



The black star indicates the location of the center of the proposed impact structure. Stippled line indicates the extent of visual damage (e.g., Gordo megabed, brecciation). Figure modified from Sánchez Gómez et al (2023).

The Tabernas–Alhabia Basin is a structural depression situated in the province of Almería, southeastern Spain. The basin is filled with Neogene, Pliocene, and Pleistocene sediments resting discordantly on a Paleozoic metamorphic basement. During the marine Tortonian sedimentation, a bed of breccia (Gordo megabed) was formed. It consists of rotated sedimentary megablocks commonly capped and/or surrounded by a polymict breccia composed mainly of up to dm-sized clasts of the crystalline (schist) basement. Linked to the formation of the Gordo megabed is a ~5 km wide, rimmed depression with exposed breccias on the northern flank of the Sierra de Gádor mountain. In the northern sector, this crater-like structure opens toward the Gordo megabed of the Tabernas Basin. In the southern sector, overturned strata transform outward into a putative ejecta layer. In the interior of the structure, there are occurrences of graded breccia and arenite superposed on a blocky, autochthonous breccia indicating an aquatic target setting.

The geological relation between rocks (e.g. breccias) and structures (e.g. overturned strata), mineralogical shock metamorphic evidence, potential shatter cones, and a high Ir anomaly (~500 ppb) support an impact origin.