- AN EXAMPLE OF SYSTEMATIC SURVEY OF BEACH DATA

by CIABATTI Mario - Istituto di Geologia dell'Università, Via Zamboni 65-67, Bologna - Italy
and MARABINI Francesco - Laboratorio di Geologia Marina del C.N.R., Via Zamboni 65-67, Bologna, Italy

Introduction.

The data have been collected from a section 2,5 km south of Porto Corsini (Northern Adriatic Sea). The features, weekly measured during October, November and December 1971, are: 1) the angle slope (Φ) of an upper scarp corresponding to high water level, 2) the angle slope (Φ') of a lower scarp due to deposition of coarse sand at the contact of uprush with backwash, 3) the distance (A') between the two scarps, 4) their difference in height (B), 5) the average slope (Φ_m) of the beach between them and 6) the distance (A) of the upper scarp from dunes ridge. Also minor features as ripple marks and beach cusps have been measured. Moreover lenght (λ), height (h) and period (T) of waves have been directly observed.

Results.

The beach parameters of the table 1 have been correlated among them and compared with the sea state. The correlation data point out that: 1) to a decrease of parameter A corresponded an increase of parameters Φ, Φ', B, Φ_m and that 2) to a decrease of parameter A' or to an increase of parameter B corresponded an increment of Φ_m. The decrease of A has resulted dependent upon frequent waves coming from E and SE (force 3-4) with wind speed higher than 10 Knots. The observed ripple marks belong to the foreshore. Their parameters, i.e. the symmetry index (a/b) and ripple index (λ/h), are reported and compared with waves features in table 2. The most significant correlations resulted between waves steepness (h/ λ) and a/b and between h/ λ and ripple back angle. It seems therefore that increasing the waves steepness, ripples become more flat and asymmetrical. A direct correlation resulted also between waves steepness and spacing (S) of beach cusps.

Table 1

Date	A (m)	A' (m)	B (m)	Φ	Φ'	Φ_m
3 Oct.	78.85	31.35	0.40	2°	8°	0°43'
10 Oct.	72.20	13.30	0.50	4°	9°	2°8'
17 Oct.	70.30	19.95	0.50	4°	7°	1°26'
24 Oct.	74.10	21.85	0.50	5°30'	9°	1°16'
31 Oct.	74.70	14.00	0.40	2°	8°	1°37'
7 Nov.	74.40	11.40	0.40	2°	5°	2°1'
14 Nov.	53.80	17.30	0.60	4°	6°	1°57'
21 Nov.	52.70	20.00	0.70	5°	10°	2°1'
28 Nov.	60.80	15.00	0.70	5°	-	2°39'
5 Dec.	62.70	13.70	1.00	8°	-	4°8'
19 Dec.	62.70	12.50	1.00	7°	9°	4°36'
26 Dec.	62.70	12.15	0.85	8°	9°	4°

Table 2

Date	Ripple marks		Beach cusps		Waves features	
	/h	a/b	S(m)	Dir.	T(sec.)	h/
3 Oct.	7.77	2.79	9	SE	6	0.0131
10 Oct.	5.77	3.05	-	-	3	0.0143
17 Oct.	-	-	-	-	4.3	0.0170
24 Oct.	8.08	3.40	3.6	E	5	0.0142
31 Oct.	9 8.57	3.65 2.07	4.9	E	5	0.0142
7 Nov.	-	-	-	-	5.5	0.0390
14 Nov.	9.5 8	1 1.76	7.9	SE	4.5	0.0083
21 Nov.	7.27	1.77	6	E	4.8	0.0113
28 Nov.	-	-	14.1	E	5.4	0.0510
5 Dec.	6.1 6.3	2.02 2.4	7.6	E	4.6	0.0092
19 Dec.	7.5 8	1 2.54	-	-	calm	
26 Dec.	8	2.54	9	E	3.8	0.0150

References

Dennis (W) Berg, 1968 - Systematic collection of beach data. C.E.R.C. Reprint 4-69.

Tanner (W.F.), 1967 - Ripple marks indices and their uses. Sedimentology, 9, 2.

Intervention sur le 10-2.

BYRAMJEE -

1 - The grain size of the beach deposits should be taken in account in ripple-marks characteristics.

2 - The relationship between ripple and wave parameters cannot be extrapolated to storm waves or to "clapotis" waves.

Réponse : En effet Mr. BYRAMJEE souligne là les points faibles de la présentation. Les auteurs devront en tenir compte dans leurs recherches futures.