

B - 10. 4. 2 A study of impact sea level rise for islands beach changes.

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Abstract: The formation and disappearance mechanisms of a sand cay were studied by a wave flume movable bed experiment. There is an optimum water depth for the formation of the maximum berm on the reef. Whereas the erosion rate of the sand cay rapidly increases when the water depth relative to the wave height on the reef exceeds a critical value. The topographic changes of a sand cay due to wave action under the changing sea level condition were studied by a sand bed experiment. The beach changes were caused mainly by the longshore sand transport in the low sea level condition, whereas in high sea level condition the overtopping flow becomes very important. These results well agree with the observed data in the field.

Key Words Coral reef, Sand cay, Sea level rise, Shore protection.

I. HYDRALIC MODEL EXPERIMENT ON SAND CAY FORMATION

The formation and disappearance mechanisms of a sand cay were studied by a wave flume movable bed experiment (shown Figs. 1, 2). There is an optimum water depth for the formation of the maximum berm on the reef. Whereas the erosion rate of the sand cay rapidly increases when the water depth relative to the wave height on the reef exceeds a critical value.

II. HYDRALIC MODEL EXPERIMENT ON SAND CAY CHANGES AND SHORE PROTECTION UNDER SEA LEVEL RISE

The topographic changes of a sand cay due to wave action under the changing sea level condition were studied by a sand bed experiment (shown Figs. 3-9). The beach changes were caused mainly by the longshore sand transport in the low sea level condition, whereas in high sea level condition the overtopping flow becomes very important. These results well agree with the observed data in the field.

REFERENCES

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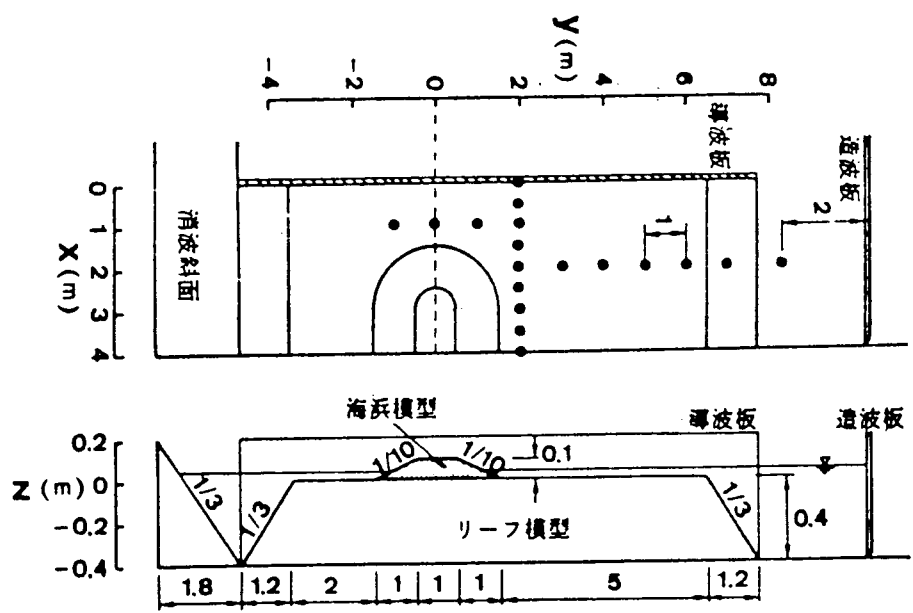
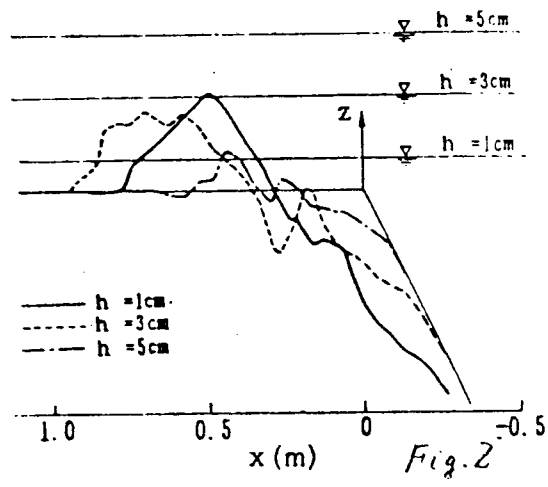
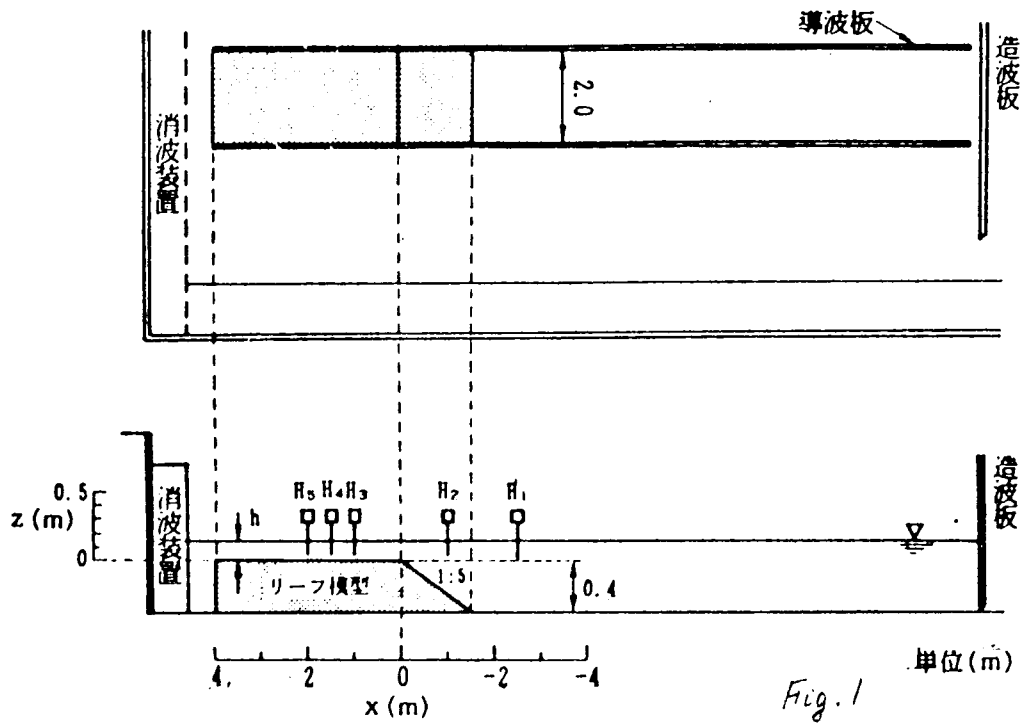


Fig. 3

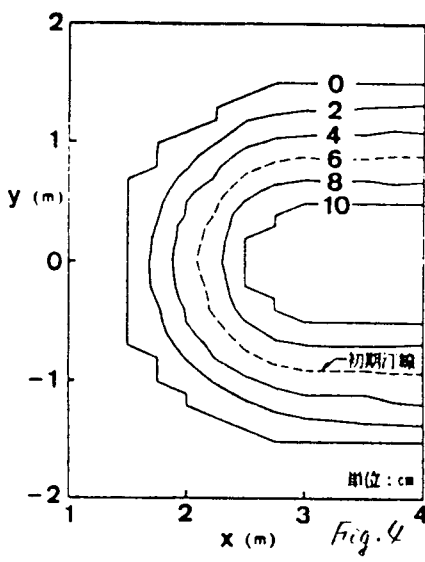


Fig. 4

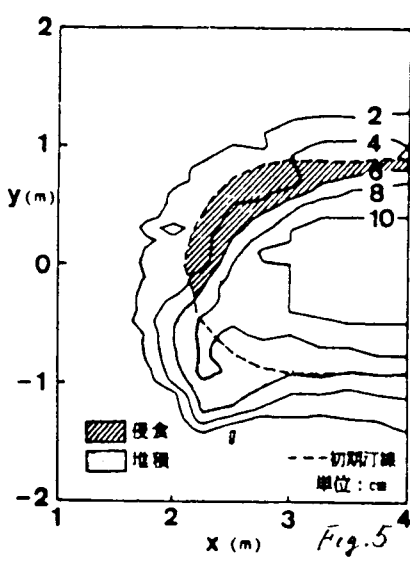


Fig. 5

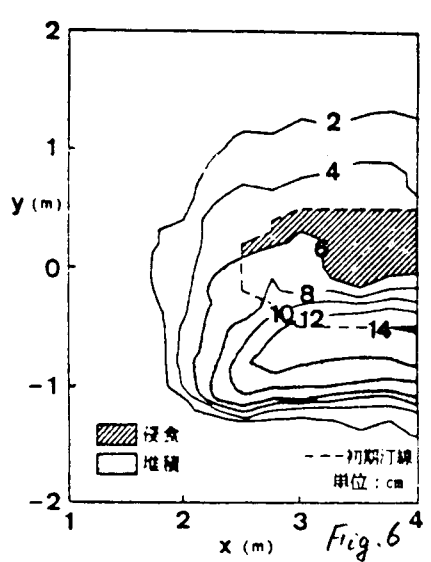


Fig. 6

入射波

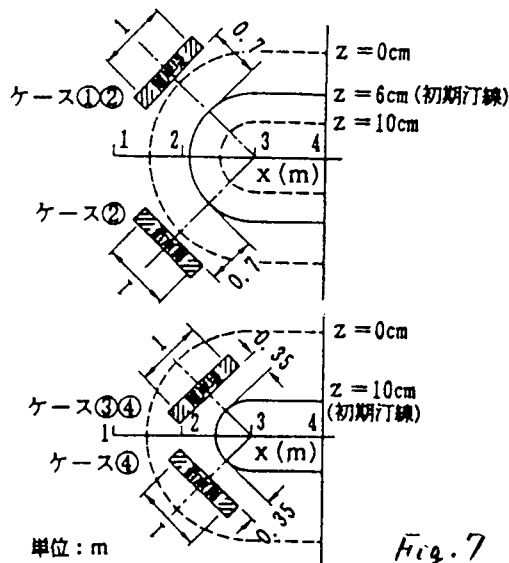


Fig. 7

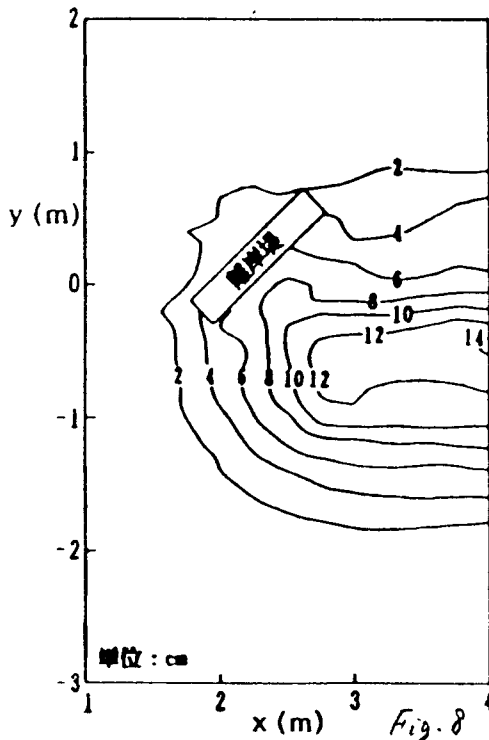


Fig. 8

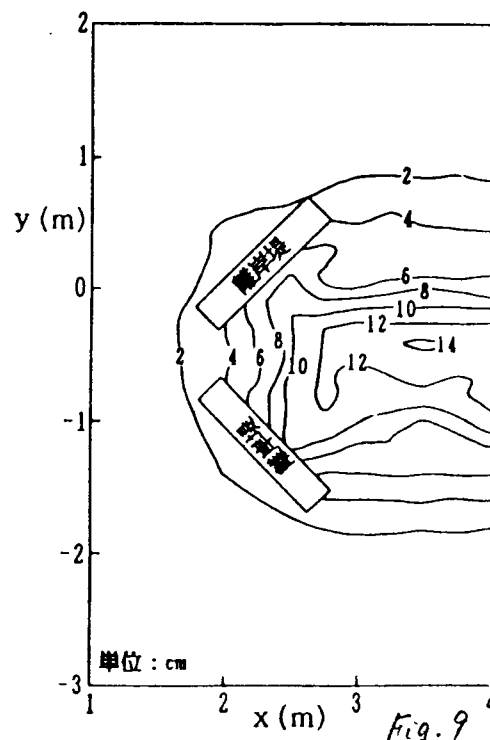


Fig. 9