

N. DE HOOP VLEI GORGE

Desk Note N8a. Hydrology – De Hoop Vlei – Overview



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The Salt River (Sout Rivier) usually carries relatively small amounts of water. The vlei is separated from the sea by a 2.5 km wide strip of sand dunes. The question, which is often asked, is whether the Salt River had an outlet into the sea in historical times. On some maps from the 19th century the De Hoop Vlei is connected to the sea and on other maps it is not.

The bathymetry of the vlei was discussed earlier in this Chapter. Calculations of the amount of water in the vlei were offered by some researchers. Nevertheless, these calculations are meaningless without referencing them to a certain water level. The vlei water level is determined by the rainfall over the river’s catchment area and water from springs along the shores of the gorge. The vlei loses water through seepage (some also suggested sinkholes) and evaporation.

A regime of floods and droughts of the vlei has already been observed by the early settlers of the area, but the records are poor. This regime can now be studied via satellite images (Figure 1).



Figure1. Satellite images of a dry vlei (left) and of a full vlei (right). Arrow indicates the north.

[The Salt River was flowing to the ocean during the later Pleistocene, as shown by HC Cawthre et al, 2020 (Figure 2)].

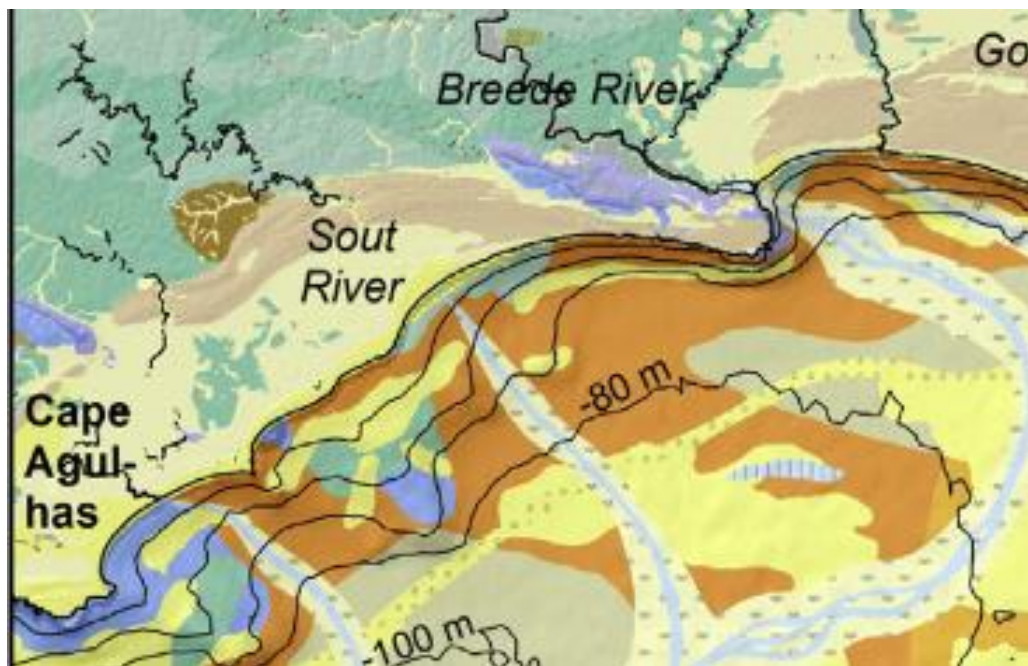
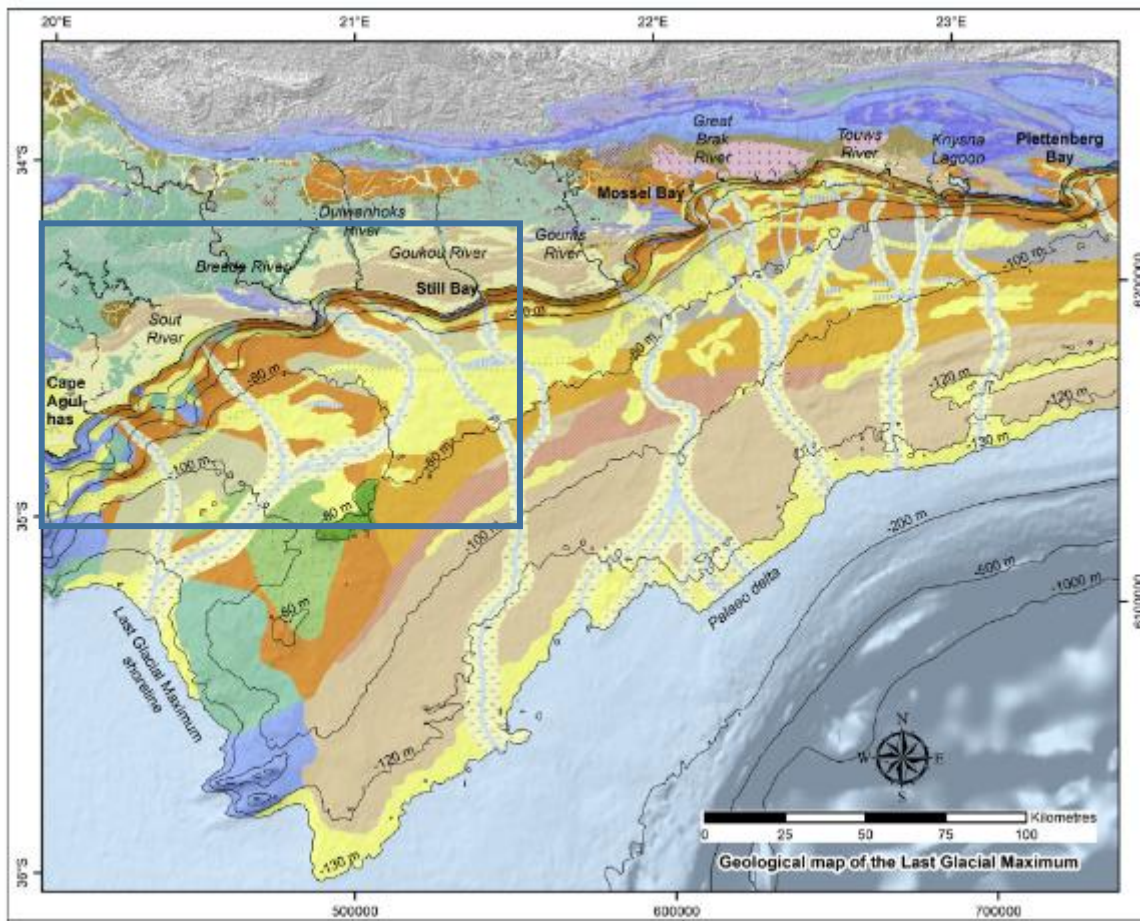


Figure2. Geology map of the Palaeo Agulhas Plain, showing the rivers which drain the South Coast flowing to the ocean. Box in the top is enlarged at the bottom.

Source: HC Cawthra et al, 2020.

Some of the floods were gradual: the vlei was filled during winters of good rains. The latest of such floods occurred in 2007 and 2014. Several floods were flash floods: the vlei was filled over two to three days due to cloud bursts or unusual weather patterns. Such events occurred in 1792, 1906, 1957 and 2021. During some floods, the low-lying areas south-west of the vlei were inundated (Figures 3 and 4).

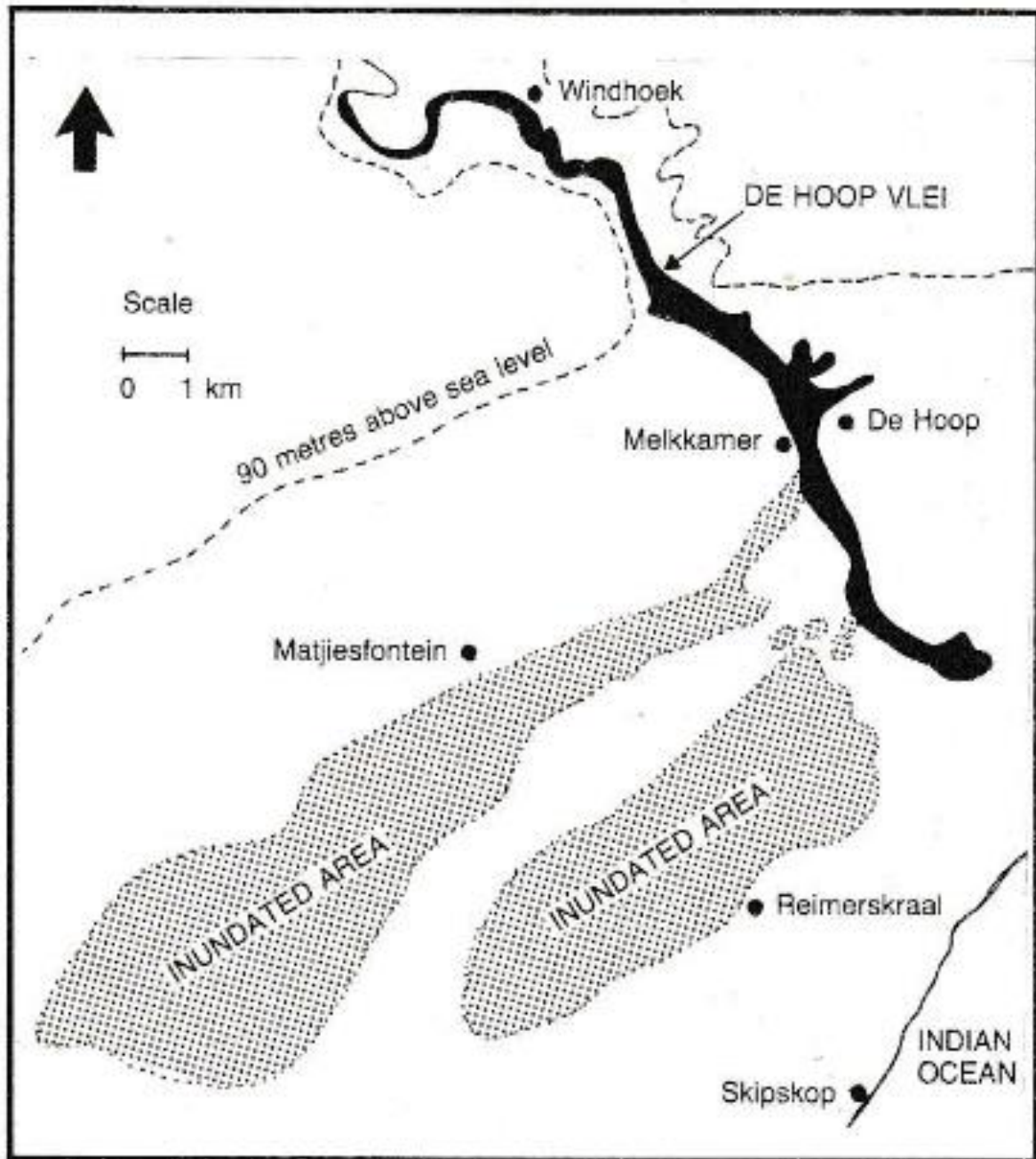


Figure 3. The extent of the 1957 flood.

Source: unknown.



Figure 4. Satellite image showing the extent of the May 2021 flood. The water is brown due to clay in suspension.

From 1960 water level fluctuations are monitored by a hydrometer, situated in the south part of the vlei. The following notes are about the vlei water levels:

- a. In the 19th century
- b. From 1900 to 1960
- c. The 1957 flash flood
- d. From 1960 to 2020
- e. The 2007 and 2014 floods
- f. The May 2021 flash flood

The flood-and-drought regime, possible outlet to the sea and the drainage of the De Hoop Vlei are subjects for further studies.