



**COLUMBIA CONSORTIUM
FOR RISK MANAGEMENT**
in a changing environment

A DIVISION OF

THE PROGRAM ON

INFORMATION AND RESOURCES

COLUMBIA EARTH INSTITUTE

COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

CCRM

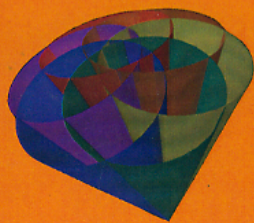
MISSION
in a changing environment

The Columbia Consortium for Risk Management (CCRM) generates and disseminates cutting-edge scientific and financial research and information prediction and management of risks arising from climate and other natural hazards, financial engineering, mathematical and statistical tools, and methodologies for understanding, assessing, predicting, and managing complex and emerging risks.

The research focus of CCRM is in decision theory under uncertainty, financial engineering, fractal statistics, stochastic analysis, and the prediction and management of complex and chaotic systems. In the area of climate prediction and natural hazards, the CCRM draws upon the scientific data and research of the Columbia Earth Institute.

CCRM is supported by Sponsors for whom it conducts research and special projects, organizes conferences, training courses, executive seminars, and workshops.

The Consortium brings together leading researchers from within Columbia University and from around the world, regardless of institutional boundaries, to manage existing and emerging risks.



CHALLENGE

Over the past decade there has been an increased awareness of risks for which actuarial data quickly lose their validity due to rapid change in both natural and economic environments. These risks are exemplified by market risks in global markets, risks associated with natural catastrophes and new technologies, business interruption risks and climate variability such as El Niño events, and global climate change. These risks have a more complex structure, are less understood potentially more dangerous than traditional types of risk. To face this challenge, new technologies are needed, including: new mathematical and statistical approaches for evaluating and managing risk, new tools involving scientific and financial information for decision making under uncertainty, and new financial instruments including scrutinization and pricing techniques for hedging risks. CCRM has been created to address this challenge. The Consortium is unique in combining the latest scientific knowledge of the prediction and management of climate and other natural hazards, with cutting-edge research in financial engineering and the mathematics of risk. Its knowledge is leading to new instruments and policies for managing natural hazards.

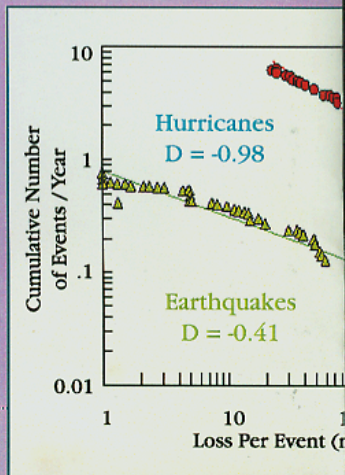


CORPORATE SPONSORS

The Consortium brings to the table intellectual capital and world renowned expertise, an external expert network, a broad spectrum of industry relations, executive courses, and individual consulting services. To insure that the Consortium remains focused, the number of sponsors will be limited to twenty for the first three years. A list of founding sponsors is included on the back of this brochure.

CCRM's annual operating budget comes from corporate sponsors in insurance/reinsurance and securities corporations, emerging technologies corporations, and national and international government agencies. The remainder is from research grants and special projects as well as Columbia University matching funds.

Plot of cumulative frequency of dollar loss due to hurricanes, earthquakes and floods in the United States.



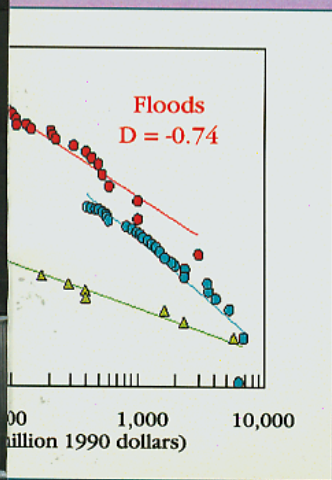
COOPERATING CENTERS & THEIR AREAS OF EXPERTISE

- Columbia Earth Institute
 - Program on Information and Resources
 - Center for International Earth Science Information Network — Demographics
 - International Research Institute — Climate Prediction
- Columbia University Business School — Financial Risks
- Columbia University School of Public Health — Infectious Diseases
- Bermuda Biological Station for Research — Risk Prediction Initiative
- Earth Engineering Center — Engineering Risk

BENEFITS OF SPONSORSHIP

CCRM funds support basic and applied research, publications, seminars and executive courses by faculty, post doctoral researchers, and graduate students on the theory, assessment, reduction, and management of risk and dissemination of the results. A list of activities and products is provided at right.

- Executive courses in risk management, financial engineering, and natural hazards of interest to sponsors
- Input into research projects and products of the Consortium
- Collaboration in start-up corporations in the area of technology and finance
- Annual meeting for sponsors, including presentations of research in progress at the Consortium
- Direct assistance from the Consortium on proprietary (within university limitations) and non-proprietary problems and datasets
- Access to website and newsletter
- Access to worldwide expert networks and databases
- Access to post-doctoral researchers
- Recruiting events



Fractal distribution of data presented in this manner reveal linear trends with slopes (D), which provide the basis for predicting the probability of future dollar loss due to individual events or aggregated over a range of events.

Activities

- * EXECUTIVE COURSES AND CONFERENCES IN:
 - ~ PRINCIPLES OF RISK MANAGEMENT AND FINANCE
 - ~ PORTFOLIO MANAGEMENT AND SECURITIZATION OF CATASTROPHE EXPOSURE
 - ~ PREDICTION AND MANAGEMENT OF CHAOTIC RISK
 - ~ APPLICATIONS OF GAME THEORY FOR STRATEGIC PORTFOLIO PLANNING
 - ~ NEW ACCOUNTING PROCEDURES FOR ENVIRONMENTAL AND HEALTH RISKS
 - ~ MERGING OF SCIENTIFIC DATA WITH FINANCIAL INSTRUMENTS FOR CROP INSURANCE RISKS
 - ~ HEDGING EL NIÑO RELATED RISKS
 - ~ HEDGING GLOBAL ENVIRONMENTAL RISKS
 - ~ CUSTOMIZING DERIVATIVES FOR CLIMATE RISKS
 - ~ RISK MODEL EVALUATION
 - ~ LEGAL AND ECONOMIC ASSESSMENTS AND EXPERT SUPPORT
- * MARKET RISK ANALYSIS
- * COMPANY SPECIFIC RISKS
- * RECRUITING EVENTS

Products

- * EL NIÑO INDEX
- * WEATHER INDICES
- * CATASTROPHE BUNDLES
- * PORTFOLIO MANAGEMENT OF CATASTROPHIC EXPOSURE
- * SECURITIZATION OF CORPORATE RISK
- * FINANCIAL AND INSURANCE TECHNOLOGIES SUCH AS:
 - ~ CATASTROPHE BUNDLES
 - ~ PUBLICATION SERIES
 - ~ ELECTRONIC AND PRINT NEWSLETTERS AND JOURNAL ARTICLES
 - ~ BOOKS



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