Jacksonville State University
Disaster Resistant University
Hazard Mitigation Plan

As of February 22, 2012

Table of Contents

Introduction

Purpose

The United States has sustained 99 weather-related, presidentially declared disasters over the past 31 years in which overall damages/costs reached or exceeded $1 billion. The total normalized losses for these 99 events exceeded $725 billion. In the fall of 2009, Jacksonville State University (JSU) applied through the Federal Emergency Management Agency (FEMA) for a grant to develop a hazard mitigation plan. The purpose of the hazard mitigation plan will be to protect JSU's students, faculty, staff, visitors, and property institution wide from natural disasters. The need is due in part to the increased awareness and activity of natural disasters. The best way for JSU to thwart the threat of natural disasters is to plan so that administrators can prepare for, respond to, and recover from these events in a comprehensive and cost-effective way.

Hazard Mitigation

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to life and property from hazards. Mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive and comprehensive long-term plan that is developed before a disaster occurs. Upon approval of the application, JSU not only will have the ability to apply for additional federal grants that will allow the university to protect itself in anticipation of an event, but will also become an applicant with the same opportunities for federal dollars as any city, town, or local government.

About Jacksonville State University

Jacksonville State University's quest to become the first to receive the Disaster Resistant University status in the state of Alabama is no surprise. JSU made a major investment in emergency management long before the horrific events of 9/11 and Hurricanes Katrina and Rita by establishing the Institute for Emergency Preparedness in 1999. JSU had the foresight to see the need in the field of emergency management and began to fill it. Since the inception of the program, hundreds of students have matriculated through the program. Degree programs are delivered exclusively online, serving students around the country and world. JSU has established a Doctoral program in Emergency Management. This new degree program meets urgent needs for research and ongoing development of the discipline, as well as provides competent faculty and staff for undergraduate and graduate degree programs. With these new responsibilities on the horizon, it is vital for JSU to continue to be a role model in the area of disaster management.

JSU is the only university in the state of Alabama to offer degrees in Emergency Management on the Bachelor's, Master's, and Doctoral level. JSU's Institute of Emergency Preparedness formed a partnership with the Association of Public Safety Communications Officials International (APCO) to offer online classes. APCO, through JSU, offers the world's first online degree program for Public Safety Telecommunications. In addition, APCO offers an Associate Degree in Public Safety Telecommunications, a Bachelor of Science

Degree in Emergency Management with a minor in Public Safety Telecommunications, and even a Master of Public Administration Degree with a concentration in Emergency Management.

FEMA's Center for Domestic Preparedness (CDP) located in Anniston, Alabama is the United States Department of Homeland Security's (DHS) only federally chartered Weapons of Mass Destruction (WMD) training center. The CDP has provided WMD training for many police officers and employees of Jacksonville State University. The CDP also allows JSU staff members to successfully complete all of their Incident Command Training including ICS-300 and ICS-400.

JSU is also one of two StormReady® universities in the state of Alabama. StormReady is a nationwide preparedness program that uses a grassroots approach to help communities develop plans to deal effectively with all types of severe weather, from tornadoes to tsunamis. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear cut guidelines. Six guidelines must be met in order to qualify as a StormReady university.

Guideline 1: Communication & Coordination
Guideline 2: National Weather Service Warning Reception
Guideline 3: Hydro-meteorological Monitoring
Guideline 4: Local Warning Dissemination
Guideline 5: Community Preparedness
Guideline 6: Administration

On August 8, 2011Jacksonville State University was recertified through 2014 a Stormready institution. In addition, JSU has an Emergency Operations Center (EOC) manned 24/7 to implement procedures in the event of a disaster. Within the EOC dispatch receives weather warnings via NOAA Weather radio, television, radio, and the Internet. JSU also has four redundant systems to alert the university's community of severe weather: outdoor warning sirens (provided by Calhoun County), NOAA Weather Radios located in each building and dorm room on campus, Blackboard, and the 800 megahertz Radios. The university's police department also offers awareness training to the campus yearly. By being a StormReady university, the students, faculty and staff, city residents, business owners, and visitors know that JSU is committed to safety and preparedness.

Finally, JSU established a Center for Information Security and Assurance (CISA) in 2008 through the Mathematical, Computing, and Information Sciences (MCIS) Department. The objective of CISA is to provide an avenue for research and education in computer and network security, digital forensics, cryptography, risk assessment and mitigation, disaster recovery and management, security regulations and compliance, and information security management. JSU has also been designated as a National Center of Excellence in Information Assurance Education by the National Security Administration.

The Planning Area

The jurisdiction includes the main campus of Jacksonville State University located in Jacksonville, Alabama, and three satellite locations Fort McClellan, Gadsden, and Fort Payne, Alabama.

The Planning Process

§201.6(b) In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. §201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, how it was prepared, who was involved in the process, and how the public was involved.

An Overview of the Planning Process

Before the grant was approved, the Hazard Mitigation Planning Committee (HMPC) was formed by university administration. The group convened and discussed the opportunity to develop a hazard mitigation plan that would protect the university from natural hazards. At the conclusion of the meeting, it was decided that JSU would pursue the Disaster Resistant University status under the Hazard Mitigation Grant Program (HMGP). Each committee member played an active role in the development of the plan with the assistance of a hired contractor. Throughout the plan's creation, the HMPC coordinated meeting dates and times and shared information via email and phone. The HMPC met officially four times from November 2010 through July 2011. All of the meetings were open to the public; two of the meetings were officially open to public for their participation and comments. In order to be eligible for HMGP funding, JSU made a conscious effort to accelerate the development of the planning process after tornados devastated Alabama on April 27, 2011. The HMPC was involved in the planning process from beginning to end, and the members' input was vital to the success of the plan's development.

Hazard Mitigation Planning Committee Meetings and Events

Date	Event
November 12, 2010	First informal meeting
February 25, 2011	First formal meeting – Public invited–Hazard identification
May 6, 2011	Risk assessments, Mitigation actions
July 22, 2011	Second public meeting- Review of plan development-Public comment requested.
TBA	Plan adoption

The Hazard Mitigation Planning Committee

Disaster Resistant University Committee Members	Title	Department
Clint Carlson	VP, Administrative and Business Affairs	Business Affairs
Dorothy Quarles	Executive Secretary, VP Institutional Advancement	Institutional Advancement
Dr. Alicia Simmons	Director, Institutional Research & Assessment	Office of Institutional Research & Assessment
Dr. Becky Turner	Provost and VP, Academic & Student Affairs	Academic and Student Affairs
Dr. Jane Kushma	Assistant Professor, Doctoral Program Director	Emergency Preparedness
Dr. Jess Godbey	Associate Professor	Technology and Engineering
Dr. Miriam Hill	Professor	Physical and Earth Science
George Lord	Director, Physical Plant	O & M Administrative
Janet Pierce (Whitmore)	Program Coordinator, Honors Program	Honors Program
Jodi Poe	Associate Professor, Library	Houston Cole Library
John Graham	Dean, Library Services	Houston Cole Library
Karen Bates	Secretary	University Police Department
Kevin Hoult	Director, University Housing & Residence Life	University Housing & Residence Life
Lynn Garner	Project Manager	Office of Institutional Research & Assessment
Melonie Carmichael	Emergency Management Specialist 1	University Police Department
Michelle Page	Safety and Security Supervisor	University Police Department
Shawn Giddy	Director, Public Safety	University Police Department

Disaster Resistant University Committee Members	Title	Department
Tammy Sallee	Secretary, Institutional Development	Institutional Development
Tienhan Ma	Coordinator of Assessment	Office of Institutional Research & Assessment
Tim King	Associate VP, Enrollment Management Student Affairs	Enrollment Management Student Affairs
Vinson Houston	Acting VP Information Technology and Director, University Telecommunications	Information and Technology

Mr. Clint Carlson is the Committee Chair; Ms. Melonie Carmichael is the committee secretary, and the facilitator is the consultant hired to develop and guide the plan, Mitigate America, LLC.

JSU followed the four-phase planning process as outlined in the FEMA Guide 443 “Building a Disaster Resistant University” and is described as follows:

1: Organize Resources: Once the Hazard Mitigation Planning Committee was formed, it identified the resources that could be used for plan development.

2: Profile hazards: Once hazards were identified, the committee ranked the hazards from the probability of most likely to happen to least likely to happen and a complete hazard analysis was performed for the hazards.

3: Inventory Assets: The committee conducted an inventory of the vulnerable assets to ascertain which could be affected by the identified hazards.

4: Estimate Losses: The committee estimated potential losses to people, structures, and other assets from the hazards identified.

Public Participation

To comply with §201.6 of the 44 CFR, JSU created a press release encouraging public participation in the planning process. The press release was sent to the *Jacksonville News*, *Anniston Star*, *Chanticleer* (student newspaper), and the JSU Newswire. In addition, JSU invited key stakeholders in the areas such as: non-profit 501(c) (3) organizations, Jacksonville Police Department, local businesses, Calhoun County Emergency Management Agency, and Public Works. JSU also posted information on its website (**http://www.jsu.edu/police/emergencymgt/**) that gave the general public the opportunity to provide continuous feedback as the strategy was developed. On February 25, 2011, participants from outside the JSU community and the HMPC, actively participated in discussions that primarily focused on the identification of hazards and the beginning stages of profiling those hazards. Participants were given a brief overview of the planning process and a synopsis of the grant via Power Point presentation. The participants were encouraged to be actively involved in the discussions and were assured that their comments were needed. The names of those who participated in the public meetings can be found on the sign-in sheets found in the appendices, along with the press release and a link to the EM website.

Several opportunities were provided for neighboring communities, agencies, nonprofit organizations, and other interested persons to participate in the planning process.

Review and Incorporation of Other Plans

A plethora of internal and external plans, studies, and guides were used to develop the Hazard Mitigation Plan. The consultant and the HMPC reviewed the documents listed below as guidance to direct and develop the plan. The documents were very helpful in identifying areas of opportunity regarding potential projects. Other documents helped in the assessment of risks and vulnerabilities, which brought to light the potential project costs versus benefits.

Internal

JSU: Hazard Vulnerability Risk Assessment
JSU: Disaster Resistant University Survey
JSU: Emergency Operations Plan
JSU: Storm Ready
JSU: 2020 Strategic Plan
JSU: 2010 Facilities Master Plan
JSU: COOP Plan
JSU: Mission Statement

External

Flood Insurance Study
Calhoun County Hazard Mitigation Plan
State of Alabama Hazard Mitigation Plan
National Climatic Data Center
NOAA Storm Prediction Center
Maps: Jacksonville State University Geography and Earth Sciences Department
FEMA Publications:
386-1
386-2
386-3
386-4
Local Hazard Mitigation Planning Guidance (July1, 2008)

Plan Incorporation Descriptions

Following is a brief description of some of the documents and guides that were utilized in plan development.

Emergency Operations Plan

The Jacksonville State University's Emergency Operations Plan (EOP) establishes policies, procedures, roles and responsibilities, and an organizational structure for responding to major emergencies that may impact the campus. The EOP incorporates operating procedures from the National Incident Management System (NIMS) and Incident Command System (ICS) for handling emergencies. NIMS establishes a uniform set of processes and procedures that emergency responders at all levels of government use to conduct response operations. The EOP has been designed as a strategic plan to provide the administrative procedures necessary to cope with campus emergencies.

StromReady® University

Americans live in the most severe weather prone country on Earth. Each year Americans cope with an average of 10,000 thunderstorms, 5,000 floods, 1,000 tornadoes, and 2 land-falling hurricanes. In addition, Americans regularly witness winter storms, intense summer heat, high winds, wild fires, and other deadly weather impacts. Some 90% of all presidentially declared disasters are weather related, leading to around 500 deaths per year and nearly $14 billion in damage. StormReady, a program started in 1999 in Tulsa, Oklahoma, helps arm America's communities with the communication and safety skills needed to save lives and property before and during the event. StormReady helps community leaders and emergency managers strengthen local safety programs and prepare to save lives from the onslaught of severe weather through advanced planning, education, and awareness. .

Strategic Planning

The Strategic Plan contains many components that work together to define the direction of the university. The Strategic Planning Committee drafted these components based on feedback provided by Red Balloon Discussion Groups comprised of faculty, staff, students, and alumni. The draft components were shared with the JSU community for feedback and used to revise and fine tune the components. The Strategic Plan was then approved by the Board of Trustees.

Mission Statement

Jacksonville State University is a public, comprehensive teaching institution that provides educational, cultural, and social experiences for a diverse undergraduate and graduate student population. As a student-centered university, JSU strives to balance academic challenges with a range of support services for students' academic, career, and personal goals. As an academic institution, Jacksonville State University seeks to produce broadly educated graduates with skills for employment, citizenship, and life-long learning. As a comprehensive university, Jacksonville State University supports scholarly and service activities consistent with its academic and professional strengths.

Continuity of Operations Plan

Jacksonville State University is committed to the safety and protection of its employees, students, operations, and facilities. In support of this commitment, the university has critical operations that must be performed, or rapidly and efficiently resumed in an emergency. The changing environmental threats and recent events have raised awareness of the need for continuity of operations (COOP) capabilities that will enable JSU to continue the performance of essential functions across a broad spectrum of emergencies. By planning for operations under such conditions, JSU hopes to mitigate the impact of the incident on its people, facilities and mission. The objectives of a Continuity of Operations Plan (COOP) are to minimize loss to the university, continue to serve faculty, staff, students, and visitors, and maintain administrative operations.

Calhoun County Hazard Mitigation Plan

The Calhoun County Hazard Mitigation Plan was created to protect the health, safety, and economic interests of residents by reducing the impact of natural hazards through hazard mitigation planning, awareness, and implementation. Hazard mitigation is any action taken to permanently eliminate or reduce the long-term risk to human life and property from natural and technological hazards. Hazard mitigation is an essential element of emergency management, along with preparedness, response, and recovery. This plan serves as the foundation for hazard mitigation activities within the county. Implementation of the plan's recommendations should reduce injuries, loss of life, and destruction of property due to natural and technological hazards. The plan provides a path toward continuous, proactive reduction of vulnerability to the most frequent hazards that result in repetitive and often severe social, economic, and physical damage. The ideal end-state is total integration of hazard mitigation activities, programs, capabilities, and actions into normal, day-to-day governmental functions and management practices. How successful this mitigation effort may be depends upon the dedication and interest displayed by governments, volunteer groups, and political entities responsible for its implementation.

State of Alabama Hazard Mitigation Plan

The purpose of the plan is to rationalize the process of identifying and implementing appropriate hazard mitigation actions across the state. The document includes a detailed characterization of natural hazards statewide; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, strategies, and actions that will guide Alabama's mitigation activities; and a detailed plan for implementing and monitoring the required aspects of the plan.

The National Climatic Data Center

The National Climatic Data Center (NCDC) is the world's largest active archive of weather data. NCDC produces numerous climate publications and responds to data requests from all over the world. NCDC operates the World Data Center for Meteorology, located in Asheville, North Carolina, and the World Data Center for Paleoclimatology, in Boulder, Colorado. NCDC supports a three-tier national climate services support program. Partners include NCDC, Regional Climate Centers and State Climatologists.

NOAA Strom Prediction Center

The Storm Prediction Center (SPC) is part of the National Weather Service (NWS) and the National Centers for Environmental Prediction (NCEP). Its mission is to provide timely and accurate forecasts and watches for severe thunderstorms and tornadoes over the contiguous United States. The SPC also monitors heavy rain, heavy snow, and fires and issues specific products for those hazards using the most advanced technology and scientific methodsl.

FEMA 386-1 Building Support for Mitigation

The first guide in the State and Local Mitigation Planning "How-To" series discusses the activities and issues involved in initiating a hazard mitigation planning process. The topics are presented within the context of the beginning phase, although many activities will continue throughout the endeavor. The effort put into identifying and organizing resources early will pay dividends later as planners progress through some of the more challenging tasks of mitigation planning. This "how-to" also provides snapshots of later phases. Planners will be able to begin the process knowing ahead of time what types of resources they may need in the future. Last, but perhaps most important, elected officials, community staff, citizens, and businesses will benefit from the knowledge, organization, positive attitude, and energy demonstrated.

FEMA 386-2 Identifying Hazards and Estimating losses

Mitigation Planning "How-To" Guide # 2 (FEMA 386-2), provides step-by-step guidance on how to perform a risk assessment. Through a series of general and hazard-specific worksheets, the publication will help state, Indian Tribal, and local planning teams determine (1) which natural hazards could affect a jurisdiction; (2) what areas of the jurisdiction are vulnerable to the hazards; (3) what assets could be affected; and (4) to what degree they will be affected as measured through dollar losses. This guide is addresses flood, earthquake, tsunami, tornado, coastal storm, landslides, and wildfire hazards. For communities dealing with multiple hazards, guidance is also provided on how to develop a composite loss estimate. Once the risk assessment is completed, state, Indian Tribal, and local officials will have the information necessary to develop a strategy for reducing their losses.

FEMA 386-3: Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies

Mitigation Planning "How-To" Guide # 3 (FEMA 386-3), the third in the State and Local Mitigation Planning "How-To" Series, is about developing the mitigation strategy and documenting the planning process. This guide builds on the resources and organizational framework discussed in Mitigation Planning "How-To" Guide # 1 (FEMA 386-1) and the results of the loss estimation conducted according to Mitigation Planning "How-To" Guide # 2 (FEMA 386-2). This guide provides planners the tools necessary to develop mitigation goals and objectives, identify and prioritize mitigation actions, formulate an implementation strategy, and assemble the planning document.

Local Multi-hazard Mitigation Planning Guidance

To help local governments better understand the Local Mitigation Plans requirements for 44 CFR Part 201, FEMA has prepared the Local Multi-hazard Mitigation Planning Guidance with two major objectives. First, the information is intended to help local jurisdictions develop new mitigation plans or modify existing ones in accordance with the requirements of the regulation. Second, the data is designed to help federal and state reviewers evaluate mitigation plans from local jurisdictions in a fair and consistent manner.

Profile Hazards

44 CFR §201.6(c)(2): A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

As part of its efforts to support and encourage hazard mitigation, the Jacksonville State University's Hazard Mitigation Planning Committee (HMPC) prepared an assessment of hazards that have the potential to impact the campus. The term "planning area" is used extensively in this section, and refers to the geographic limits of the JSU main campus as well as JSU at Fort McClellan, Fort Payne, and Gadsden, Alabama. The hazards identified in this plan are reflective that of the Calhoun County Hazard Mitigation Plan.

The following subsections provide an overview of past hazard events in and around the planning area and associated losses. Damage and losses (physical damage, indirect and economic losses, and injuries and deaths) associated with hazards result when an event affects areas where people and improved property are located. After hazards are identified, risk or vulnerability assessments can be prepared. When the full range of possible natural and man-made hazards is reviewed, it becomes apparent that some events occur frequently and some are extremely rare. Some hazards impact large numbers of people to a limited degree, while others may cause very localized but significant damage.

201.6 (c)(2)(I):
(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Hazard Descriptions

Thunderstorms (Hail, Lightning, High Winds)

Thunderstorms

Hazard Profile

Thunderstorms, sometimes referred to as “thunder events,” are recorded and observed as soon as a peal of thunder is heard by an observer at a National Weather Service (NWS) first-order weather station. A thunder event is composed of lightning and rainfall and can intensify into a severe thunderstorm with damaging or deadly hail, high winds, tornadoes, and flash flooding. The NWS classifies a thunderstorm as severe if its winds reach or exceed 58 mph, if it produces a tornado, or if it drops surface hail at least 0.75 inches in diameter. The average thunderstorm system is approximately 15 miles in diameter and typically lasts less than 30 minutes at a single location. However, weather monitoring reports indicate that coherent thunderstorm systems can travel intact in excess of 600 miles. The planning area may experience any of three types of thunderstorms: single-cell, squall line (multi-cell), and supercell.

- Single-cell thunderstorms, also known as pulse, air mass, or summertime thunderstorms, are individual or clusters of thunderstorms that are not usually severe. Frequent lightning strikes and locally-heavy rainfall capable of producing flooding are the main hazards from these slow-moving storms. These storms usually occur in the summer when the atmosphere is warm and unstable, but winds are weak.

- Squall lines and multi-cell thunderstorms are organized complexes of thunderstorms that cover large areas and great distances. These storms are often severe. Damaging wind is the main hazard since they move rapidly, although tornadoes, hail, and heavy rainfall capable of producing flooding are possible. Squall lines are more common during the months of March, April, May, November, and early December.

- Supercell thunderstorms are the most dangerous category of thunderstorms. They can produce long-lived tornadoes, winds in excess of 100 mph, and very large hail. Fortunately, they are not very common and usually cover small areas. At times, they can be embedded in clusters of thunderstorms or squall lines. Supercells are also most common during the months of March, April, May, November, and early December.

Hail

Hazard Profile

Any thunderstorm producing hail that reaches the ground is known as a hailstorm. Hail has a diameter of 5 millimeters (0.20 inches) to 15 centimeters (6 inches) and can weigh more than 0.5 kilograms (1.1 pounds). Unlike ice pellets, hail stones are layered and can be irregular and clumped together. Hail is composed of transparent ice or alternating layers of transparent and translucent ice at least 1 millimeter (0.039 inches) thick. These layers are deposited on the hail stone as it cycles through the cloud, suspended aloft by air with strong upward motion until its weight overcomes the updraft and falls to the ground. Although the diameter of hail is varied, in the United States the average damaging hail is between 2.5 centimeters (1 inch) and golf ball size (1.75 inches). Stones larger than 2 centimeters (0.75 inches) are usually considered large enough to cause damages. The Meteorological Service of Canada issues severe thunderstorm warnings when hail that size or above is expected. The US National Weather Service has a 2.5 centimeters (1 inch) or greater in diameter threshold: Other countries will have different thresholds according to local hail sensitivity. For instance, grape growing areas could be adversely impacted by smaller hailstones.

Lightning

Hazard Profile

Lightning is a discharge of atmospheric electricity, accompanied by a vivid flash of light, from a thunderstorm, frequently from one cloud to another, sometimes from a cloud to the earth. The sound produced by the electricity passing rapidly through the atmosphere causes thunder. Within the thunderstorm clouds, rising and falling air causes turbulence, that results in the buildup of a static charge. The negative charges concentrate in the base of the cloud. Since like charges repel, some of the negative charges on the ground are pushed down away from the surface, leaving a net positive charge on the surface. Opposite charges attract, so the positive and negative charges are pulled toward each other.

High Winds (or Windstorms)

Hazard Profile

Wind is defined as the motion of air relative to the earth's surface. In the mainland United States, the mean annual wind speed is 8 to12 mph with frequent speeds of 50 mph and occasional wind speeds greater than 70 mph. Large scale extreme wind phenomena are experienced in every region of the United States. High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds (high or low pressure systems) moving across an area. High winds are defined as speeds reaching 50 mph or greater, either sustaining (continuous) or gusting. Downdraft winds are from a strong thunderstorm downburst which causes damaging winds on or near the ground; these can extend from 2 ½ miles to more than extend 100 miles. Downdraft wind speeds can be from 80 mph to 168 mph and occur quite suddenly as a thunderstorm cloud collapses. Winds associated with storms are temperature driven as opposed to those caused by fronts or gradient winds. These speeds can range from light breezes to sustained speeds of 80 to 100 mph.

Tornado

Hazard Profile

Tornadoes are defined as violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground. However, the violently rotating column of air may reach the ground very quickly and become a tornado. If debris is picked up or blown around by the "funnel cloud," it has reached the ground and is a tornado. Spawned by thunderstorms tornados are produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of both high wind velocity and wind-blown debris. Although tornadoes can occur at any time of year, tornado season is generally April through June, in the afternoons and evenings. Over 80 percent of all tornadoes strike between 3 PM and 9 PM, but can occur at any time of day or night. Tornadoes are found most frequently in the United States east of the Rocky Mountains.

Floods

Hazard Profile

A flood is a natural event for rivers and streams. Excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, next to rivers, lakes, and oceans, that are subject to recurring floods. Hundreds of floods occur each year, in all 50 states and U.S. territories, and are the most widespread of all natural disasters except fire. Most communities in the United States have experienced some kind of flooding after spring rains, heavy thunderstorms, or winter snow thaws. Flood waters can be slow or fast rising, but generally develop over a period of days. Flooding tends to occur in the summer and early fall because of the monsoon rains and is typified by increased humidity and high summer temperatures. However, floods can occur at any time of the year, in any part of the country.

Several factors determine the severity of floods including rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also produce floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Riverine flooding occurs when rising water levels in rivers cause river bank overtopping. The rising water level may be caused by heavy snowmelt or high-intensity rainfall, creating soil saturation and high runoff either directly or in upstream catchment areas. Frequency of inundation depends on the climate, soil, and channel slope. In regions where substantial precipitation occurs in a particular season each year or in regions where annual flooding is derived principally from snowmelt, the floodplains may be inundated almost annually. In areas where flooding is caused by melting snow that is occasionally compounded by rainfall, the flood season is spring or early summer.

Hurricane Winds (Tropical Storms)

Hazard Profile

The intensity of a land-falling hurricane is expressed in terms of categories that relate wind speeds and potential damage. According to the Saffir-Simpson Hurricane Scale, a Category 1 hurricane has lighter winds compared to storms in higher categories. A Category 4 hurricane would have winds between 131 and 155 mph and, on average, would be expected to cause 100 times the damage of the Category 1 storm. Depending on circumstances, less intense storms may still be strong enough to produce damage, particularly in areas that have not prepared in advance. Tropical storm-force winds are dangerous to those caught in them. For this reason, emergency managers plan on having their evacuations complete and their personnel sheltered before the onset of tropical storm winds, not hurricane-force winds. Hurricane-force winds can easily destroy poorly constructed buildings and mobile homes. Debris such as signs, roofing material, and small items left outside become flying missiles in hurricanes. Extensive damage to trees, towers, water and underground utility lines (from uprooted trees), and fallen poles cause considerable disruption. High-rise buildings are also vulnerable to hurricane-force winds, particularly at the higher levels since wind speed tends to increase with height. Recent research suggests that individuals in the path of these winds should stay below the tenth floor, but still above any floors at risk for flooding. It is not uncommon for high-rise buildings to suffer a great deal of damage due to windows being blown out. Consequently, the areas around these buildings can be very dangerous. The strongest winds usually occur in the right side of the eyewall of the hurricane. Wind speed usually decreases significantly within 12 hours after landfall. Nonetheless, winds can stay above hurricane strength well inland. In 1989 for example, Hurricane Hugo battered Charlotte, North Carolina, which is 175 miles inland, with wind gusts of nearly 100 mph.

Winter Storms

Hazard Profile

A winter storm can range from moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow, and extremely cold temperatures that last several days. Some winter storms may be large enough to impact several states, while others may affect only a single community. All winter storms are accompanied by cold temperatures and blowing snow, which can greatly reduce visibility. A severe winter storm is one that drops 4 or more inches of snow during a 12–hour period or 6 or more inches during a 24-hour span. An ice storm occurs when freezing rain falls from clouds and freezes immediately on impact. All winter storms make driving and walking extremely hazardous. A winter storm watch means that severe winter weather may affect your area. A winter storm warning indicates that severe winter weather conditions are definitely expected. A blizzard warning means that large amounts of falling or blowing snow and sustained winds of at least 35 mph are anticipated for several hours.

Earthquake

Hazard Profile

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the Earth as they move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When that energy grows strong enough, the plates break free, causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates. Earthquakes strike suddenly and without warning.

Drought

Hazard Profile

A drought is a period of drier-than-normal conditions that result in water-related problems. Precipitation (rain or snow) falls in uneven patterns across the country. When no rain or only a small amount of rain falls, soils can dry out and plants can die. When rainfall is less than normal for several weeks, months, or years, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth of water in wells decreases; if dry weather persists and water supply problems develop, the dry period can become a drought. Droughts can be defined in three ways:

1. Meteorological drought is brought about when a prolonged period has less than average precipitation. Meteorological drought usually precedes other kinds of drought.

2. Agricultural droughts affect crop production or the ecology of the range. This condition can also arise independently from any change in precipitation levels when soil conditions and erosion triggered by poorly planned agricultural endeavors cause a shortfall in water available to the crops. However, in a traditional drought, it is caused by an extended period of below average precipitation.

3. Hydrological drought is brought about when the water reserves available in sources such as aquifers, lakes, and reservoirs fall below the statistical average. Hydrological drought tends to show up more slowly because it involves stored water that is used but not replenished. Like an agricultural drought, this can be triggered by more than just a loss of rainfall.

Extreme Heat

Hazard Profile

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as “extreme heat.” Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility.

Landslides

Hazard Profile

Landslides and mass movements are serious geological hazards experienced in every state in the United States. Mass movements involve the downslope movement of earth materials resulting from the pull of gravity. All slopes experience slow mass movement in the form of creep. The rate of mass movements varies from slow to fast, and the role of water as a lubricant and a trigger mechanism is an important classification variable. Landslides, generally considered the largest and most dramatic, are fairly rare and can be catastrophic. Debris flows, earth flows, mudflows, lahars, rockslides, rock falls, block falls, slumps, and subsidence are other noteworthy natural hazards that are distinguished from landslides by the type, amount, and size of debris fragments, the amount and role of water, and the path of debris particle movement. Mass movement risks are highest during periods of intense rain or rapid snow melt. Mass movements may occur without warning, and often preliminary warning conditions go unnoticed. Mass movements can move so rapidly that they destroy property and take lives unexpectedly. Factors that allow the force of gravity to overcome the resistance of earth material to mass movement include saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, earthquake shaking, and volcanic eruptions.

Subsidence can be classified as a mass movement when related to mining or excavations for underground utilities and other structures. It can also be considered a separate natural hazard associated with the solution and removal of soluble bedrock such as limestone and dolomite. The term karst topography refers to a landscape dominated by such solution features. Ground water movement and the collapse of cavern roofs can result in gradual or sudden subsidence as the surface and risk to structures built upon those surfaces.

Wildfires

Hazard Profile

Three different classes of wildfires are recognized. A surface fire is the most common and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, and low precipitation during the summer, and during the spring, moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires. Wildfires are less significant in the more humid eastern United States; however, droughts and high winds can result in forest and grass fires that present risk to nearby residents and structures especially urban developments near forested areas.

Pandemic

Hazard Profile

A pandemic is an epidemic of an infectious disease that is spreads through human populations across a large region such as multiple continents, or even worldwide. A widespread endemic disease that is stable in terms of how many people are getting sick from it is not a pandemic. Further, flu pandemics exclude seasonal flu, unless the flu of the season is a pandemic. Pandemics, such as smallpox and tuberculosis, have occurred throughout history. More recent pandemics include the HIV pandemic and the H1n1 pandemic.

Thunderstorms

(Hail, High Wind, Lightning)

Location

The entire planning area is subject to the same probability of thunderstorms. Thunderstorms are more frequent during warmer weather.

Extent of Natural Hazards

A severe thunderstorm is expected to cover a wide geographic area. The spatial extent (i.e., how large an area is potentially affected) is expected to be moderate, affecting 25–50% of people and/or property. However, the severity of impact (i.e., severity of damage within the affected area) is expected to be limited damage to 10-25% of property. No estimate is available for the economic damages to Calhoun County (JSU) from severe thunderstorms. Winds in excess of 58 miles per hour can break or uproot trees, damage roofs, and cause considerable structural damage. Hail of 0.75 inches in diameter is too small to cause personal injury or serious property damage except to crops. However, extreme hailstones can total cars, ruin roofs, break windows, damage shutters, kill animals, and seriously hurt or kill humans. Campus operations may be temporarily shut down or classes canceled.

Lightning damage can result in electrocution of humans and animals, vaporization of materials along the path of the strike, fire caused by the high temperature produced by the strike, and a sudden power surge that can damage electrical and electronic equipment, including utility substations and distribution lines. While property damage is the major hazard associated with lightning, it should be noted that lightning strikes kill nearly 100 people each year in the United States.

Previous Occurrences

According to the National Climatic Data Center, 138 thunderstorms were reported in Calhoun County between January 1950 and December 2010. Thunderstorm-related deaths totaled 6 with 15 injuries. The thunderstorms caused $1.548 million dollars in property damage and $14K in crop damage. The chart below lists previous occurrences. *Thunderstorm is abbreviated as Tstm.*

Thunderstorms for Calhoun County January 1950–December 2010

Alabama								
Location or County	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
1 CALHOUN	12/11/1961	2000	Tstm Wind	0 kts.	0	0	0	0
2 CALHOUN	03/17/1965	1055	Tstm Wind	0 kts.	0	0	0	0
3 CALHOUN	02/22/1971	0200	Tstm Wind	0 kts.	0	0	0	0

4 CALHOUN	03/21/1974	0240	Tstm Wind	50 kts.	0	0	0	0
5 CALHOUN	04/01/1974	2215	Tstm Wind	0 kts.	0	0	0	0
6 CALHOUN	01/10/1975	1630	Tstm Wind	0 kts.	0	0	0	0
7 CALHOUN	03/13/1975	1715	Tstm Wind	0 kts.	0	0	0	0
8 CALHOUN	07/10/1975	1509	Tstm Wind	55 kts.	0	0	0	0
9 CALHOUN	04/11/1976	1830	Tstm Wind	50 kts.	0	0	0	0
10 CALHOUN	08/06/1976	1725	Tstm Wind	0 kts.	0	0	0	0
11 CALHOUN	02/23/1977	2140	Tstm Wind	0 kts.	0	0	0	0
12 CALHOUN	02/27/1977	0135	Tstm Wind	0 kts.	0	0	0	0
13 CALHOUN	06/24/1977	2010	Tstm Wind	0 kts.	0	0	0	0
14 CALHOUN	03/14/1978	0311	Tstm Wind	52 kts.	0	0	0	0
15 CALHOUN	07/03/1979	1630	Tstm Wind	0 kts.	0	0	0	0
16 CALHOUN	07/06/1980	1655	Tstm Wind	52 kts.	0	0	0	0
17 CALHOUN	09/03/1980	1328	Tstm Wind	0 kts.	0	0	0	0
18 CALHOUN	07/05/1981	1430	Tstm Wind	0 kts.	0	0	0	0
19 CALHOUN	06/28/1982	1800	Tstm Wind	0 kts.	0	0	0	0
20 CALHOUN	03/05/1983	1935	Tstm Wind	0 kts.	0	0	0	0
21 CALHOUN	04/23/1983	1647	Tstm Wind	51 kts.	0	0	0	0
22 CALHOUN	05/29/1983	1416	Tstm Wind	55 kts.	0	0	0	0

23 CALHOUN	05/02/1984	1525	Tstm Wind	0 kts.	0	0	0	0
24 CALHOUN	05/03/1984	1215	Tstm Wind	52 kts.	0	0	0	0
25 CALHOUN	05/07/1984	2120	Tstm Wind	52 kts.	0	0	0	0
26 CALHOUN	05/07/1984	2220	Tstm Wind	0 kts.	0	0	0	0
27 CALHOUN	04/05/1985	1750	Tstm Wind	0 kts.	0	0	0	0
28 CALHOUN	04/05/1985	1757	Tstm Wind	74 kts.	0	5	0	0
29 CALHOUN	05/07/1985	1215	Tstm Wind	0 kts.	0	0	0	0
30 CALHOUN	05/07/1985	1215	Tstm Wind	0 kts.	0	0	0	0
31 CALHOUN	06/23/1986	1715	Tstm Wind	0 kts.	0	0	0	0
32 CALHOUN	08/16/1986	1528	Tstm Wind	0 kts.	3	1	0	0
33 CALHOUN	08/16/1986	1630	Tstm Wind	0 kts.	3	1	0	0
34 CALHOUN	01/19/1988	2020	Tstm Wind	0 kts.	0	0	0	0
35 CALHOUN	08/02/1988	1425	Tstm Wind	0 kts.	0	0	0	0
36 CALHOUN	03/05/1989	1719	Tstm Wind	55 kts.	0	0	0	0
37 CALHOUN	03/20/1989	2014	Tstm Wind	0 kts.	0	0	0	0
38 CALHOUN	03/29/1989	1605	Tstm Wind	0 kts.	0	0	0	0
39 CALHOUN	04/04/1989	1231	Tstm Wind	70 kts.	0	8	0	0
40 CALHOUN	04/04/1989	1315	Tstm Wind	0 kts.	0	0	0	0
41 CALHOUN	07/12/1989	1635	Tstm Wind	0 kts.	0	0	0	0

42 CALHOUN	11/15/1989	1715	Tstm Wind	0 kts.	0	0	0	0
43 CALHOUN	02/10/1990	0330	Tstm Wind	69 kts.	0	0	0	0
44 CALHOUN	04/10/1990	1420	Tstm Wind	0 kts.	0	0	0	0
45 CALHOUN	06/07/1990	1455	Tstm Wind	0 kts.	0	0	0	0
46 CALHOUN	04/27/1991	1520	Tstm Wind	0 kts.	0	0	0	0
47 CALHOUN	06/18/1992	1800	Tstm Wind	0 kts.	0	0	0	0
48 CALHOUN	06/18/1992	1800	Tstm Wind	0 kts.	0	0	0	0
49 CALHOUN	07/05/1992	1345	Tstm Wind	0 kts.	0	0	0	0
50 CALHOUN	08/06/1992	1900	Tstm Wind	0 kts.	0	0	0	0
51 CALHOUN	04/15/1993	0615	Tstm Wind	0 kts.	0	0	0	0
52 Ohatchee	03/27/1994	1730	Tstm Wind	0 kts.	0	0	0	0
53 CALHOUN	04/15/1994	1150	Tstm Wind	0 kts.	0	0	50K	0
54 CALHOUN	05/15/1994	1600	Tstm Wind	0 kts.	0	0	50K	0
55 Dearmanville	05/15/1994	2000	Tstm Wind	50 kts.	0	0	5K	0
56 Piedmont	06/24/1994	1345	Tstm Wind	50 kts.	0	0	50K	0
57 Anniston	04/21/1995	0000	Tstm Wind	0 kts.	0	0	40K	0
58 Anniston	04/21/1995	0006	Tstm Wind	58 kts.	0	0	0	0
59 CALHOUN	04/22/1995	0815	TTstm Wind	0 kts.	0	0	0	0
60 Anniston	05/09/1995	2015	Tstm Wind	0 kts.	0	0	5K	0

61 Jacksonville	05/15/1995	1343	Tstm Wind	0 kts.	0	0	8K	0
62 Oxford	05/15/1995	1400	Tstm Wind	57 kts.	0	0	14K	0
63 Anniston	07/16/1995	1550	Tstm Wind, Lightning	0 kts.	0	0	85K	0
64 Anniston	04/20/1996	12:20 PM	Tstm Wind	57 kts.	0	0	20K	2K
65 Anniston	05/24/1996	08:47 PM	Tstm Wind	50 kts.	0	0	10K	0K
66 Piedmont	05/27/1996	05:55 PM	Tstm Wind	52 kts.	0	0	25K	2K
67 Anniston	01/24/1997	07:50 PM	Tstm Wind	50 kts.	0	0	10K	0K
68 Oxford	11/01/1997	03:30 PM	Tstm Wind	50 kts.	0	0	8K	0K
69 Jacksonville	02/17/1998	03:55 AM	Tstm Wind	50 kts.	0	0	3K	0K
70 Piedmont	06/05/1998	05:35 AM	Tstm Wind	50 kts.	0	0	20K	10K
71 Anniston	06/15/1998	09:45 PM	Tstm Wind	50 kts.	0	0	20K	0K
72 Oxford	06/15/1998	09:45 PM	Tstm Wind	50 kts.	0	0	15K	0K
73 Jacksonville	07/20/1998	01:50 PM	Tstm Wind	50 kts.	0	0	5K	0K
74 Ohatchee	02/27/1999	07:50 PM	Tstm Wind	55 kts.	0	0	18K	0K
75 Jacksonville	04/02/2000	11:12 PM	Tstm Wind	65 kts.	0	0	25K	0K
76 Ohatchee	04/03/2000	01:14 PM	Tstm Wind	55 kts.	0	0	5K	0K
77 Countywide	07/20/2000	05:30 PM	Tstm Wind	55 kts.	0	0	25K	0K
78 Countywide	08/10/2000	06:05 PM	Tstm Wind	50 kts.	0	0	5K	0K
79 Weaver	08/10/2000	06:20 PM	Tstm Wind	50 kts.	0	0	0K	0K

80 Countywide	02/16/2001	03:40 PM	Tstm Wind	55 kts.	0	0	10K	0K
81 Countywide	07/05/2001	02:30 PM	Tstm Wind	55 kts.	0	0	5K	0K
82 Jacksonville	07/09/2001	07:00 PM	Tstm Wind	50 kts.	0	0	2K	0K
83 Countywide	08/31/2001	05:12 PM	Tstm Wind	55 kts.	0	0	6K	0K
84 Ohatchee	04/28/2002	10:30 PM	Tstm Wind	50 kts.	0	0	8K	0K
85 Jacksonville	05/03/2002	04:30 AM	Tstm Wind	50 kts.	0	0	3K	0K
86 Jacksonville	08/20/2002	04:08 PM	Tstm Wind	50 kts.	0	0	10K	0K
87 Countywide	05/01/2003	06:25 PM	Tstm Wind	50 kts.	0	0	10K	0K
88 Countywide	05/05/2003	06:41 PM	Tstm Wind	55 kts.	0	0	20K	0K
89 Countywide	07/21/2003	04:45 PM	Tstm Wind	50 kts.	0	0	10K	0K
90 Ohatchee	08/27/2003	03:50 PM	Tstm Wind	50 kts.	0	0	32K	0K
91 Countywide	06/22/2004	05:50 PM	Tstm Wind	60 kts.	0	0	18K	0
92 Countywide	07/14/2004	04:22 PM	Tstm Wind	52 kts.	0	0	34K	0
93 Ohatchee	07/14/2004	04:45 PM	Tstm Wind	50 kts.	0	0	2K	0
94 Oxford	07/25/2004	04:00 PM	Tstm Wind	50 kts.	0	0	8K	0
95 Jacksonville	11/24/2004	07:30 AM	Tstm Wind	52 kts.	0	0	17K	0
96 Countywide	04/30/2005	03:43 AM	Tstm Wind	52 kts.	0	0	7K	0
97 Ohatchee	04/08/2006	12:48 AM	Tstm Wind	61 kts.	0	0	50K	0
98 Ohatchee	04/18/2006	06:05 PM	Tstm Wind	50 kts.	0	0	2K	0

99 White Plains	06/22/2006	04:07 PM	Tstm Wind	50 kts.	0	0	3K	0
100 Ohatchee	07/19/2006	03:45 PM	Tstm Wind	50 kts.	0	0	5K	0
101 Ohatchee	08/15/2006	02:05 PM	Tstm Wind	50 kts.	0	0	2K	0
102 Anniston	08/15/2006	02:25 PM	Tstm Wind	50 kts.	0	0	4K	0
103 Ohatchee	08/15/2006	02:28 PM	Tstm Wind	50 kts.	0	0	10K	0
104 Piedmont	06/14/2007	18:30 PM	Tstm Wind	70 kts.	0	0	100K	0K
105 Oxford	06/30/2007	15:50 PM	Tstm Wind	50 kts.	0	0	0K	0K
106 Piedmont	07/20/2007	10:35 AM	Tstm Wind	50 kts.	0	0	2K	0K
107 (anb)Anniston Calhoun	02/26/2008	04:10 AM	Tstm Wind	83 kts.	0	0	260K	0K
108 Saks	02/26/2008	04:10 AM	Tstm Wind	70 kts.	0	0	100K	0K
109 Jacksonville	04/04/2008	14:36 PM	Tstm Wind	52 kts.	0	0	3K	0K
110 Coldwater	04/04/2008	15:55 PM	Tstm Wind	50 kts.	0	0	10K	0K
111 Dearmanville	05/11/2008	12:35 PM	Tstm Wind	50 kts.	0	0	2K	0K
112 Boiling Spgs	05/20/2008	17:40 PM	Tstm Wind	50 kts.	0	0	3K	0K
113 Anniston	07/05/2008	16:46 PM	Tstm Wind	50 kts.	0	0	1K	0K
114 Tredegar	07/05/2008	17:10 PM	Tstm Wind	40 kts.	0	0	1K	0K
115 Prices	07/12/2008	11:36 AM	Tstm Wind	45 kts.	0	0	1K	0K
116 Reads Mill	08/02/2008	17:14 PM	Tstm Wind	50 kts.	0	0	1K	0K
117 Middleton	08/02/2008	17:53 PM	Tstm Wind	50 kts.	0	0	10K	0K

118 (anb)Anniston Calhoun	01/06/2009	17:00 PM	Tstm Wind	74 kts.	0	0	160K	0K
119 Hobson City	02/18/2009	15:52 PM	Tstm Wind	56 kts.	0	0	15K	0K
120 Wellington	03/28/2009	19:33 PM	Tstm Wind	50 kts.	0	0	10K	0K
121 Anniston	04/02/2009	21:50 PM	Tstm Wind	50 kts.	0	0	5K	0K
122 (anb) Anniston Calhoun	04/02/2009	21:52 PM	Tstm Wind	40 kts.	0	0	5K	0K
123 Ladiga	05/03/2009	14:40 PM	Tstm Wind	50 kts.	0	0	5K	0K
124 Grayton	05/06/2009	10:14 AM	Tstm Wind	50 kts.	0	0	2K	0K
125 (anb) Anniston Calhoun	06/12/2009	20:51 PM	Tstm Wind	39 kts.	0	0	2K	0K
126 Middleton	06/15/2009	20:59 PM	Tstm Wind	50 kts.	0	0	2K	0K
127 Anniston	06/15/2009	21:24 PM	Tstm Wind	50 kts.	0	0	15K	0K
128 Old Davisville	06/15/2009	21:49 PM	Tstm Wind	50 kts.	0	0	2K	0K
129 Grayton	06/28/2009	13:16 PM	Tstm Wind	55 kts.	0	0	10K	0K
130 Reads Mill	06/19/2010	12:10 PM	Tstm Wind	50 kts.	0	0	2K	0K
131 Jacksonville	06/19/2010	12:30 PM	Tstm Wind	50 kts.	0	0	3K	0K
132 Jacksonville Muni Ar	06/19/2010	12:30 PM	Tstm Wind	43 kts.	0	0	1K	0K
133 Reads Mill	07/24/2010	14:30 PM	Tstm Wind	60 kts.	0	0	3K	0K
134 Middleton	10/25/2010	03:36 AM	Tstm Wind	3 kts.	0	0	3K	0K
135 Blue Mtn	10/25/2010	03:51 AM	Tstm Wind	52 kts.	0	0	0K	0K

136 Blue Mtn	10/25/2010	03:52 AM	Tstm Wind	60 kts.	0	0	2K	0K
137 Laney	10/25/2010	03:52 AM	Tstm Wind	60 kts.	0	0	7K	0K
138 White Plains	11/30/2010	10:18 AM	Tstm Wind	50 kts.	0	0	2K	0K
				TOTALS:	6	15	1.548M	14K

Probability of Future Events

The probability of thunderstorms affecting the planning area is high. In fact, when identifying hazards the Hazard Mitigation Planning Committee chose thunderstorms as the planning area's number one hazard. The JSU HMPC rates thunderstorms as a high risk hazard.

Probability Ranking	Percentage chance of occurrence in a given year
Low	0 -33%
Medium	34-66%
High	67-100%

HAIL

Location

The entire planning area is at risk for hail and hail storms.

Extent of the Hazard

Based on past occurrences, JSU can experience hail or hail storms or both multiple times throughout the year. In the worst case scenario, JSU can expect hail from an H1 to an H2 (1 inch to 1.75 inches in diameter) based on the TORRO Hail Intensity Scale. Hail that size can destroy glass windows, automobiles, and equipment. It also can cause power outages, down power lines, and make roads impassable. The university may have to cancel classes or alter operations.

Torro Hail Intensity Scale

	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m^2	Typical Damage Impacts
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-**15**	>20	Slight general damage to plants, crops
H2	Significant	10-**20**	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-**30**	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-**40**	>500	Widespread glass damage and vehicle body damage
H5	Destructive	30-**50**	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-**60**		Body of grounded aircraft dented, brick walls pitted
H7	Destructive	50-**75**		Severe roof damage, risk of serious injuries
H8	Destructive	60-**90**		(Severest recorded in the British Isles) Extreme damage to aircraft bodywork
H9	Super Hailstorms	75-**100**		Extensive structural damage. Risk of severe or even fatal injuries to exposed persons
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons outdoors

Hail size and diameter in relation to TORRO Hailstorm Intensity Scale.		
Size code	**Maximum Diameter mm**	**Description**
0	5-9	Pea
1	10-15	Mothball
2	16-20	Marble, grape
3	21-30	Walnut
4	31-40	Pigeon's egg > squash ball
5	41-50	Golf ball > Pullet's egg
6	51-60	Hen's egg
7	61-75	Tennis ball > cricket ball
8	76-90	Large orange > Soft ball
9	91-100	Grapefruit
10	>100	Melon

Hail for Calhoun County January 1950- December 2010

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 CALHOUN	09/27/1967	1920	Hail	0.75 in.	0	0	0	0
2 CALHOUN	03/07/1975	1100	Hail	1.75 in.	0	0	0	0
3 CALHOUN	06/18/1975	2020	Hail	1.75 in.	0	0	0	0
4 CALHOUN	05/08/1977	1543	Hail	0.75 in.	0	0	0	0
5 CALHOUN	07/03/1979	1630	Hail	1.75 in.	0	0	0	0
6 CALHOUN	07/03/1979	1630	Hail	1.75 in.	0	0	0	0
7 CALHOUN	05/18/1981	2000	Hail	1.75 in.	0	0	0	0
8 CALHOUN	03/25/1982	1620	Hail	1.75 in.	0	0	0	0

9 CALHOUN	03/28/1984	1210	Hail	1.00 in.	0	0	0	0
10 CALHOUN	04/19/1984	2130	Hail	1.75 in.	0	0	0	0
11 CALHOUN	05/03/1984	1757	Hail	0.75 in.	0	0	0	0
12 CALHOUN	06/07/1985	1245	Hail	2.75 in.	0	0	0	0
13 CALHOUN	07/25/1986	2250	Hail	0.75 in.	0	0	0	0
14 CALHOUN	04/25/1988	1313	Hail	1.00 in.	0	0	0	0
15 CALHOUN	05/05/1991	1343	Hail	0.75 in.	0	0	0	0
16 Ohatchee	03/27/1994	1730	Hail	1.75 in.	0	0	0	0
17 CALHOUN	04/15/1994	1730	Hail	1.75 in.	0	0	0	0
18 Jacksonville	05/15/1994	1530	Hail	1.75 in.	0	0	0	0
19 Anniston	03/20/1995	2200	Hail	0.75 in.	0	0	0	0
20 Jacksonville	04/22/1995	0825	Hail	0.75 in.	0	0	0	0
21 Jacksonville	05/15/1995	1350	Hail	1.00 in.	0	0	0	0
22 Anniston	01/24/1997	06:00 PM	Hail	0.75 in.	0	0	5K	0K
23 Anniston	01/24/1997	07:40 PM	Hail	1.75 in.	0	0	9K	0K
24 Jacksonville	01/24/1997	10:21 PM	Hail	0.75 in.	0	0	5K	0K
25 Oxford	01/24/1997	10:28 PM	Hail	0.88 in.	0	0	7K	1K
26 Anniston	01/24/1997	10:30 PM	Hail	0.75 in.	0	0	5K	0K
27 Weaver	03/29/1997	02:25 AM	Hail	0.75 in.	0	0	2K	0K