# Digging Deep Into Compression

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He developed the program GenCompress for his DNA pattern-matching problem. In a forthcoming issue of *Scientific American,* Li Bin Ma of the University of Waterloo, Canada, and Charles Bennett of IBM apply the same algorithm on a series of chain letters to divine the historical evolution of its text.

At the U.S. Geological Survey, Christopher Barton has been applying a different technique to quantify patterns in datasets.

After two sabbaticals with the "father of fractals" Benoit Mandelbrot, Barton and colleagues at the USGS began using Mandelbrot's mathematical toolkit to analyze such disparate phenomena as Mississippi flooding, hurricane landfalls and the location of oil and gas deposits.

At last December's meeting of the American Geophysical Union, Barton presented recent work (PDF) on fractal modeling of the U.S. coastline.

His presentation was part of a larger predict natural phenomena with unprecedented accuracy.

"Mandelbrot has created a mathematical approach that allows us to quantify complex patterns without having to simplify them," said Barton.

"As Mandelbrot now says, fractals are the 'science of roughness.'"

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