

Buoy 62092 - 2024 Quality Control Report

Generated: 2025-08-27 19:28:31

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Data Overview

- Station ID: 62092
- Year: 2024
- Total Records: 14,561
- Time Range: 2024-01-01 00:00:00 to 2024-10-30 23:00:00
- Duration: 303 days
- Sensors/Loggers: 4 active
 - 12147_CR6: 6,910 records (47.5%)
 - 427_Wavesense: 6,906 records (47.4%)
 - 314_Wavesense: 374 records (2.6%)
 - 12146_CR6: 371 records (2.5%)

Quality Control Results

Record-Level QC Status

- ****QC complete:**** 13,580 records (93.3%)
- ****No QC performed:**** 981 records (6.7%)

Parameter-Level QC Results

Parameter	Total	Missing	Range Fail	Spike Fail	Flat Line Fail	Passed	Pass Rate
airpressure	14,561	0	0	2	0	14,559	100.0%
airtemp	14,561	0	0	2	671	13,888	95.4%
humidity	14,561	0	0	4	148	14,410	99.0%
windsp	14,561	0	1	3	44	14,514	99.7%
winddir	14,561	0	0	204	24	14,333	98.4%
hm0	14,561	0	12	21	261	14,276	98.0%
hmax	14,561	0	10	60	0	14,501	99.6%
tp	14,561	0	0	21	27	14,513	99.7%
mdir	14,561	0	0	77	25	14,459	99.3%
seatemp_aa	14,561	0	1	2	84	14,475	99.4%

Issues Identified

- airpressure: 2 spike values (>10.0 change)
- airtemp: 2 spike values (>5.0 change)
- airtemp: 671 flat line values (5+ consecutive identical)
- humidity: 4 spike values (>20.0 change)
- humidity: 148 flat line values (5+ consecutive identical)
- windsp: 1 values outside range [0.0-50.0]
- windsp: 3 spike values (>15.0 change)

- windsp: 44 flat line values (5+ consecutive identical)
- winddir: 204 spike values (>180.0 change)
- winddir: 24 flat line values (5+ consecutive identical)
- hm0: 12 values outside range [0.0-12.0]
- hm0: 21 spike values (>2.5 change)
- hm0: 261 flat line values (5+ consecutive identical)
- hmax: 10 values outside range [0.0-20.0]
- hmax: 60 spike values (>4.0 change)
- tp: 21 spike values (>10.0 change)
- tp: 27 flat line values (5+ consecutive identical)
- mdir: 77 spike values (>180.0 change)
- mdir: 25 flat line values (5+ consecutive identical)
- seatemp_aa: 1 values outside range [6.0-20.0]
- seatemp_aa: 2 spike values (>2.5 change)
- seatemp_aa: 84 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

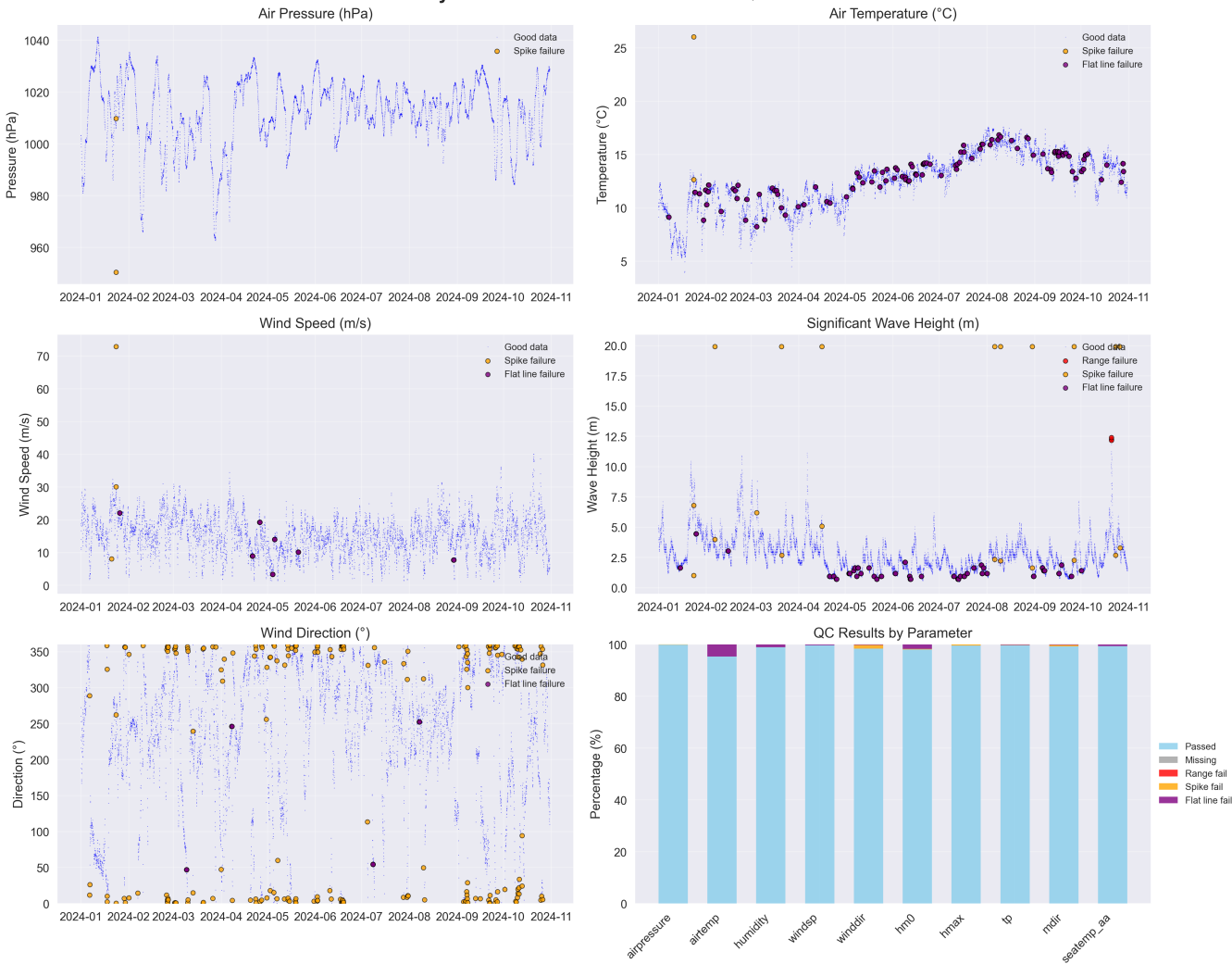
1. **Review flagged extreme values** - validate against weather events
2. **Investigate sensor failures** - replace/repair faulty sensors
3. **Cross-validate between loggers** - compare duplicate measurements
4. **Apply sensor hierarchy** - prioritize Wavesense for hm0, Datawell for hmax
5. **Transfer 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 - 2024 Data Overview and QC Results



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