Seasonal variation through one year in total nitrogen (TN), total phosphorus (TP), phytoplankton biomass, phytoplankton species composition and other environmental factors were examined in Lake Sonachi, a tropical meromictic soda lake. Mean concentrations of TN and TP were 11 000 µg N l⁻¹ and 100 µg P l⁻¹, respectively. Maximum concentrations of TN and TP occurred in the monimolimnion. Phytoplankton biomass ranged from 350 to 1260 mg m⁻³. *Synechococcus bacillaris*, a small coccoid cyanophyte, dominated the phytoplankton. The mean chlorophyll *a* concentration of 37 mg · m⁻³ was a modest value when compared with those of other tropical soda lakes. High TN:TP ratios indicated phosphorus limitation in the lake.