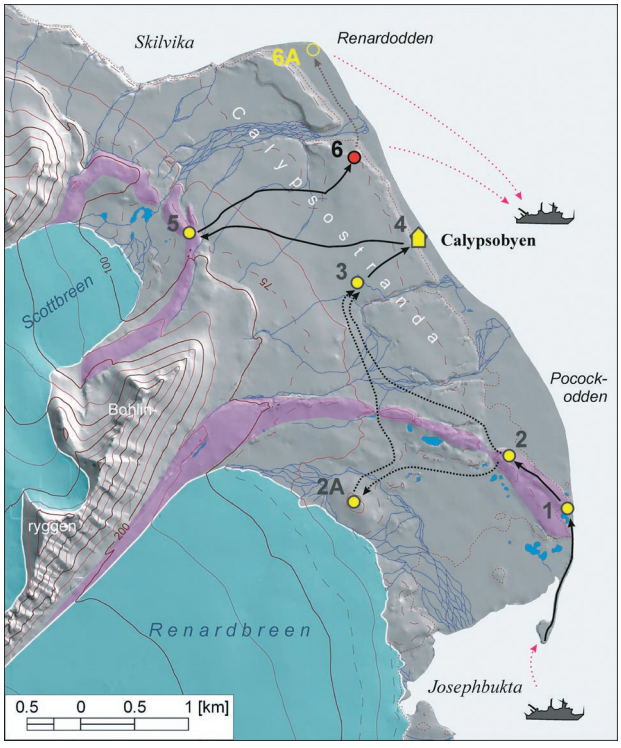
Point 6 – Calypsostranda *77° 33' 55" N, 14° 29' 41" E*

Relief and development of Calypsostranda

Piotr Zagórski*

Department of Geomorphology, Institute of Earth Sciences, Maria Curie-Skłodowska University, Lublin, Poland



The direct effect of sea level changes connected with glacial-interglacial cycles and glacioisostasy are the raised marine terraces. Very often they develop systems of steps within which there are characteristic storm ridges marking former shoreline, dead cliffs and paleoskerries related to marine abrasion. On Calypsostranda area seven terraces can be distinguished. The range of their height is between 2 and 85 m a.s.l. (Zagórski 2002, Zagórski et al. 2006) (Fig. 23).

The highest is the terrace VII (70–85 m) developed as slightly slanting abrasion platform. In the region of the Bohlinryggen, it neighbours to denudation level (80–90 m and 125–140 m) and shows clear traces of glacial remodelling. On the forefield of the Scott Glacier it was aggradated partly with ice-cored moraine ridges (Fig. 24). The abrasive character belongs to the terrace VI (height 50–60 cm). The age of those terraces is difficult to state due to a lack or vestigial occurrence of accumulative sediments. Their surfaces show traces of distinct glacial remodelling so the guess of pre-Weichselian age.

The marine terraces (V–I), which are located lower, are of accumulative character. They are made of various sediments as regards genesis and stratigraphy. It indicates multistage of development of the surfaces in Late Pleistocene when the periods of marine inundation interlaced with the advances of glaciers.

The marine terrace V (40–50 cm) probably marks the maximum limit of sea inundation from about 12 ka BP, what means after the last maximum Weichselian deglaciation (Fig. 25). That is the slightly slanting plain in the lower part accumulative changing into abrasive-accumulative one. In its morphology it can clearly distinguished the storm ridge of maximum width 60 m. Its length is at the foot of a denudation level 110–130 m (Wijkanderberget region) to Skilvika where it was cut abrasively.

The dominant terrace IV (30–40 m) is accumulative, nearly flat with fossil storm ridges and covered by fluvioglacial and marine sediments (Pleistocene and Holocene), which are lying on Palaeogene and Precambrian bedrock. Glacial sediments (medial moraine) are connected with the conjunction of glacier tongues from the region: Recherche Fiord and Van Keulen Fiord (Fig. 25). Near the Renardodden the terrace IV is limited by dead marine cliff modelling by solifluction. From the Skilvika terrace IV is

* e-mail: pzagorsk@biotop.umcs.lublin.pl

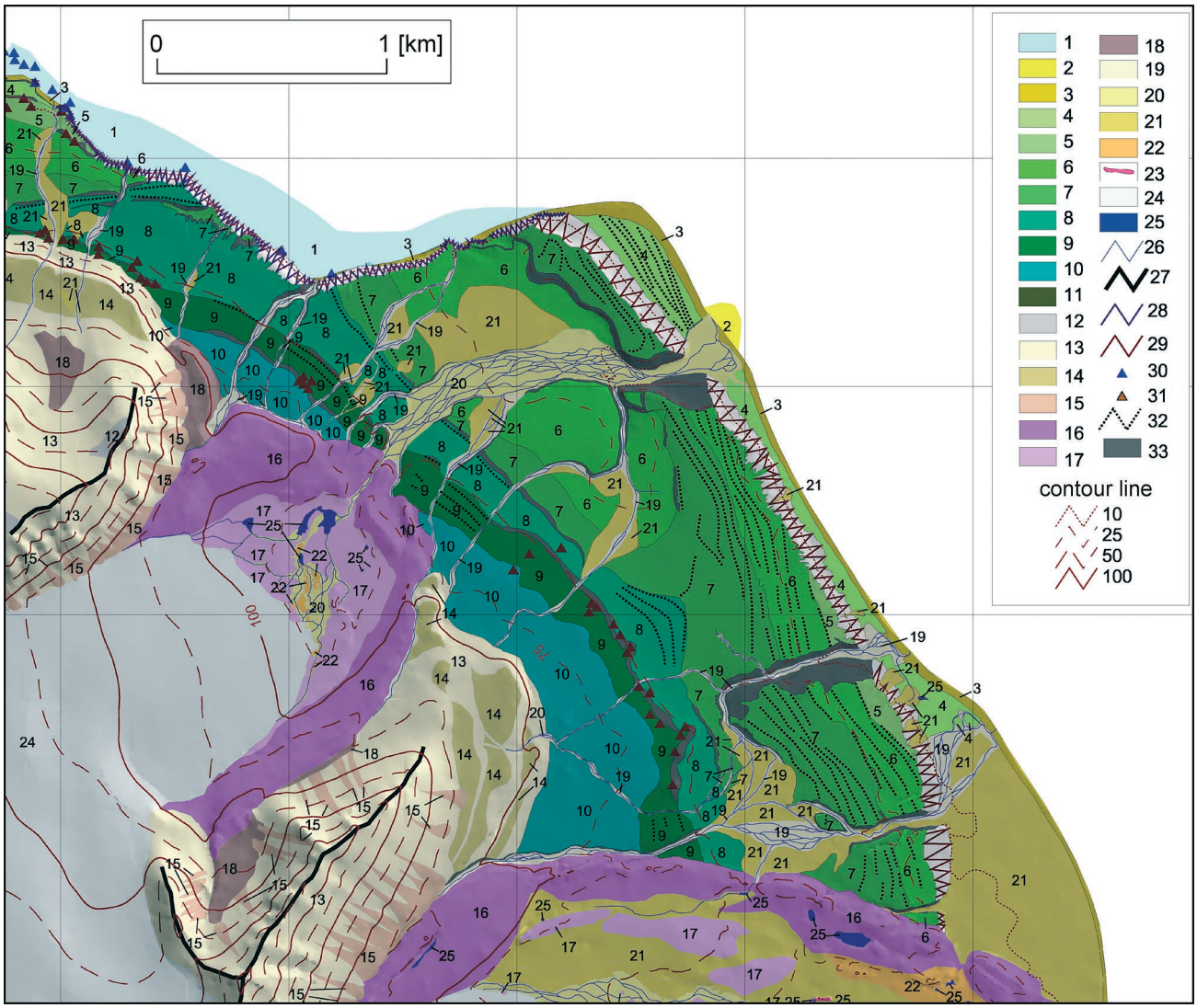


Fig. 23. Geomorphological map of the forefield of the Renard Glacier (Zagórski 2002)
1 – contemporary abrasion platform, 2 – tidal flat, delta cons, 3 – contemporary storm ridge, 4-terrace I (2–8 m), 5 – terrace II (10–20 m), 6 – terrace III (25–30 m), 7 – terrace IV (30–40 m), 8 – terrace V (40–50 m), 9 – terrace VI (50–65 m), 10 – terrace VII (70–85 m), 11 – terrace VIII (105–120 m), 12 – superficial flattening, 13 – slopes, 14 – denudation-structure level, 15 – talus cones, 16 – ice-cored moraine ridges, push and lateral moraines, 17 – ground and ablation moraines, 18 – rock glaciers (nival), 19 – floors of pronival valleys, 20 – contemporary sandur plains and fans, alluvial cones, 22 – kame, 23 – esker, 24 – glaciers, 25 – lakes, 26 – rivers, 27 – ridges, 28 – active marine cliffs, 29 – dead marine cliffs, 30 – skerries, 31 – paleoskerries, 32 – old storm ridges, 33 – edges.

Fig. 24. The view of Calypsostranda from Wijkanderberget (Photo Piotr Zagórski 2006)

destroyed intensely by abrasion. In that part of Calypsostranda it surrounds circularly distinct plain depression within which the lower terrace III of 25–30 m height was distinguished. Its fragments occur also between the valley of the Scott River and moraine ridges of the Renard Glacier and have character of slightly inclined accumulative surface with fossil storm ridges (Fig. 23, 25). On the distance from the Calypsobyen to extramarginal sandur fans of the Renard Glacier the terrace III merge into the lower terrace II (10–20 m). The dead cliff from east of Calypsostranda proves the intensity of abrasion of both terraces III and II in early Holocene.

The lowest terrace I (2–8 m) is a beach around the whole shore between Josephbukta and the Renardodden (Fig. 23). On the distance from the vast extramarginal sandur fans of the Renard Gla-

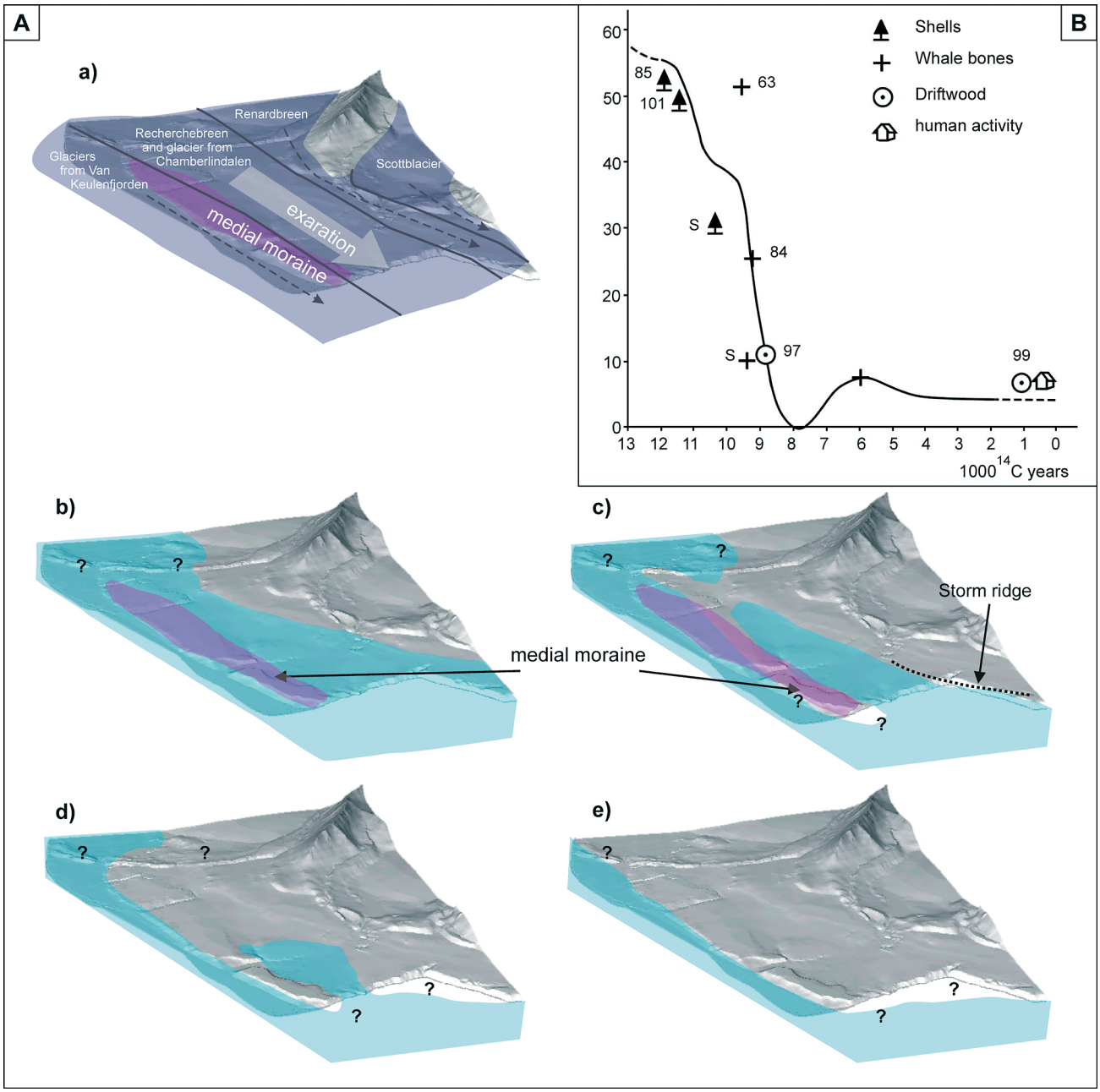


Fig. 25. A. Phases of development of Calypsostranda at the decline of Weichselian and in Holocene (Zagórski 2002)
a – the zone of influences of the glaciers during the glacial maximum of the Late Weichselian (about 20 ka BP), b – shoreline at 12 ka BP (development of terrace V), c – shoreline at 11–10 ka BP (development of terrace IV), d – shoreline at 10–9 ka BP (development of terrace III), e – shoreline at 8 ka BP (development of terrace II); B. Shoreline displacement curve for north-western Wedel Jarlsberg Land (Lognedallen) (after: Salvigsen et al. 1991)

cier in the Pocockodden region to the mouth of the Scott River, the terrace I is build of two old storm ridges divided by two depressions developed as lagoons. In the neighbourhood of the Renardodden, as the result of intensive accumulation some now fossil ridges were made. On their surface there are numerous settlements sites from XVII and XIX century (Krawczyk, Reder 1989).