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Comment on "The Fethiye–Burdur Fault Zone: A component of upper plate extension of the subduction transform edge propagator fault linking Hellenic and Cyprus Arcs, Eastern Mediterranean. Tectonophysics 635, 80–99" by J. Hall, A.E. Aksu, İ. Elitez, C. Yaltırak, G. Çiftçi

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In the Eastern Mediterranean, the NE-trending Pliny–Strabo trench to the eastern Hellenic subduction has envisaged being continued into SW Anatolia with left-lateral strike-slip motion. The hypothesis has been favoured as the Fethiye–Burdur Fault Zone (FBFZ) which still remained unproven by field mapping, kinematics, fault plane solutions of earthquakes, geodetic velocity and subsurface data. Although the left-lateral strike-slip motions on active faults in the SW Anatolia are not evident from earthquake focal mechanism (Taymaz and Price, 1992), it has proposed as active sinistral strike-slip movement based on GPS velocities (Barka and Reilinger, 1997). It is claimed to be normal fault zone by Koçyiğit (2000) while the basin array along the proposed FBFZ was already demonstrated as graben-type extensional depressions without evidence of basin formation in strike-slip setting (Price and Scott, 1994; Alçiçek et al., 2006; Alçiçek, 2007; ten Veen et al., 2009; Over et al., 2010; Alçiçek et al., 2012; Alçiçek et al., 2013a,b; Over et al., 2013a,b). Recent geodetic velocity study by Aktuğ et al. (2009) shows also no significant chance on the both sides of proposed FBFZ. More recently the left-lateral transtensional feature has put doubt by Kaymakçı et al. (2014) whose observation has no change in the rotation senses and amounts on either side of the proposed FBFZ implying no differential rotation on the basis of paleomagnetic and kinematics. The slickensides and paleostress configurations along the proposed zone are consistent with focal mechanisms indicating normal sense and no data supporting strike-slip but dominated by extensional deformation.

A recent attempt by Hall et al. (2014) has challenged to evidence the existence of linkage of Pliny–Strabo trench with inland SW Anatolia promoting a regional NE-trending structure with left-lateral offset which was hypothesised as FBFZ. Despite of their offshore seismic data; they do not present displacement of rock units and fault kinematics supporting NE-trending left-lateral sense of movement penetrating into SW Anatolia. These points are here indicated to well inform the readers and help to improve and review the interpretation by Hall et al. (2014). It is also aimed to stimulate further researches and discussions to better understand the geodynamics of SW Anatolia in connection with the Hellenic arc and drawn entire eastern Mediterranean context. Such stimulation is recently considered as "unprofessional" by Elitez, Yaltirak, Hall, Aksu and Ciftci (this volume) which is unfortunate improper statement in scientific writing.

They state that "*Mapping of many faults in parts of the FBFZ shows evidence for sinistral strike-slip but total displacement across the fault zone is at maximum a few tens of kilometres.*" and "*The close correlation*

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between the faults mapped in the marine areas and those mapped in the onland Eşen and Dalaman river valleys strongly suggest that the Pliny–Strabo fault zone extends toward the northeast linking with the onland FBFZ." In their Figs. 19 and 20, some selected faults are running NE–SW direction. However in the complete map of the region compiled by MTA (Mineral Research & Exploration Directorate, i.e. Geological Survey of Turkey; Konak, 2002; Konak and Şenel, 2002; Şenel, 2002; Turan, 2002) and the papers dealing with the mapping particular areas of SW Anatolia (e.g. Price and Scott, 1994; ten Veen, 2004; Alçiçek et al., 2006; Alçiçek, 2007) document multidirectional faulting. The compilations of the faults in SW Anatolia were already presented in the geological and lineament maps by ten Veen et al. (2009) based on digital elevation model showing no uniform lineation (Fig. 1). The authors claim; "*mapping of many faults shows sinistral strike-slip component*" without presentation fault plane kinematics and map indicates "*a few tens of kilometres of displacement*". They refer MSc thesis by Elitez (2010) and the conference abstracts of Elitez et al. (2009) and Elitez and Yaltırak (2014a) in which still no fault kinematics or map supporting their statements of strike-slip movement and displacement of rock units. They further claim "*It is difficult to estimate the overall offset across the fault zone*: *perhaps 20 km in the vicinity of the releasing bend at the GYFZ, and a maximum of 40 km in the Çameli Basin area mapped by us*" but no field evidence presented in their maps that render imaginary such amounts of offset. If the proposed FBFZ is a regional structure with displacement, it might have an initiation time and developmental history as discussed in Hall et al. (2014) considering as a part of subduction ongoing convergence of Africa–Eurasia. For instance a sinistral motion of 15–20 mm/yr proposed by Barka and Reilinger (1997) means 15–20 km in 1 My, and 60–100 km in 4–5 My and it would expected 60–80 cm of visible dislocation of the rock suits on 1:25,000, 15–20 cm on 1:100,000, and 3–4 cm on 1:500,000 map scales. There is no such visible offset in any published maps. Conversely the NW-oriented Dinar Fault Zone (DFZ), the most prominent structure of the region ignored by Hall et al. (2014), standing orthogonally to the northeast tip of proposed FBFZ shows no such a km scaled offset. The Quaternary activity of DFZ is in normal sense accommodating the subsidence of NW-oriented Dinar depression (Alçiçek et al., 2013a). The NE-trending faults with strike- to oblique-slip components, i.e. in the Burdur (Over et al., 2013a), Çameli (Alçiçek et al., 2006; Karabacak, 2011; Over et al., 2010), Eşen (Alçiçek, 2007; Over et al., 2013b) and Dinar basins (Alçiçek et al., 2013a) were attributed to accommodating the extension determined by the NW-trending faults.

The same authors (Hall et al., 2009), have already been compiled the earthquake first motions showing mixed deformation in the area. Moreover the fault plane solution of the latest earthquake on the proposed FBFZ was in southern Çameli Basin (29.10.2007, M = 5.3) indicating pure normal motion (Over et al., 2010). Despite of kinematic interpretation by Hall et al. (2014) lacking field-based measurement of fault kinematics, there are already some studies presenting plenty of fault kinematics in the Çameli Basin (e.g. Alçiçek et al., 2006; Over et al., 2010; Karabacak, 2011) as well as along proposed FBFZ (e.g. Over et al., 2010, 2013a,b; Alçiçek et al., 2013a). They claim "*magnetotelluric studies* (*Gürer et al., 2004*) *have been interpreted to show a deep high-conductivity zone associated with the fault zone*". But the FBFZ in the Hall et al. (2014) is not the same in Fig. 2 of Gürer et al. (2004) where 'Bucak' is wrongly written as 'Burdur'. But this is the robust evidence refuting a regional shear zone cross-cutting Çameli Basin. Such a discontinuity could exist as Fethiye–'Bucak' fault zone, well accordance with

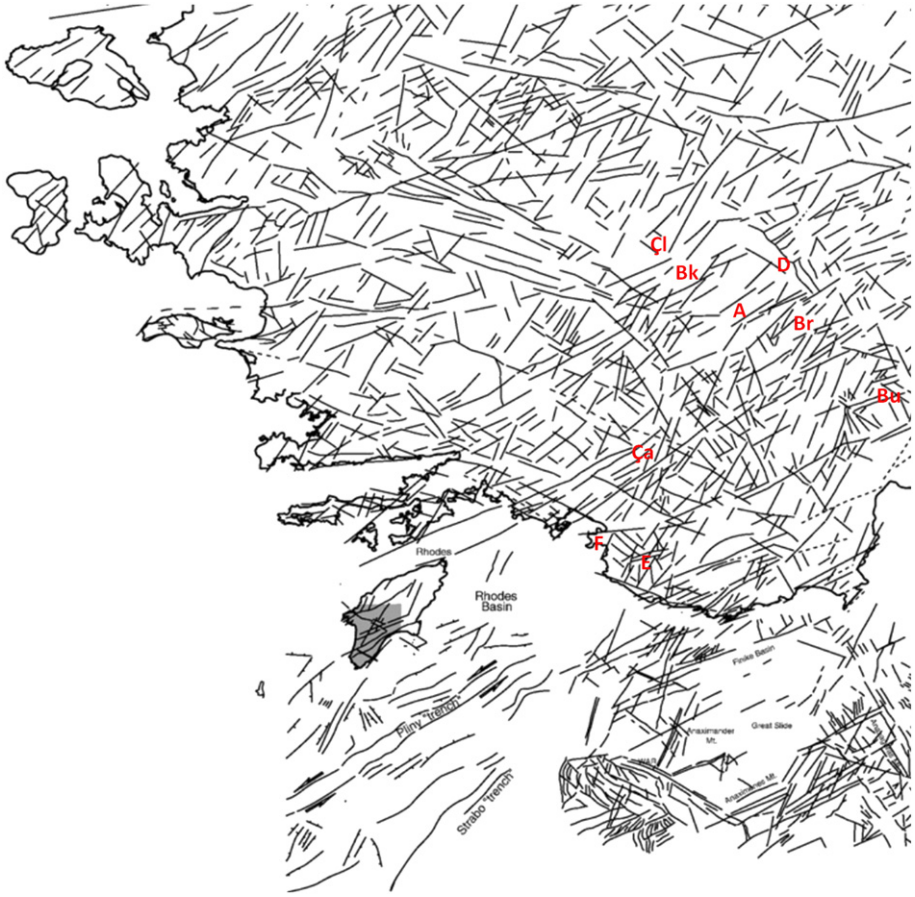

Fig. 1. The lineament interpretation map of SW Anatolia by ten Veen et al. (2009). Çl: Çal, Bk: Baklan; A: Acıgöl, Br: Burdur, Bu: Bucak, Ça: Çameli, E: Eşen, and F: Fethiye.