



Welcome to Catastrophic Park

(An Overview of USA Catastrophes)

Presented by

**Gary Embleton
Vice President, GenRe**

Presented to

**Los Angeles Chapter CPCU
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AGENDA

- The **“Numbers”** (Don't Go Near the Outhouse!)
- **Origins** of Catastrophes:
 - Hurricane / Tornado
 - Wildfire
 - Earthquake
 - Climatic Change
 - Terrorism / Political Unrest
- **Severity** (Why Are Losses So Big?)
- **Reactions:**
 - Regulators
 - Treaty Markets
 - Insurers: Cat Modeling

*What do you
mean it's a
8 Hour
Presentation!*



*Relax...it's only 45 minutes to an hour.
And remember that time flies by a lot
quicker with audience participation*





The Numbers...They Should Grab Your Attention

Don't Go Near the Outhouse!

(Billions - Trended to Today's Dollars)

W T C	2001	20.3
Andrew	1992	19.6
Northridge	1994	14.9
Charlie	2004E	6.8
Hugo	1989	5.9
Francis	2004E	5.0
Georges	1998	3.2
Betsy	1965	2.9
Allison	2001	2.5
Opal	1995	2.4
Ivan	2004E	???

The Runner's Up

(Billions - Trended to Today's Dollars)

SoCalB rush	2004	2.25
Iniki	1992	2.00
Frederick	1979	1.46
Xenia	1974	1.29
W tr Strm	1993	1.24
Cecelia	1970	1.12
Lom aPrieta	1989	1.09
W ind Strm	1950	1.01
SoCalB rush	1993	1.00
W tr Strm	1996	1.00

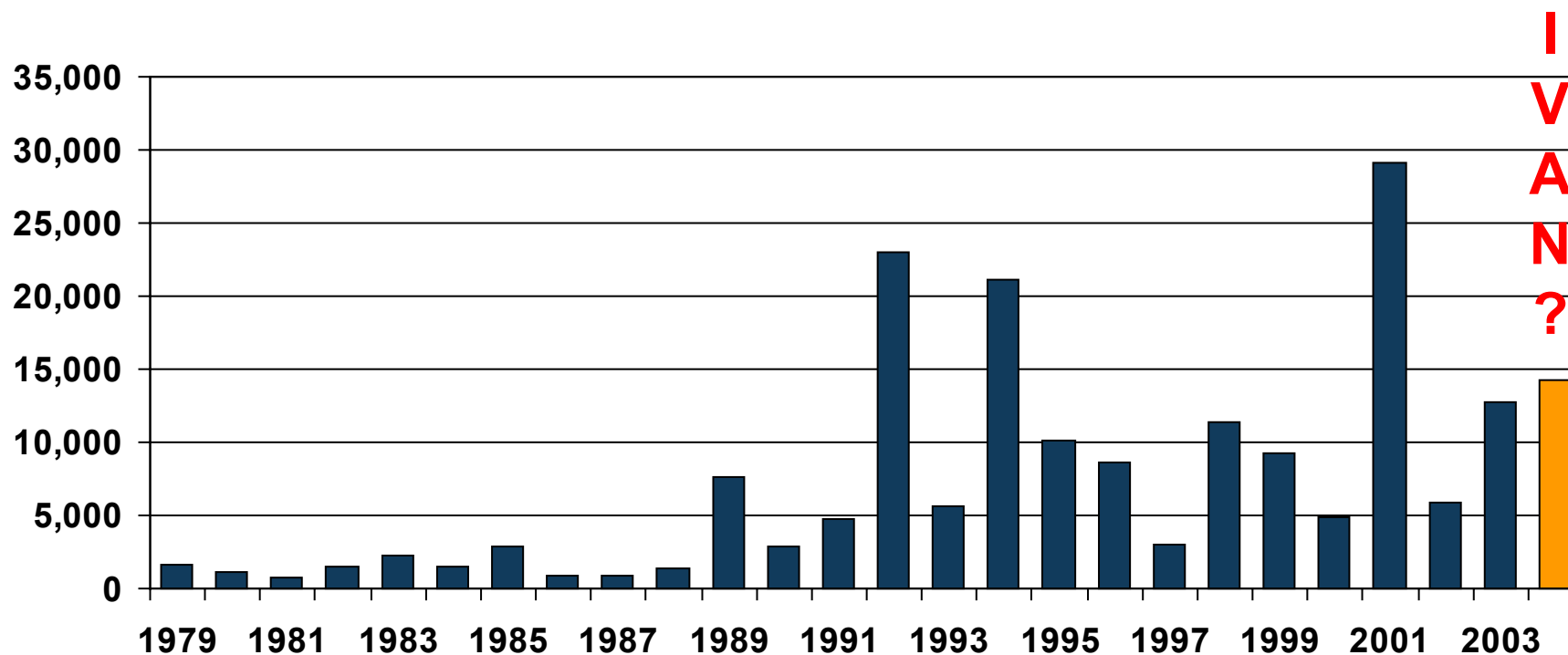
Also Rans...

(Billions – Trended to Today's Dollars)

W tr Strm	1994	0.79
LA Riot	1992	0.78
Tornadoes	1992	0.74
Carol	1954	0.71
Elena	1985	0.71
M .W .Flood	1993	0.68
Tornadoes	1992	0.68
Beth	1992	0.65
W .T .C .Bomb	1993	0.65
Bob	1992	0.64

U.S. Catastrophe / Insured Losses

Catastrophe Losses in the United States
1979-2003



(amounts in millions and 2003 dollars)

2004E (\$6.8B Charlie, \$5B Francis. \$2.4B Other)

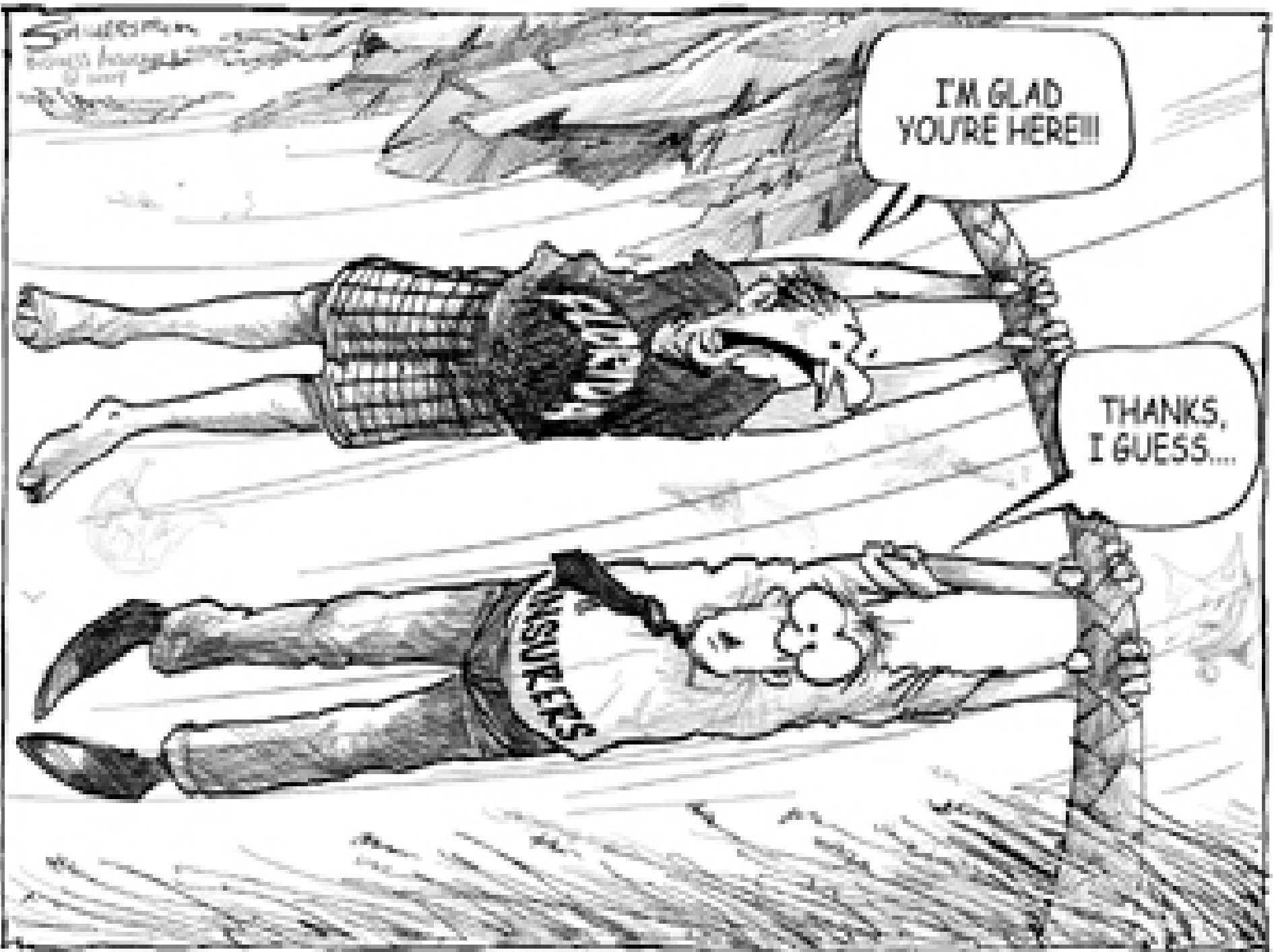
Origins of Catastrophes

“...are like a box of chocolates...you never know what you are going to get!”

Catastrophe Losses (USA): 1983-2002

<u>Peril</u>	<u>Percent of Cat Losses</u>
Tornado	32.1
Hurricane	28.0
Terrorism	12.4
Winter Storms	10.5
Earthquakes	9.8
Wind/Hail/Flood	4.2
Fire	2.3

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I'M GLAD
YOU'RE HERE!!!

THANKS,
I GUESS...

MUSKETEERS



Origins of Catastrophes

Hurricane / Tornado

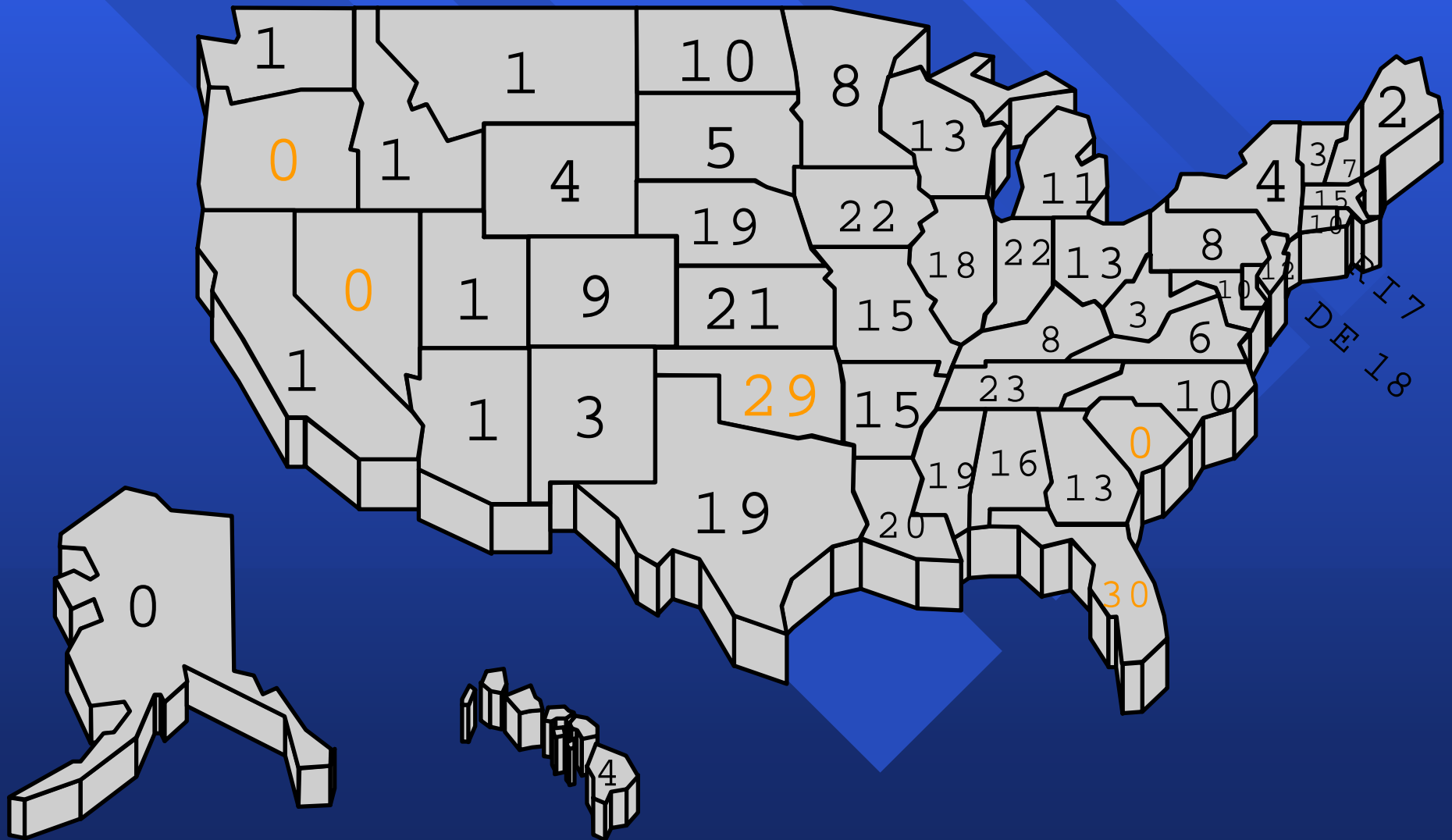
'tis the Season

N Atlantic	Jun-Nov	Hurricane
S Atlantic	Never	(We Hope)
NPacWest	Jul-Nov	Typhoon
NPacEast	Jun-Nov	Hurricane
SPacWest	Dec-Apr	Hurricane
BayBengal	Apr-Dec	Cyclone
S Indian	Nov-Apr	Cyclone
China Sea	Jul-Nov	Typhoon
NW Aust.	Dec-Apr	Cyclone

Saffir/Simpson Hurricane Classification System

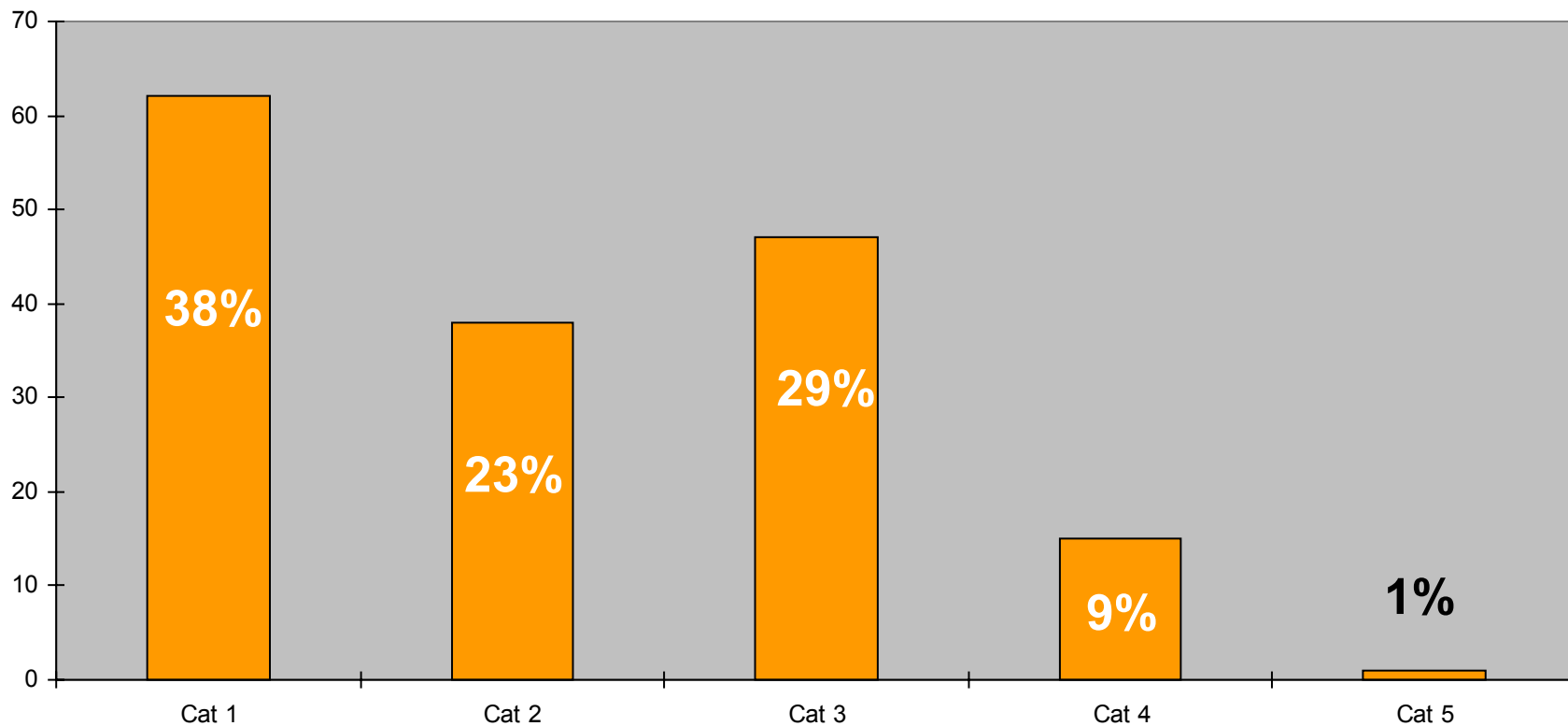
Category	Wind Speeds	Pressures	Storm Surge
1	74-95 MPH	More than 980 mb	4-5 ft
2	96-110 MPH	965-979 mb	6-8 ft
3	111-130 MPH	945-964 mb	9-12 ft
4	131-155 MPH	920-944 mb	13-18 ft
5	155 MPH Plus	Less than 920 mb	18 ft Plus

Tornados/1000 Sq M i/Yr



20th Century Hurricanes Making Landfall

162 Total



So Far (as of 09/14/2004)

<u>Category</u>	<u>2004 to Date</u>	<u>Average Season</u>
Named Storms	9	9-10
Hurricanes	5	5-6
Major Hurricanes	4	2-3

A record 5 of 8 systems made landfall in August

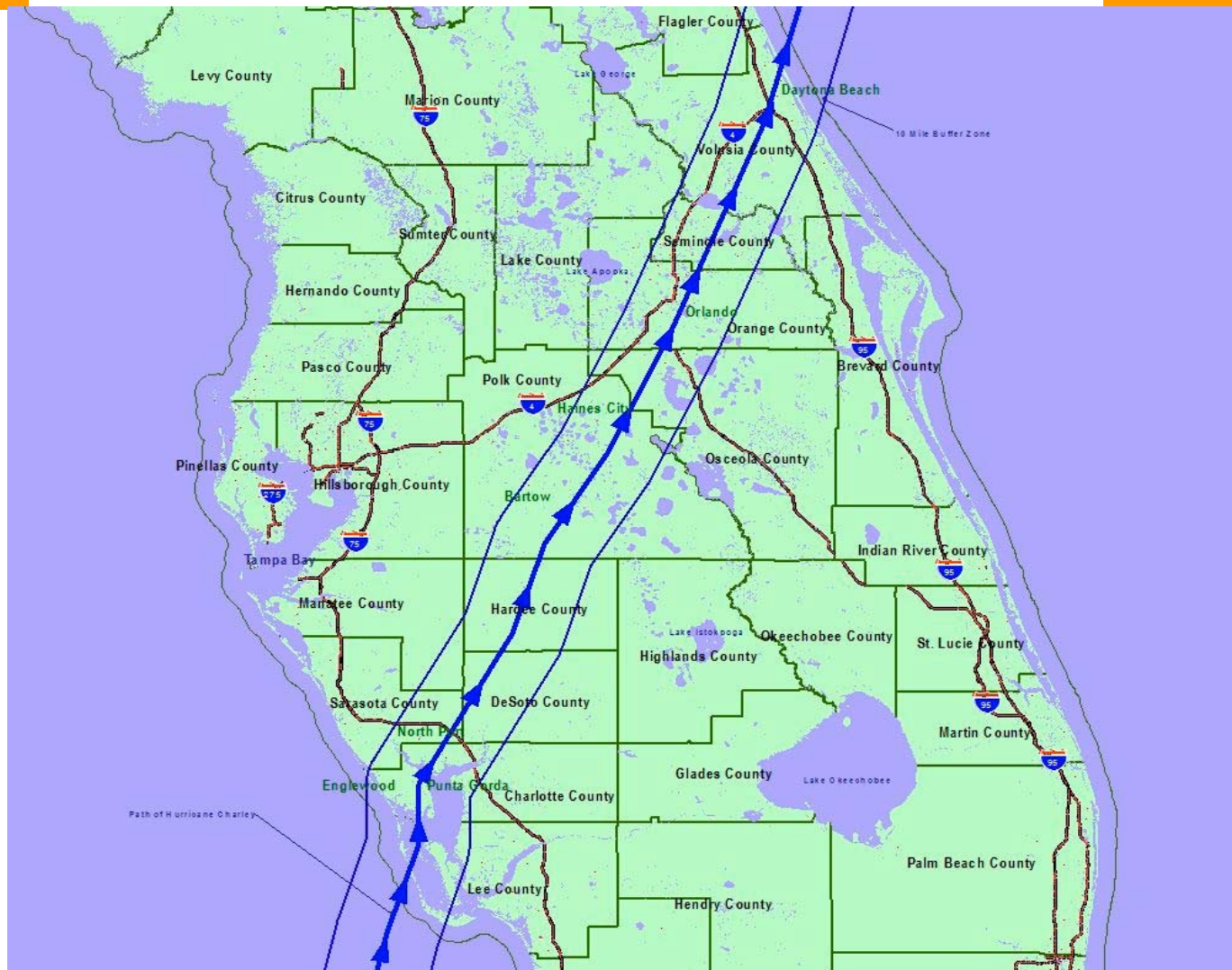
Hurricane Season Peaks around 09/12

Welcome to **Florida**

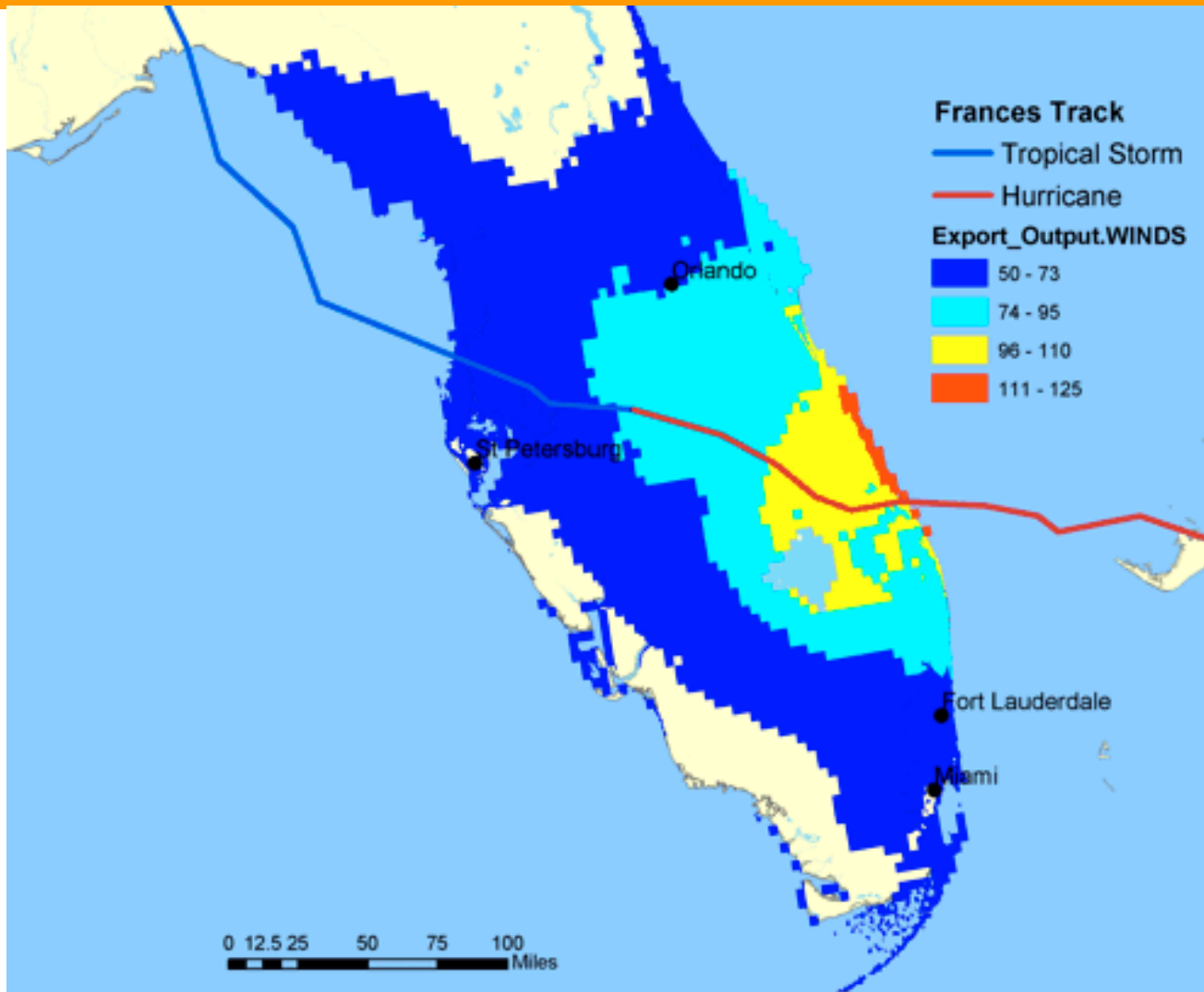
We are here



Hurricane Charlie (2004)



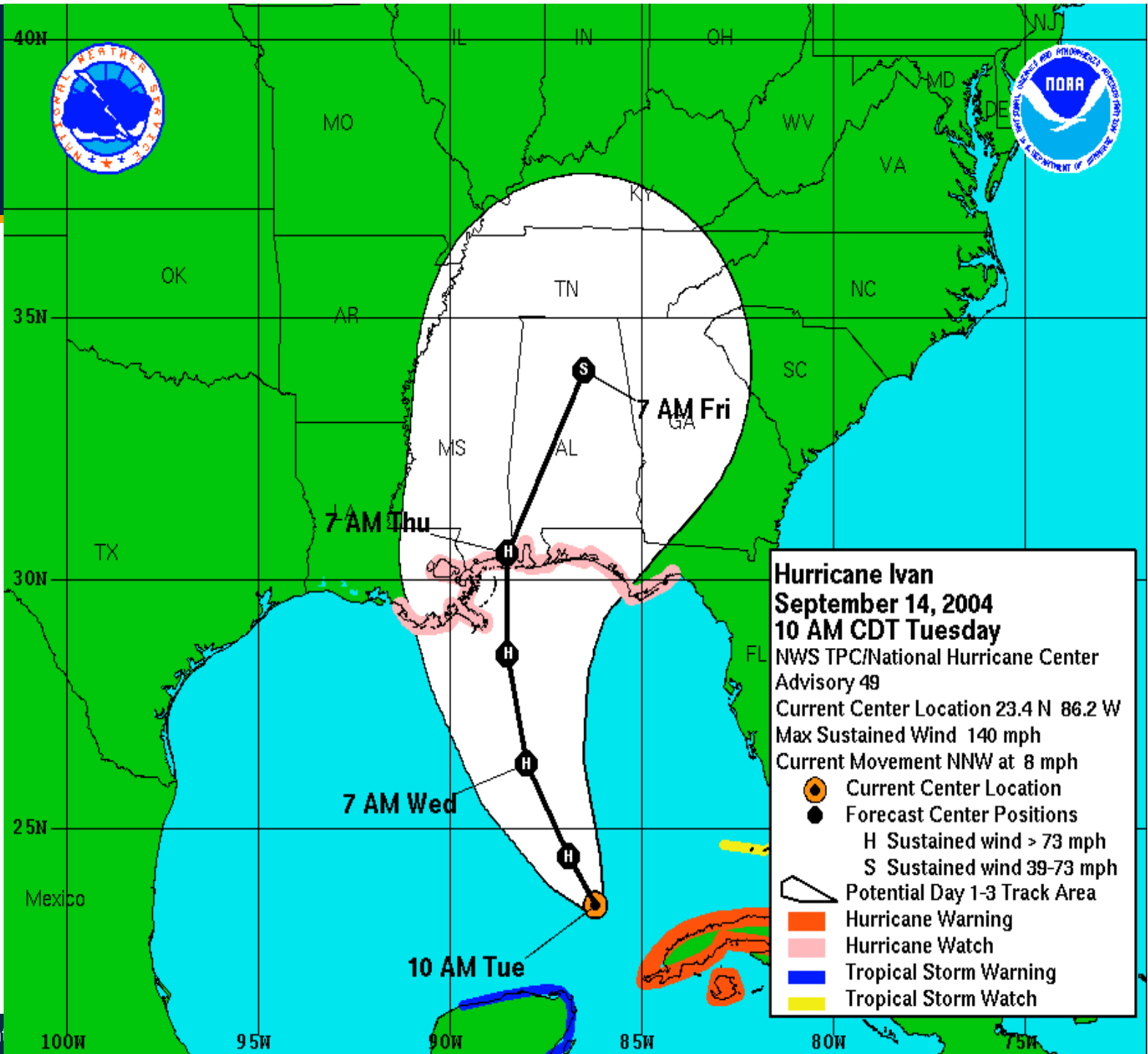
Hurricane Francis (2004)





NOAA
3
Day
Tracking
Map

Hurricane
Ivan
(2004)





Origins of Catastrophes

Wildfires

October, 2003 Southern California Brush Fires

- **Near 743,000 Acres Burned (Over 1,250 Square Miles)**
- **+14,000 Firefighters fighting the fires**
- **25 Dead...including one firefighter**
- **3,640 Homes Destroyed**
- **Fires burned in the following Southern California Counties... Los Angeles, Ventura, San Bernardino, Riverside and San Diego. Additional fires Reported in Baja Mexico**
- **Last Fire to be Declared 100% Contained was the Piru Fire in Ventura County. It was Contained at 8:00pm/pst, Friday, November 14th.**









Modeling Aids

- **Individual Risks**
 - Risk Meter
 - Keyhole
 - ISO Fireline
- **Portfolio Analysis**
 - Tillinghast and other Consultants
 - Reinsurers
 - Direct
 - Broker
 - Brokers
 - Marsh, Aon, Willis



Origin of Catastrophes

Earthquake

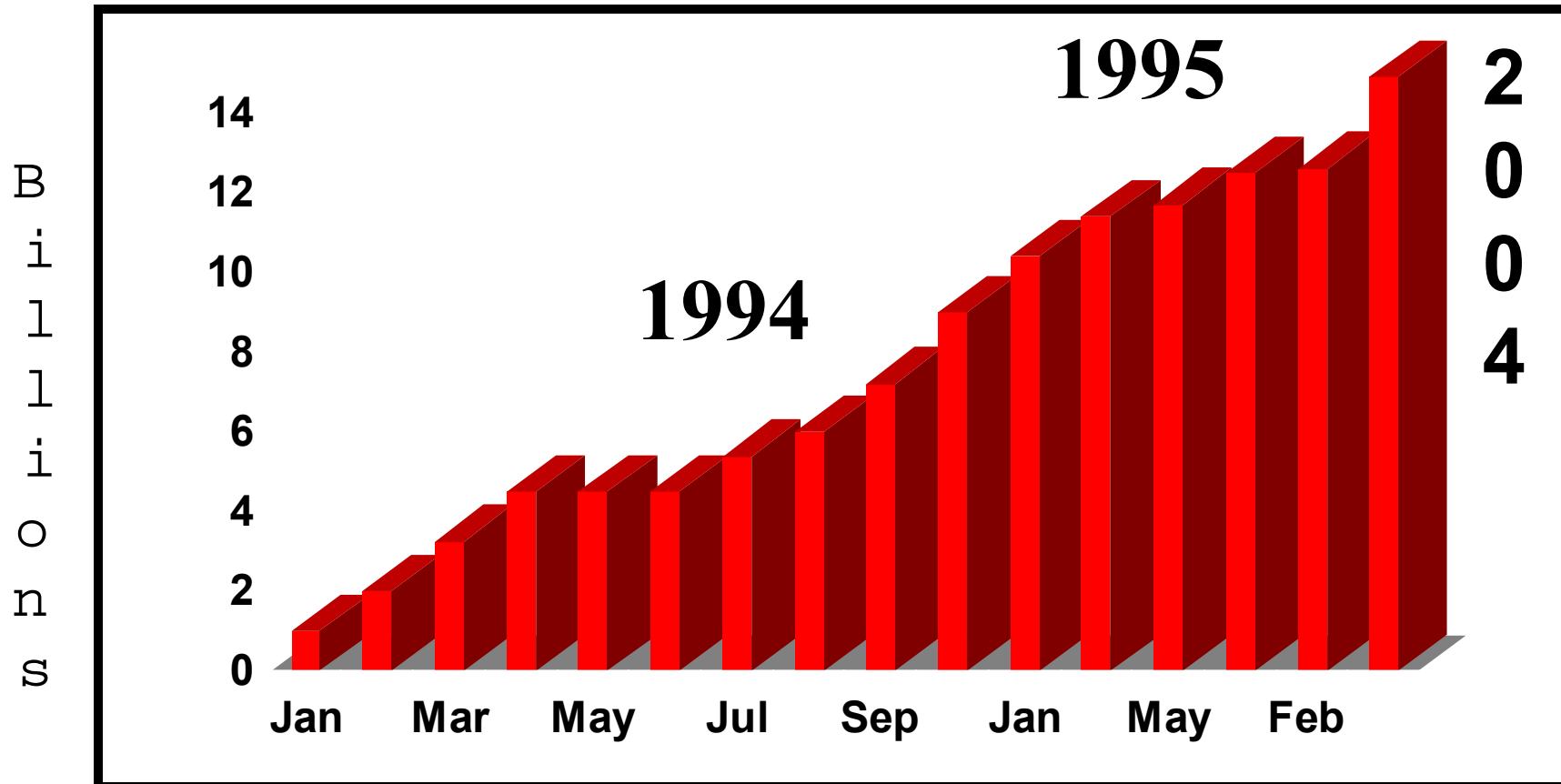
Biggest US Earthquakes

Year	Location	Magnitude	Trended Loss (2002 \$\$\$)
1994	Northridge, CA	6.7	16.0 B
1989	Loma Prieta, CA	6.9	10.2 B
1971	San Fernando, CA	6.5	2.5 B
1964	Anchorage, AK	9.2	2.9 B
1987	Whittier, CA	5.9	567 K
1992	Landers, CA	7.6	118 K
1992	Eureka, CA	7.1	85 K
1952	Kern County, CA	7.5	407 K
1933	Long Beach, CA	6.3	554 K
1983	Coalinga, CA	6.4	56 K

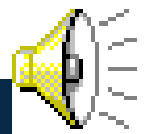
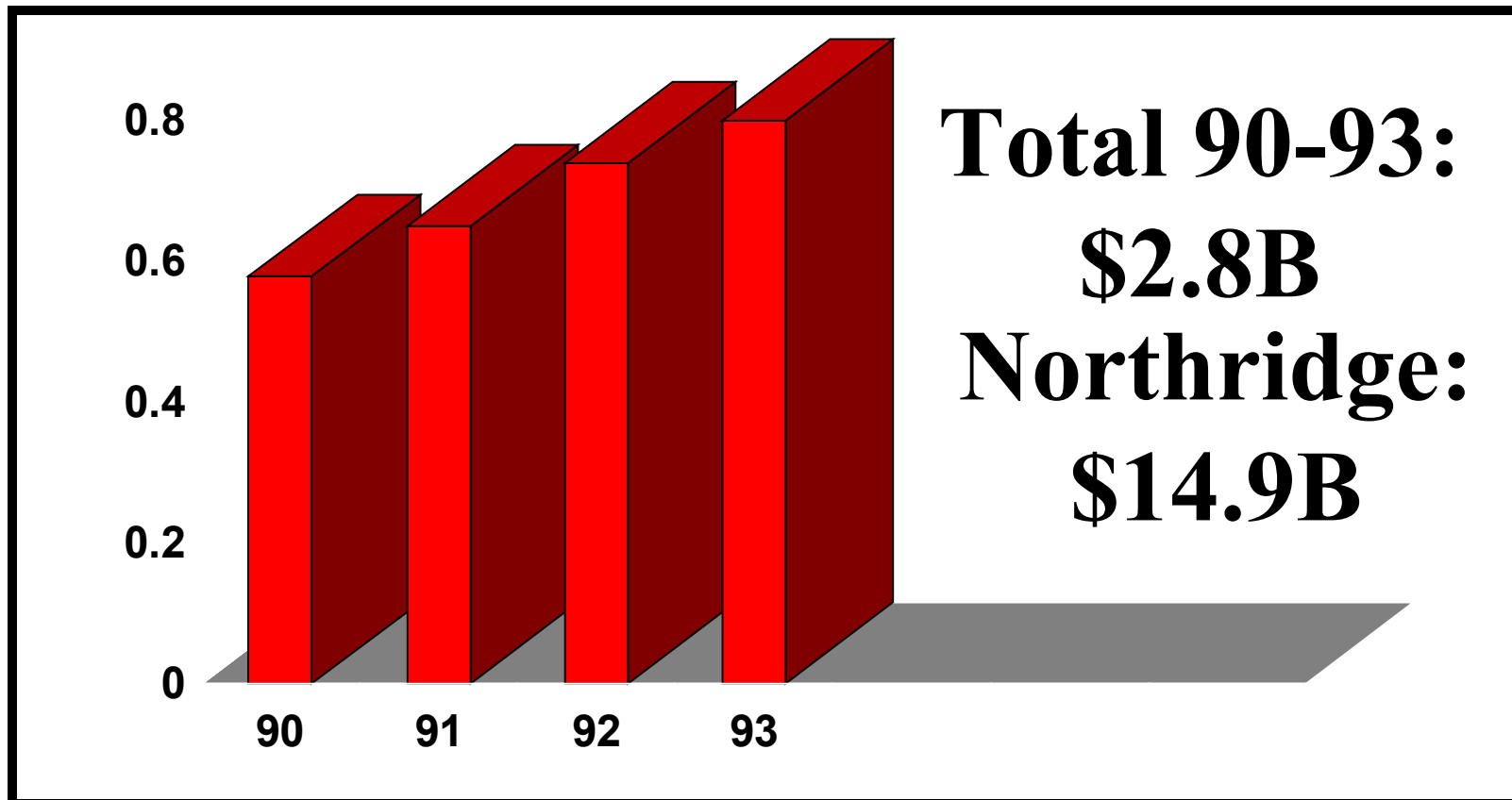
Northridge Earthquake

State Farm	2,500,000,000
Allstate	1,700,000,000
Farmers	1,700,000,000
20 th Century	1,000,000,000
USAA	257,000,000
Safeco	225,000,000

Northridge Adverse Development



U.S. Earthquake Premiums



NORTHRIDGE Eye Openers



- **EQSL**
- **Moment Resisting Steel Frame High Rise Structures**
- **Asbestos**
- **“Soft” First Floor Construction**

Northridge B.I. Estimates (Billions)

- **W/I Quake Area:** **2.1**
- **Other SoCal Areas:** **2.3**
- **Outside California:** **1.5**
- **Total.....** **5.9**

(Insured & Uninsured Totals)

6/95



Origins of Catastrophes

Climatic Changes

CLIMATIC CHANGES

- **GLOBAL WARMING/COOLING**
- **POLLUTION/CONTAMINATION**
 - (Air/Water/Land/Noise)
- **ACID RAIN**
- **GORE INITIATIVES**

Gore Initiative

- “...what we found is the **scientists differed** on what the causes of global warming are, and how fast it is occurring...We can't even get agreement among the scientists that global warming is even taking place...One even demonstrated that the earth is getting cooler.”

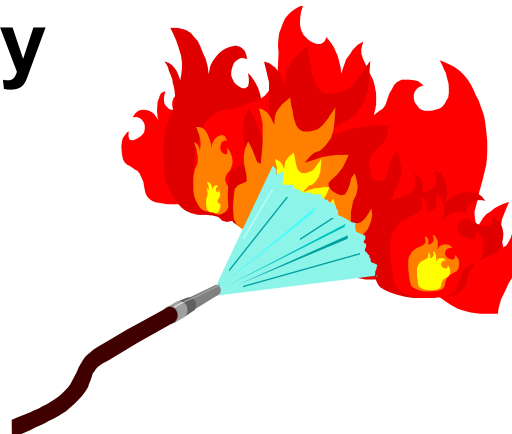


Origin of Catastrophes

Terrorism / Political Unrest

Terrorism / Political Unrest

- **World Trade Center**
- **London**
- **Oklahoma City**



- **LOS ANGELES RIOTS**





Severity

**Why are Catastrophes Causing More
Damage?**

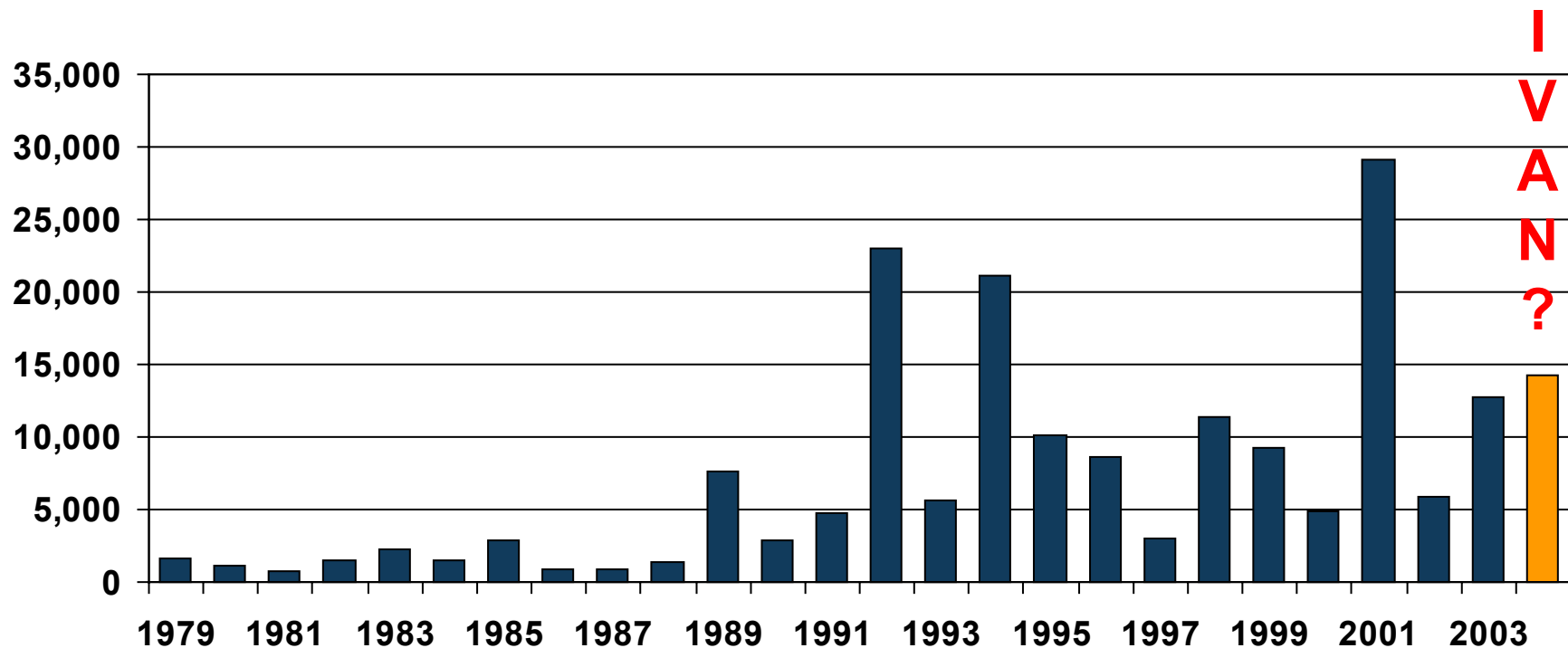
Future Shock

(You Ain't Seen Nothin' Yet)

<u>EVENT</u>	<u>MAGNITUDE</u>	<u>ESTIMATE (Billions)</u>
San Francisco Earthquake	Richter 8.4	85
Memphis Earthquake	Richter 8.6	70
Los Angeles Earthquake	Richter 7.0	58
Miami Hurricane	Cat 5	53
New York City Hurricane	Cat 4	45
Houston Hurricane	Cat 4	43
North Carolina Hurricane	Cat 5	34
Seattle Earthquake	Richter 7.5	33
Honolulu Hurricane	Cat 4	30
New Orleans Hurricane	Cat 5	26
Compare: Tokyo Earthquake	Richter 8.0	1,800

U.S. Catastrophe / Insured Losses

Catastrophe Losses in the United States
1979-2003



(amounts in millions and 2003 dollars)

2004E (\$6.8B Charlie, \$5B Francis. \$2.4B Other)

ANDREW

State Farm	3,500,000,000
Allstate	2,500,000,000
Prudential	1,700,000,000
USAA	400,000,000
Travelers	240,000,000
AIG	158,000,000
St Paul	150,000,000

Increasing Severity

- **Demographic Shifts**
- **Inadequate Valuations**
- **Increased Replacement Cost**
- **“Revisionism”**
- **Building Codes**

POPULATION GROWTH

<u>REGION</u>	<u>1960-1990</u>	<u>1990-2010</u>	<u>1960-2010</u>
S.E Atlantic	128.7%	22.8%	180.9%
Other Coastal	33.6%	13.2%	51.2%
Non Coastal	46.3%	12.6%	64.8%
Total U.S.	37.6%	13.7%	56.4%

**Up to 70% of U.S. Population will Live
Within 50 Miles of a Coast by the Year 2010**

Inadequate Valuations

- **Fraud**
- **“Wrong” Sources of Information**
- **“Corporate” vs “Location” Exposures (B.I.)**
- **BBFC / Just in Time**
- **Social Engineering**
- **Accounting or Tax Depreciation Does Not Equal Economic Depreciation for Insurance Purposes**
- **Blanket Issues**

Building Codes

- **Nonexistent**
- **Inadequate**
- **Unenforced**
- **Purpose???**

Severity

- **Over 50% of All U.S. Cat Losses Have Occurred since 1990**
- **12 of 13 Costliest U.S. Cats (Trended) Have Occurred Since 1989**



Reactions:

Regulators



In surer

R egu lator



Regulatory Reactions to Catastrophes

- **Moratoriums**
- **Redlining**
- **State/Fed Cat Pools**
- **Reserve Strengthening Requirements**
- **Joint Underwriting Assns. (Florida Cat Fund)**
- **Controls on Public Adjustors / Vendors**
- **Application of Deductibles (Per Hurricane Season?)**
- **Guaranteed Replacement Cost (?)**



Reactions:

Treaty Markets

Treaty Terms & Conditions

- **Stand Alone Covers**
- **Unlimited Per Risk Covers**
- **Pricing**
- **Detailed Data**
- **Higher Retentions / Deductibles**
- **Reinstatements Restricted**
- **Exclusions**
- **Pro Rata Reinsurance (Limited)**



Reactions:

Insurers: Catastrophe Modeling

Services Offered to Clients

- **Aggregate Exposure Management**
 - **Catastrophe Risk Identification**
 - **Catastrophe Risk Transfer**
 - **Catastrophe Risk Management**

Catastrophe Risk Identification

- **Aggregate exposure data preparation**
 - **GIGO**
 - **“Data Scrubbing”**
 - **Numbers must carry credibility in the Cat Market**
- **Exposure analysis**
- **Catastrophe modeling**
 - **All industry recognized models**
 - **GeneralRe Cat Center of Excellence**
- **Exposure mapping**

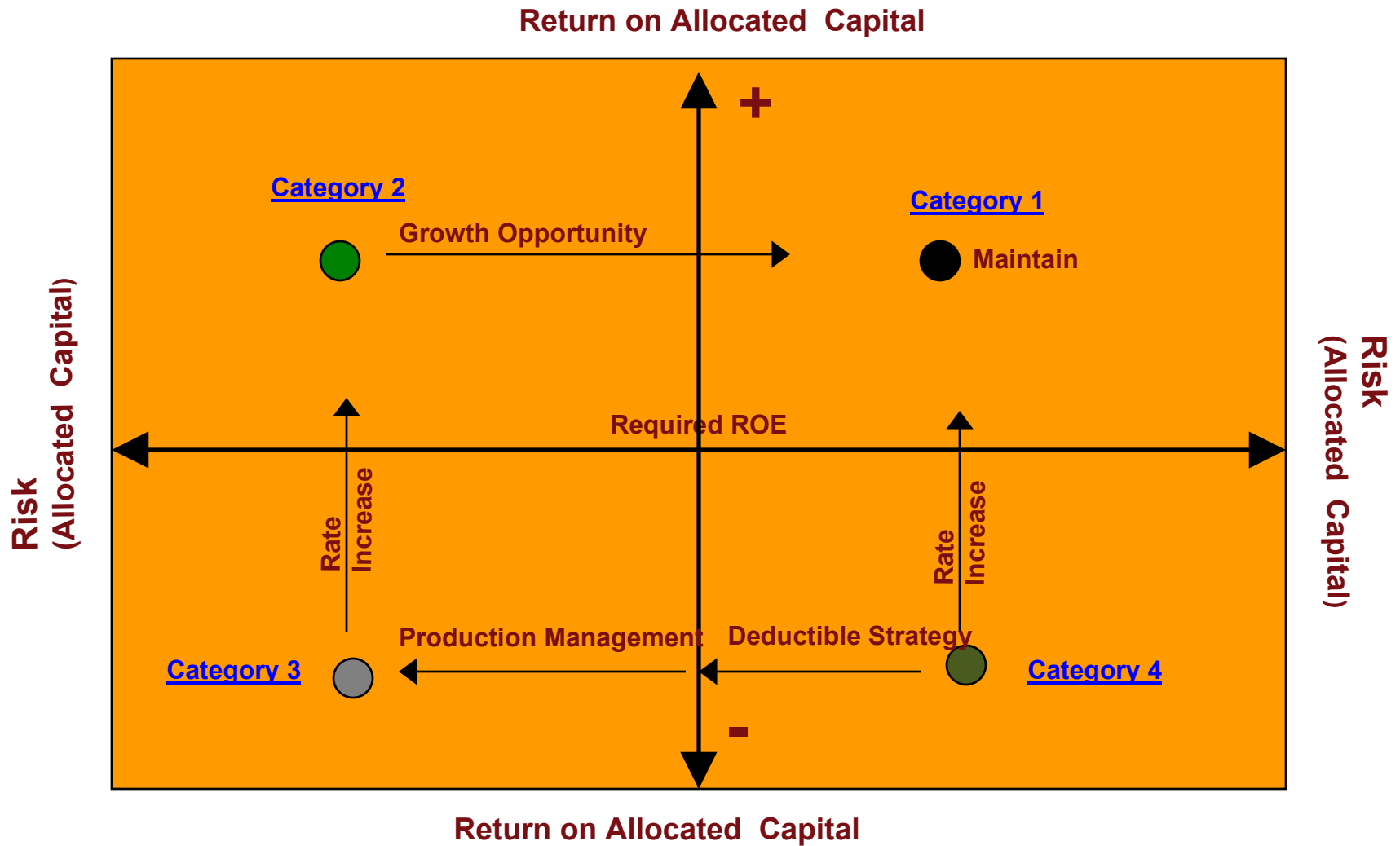
Risk Transfer Programs

- **Catastrophe Risk Transfer**
 - **Reinsurance Program Design**
 - “Design Team” delivers innovative yet practical solutions.
 - Tailored solutions to balance exposure and financial strength with market appetite
 - Blending market capacity with General Re appetite and traditional capacity with finite solutions.
 - **Market Syndication** through Licensed Reinsurance Brokers
 - **Access to Global Reinsurance Markets**
 - US, Bermuda, London, Europe
 - **Security Analysis**

Catastrophe Risk Management

- "Catastrophe Risk Management is not something that is done once a year - it is a everyday function of insurance underwriting - not only is it a source of competitive advantage it is critical for long term survival"
- Advice is offered in the following areas:
 - Portfolio Optimization
 - Capital Allocation
 - Pricing Adequacy
 - Reinsurance efficiency
 - Client specified projects

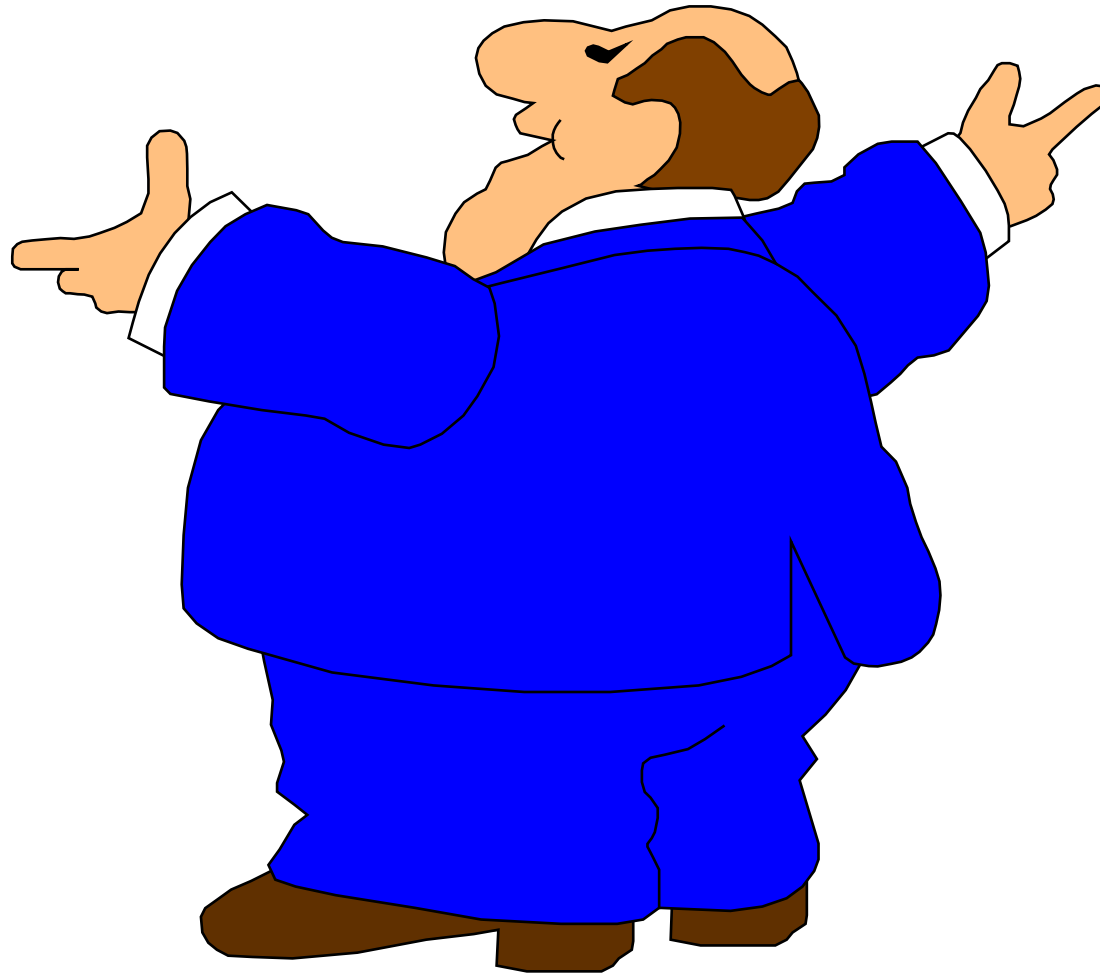
Optimization Matrix



Modeling (con'd)

- **Terrorism**
 - **Probabilities vs Aggregates**
- **Flood**
- **Earthquake**
- **Wind**
- **Brushfire**

THANK YOU!





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