Buoy 62092 - 2023 Quality Control Report

Generated: 2025-08-19 23:48:34

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Data Overview

• Station ID: 62092
• Year: 2023
• Total Records: 17,387
• Time Range: 2023-01-01 00:00:00 to 2023-12-30 23:00:00
• Duration: 363 days
• Sensors/Loggers: 2 active
- 314_Wavesense: 8,735 records (50.2%)
- 12146_CR6: 8,652 records (49.8%)

Quality Control Results

Record-Level QC Status

- **QC complete:** 16,615 records (95.6%)
- **No QC performed:** 772 records (4.4%)

Parameter-Level QC Results

Parameter	Total	Missing	Range Fail	Spike Fail	Flat Line Fail	Passed	Pass Rate
airpressure	17,387	0	0	0	0	11,580	66.6%
airtemp	17,387	0	0	0	833	11,001	63.3%
humidity	17,387	0	0	2	174	11,468	66.0%
windsp	17,387	0	0	1	36	11,561	66.5%
winddir	17,387	0	0	145	24	11,453	65.9%
hm0	17,387	0	0	0	409	11,324	65.1%
hmax	17,387	0	1	32	43	8,003	46.0%
tp	17,387	0	0	28	40	17,319	99.6%
mdir	17,387	0	0	67	5	11,523	66.3%
seatemp_aa	17,387	0	0	0	180	11,455	65.9%

Issues Identified

- airtemp: 833 flat line values (5+ consecutive identical)
- humidity: 2 spike values (>20.0 change)
- humidity: 174 flat line values (5+ consecutive identical)
- windsp: 1 spike values (>15.0 change)
- windsp: 36 flat line values (5+ consecutive identical)
- winddir: 145 spike values (>180.0 change)
- winddir: 24 flat line values (5+ consecutive identical)
- hm0: 409 flat line values (5+ consecutive identical)
- hmax: 1 values outside range [0.0-20.0]

- hmax: 32 spike values (>4.0 change)
- hmax: 43 flat line values (5+ consecutive identical)
- tp: 28 spike values (>10.0 change)
- tp: 40 flat line values (5+ consecutive identical)
- mdir: 67 spike values (>180.0 change)
- mdir: 5 flat line values (5+ consecutive identical)
- seatemp_aa: 180 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

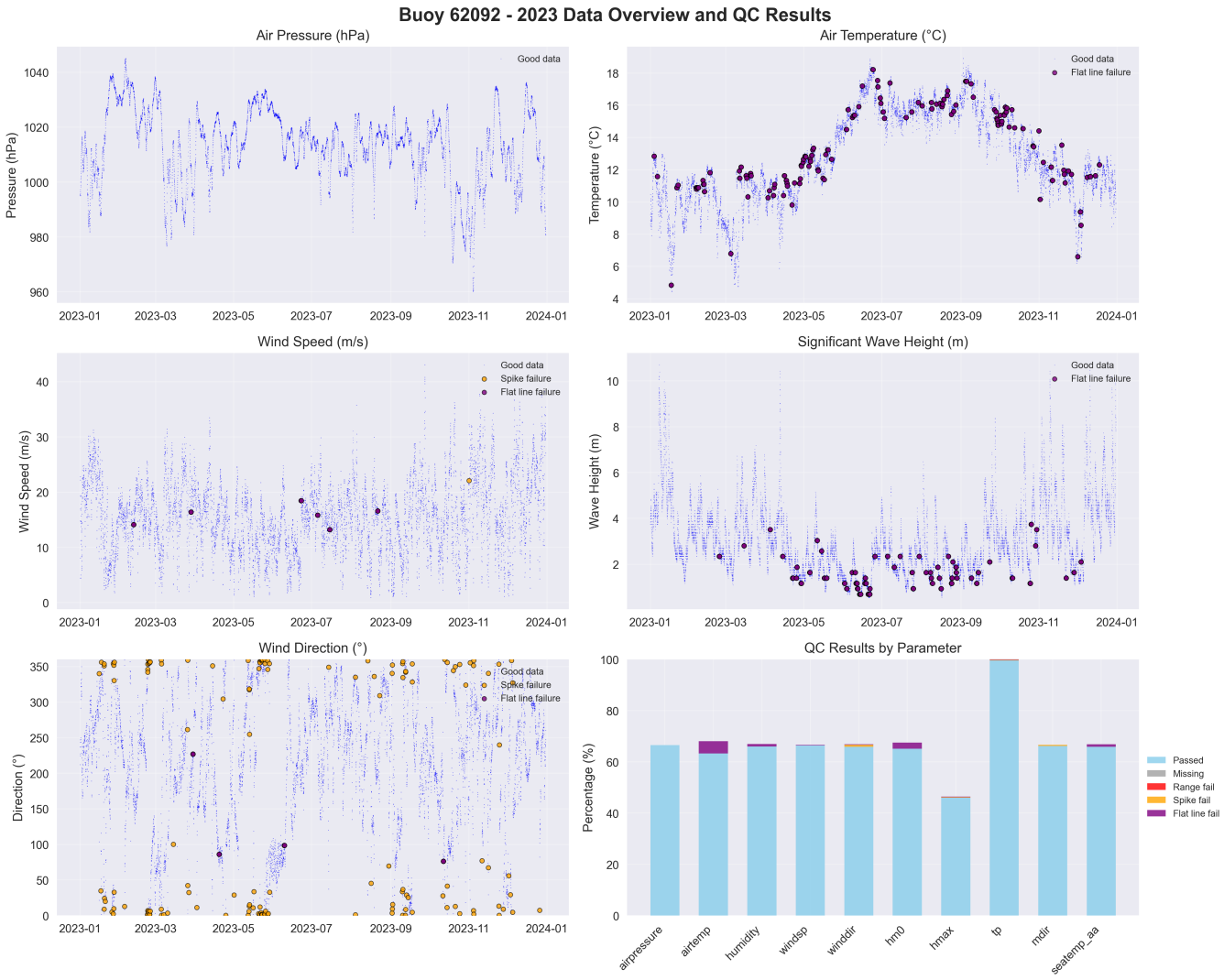
Manual QC Actions Needed

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



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