

Field measurement of hydrodynamic characteristics in coral reef
at Yoshiwara Coast, Ishigakijima, Okinawa, Japan

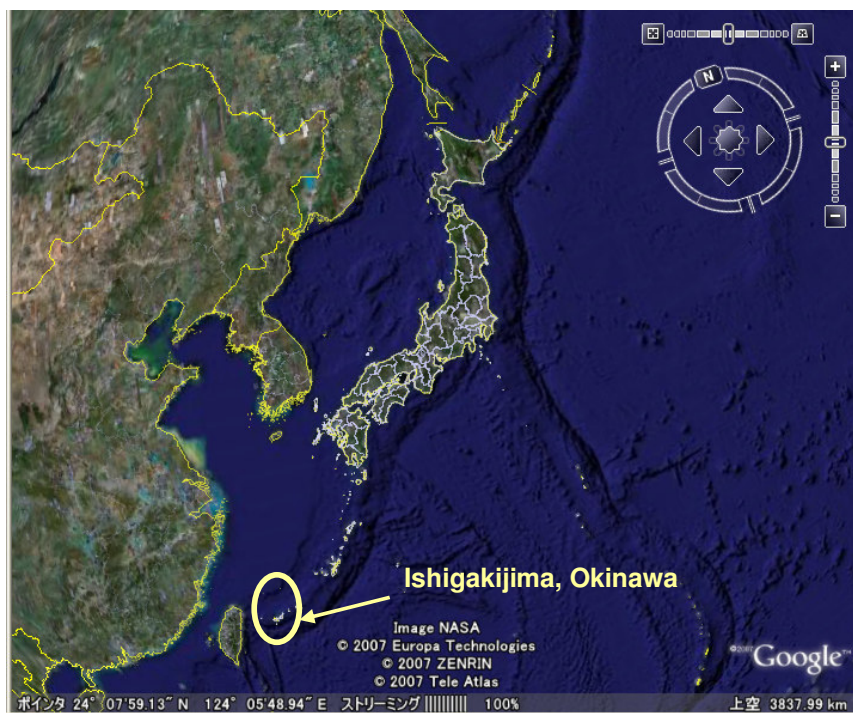
By

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Background information

Addressing the environmental and economic impacts of coastal environment particularly on coastal erosion and safe beach utilization led the researchers to conduct field studies on hydrodynamics in coral reefs in tropical and subtropical regions. The study area is located in the subtropical region of Japan specifically the Yoshiwara coast in Ishigakijima, Okinawa (Map 1, Photo 1). Wave Hunter, ADCP, water level gauges were installed in the reef lagoon, on the reef flat, edge and gap (Figure 1) to measure wave, current and tide characteristics respectively. Wind speed and direction were also measured with the aid of an anemometer set up on the beach (Photo 2). Because of seasonal variation, hydrodynamic parameters may vary. Thus, measurement is currently done during winter season from November 2007 to January 2008 in order to establish a comparative study with the data generated during summer season from June to July 2006.



(a) Map of Japan and location of Ishigakijima, Okinawa, Japan



(b) Zoom in of Ishigakijima and Yoshiwara coast

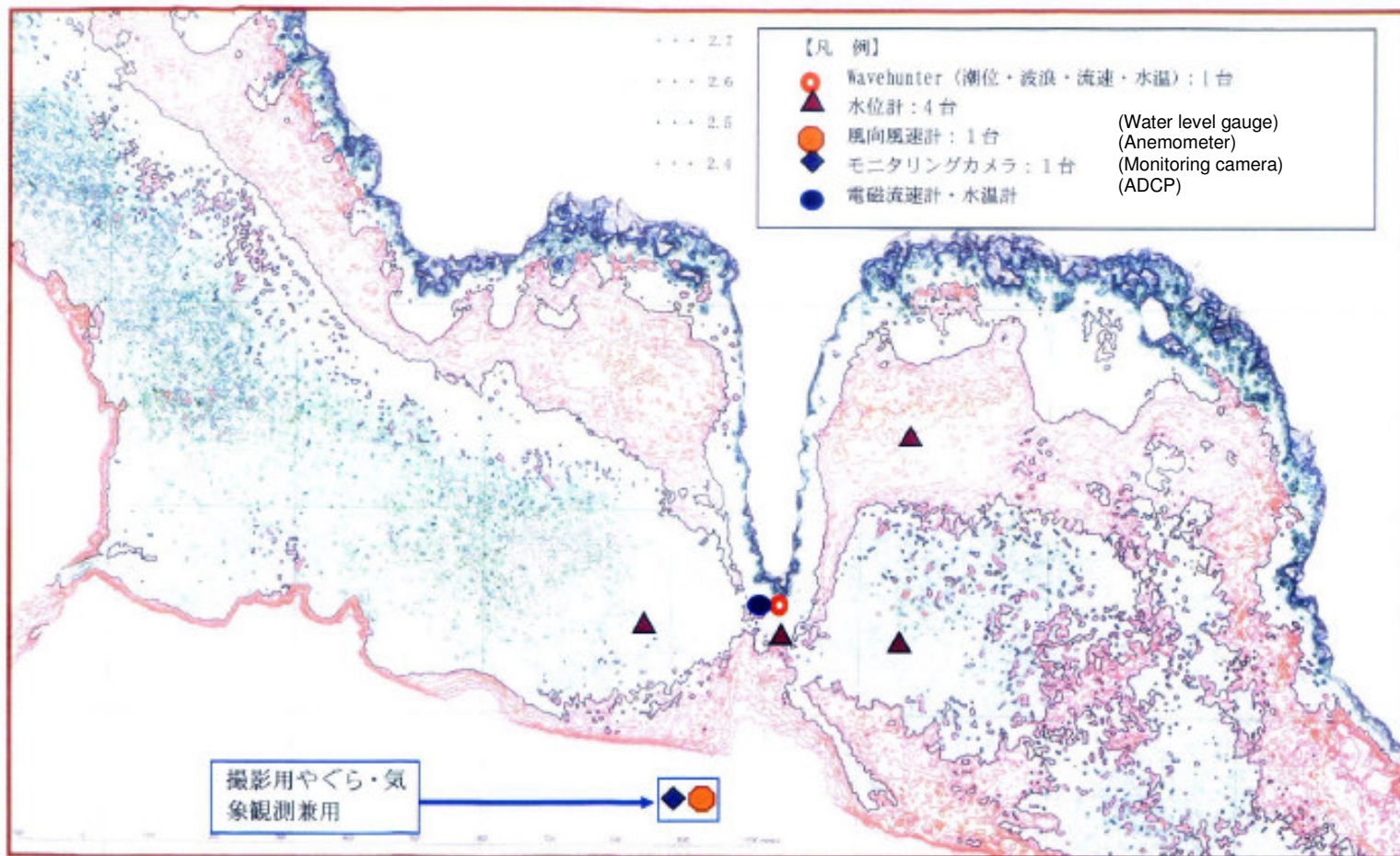
Map 1. Location of Ishigakijima, Okinawa, Japan



Photo 1. Aerial view of the coral reef and carbonate beach in Yoshiwara coast



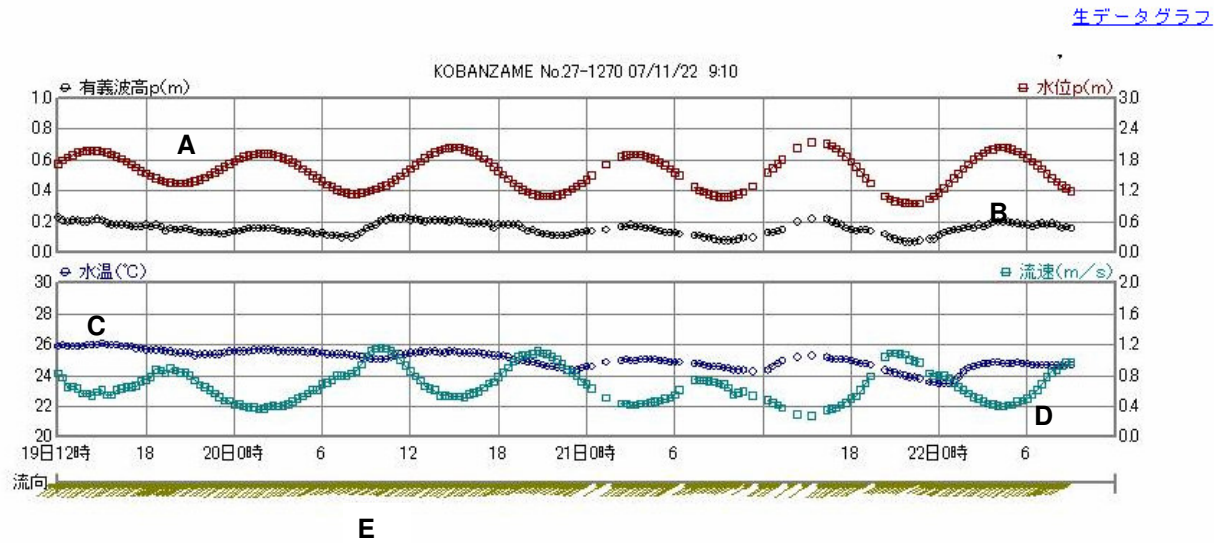
Photo 2. Installation set-up of anemometer



注) 本海底地形図は第十一管区海上保安本部海洋情報部が航空機レーザー測深により作成したものである。

調査位置図 (詳細)

Figure 1. Location of equipment installed in the coral reef lagoon, reef flat, reef gap, reef edge and on the beach



F	G	H	I	J	K	L	M	N	O	P	Q	LEGEND:	
月日	時分	最高波 H(m)	T(s)	有義波 H(m)	T(s)	平均 波向	水位 (m)	流速 (m/s)	流向	水温 (°C)	測定 番号	A, M	Water level (m)
11/22	4:10	0.35	3.1	0.18	3.4	NE	1.99	0.44	ENE	24.8	1255	B	Significant wave height (m)
11/22	4:30	0.32	11.9	0.20	3.3	NE	2.01	0.43	ENE	24.9	1256	C, P	Temperature (°C)
11/22	4:50	0.31	5.1	0.20	3.3	NE	2.04	0.41	ENE	24.9	1257	D, N	Current speed (m/s)
11/22	5:10	0.31	3.8	0.20	3.2	NE	2.04	0.40	NE	24.8	1258	E, O	Current direction
11/22	5:30	0.35	2.8	0.20	3.1	NE	2.03	0.42	ENE	24.8	1259	F	Date (month/day)
11/22	5:50	0.33	4.4	0.19	2.7	NE	2.00	0.42	ENE	24.8	1260	G	Time (h:m)
11/22	6:10	0.31	2.2	0.19	3.0	NE	1.96	0.46	ENE	24.9	1261	H	Maximum wave height (m)
11/22	6:30	0.30	1.6	0.18	2.7	NE	1.91	0.47	ENE	24.8	1262	I	Maximum wave period (s)
11/22	6:50	0.35	6.7	0.18	2.6	NE	1.84	0.50	ENE	24.8	1263	J	Significant wave height (m)
11/22	7:10	0.30	4.1	0.17	2.3	NE	1.77	0.56	ENE	24.7	1264	K	Significant wave period (s)
11/22	7:30	0.34	1.3	0.18	2.3	ENE	1.70	0.61	ENE	24.7	1265	L	Wave direction
11/22	7:50	0.30	2.2	0.19	2.5	NE	1.62	0.69	ENE	24.7	1266	Q	Record number
11/22	8:10	0.33	3.4	0.18	2.4	NE	1.53	0.78	ENE	24.7	1267		
11/22	8:30	0.33	9.0	0.19	2.2	ENE	1.45	0.84	ENE	24.7	1268		
11/22	8:50	0.32	5.5	0.18	2.1	ENE	1.37	0.88	ENE	24.7	1269		
11/22	9:10	0.29	1.1	0.16	1.9	ENE	1.30	0.92	ENE	24.7	1270		

Sample record of real time measurement of hydrodynamic parameters

Note: The English description for the Japanese characters is provided for your reference.