Validation of the [TAMU]2 side-scan bathymetry by Comparison with the bathymetry along Shinkai 6500 tracks

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[TAMU]2 bathymetry provides a resolution of down to 12 mX12 m at water depth of about 3000 m, which reveals fine topographic features at submersible scale. [TAMU]2 bathymetry is compared to that along Shinkai 6500 tracks (resolution of c.a. 0.1 mX0.1 m) in order to know whether these features are real or not.

Common bathymetric maps, with a resolution of c.a. 200 mX200 m at water depth of about 3000 m are valuable for regional-scale interpretations, but provide only a general depth range for detailed studies at the submersible scale. [TAMU]2 bathymetry provides a resolution of down to 12 mX12 m at water depth of about 3000 m, which reveals fine topographic features at submersible scale. [TAMU]2 bathymetry is compared to that along Shinkai 6500 tracks (resolution of c.a. 0.1 mX0.1 m) in order to know whether these features are real or not. Longitude, latitude and depth shifts are taken into account since measurements occurred at different times under different navigation systems and bathymetry tools. The comparison is done for two locations along the SEPR axis: at 17deg25'30"S where the bathymetry is gentle and hummocky and at 18deg26'S where it is rough with an axial trough. We compare the [TAMU]2 bathymetry from the 1995 FAST Ridge expedition to that of the Shinkai 6500 along 15 dives of the RidgeFlux'97 expedition. For each computation, the shift maps of the correlation coefficients r2, of the bisector slopes s and of d defined as ((r2-1)2+(s-1)2)0.5 enable us to select one exclusive best-fitted area. Most of the differences between the [TAMU]2 and the Shinkai 6500 bathymetries are less than a few meters. The remaining differences can be interpreted as temporal changes occurring between the two cruises.