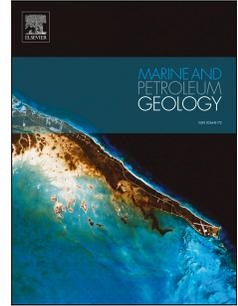


Accepted Manuscript

Sea-level control on the submarine fan architecture in a deepwater sequence of the Niger Delta Basin

Jiajia Zhang, Shenghe Wu, Guangyi Hu, Ting-en Fan, Bin Yu, Peng Lin, Shining Jiang



PII: S0264-8172(18)30154-5

DOI: [10.1016/j.marpetgeo.2018.04.002](https://doi.org/10.1016/j.marpetgeo.2018.04.002)

Reference: JMPG 3309

To appear in: *Marine and Petroleum Geology*

Received Date: 25 May 2017

Revised Date: 26 March 2018

Accepted Date: 3 April 2018

Please cite this article as: Zhang, J., Wu, S., Hu, G., Fan, T.-e., Yu, B., Lin, P., Jiang, S., Sea-level control on the submarine fan architecture in a deepwater sequence of the Niger Delta Basin, *Marine and Petroleum Geology* (2018), doi: 10.1016/j.marpetgeo.2018.04.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 **Sea-level Control on the Submarine Fan Architecture in a Deepwater** 2 **Sequence of the Niger Delta Basin**

3 Jiajia Zhang^a, Shenghe Wu^{a,*}, Guangyi Hu^b, Ting-en Fan^b, Bin Yu^b, Peng Lin^a, Shining Jiang^a

4 ^a State Key Laboratory of Petroleum Resource and Prospecting, College of Geosciences, China University of
5 Petroleum (Beijing), Beijing, China

6 ^b Research Institute, China National Offshore Oil Corporation, Beijing, China

7 * Corresponding author. Present address: State Key Laboratory of Petroleum Resource and Prospecting, College of
8 Geosciences, China University of Petroleum (Beijing), Beijing 102249, China. Tel.: +86 13701135182

9 E-mail address: reser@cup.edu.cn (Shenghe Wu); zhangjiajia0103@gmail.com (Jiajia Zhang)

10 **Abstract**

11 Submarine fan architecture has long been considered much complicated as controlled by both
12 allogenic and autogenic mechanisms. However, to which extent the allogenic sea-level change
13 controls the submarine fan architecture is still unclear. This study uses integrated 3-D seismic,
14 well-log and core data to characterize the submarine fan architecture in a deepwater sequence of the
15 Niger delta basin. Correlation of the timing of architecture units to high-frequency sea-level curve
16 helps to investigate the sea-level control on architecture distribution and evolution of submarine fan
17 systems.

18 The studied sequence is a 3rd-order sequence that formed during 12.5–10.5 Ma and contains a
19 lowstand systems tract (LST) and a transgressive-highstand systems tract (TST-HST). We find that
20 the LST develops a single channel system that is terminated by a lobe system; whereas the TST-HST
21 develops two mutually incised channel systems and mudflow deposits, which are distinct from the
22 conventional condensed sections and interpreted to result from the repeated 4th-order sea-level cycles
23 during the TST-HST of the 3rd-order sequence. Single submarine fan systems, which last for ~0.3–0.6
24 Myr, are assumed to form in response to single 4th-order sea-level cycles since they are well
25 correlated with each other. Each single submarine fan system contains several vertically stacked
26 complex sets, which are well correlated with 5th-order sea-level cycles that last for ~0.1–0.2 Myr,
27 suggesting their potential genetic links. Different complex sets in a single submarine fan system
28 exhibit variable architectural features, which are interpreted to result from the evolution of
29 gravity-flow types as the 4th-order sea-level fluctuates. Thus for the Niger system, at time scales >0.1
30 Myr, the allogenic sea-level change is considered to have played a major role in controlling the
31 submarine fan architecture at the scale of submarine fan systems and complex sets, whereas
32 autogenic effects on the submarine fan architecture may increase and become dominant on time
33 scales <0.1 Myr.

34 **Keywords:** submarine fan system; depositional architecture; high-frequency sea-level change; Niger
35 Delta Basin

36 **1. Introduction**

37 Submarine fan systems have been the subject of extensive studies because of their enormous
38 hydrocarbon potential. Due to the multiple triggering mechanisms of deepwater sediment gravity

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات