



Study on fine-grained sedimentary rocks environment from the 2nd Member of Kongdian Formation in the Cangdong Sag [U+FF0C] Bohai Bay Bain

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Cangdong Sag is located in the south of Huanghua Depression, Bohai Bay Basin, with Kongdian uplift in the north east, Xuhei uplift in the east and Cangxian uplift in the west. During the sedimentary period of the 2nd Member of Kongdian Formation, a set of fine-grained sedimentary rocks with stable transverse distribution were deposited in the Cangdong Sag. Based on the data of cores and wells, the sedimentary environment of fine-grained sedimentary rocks was analyzed from 5 aspects: salinity, water depth, redox, climate and provenance. The findings include: a relatively closed lake environment, salinity from semi-saline water to saltwater, water depth from bottom to top first to shallow and then to deep, the overall anaerobic environment, climate of overall humid with alternating of wetting and drying and the land source supply from bottom to top decreases relatively. On this basis, the corresponding relations between different lithofacies assemblages and sedimentary environments were established. The lithofacies assemblage of laminated dolomite lithofacies and laminated fine grained mixed sedimentary lithofacies developed in semi-saline, shallow-semi-deep water, oxygen-poor, overall semi-arid - arid, dry-wet alternation and low-input continental sedimentary environments. The lithofacies assemblage of laminated fine grained felsic (mixed) sedimentary lithofacies and laminated dolomite lithofacies developed in a semi-saline, shallow-semi-deep water, oxygen-poor, overall wet, dry and wet alternating sedimentary environment. The lithofacies assemblage of massive fine-grained felsic sedimentary lithofacies and massive fine-grained mixed sedimentary lithofacies developed in the sedimentary environment of semi-saline water, shallow water, oxygen poor, warm and humid, strong terrestrial input and strong hydrodynamic force. The lithofacies assemblage of massive dolomite lithofacies and laminated fine-grained mixed sedimentary lithofacies developed in the sedimentary environment of semi-salt-salt water, shallow water, poor oxygen, continuous drought and insufficient land source input. The sedimentary environment controls the lithofacies and the lithofacies assemblages development, and the lithofacies and the lithofacies assemblages reflects the change of sedimentary environment.