

## THE GEOLOGY, GEOCHEMISTRY AND BASIN MODELING OF THE WESTERN KURA BASIN DEPRESSION, GEORGIA

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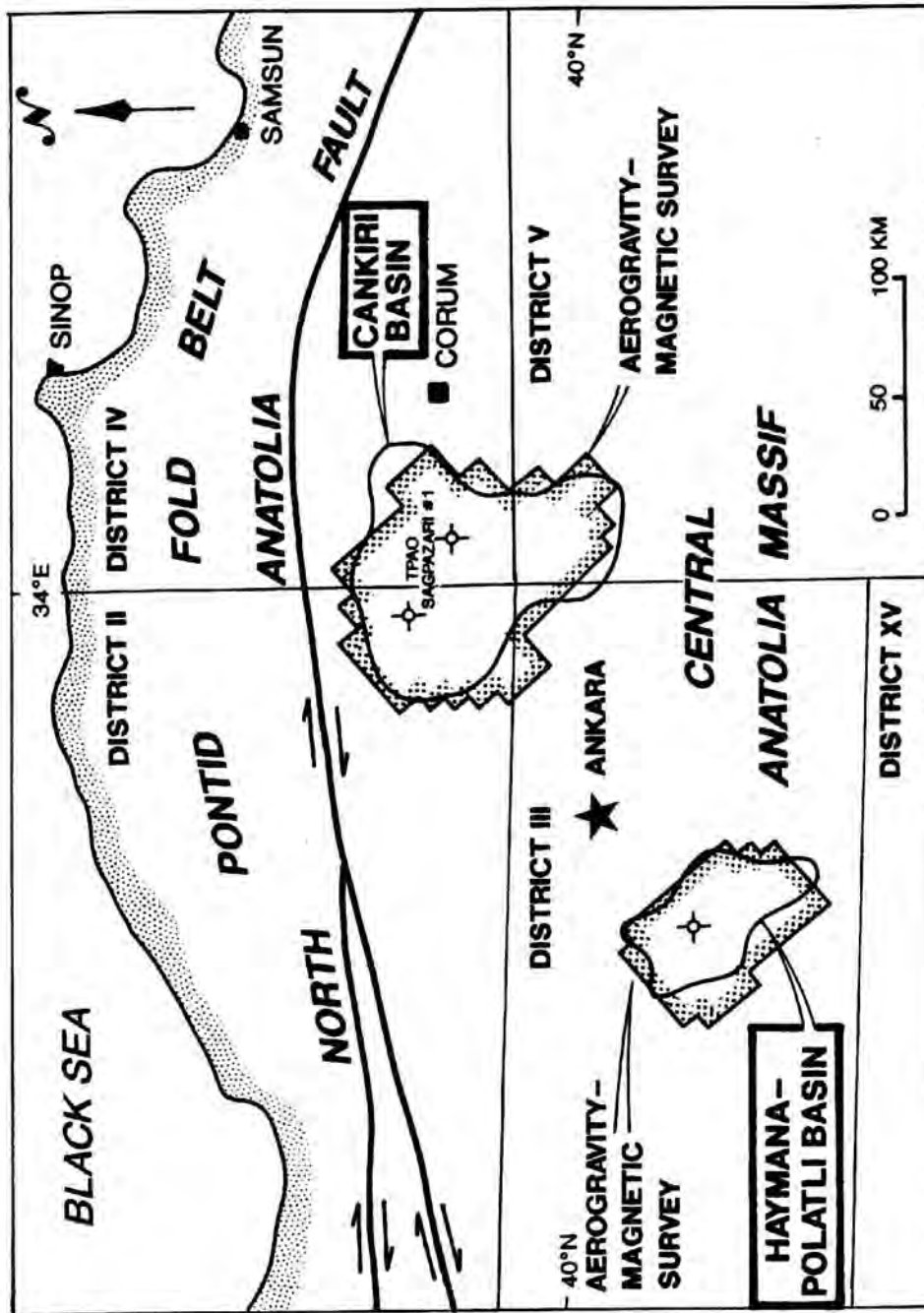


FIGURE 1  
LOCATION MAP

The Western Kura Basin is an east-west trending intermontane depression, which lies between the Greater and Lesser Caucasus Mountains. The basin's western margin is located in central Georgia along the Dzirula Massif. The basin is a late Tertiary back-arc feature formed as a result of Alpine/Himalayan compression. The basin is shaped by multiphase tectonism associated with collision, accretion and rotation that took place between the Eastern European Platform and the Arabian Plate. In response to varying stress fields, several structural elements developed including thrust faults, normal faults, inverted grabens, strike-slip faults and associated structures.

The primary hydrocarbon source for the Kura Basin is the prolific Oligocene-Miocene Maycop shale. Maycop shales are characterized by marine Type II kerogen with local concentrations of Type III kerogen near the basin edges. Total organic content has been measured between 1% and 10%.

Basin modeling results show that the Kura Basin has developed since the Tertiary over a relatively thick crust so that the optimized heat flow values are estimated to be between 0.9 and 1.0 HFU. The sedimentation rates were moderate for the Maycop shales followed by rapid sedimentation of the Upper Miocene Sarmathian Formation. Sedimentation rates were also high during the deposition of the Pliocene Shiraki and Akchagyl formations. The rapid deposition of the Miocene and Pliocene sediments led to the generation and migration of hydrocarbons since the Pliocene. The rapid deposition resulted in high heating rates which led to generation of sweet, low sulfur, 26 to 36 degree API crude oils with measured vitrinite reflectance values (Ro%) less than 0.7. Consequently, the sterane isomerization values have not reached equilibrium in most of the oils in the basin.