High Tide Flooding Data Quality Analysis - south_atlantic

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Overview

Analysis of high tide flooding data from 1920 to 2024.

Key Statistics

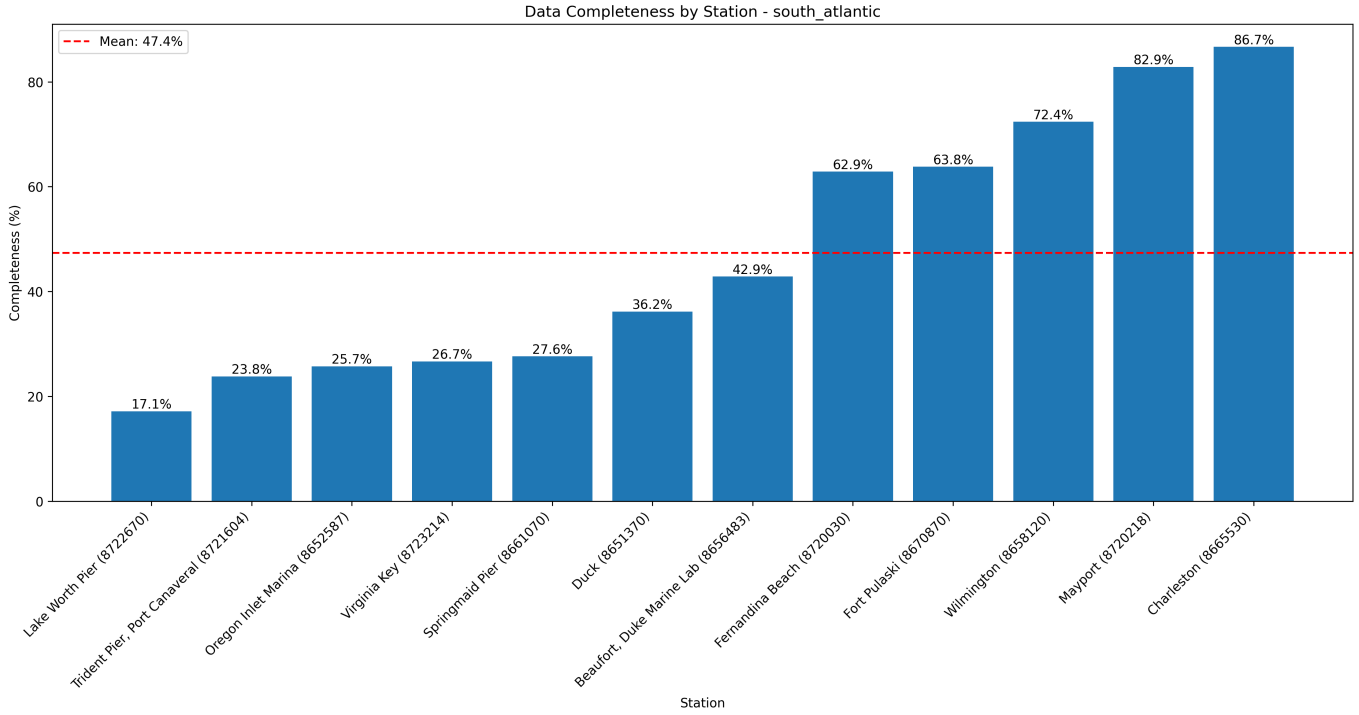
- Total records analyzed: 1260
- Average flood days per year (excluding missing data): 2.10
- Overall data completeness: 47.4%

Monitoring Stations

Station ID	Name	Location	Sub-Region	Data Completeness
8651370	Duck	36.18°N, 75.75°W	North Carolina	36.2%
8652587	Oregon Inlet Marina	35.80°N, 75.55°W	North Carolina	25.7%
8654467	USCG Station Hatteras	35.21°N, 75.70°W	North Carolina	0.0%
8656483	Beaufort, Duke Marine Lab	34.72°N, 76.67°W	North Carolina	42.9%
8658120	Wilmington	34.23°N, 77.95°W	North Carolina	72.4%
8661070	Springmaid Pier	33.65°N, 78.92°W	South Carolina	27.6%
8665530	Charleston	32.77°N, 79.92°W	South Carolina	86.7%
8670870	Fort Pulaski	32.03°N, 80.90°W	Georgia	63.8%
8679598	Kings Bay MSF Pier	30.78°N, 81.49°W	Georgia	0.0%
8720030	Fernandina Beach	30.67°N, 81.47°W	Florida Atlantic	62.9%
8720218	Mayport	30.40°N, 81.43°W	Florida Atlantic	82.9%
8721604	Trident Pier, Port Canaveral	28.42°N, 80.59°W	Florida Atlantic	23.8%
8722670	Lake Worth Pier	26.61°N, 80.03°W	Florida Atlantic	17.1%
8723214	Virginia Key	25.73°N, 80.16°W	Florida Atlantic	26.7%

Data Quality Analysis

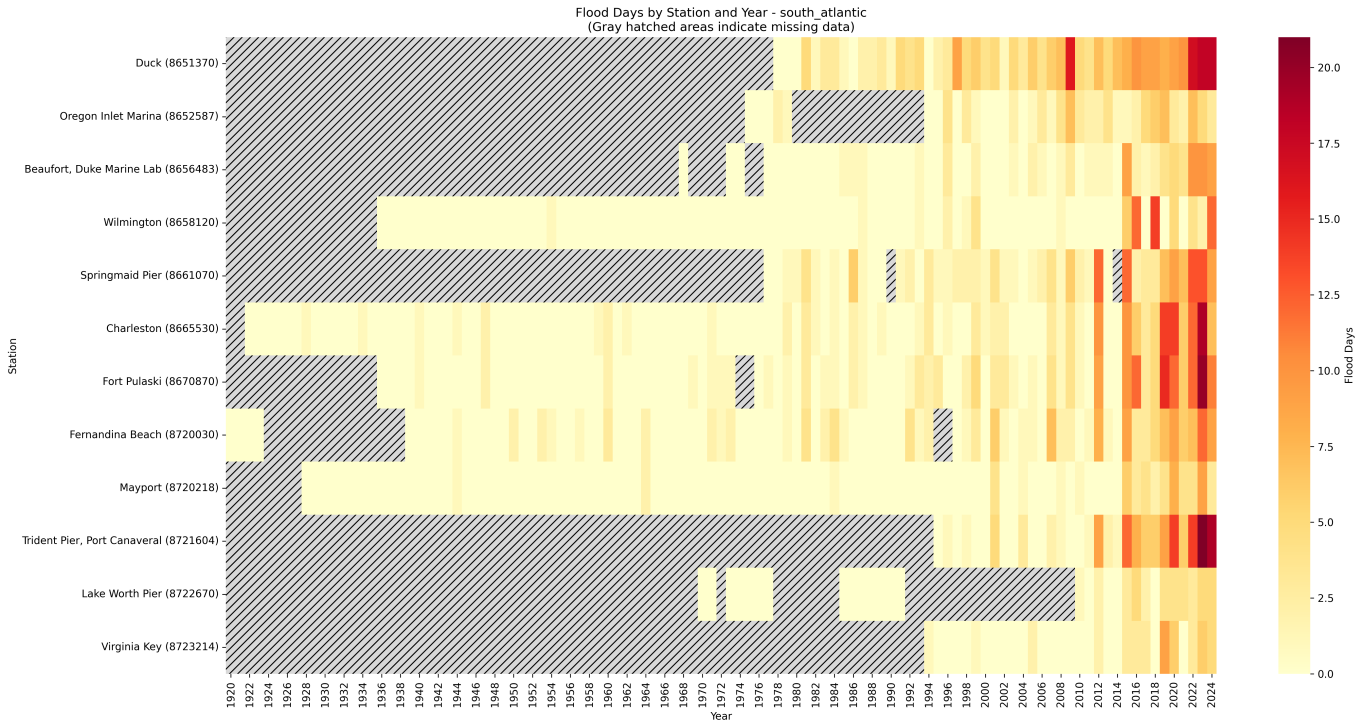
Data Completeness by Station



This visualization shows the percentage of days with valid data for each station:

- Stations are ordered by completeness percentage
- The red line indicates the regional mean completeness
- Regional mean completeness: 47.4%

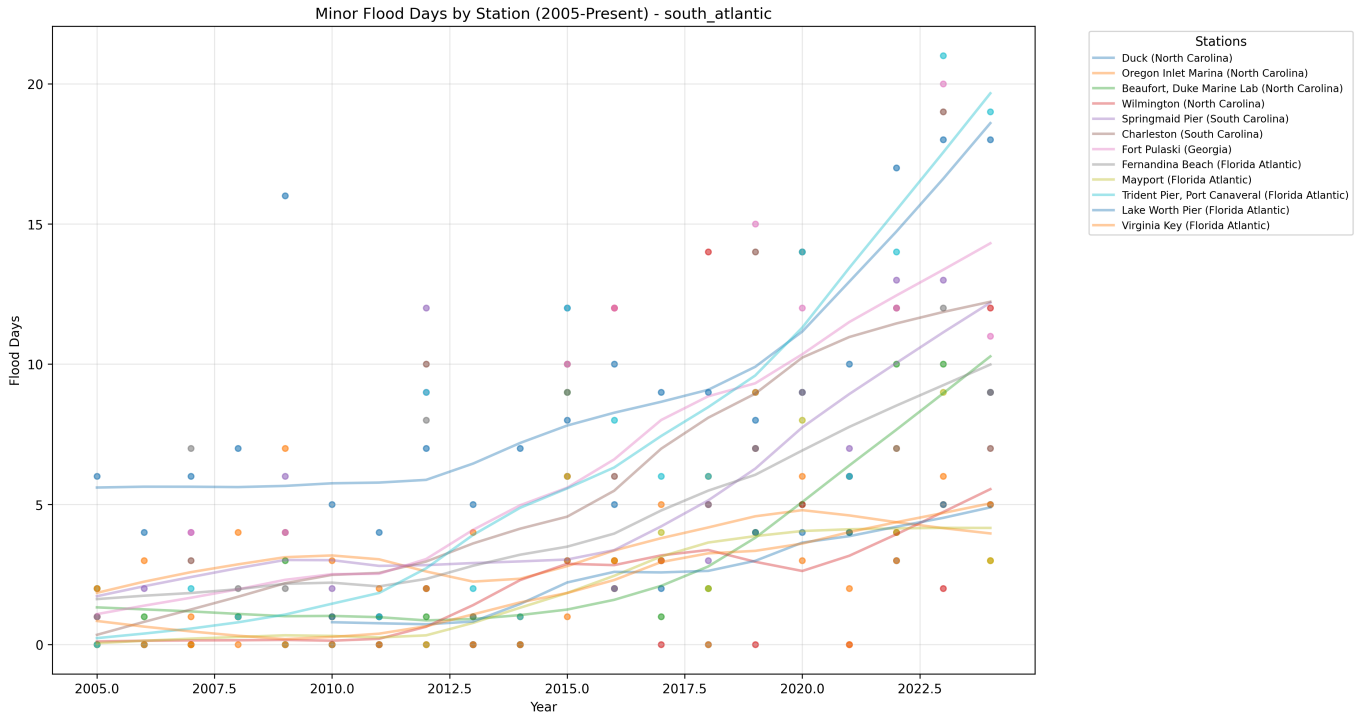
Flood Days Distribution



This heatmap shows the distribution of flood days across stations and years:

- Color intensity indicates number of flood days
- Gray hatched areas indicate missing data (>180 days missing in that year)
- White indicates zero flood days with complete data

Recent Flooding Trends (2005-Present)



This plot shows the trend in minor flood days for each station since 2005:

- Each line represents a different monitoring station
- Points indicate actual measurements
- Gaps in lines indicate missing data

Key Findings

Most Complete Records

- Charleston (South Carolina, Station 8665530): 86.7% complete
- Mayport (Florida Atlantic, Station 8720218): 82.9% complete
- Wilmington (North Carolina, Station 8658120): 72.4% complete

Highest Flooding Activity

- Duck (North Carolina, Station 8651370): 6.24 flood days per year
- Trident Pier, Port Canaveral (Florida Atlantic, Station 8721604): 5.12 flood days per year
- Springmaid Pier (South Carolina, Station 8661070): 3.90 flood days per year