



OFFICIAL REPORT

Analyzed Period: 30 / 6 / 2015 at 23h to 31 / 7 / 2015 at 23h

Basin Length (wind direction: 142.00 ± 20.00)

min: 2850.0 m; max: 3150.0 m; ave: 3000.0 m

Layers Thickness (Total depth: 22.0 m):

Two-layer	Epilimnion	6.6 m
	Hypolimnion	15.4 m
Three-layer	Epilimnion	5.3 m
	Metalimnion	5.46 m
	Hypolimnion	11.23 m

Layers Density and stratification:

Two-layer	Epilimnion	997.66 kg/m ³
	Hypolimnion	999.53 kg/m ³
Three-layer	Epilimnion	997.67 kg/m ³
	Metalimnion	998.82 kg/m ³
	Hypolimnion	999.8 kg/m ³

Wind parameters:

Duration of the strongest wind event: 24.0 h

Just considering homogeneous direction:

22.25 h blowing 155.00 (c. nautica)

Reduction factor: Duration factor: 1
Direction factor: 0.901

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 47.61%

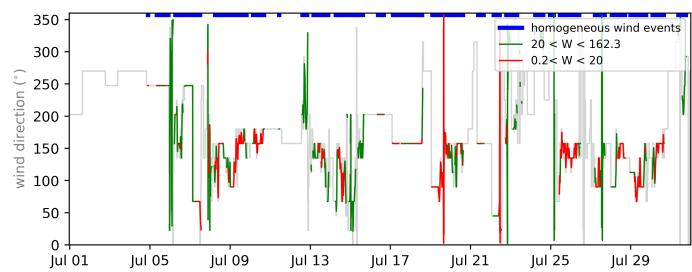
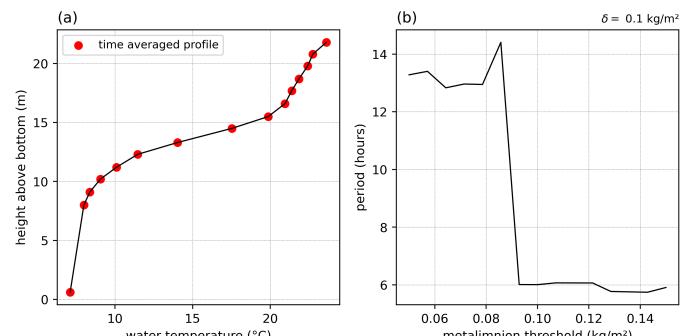
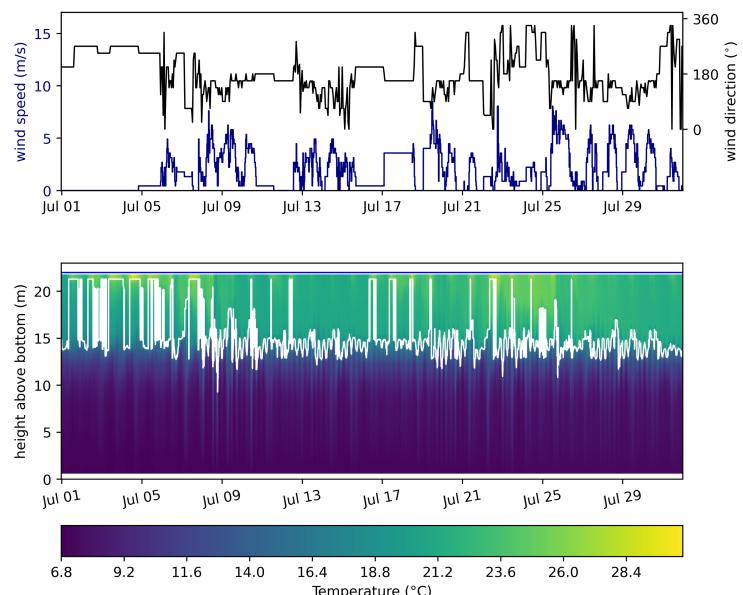
Taking direction: 36.6%

Paramters of Stability:

Reduced Gravity: $1.83e-02 \pm 1.00e-04$ m/s²

Brunt-Vaisalla: $1.06e-02 \pm 9.00e-04$ Hz

Averaged Richardson number: $2.13e+08$



Time averaged (thermocline assuming V1 mode) :

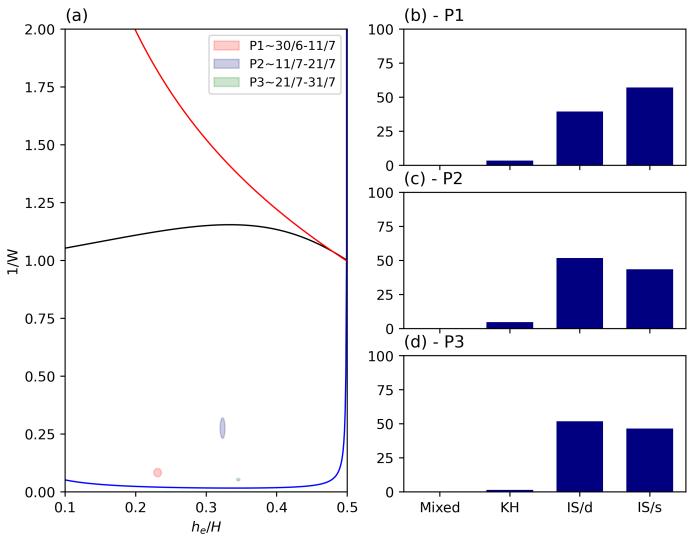
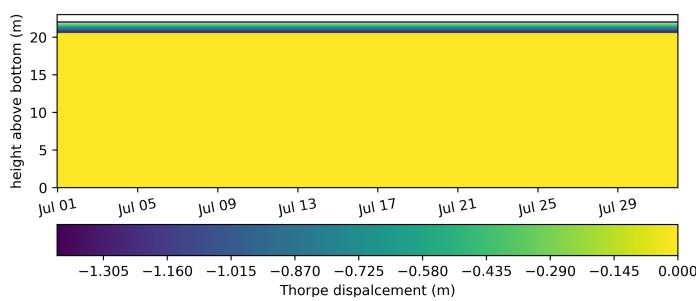
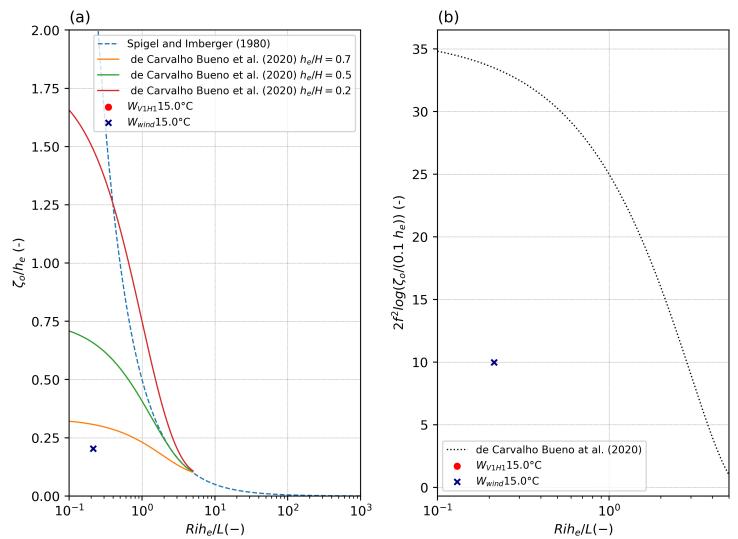
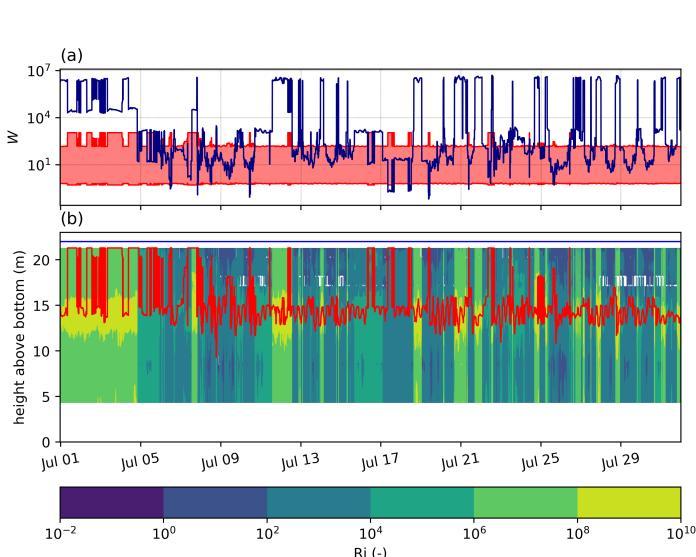
Richardson number: $2.13e+08 \pm 1.80e+07$

Wedderburn number: $536696.513 \pm 4.90e+04$

Filtered time averaged Wedderburn number:

Filtered by lake mixing criteria: 0.066

Filtered by wind homogeneity: 0.066



Stability associated to strongest wind event:

Richardson number: 916.558

Wedderburn number: 0.214

BSIW amplitude according theories:

Spigel and Imberger (1980): 49.84 m

Bueno et al. (2020): 8.04 m

Surface seiche amplitude: 93.13 mm

Generation & Degeneration Theory1:

Periods $1/W$ h_e/H :

Periods	$1/W$	h_e/H
P1	11.69938	0.23116
P2	15.56216	0.32321
P3	1.95802	0.34541

Maximum amplitude of BSIW:

P1 38.61 m

P2 51.358 m

P3 6.462 m

1 Strongest BSIW that should be detected

Probable amplitude of BSIW according to Wedderburn number:

Wedderburn < 100

Periods	Amplitude	Duration Ratio ²
P1	1.358 m	0.4024
P2	3.359 m	0.5402
P3	0.78 m	0.4343

Wedderburn < 20

Periods	Amplitude	Duration Ratio ²
P1	2.275 m	0.2266
P2	6.765 m	0.2598
P3	1.201 m	0.2588

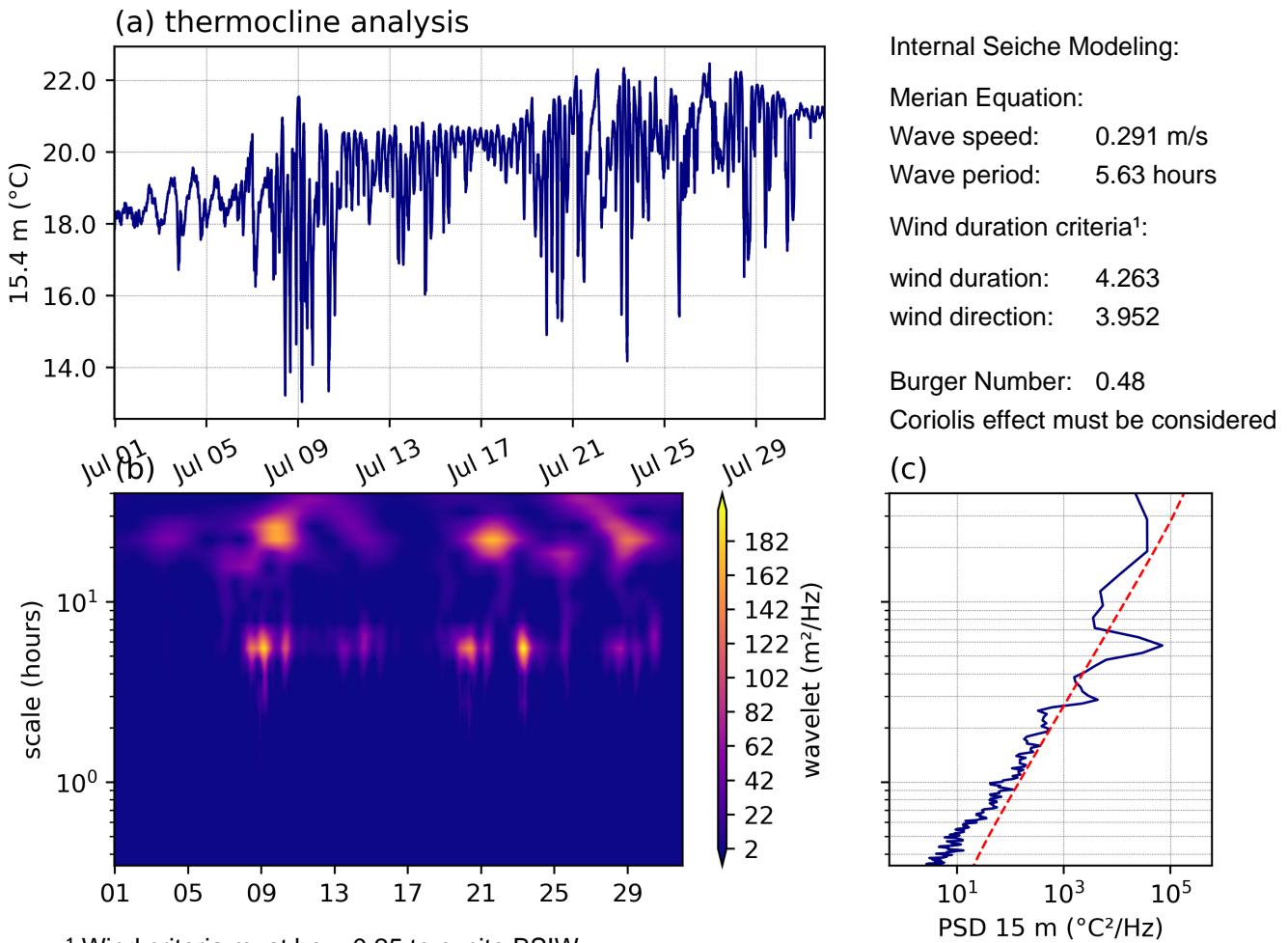
Wedderburn < 50

Periods	Amplitude	Duration Ratio ²
P1	1.685 m	0.3197
P2	3.863 m	0.4679
P3	0.969 m	0.3405

Wedderburn < 3

Periods	Amplitude	Duration Ratio ²
P1	8.85 m	0.0444
P2	35.205 m	0.0467
P3	5.465 m	0.0202

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

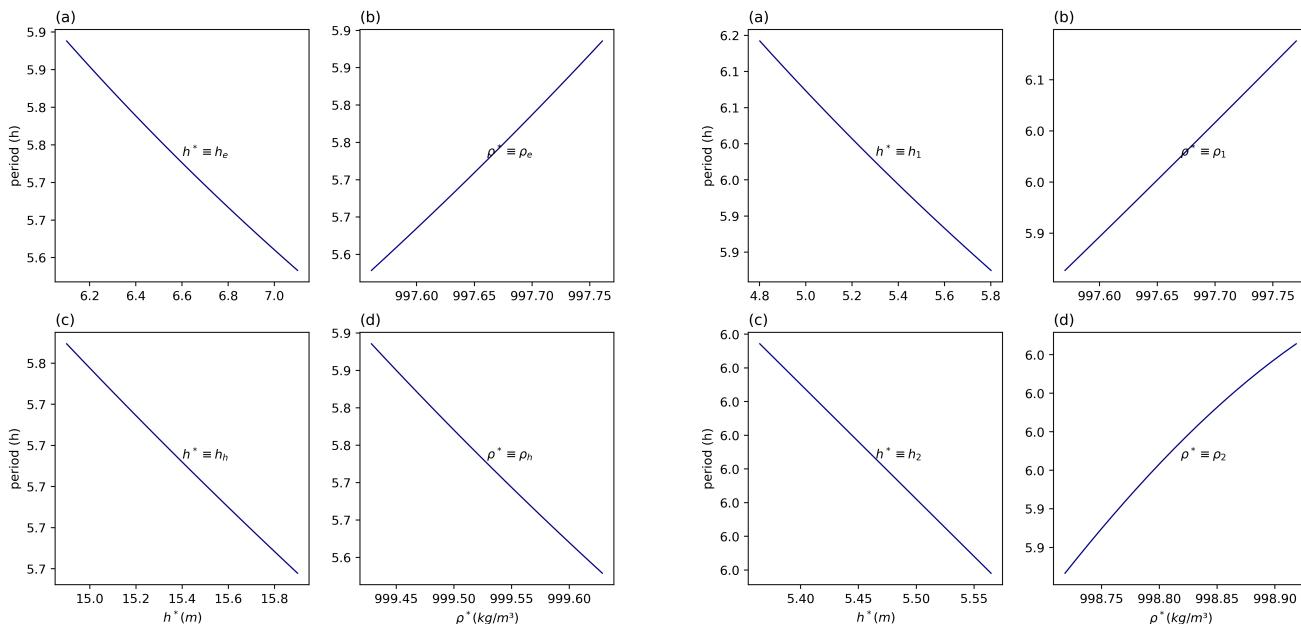


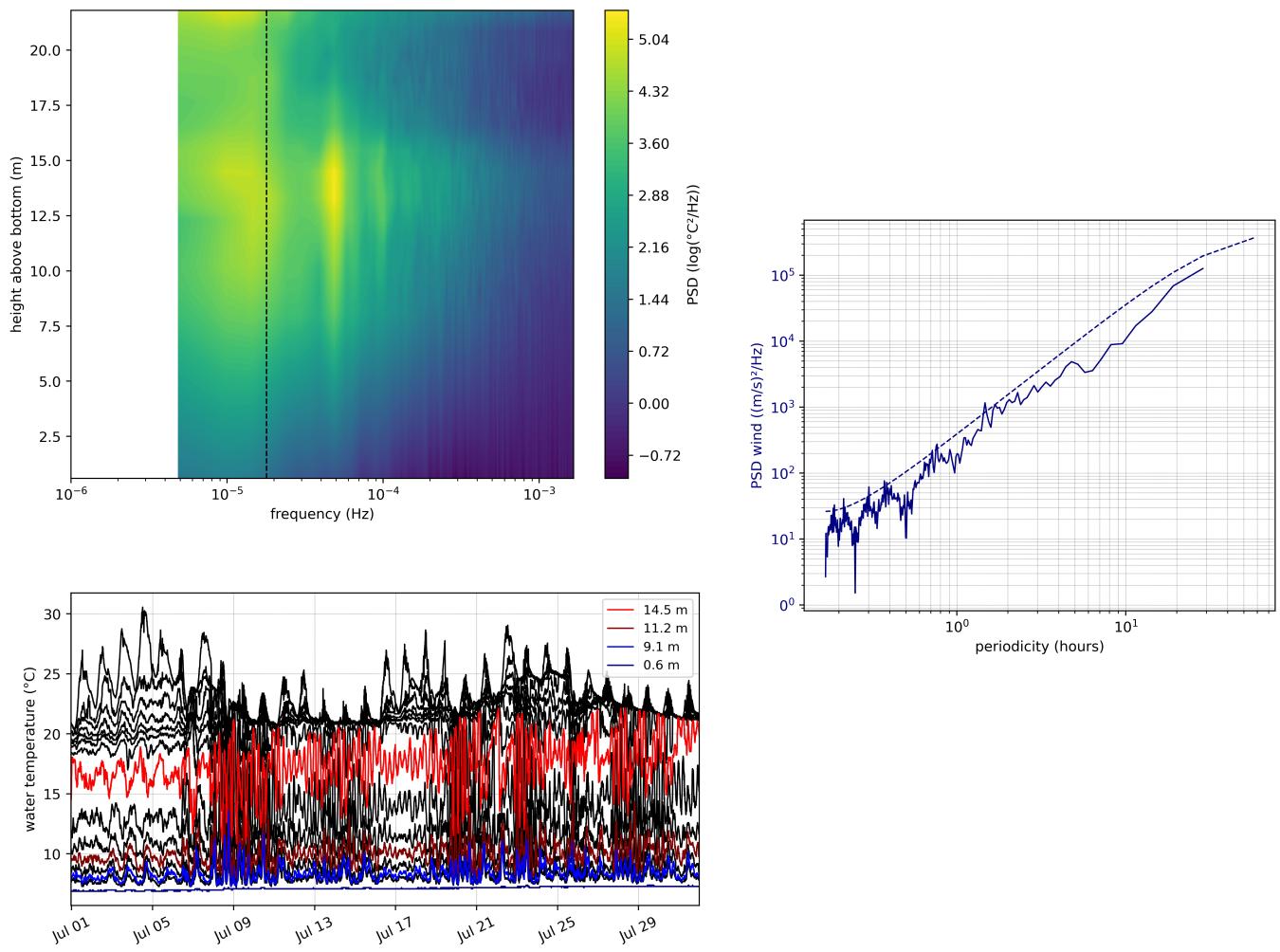
¹ Wind criteria must be > 0.25 to excite BSIW

Hydrostatic Model for the first three vertical and horizontal modes:

V1H1	5.73 h	\pm	0.29 h	V1H2	2.86 h	\pm	0.14 h	V1H3	1.91 h	\pm	0.1 h
V2H1	5.97 h	\pm	0.3 h	V2H2	2.99 h	\pm	0.15 h	V2H3	1.99 h	\pm	0.1 h
V3H1	17.31 h	\pm	0.87 h	V3H2	8.65 h	\pm	0.43 h	V3H3	5.77 h	\pm	0.29 h

Sensibility Analysis for the Two-layers Internal Wave Model:





Isotherm analysis:

