Remote Sensing

Vegetation Indexing made easier!

TETRACAM MCA & ADC Multispectral Camera Systems

TETRACAM MCA and ADC are multispectral cameras for critical narrow band digital photography.
Based on the information derived from multispectral images and management decisions in agriculture and forestry become much easier. The precise knowledge about biological activity and plant conditions provides the necessary information for required counteractions or support measures for better yields and higher revenues.

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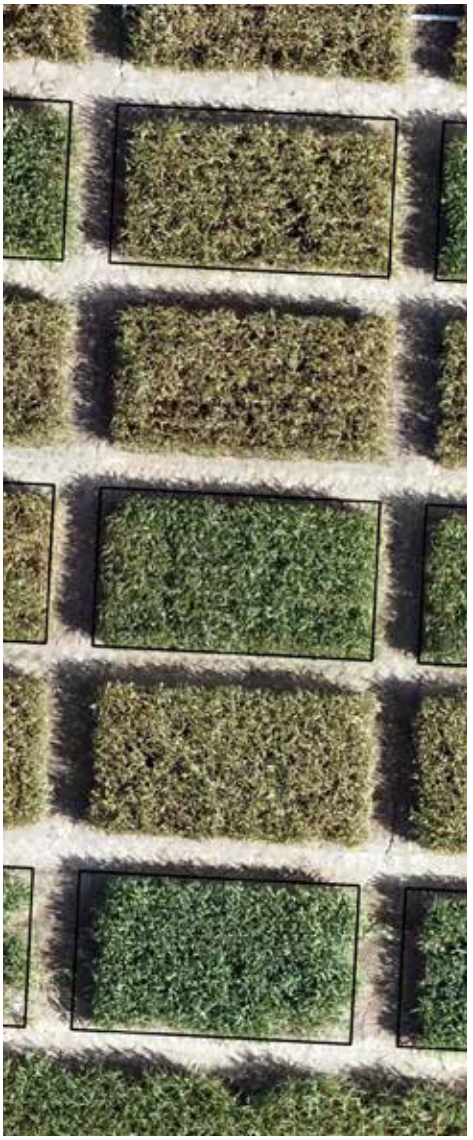
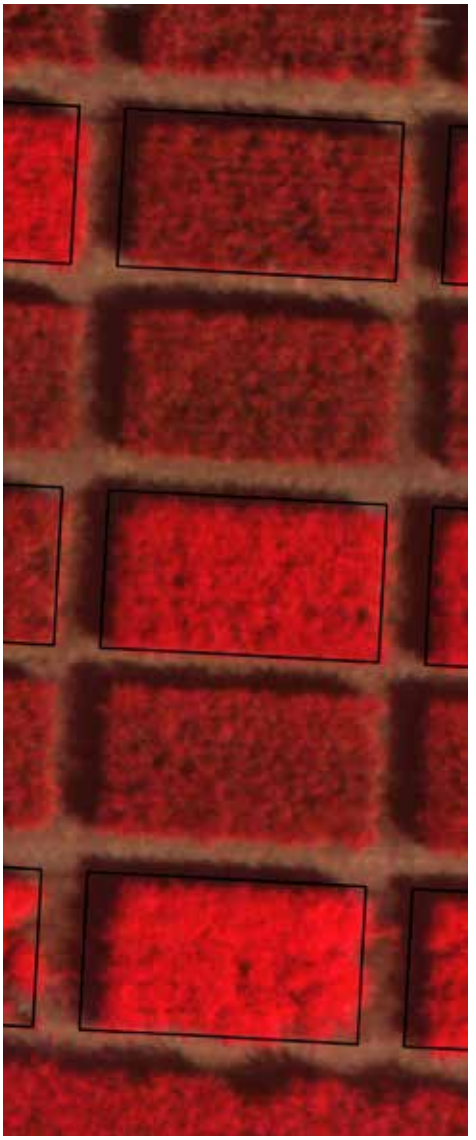
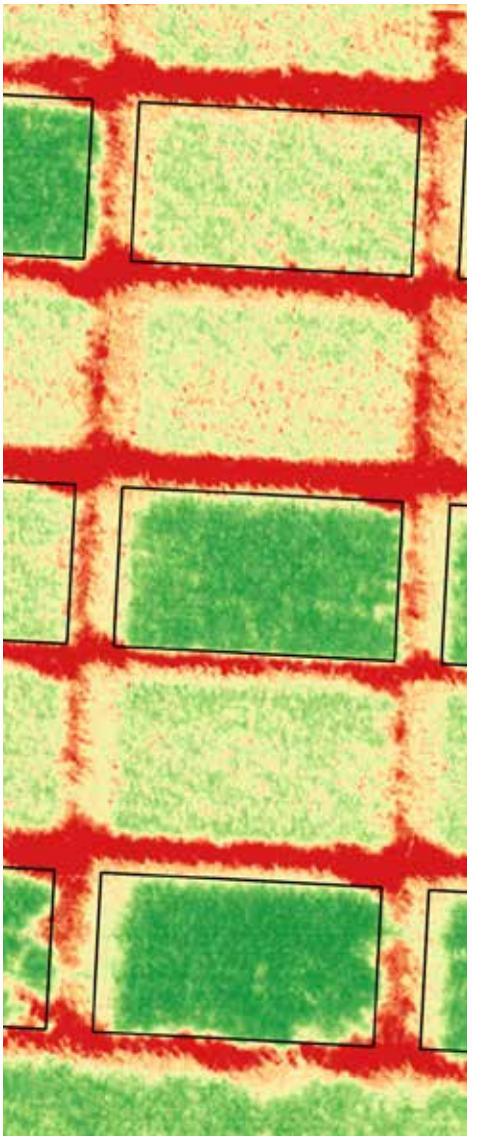
inventarisieren. kartieren. optimieren.

TETRACAM INC

READY FOR ANY ASSIGNMENT

Tetracam's multispectral cameras stand for highest quality in multispectral imaging for more than 30 years. As a result of the outstanding image quality , Tetracam cameras provide you with permanently high quality data. The camera systems are continuously improved and hence always depict state-of-the-art. Tetracam offers a huge variety of different camera systems to cope with the different requirements of customer's application areas. You can retrieve all relevant information regarding biomass and crop health to optimize water management, pesticide and fertilizer application in order to improve your business. Each Tetracam camera system is lightweight and can be easily integrated into all kind of flight platforms, regardless of which type, drone (multirotor or fixed-wing UAV) or airplane. This enables you to use one single multispectral sensor on multiple aerial platforms or at the ground to be flexible and effective in all survey jobs you have to do.

High Quality Multi-Spectral & NIR Imaging

Tetracam MCA Multiple Camera Array Systems

The **TETRACAM µMCA camera** array can be provided with 4, 6 or more channels, each being equipped with interchangeable filters at a wavelength range from 450 - 1000 nm, optional in the region of 370 – 400 nm and / or a separate RGB sensor instead of one monochrome sensor. In that way they can be designed specifically to the wavelength-combination required. Thousands of filters are available, so every individual set of filters in standard distances of 10 nm can be assembled. But it is also possible to set Bandpass filters with a bandwidth of 1 nm. The µMCA camera is available with two different image sensors: ROLLING SHUTTER or GLOBAL „SNAP" SHUTTER.

The MCAW (Macaw)

- fully featured Linux computer
- WiFi, USB3, Serial Input,
- wireless camera configuration & GUI
- SATA SSD storage

It can align image planes and extract vegetation indices at the rate the images are acquired (up to 2 images/second), thanks to its 2GHz quad-core ARM CPU. Macaw also offers an optional upgraded u-ILS module that can be used as a flying system or Ground Station, so the instrument is entirely self-contained, except for power input. Mini MCA, µMCA and RGB+3 owners can upgrade their existing cameras to MCAW level.

Based on µCMA Snap 4 architecture, the **TETRACAM RGB+3** is a remote sensing workhorse. This system consists of four cameras: one RGB color camera and three monochrome cameras. All cameras in the array are registered and synchronized so that each captures the same image at the same time at a different band. The spectral sensitivity of the monochrome sensors are between 425 nm to 950 nm. The RGB+3 Snap shutter sensors produce excellent images at very short exposure that are ideal for building mosaics with lower overlap between the flight lines.

TETRACAM´s µMCA systems can be configured with one or two thermal **FLIR TAU sensors** for imaging in the range from 7500 to 13000 nanometers (FLIR TAU 2 IR or FLIR TAU 2 SWIR).The footprint for the product are the same as for the µMCA12 product lines. All of the cameras in the array including the FLIR units are aligned and synchronized so that the captured images can be added to multi-page TIFF files, and stitched into large mosaics. Typically, thermal cameras are difficult to stitch by themselves, so the synchronization and alignment in the array of the MCA units permits accurate overlaying of thermal, SWIR, NIR, visible and UV band information.

The **Tetracam Wireless Incident Light Sensor (u-ILS) Ground Station** is designed as an accessory for all Tetracam ADC and MCA camera lines, and can be ordered with the camera, or purchased as an accessory for any camera already in the field. The u-ILS detects the down-welling solar radiation when mounted on the UAV / aircraft or as a standalone Ground Station on the surface. Up to 15 bands of radiometric data are collected at the same wavelengths as the camera system.

— **Flying u-ILS system**

The radiometric data of the u-ILS is transmitted to the camera and saved in the metadata of the images. The calibration are in the images.

— **Ground Station u-ILS system**

The radiometric data is saved in a 1 second interval by the u-ILS in a log file, without the errors introduced by platform motion of a UAV. The radiometric data is combined with the images in post-processing via Tetracam PixelWrench2.

12 bands can be configured in the field with narrow band-pass filters to match the characteristics of a measurement instrument or camera.The unit is a smart device, equipped with a Wi-Fi network browser interface which allows live display of the data being logged. The wireless interface can be used to retrieve the log file for calibration of images or measurements.

TETRACAM ADC Agriculture Digital Camera System

The **ADC (Agriculture Digital Camera)** is available in different models:

— **ADC Lite** – small and lightweight generation for UAV applications

— **ADC Micro** – very small and very light weight generation for UAV applications (ROLLING SHUTTER image sensor)

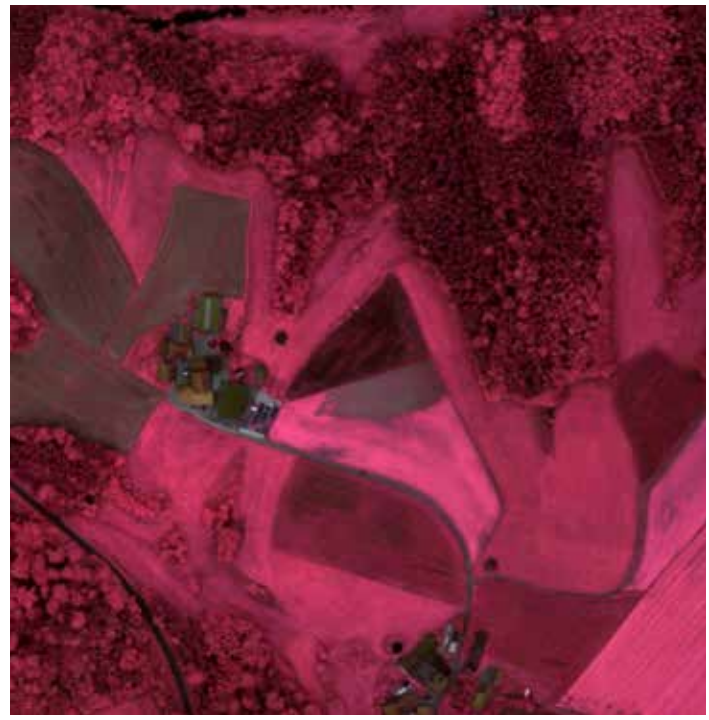
— **ADC Snap** – very small and very lightweight generation for UAV applications (GLOBAL “SNAP” SHUTTER image sensor)

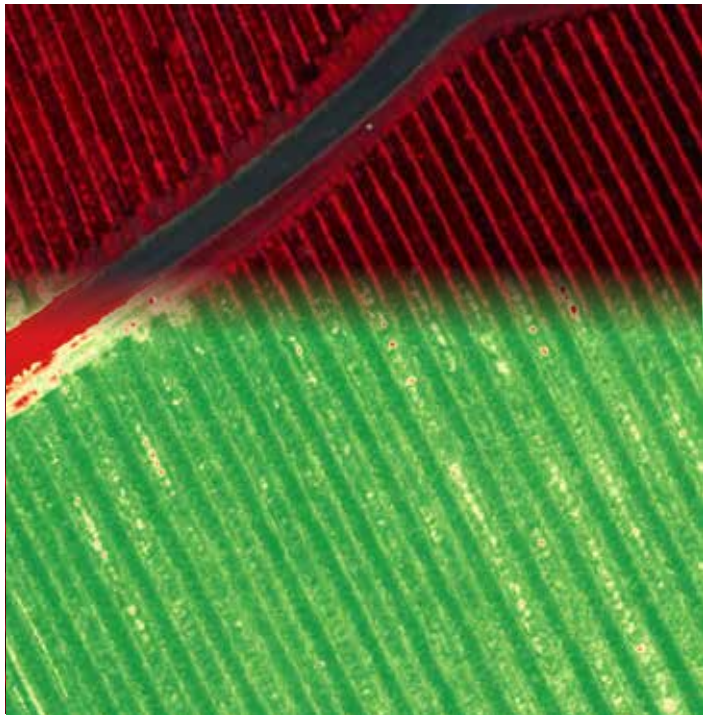
— **AWC (AUK)** - Agricultural Wireless Camera entry level low priced camera for agricultural applications

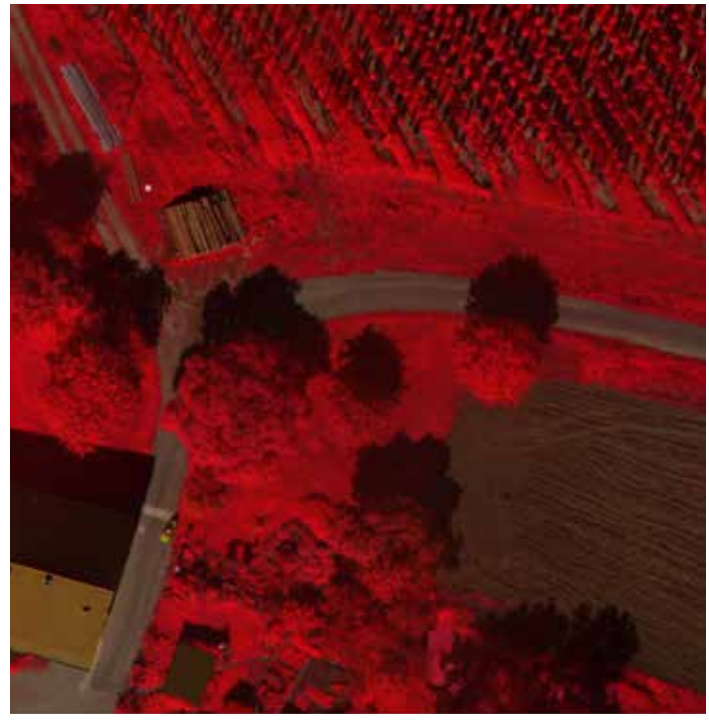
It is a single sensor digital camera optimized for capturing visible light wavelengths longer than 520 nm and near infrared wavelengths up to 920 nm. The primary application is the recording of vegetation canopy reflectance. The resulting image is suitable of the derivation of several vegetation indices.
Red, Green and NIR bands (approximating TM2, TM3 and TM4 of Landsat) provide the information needed for extraction of NDVI, SAVI, canopy segmentation and NIR/Green ratios.
ADC Snap Single Band NIR / ADC Snap Single Band UV – single-band camera based on the ADC Snap case and MCA image sensor with interchangeable filters in the range from 450 – 1000 nm OR at short-wave energy in the range of 370 to 400 nm.

The AWC (Auk) is an entry level low priced camera for agricultural applications. The system features an integrated ILS measurement system for down-welling radiation that can be used to generate accurate reflectance data for the NIR, Red and Green bands.

Convince yourself!







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