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Drones and geomorphology in high schools: How to recruit the next generation of geomorphologists

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Unmanned Aerial Vehicles (UAVs), are increasingly used in STEM research and educational purposes as they are a cost-effective and time-efficient way to gather geospatial data, and they are a fantastic way to engage students. UAVs are utilised to survey the landscape, especially in locations where students are unable to access due to logistical or OHS reasons (even Mars!). They are also useful for students to better understand abstract concepts and to aid in conceptualisation of the 'bigger picture', allowing students to 'see science for themselves'.

UAVs are a powerful educational tool if repeated missions are conducted on dynamic natural systems, such as mangrove and salt marsh systems, river environments and coastal environments since they capture both macro and micro changes in physical landscapes and ecosystems. This provides insights into the spatial and temporal evolution of the environment, and can be used to inform future management decisions. The output images, videos and surveys can be annotated and utilised as geospatial base maps for fieldwork activities. Student engagement and critical thinking skills can be enhanced by allowing the students to use the outputs pre-excursion in order to identify accessibility of field sites and possible sites for investigation.

James has been utilising UAVs for six years for a diverse range of educational purposes such as geophysical and climate change hazard identification (Hawaii and Australia), geomorphological evolution of terrestrial environments (New Zealand), changes in coastal landforms (Australia), ecosystem mapping (Australia), and production of geospatial base maps for STEM-focused fieldwork (UK, Hawaii, New Zealand and Australia). He will offer case studies and insights in how UAVs can be used to increase both visibility and purpose of geomorphology in high schools, and thus excite our next generation of geomorphologists.