

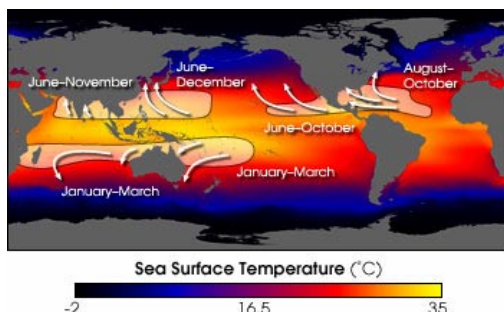
Hurricane Agnes

Jen Somerville
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Severe Storms

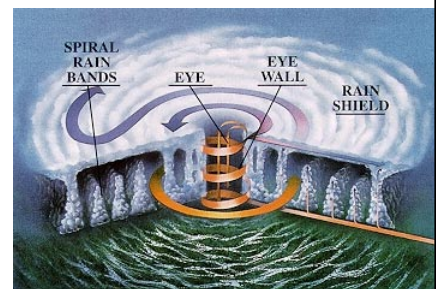
Outline

- Basic Hurricane review
- Hurricane Agnes- why was it so special
- Damages/death
- New York
- Pennsylvania
- Mitigation

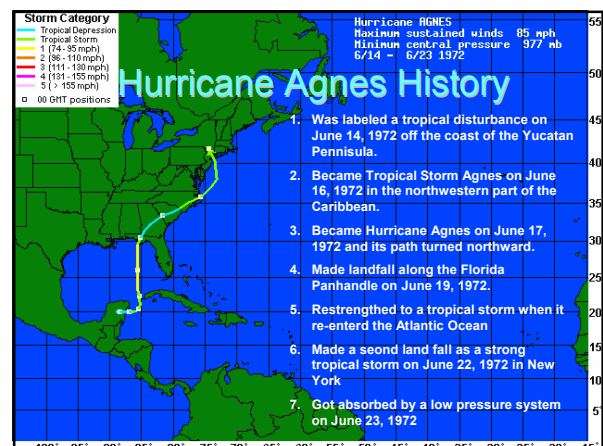
Where Hurricanes form and Hurricane Seasons



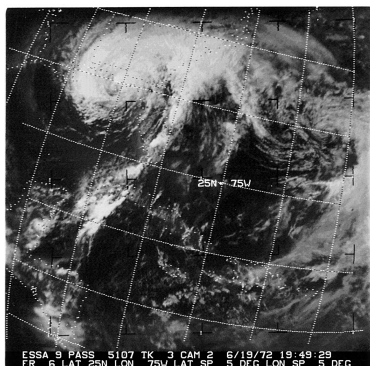
Anatomy of a Hurricane



DEFINITION OF THE SAFFIR/SIMPSON SCALE			
CATEGORY	WINDS (mph)	SURGE (ft)	EXAMPLES: FLORIDA COAST
1	74-95	4-5	AGNES 1972
2	96-110	6-8	CLEO 1964
3	111-130	9-12	BETSY 1965
4	131-155	13-18	DONNA 1960
5	GREATER THAN 155	GREATER THAN 18	1935 STORM



Hurricane Agnes



Rank	Hurricane	Year	Category	Damage
1	Andrew (Se FL, Se LA)	1992	5	26,500,000,000
2	Charley (SW FL)	2004	4	15,000,000,000
3	Ivan (AL, NW FL)	2004	3	14,200,000,000
4	Frances (FL)	2004	2	8,900,000,000
5	Hugo (SC)	1989	4	7,000,000,000
6	Jeanne (FL)	2004	3	6,900,000,000
7	Allison (N TX)	2001	TS	5,000,000,000
8	Floyd (Mid-Atlantic & NE U.S.)	1999	2	4,500,000,000
9	Isabel (Mid-Atlantic)	2003	2	3,370,000,000
10	Fran (NC)	1996	3	3,200,000,000
11	Opal (NW FL, AL)	1995	3	3,000,000,000
12	Frederic (AL, MS)	1979	3	2,300,000,000
13	Agnes (FL, NE U.S.)	1972	1	2,100,000,000
14	Alicia (N TX)	1983	3	2,000,000,000
15	Bob (NC, NE U.S.)	1991	2	1,500,000,000
16	Juan (LA)	1985	1	1,500,000,000
17	Camille (MS, SE LA, VA)	1969	5	1,420,700,000
18	Betsy (SE FL, SE LA)	1965	3	1,420,500,000
19	Elena (MS, AL, NW FL)	1985	3	1,250,000,000
20	Georges (FL Keys, MS, AL)	1998	2	1,155,000,000

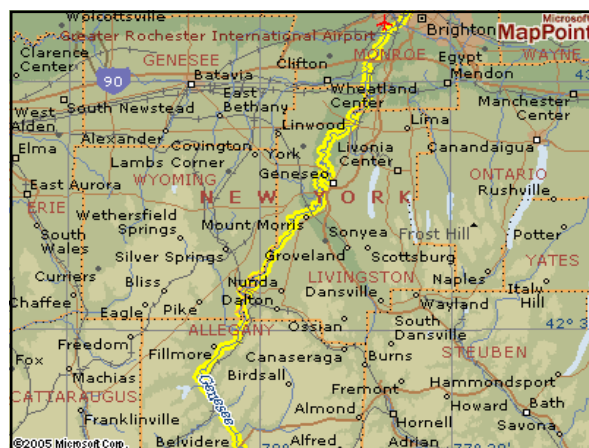
State	Damage	Deaths
Pennsylvania	\$2,119,269,000	48
New York	\$702,502,000	24
Virginia	\$125,987,000	13
Maryland	\$110,186,000	19
New Jersey	\$15,000,000	1
Florida	\$8,243,000	9
West Virginia	\$7,753,000	0
Ohio	\$6,618,000	0
North Carolina	\$6,558,380	2
Georgia	\$205,000	0
South Carolina	\$50,000	0
Delaware	Light	1
Total	\$3,102,571,380	117

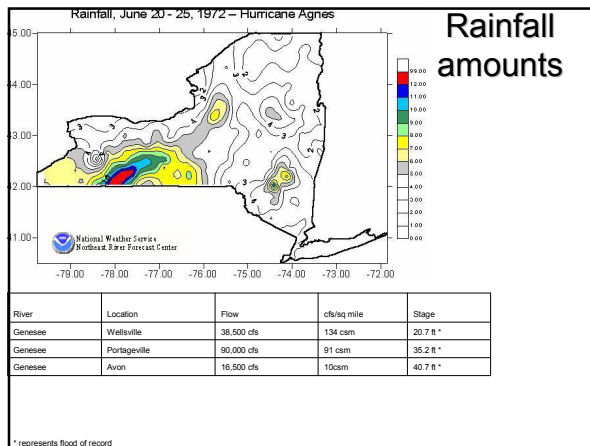
Precursors

- Hurricane Agnes was the first hurricane of the 1972 season, and it occurred early in the season
- The three weeks prior to Agnes, Pennsylvania received 2-3 inches of rain.
- New York received an inch of rain the week prior to Hurricane Agnes.
- Plus there was still spring snow melt influences
- Rivers weren't flooded, but were higher than normal.
- Most people in the North East did not pay attention to the storm because they figured it would not affect them.

New York

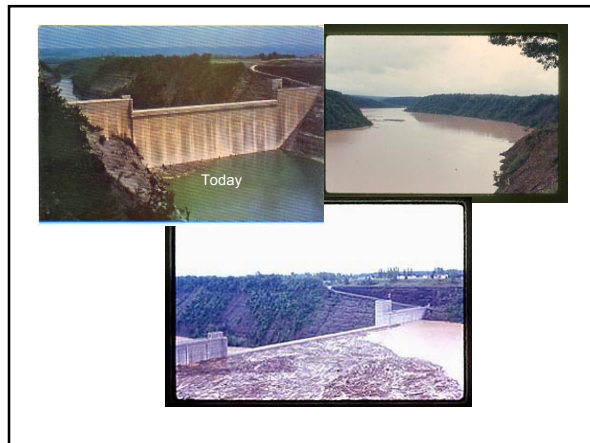
- The Genesee River and its tributaries were greatly affected by Hurricane Agnes.
- Flooding
 - Flooding in the upper part of the Genesee, above the Mt. Morris dam, broke all historic records for floods.
 - Flooding in the lower part of the river was sparred massive flooding due to the dam.





Why was Rochester Spared?

- Officials were concerned that the dam would overtop, which would cause major downstream flooding.
- Close monitoring and careful releases of the dam water resulted in limited flooding.
- Inflow into the dam was 90,000 cfs. Outflow downstream was limited to 15,000 cfs
- The Corps of Engineers estimated that the operations at the Dam during the storm prevented over \$200 million in potential damage.

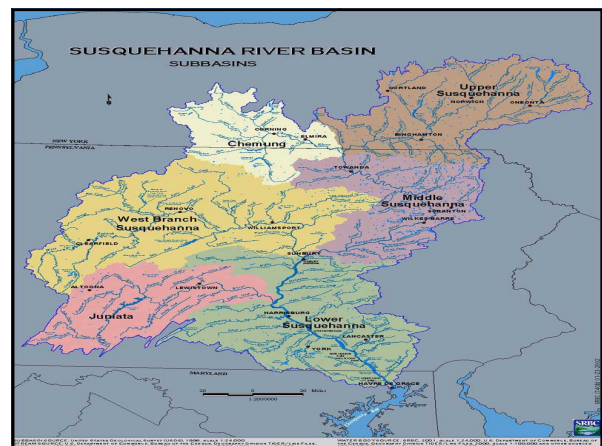


Pennsylvania

- Hurricane Agnes was the worst disaster to ever hit Pennsylvania. President Nixon declared the entire state a disaster area.
- Flooding occurred along the Susquehanna River and all its tributaries.
 - Hardest hit were the northern tributaries in New York.

Flooding

- The worst flooding occurred along the Chemung River and its tributaries.
 - Floods here were greater than the 100 year recurrence interval
 - Elmira N.Y. was the city in the river's basin that suffered the most damage.
 - 20,000 people had to evacuate the city
 - Corning NY and its famous glass museum were also damaged.



Flooding in Wilkes-Barre

- Wilkes-Barre had been flooded before, in 1936 when the river was 33 ft above flood level.
- To keep the town from being flooded again the town had dikes built to 37 ft, figuring it would keep the water out of the city.
- During Agnes, the river peaked at 40 ft above flood level.

Wilkes-Barre continued

- The National Weather Service staff in Harrisburg predicted that the River would overtop the levees build after the historic 1936 flood.
- This prediction allowed for the safe evacuation of 100,000 people in the area.

Mitigation evaluation

- Warnings and population awareness
 - The Population was aware that more rain could cause the already high rivers to flood.
 - They were warned in enough time to be able to safely evacuate their homes.

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Questions?