

Weathering Monsoons

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Period 1 - Science



Our Goal

- To inform you, the citizens of Phoenix, Arizona, of potential risks associated with monsoons in the greater Phoenix area.
- To give you instructions on what to do if you are caught in a monsoon.
- Finally, to convince all residents to establish and maintain a home disaster preparedness kit. It could save your life!

Monsoons

- What are they?
- How do they affect us?
- Why are we at risk?
- How can we stay safe in a monsoon?
- What else do we know about Monsoons?
- Why is it important to be prepared?

What is a Monsoon?



- A season of high temperatures, high winds, and high moisture, resulting in potentially deadly weather.
- Winds that change direction with the change of season.
- Winds blow in response to differences in temperature between air over the land and air over the sea.
- Widespread torrential rains, and even severe thunderstorms, often accompany the onset of a monsoon.

How Do Monsoons Occur?

- Monsoons are determined by the land and sea temperature differences.
- Monsoons are created by the Earth's tilt in relation to the sun. The rotation of the earth acts upon these winds.
- Large mountain chains and irregular continent shape affect monsoons.
- During winter monsoons, the wind blows from the land to ocean, while in the summer it is the opposite.
- This can cause major climate changes throughout the entire world, depending on the location.



How Do Monsoons Affect Us?

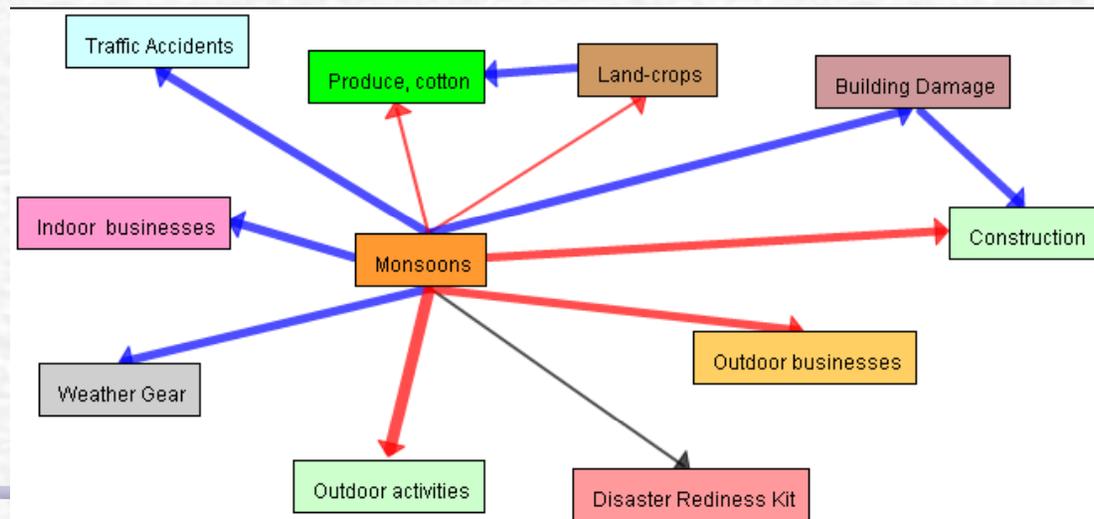
- Brings heavy rain in summer
- Rain can last for days
- Very few breaks may produce floods
- Homes, crops, and businesses may be ruined due to flood



Bruce Brander/Photo Researchers, Inc.

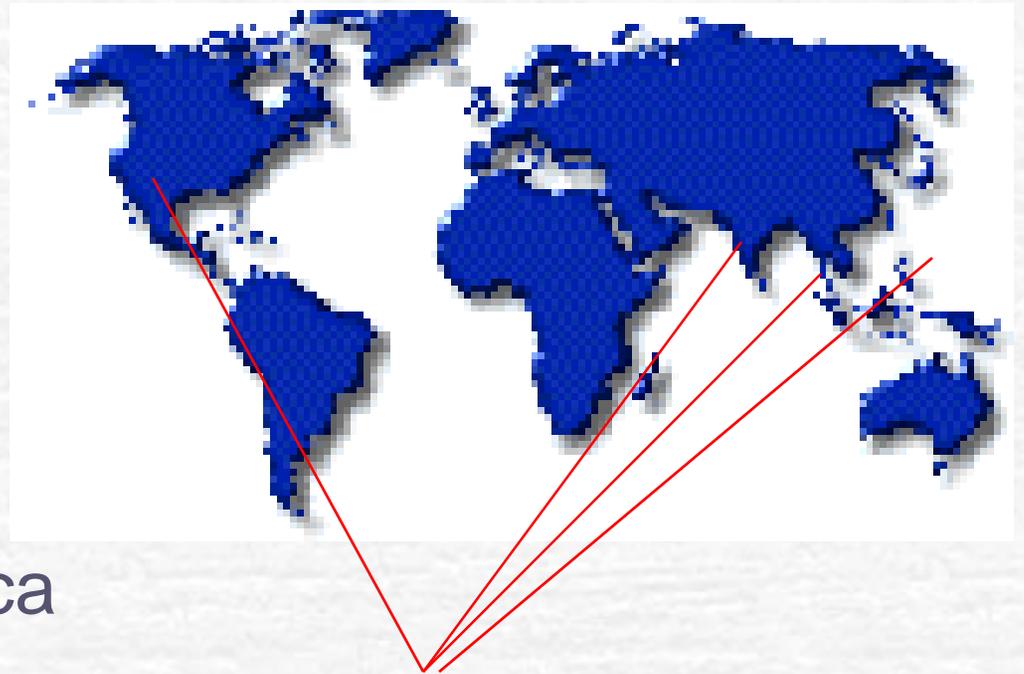
How Do Monsoons Affect Us?

- If the monsoon season is late it may bring about drought.
- Drought effects agricultural output.
- A decrease in agriculture is likely to lead to an increase in prices and higher inflation.
- Inflation effects our ability to purchase things.

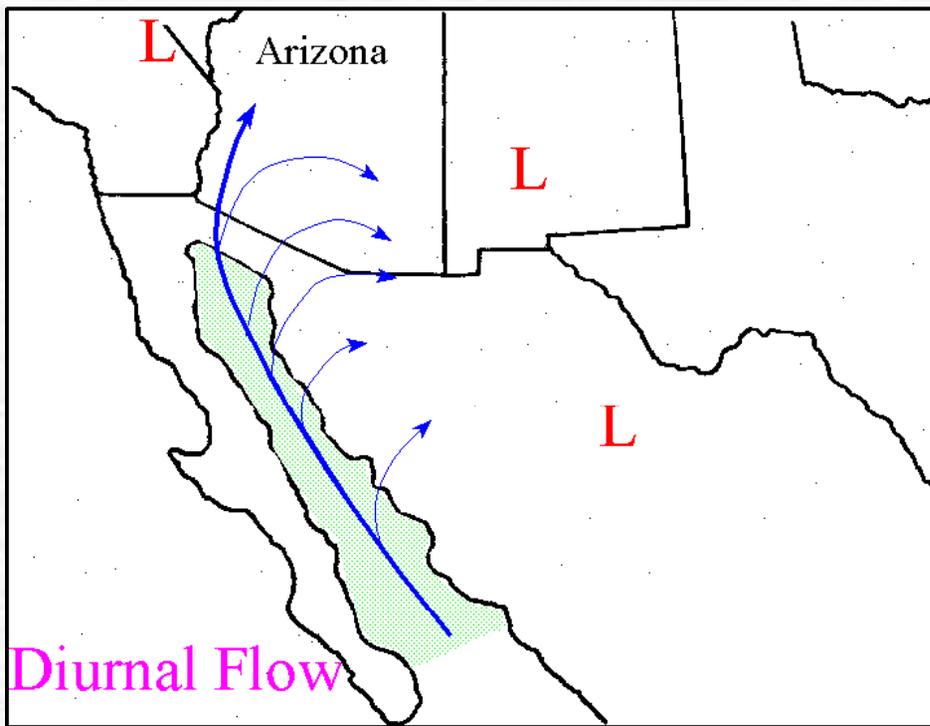


Where do Monsoons Occur?

- Strongest and largest monsoons occur in the eastern hemisphere (southeast Asia and India)
- Also occur in Chile
- Parts of North America



Our Region: Monsoons in Arizona



- The "Gulf Surge" is such an important player in Arizona monsoon weather.
- A Gulf surge is a push of low-level moist and cool air that moves northward over the Gulf of California and into southern Arizona.

Picture from:

<http://images.google.com/imgres?imgurl=http://www.wrh.noaa.gov/images/twc/monsoon/OUTFLOW.GIF&imgrefurl=http://www.wrh.noaa.gov/twc/monsoon/az.php&h=563&w=726&sz=12&tbnid=LF2XGdBf-XgJ:&tbnh=107&tbnw=139&hl=en&start=16&prev=/images%3Fq%3Dmonsoon%252Bgraphic%26svnum%3D10%26hl%3Den%26lr%3D%26sa%3DN>

Climate In Arizona



Phoenix, Arizona

latitude: $31^{\circ}20'N$ to $37^{\circ}N$

longitude $109^{\circ}3'W$ to $114^{\circ}50'W$

Climate: Dry, desert, mild winters
and hot summers

We think that Phoenix has the
climate that it does because of
its elevation, the surrounding
mountains, and the latitude
and longitude of the city.

Picture from:

<http://us.i1.yimg.com/us.yimg.com/i/travel/dg/maps/45/750x7>

50_arizona_m.gif

Why is Arizona At Risk?

- In early July, the winds in Arizona shift in a southern direction. Moisture streams north from the Pacific Ocean and the Gulf of Mexico. This shift produces a huge change in moisture conditions and along with daytime heating, causes the Arizona monsoons.
- Arizona monsoon storms usually start with heavy winds and sometimes result in a wall of dust hundreds of feet high. These dust storms often include thunder and lightning and heavy rain.
- The storm's heavy rains, high winds, and lightning can be very dangerous.
- Wind and lightning can snap utility poles and power lines, and heavy rains can cause flash flooding.

The next Monsoon in Phoenix will be. . .

- Monsoons occur seasonally depending on land and air temperatures.
- Meteorologist can not predict the exact start of the monsoon season nor the strength of the storms they bring.
 - We think that the next Monsoon will be consistent with the average start date and begin on July 9th.

Average Start date	July 7 th
Earliest Start Date	June 19 th (1958)
Latest Start date	July 25 th (1987)

How Can We Stay Safe in a Monsoon?

- Stay tuned to the local weather station during severe storms.]
- Turn off all major appliances to protect these machines from voltage fluctuations and help avoid circuit overloads when power returns.
- Stay indoors away from windows.
- Draw blinds and shades over windows to prevent glass from shattering into your home.
- Find a safe haven for your pets.



How Can We Stay Safe in a Monsoon?

- Do not drive in a monsoon – or a street flooded by a monsoon
- Don't shower during a monsoon storm - lightning can pass through metal pipes.
- To avoid being struck by lightning stay away from open fields, high land, trees, poles, other tall objects, bodies of water, and metal objects.
- Don't touch downed power lines or try to move them.
- Stay off the phone unless you need to make an emergency phone call.



Facts about Monsoons

- Although monsoons have the ability to damage, they have become an intricate part of society, changing agricultural patterns and affecting people's lives in many ways.
- Benefit -the floods from the monsoons replenish the nutrients in the soil and provide much needed water to many parts of the world.



Why is it Important to be Prepared?

It is difficult to predict how strong a monsoon season will be so we must be prepared:

- Knowing about the dangers of the storm can keep family members safe.**
- Having a readiness kit can benefit if other disasters strike.**

Works Cited

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Basics of Arizona Monsoons & Desert Meteorology

<http://geography.asu.edu/aztc/monsoon.html>

Monsoon Statistics

<http://geography.asu.edu/aztc/monsoon2.html>