International Day for Disaster Reduction
Sasakawa Award 2007

Tony Gibbs
Achievements and Recommendations
The Caribbean – an area of multiple hazards
Maximum Wind Speeds (50-year return)

The Hurricane Hazard

Wind Speeds

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Maximum Storm Surge (50-year return)
Maximum Wave Heights (50-year return)
THE TSUNAMI HAZARD AT KICK'EM JENNY VOLCANO

Outline map of the Lesser Antilles showing locations of main volcanic centres
(Martin S Smith and John Shepherd, Dec 1992)

Figure 11
Caribbean Seismicity

FIGURE 1 Geodynamics Setting of the Caribbean Region (modified after Giraldo 90)
Worldwide Seismic Activity

British Geological Survey
Thin concrete shells and folded plates for economical, utilitarian structures
Nevis tested at the Boundary Layer Wind Tunnel Laboratory (UWO)
Hurricane Gilbert in Jamaica 1988 – Princess Margaret Hospital
PAHO Photo
The Cariaco (Venezuela) earthquake – 1997
The Cariaco (Venezuela) earthquake – 1997
The Antigua earthquake – 1973
The Antigua earthquake
1973
Hurricane Hugo
1989
Montserrat
Hurricane Gilbert
1988
Jamaica
Hurricane Georges 1998 in St Kitts
Structure lost in spite of clips
WIND PENETRATING BUILDING ENVELOPE

UPLIFT OF ROOF SYSTEM

FLYING DEBRIS

STORM SURGE, FLOODING, AND LANDSLIDES

IRREGULARITIES IN ELEVATION AND PLAN

POOR WORKMANSHP

IGNORING NON-STRUCTURAL ELEMENTS

CAUSES OF DAMAGE

SEVERE WINDSTORMS

CASE HISTORIES
Installation of Strong-motion accelerographs in buildings to record earthquakes so as to improve knowledge of ground accelerations and their attenuation
In the best of circumstances there would be:

- legally-mandated codes (laws and regulations);
- defined technical standards;
- effective enforcement of standards.
Effect on Cost of a Seismic Design of Typical Concrete Apartment Buildings (after Whitman et al)
The most expensive hospital is the one that fails.

What we need:
better designs
not better accounting
Hazards

Elements of Risk

Exposure

Vulnerability

Location

Risk
ALL ELEMENTS ARE INTERRELATED