A NEW MARKET: ENVIRONMENTAL RISK

Imagine a hybrid between a Wall Street financier and a field geoscientist. That's what's coming our way, thanks to a growing fear of natural disasters and a rapidly changing physical environment.

In the popular image, geo guys wear lug-soled boots, work outdoors, swing rock hammers at outcrops and create nearly impossible-to-read material maps. Money guys dress for success, work indoors and create derivative-based financial instruments. These seemingly opposite ends of the professional spectrum are merging into a field called "catastrophic finance," where math-loving geoscientists work hand in glove with math-loving financiers.

Financial instruments called catastrophe bonds are driving this unlikely merger of disciplines. Called cat bonds for short, they are offered by reinsurers to cover the possibility of major insurance losses in natural disasters such as hurricanes, earthquakes and rising sea levels. Although risky, they attract investors as an alternative to stocks and other bonds. They pay a high return unless disaster strikes, in which case the bond holders can lose their investment.

Cat bonds, according to an article published in the Aug. 18 issue of EOS, Transactions, American Geophysical Union, are now "integral to modern risk management practices." In 2007, for example, the market for them "broke all previous issuance records with $7 billion in publicly disclosed transactions, up 49 percent from the previous year's record of $4.7 billion." The cat bond market collapsed in the recession but is showing signs of recovery this year.

I understand the geology part of the new geo/financial hybrid pretty well. So does the writer John McPhee, whose 20-year-old book, "The Control of Nature," so elegantly assessed the environmental threats posed by Gulf Coast hurricanes and wildfires in southern California. This week, for the 20th year in a row, I asked my students to read it and weep, because his geoscience wisdom has been ignored by those operating from strictly financial and personal points of view.

What I do not understand is the finance part of the hybridization. In fact, I get the sweats whenever I think about the unearthly probabilities associated with actuarial statistics and reinsurance.

My training and career have been old-school. What I've seen my whole career are federal and state agencies sponsoring scientific research on natural catastrophes and attempting to influence public policy associated with natural hazards. I've contributed to this personally, having helped map landslide, flood, seismic and volcanic hazards. Typically, little happens until disaster strikes. That's when the insurance side of the federal government steps in, even as the scientific side of our profession stifles their "I told you so" thoughts.

The new school is being built by private capital entering the risk management business far more than it did during the last century. Along with the "dismal science" of economics taught at business schools, risk management students are being simultaneously trained in the "hard" geosciences and engineering. These future investors are, according to the EOS article, getting "greater education in understanding the physical mechanisms behind the risk and in evaluating the probability of loss . . . to create a fully functioning and liquid market for these trading instruments."

What delights me is that cat bond prices are "relatively immune to general market sentiment (bull and bear markets)." After all, human wisdom and folly have no influence the timing and strength of natural disasters. Hence, fledging geoscientists with an interest in finance can now contribute mightily to decisions that will benefit the U.S. and others around the world.
Though I'm too old to switch, I can send my students toward the business school whenever they ask about potentially more lucrative career choices. That's a good thing in an age of financial angst, especially for the young.