In recent years, a full 3-D extension of Surface-Related Multiple Elimination (SRME) has become available to address complex multiples. True-azimuth 3-D SRME (TA 3-D SRME) aims to predict the full 3-D nature of all surface-related multiples, while making no assumptions about the subsurface geology.

The application of TA 3-D SRME on data acquired using multi-azimuth towed streamer configurations has led to significant improvements in multiple removal compared to the application on data acquired in conventional narrow-azimuth towed streamer mode. Multi-azimuth data from the Nile Delta is used to compare results between narrow-azimuth 3-D SRME and true-azimuth 3-D SRME. Multiples are among the toughest challenges in processing seismic data in the Nile Delta, which is characterized by a structurally complex dipping water bottom, shallow gas charged channel systems in a compaction driven overburden, overlying a complex anhydrite rich layer of Messinian age. This overburden generates complex diffracted multiples, both in the shallow section (water bottom multiples) and in the deeper section (Messinian peg-legs).

The results indicate that the multi-azimuth 3-D SRME leads to better results than conventional narrow azimuth 3-D SRME. The azimuthal diversity inherent in the multi-azimuth data allows for better multiple prediction and data reconstruction of missing data when TA 3-D SRME is applied, compared to conventional narrow-azimuth 3-D SRME.