Recent years have seen remarkable advances in sonar technology, positioning capabilities, and computer processing power that have revolutionized the way we image the seafloor. The US Naval Oceanographic Office (NAVOCEANO) has updated its survey vessels and launches to the latest generation of technology and now possesses a tremendous ocean observing and mapping capability. However, the systems produce massive amounts of data that must be validated prior to inclusion in various bathymetry, hydrography, and imagery products. The key to meeting the challenge of the massive data volumes was to change the approach that required every data point be viewed. This was achieved with the replacement of the traditional line-by-line editing approach with an automated cleaning module, and an area-based editor. The approach includes a unique data structure that enables the direct access to the full resolution data from the area based view, including a direct interface to target files and imagery snippets from mosaic and full resolution imagery. The increased data volumes to be processed also offered tremendous opportunities in terms of visualization and analysis, and interactive 3D presentation of the complex multi-attribute data provided a natural complement to the area based processing. If properly geo-referenced and treated, the complex data sets can be presented in a natural and intuitive manner that allows the integration of multiple components each at their inherent level of resolution and without compromising the quantitative nature of the data. Artificial sun-illumination, shading, and 3-D rendering are used with digital bathymetric data to form natural looking and easily interpretable, yet quantitative, landscapes that allow the user to rapidly identify the data requiring further processing or analysis. Color can be used to represent depth or other parameters (like backscatter, quality factors or sediment properties), which can be draped over the DTM, or high resolution imagery can be texture mapped on bathymetric data. The presentation will demonstrate the new approach of the integrated area based processing and 3D visualization with a number of data sets from recent surveys.