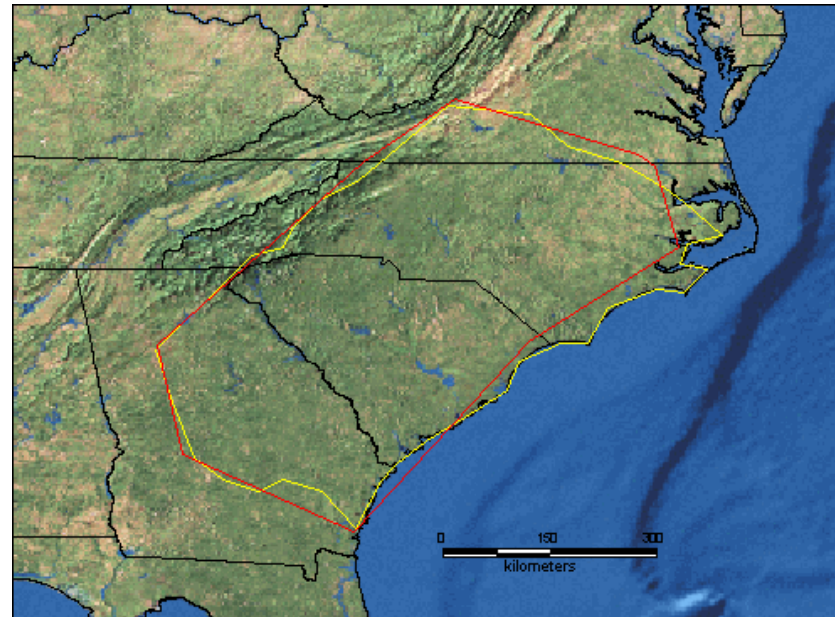


Dartmouth Flood Observatory

Flood Analysis Report 2003-069

Event:	DFO-2003-069, U.S. Southern Mid-Atlantic	Previous Events:	DFO-2003-053; 1999-076; 1998-006; 1991-060; 1990-103
		Antecedent Conditions:	Heavy rain and melting snow since February 22 in southern Mid-Atlantic and along the Gulf Coast.
Duration:	March 19-28, 2003, 9 days	News Notes:	Record flooding on the lower Santee River in South Carolina on March 27
Cause:	12, Heavy rains for 2 days and snowmelt prolong existing spring flooding	Locations:	From news sources: North and South Carolina, Virginia, and Georgia.
Region Affected:	270,000 sq. km	Watershed:	273,300 sq. km; US southeast coast rivers
Severity:	1, large	GIS vectors:	20030811620Carolinas069M2.32; 20030831610Carolinas069M2.32
Magnitude:	9.5		

Figure 1. Location of contributing watershed (yellow line) and area affected by flooding (red line)



Causation categories are: 1, thunderstorm; 2, precipitation band; 3, squall line; 4, stationary front; 5, mesoscale convective complex; 6, convective cloud cluster; 7, tropical cyclone; 8, extra-tropical cyclone; 9, stationary synoptic front; 10, ITCZ wave disturbance; 11, snowmelt; 12, rain and snowmelt; 13, ice jam or ice break-up; 14, dam break; 15, avalanche.

Severity classes: 1, large, 20%-5% exceedance probability – and/or significant damage to structures or agriculture; 2, very large, 5%-1%; 3, extreme, <1%.

Flood Magnitude: {Natural Log duration (days)} x {severity class} x {sq rt region affected (sq. km)} x .01.

Duration, region affected, and intensity are estimates from news and government reports.

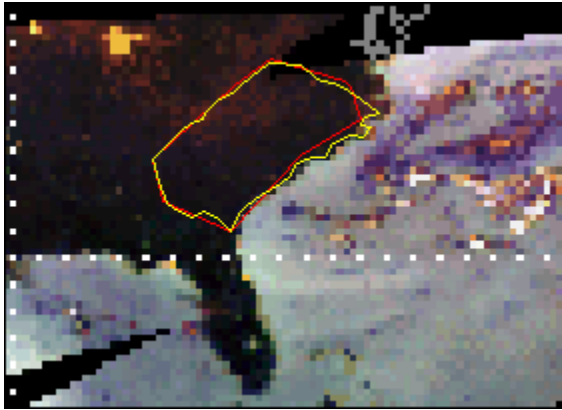
Work supported by: the NASA Office of Earth Science and by the Dartmouth College Geography Department, Hanover NH 03755 USA

Citation for this publication: Anderson, E. and Brakenridge, G.R., 2003, Dartmouth Flood Observatory Flood Analysis Report 2003-069, p1-5, online at <http://www.dartmouth.edu/~floods/2003069.pdf>

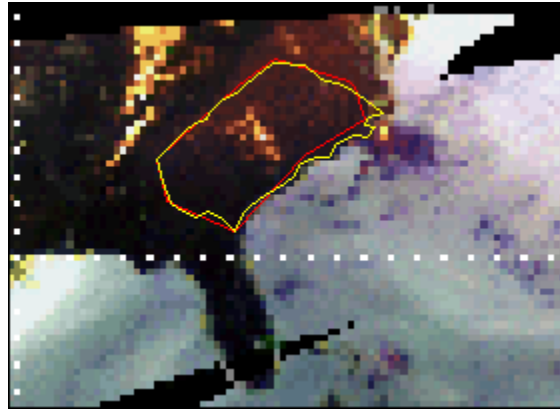
Dartmouth Flood Observatory Flood Analysis Report 2003-069

Figure 2. NASA/NASDA Tropical Rainfall Measurement Mission (TRMM) daily rainfall (“Quicklook”) data for the flood-generating storm. Images are from the TRMM home page at: http://trmm.gsfc.nasa.gov/data/quicklook/last_2_cal.html.

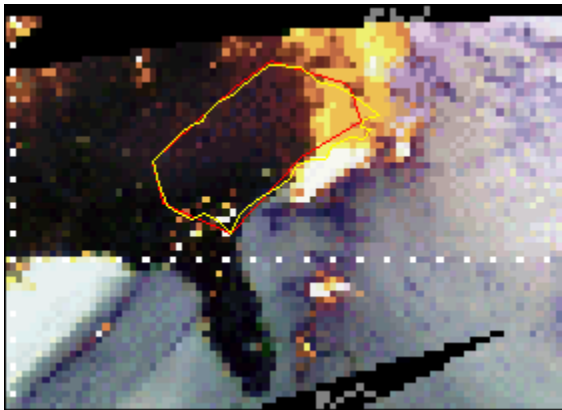
March 18, 2003



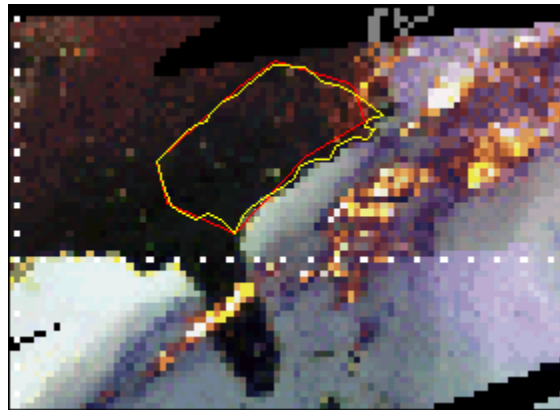
March 19, 2003



March 20, 2003



March 21, 2003



Heavy rains associated with a substantial storm in the center of the country affected a wide region of the East Coast from March 19 and 20. Combined with snowmelt this rain caused flooding in the Carolinas which has persisted through March 28.

**Dartmouth Flood Observatory
Flood Analysis Report 2003-069**

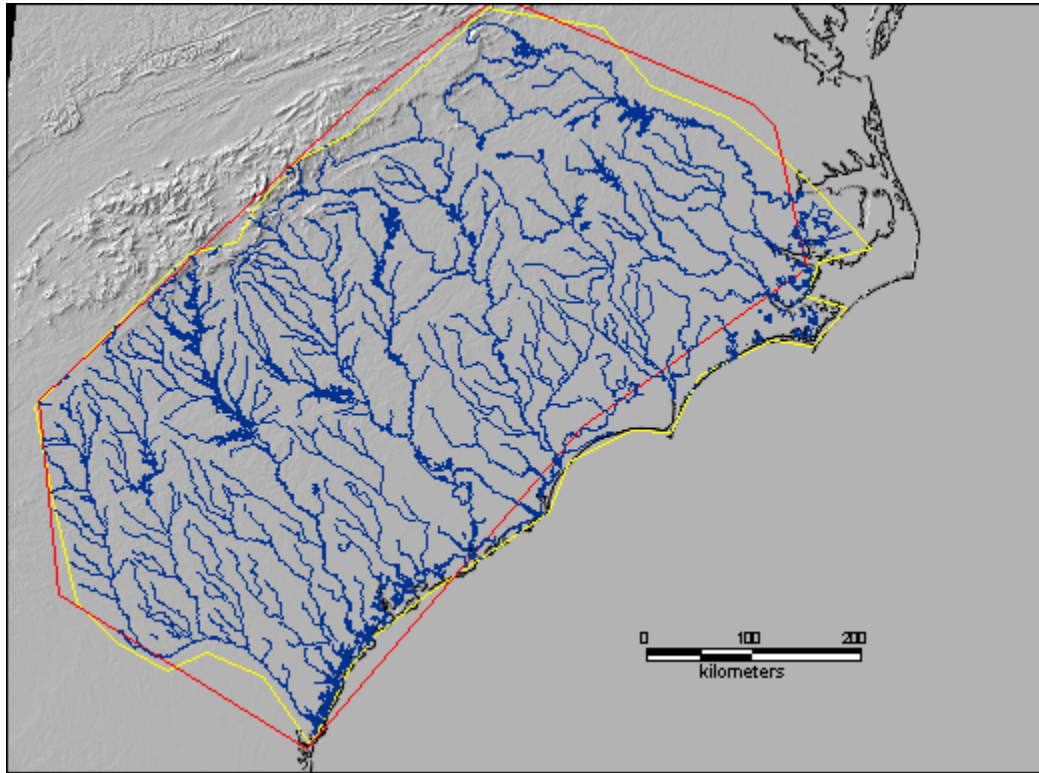










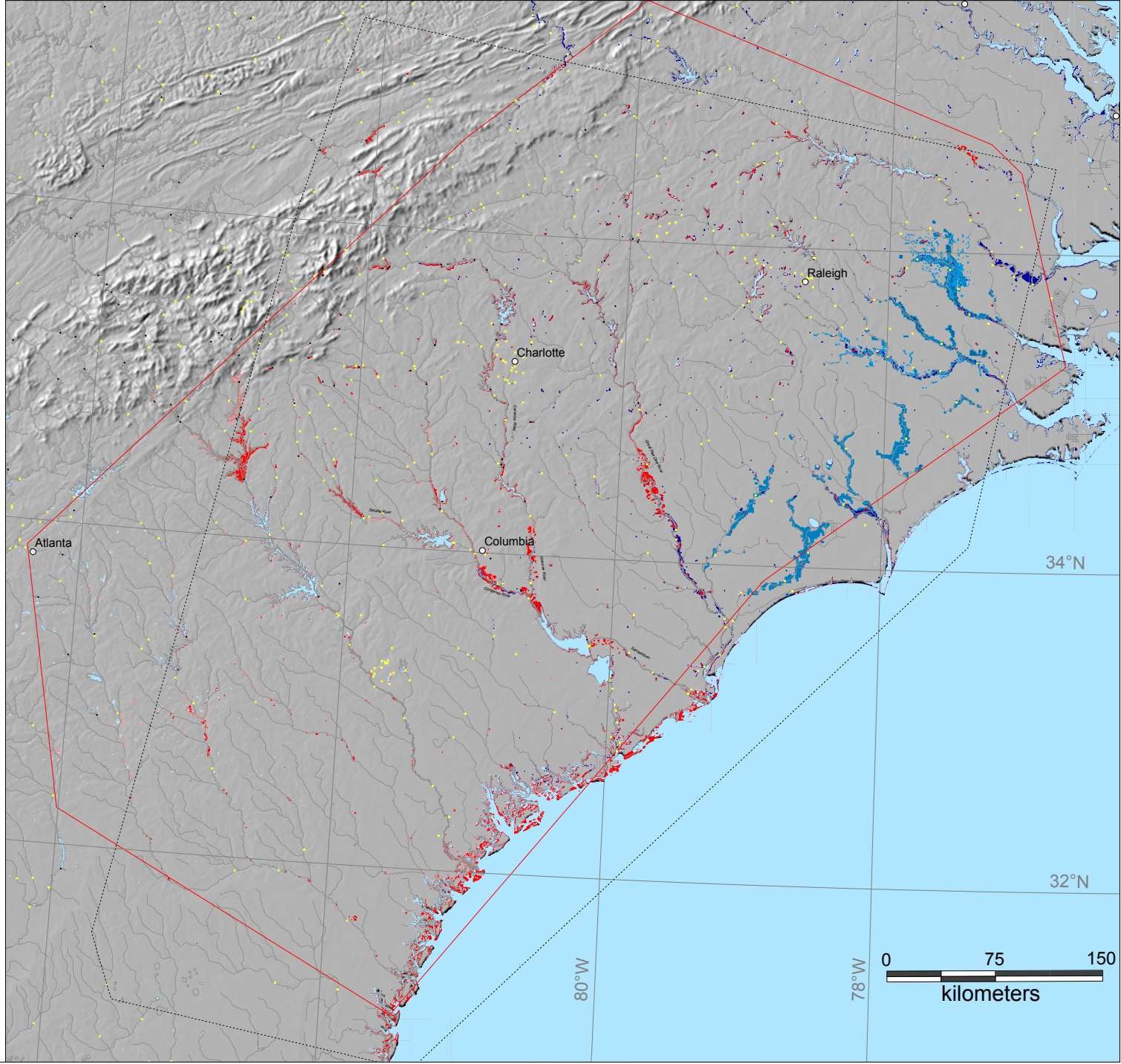


Figure 3. Flood-generating watersheds for this flood event.

DFO event # 2003-069

- Area affected 
- MODIS flood inundation limit
 - March 24, 2003 
 - March 22, 2003 
- MODIS data cloud free area
 - March 24, 2003 
- Flooded Lands in:
 - 2003 
 - 1999 
- MODIS reference water 
- USGS Gaging station 
- Dam 
- Main city 



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Dartmouth Flood Observatory
Dartmouth College
Hanover NH 03755 USA
G. R. Brakenridge
Elaine Anderson
Sébastien Caquard
Work supported by
NASA grant NAG5-9470

Universal Transverse Mercator
UTM Zone 18 North; WGS 84
Graticule: 2 degrees

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Figure 5. MODIS data showing inundated areas on March 24, 2003 overlaid on ASTER data from May 8, 2002.

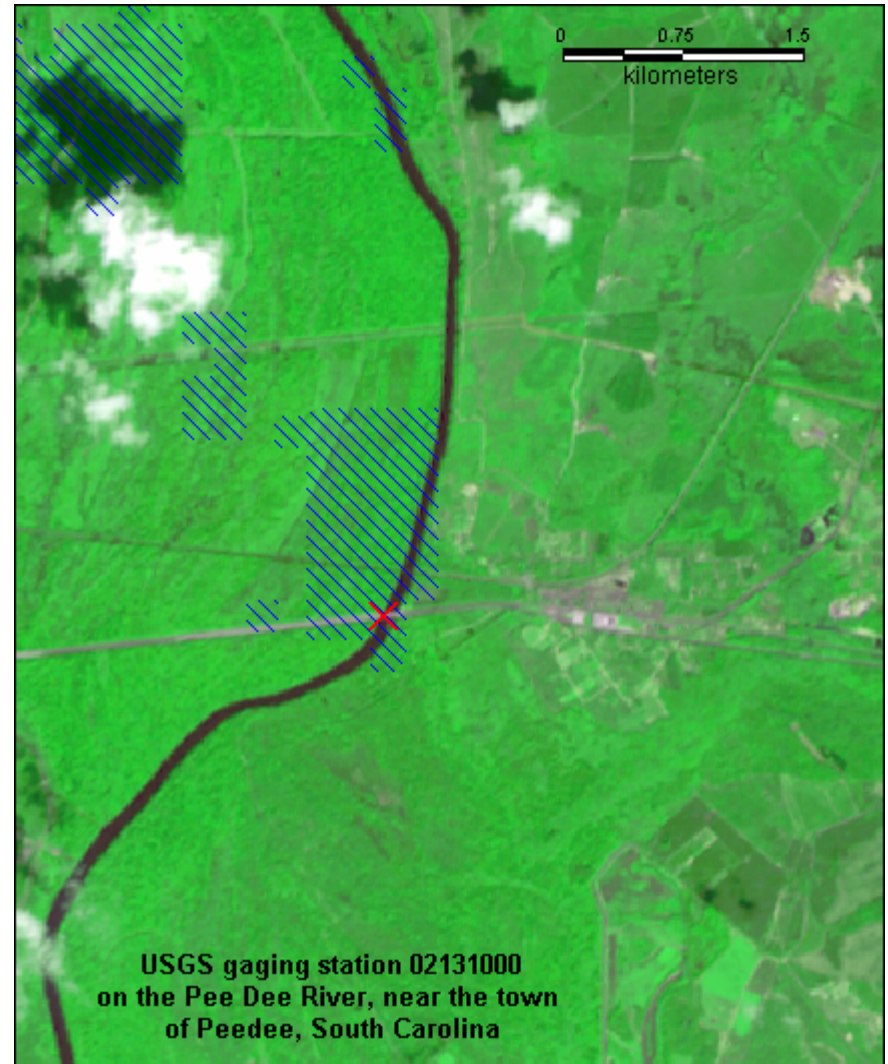


Figure 6. MODIS data showing inundated areas on March 24, 2003 overlaid on ASTER data from Sep 6, 2002.