

## **Wageningen UR Unmanned Aerial Remote Sensing Facility – Overview of activities**

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To support environmental management there is an increasing need for timely, accurate and detailed information on our land. Unmanned Aerial Systems (UAS) are increasingly used to monitor agricultural crop development, habitat quality or urban heat efficiency. An important reason is that UAS technology is maturing quickly while the flexible capabilities of UAS fill a gap between satellite based and ground based geo-sensing systems.

In 2012, different groups within Wageningen University and Research Centre have established an Unmanned Airborne Remote Sensing Facility. The objective of this facility is threefold: a) To develop innovation in the field of remote sensing science by providing a platform for dedicated and high-quality experiments; b) To support high quality UAS services by providing calibration facilities and disseminating processing procedures to the UAS user community; and c) To promote and test the use of UAS in a broad range of application fields like habitat monitoring, precision agriculture and land degradation assessment.

The facility is hosted by the Laboratory of Geo-Information Science and Remote Sensing (GRS) and the Department of Soil Physics and Land Management (SLM) of Wageningen University together with the team Earth Informatics (EI) of Alterra.

The added value of the Unmanned Aerial Remote Sensing Facility is that compared to for example satellite based remote sensing more dedicated science experiments can be prepared. This includes for example higher frequent observations in time (e.g., diurnal observations), observations of an object under different observation angles for characterization of BRDF and flexibility in use of camera's and sensors types. In this way, laboratory type of set ups can be tested in a field situation and effects of up-scaling can be tested.

In the last years we developed and implemented different camera systems (e.g. a hyperspectral pushbroom system, and multispectral frame cameras) which we operated in projects all around the world, while new camera systems are being planned such as LiDAR and a full frame hyperspectral camera. In the presentation we will give an overview of our activities, ranging from erosion studies, decision support for precision agriculture, determining leaf biochemistry and canopy structure in tropical forests to the mapping of coastal zones.