

**Public Abstract**

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Graduation Term:SP 2008

Department:Nuclear Engineering

Degree:MS

**Title:COMPARISON AND DEVELOPMENT OF HURRICANE ELECTRICAL POWER SYSTEM DAMAGE MODELS**

Hurricanes are a periodic source of damage to infrastructure in the US. The costs of repairing the damage they do ranges from the hundreds of thousands, to several billion dollars. The Saffir-Simpson Hurricane Scale is intended to give some idea of the damage a hurricane may potentially cause, but it represents only the most basic indicator of hurricane damage. For example, hurricane Agnes in 1972, a category 1 storm on the Saffir-Simpson scale caused approximately \$11.3 billion in damages . Three years earlier, hurricane Camille a category 5 hurricane (the highest class of hurricane on the Saffir-Simpson scale), caused \$8.9 billion in damages. While it is generally the case that higher category hurricanes do more damage than lower categories, this example illustrates to some extent how widely damage can vary from storm to storm.

Given the massive financial impact these storms can have, it is desirable to be able to predict, to the largest extent possible, where, when and how much damage an incoming hurricane may cause.

This document describes work done to compare some of the methods used for hurricane damage prediction at LANL, and extensively discusses development work undertaken on the newest model. First, the oldest method used at LANL, their Heuristic method is described. Then an automated version of the same method is described, and the two methods are then compared in detail. The final section will describe the development of a new tool for physically modeling hurricanes, CICLOPS. Its properties will be described in detail, and the process of development undertaken on this model will be fully described.