Abstract—

The history of sea level fluctuations in the Miocene basins of the Eastern Paratethys was determined by tectonics in the straits' zone and by river discharge and hydrological balance. The available magnetostratigraphic records permitted dating transgressive and regressive episodes, and seismostratigraphic and drilling materials made it possible to estimate the magnitude of the sea level drop by the base level fall as the sea area was reducing. The transition from the Late Maikopian (Kozakhurian) basin to the Tarkhanian was rapid in terms of geological time, though sedimentologically gradual. The boundary is placed according to lithologic and biotic characters at the end of the anoxic regime and to the appearance of benthic communities (14.85–14.9 Ma). In the marginal parts of the basin, the occurrence of conglomerates, brecciation, and seismostratigraphic data indicate a slight sea level drop and the subsequent transgression. More striking events took place at the beginning of the Chokrakian (~14.8 Ma), within the same short Subchron C5Bn.1n. A significant Late Tarkhanian–Early Chokrakian regression (down to about 200 m) resulted in a regional depositional gap, the appearance of canyons, and in slope landslides. This was followed by a middle–late Chokrakian level rise that can be estimated in +50 to +60 m relative to the modern sea level, which lasted to the upper part of Chron C5ACn (up to 13.8 Ma). According to the distribution of the Karaganian sediments (13.8–13.4 Ma), the sea level was evidently higher than that of the Chokrakian and only slightly lower than in the Sarmatian and was about +70 to +80 m on the Volga-Don interfluve. The presence of the pre-Konkian (Balkovsky) incision of the paleo-Don valley indicates the level drop down of –80 to –90 m and its subsequent rise up to 0 to +30 m. At the beginning of the Konkian (Kartvelian) time (13.4–12.9 Ma), the arrival of marine fauna was associated with renewed communication with the open seas, and these sediments are as widespread as the Karaganian s.s. The pre-Sarmatian s.l. level drop (12.7 Ma) resulted in the incision of the paleo-Don valley, which base occurred at absolute heights of –10 to –20 m. The hypsometric position of the fill top (Ovata Formation) is recorded at absolute height of +35 to +45 m, what do we take as the height of the Early Sarmatian s.l. transgression. The rise of the Middle Sarmatian (Bessarabian) water level, which maximum is dated by volcanic ash as 11.5 ± 0.5 Ma, can be estimated from the distribution of sediments in +75 to +85 m. The regression of the second half of the Middle Sarmatian s.l. with an amplitude of about –200 m, traced throughout the Eastern Paratethys and is dated at 9.75 Ma in the Euxinian Basin and at 10 Ma in the Caspian Basin. Around that time, the Dziruli Massif and Stavropol arch were drained and the connection between the Euxinian and Caspian parts of the basin was interrupted. Deep-sea conditions on the outer shelf of the Euxinian Basin were restored in the Late Sarmatian s.l. (9.9–8.0 Ma), while the Caspian Basin experienced a prolonged water level drop (9.5–8.0 Ma). Overall, the Late Sarmatian s.l. sea level remained unstable. The catastrophic regression of the terminal Sarmatian s.l., when the sea level dropped by 450–500 m in the Euxinian Basin lasted from 7.9 to 7.7 Ma. At that time continental facies

accumulated on the outer shelf, canyons of the delta system were formed, and landslides occurred on the slopes.