

UPDATED INTERPRETATIONS OF LATE QUATERNARY SECTIONS IN WEST CORNWALL RESULTING FROM WINTER STORMS IN RECENT PAST

H.C.L. JAMES¹ AND P.J. EALEY²



James, H.C.L. and Ealey, P.J. 2018. Updated interpretations of Late Quaternary sections in West Cornwall resulting from winter storms in recent past. *Geoscience in South-West England*, **14**, 140–149.

The unprecedented series of winter storms of 2013/2014 removed rock armour sea defences, cut new sections and scoured beach sands from the adjacent shore platforms as well as breaching of coastal defences, cliff falls and flooding of coastal areas. Quaternary coastal sections at Godrevy (SSSI) and Gunwalloe Fishing Cove have been revisited and a Holocene clay deposit at Kennack Sands is documented for the first time. The bedrock behind the Quaternary section at Godrevy, is increasingly being revealed following the winter storms with new exposures of the fossil cliff at the northern and southern ends of this important Quaternary site and its landward configuration is shown to be of significant importance in the development of the section. It is argued that the cementation of the sandrock (aeolianite) prominent in Godrevy North, extended much further south to Godrevy Rocks prior to its current decalcified condition. Stratified slope sands and thinner slate-rich layers have been identified on the northern flank of the Magow Rocks immediately above the bedrock. These are either coeval with the “littoral” sands above the raised beach further north or older than both.

At Gunwalloe Fishing Cove, the total collapse of a previously described Quaternary section to the north during the 2013/2014 storms has been compensated by the exposure of a new Quaternary section to the south, comprising raised beach, stratified colluvial slope sands and upper periglacial head. Scouring of beach shingle seawards during winter storms has shown that the particularly steep beach profile here results from the frontal erosion of the former shore platform by wave quarrying and abrasion during the Post-Glacial sea level rise.

Scouring of beach sands at Kennack Sands during storms has revealed the full extent of the Holocene clay beneath, which is interpreted as a lagoonal deposit formed behind the dunes as they moved landward during the Post-Glacial sea level rise. They are similar in origin to the Praa Sands peat and the submerged forest at Mounts Bay further west.

¹ 7 Upper Farm Road, Oakley, Basingstoke, Hampshire RG23 7HN
(hcljames@tiscali.co.uk)

² 8 Minster Fields, Manaccan, Helston, Cornwall TR12 6JG

Keywords: Cohesive clay, shore platform, storms, sandrock, Pleistocene colluvium, coastal boulders, submerged forests

INTRODUCTION

The South-West has always been prone to the effects of Atlantic depressions, causing heavy rainfall, breaching of coastal defences, removal of beach sand, cliff falls and flooding of coastal areas. In January/February 2014 the effects of an unprecedented series of Atlantic depressions and swells were particularly severe (Poate *et al.*, 2014; Scott *et al.*, 2016 and Masselink *et al.*, 2016). This paper revisits/reinterprets Quaternary coastal sections at Godrevy (SSSI) and Gunwalloe Fishing Cove, initially described more than 40 years ago and documents, for the first time, a Holocene clay deposit at Kennack Sands that has been gradually revealed by reported storm activity over the last 20 years (Fig. 1).

GODREVY

This ~ 1 km long coastal Pleistocene section forms the northern margin of St Ives Bay (Figs 1, 2) which is separated from the central part of the bay by the mouth of the 13 km long Red River. This north-west facing coast is the most exposed part of St Ives Bay (Masselink *et al.*, 2016). The bedrock comprises

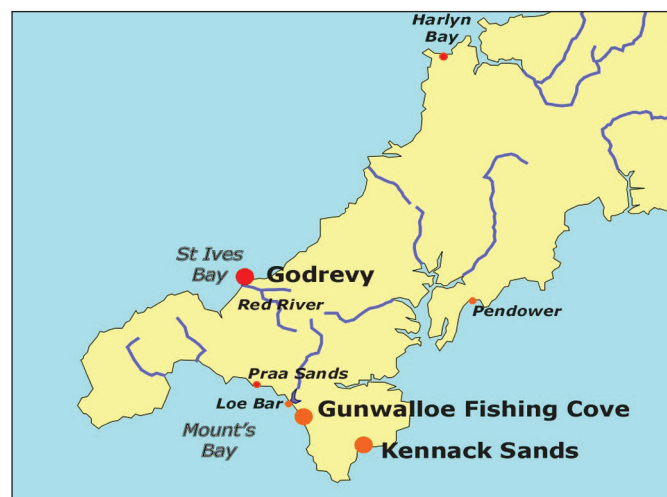


Figure 1. Location of three sites discussed in the paper.