INTERWAVE ANALYZER

OFFICIAL REPORT

Analyzed Period: 1 / 7 / 2015 at 0h to 1 / 8 / 2015 at 0h

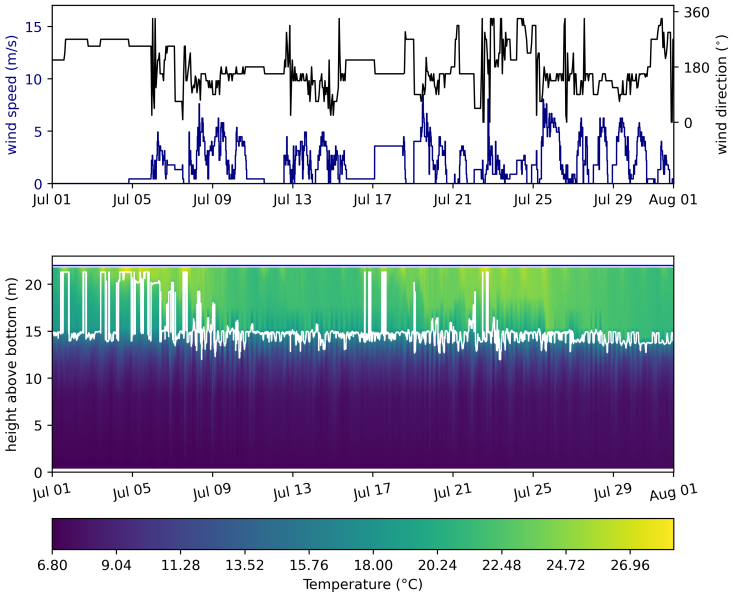
Basin Length (wind direction: 142.0o ± 20.0o)
min: 2850.0 m; max: 3150.0 m; ave: 3000.0 m

Layers Thickness (Total depth: 22.0 m):

Two-layer	Epilimnion	6.82 m
	Hypolimnion	15.18 m
Three-layer	Epilimnion	4.55 m
	Metalimnion	5.84 m
	Hypolimnion	11.61 m

Layers Density and stratification:

Two-layer	Epilimnion	997.65 kg/m3
	Hypolimnion	999.59 kg/m3
Three-layer	Epilimnion	997.56 kg/m3
	Metalimnion	998.79 kg/m3
	Hypolimnion	999.81 kg/m3

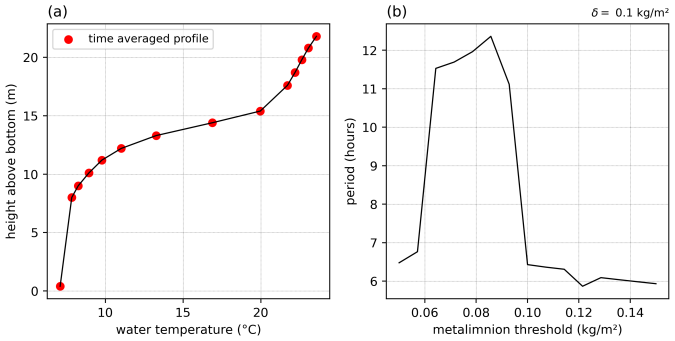


Wind parameters:

Duration of the strongest wind event: 36.08 h

Just considering homogeneous direction:
35.08 h blowing 160.0o (c. nautica)

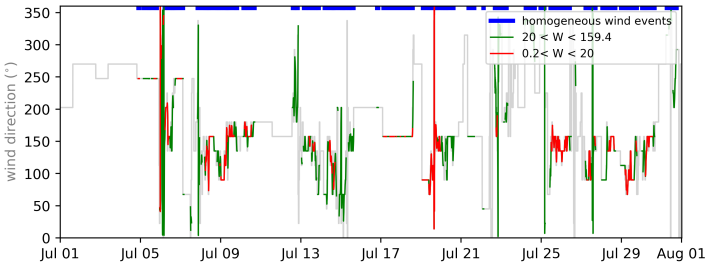
Reduction factor:	Duration factor:	1
	Direction factor:	0.907



Mean friction velocity of the wind: 2.04e-03 m/s
Min friction velocity of the wind: 1.00e-05 m/s
Max friction velocity of the wind: 1.15e-02 m/s

Time of wind events favoring BSIW (%)

Accoding to W	46.87%
Taking direction:	36.17%



Paramters of Stability:

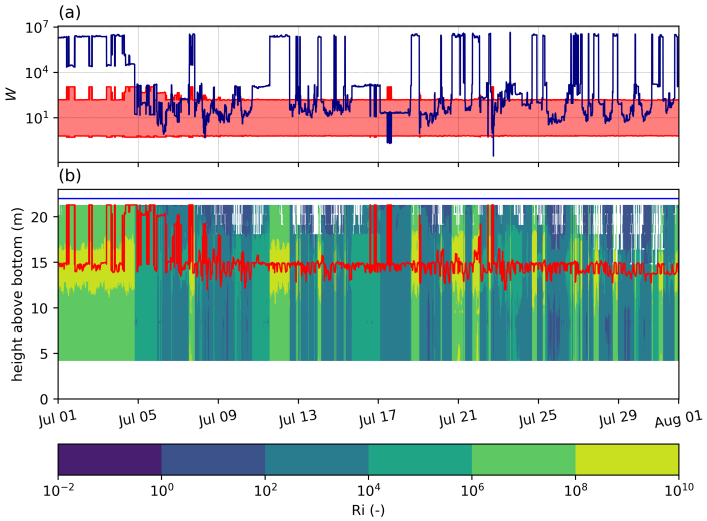
Reduced Gravity:	1.91e-02 ± 0.00e+00 m/s2
Brunt-Vaisalla:	9.60e-03 ± 7.00e-04 Hz
Averaged Richardson number:	2.43e+08

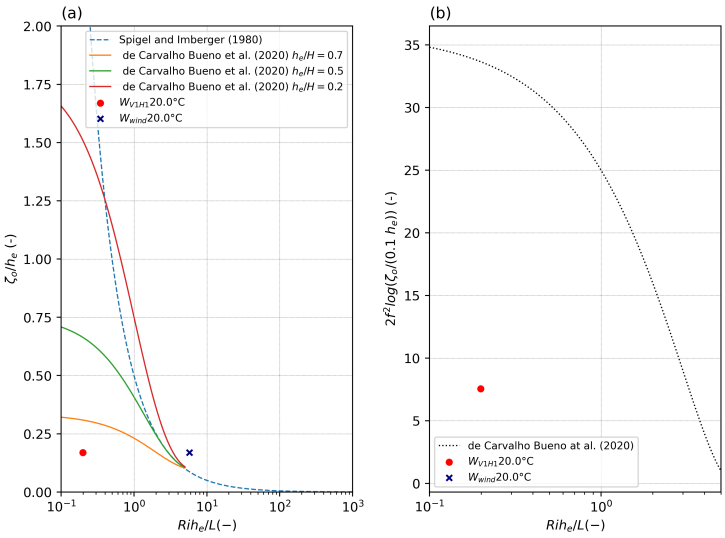
Time averaged (thermocline assuming V1 mode) :

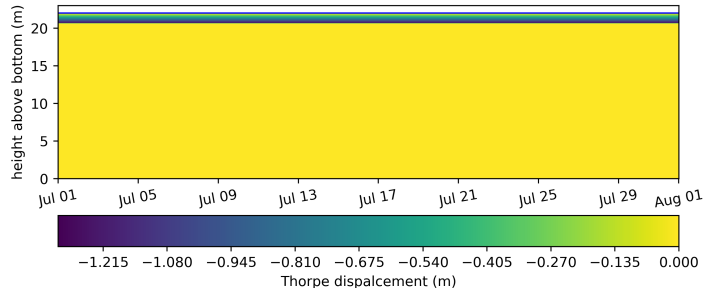
Richardson number:	2.43e+08 ± 1.86e+07
Wedderburn number:	585444.467 ± 4.63e+04

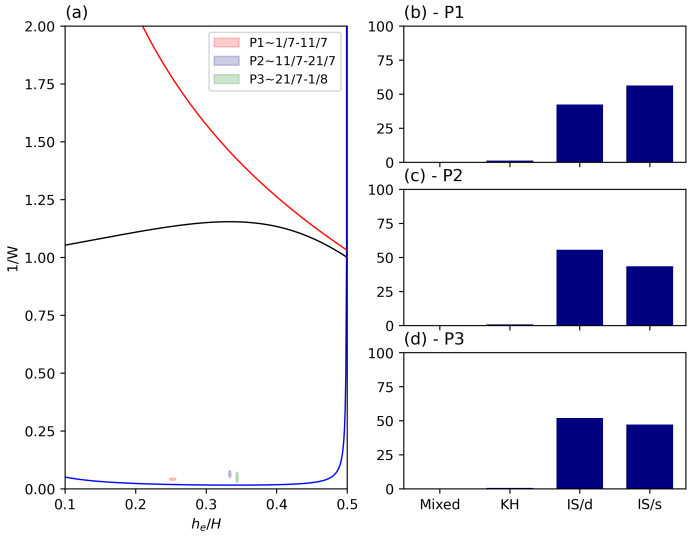
Filtered time averaged Wedderburn number:

Filtered by lake mixing criteria:	0.199
Filtered by wind homogeneity:	0.199









Stability associated to strongest wind event:

Richardson number:	2376.267
Wedderburn number:	5.773

BSIW amplitude according theories:

Spigel and Imberger (1980):	17.14 m
Bueno et al. (2020):	7.23 m

Surface seiche amplitude: 33.31 mm

Generation & Degeneration Theory1:

Periods	1/W	he/H:
P1	2.12998	0.25236
P2	5.13335	0.33346
P3	34.75271	0.34378

Maximum amplitude of BSIW:

P1	7.26 m
P2	17.498 m
P3	118.461 m

1 Strongest BSIW that should be detected

Probable amplitude of BSIW according to Wedderburn number:

Wedderburn < 100

Periods	Amplitude	Duration Ratio²
P1	0.721 m	0.387
P2	0.839 m	0.5156
P3	0.704 m	0.4723

Wedderburn < 50

Periods	Amplitude	Duration Ratio²
P1	0.9 m	0.301
P2	0.924 m	0.4619
P3	1.004 m	0.3171

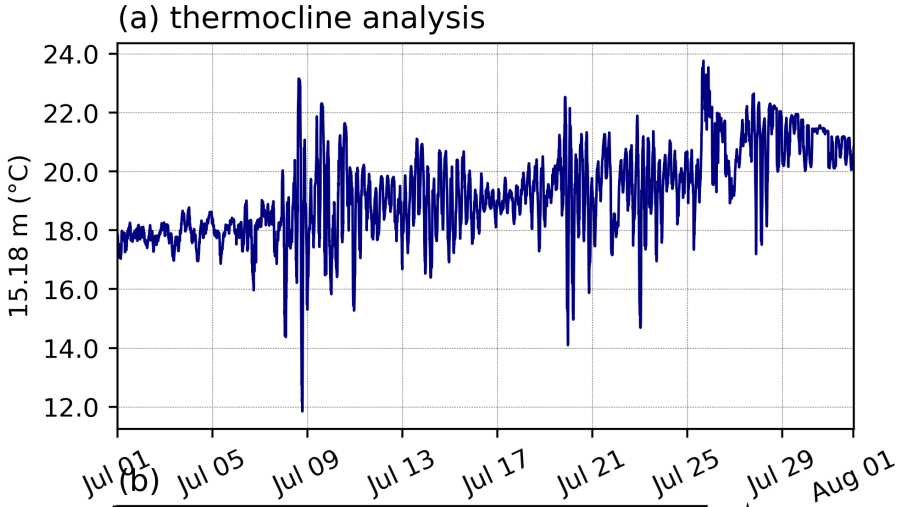
Wedderburn < 20

Periods	Amplitude	Duration Ratio²
P1	1.229 m	0.2012
P2	2.23 m	0.1562
P3	1.346 m	0.219

Wedderburn < 3

Periods	Amplitude	Duration Ratio2
P1	6.566 m	0.0161
P2	24.528 m	0.0111
P3	11.816 m	0.0104

2 Ratio between duration period of Wedderburn < than the criteria and the total period



Internal Seiche Modeling:

Merian Equation:

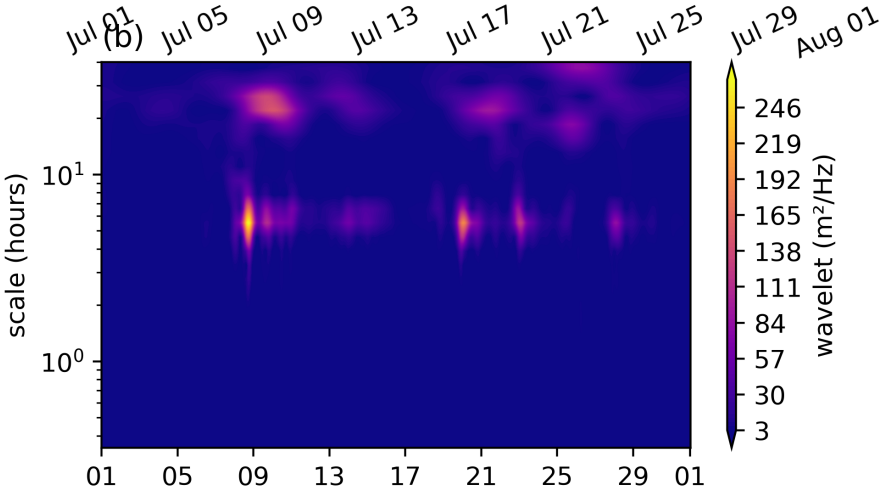
Wave speed:	0.2995 m/s
Wave period:	5.71 hours

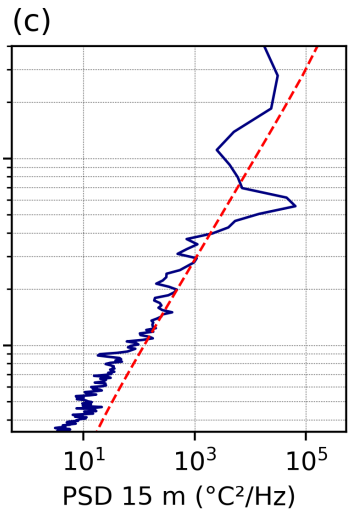
Wind duration criteria[1]:

wind duration:	6.321
wind direction:	6.146

Burger Number: 0.39

Coriolis effect must be considered



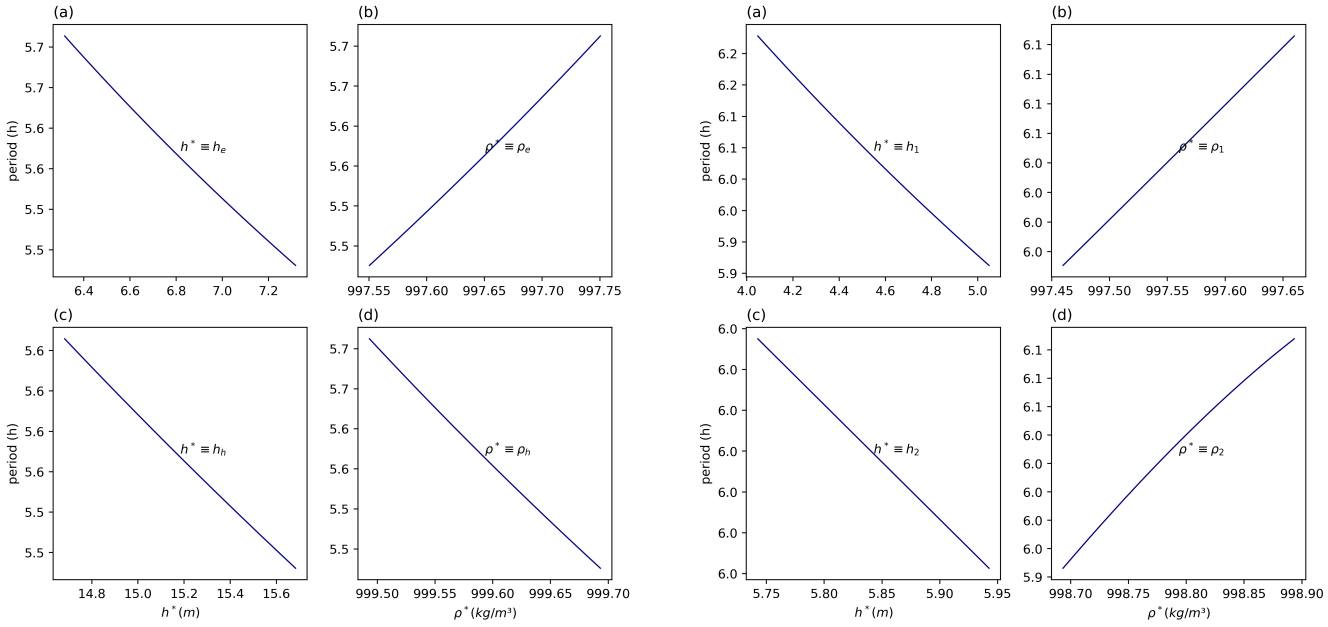


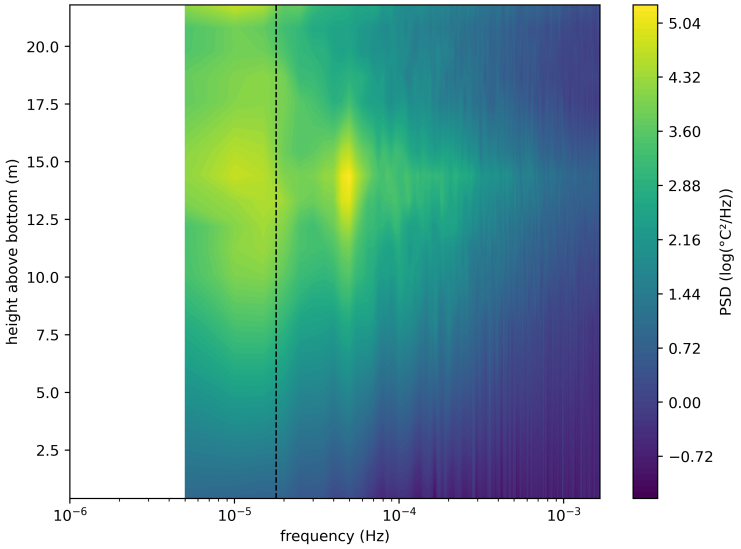
[1] Wind criteria must be > 0.25 to excite BSIW

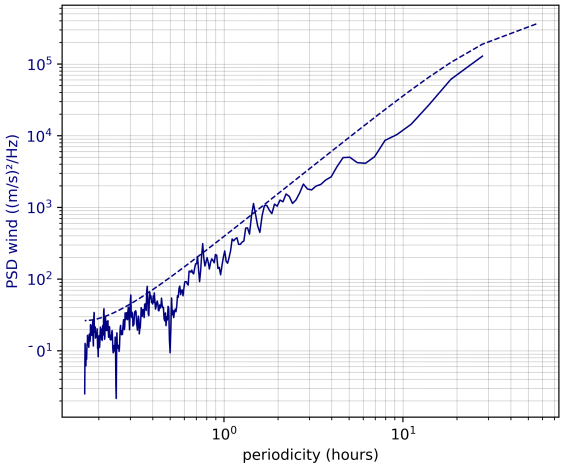
Hydrostatic Model for the first three vertical and horizontal modes:

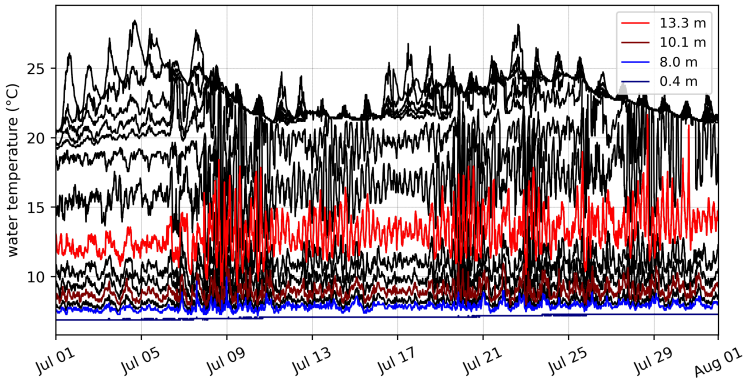
V1H1	5.56 h	±	0.28 h	V1H2	2.78 h	±	0.14 h	V1H3	1.85 h	±	0.09 h
V2H1	6.03 h	±	0.3 h	V2H2	3.02 h	±	0.15 h	V2H3	2.01 h	±	0.1 h
V3H1	17.58 h	±	0.88 h	V3H2	8.79 h	±	0.44 h	V3H3	5.86 h	±	0.29 h

Sensibility Analysis for the Two-layers Internal Wave Model:









Isotherm analysis: