LAKE RUKWA BASIN – BATHIMETRY SURVEY

Overview of the Lake

Lake Rukwa levels fluctuate in response to seasonal river flow which is mainly high during November – May rainy season and low during dry season in late May – early November. Due to inadequate monitoring facilities and limited availability of good quality data, little is known about the total inflow to the Lake. Lack of lake depth variations, lake elevation – area – storage characteristics makes it difficult to determine volume of water at a given altitude. Following this, Bathymetry survey was planned and organized in order to develop lake characteristic equations and establish a water quality status of the lake.

WR Assessment	WR Allocation
Rainy Seasons	Nov - May
Dry seasons	Late May – early Nov
Temperature	12°C in highlands and 20°C in Lowlands
Wind Direction	Southeast to Northwest

Lake dimensions

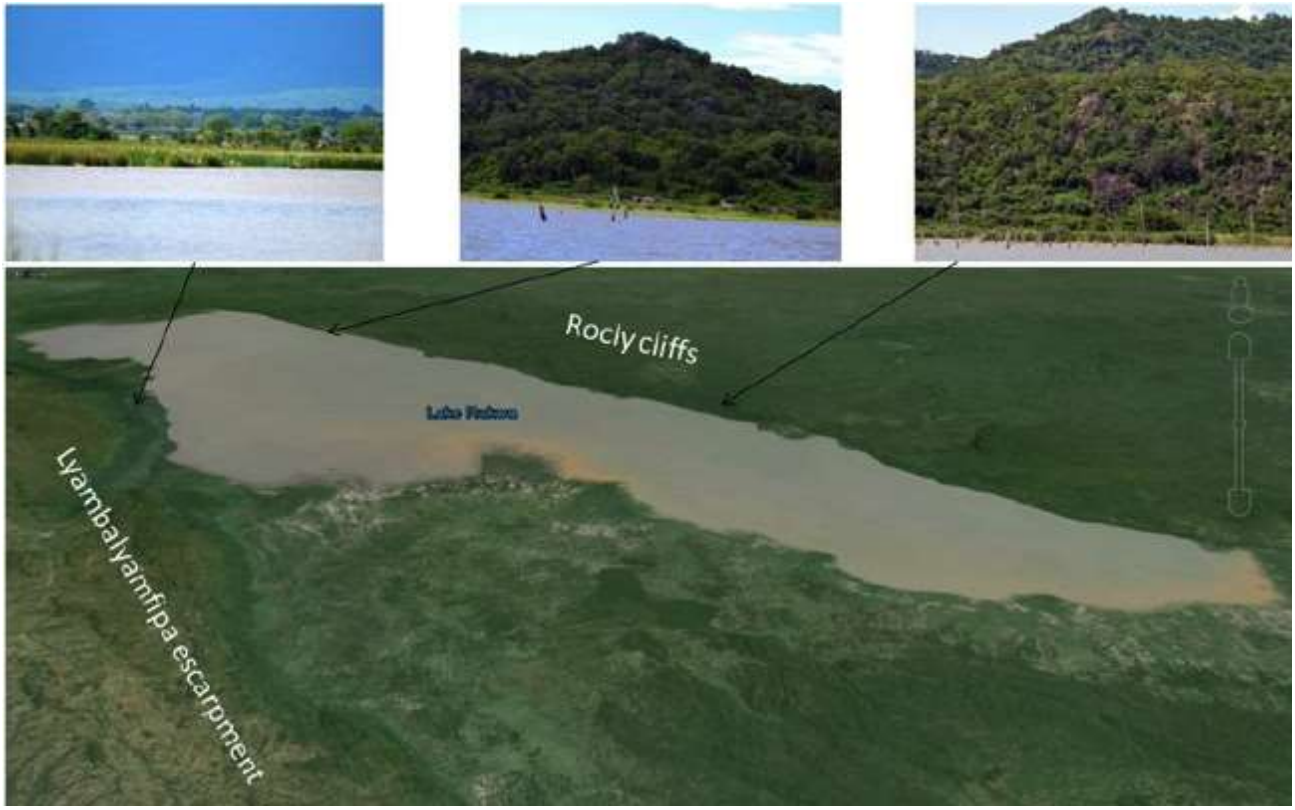
The Lake is 188km long, width varies between 24km and 50km. topographically the lake lies within the lowest part between the northwest-southeast orienting rift valley systems. The Lyambalyamfipa escarpment is in the Southwestern part; Rock cliffs and rolling hills occupy the Northeast shoreline of the lake with their peak at Mount Sange.

Equipment used

- Eco-sounder fitted with internal GPS
- Mobile phone for real-time data visualization.

BOX 2: The Methodology

The method used based on FAO Bathymetric Survey Guide which defines bathymetric survey as a process of measuring depth and corresponding locations of a water body for the purpose of producing a bathymetric contour map.



Topography around Lake Rukwa

RESULTS

Lake depth: Water is deeper at south basin (13-15m) than north basin (9-11m). The western shoreline is relatively shallow 0-3m while the largest part of the north basin is less than 7m deep. The connecting part between North-South is about 3-4m deep.

Lake Bottom altitudes: The deepest part of the lake is at the south at an altitude of 786.80m, lake shore fluctuates between 800.75m and 800.79m. The connecting part is at altitude of 796-797m and therefore below the altitude of 796m, the lake exists as two separate basins.

Area-Volume characteristics: Total volume is 5.0076km3 extending a total area of 2,725.7km2 at altitude below 794m. These area and volume comprises 1,996.6km2 and 2.8402km3 of north basin and 729.2km2 and 2.1674km3 of south basin.

Lake water quality: The Lake is slightly saline and moderately alkaline. EC varies between 2,100 and 3,000µS/cm, with the largest part of the lake surface characterized by higher EC exceeding 2,700µS/cm with exceptions of river inflow points. The pH varies between 9.19 and 9.25 in North basin and 9.24 and 9.26 in South basin with little variation with depth. Water temperature is warmer at central part, slightly cool at northern part and coolest southern surface water. Along the vertical column, there is insignificant variations of water quality parameters except in the south basin where significant changes of EC and pH between 4 and 8 m depth.