High Tide Flooding Data Quality Analysis - west_coast

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Overview

Analysis of high tide flooding data from 1920 to 2024.

Key Statistics

- Total records analyzed: 2205
- Average flood days per year (excluding missing data): 3.33
- Overall data completeness: 56.7%

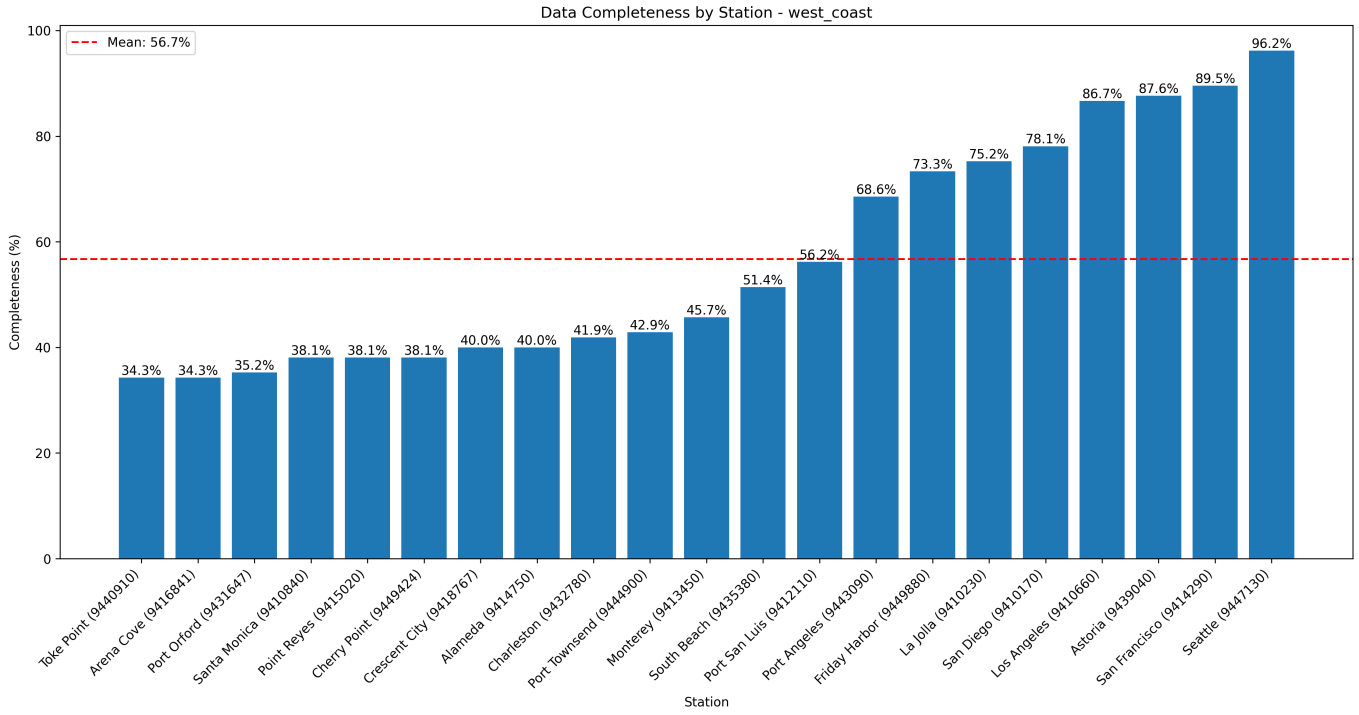
Monitoring Stations

Station ID	Name	Location	Sub-Region	Data Completeness
9410170	San Diego	32.71°N, 117.17°W	California	78.1%
9410230	La Jolla	32.87°N, 117.26°W	California	75.2%
9410660	Los Angeles	33.72°N, 118.27°W	California	86.7%
9410840	Santa Monica	34.01°N, 118.50°W	California	38.1%
9411340	Santa Barbara	34.41°N, 119.69°W	California	0.0%
9412110	Port San Luis	35.17°N, 120.75°W	California	56.2%
9413450	Monterey	36.60°N, 121.89°W	California	45.7%
9414290	San Francisco	37.81°N, 122.47°W	California	89.5%
9414750	Alameda	37.77°N, 122.30°W	California	40.0%
9415020	Point Reyes	38.00°N, 122.98°W	California	38.1%
9416841	Arena Cove	38.91°N, 123.71°W	California	34.3%
9418767	Crescent City	41.74°N, 124.18°W	California	40.0%
9431647	Port Orford	42.74°N, 124.50°W	Oregon	35.2%
9432780	Charleston	43.34°N, 124.32°W	Oregon	41.9%
9435380	South Beach	44.63°N, 124.04°W	Oregon	51.4%
9437540	Garibaldi	45.56°N, 123.92°W	Oregon	0.0%
9439040	Astoria	46.21°N, 123.77°W	Oregon	87.6%
9440910	Toke Point	46.71°N, 123.97°W	Washington	34.3%
9443090	Port Angeles	48.12°N, 123.44°W	Washington	68.6%

Station ID	Name	Location	Sub-Region	Data Completeness
9444900	Port Townsend	48.11°N, 122.76°W	Washington	42.9%
9447130	Seattle	47.60°N, 122.34°W	Washington	96.2%
9449424	Cherry Point	48.86°N, 122.76°W	Washington	38.1%
9449880	Friday Harbor	48.55°N, 123.01°W	Washington	73.3%

Data Quality Analysis

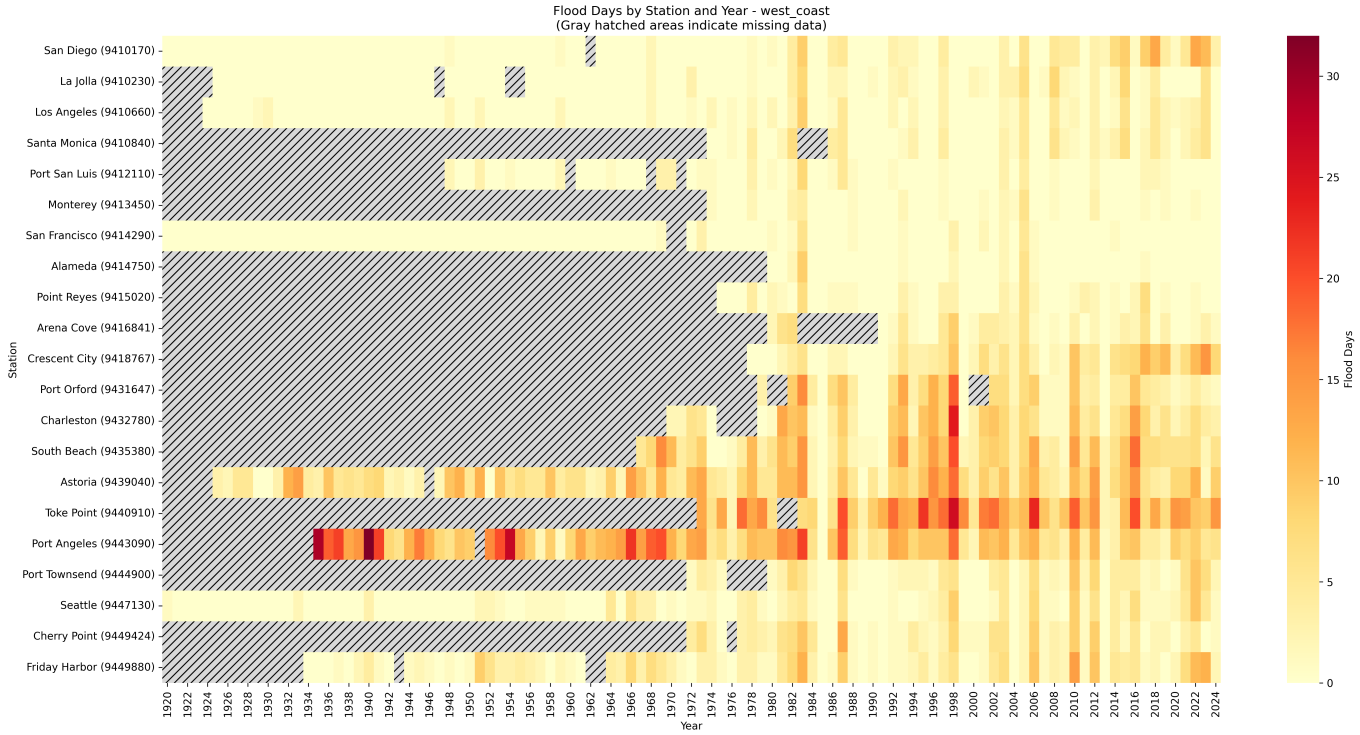
Data Completeness by Station



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: 56.7%

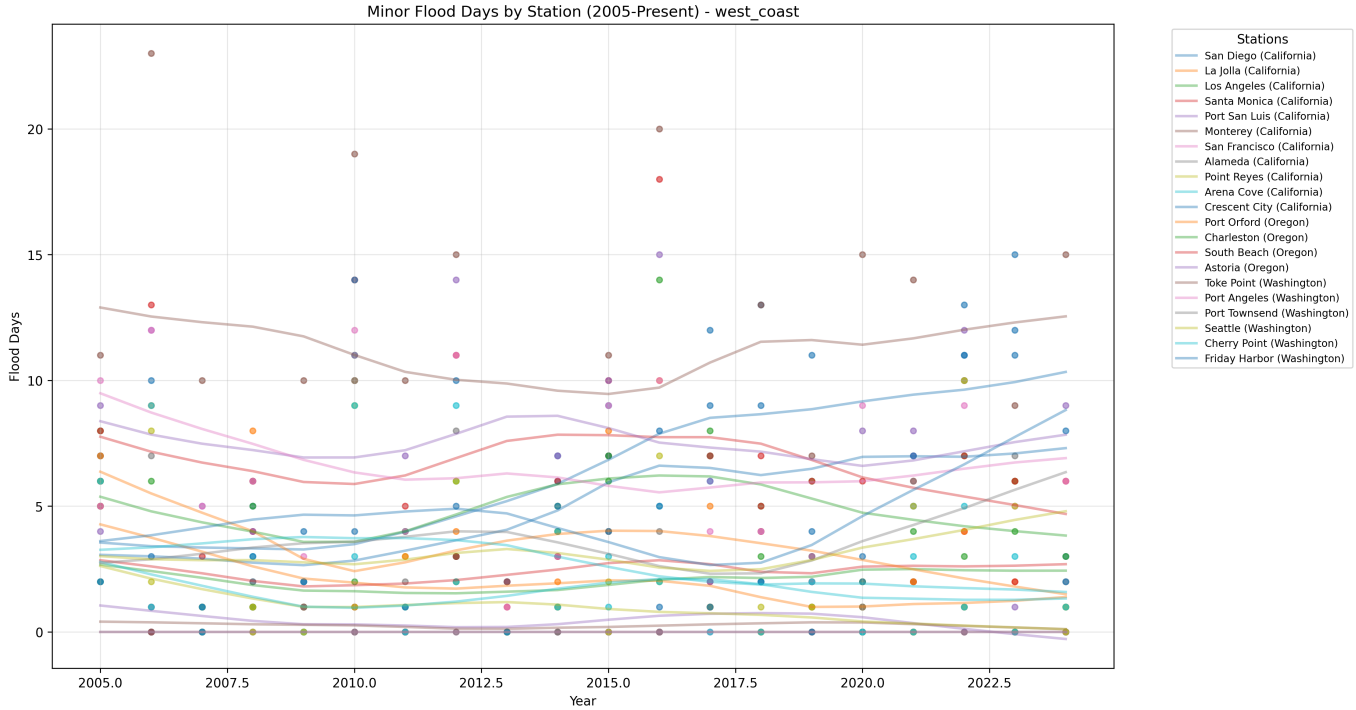
Flood Days Distribution



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

- Seattle (Washington, Station 9447130): 96.2% complete
- San Francisco (California, Station 9414290): 89.5% complete
- Astoria (Oregon, Station 9439040): 87.6% complete

Highest Flooding Activity

- Toke Point (Washington, Station 9440910): 12.78 flood days per year
- Port Angeles (Washington, Station 9443090): 10.65 flood days per year
- South Beach (Oregon, Station 9435380): 7.15 flood days per year