# A First Step Towards Consistency of Multibeam Backscatter Estimation
## Requesting and Comparing Intermediate Backscatter Processing Results From Backscatter Processing Software

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Backscatter mosaics of the seafloor are now routinely produced from multibeam sonar data, and used in a wide range of marine applications. However, significant differences (up to 5 dB) have been observed between the levels of mosaics produced by different software processing a same dataset. This is a major detriment to several possible uses of backscatter mosaics, including quantitative analysis, monitoring seafloor change over time, and combining mosaics. A recently concluded international Backscatter Working Group (BSWG) identified this issue and recommended that "to check the consistency of the processing results provided by various software suites, initiatives promoting comparative tests on common data sets should be encouraged […]". However, backscatter data processing is a complex (and often proprietary) sequence of steps, so that simply comparing end-results between software does not provide much information as to the root cause of the differences between results.

In order to pinpoint the source(s) of inconsistency between software, it is necessary to understand at which stage(s) of the data processing chain do the differences become substantial. We have invited willing software developers to discuss this framework and collectively adopt a list of intermediate processing steps. We provided a small dataset consisting of various seafloor types surveyed with the same multibeam sonar system, using constant acquisition settings and sea conditions, and have the software developers generate these intermediate processing results, to be eventually compared. If the experiment proves fruitful, we may extend it to more datasets, software and intermediate results. Eventually, software developers may consider making the results from intermediate stages a standard output as well as adhering to a consistent terminology, as advocated by Schimel et al. (2018). To date, the developers of four software (Sonarscope, QPS FMGT, CARIS SIPS, MB Process) have expressed their interest in collaborating on this project.