Knowledge of near-shore wave condition is vital in the design of coastal and harbour structures, planning activities in the coastal zone, and as input to various other models, Knowing the offshore wave condition and the bathymetry of the concerned area, it is possible to evaluate wave characteristics in the near-shore using numerical wave transformational models.

Great computer savings and acceptable results can be achieved by horizontal, two-dimensional linear models. The earlier models of this type are based on the popular mild-slope equation, which assumes a mildly sloping bathymetry in its derivation. More recently developed extended liner refraction-diffraction model can be applied to steeper bathymetry.

However, close observations of the earlier comparisons of the extended model have shown that, when there are slope discontinuities in the bathymetry, the wave conditions

in the far-field are less accurate. The objective of this paper is to demonstrate the extended linear refraction-diffraction model. Since no relevant experimental data are available, numerical experiments are performed. The results of the extended two-dimensional model are compared with the wave height predictions of the three-dimensional linear model. Two types of bathymetry are modeled: The first, a shoal with a slope- discontinuity at the foot of the shoal and second, a smooth shoal with no slope-discontinuity. The results show that the model performs better in the case of the smooth shoal with no slope discontinuities.