Morphometrical insights of the Spanish submarine landslides

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The morphometrical analysis of the Spanish submarine landslides shows a different trending depending on the geological/tectonic context where they have been developed. Three main groups can be separated depending on the significant differences detected between minimum or maximum bathymetry versus sphericity (maximum width/run out): deep ocean ridges, volcanic island and sedimentary continental margins. These different geological contexts show a different relation between bathymetry and sphericity. While minimum bathymetry versus sphericity in sedimentary continental margins ($y=1.5195+6.4669*E-5*x$; $p=0.5917$) show no significant association, deep ocean ridges, ($y=2.3412+4*x*10-4$; $p<0.05$) show a positive association, with bigger values of sphericity along the increasing values of minimum bathymetry. On the contrary, landslides in volcanic islands ($y=0.1311-7*x*10-4$; $p<0.05$) display a negative association of this variables, with lower values of sphericity associated with higher values of minimum bathymetry.

Finally, ANOVAS and Tukey's HSD Test resulting from both minimum ($F_{2,253}=191.34$; $p<0.001$) and maximum ($F_{2,253}=247.16$; $p<0,001$) bathymetry, and sphericity ($F_{2,228}=8.7907$; $p<0.01$) show that the morphologies in each geological context differs from the others, resulting in three consistent groups of landslides