

The widely used JPEG standard algorithm for two-dimensional image compression may be adapted for compression of arrays of any dimension and data type, specifically for arrays of seismic data. Because the JPEG algorithm processes more or less independently, small subsets (8x8 blocks) of larger images or arrays of data, such adaptations are particularly useful in applications that cannot maintain a large, uncompressed, multi-dimensional array in computer memory. JPEG-like methods enable compression and decompression of large arrays by iteration over sub-arrays that are small enough to reside in memory. These algorithms lead to the concept of a *compressed virtual memory*. Special care must be taken in JPEG-like algorithms to avoid blocking artifacts, which are discontinuities between blocks of data that are compressed and decompressed independently. Fortunately, computationally efficient methods for suppressing these artifacts are well known. Of these methods, one has been adopted that enables much of the JPEG method to be reused. The JPEG-like method of the invention uses the JPEG methods for discrete cosine transform (although the forward and inverse transforms are reversed), and for Huffman encoding of the quantized transform coefficients. The method differs from JPEGs primarily in additional steps taken to avoid blocking artifacts, and in the quantization of transform coefficients.