

## ABSTRACT

In the present M.S.C. thesis we have looked for a simple predictor of the changes beach's profile due to the cross-shore transport. The importance of these changes resides in the backward or advance movement of the beach profile. That movement implies a diminution or increase of the visible beach wide. In these days, it is a subject that becomes more relevant, not only for engineering purposes, also at environmental and social level. First of all, by tourist reasons and by the flaws caused in strolls and other infrastructures on the marine front due to diminution or total disappearance of the preexisting beach.

In order to control these events, it is required that the predictor parameter determines if the profile type is erosive, cumulative or in balance, (qualitative criterion), and also the transported volume (quantitative criterion). For this reason, we will study the cross-shore sediment transport mechanisms, in aim to establish the variables of the predictor parameter. At the present time, predictor parameters of qualitative type already exists, but only one that it is a quantitative type parameter too. The existing parameters will be the base for the study, because we will make the opportune modifications with the purpose of fitting them to the data. In the case of the previous modifications are not satisfactory, we will consider a new parameter.

The study will be based on the compiled data of the experiments made by: Kajima et al. (1982), Larson and Kraus (1988), Dette et al. (1992), Kraus and Smith (1994) and Jiménez et al. (1994); obtaining 56 data. Finally, we will analyze each parameter to verify its effectiveness in the prediction.

At that time, it will be necessary to select the most suitable parameter for both type of analysis (qualitative and quantitatively), so we will obtain the wished parameter.

It has been noted a displacement of the data of Kraus and Smith experiments (1994) respect the others. Maybe it's caused by the considered slope. In the profiles that are nearer to the equilibrium profile has a parabolic shape, so we have to consider a medium slope to be more representative.

In conclusion, we have found a good criterion for the prediction of the profile type according to  $N_0$  parameter (number of Dean), but the adjustment for the volumetric prediction has not been satisfactory. The previous bibliography has already demonstrated that the parameters that do not include the slope lack effectiveness in the prediction of the volume.

In addition to this, we have studied in detail JA and it have highly positive results at qualitative prediction. Besides, it has been best studied predictor in the quantitative criterion, although the results are not comparable with the qualitative one (98'1 % of qualitative success front to 87'7 % of the quantitative one). The cause of this resides on the fat that the quantitative analysis requires greater precision than the qualitative one, so it will be necessary to consider an uncertainty band to reduce the distortion that introduces the experimental errors.

Therefore, it's propose to use the following indications:

- evaluate the change tipe (acretion/erosion) using the  $N_0$  parameter (Dean's number), with the criterion in the rate 2'7.
- evaluate the magnitud of the change using the  $JA^*$  parameter, considering all the changes done in this work.

