**Supplementary Information Table S6**: Micromorphological features observed in the Katoati litho-section.

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| S.No. | Depth | Types of Micro structure | Voide | % age | Coarse sand fraction | % age | Coarse sand Fraction | % age | Fine sand fraction (20 um) | C/F ratio | Sorting | C/F ratio |  | Type | Type of Nodules |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1. | 0-0.40 | Sg chn | Chn Sp | 15% | 550-440 um | 15% | 75-175 um | 55% | Silty Clay | 9/1, 8/2 | M | Chn | Well expressed | - | - |
| 2. | 0.40-0.60 | Sg | Chn Sp | 20% | 220-640 um | 10% | 75-80 um | 60% | Silty Clay | 9/1, 8/2 | W | Chn Inf | Very Well expressed | Hypo coatings | - |
| 3. | 0.60-0.70 | Sg | Chn Sp | 20% | 450-540 um | 5% | 75-220 um | 75% | Micaceous silty clay | 8/2 | W | Chn Inf | Well expressed | Hypo coatings | Diffused, weakly cement |
| 4. | 0.90-1.00 | Sg Igm pg | Chn Sp | 30% | 300-350 um | 15% | 60-80 um | 55% | Micaceous silty clay | 8/2, 7/3 | W | chn | Moderate | Hypo coatings, Quasicoatings | Diffused, amboidal |
| 5. | 1 20-1.30 | Sg Igm pg | Chn Sp | 20% | 325-350 um | 10% | 75-110 um | 70% | Micaceous silty clay | 9/1, 8/2 | W | Chn Inf | Moderate | Hypocoatings Quasi coatings | Well rounded, diffused |
| 6. | 1.40-1.45 | Sg Igm pg | Chn Sp | 15% | 400-600 um | 10% | 110-220 um | 75% | Calcitic silty clay | 6/4, 7/3 | P | chn | Well expressed | Hypo coatings Quasi coatings | Diffused, well rounded, compound |
| 7 | 1.50-1.55 | Sg pg chn | Sp | 15% | 350-440 um | 15% | 100-200um | 70% | Calcitic silty clay | 7/3, 8/2 | M | - | Weakly expressed | All the ground mass is impregnated | Well rounded, diffused, compound, well cemented |
| 8. | 1.60-1.65 | Sg pg chn | Sp | 10% | 250-300 um | 5% | 100-140um | 85% | Calcitic, micaceous silty clay | 6/4, 7/3 | W | chn | Weakly expressed | Hypo coatings | Diffused compound |
| 8. | 1.70-1.75 | Sg | Sp | 20% | 600-700 um | 10% | 180-200um | 70% | Calcitic, micaceous silty clay | 8/2 | P | chn | Moderately well expressed | Ground mass is impregnated | Diffused, compound, well cemented |
| 9. | 1.85-1.90 | Sg pg | Sp | 5% 10% | 350-440 um | 15% | 110-220um | 75% | Calcitic, silty clay | 6/4, 7/3 | M | chn | Well expressed | Ground mass is impregnated | Compound, dense, well cemented |
| 10. | 1.95-2.00 | Sg pg | Chn | 15% | 300-325 um | 10% | 110-175um |  | Calcitic silty clay | 7/3 | M | - | Weakly expressed | Ground mass is impregnated | Dense, compound, amboidal |
| 11. | 2.00-2.05 | Sg | Chn | 20% | 250-325 um | 20% | 100-190um | 60% | Calcitic silty clay | 6/4 | P | - | Moderately expressed | Hypo-coatings | Large, diffused nodule |
| 12. | 2.15-2.20 | Chn sg Igm pg | ChnSp | 10% | 300-400 um | 20% | 85-160um | 70% | Calcitic silty clay | 7/3 | M | Chn | Well expressed | Hypo-coatings loose | Diffused/weakly cemented |
| 13. | 2.30-2.40 | Chn sg Igm Pg | ChnSp | 15% | 250-400 um | 15% | 110-220um | 70% | Calcitic micaceoussilty clay | 6/4 | W | Chn | Well expressed |  | Diffused, weakly cemented |
| 14. | 2.50-2.55 | Chn Sg | ChnSp | 155 | 300-500 um | 25% | 90-180um | 60% | caliictc | 4/6 | M | chn | Weakly expressed | Hypo-coatings loose | Compound, dense, well cemented |
| 15. | 2.65-2.70 | Sg Igm Chn | ChnSp | 5-10% | 150-350 um | 20% | 110-170um | 65-70% | Silty clay, micaceous calcitic | 8/2, 7/3 | W | Chn | Moderately well expressed | Hypo- coatings Quasi coatings | Well rounded, diffused |
| 16. | 2.90-3.00 | Sg chn | Chn Sp | 15% | 160-300 um | 20% | 80-160um | 65% | Calcitic silty clay | 7/3 | M | Chn | Moderately well expressed | Hypo-coatings Quasi coatings | Dense, diffused and compound well cemented |
| 17. | 3..15-3.20 | Sg chn igm | Sp | 20% | 220-400 um | 15% | 120-190um | 65% | Claey silt | 5/5 | M | Chn | Weakly expressed | Hypo coatings Quasi coatings | Dense, compound well cemented |
| 18. | 3.40-3.45 | Chn Sg | Chn Sp | 15% | 190-250 um | 10% | 70-130um | 75% | Micaceous clayey silt | 8/2 | W | Chn | Very well expressed | Hypo coatings Quasi coatings | Diffused, weakly cemented |
| 19. | 3.70-3.80 | Chn Sg | Chn Sp | 10% | 175-350 um | 30% | 90-160um | 60% | Micaceous clayey silt | 7/3 | M | Chn | Moderately expressed | Hypo coatings Quasi coatings | Diffused, moderately cemented |
| 20. | 3.90-395 | Sg Chn Igm | Sp | 10% | 180-400 um | 25% | 100-190um | 65% | Micaceous clayey silt | 7/3, 6/4 | P | Chn | Weakly expressed | Hypo-coatings Quasi coatings | Diffused, well cemented |
| 21. | 4.00-4.05 | Sg Chn Igm | Sp | 25% | 180-350 um | 25% | 70-140 um | 50% | Fine silty micaceous | 7/3, 8/2 | W | Chn | Well expressed | Hypo-coatings | Well rounded diffused |
| 22. | 4.18-4.25 | Sg Pg | Sp Chn | 15% | 200-350 um | 5% | 80-145 um | 50% | Calcitic | 6/4 | M |  | Weakly expressed | All the ground mass is impregnated | Well rounded, diffused, compound, dense, well cemented |