

Editorial

Editorial for “Remote Sensing from Unmanned Aerial Vehicles”

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The recent proliferation of unmanned aerial vehicle (UAV) platforms has greatly increased our ability to remotely sense the Earth’s surface from the air at particularly low altitudes. UAVs are able to fly low and slow compared to their manned counterparts and UAVs can also fly for much longer durations. They can operate over hostile environments making them an ideal platform for aerial reconnaissance in areas of armed conflict. These platforms range from small expendable aircraft launched by hand to large jet powered planes using normal airport runways.

There are some restrictive conditions on the operation of these UAVs for remote sensing places, such as requiring detailed knowledge of their real-time 3D location and platform attitude (pointing angle). This has led to the development of a lot of accurate but small inertial management systems (IMUs) and GPS receivers. The entire operation of one of these aircraft can be pre-programmed using GPS locations as waypoints. Often the flight out and back to a sampling location are controlled by a pilot while the sampling on station is pre-programmed in GPS coordinates.

The availability of UAVs for remote sensing has led to the development of a great many new small sensor systems to expand the ability of UAVs to collect useful information. In general, UAVs have been used to collect photo reconnaissance but that has now been extended to thermal infrared, synthetic aperture radar (SAR), and the passive microwave. The ability of the UAV to fly low and slow greatly enhances the detection of weak microwave signals by the UAV. The thermal infrared can show patterns and characteristics when there is no longer visible light to enable photography. Thus, new UAV sensors provide all-weather capabilities for these unmanned platforms.

This Special Issue of *Remote Sensing* includes a great many different applications of UAV remote sensing for the study of the Earth. The papers cover a range of topics from the routine monitoring of crops to the variable height of the sea surface and the spread of the urban environment. Many new and innovative techniques have been developed to analyze images from these UAVs and those papers are included in this collection. Finally, it should be emphasized that this is just a small sample of the applications of UAV remote sensing and that there is a much bigger world waiting to use these capabilities. As the UAV community continues to expand so will the opportunities to utilize these platforms for the collection of valuable information from the surface of the Earth.

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