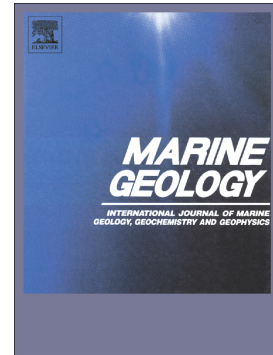


Accepted Manuscript

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PII: S0025-3227(16)30375-9
DOI: doi: [10.1016/j.margeo.2016.12.008](https://doi.org/10.1016/j.margeo.2016.12.008)
Reference: MARGO 5560

To appear in: *Marine Geology*

Received date: 27 July 2016
Revised date: 8 December 2016
Accepted date: 18 December 2016

Please cite this article as: Ángel Puga-Bernabéu, Robin J. Beaman, Jody M. Webster, Alex L. Thomas, Geraldine Jacobsen , Gloria Knolls Slide: A prominent submarine landslide complex on the Great Barrier Reef margin of north-eastern Australia. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Margo*(2016), doi: [10.1016/j.margeo.2016.12.008](https://doi.org/10.1016/j.margeo.2016.12.008)

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Gloria Knolls Slide: a prominent submarine landslide complex on the Great Barrier Reef margin of north-eastern Australia

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Abstract

We investigate the Gloria Knolls Slide (GKS) complex on the Great Barrier Reef margin of north-eastern Australia, the largest extant mixed carbonate-siliciclastic province in the world. Based on the most complete bathymetric and sub-bottom profile datasets available for the region, we describe the main surface and subsurface geomorphologic characteristics of this landslide complex. The GKS forms a 20 km along-slope and 8 km across-slope indentation in the margin, extending from 250 to 1350 m depth, and involves a volume of 32 km³ of sediment remobilized during three events. Three main seafloor terrains can be distinguished based on seafloor morphology: a source area, a proximal depositional area and a distal depositional area. The source area includes a main headwall scarp with a maximum height of 830 m and a secondary scarp at 670 m depth. The proximal depositional area is flat and smooth, and lacks debris exposed on the seafloor. The distal depositional area has a hummocky surface showing a distinctive cluster of eight knolls and over 70 small debris blocks. A dredge sample from the top of the largest knoll at a depth of 1170 m reveals the presence of a cold-water coral community. In the sub-bottom profiles, the mass-transport deposits in the GKS are identified below the background sediment drape as partially confined, wedge-shaped bodies of mostly weak amplitude, transparent reflectors in the proximal

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