

# The Florida Public Hurricane Loss Model

Version 5.0

August 2013

## Model Overview

- The FPHLM development project for personal and commercial residential properties was funded by the FL-Office of Insurance Regulation.
- We are currently funded to operate, update and maintain the model at Florida International University.
- Model is operated by a team of experts in computer science, actuarial science, finance, statistics, meteorology and engineering experts.

- Our major client is the FL-OIR
- Since 2009, as required by the Florida legislature, we have provided hurricane modeling services to over thirty clients in the insurance industry.
- Model development was not influenced by either FL-OIR or the insurance industry

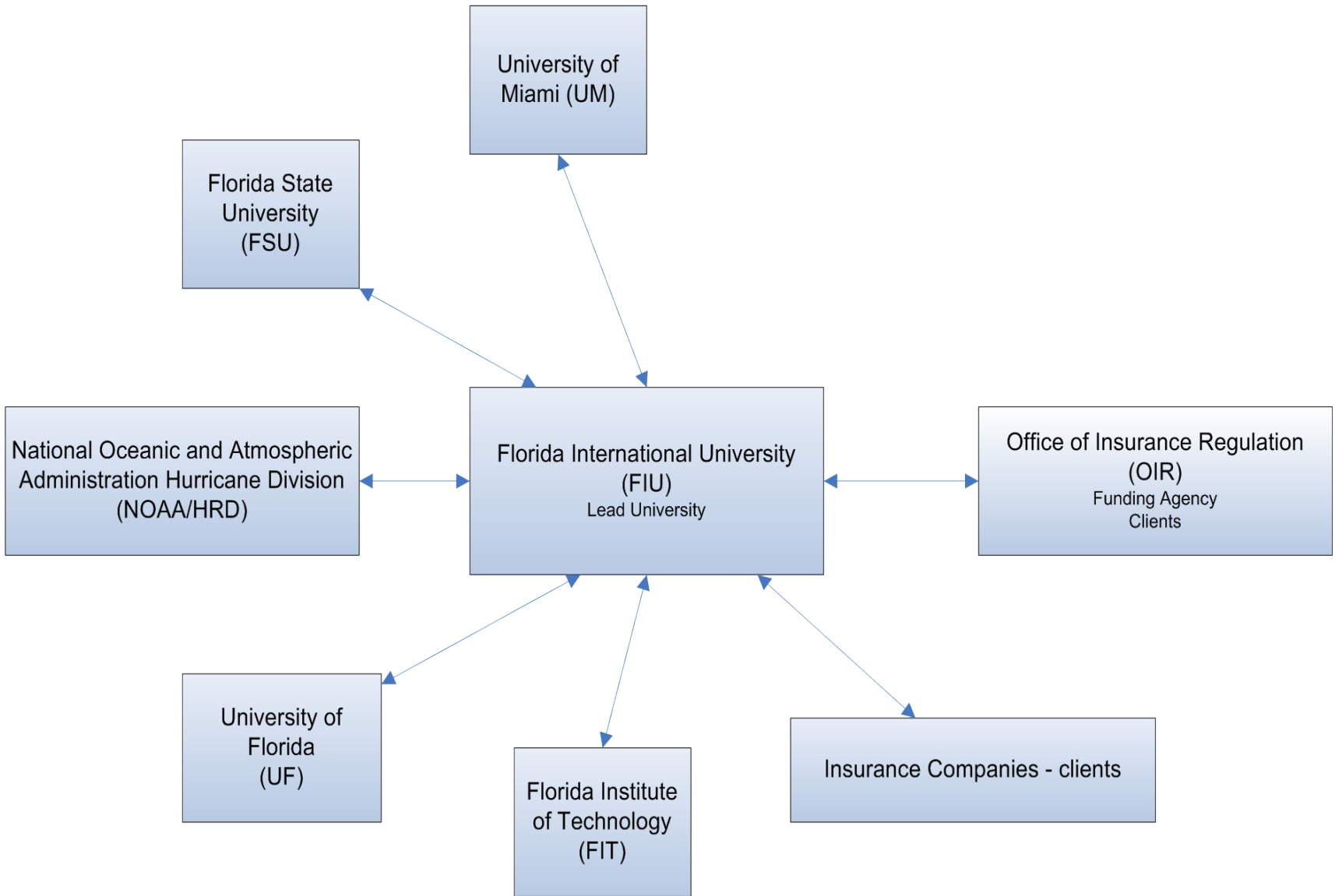
- The model was first activated in March 2006. This version was used to process the insurance company data on behalf of the Florida Office of Insurance Regulation.
- In Summer 2007 a revised and updated version 2.6 of the model was accepted by the Florida Commission on Hurricane Loss Projection Methodology and put to immediate use.
- Another revised and updated version 3.0 was accepted by the Commission in June 2008.
- Another revised and updated version 3.1 was accepted by the Commission in June 2009.
- Version 4.1 was accepted by the Commission in August 2011 and has been used since.

# General Comments

- The model is transparent in the sense that we make available technical reports, flowcharts etc. on the assumptions, methods, theories, component designs, and tests.
- In fact much has already been published in refereed journals and proceedings.
- Technical documents are available at the project website: [www.cis.fiu.edu/hurricane/loss/](http://www.cis.fiu.edu/hurricane/loss/)
- The source code, however, is not open.

# Participating Institutions

- Florida International University/ IHRC (lead institution)
- Florida State University
- Florida Institute of Technology
- Hurricane Research Division, NOAA
- University of Florida
- University of Miami
- AMI Risk Consultants



- About 20 professors and experts and about 2 dozen graduate students were involved in the development and operation of the model.



# Meteorology Team

- Dr. Mark Powell\*                      Hurricane Research Division, NOAA  
Team leader
- Dr. Steven Cocke                      Dept of Meteorology, FSU
- Bachir Annane                          Univ of Miami – CIMAS
- Dr. T.N.Krishnamurti                  Dept of Meteorology, FSU
- Dr. George Soukup                    Applied physicist, AOML/NOAA
- Neal Dorst                              Hurricane Research Division, NOAA
- Graduate students

# Engineering Team

- Dr. Jean Paul Pinelli\*      Dept of Civil Engineering, FIT  
Team leader
- Dr. Kurtis Gurley      Dept of Civil Eng, UF
- Dr. Mani Subramaniam      Dept of Mech Engineering, FIT
- Dr. Emil Simiu      Civil Eng, IHRC at FIU and  
NIST
- Graduate students

# Actuarial/Finance Team

- Dr. Shahid Hamid\*      Dept of Finance and IHRC, FIU  
PI and Project Director
- Gail Flannery      Actuary, FCAS, AMI Risk Consultant
- Bob Ingco      Actuary, FCAS, AMI Risk Consultant
- Dr. Duong Nguyen      Dept. of Finance, U-Mass Dartmouth
- Graduate students

# Computer Science Team

- Dr. Shu-Ching Chen\*      School of Computer Science, FIU  
Co-PI and team leader
- Dr. Mei-Ling Shyu      Dept. of Electrical and Computer  
Engineering, University of Miami
- Dr. Min Chen      School of CIS, FIU/ Univ Montana
- Dr. Na Zhao      Ph.D. CIS, FIU
- Fausto Fleites      Ph.D. student candidate, FIU
- Nirva Morisseau      Database expert, HRD, NOAA
- Raul Garcia      Student at FIU
- Diana Machado      Student at FIU
- Ronald Ocampo      Student at FIU
- Other students



# Publications

- The project team has generated over four dozen papers so far. Some of these have been published in top science, engineering and computer science journals and proceedings and conferences.
- We expect to produce many more papers.
- Some of the publication outlets are:
  - Nature
  - ASCE Journal of Structural Engineering
  - Software Practice and Experience
  - Natural Hazard Review
  - Numerous IEEE Proceedings
  - Journal of Wind and Industrial Engineering Aerodynamic
  - Intl Wind Engineering Proceedings
  - Reliability Engineering and System Safety Journal

# Publications (continued)

- Government Information Quarterly
- Statistical Methodology
- Statistical proceedings of ASA
- Various Meteorology conferences

# Model Design

- The model consists of three major components: wind hazard (meteorology), vulnerability (engineering), and insured loss cost (actuarial).
- The major components were developed independently before being integrated.
- The computer platform is designed to accommodate future hookups of additional sub-components or enhancements.



