Discharge and bathymetric data collection of Sinar Mas Forestry plantation canals in Indonesia

Sinar Mas Forestry (SMF) manages companies that operate forest plantations in Sumatra and Kalimantan. Sinar Mas Forestry is the exclusive supplier of raw materials for pulp and paper mills Asia Pulp & Paper.

Water management in the Sinar Mas Forestry plantations presents an immense amount of challenges. With over 2.6million hectares of concession areas to manage, a comprehensive and dynamic water management plan is essential. For example, during the annual dry season, water table management is critical to prevent peat fires and for peatland forest conservation. However during the wet season, attention is switched to flood management at low elevation areas.

Defining and understanding these water zones is critical to ensure healthy tree growth for paper production and environmental protection. To achieve its production and environmental goals, field hydrological data pertaining to sedimentation in rivers and canals and water budget planning in water zones becomes a critical factor. The use of appropriate technology in the management of industrial plantations water infrastructure to support managerial professionals is essential.

"In an effort to improve understanding of catchment hydrology and enhance water management operations, (Sinar Mas Forestry's) Dr Lee recognised the need to enhance the team's ability to collect accurate and meaningful hydrological information."
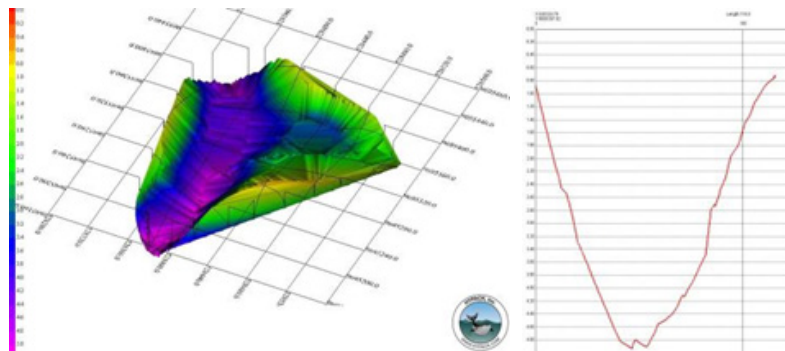
Dr Desmond Lee, Head of Water Management (CoE WM) for SMF alongside Prof. Wahyu (CoE WM) lead the water management teams across regions in Sumatra and Kalimantan, Indonesia. In an effort to improve understanding of catchment hydrology and enhance water management operations, Dr Lee recognised the need to enhance the team's ability to collect accurate and meaningful hydrological information. Capacity building is not just a case of purchasing innovative scientific instrumentation and as such Sea and Land Technologies Pte Ltd in conjunction with SonTek was invited to demonstrate instrumentation at real site conditions to better understand both the operation of the equipment as well as the potential applications to SMF WM operations.

Suneesh Nair, Application Specialist, Sea and Land Technologies and Justin Stockley, AP Xylem Surface Water, demonstrate the SonTek M9 for canal discharge measurements and bathymetry.
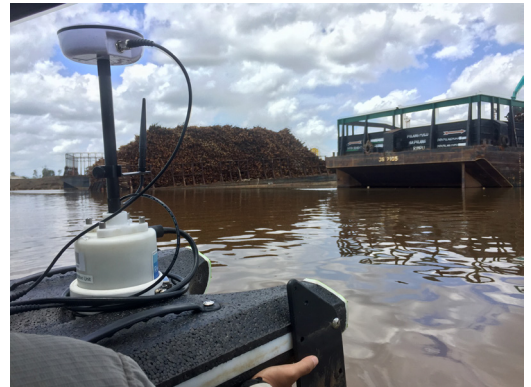
A complex series of canals are integral to both providing water to the plantations but also for navigation and transportation of the harvested fibre. Maintaining these canals through dredging is an ongoing and expensive process and as part of the water management program, information on these channels (discharge and bathymetry) are a key component in being able to efficiently manage the water. The Sontek M9 is used for the collection of both the discharge data as well as bathymetric data of these many canals.

Use of the Sontek M9 to collect discharge and cross sectional data to better understand canal water routing

The SonTek M9 RiverSurveyor Acoustic Doppler Profiler not only can measure discharge levels but can be used as a 5 beam echo sounder to collect accurate bathymetric data. This was an important consideration for SMF when deciding on an appropriate technology that performs multi functionality in its applications that benefit its WM operations.
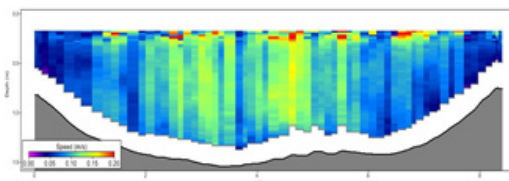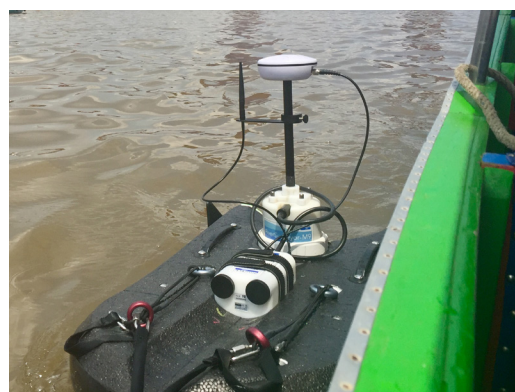

The Sontek M9 quickly and accurately collects discharge and cross sectional data to better understand canal water routing as well as canal storage.

The SonTek FlowTracker2 Handheld ADV is used to quantify discharge through the canals. In channels where the water is very slow, the highly accurate ADV is used to ensure hydrological discharge data collected is accurate.

Use of the Sontek M9 and Hypack software to collect bathymetric data at Baung, Palembang for a navigable section of the river leading to the Paper Mill jetty.

After the success of the proof of concept, Sinar Mas invested in Sontek Flow Tracker 2 and M9 Riversurveyor systems to complement their water management programs.

Prof. Wahyu mentioned that continued post sales training and equipment service support by Sea and Land Technologies locally was an important factor in determining the technology supplier.