Comments to: "Volcanic geomorphology and tectonics of the Aeolian Archipelago (Southern Italy) based on integrated DEM data" by Favalli et al. [Bull Volcanol 68:157–170 (2005) DOI: 10.1007/s00445-005-0429-3]

by Calanchi et al. 2007 (Bull Volcanol DOI: 10.1007/s00445-007-0134-5)

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Received: 21 November 2005 / Accepted: 9 March 2007

The submarine morphology of the Aeolians (Favalli et al. 2005) is based not only *on DEM images and general consideration*, but on bathymetric/topographic data, derivative images, and on structural information. DEM data enabled to compute morphometric parameters, construct various plots, and to identify two types of volcanic edifice evolution.

The map by Marani et al. (2004) is at a 1:1,000,000 scale with 100 m contour interval (http://www.apat.gov.it/site/_Files/Pubblicazioni/MemorieLXIV/carte_grandi_tirreno.zip). The resolution of this map is too low.

Editorial responsibility: C. Kilburn

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As regards the marine-land correlations, we report that studies exist at scales of 10^2–10^3 m. However, an integrated analysis of subaerial–submarine landforms, volcanism and tectonics at a 10^3–10^4 m scale was lacking before Favalli et al. (2005).

The 'Alicudi North' of Calanchi et al. (1995) is located at lat. 38°40′N. Favalli et al. (2005) show that: (1) this structure is more complex and consists of two, never described, volcanic edifices located at 38°39′N (Fig. 4 of Favalli et al. 2005); (2) a third seamount occurs at 38°38′N. Kokelaar and Romagnoli (1995) is not cited because it focuses on the Stromboli canyon, whose origin and evolution was out of the our scope.

The sources and characteristics of the data are in the section "The bathimetric grid" by Favalli et al. (2005), where the references are detailed. The higher resolution onland data are from a topographic survey (references in Favalli et al. 2005). The sampling rate of the offshore data is reported in Fig. 1 by Favalli et al. (2005). The onland and offshore data were organized in a TIN according to the DEST algorithm (Favalli and Pareschi 2004). The TIN has been sampled to obtained a 5 m spaced DEM. The step choice was guided by the land feature accuracy, higher than the offshore one. In areas where input data have a low density and precision, our DEM does not provide or introduce new topographic true information. Five meters is simply the grid step, not the plano-altimetric accuracy.

As concerns the data northwest of Stromboli by Romagnoli et al. (1993), i.e. the campaign 4 of Favalli et al. (2005), we do not specify the ship *Urania*. This ship is

cited for campaign 3 (Gamberi et al. 1998 and references therein, as reported in Favalli et al. 2005). The data northwest of Stromboli are from Romagnoli et al. (1993), and are correctly cited. Multibeam refers to campaign 3, and, according to Gamberi et al. (1998), *The multibeam data acquisition was carried out using Simrad EM12D and EM1000 equipment*.

As concerns the hummocky surface near Vulcanello, the surface interpreted as pillow lavas by Gamberi (2001) is located 500 m west of the 'hummocky surface' of Favalli et al. (2005). Our map shows some positive, concentric features with a crater-topped summit northeast of Vulcano. These may be the source of pillow lavas. To the east, there is a 3×3 km area of hummocky surface. Gamberi (2001) has no data on the sea sector we investigated (blank area in Fig. 1 of Gamberi 2001) and we do not understand the criticism to this point. Five hundred meters west of our hummocky surface, Gamberi (2001) found dispersed blocks with diameter up to 15 m in valleys. These blocks are consistent with our hummocky surface.

Only hummocky surfaces with an on-land associated amphitheatre-like depression with scar are interpreted as collapse deposits. Despite what Calanchi et al. (2007) mention, i.e. that the question of sector collapses and related deposits *is a very fashionable topic—terrains with rugged morphology are quite common*, none of the papers investigated this problem before Favalli et al. (2005). In Favalli et al. (2005), an age for some of the collapses is proposed by integrating geochronological, volcanological, and newly assembled offshore data.

Our high-resolution bathymetry shows two abrasion platforms between 0 and 150 m b.s.l. The depth of the upper one has very similar values of 20–40 m at Salina, Lipari and Panarea. Therefore, there is no reason to question the existence of the abrasion platform around Panarea. At Panarea, it is obvious that the *small abrasion platform* represents, at the present, a depositional feature. This is the natural evolution of the platforms. Favalli et al. (2005) focus on the origin and not on the present day geomorphic processes of platforms. As concerns the occurrence of an abrasion platform at the top of the Alicudi seamounts, the age of the oldest volcanics between Filicudi Islands and the Eolo seamount is 0.8–1.2 Myr (references in De Astis et al. 2003). The Alicudi seamounts (top at 1,200 m b.s.l.) are located within a sedimentary basin that, in the last 1 Myr, subsided with a velocity of about 1 mm/year (Pepe et al. 2004). Assuming an age of about 1 Ma for the Alicudi seamounts and a subsiding rate of 1 mm/year, then, 1 Ma ago, those seamounts were at 200 m below the actual sea level. The sea level at that time was at −100 m (Pepe et al. 2004). As a result, the top of the Alicudi seamounts were probably located at 100 m b.s.l., a depth compatible with the formation of an abrasion platform.

'Regional' refers to a 10^2–10^4 km scale, and 'local' means 1–10 km scale, as usually accepted in structural geology. Following De Astis et al. (2003), the only regional, lithospheric structure is the 'Tindari–Letojanni' fault system. The recent (<42 ka) volcanism in the Salina–Lipari–Vulcano sector concentrates along a N–S crack, which is a second-order structure of the 'Tindari–Letojanni' system. As concerns the faults affecting the other sectors of the Aeolians, De Astis et al. (2003) report that these faults represent splays of the 'Tindari–Letojanni' shears. The relationships between regional and local tectonic structures at Aeolians are well known (De Astis et al. 2003) by the integration of 1 to 10^4 km scale, geophysical and structural data. None of the papers cited by Calanchi et al. (2007) integrate these data. In addition, data on the fault kinematics are lacking. Therefore, we do not understand the criticism to this point.

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