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Monitoring the Evolution of a Tidal Salt Marsh Restoration Site with an RTK-enabled UAV

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Since 1900 AD, 64-71% of the world's natural wetlands have been lost due to anthropogenic influences. Wetland restoration projects, such as managed realignment and tidal salt marsh restoration, act to combat these losses, but are also being used as a form of nature-based adaptation to the effects of climate change, including sea level rise. New advances in Unmanned Aerial Vehicle (UAV) technology offer a unique opportunity to quantify the restoring landscape at resolutions and accuracies previously unachievable. This presentation will focus on the use of hyperspatial datasets collected with a Real-Time Kinematic (RTK) GNSS enabled UAV at a managed realignment site in the Bay of Fundy, Canada, to monitor and quantify the geomorphic evolution of the site, including the development of a semi-automated method for mapping embryonic creek networks. Analyzed datasets were collected seasonally over the course of 1 year following the reintroduction of tidal flow, and range in resolution from 2.0 - 3.5 cm. Preliminary results show significant spatial variation in channel evolution patterns, related to the presence and absence of antecedent landscape features. A greater understanding of restoration site evolution, and the effects of the antecedent landscape on that evolution, will allow for a more informed design and implementation of future restoration projects to encourage site resilience and sustainability in terms of climate change adaptation.