

Supplement 1

Supporting Online Material for A synthesized study of the spatiotemporal evolution of central Yellow Sea Mud depositional processes during the Holocene

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Materials and Method

Definition of mud thickness for cores without grain size or coarse fraction datasets

(1) Core 43

Core length: 3.65 m

Lithology: 0-3.65m, silty mud (Wang et al., 1987).

Definition of mud thickness: Core 43 is muddy sediments from the top to bottom and dose not reached the lower boundary of the Holocene Mud layer. The thickness of Core 43 is 3.65m.

(2) Core 46

Core length: 4.8 m

Lithology: 0-4.2m, dark gray argillaceous silt; 4.2-4.8m, grey silty mud (Wang et al., 1987).

Definition of mud thickness: Core 46 is muddy sediments from the top to bottom and dose not reached the lower boundary of the Holocene Mud layer. The thickness of Core 46 is 4.8 m.

(3) Core 47

Core length: 3.75 m

Lithology: 0-3.75m: silty mud (Wang et al., 1987).

Definition of mud thickness: Core 47 is muddy sediments from the top to bottom and dose not reached the lower boundary of the Holocene Mud layer. The thickness of Core 47 is 3.75 m.

(4) Core 50

Core length: 4.3 m

Lithology: 0-2.35m: gray silty mud; 2.35-4.3m light gray muddy silt (Wang et al., 1987).

Definition of mud thickness: Upper part of core 50 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 50 is 2.35 m.

(5) Core 52

Core length: 4.4 m

Lithology: 0-2.7m silty mud; 2.7-4.4m muddy silt (Wang et al., 1987).

Definition of mud thickness: Upper part of core 52 is muddy sediments and it reached the lower boundary of the

Holocene Mud layer. The thickness of Core 52 is 2.7 m.

(6) Core 72

Core length: 3.75 m

Lithology: 0-3m gray silty mud; 3-3.45 dark brown peat layer; 3.45-3.75m argillaceous silt ([Wang et al., 1987](#)).

Definition of mud thickness: Upper part of core 72 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 72 is 3 m.

(7) Core 90

Core length: 3.1 m

Lithology: 0-0.6m: gray argillaceous silt; 0.6-3.1m: gray fine sandy silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 90. The thickness of Core 90 is 0 m.

(8) Core 91

Core length: 3.31 m

Lithology: 0-1.3m: grey muddy silt, 1.3-3.31m: grey fine sandy silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 91. The thickness of Core 91 is 0 m.

(9) Core 92

Core length: 3.75 m

Lithology: 0-0.7m yellow gray silty silt with a small amount of fine sand; 0.7-2.5m grey silt; 2.5-3.75m dark grey silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 92. The thickness of Core 92 is 0 m.

(10) Core 93

Core length: 3.31 m

Lithology: 0-2.05m: gray argillaceous silt; 2.05-3.31m black gray silty mud ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 93 during Holocene. The thickness of Core 93 is 0 m.

(11) Core 94

Core length: 4 m

Lithology: 0-0.9 m grey muddy silt, 0.9-3.79 m grey fine sandy silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 94 during Holocene. The thickness of Core 94 is 0 m.

(12) Core 96

Core length: 3.3 m

Lithology: 0-3.3m: grey silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 96 during Holocene. The thickness of Core 96 is 0 m.

(13) Core 97

Core length: 3 m

Lithology: 0-0.55m: gray argillaceous silt; 0.55-3.0m fine sandy silt ([Wang et al., 1987](#)).

Definition of mud thickness: There is no mud deposit in Core 97 during Holocene. The thickness of Core 97 is 0 m.

m.

(14) Core 8407-1

Core length: 3.27 m

Lithology: 0-0.13m brown gray clay, sand and silt; 0.13-0.96m gray green fine sand; 0.96-1.15m gray fine sand; 1.15-1.2m: grayish yellow shell medium fine sand; 1.2-1.39m grayish yellow medium fine sand; 1.39-3.27m yellow gray fine sand (Zheng, 1989).

Definition of mud thickness: There is no mud deposit in Core 8407-1 during Holocene. The thickness of Core 8407-1 is 0 m.

(15) Core 8407-2

Core length: 0.76 m

Lithology: 0-0.18m grayish brown clay, sand and silt; 0.18-0.43m gray shell bearing silty clay; 0.43-0.76m gray fine sand (Zheng, 1989).

Definition of mud thickness: There is no mud deposit in Core 8407-2 during Holocene. The thickness of Core 8407-2 is 0 m.

(16) Core 8408

Core length: 3.7 m

Lithology: 0-2.08m: gray silt; 2.08-3.05m: gray silty clay mixed with silty sand and clay layer; 3.05-3.13m: light gray silt interbedded with layered silty clay; 3.13-3.7m: grey silty clay (Zheng, 1989).

Definition of mud thickness: There is no mud deposit in Core 8408 during Holocene. The thickness of Core 8408 is 0 m.

(17) Core 8409

Core length: 0.77 m

Lithology: 0-0.1m: dark gray clay; 0.1-0.35m: Brown Gray silty clay; 0.35-0.77m: brown yellow silty clay with limonite and calcareous nodules, which may belong to late Pleistocene (Zheng, 1989).

Definition of mud thickness: Upper part of core 8409 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 8409 is 0.35 m.

(18) Core 8410-1

Core length: 3 m

Lithology: 0-0.37m dark gray clay and silty clay; 0.37-1.17m light yellow gray silt; The age of 0.37m is 33480 ± 1320 ; 0-0.37m may belong to the Holocene (Zheng, 1989).

Definition of mud thickness: Upper part of core 8410-1 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 8410-1 is 0.37 m.

(19) Core 8411

Core length: 1.25 m

Lithology: 0-0.4m: Yellow gray clay; 0.4-0.95m: dark gray silty clay, ^{14}C dating value of 0.4m is 28150 ± 580 ; 0.95-1.25m: Black Gray silty clay; 0-0.4m may belong to the Holocene (Zheng, 1989).

Definition of mud thickness: Upper part of core 8411 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 8411 is 0.4 m.

(20) Core 8412

Core length: 3.78 m

Lithology: 0-1.34m: grey silty clay; 1.34-1.9m: gray silt; 1.9-3.78m: gray silty clay, light gray silt and fine sand interbedding. ([Zheng, 1989](#)).

Definition of mud thickness: Upper part of core 8412 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 8412 is 1.34 m.

(21) Core PK48

Core length: unknown

Lithology: 0-2.6m: fine-grained deposits. ([Alexander et al., 1991](#)).

Definition of mud thickness: The thickness of Core PK48 is 2.6 m ([Alexander et al., 1991](#)).

(22) Core 01P10

Core length: 2.62 m

Lithology: 0-2.62m, bioturbated silty mud to laminated sandy mud ([Chough et al., 2004](#); [Shinn et al., 2004](#)).

Definition of mud thickness: There is no mud deposit in Core 01P10 during Holocene. The thickness of Core 01P10 is 0 m.

(23) Core 01P14

Core length: 3.72 m

Lithology: 0-2.15m, bioturbated clayey mud; 2.15-3.72m, bioturbated silty ([Chough et al., 2004](#); [Shinn et al., 2004](#)).

Definition of mud thickness: Upper part of core 01P14 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 01P14 is 2.15 m.

(24) Core 01P15

Core length: 2.94 m

Lithology: 0-0.82m, bioturbated clayey mud; 0.82-2.94m, bioturbated silty to laminated sandy mud ([Chough et al., 2004](#); [Shinn et al., 2004](#)).

Definition of mud thickness: Upper part of core 01P15 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 01P15 is 0.82 m.

(25) Core CC02

Core length: 2.78 m

Lithology: 0-1.2m, mud to silt, dark grey marine sediments; 1.2-2.75m, silty sand ([Kim et al., 1999](#); [Kim and Kennett, 1998](#); [Kim and Kucera, 2000](#)).

Definition of mud thickness: Upper part of core CC02 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core CC02 is 1.2 m.

(26) Core CC04

Core length: 2.25 m

Lithology: 0-0.3m, dark-grey homogenous silt; 0.3-2.2m, silty sand ([Kim and Kucera, 2000](#)).

Definition of mud thickness: Upper part of core CC04 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core CC02 is 0.3 m.

(27) Core CSDP-1

Core length: 300.1 m

Lithology: 0-2m: silt ([Liu et al., 2016](#)).

Definition of mud thickness: There is no mud deposit in Core CSDP-1 during Holocene. The thickness of Core CSDP-1 is 0 m.

(29) Core QC2

Core length: 108.8 m

Lithology: 0-2.63m, sandy clay; 2.63-12.63m, the upper part is fine sand, the middle part is clay, and the lower part is fine sand (Liu et al., 2016; Yang, 1993).

Definition of mud thickness: Upper part of core QC2 is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core QC2 is 2.63 m.

(30) Core 92- II

Core length: 4.25 m

Lithology: 0-1.6m is dominated by yellowish gray clay with hard mud blocks near 1.6m. Combined with sporopollen zoning, it can be determined that Holocene mud deposits are above 1.6m. (Meng et al., 1998).

Definition of mud thickness: Upper part of core 92- II is muddy sediments and it reached the lower boundary of the Holocene Mud layer. The thickness of Core 92- II is 1.6 m.

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