INTRODUCTION

Foredunes of arid dunefields have been hardly studied. They present significant differences with respect to the foredune of other climatic zones. *Traganum moquinii* is the predominant plant species in the foredune of arid dunefields around the Canary Islands (including South Morocco, Mauritania and other close archipelagos, like Cape Verde). This bush species plays an important geomorphological role: as interaction with the aeolian sedimentary processes generates nebkhas, shadow dunes and arid parabolic shape dunes. In Maspalomas is located an example of this arid foredune. However, the touristic development in last decades have produced as result an altered system (Figure 1 and 2). It is the objective of this work to show the morphometric evolution of the foredune of an arid dunefield of the Canary Islands, Maspalomas (Gran Canaria), as well as explain the function of *Traganum moquinii* on it. The next historical aerial photography, orthophotos and WMS service were used.

METHODOLOGY

The measured variables were statistically analysed by a cluster analysis, using Ward method. In the next dendrogram the grouping of the observation plots according to the evolution of the variables is shown. Three groups can be separate: 1) represented by the plot 1 (N), 2) with the plots 2 to 6 (central area), and 3) including the plots 7 to 10 (S).

RESULTS

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DISCUSSION

The morphometric evolution of the Maspalomas foredune has not been homogeneous from N to S. The motives of this differential evolution are different anthropogenic and natural processes. The changes in the number of nebkhas (and Traganum moquinii plants) enable to characterize three types of foredune environments, which lie from N to S. In the Group 1 (N) human activities have removed all Traganum moquinii individuals. The Group 2 (central area) it is characterized by the stability in the number of nebkhas and *Traganum moquinii* individuals. It can be related with stability of the coast in this area, studied by other authors. The Group 3 (S) is characterized by the recovery of the number of nebkhas and the *Traganum moquinii* individuals, which disappeared due to factors not studied in detail yet, but attributable to natural processes (variation in the sediments input) as well as to human activities (direct action on the plants by tourists). Morphological variables measured in the first line of the foredune present significant relationship with the number of nebkhas (morphometric variable) and with the evolution of these variables. These relationships change according to the types of foredune environment group.

CONCLUSION

Three types of foredune environments have been identified in Maspalomas, considering the variation of the *Traganum moquinii* plants and some morphometric changes. Measured variables in the first line of the foredune present significant relations with the number of nebkhas. The changes detected and the relationships observed between variables are related to natural and anthropogenic processes. This information can be useful for arid coastal dune systems management, as well as for restoration tasks in arid foredunes.