# Remote-sensing technology for vegetation monitoring using an unmanned helicopter

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Abstract: The objective of this study is to develop a system that can generate a map regarding crop status obtained by mounting an imaging sensor on an unmanned helicopter. The flight characteristic of an unmanned helicopter is effective for remote sensing. A real-time kinematic global positioning system (RTK-GPS) was adopted, and an inertial sensor (INS) that provides posture (roll and pitch angles) was installed in the helicopter. In addition, a geomagnetic direction sensor (GDS) that outputs an absolute direction was also attached to the helicopter. While obtaining pictures using the imaging sensor on the unmanned helicopter, image distortions arose due to changes in helicopter posture. Converting from image coordinates to global coordinates removes this distortion. However, a geomagnetic warp surrounding the helicopter created errors in the posture data, particularly a large GDS error. By correcting GDS errors, it was possible to generate a field map from helicopter-captured image data with a spatial error of 38 cm. 

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