U23

GIMS 15

23-27 OCTOBER 2023

GAS IN MARINE SEDIMENTS CONFERENCE

CÁDIZ
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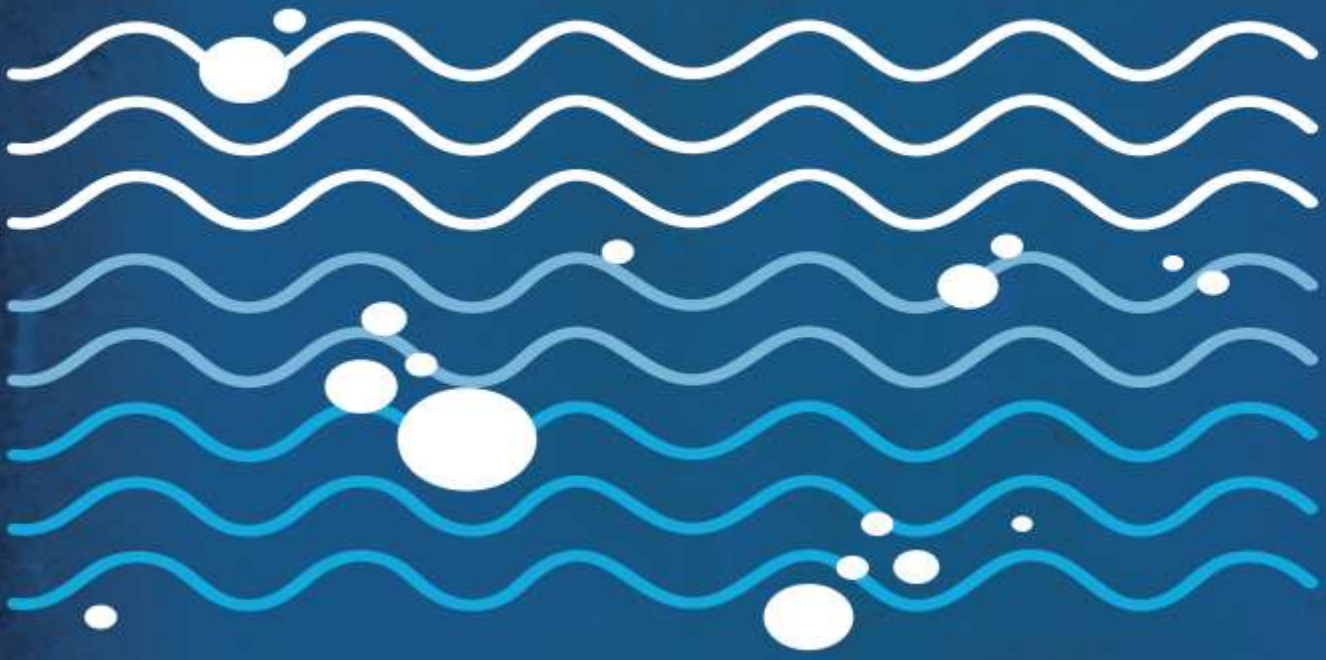

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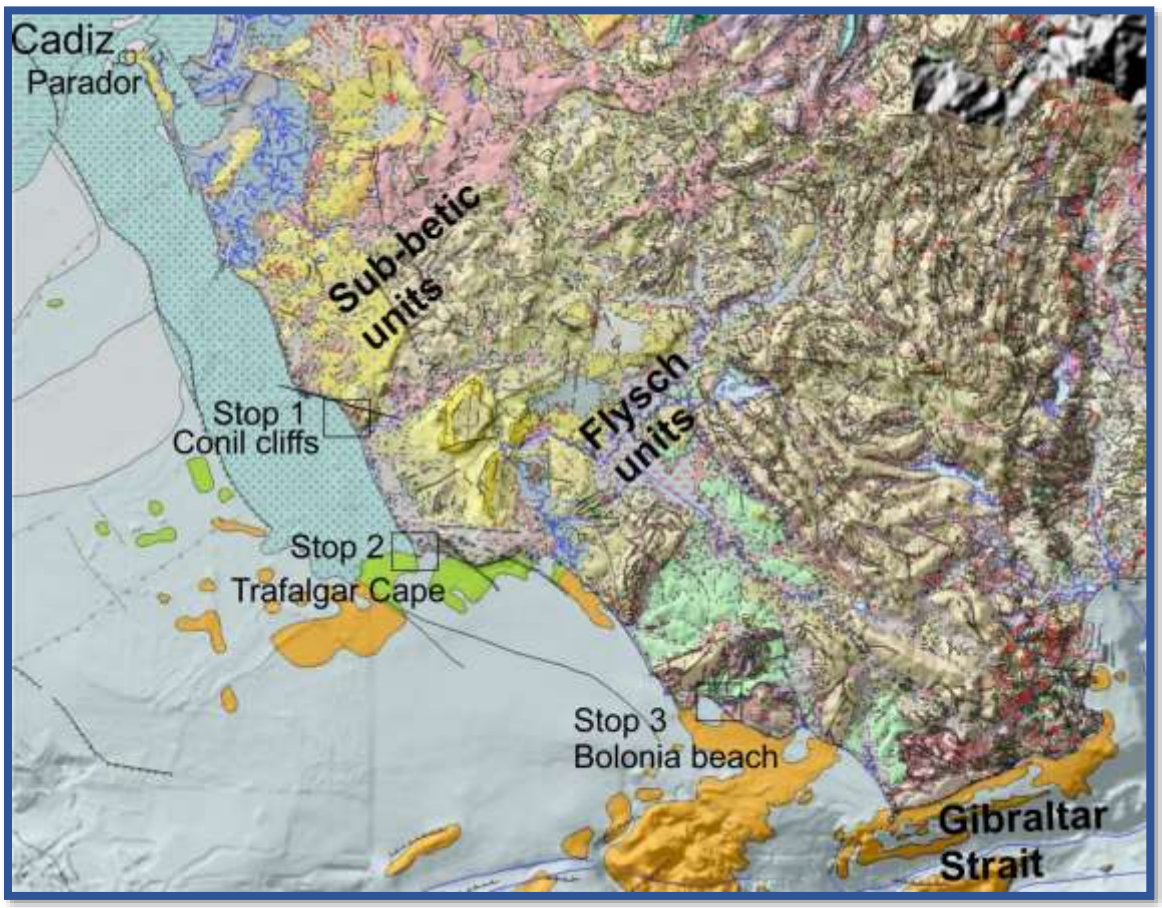
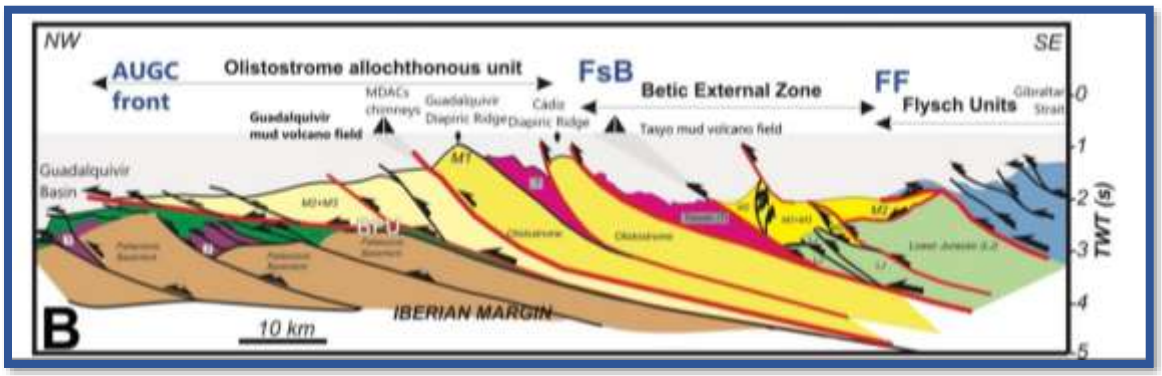
GIMS15´ FIELD TRIP GUIDE
Observations of the Gibraltar Arc tecto-sedimentary units

27th October 2023

Fernández-Puga, M.C, Gracia, J. and Somoza L.



Integrated geological map from onshore and offshore units of the Gulf of Cádiz (sources: onshore map from IGME digital geological map web site; offshore geological map from Medialdea et al. (2021). https://info.igme.es/visor/?Configuracion=GeologiaMarina



Scheme of the main tecto-sedimentary units of the Allochthons Units of the Gulf of Cádiz-(AUGC). (Modified from Maldonado et al. 1999)

Schedule

7:45: Gather at the Cadiz Parador main hall.

08.00: Departure from Cádiz Parador main hall.

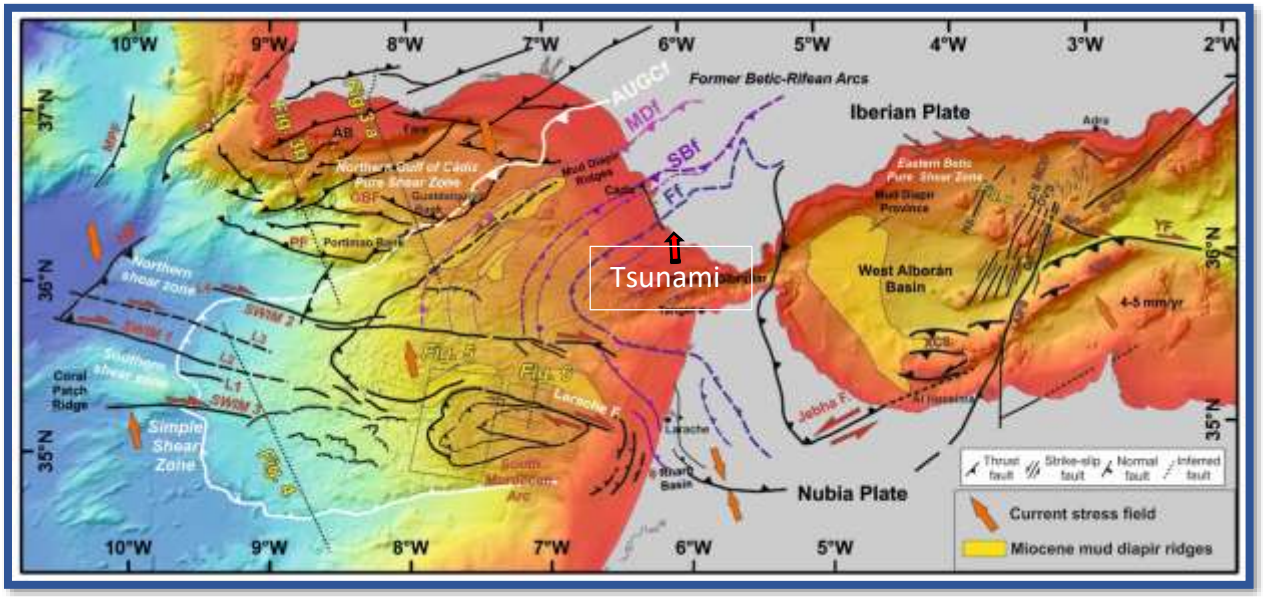
08.00 – 09.30: Transit from Cádiz city to Conil.

09.30 – 10:30: STOP 1: Conil beach & cliffs. Walking at low tide along La Fontanilla beach from La Fuente del Gallo to El Roqueo chiringuito (1.5 km) to observe outcrops of Sub-Betic units associated to mud volcanism in the Gulf of Cadiz: "Blue" marl diapir overlied by sandy "syn-olistostromic" deposits (Late Tortonian to Messinian in age) with sandstones associated fluid structures. The Miocene–Pliocene boundary appears as a hiatus between upper Miocene (Tortonian) marls and lower Pliocene sands (Hernández-Molina et al., 2016).

10.30 – 11.15: Transit from Conil beach to the Trafalgar Cape.

11.15 – 12.30: STOP 2: Visit to the Trafalgar Cape. Walking along the beach (aprox. 20 min.) to see imbricated mega-blocks caused by tsunami associated to the main tsunami in the Gulf of Cádiz in 1755 affecting strongly to Cadiz and Lisbon cities (Gracia et al., 2006) The system of washovers fan with W-E orientation is a tombolo between rocky island and rocky platform.

Relative dating of weathering features as well as minor bioconstructive forms in the littoral zone suggest the Lisbon tsunami of 1755 AD as the event responsible for the large deposits described. This tsunami had run up heights of more than 19 m and was generated at the Gorringe Bank, located 500 km west off the Cape (Whelan and Kelletat, 2005).



Above: view of the Trafalgar Cape in the area of giant blocks caused by tsunamis in the area. Below: Submarine active fault systems in the Gulf of Cadiz and Alborán Sea associated with the Africa and Eurasia plate boundary convergence (Somoza et al. 2021). Red arrows point out the Trafalgar blocks caused by tsunamis.

12.30 – 14:30: Lunch at Las Dunas chiringuito. Tapas menu (aprox. 40 euros per person). Note: payment will be by credit card or by cash individually per each person after the meal.

14:30 – 15:30: Transit from Trafalgar Cape to Bolonia beach. Crossing through the Vejer de la Frontera historical town. Observations of the Flysch units of the Gibraltar Arc in the transit.

15:30 – 18:00: STOP 3 Bolonia beach. Visit to the Roman port and city of Bolonia affected by historic and recent earthquakes. Observations of the Flysch Units of the Gibraltar Arc. Bolonia is planned the exit at the Spanish side of the submarine between Africa and Europe through the Gibraltar Strait. Observations of the north coast of Africa.

View of Flysch units from the sea. The white layers correspond to sandstones and the vegetation correspond to clay layers

18.00 – 19:30: Return to the Parador of Cadiz (time estimated aprox. 1 h 20 min.)

19:30 Estimated time of arrival at the Parador of Cádiz.

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