

DEVELOPMENT OF FLOOD STANDARDS

Florida Commission on Hurricane Loss Projection Methodology

October 30, 2014

**Dr. Jack E. Nicholson,
Chair, Flood Standards Development Committee**

Agenda

1. **Welcome and Opening Comments** – *Jack Nicholson, Chair*
2. **Discussion of the Commission's Website** – *Donna Sirmons*
3. **Discussion of Law Changes** – *Leonard Schulte*
4. **Modeler Presentations on Flood Loss Modeling Concepts**
 - AIR – *Brandie Andrews*
 - Florida Public Hurricane Model – *Keqi Zhang*
 - CoreLogic EQECAT – *David Smith*
 - RMS – *Matt Nielsen*
 - KatRisk – *Guy Morrow*
5. **Discussion of the Catastrophic Modeling Review Process** – *Jack Nicholson, Chair*
6. **Identification of Issues** – *Jack Nicholson, Chair*
7. **Audience Comments/Closing Remarks/Adjourn** – *Jack Nicholson, Chair*

Commission Website

www.sbafla.com/methodology

- *Donna Sirmons*

Tab to far right “Flood Standards Development”

- Meetings Materials
- Documents, Studies, and References
- Requirements for Outside Party Input

Discussion of Law Changes

- *Leonard Schulte*

Federal Legislation and Florida Response

- Federal Biggert-Waters Act (2012)
 - Provides for a transition to non-subsidized rates in the National Flood Insurance Program (NFIP)
 - Large numbers of consumers started seeing big rate increases in 2014
 - Federal legislation passed in 2014 places caps on annual increases and removes some of the more onerous parts of Biggert-Waters
- Florida SB 542 (2014)
 - Intended to provide a private sector alternative to the NFIP
 - Allows admitted insurers to write personal lines residential policies and endorsements covering the peril of flood on structures or contents
 - No FHCF reimbursement for flood losses, no Citizens flood policies
 - Defines “flood”
 - Authorizes four types of policies
 - Provides for rate regulation

Flood coverage under SB 542

- Definition of the peril (s. 627.715(1)(b))
 - “Flood” means a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties, at least one of which is the policyholder’s property, from:
 1. Overflow of inland or tidal waters;
 2. Unusual and rapid accumulation or runoff of surface waters from any source;
 3. Mudflow; or
 4. Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined in this paragraph.

Flood coverage under SB 542

- Types of policies (s. 627.715(1)(a))
 - **“Standard”**—coverage equivalent to the NFIP standard coverage
 - **“Preferred”**—standard coverage plus:
 - Coverage for losses from water intrusion originating from outside the structure and not already defined as “flood”
 - Coverage for additional living expenses (ALE)
 - Losses adjusted on replacement cost basis up to the policy limits
 - **“Customized”**—must include coverage that is broader than the standard policy
 - No additional specifics as to what can be included in a customized policy

Flood coverage under SB 542

- Types of policies (s. 627.715(1)(a))
 - **“Supplemental”**—coverage designed to supplement a standard or preferred flood policy or an NFIP policy
 - May provide—but need not be limited to—coverage for jewelry, art, deductibles, and ALE
 - Does not include coverage for flood that is excess over any other insurance covering flood

Rate regulation under SB 542

- Rates for flood policies are regulated under s. 627.062
- Rates filed before October 1, 2019 are regulated on a use-and-file basis
- Rates filed on or after October 1, 2019 are subject to the same approval process as other property insurance rates
 - Under s. 627.062(2)(b)12., the insurer may base projected flood losses on a model found acceptable by the Commission
 - The insurer may use a straight-line average of more than one acceptable model
 - Note that under s. 627.062(2)(b)11., the insurer *must* use a model found acceptable by the commission to project hurricane losses, but under this provision, the insurer *may* use an acceptable model to project flood losses

Duties of the Commission

- Standards: The Commission must:
 - Adopt actuarial methods, principles, standards, models, or output ranges
 - For personal lines residential flood loss
 - No later than July 1, 2017
 - See s. 627.0628(3)(e)
- Acceptability determinations: The effective deadline for the first round of acceptability determinations is October 1, 2019
- The statutory requirements that govern the process of developing flood standards and reviewing flood models are the same as apply to hurricane standards and models

Trade secret confidentiality under SB 1262 (2014)

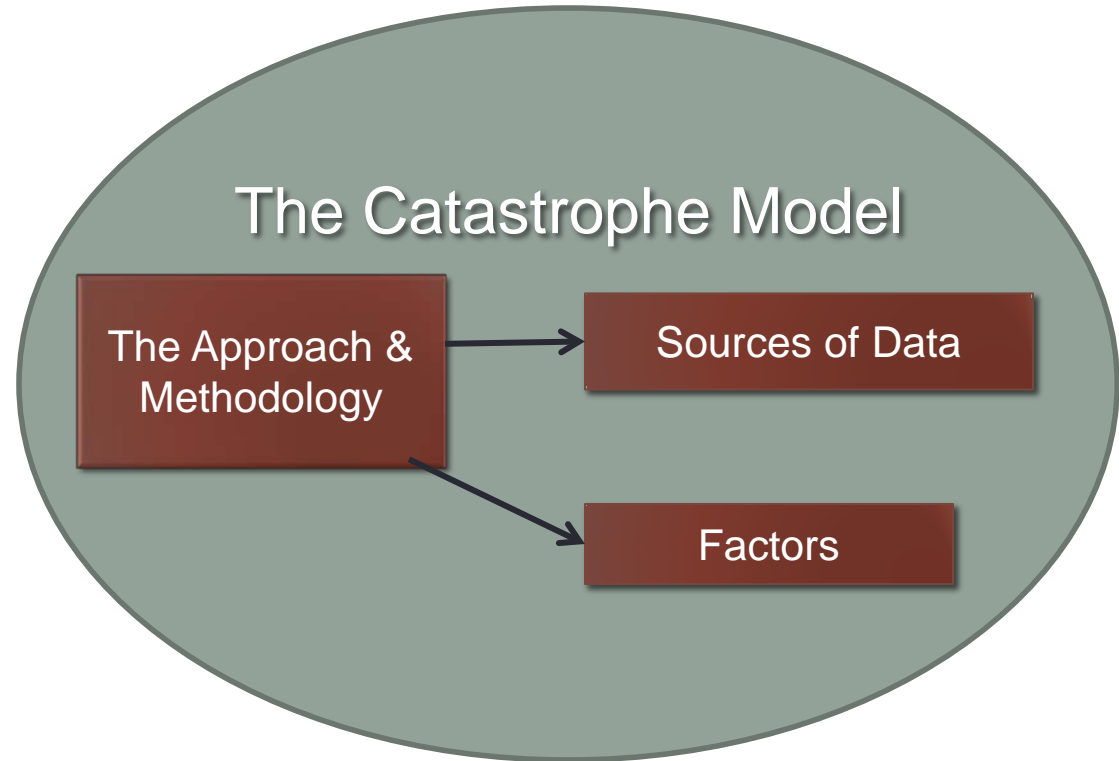
- SB 1262 revised the existing trade secret confidentiality provision, s. 627.0628(3)(f), to include flood models so that:
 - A trade secret as defined in s. 688.002 used in designing and constructing a flood loss model and provided to the Commission, OIR, or Insurance Consumer Advocate is confidential and exempt from disclosure under the public records law
 - That portion of a Commission meeting or rate proceeding at which a confidential trade secret is discussed is exempt from the open meetings (“Government in the Sunshine”) law, but the closed meeting must be recorded with no part off the record

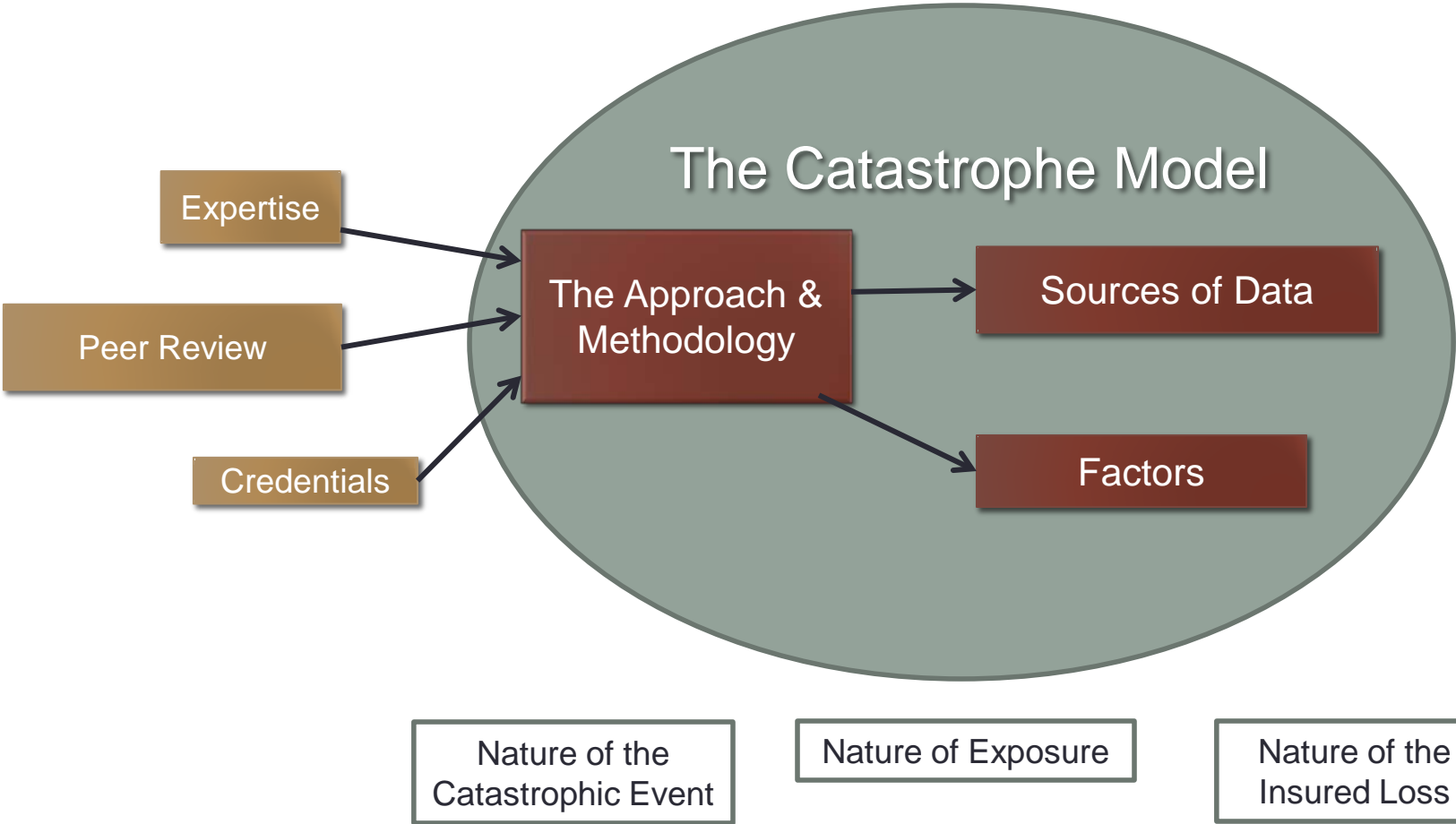
Modeler Presentations on Flood Loss Modeling Concepts

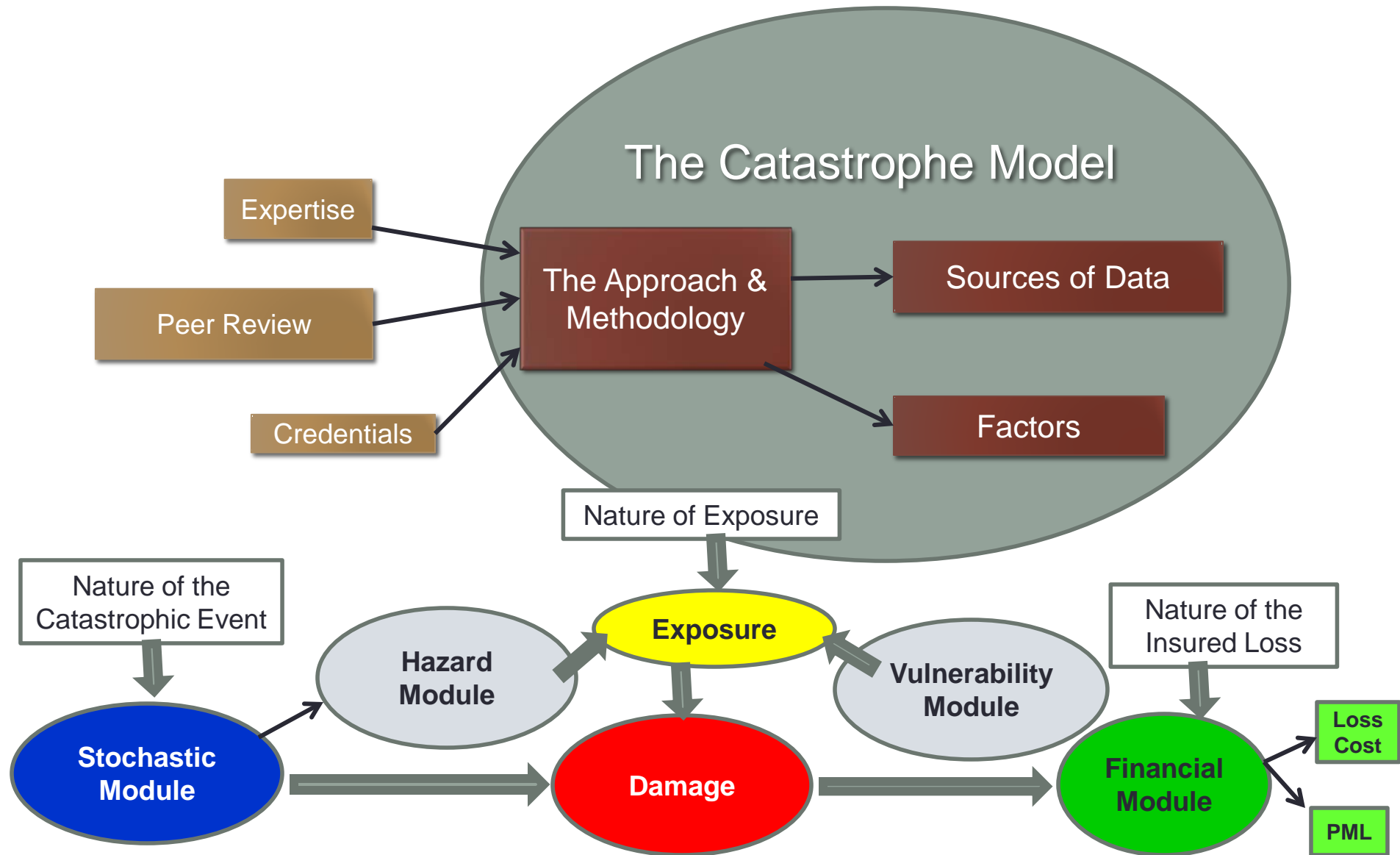
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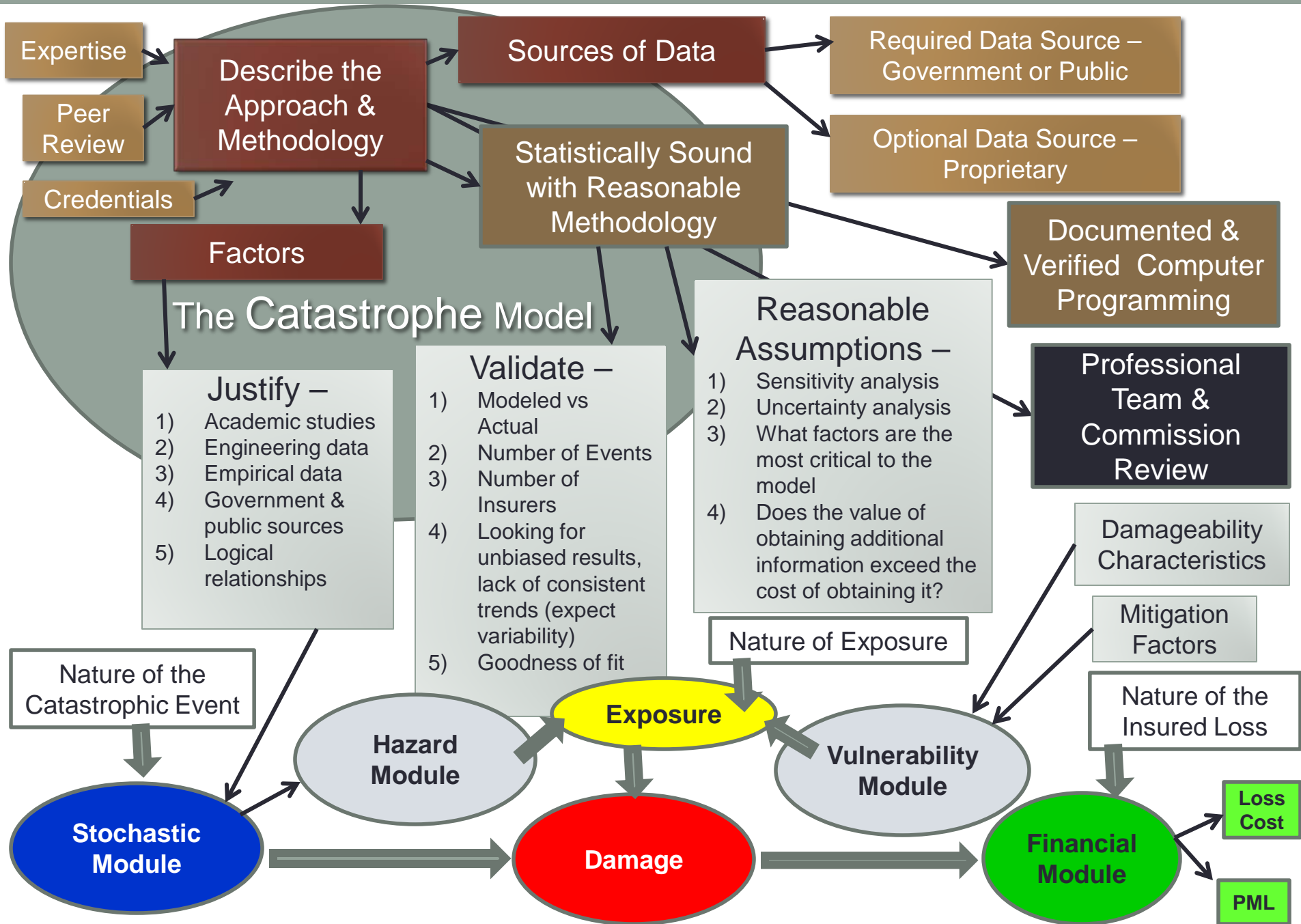
Discussion of the Catastrophic Modeling Review Process

- Jack Nicholson, Chair

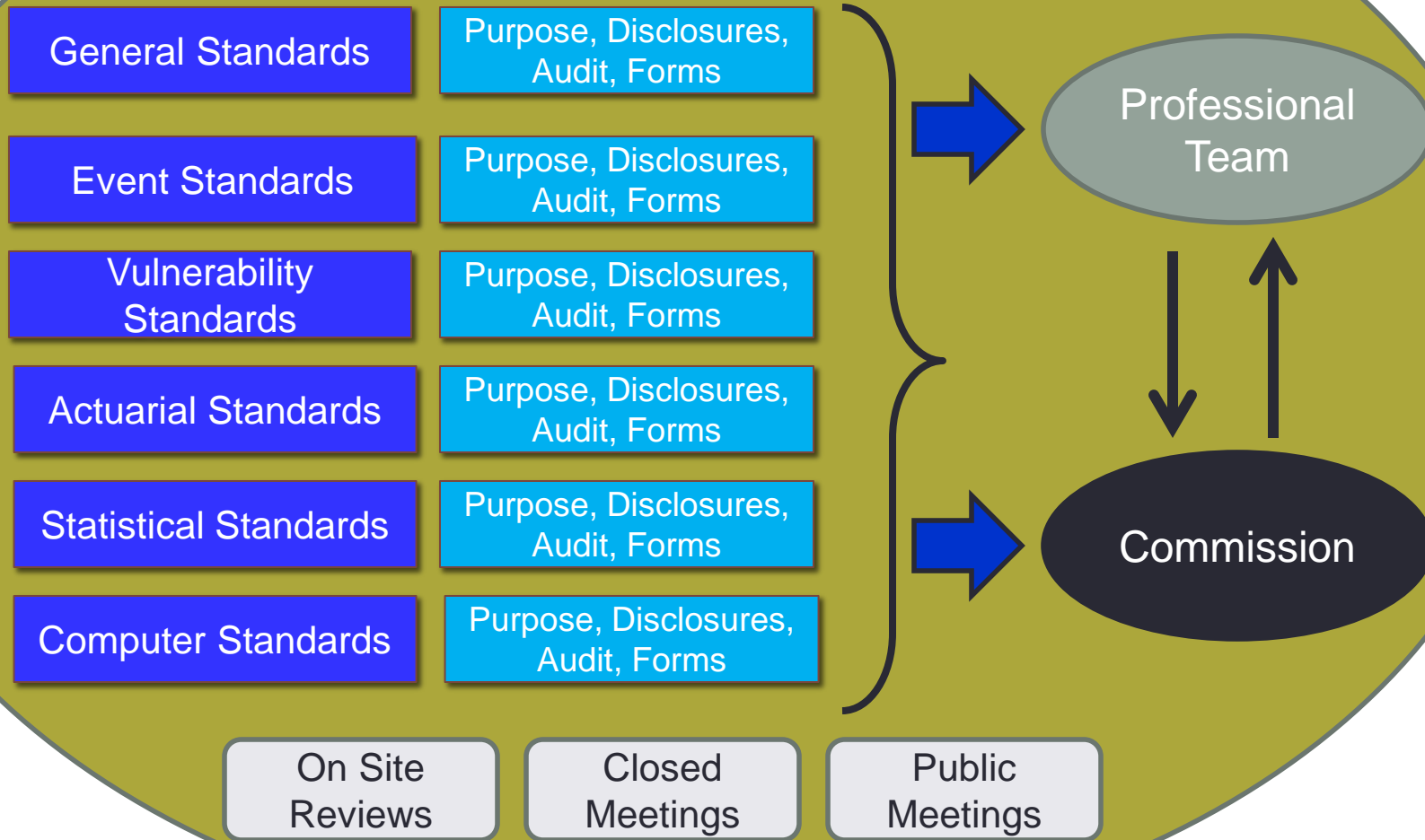








The Catastrophe Model Review & Evaluation



Introduction to Flood

World Water Quantity

Total quantity of water on earth = 1386 m KM³

Oceans = 96.5% (Saline)

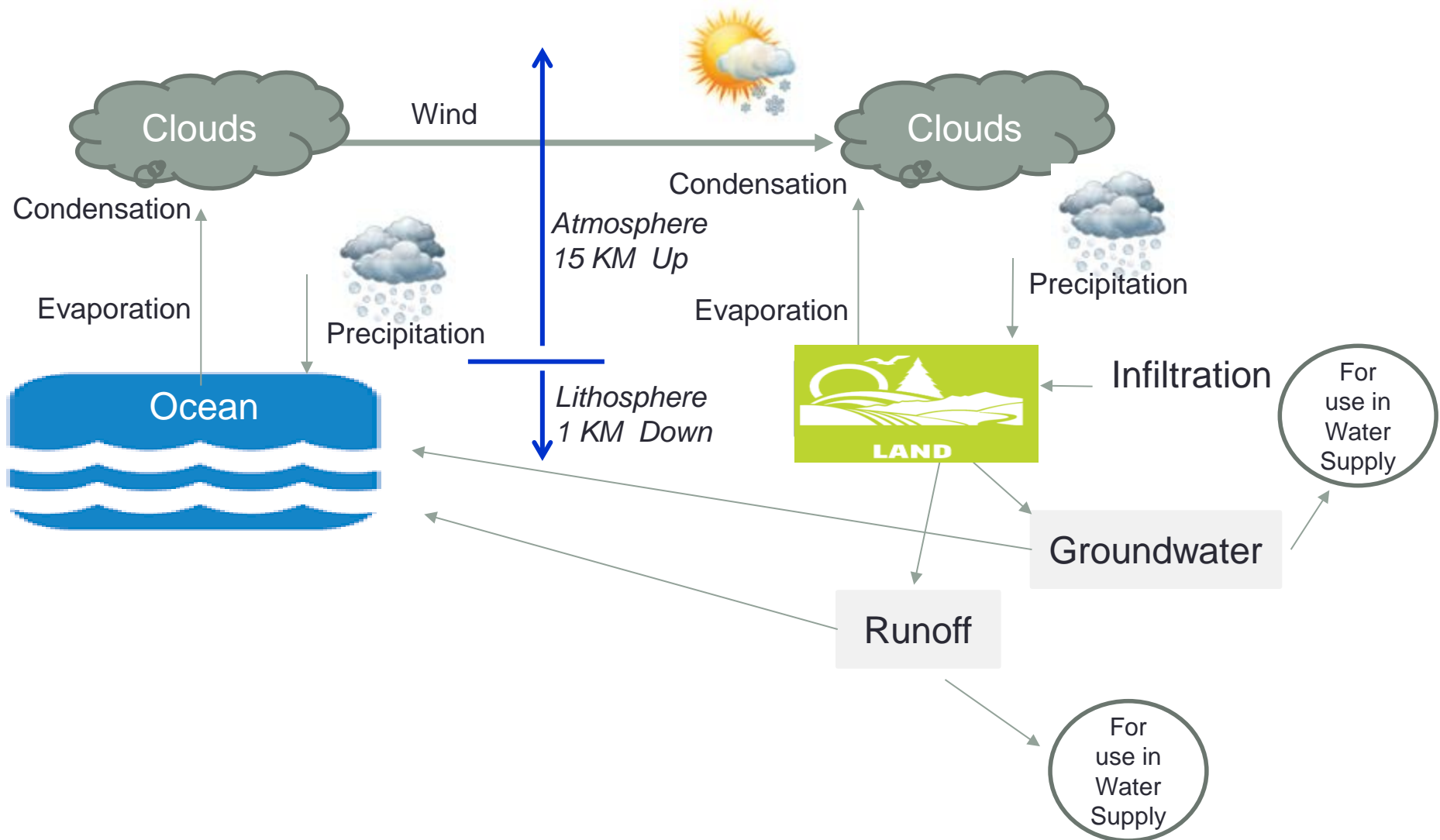
Land = 3.5% and 1% Saline and 2.5% Fresh or 35 m KM³

Out of 35 m KM³ about 10.6 m KM³ is liquid and 24.4 m KM³ is solid (form of ice in polar regions)

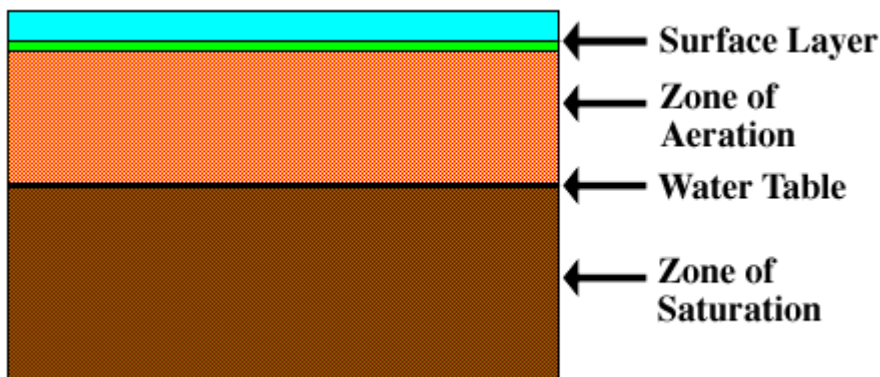
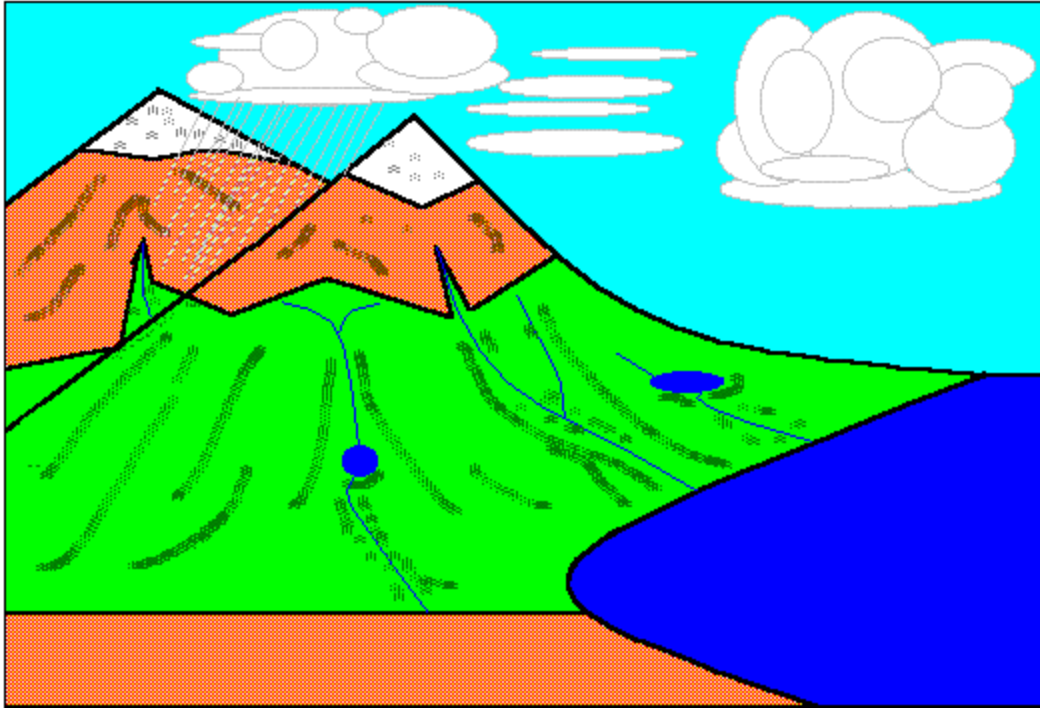
Hydrology

- Hydrology – the science of water. More specifically, the occurrence, distribution, and circulation of water.
- Hydrosphere: 15 KM up
- Lithosphere: 1 KM down
- Hydrologic Cycle

Hydrologic Cycle: Water is Always Moving



Groundwater

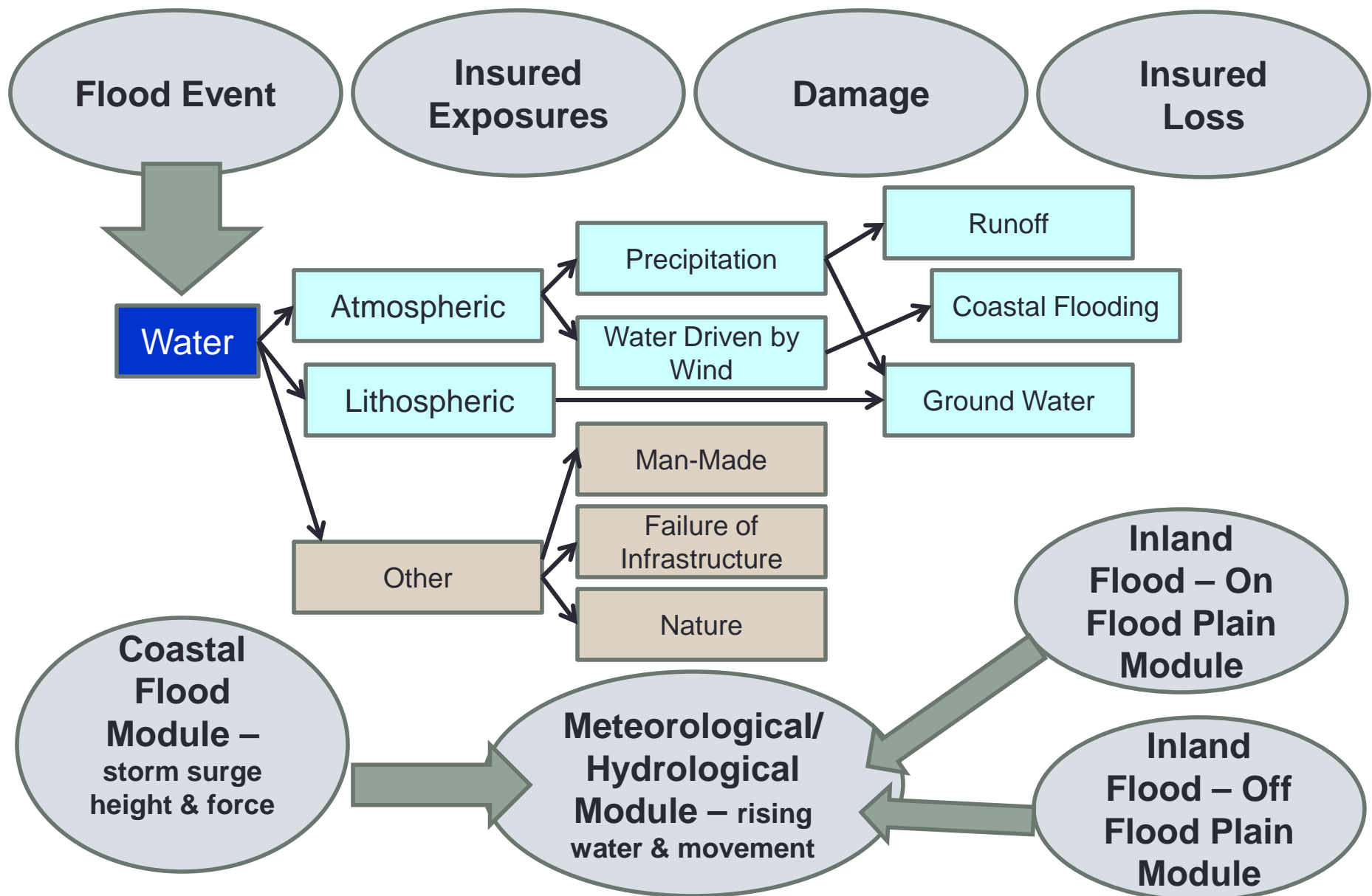


- **Groundwater** is all the water that has penetrated the earth's surface and is found in one of two soil layers.
- The one nearest the surface is the "**zone of aeration**," where gaps between soil are filled with both air and water.
- Below this layer is the "**zone of saturation**," where the gaps are filled with water.
- The "**water table**" is the boundary between these two layers. As the amount of groundwater increases or decreases, the water table rises or falls accordingly.
- When the entire area below the ground is saturated, flooding occurs because all subsequent precipitation is forced to remain on the surface.

Discussion of the Flood Peril

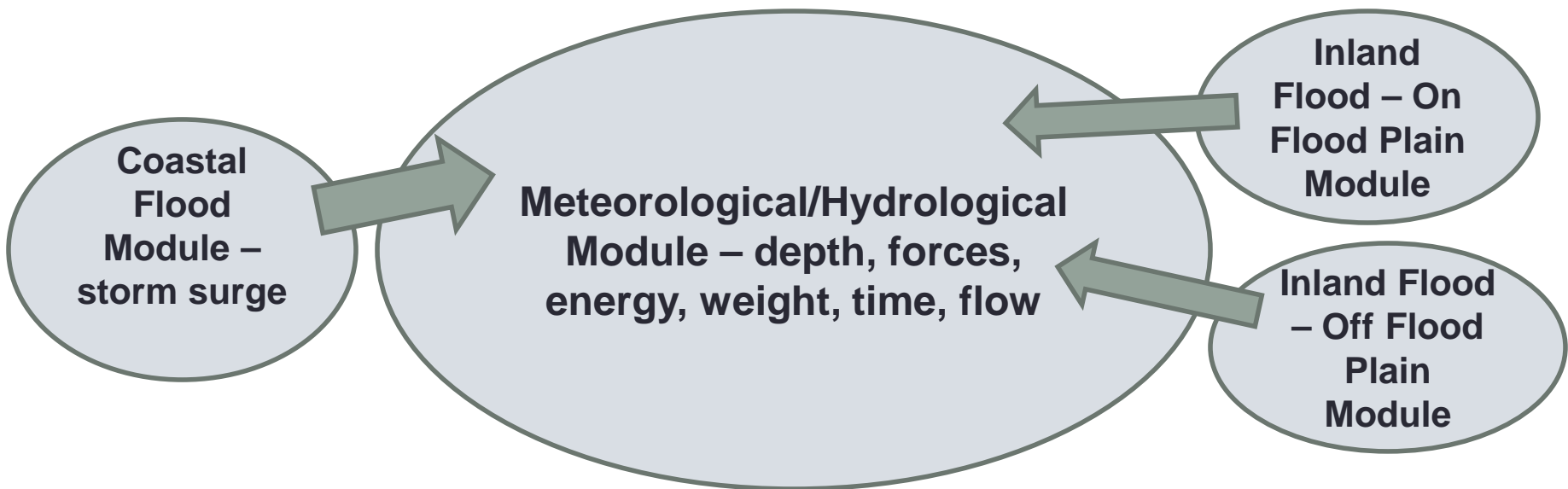
Flood Modeling:

- Catastrophic Modeling:
 - Four Modules: 1) Stochastic, 2) Hazard, 3) Vulnerability, 4) Financial
- For Flood:
 - Flood Events – stochastic events and nature of the events (understanding the flood event). Flooding occurring in Florida can be from flood events in other states
 - Exposures – Personal residential property in Florida
 - Damage – flood damage including rising water, the force and energy from flow (erosion) and weight of water, the duration of standing or flowing water or the duration of wind blown water (storm surge) and pressures on exposed structures
 - Insured Loss – What the insurer is obligated to pay



The Nature of the Flood Peril Event:

- Flood
 - Height of water
 - Force of water
 - Weight of water
 - Duration of standing water before receding
 - Rapid accumulation of water
- Types of Flooding
 - Coastal flooding associated with storm surge
 - Inland flood plain flooding
 - Inland non-flood plain flooding
 - Other:
 - Man-made (dam or levy breaks or intentional release of water)
 - Nature (earthquake/tsunami)



Factors:

1. Tide
2. Windspeed, R-Max
3. Central & Far Field Pressure
4. Wave height
5. Speed of storm
6. Bathymetry
7. Coastal shape
8. Location
9. Mitigation – seawalls, etc.
10. Vulnerabilities

Factors:

1. Land contours (topography)
2. Absorption of soil
3. River flow
4. River shape
5. Underground water flows
6. Catchments, lakes, ponds, streams, creeks, etc.

Factors:

1. Rainfall
2. Coastal flooding effects (back up)
3. Flood control or mitigation, levies, dams, drainage ponds, etc. & probabilities and severity if break

The Nature of the Exposure:

- Location, height, and elevation
- First floor height
- Construction characteristics
- Building/structure age
- Occupancy type
- Mitigation features
- Residential structure characteristics
- Appurtenant structures
- Basement
- Contents
- Special property
- Time to repair

The Nature of the Insured loss:

- Definition of flood event
- Definition of flood peril
- Definition of flood coverage
- Deductibles
- Co-payments
- Limits
- Coverages
- Exclusions
- Endorsements

Insured Exposures

Factors:

1. Height
2. Basement
3. Mitigation
4. First Floor height
5. Contents
6. Location on flood plain, off flood plain, or on coast
7. Age of structure

Damage

Factors:

1. Structure
2. Appurtenant structures
3. Contents
4. Additional living expenses
5. Special property endorsed
6. Time

Insured Loss

Factors:

1. Deductible
2. Copayments
3. Limits
4. Coverage
5. Exclusions

Insurer/Reinsurer Considerations

1. Definition of flood event
2. Definition of the flood peril
3. Definition of flood coverage
4. Loss costs
5. Exposure distribution (PML)
6. Reinsurance

Identification of Issues

- Jack Nicholson, Chair

Flood Modeling Issues:

- Methodology & Statistics
- Nature of the Flood Peril
 - Types of flooding – river (fluvial), overland (pluvial), coastal, urban, groundwater, failure of artificial systems, flash floods, semi-permanent flooding
 - Characteristics
- Nature of the Exposure
 - Hazard
 - Vulnerability
- Nature of the Insured Loss
 - Coverage
 - Limitations
- Definitions & Terms
- Miscellaneous Issues

Audience Comments/Closing Remarks/Adjourn

- Jack Nicholson, Chair