Figure 1. 1 The SAR image in the (A) shows the geographic extent of the study domain. The red boundary in the figure A indicates Pee Dee River basin and the shaded portion inside the basin boundary indicates the study area (aircraft flight domain). Hydrograph in the figure B shows the discharge at gauge B and red dots in it indicate the dates used in the analysis. The right plot (C) displays a LiDAR-based DEM of the study area along with locations of USGS gauge points and approximate distance from the river mouth.
Gauge IDs: A=02110802; B=02135200; C=02131010; D=02131000; E=02130810; F=02130561; G=02130000 TA=02130980; and TB=02130930 (T=tributary)

Figure 2. Spatial plots of the estimated flood depth with LiDAR DEM and flood extent using Sentinel-1 and UAVSAR data

Figure3. A) Daily scatter plots showing the agreement between the estimated flood depth using LiDAR DEM and flood extent and the USGS gauge data. The Correlation coefficient R2 between calculated and observed depth varies from 0.79 and 0.96 for the different dates and RMSE varies from 1.69 to 13.59 B) Scatter plots showing the change in water surface depth between September 18 and September 24, 2018 for the calculated using Sentinel-1 versus that observed using USGS gages. The correlation between the two is 0.9. (C) The (right) figure indicates change in water level between 18 and 24 September obtained from two different methods and their differences from the observed gauge data. The black column indicates difference in observed gauge data between two dates, light blue column indicates difference in depth obtained from DEM, and dark blue column indicates difference obtained from InSAR.
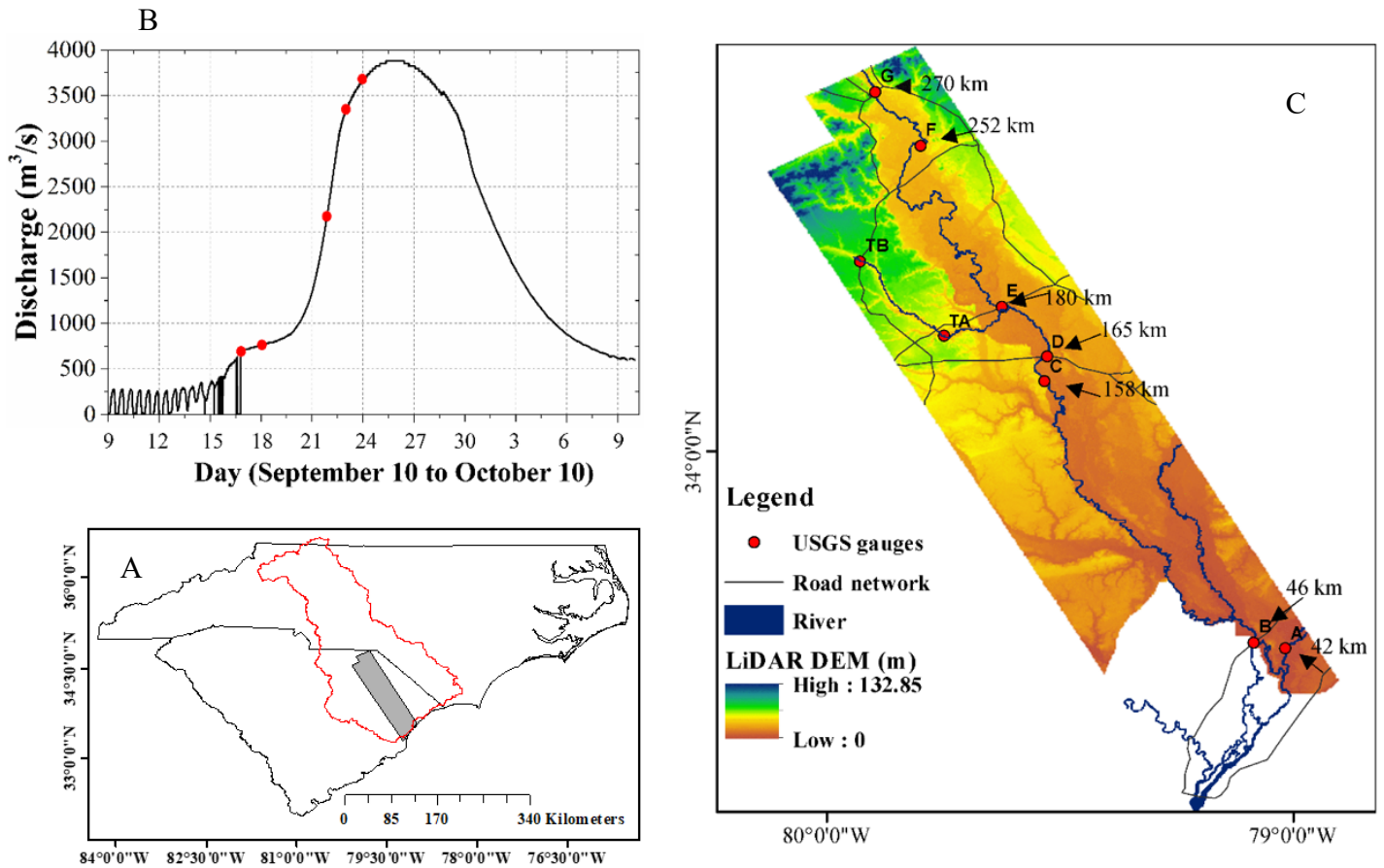
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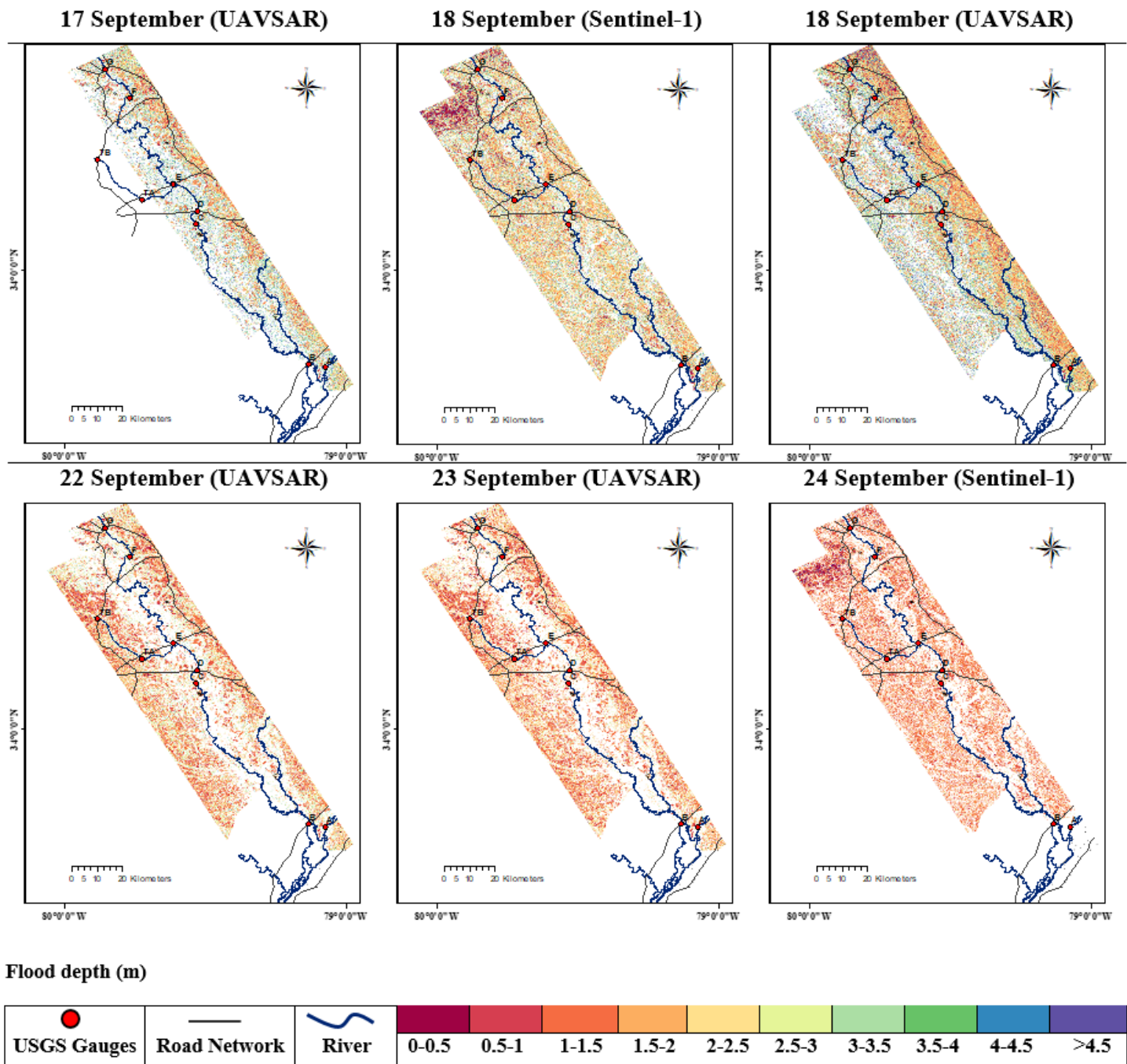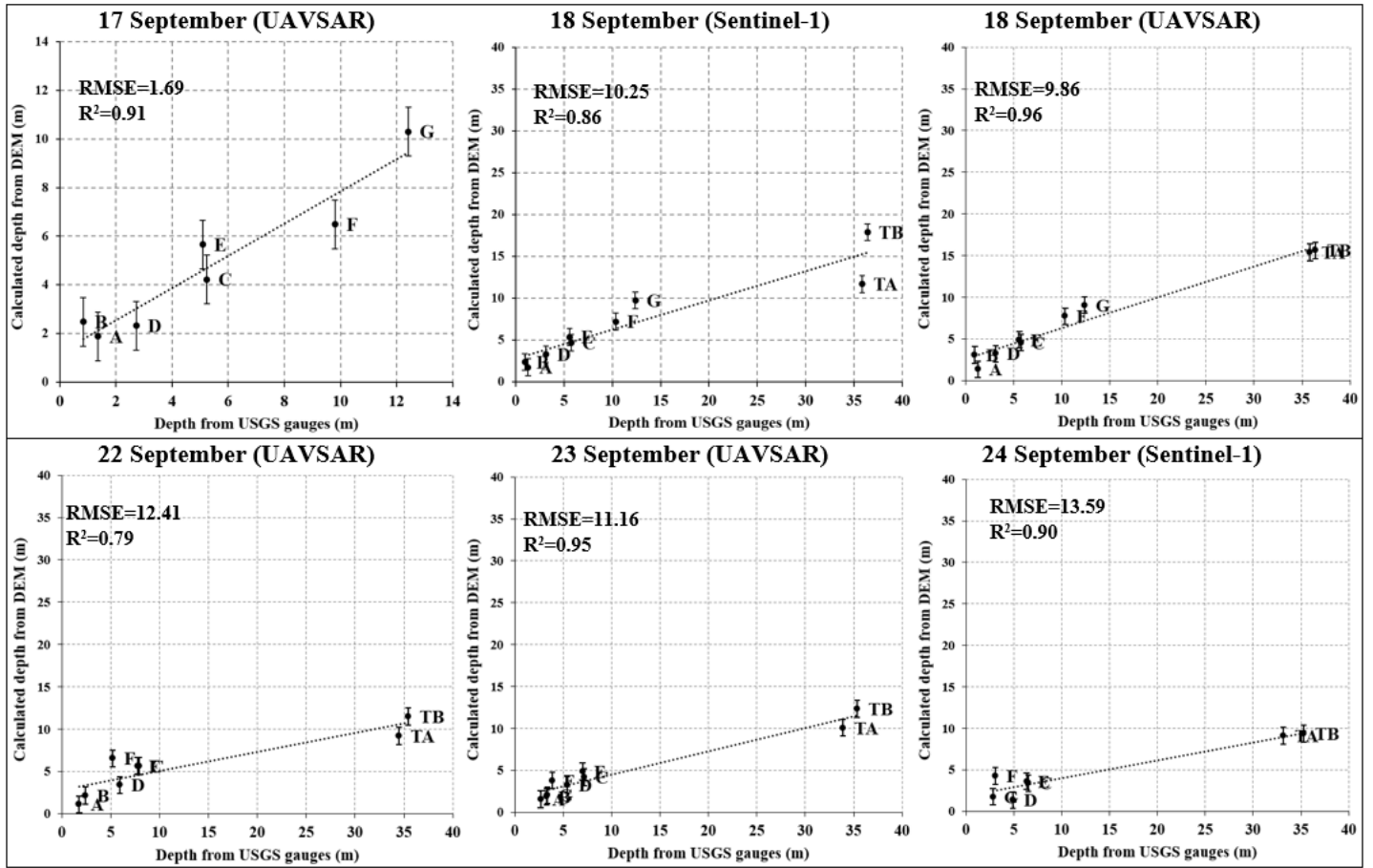
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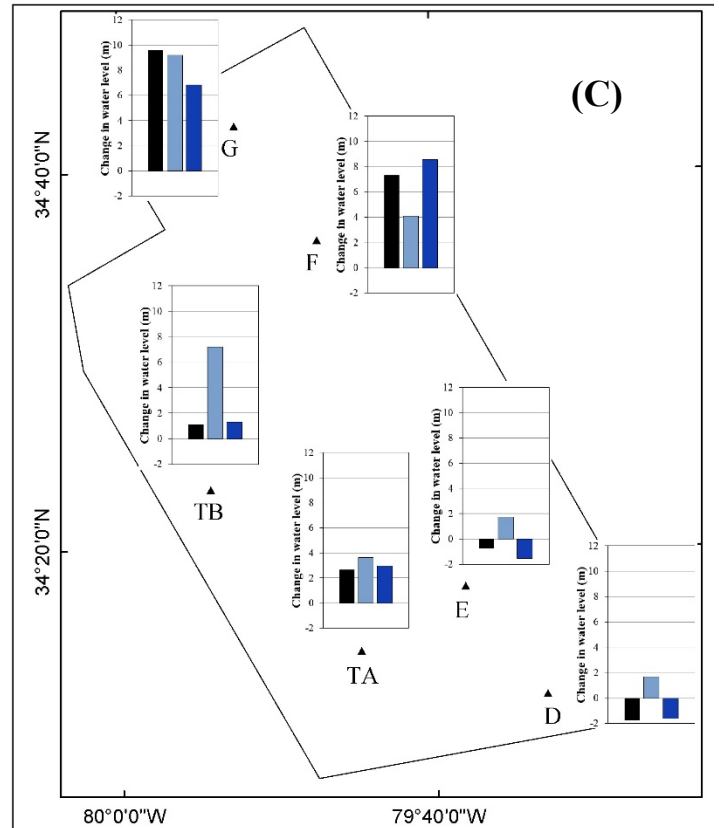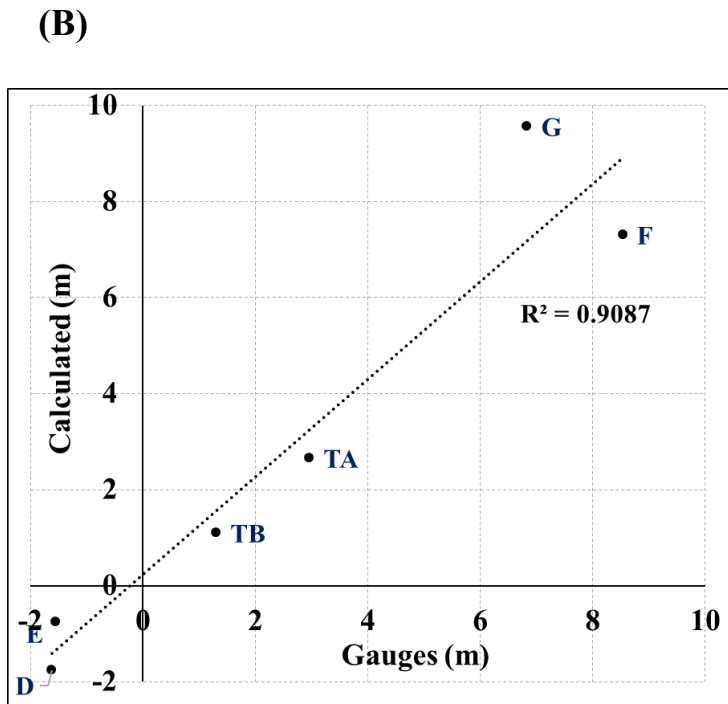
(A)

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