

Water management and  
earth observation in Giant  
canal/Yoda elain Sri Lanka.

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October 24, 2023

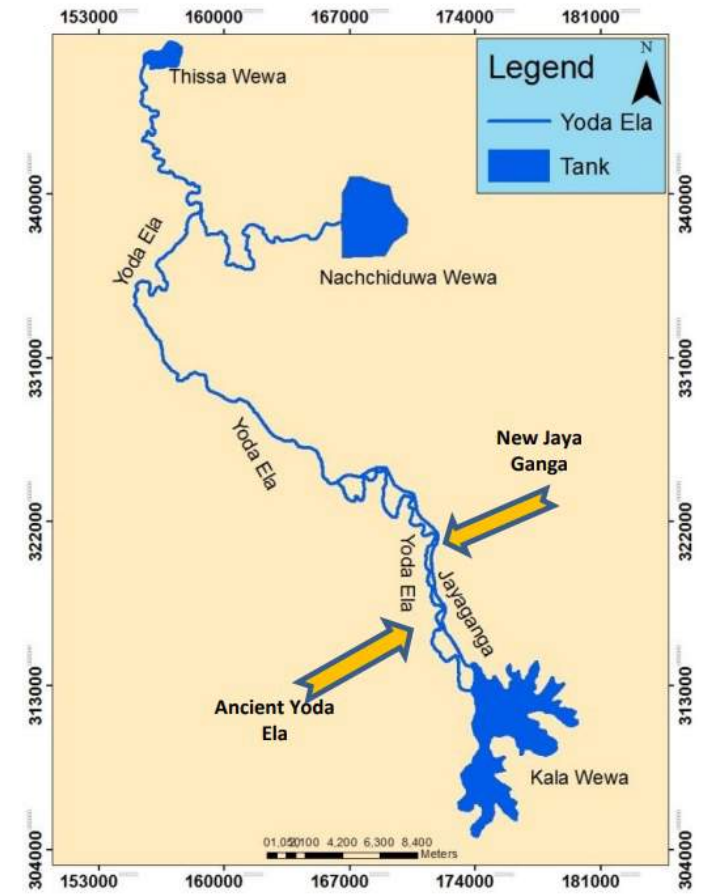
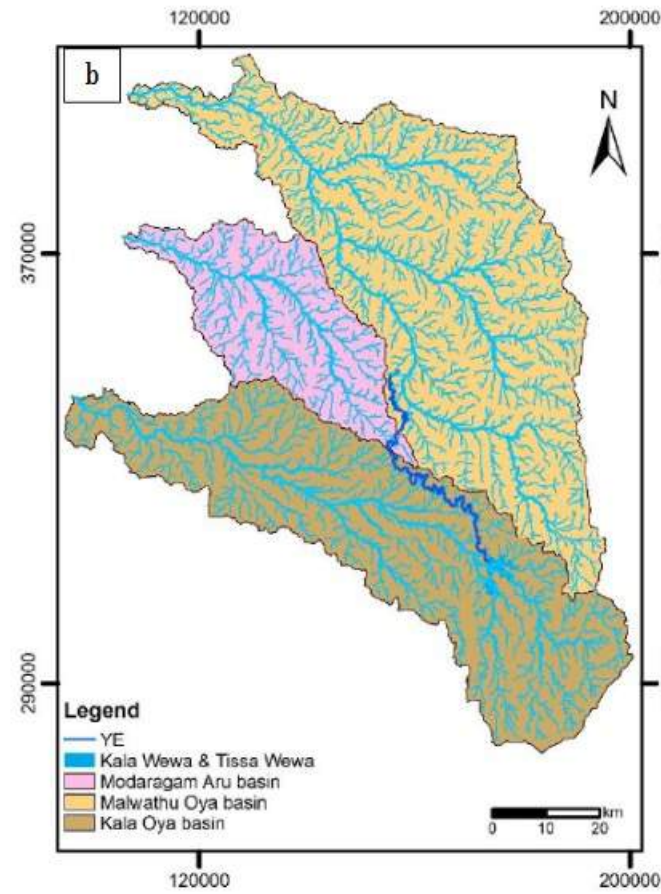
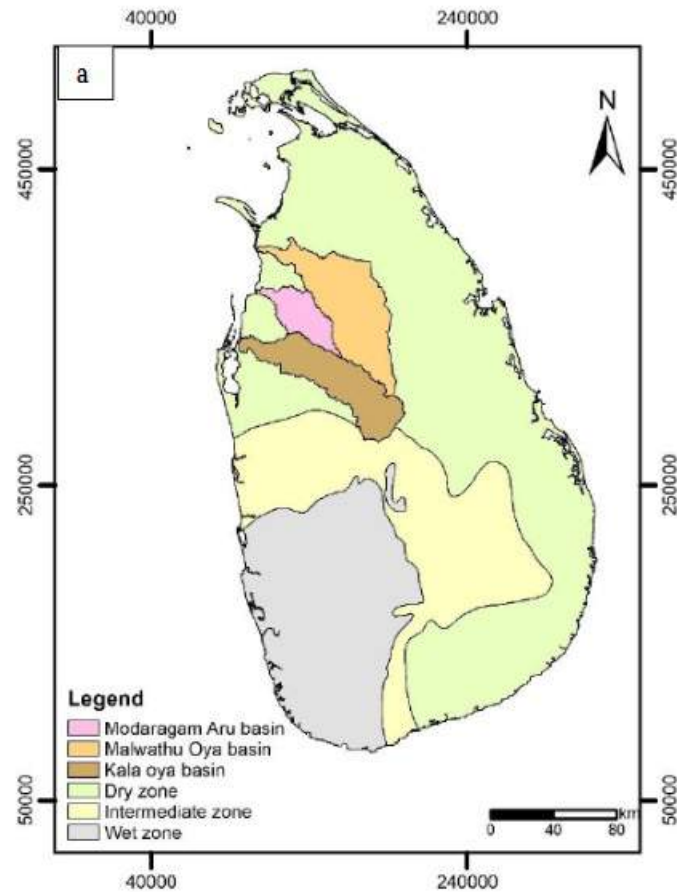
# Canal for water management

- Though canal irrigation is not new to the world, Sri Lanka has a long history of canal irrigation dating back to 1st century BC.
- Supply of water for paddy fields, for small tanks located along the canal which ultimately feed paddy fields, distribute water for the entire downstream area enabling people to use free water and provide water to tanks located along its way as well as to its destination reservoir.
- Climate change in the dry zone with reference to the origins of tank-based hydraulic civilization.



- **The Giant Canal (Yoda Ela) is an 87 km (54 mi) long single banked canal constructed to carry excess water from Kala Wewa reservoir in Anuradhapura to Tissa Wewa reservoir in Anuradhapura city.** It is a trans-basin diversion canal transferring water from Kala Oya Basin to Malwathu Oya Basin. A low gradient is one of the most notable features of Yodha Ela. There is a gradient of about 10 centimeters per kilometer.
- Yodha Ela functions like a moving reservoir due to its single banking system to manage the canal pressure with the influx of water, which differs from the double banking irrigation canals of today.
- Water is provided to 4,630 ha (11,400 acres) of paddy lands and 120 small tanks situated between Kala Wewa and Tissa Wewa over an area of 470 km<sup>2</sup>. Collecting water from 66 mini catchments.
- Two bunds would have increased the pressure causing damage while with one bund the water spreads on the upper side and releases the pressure.( This creates no danger to the bund).
- Built along the contours the canal collects and dispenses water.
- Not only a canal of water carrying, but also a water source freely flown on the ground can be denoted as a flown tank.

# Yodha Ela



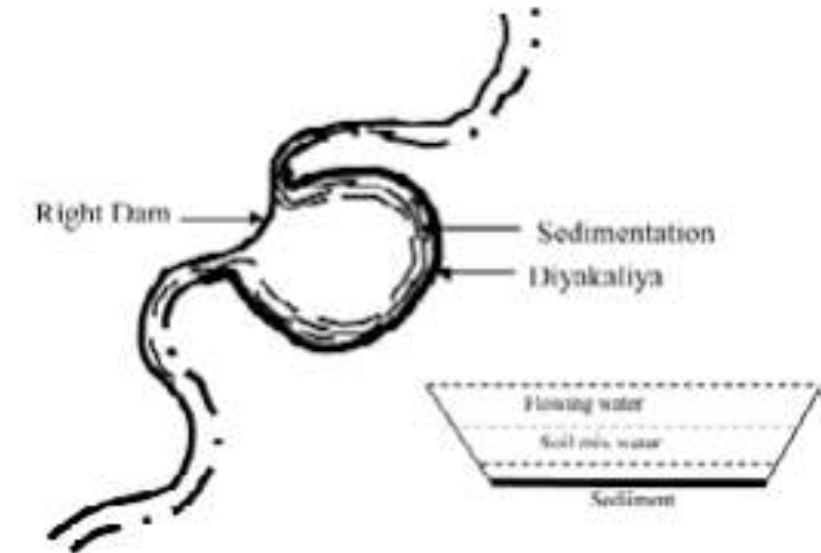
# One bank system

- Due to the low flow rate, the water is radially accelerated along with meanders, deflected along the whole stream in a steady but sluggish flow.
- it is akin to an elongated reservoir because of the single embankment. This single embankment supports lateral push of waters towards the upslope while reducing the pressure on the bank so that free flooding on the opposite side of the embankment is maintained.
- The existence of a single embankment throughout the entire length is depending on the slope and headwater valleys.



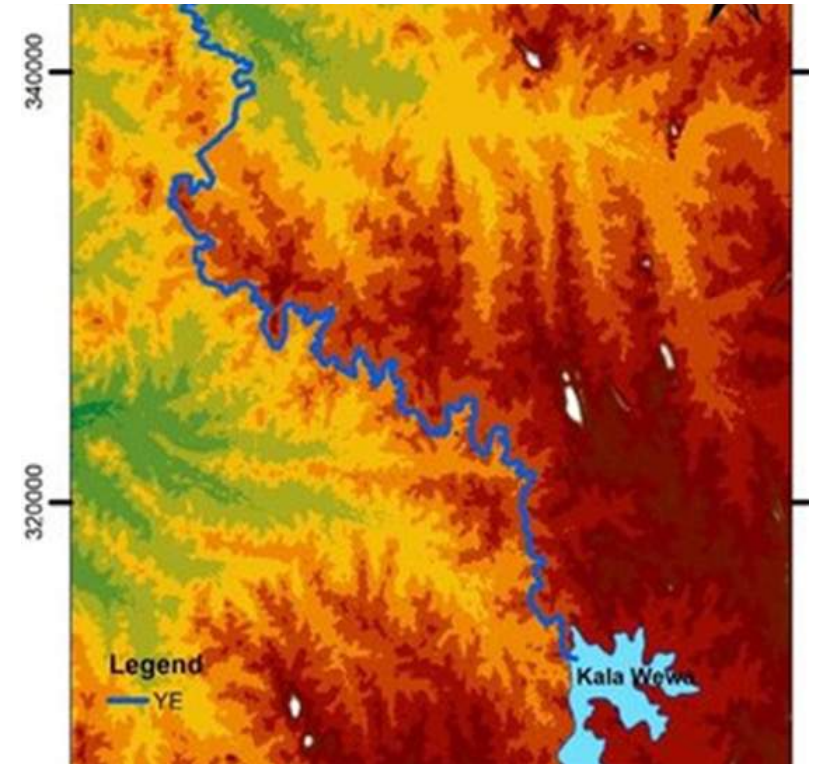
# Meanders in Canal

- Diyakaliya is a feature located at the bends of meanders in the canal.
- Water flowing at this site normally slows down and some quantity is retained, with the rest flowing into normal flow. The feature resembles ox-fold lakes that naturally form in rivers in the lower valley. The noteworthy fact that meanders in Yoda ela have been made by ancient engineers purposely to convey water for high grounds where there was a need of water for irrigable lands.
- The normal size of this feature is about 500m length, Depth is about 20 feet.
- These features have been constructed in high value counters being actual canal in the lower contours 50 Diyakaliya located within 17 miles of the canal.(Investigation revealed that Diyakaliya positioned at a high altitude from the canal).
- Points out it has been used as a unit in which sediment gets deposited.
- worked as an instrument of water purifying, sediment and flood controlling of the canal itself and the surrounding, e canal-based water management systems.
- Engineering, hydrological and water management aspects and the functionality/environmental perspectives.



# EO in Analysis

- Topographical survey of Yoda has been carried out using contour analysis method. The canal had flowed along a similar contour line (300m). Aerial photos, topographical maps, and contour data were also used to verify the information.



- Thank you!

