

Buoy 62092 - 2025 Quality Control Report

Generated: 2025-08-19 23:48:46

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Data Overview

- Station ID: 62092
- Year: 2025
- Total Records: 10,847
- Time Range: 2025-01-01 00:00:00 to 2025-08-14 23:00:00
- Duration: 225 days
- Sensors/Loggers: 2 active
 - 12147_CR6: 5,424 records (50.0%)
 - 427_Wavesense: 5,423 records (50.0%)

Quality Control Results

Record-Level QC Status

- ****QC complete:**** 9,675 records (89.2%)
- ****No QC performed:**** 1,172 records (10.8%)

Parameter-Level QC Results

Parameter	Total	Missing	Range Fail	Spike Fail	Flat Line Fail	Passed	Pass Rate
airpressure	10,847	0	0	0	12	10,835	99.9%
airtemp	10,847	0	0	6	667	10,175	93.8%
humidity	10,847	490	0	3	200	10,155	93.6%
windsp	10,847	0	0	3	124	10,720	98.8%
winddir	10,847	0	0	99	106	10,642	98.1%
hm0	10,847	0	26	14	354	10,460	96.4%
hmax	10,847	0	11	39	0	10,806	99.6%
tp	10,847	0	0	12	54	10,781	99.4%
mdir	10,847	0	0	71	0	10,776	99.3%
seatemp_aa	10,847	0	0	0	110	10,737	99.0%

Issues Identified

- airpressure: 12 flat line values (5+ consecutive identical)
- airtemp: 6 spike values (>5.0 change)
- airtemp: 667 flat line values (5+ consecutive identical)
- humidity: 3 spike values (>20.0 change)
- humidity: 200 flat line values (5+ consecutive identical)
- windsp: 3 spike values (>15.0 change)
- windsp: 124 flat line values (5+ consecutive identical)
- winddir: 99 spike values (>180.0 change)
- winddir: 106 flat line values (5+ consecutive identical)

- hm0: 26 values outside range [0.0-12.0]
- hm0: 14 spike values (>2.5 change)
- hm0: 354 flat line values (5+ consecutive identical)
- hmax: 11 values outside range [0.0-20.0]
- hmax: 39 spike values (>4.0 change)
- tp: 12 spike values (>10.0 change)
- tp: 54 flat line values (5+ consecutive identical)
- mdir: 71 spike values (>180.0 change)
- seatemp_aa: 110 flat line values (5+ consecutive identical)

QC Limits Applied

Station-specific QC limits used for this analysis:

Parameter	Min Value	Max Value	Spike Threshold	Notes
airpressure	950.0	1050.0	10.0	Default
airtemp	-20.0	40.0	5.0	Default
humidity	0.0	100.0	20.0	Default
windsp	0.0	50.0	15.0	Default
winddir	0.0	360.0	180.0	Default
hm0	0.0	12.0	2.5	Station-specific
hmax	0.0	20.0	4.0	Station-specific
tp	1.0	25.0	10.0	Default
mdir	0.0	360.0	180.0	Default
seatemp_aa	6.0	20.0	2.5	Station-specific

Data Visualization

QC Failure Color Coding

The visualization uses different colors to distinguish QC failure types:

- **Blue dots**: Good data (passed all QC tests)
- **Red dots**: Range failures (values outside physical limits)
- **Orange dots**: Spike failures (unrealistic sudden changes)
- **Purple dots**: Flat line failures (sensor stuck/malfunctioning)

The bottom-right panel shows a stacked bar chart with the percentage breakdown of each QC result type per parameter.

Recommendations

Manual QC Actions Needed

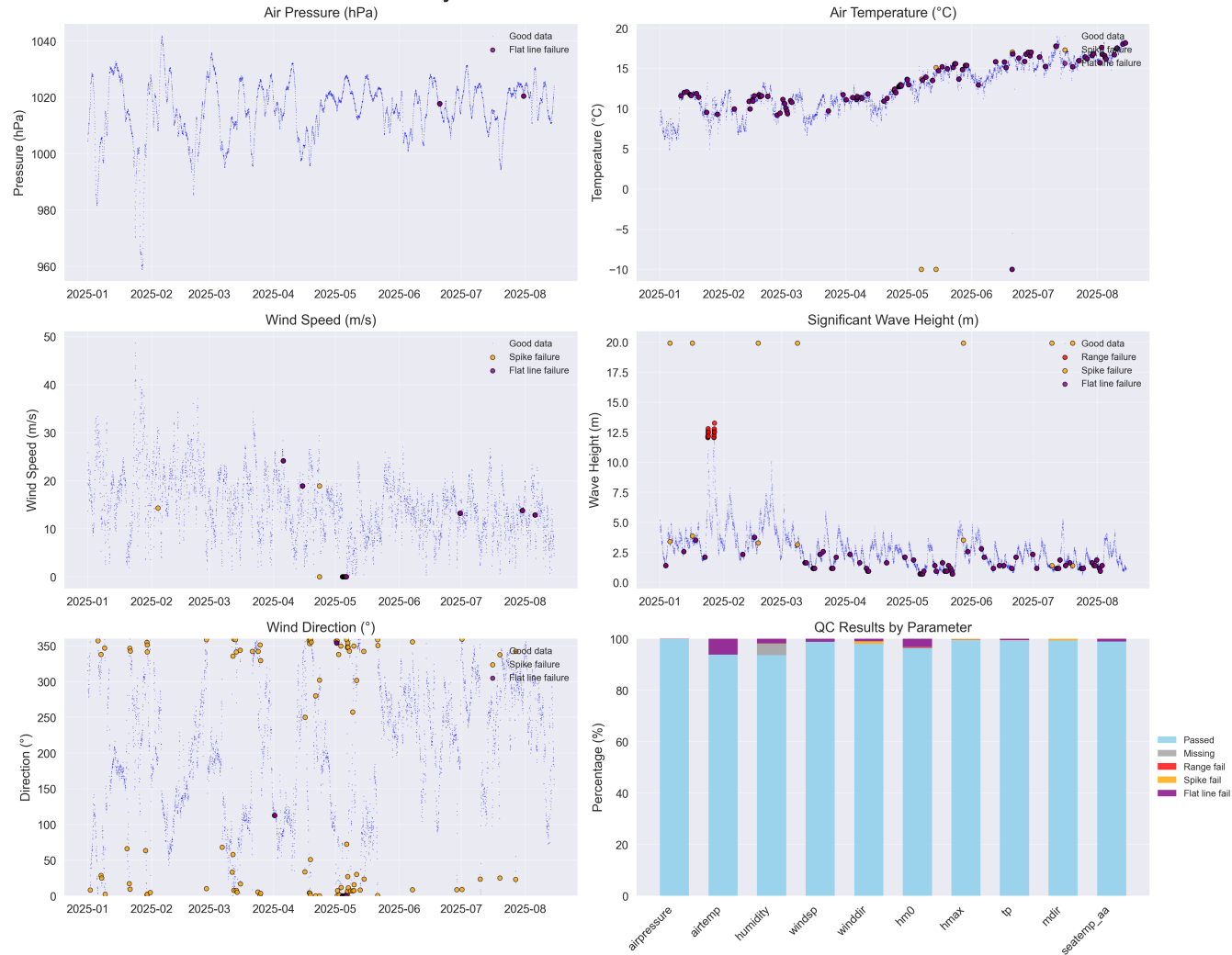
1. **Review flagged extreme values** - validate against weather events
2. **Investigate sensor failures** - replace/repair faulty sensors
3. **Cross-validate between loggers** - compare duplicate measurements
4. **Apply sensor hierarchy** - prioritize Wavesense for hm0, Datawell for hmax
5. **Transfer to production** - move QC'd data to irish_buoys_fugro table

Next Steps

1. Execute parameter-level QC SQL commands from readme.md
2. Perform individual value corrections for flagged data
3. Complete record-level QC marking
4. Transfer approved data to production table

Data Visualization

Buoy 62092 - 2025 Data Overview and QC Results



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