ASIAN DISASTER PREPAREDNESS CENTER

CURRENT PROGRESS

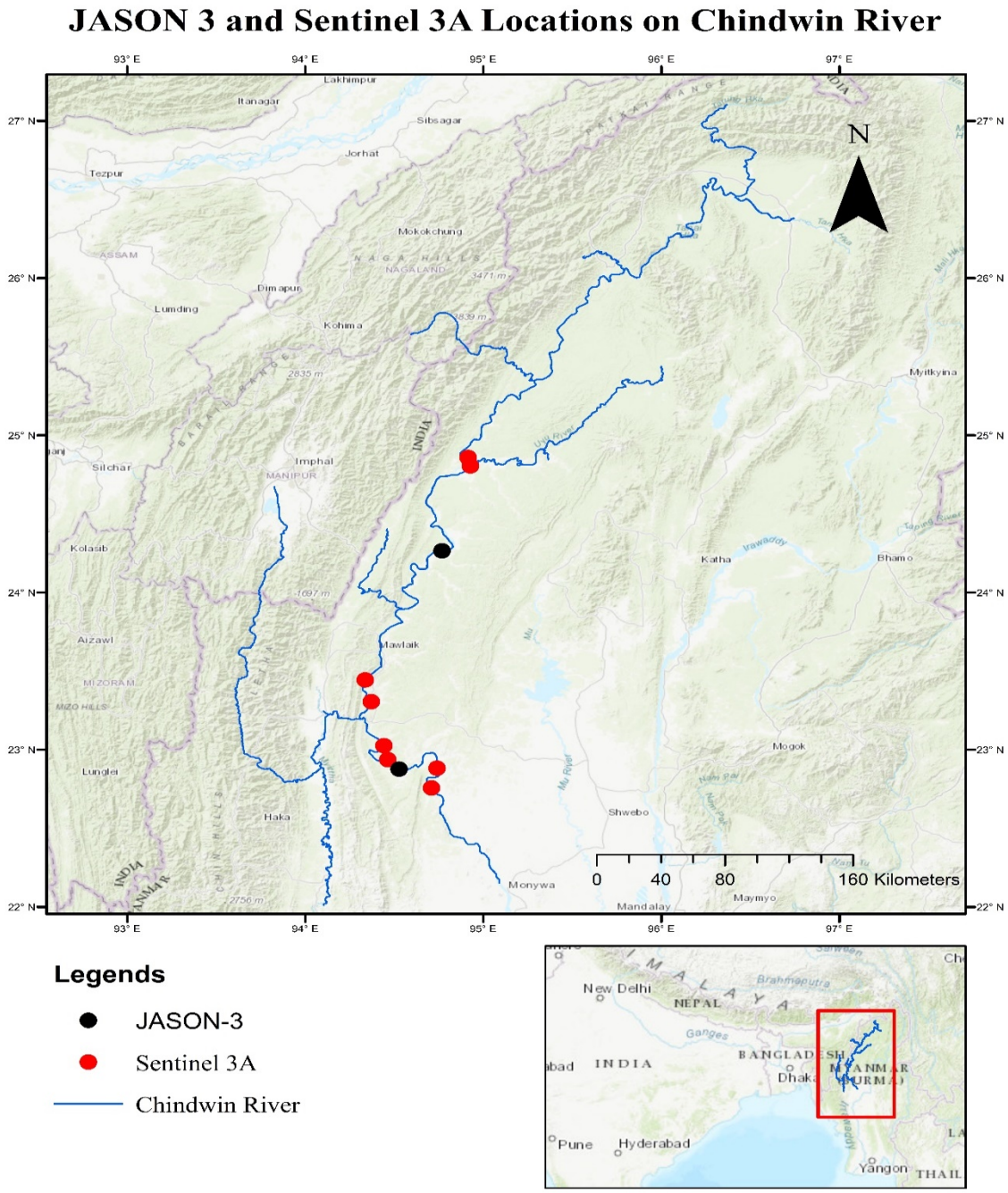

Figure 1. JASON 3 and Sentinel 3A locations on Chindwin River

- HEC RAS and HEC HMS model is setup for the Chindwin River basin in Myanmar (Figure 1)
- Ten Virtual stations on the river for Jason-3 and Sentinel-3A altimeters identified (Figure 1)
- Using SRTM DEM data, width-elevation and area-elevation relationships have been identified. The area represents the surface area for a 2km river reach at the virtual station (1 km upstream and 1 km downstream). See Figure 2 below.

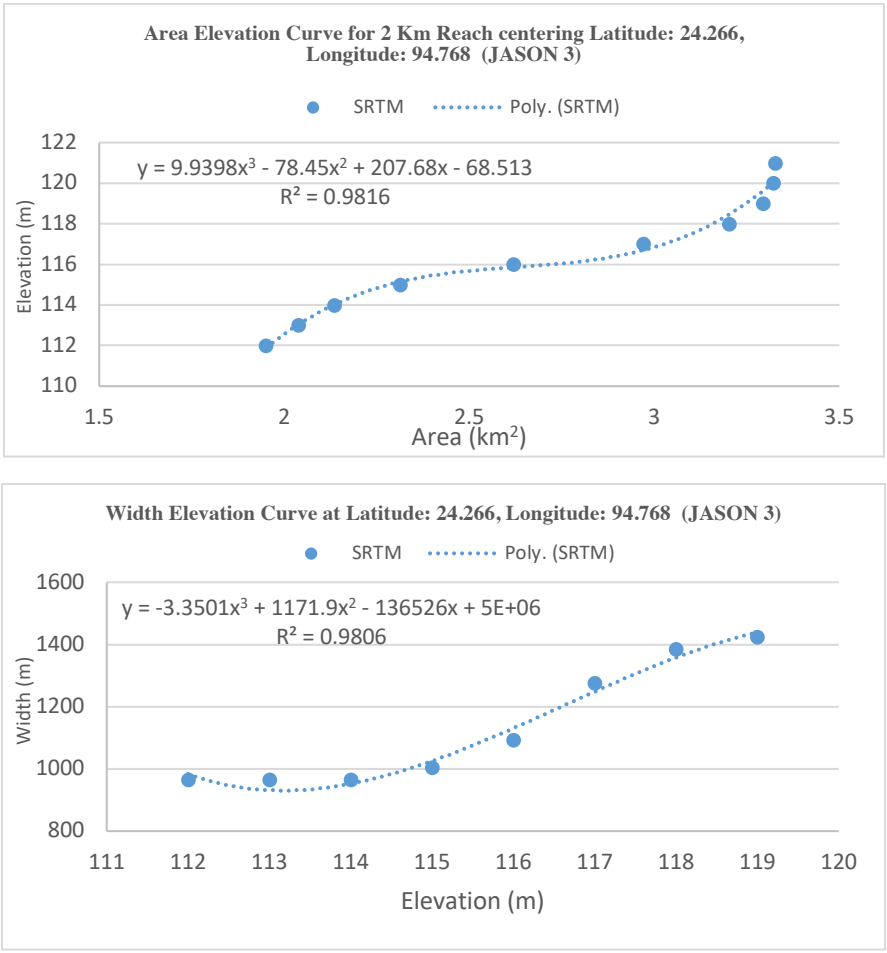

Figure 2. Upper panel – river area (for a 2km reach – 1km upstream and 1 km downstream) and elevation relationship; Lower panel – river width and elevation relationship for a Jason-3 virtual station in Chindwin river. Derived using SRTM DEM data.

- Time series extracted for river width/area (calculated from Landsat) and river elevation (derived from width/area-elevation curve relationship from SRTM). See Figure 3.

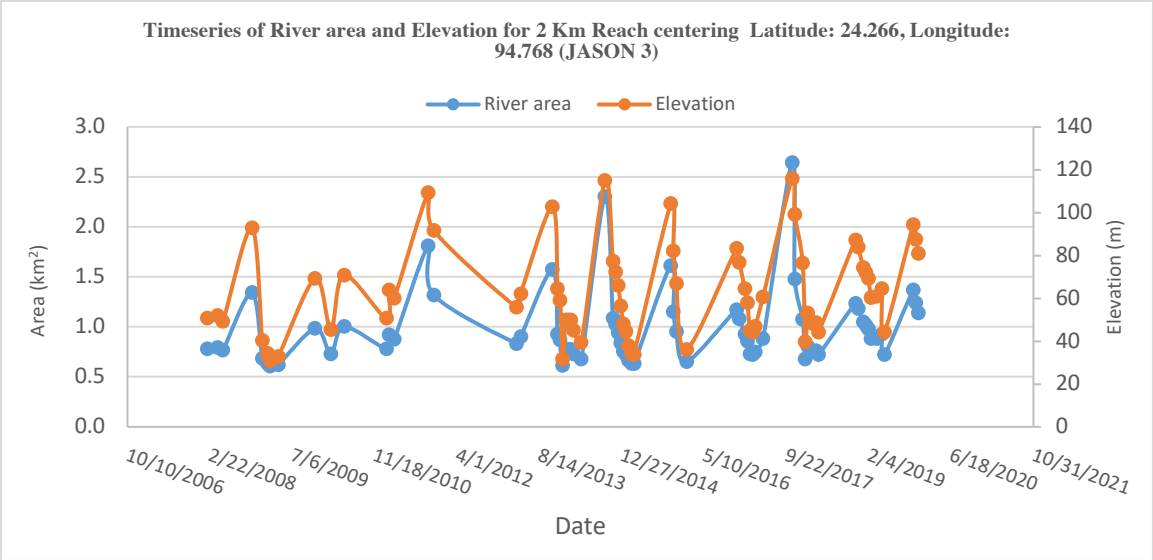

Figure 3. Timeseries of river area (calculated from Landsat) and Elevation (calculated using regression equation of area elevation curve based on SRTM data) for 2 Km Reach centering Latitude: 24.266, Longitude: 94.768 (JASON 3 track)

NEXT STEPS:

- ADPC will use the time series and SRTM-based relationships in calibration/validation of HEC-RAS (and HEC HMS) models .
- ADPC will generate time series of shape files at the 10 virtual locations of river surface elevation as input for use in CNES SWOT simulator
- CNES simulator will be run to generate SWOT like river heights and river surface area for the ten river locations.
- The SWOT like river heights/widths/area will be assimilated into HEC RAS for a) comparison b) impact on improvement of skill (with and without the array of altimeters/landsat data) c) identify ways to best synergize SWOT mission data products (potentially for cal/val of the HEC RAS and HEC HMS model for the entire river system).
- ADPC expected to attend the SWOT Hackathon-2020 at University of Washington during May 26-29, 2020.