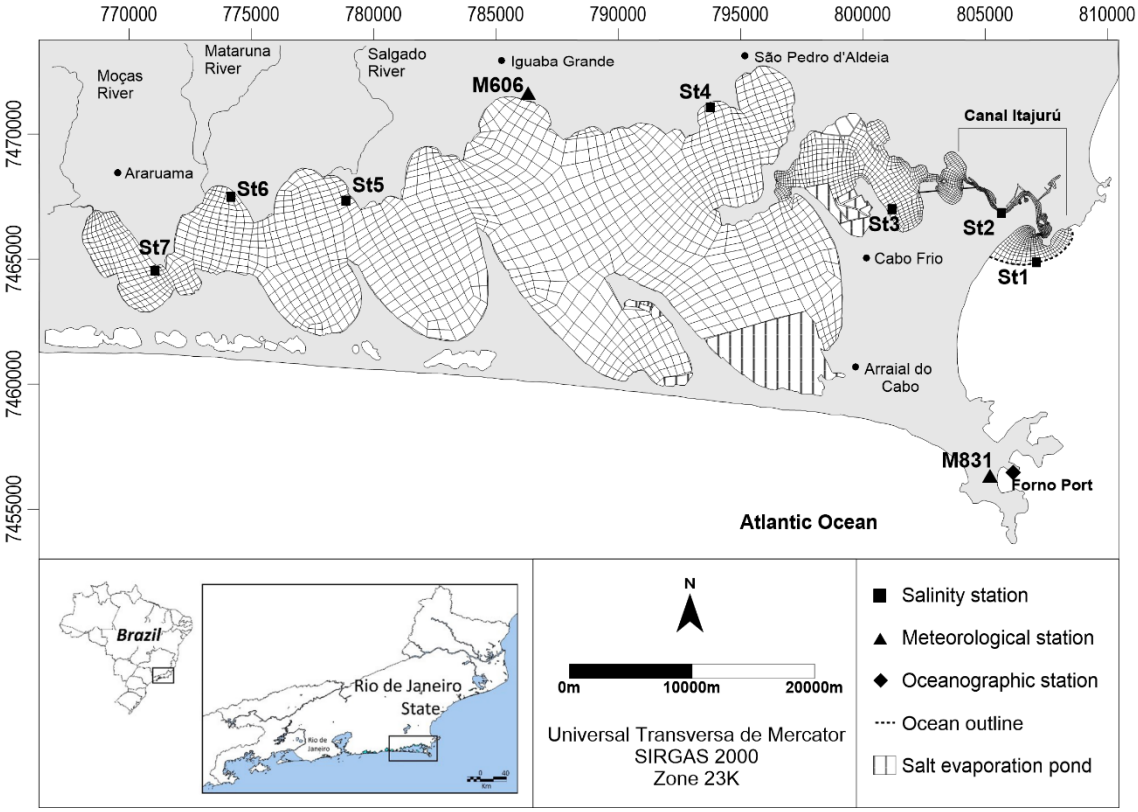
Modeling a hypersaline lagoon to evaluate salinity changes due to modifications on depths of an ocean connection.

SUPPLEMENTARY MATERIALS

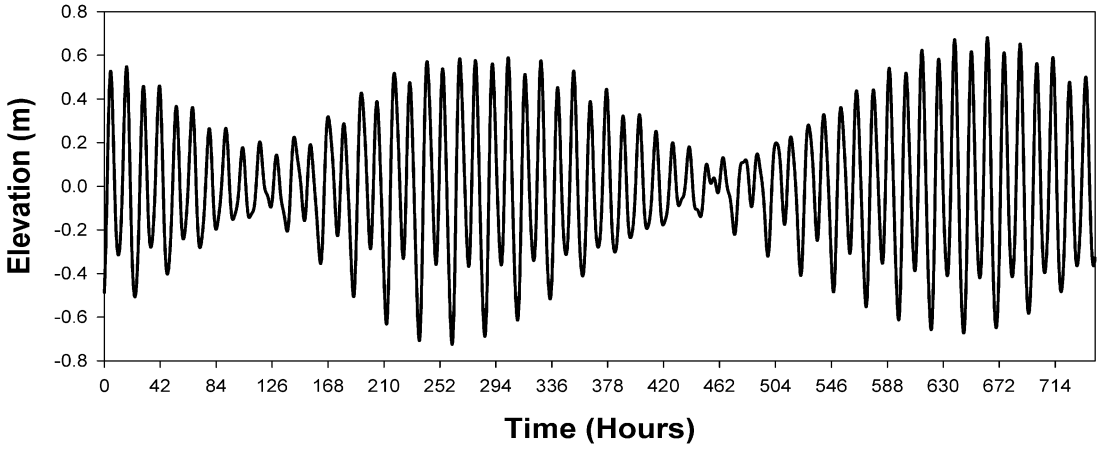


Supplementary Material 1 – Map showing the applied grid of Araruama Lagoon for the construction of the hydrodynamic model in SisBaHiA.

Supplementary Material 2 – Tidal constants, period, amplitude and phase inserted in the oceanic frontier of the hydrodynamic module. Data from DHN, Forno Port, Arraial do Cabo – RJ.

Name	Period (s[a])	Amplitude (m[b])	Phase (rad[c])
M2	44714.16	0.3256	1.370607062
S2	43200.00	0.1718	1.539729466
O1	92949.63	0.0999	1.524894167
K1	86164.09	0.0504	2.568482527
K2	43082.05	0.0467	1.553517567
N2	45570.05	0.0418	1.609891702
Q1	96726.08	0.0267	1.312313065
L2	43889.83	0.0222	1.611986097
M4	22357.08	0.0193	0.429176463
P1	86637.20	0.0167	2.490235777
KQ1	77681.65	0.0145	0.358665161
M1	89399.69	0.0140	0.800757061
MNS2	42430.07	0.0108	2.244144352
T2	43259.22	0.0101	1.532922682
MS4	21972.02	0.0100	2.011666496
J1	83154.52	0.0098	2.162462943

[a] second; [b] meters; [c] radiane.



Supplementary Material 3– Tide at the open edge for the interval analyses of 01/01/2015 a 31/01/2015. The medium level (0.0 m) is the NMM at oceanographic station located in Forno Port.

Supplementary Material 4 – Calibration levels, items for assess, requirements that must be considered for each calibration level and if those requirements were complied with.

			Requirement complied with ?	
Level	**What to assess?**	**Requirement**	**Yes**	**No**
(1) Geometry Calibration	Modelling domain geometry	Appropriately represent land, margins, narrow channels and islands contours	x	
		Depth values suitable and consistent with real data	x	
(2) Hydrodynamic Calibration	Water volume exchanged with system	Attend to Level 1	x	
	Current speed and tide and/or water table variation level	Correct information about model inputs (wind, tide, precipitation and rivers flow)	x*	
(3) Scalar Transport Calibration	Scalar transport models, using currents and hydrodynamic model levels, it is possible to properly represent the studied parameter concentration over time.	Attend to Level 1 and 2	x	
		Correct information about parameter concentration at several points	x	
		Initial condition suitable to the analysis interval	x	

Source: Adapted from ROSMAN, 2018.

Supplementary Material 5– Raw data used for calibration, obtained in stations 4 and 5.

	Mesured Data		Modeled Data	
Date	Meas St. 4	Meas St.5	Mod St. 4	Mod St. 5
1/1/15	47	51	50	52
2/1/15	40	45	50	52
3/1/15	44	52	50	52
4/1/15	48	49	50	51
5/1/15	49	52	50	51
6/1/15	47	50	50	51
7/1/15	48	53	50	51
8/1/15	48	52	50	51
9/1/15	48	55	50	51
10/1/15	47	55	50	51
11/1/15	49	53	50	51
12/1/15	46	48	50	50
13/1/15	46	53	50	50
14/1/15	48	53	50	50
15/1/15	48	52	50	50
16/1/15	47	50	49	50
17/1/15	45	52	49	50
18/1/15	46	48	49	50
19/1/15	44	52	49	50
20/1/15	50	51	49	49
21/1/15	50	51	49	49
22/1/15	50	46	49	49
23/1/15	50	52	49	49
24/1/15	50	50	49	49
25/1/15	50	53	49	49
26/1/15	48	50	49	48
27/1/15	44	43	49	48
28/1/15	41	44	49	48
29/1/15	50	51	49	48
30/1/15	50	44	49	48
31/1/15	49	51	49	48