



# PLATFORM EROSION AT HOPE GAP

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## 1 Aims

Investigate platform erosion at Hope Gap with the aim to identify whether rare use of heavy machinery (tracked vehicles) on the platform leads to a detectable erosion pattern as tracks associated with tracked vehicles can be seen in the field.

## 2 Summary

There is very little erosion on the chalk platform at Hope Gap. An increased erosion of the tracked vehicle tracks (TVT) cannot be detected. The main pattern of erosion relates to the deepening of runnels and the backwards erosion of steps in chalk layers. Another prominent feature close to the cliff is the movement of chalk blocks which are remainders of cliff falls.

## 3 Introduction

A Hope Gap, access to the foreshore has existed for many decades ranging from steps through a v-shaped incision in the cliff to steps in front of the cliffs.



Figure 1: Old stairs at Hope Gap in 1979 (Lewes District Council)

The old stairs shown in Figure 1 were demolished in 1979 and new steps were built. For the demolition of the old steps and the excavation of the foundations for the new steps an

excavator was driven along the shore platform from Cuckmere Haven. The excavator was relatively small (Figure 2). The TVT can be seen in the photographs shown in Figure 3.



Figure 2: Image of the excavator used in 1979 demolishing the old stairs (Lewes District Council)

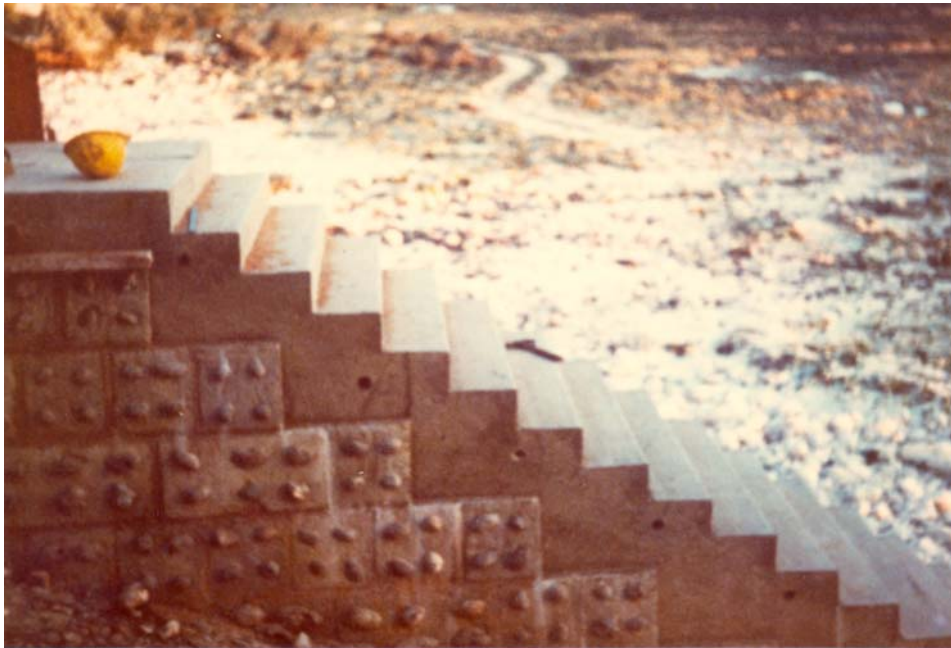


Figure 3: View eastwards across the new steps showing TVT as two parallel white bands in the background (Lewes District Council).

In 1997, it became necessary to repair and extend the gabions to the east of the steps. Again, an excavator had to be brought in via Cuckmere Haven to make the necessary excavations. The excavator was only slightly bigger than in 1979 ().





Figure 4: Excavator used in 1997 for the repair of the gabions to the east of the steps (Lewes District Council).

## 4 Results

Digital elevation models were created from the air photographs taken in 1973 and 2001. The result can be seen in Figure 5. There is little indication that the TVT have eroded more than the surrounding chalk. The lowest lying area immediately south of the steps seem to have eroded more than the platform further east though most of the erosion in the vicinity of the steps is related to beach level changes.

The most interesting feature as the clusters of red and blue north of the red line and to the south at its eastern end. Figure 6 shows in detail how some block seem to have moved over short distances (block 2 has moved ~3.7m to the south east) while others (e.g. block 1) have either moved much further or have broken up. Blocks 3, 4 and 5 were located in 1973 on the southern TVT so either they have moved by 1979 or they were moved away by the excavator.

The concentration of erosion along steps and runnels can be seen in Figure 7.

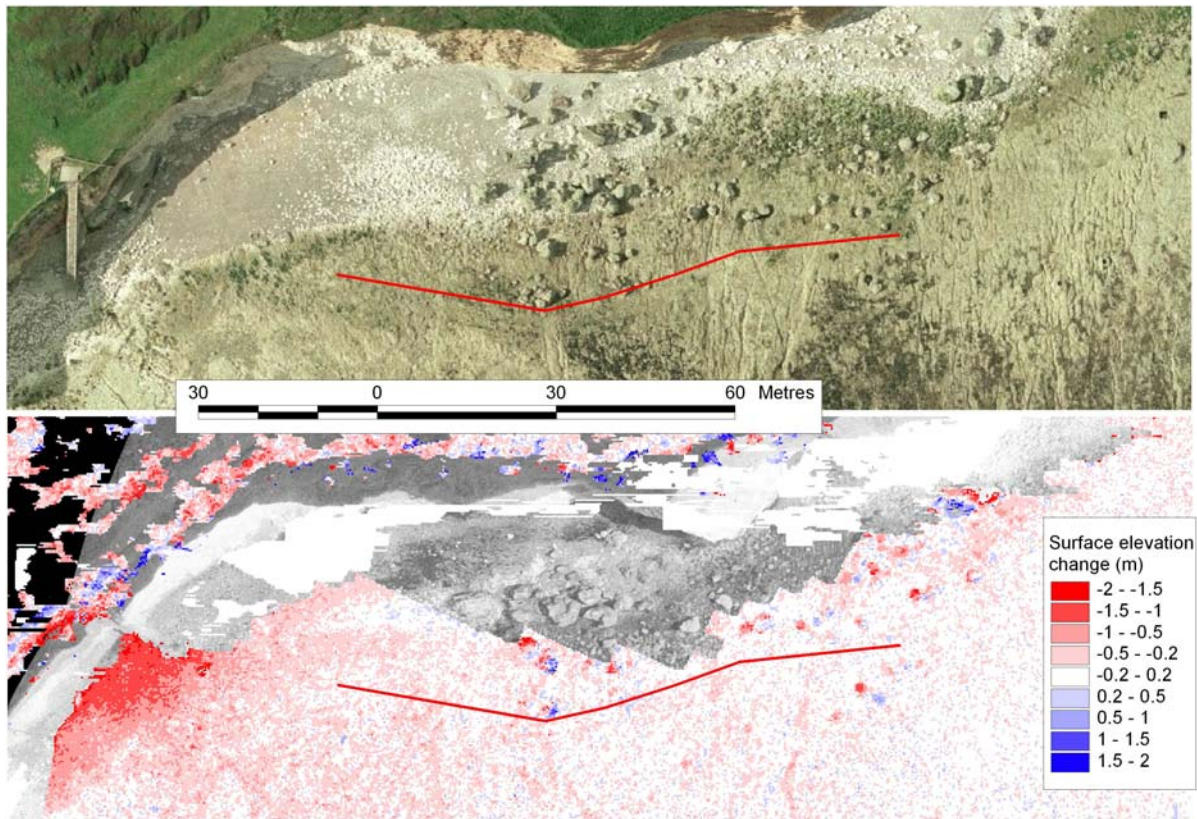


Figure 5: Cliff and shore platform east of Hope Gap steps. Top: 2001 orthophoto with TVT weakly visible just south of the red line (curving corresponds to that shown in Figure 3). Bottom: Elevations differences overlain over 1973 orthophoto and the red line in the same place.

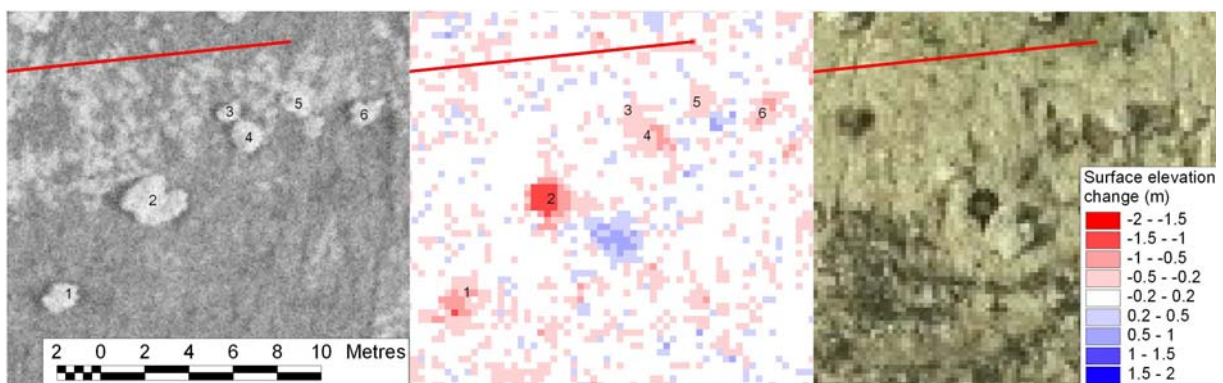


Figure 6: Detail of platform elevation change at the eastern end of the red line in Figure 5.



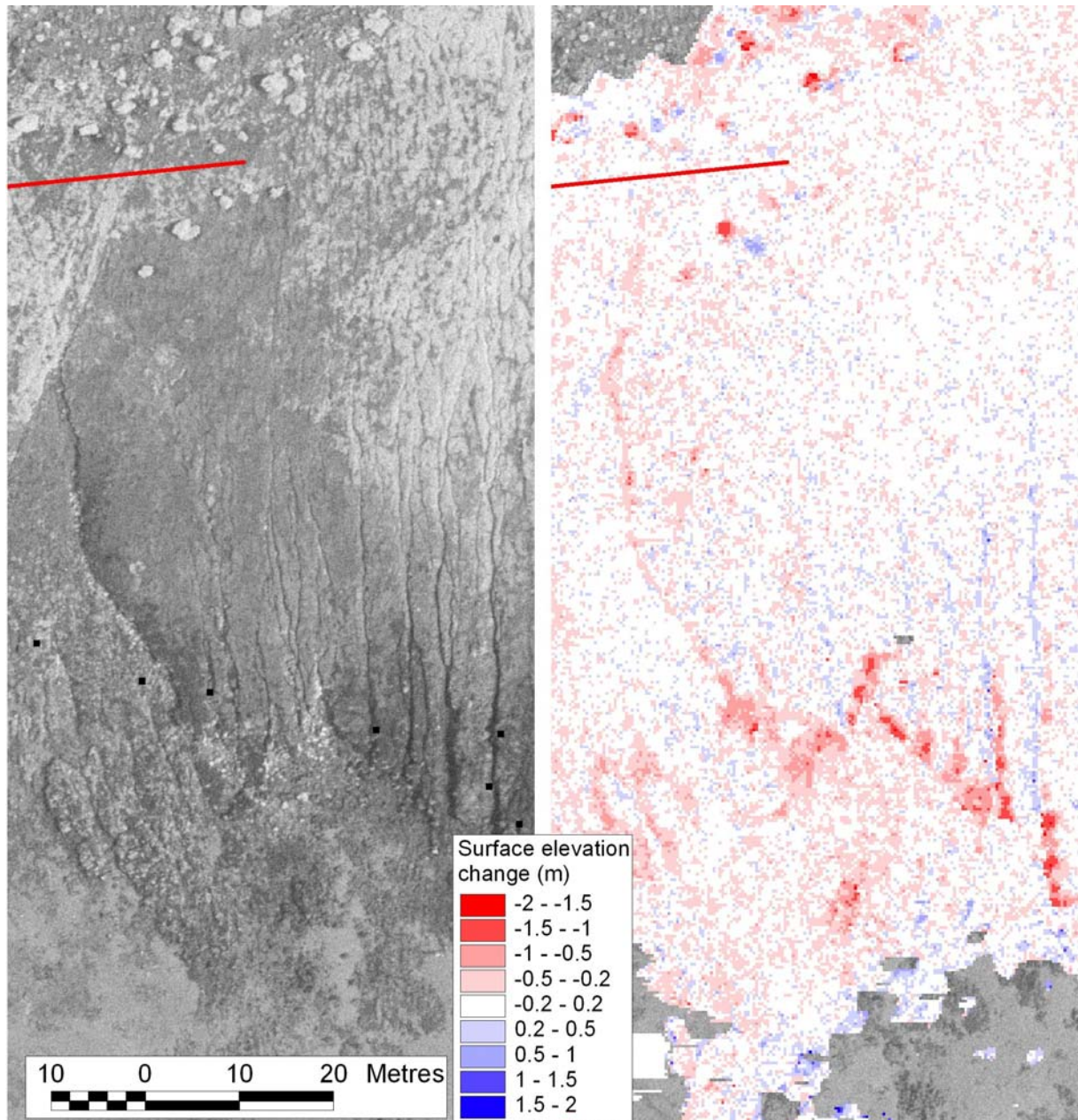


Figure 7: Erosion along steps and runnels. Left: 1973 orthophoto. Right: Surface elevation differences.