Kentaro Kuwata et al., J Remote Sensing & GIS 2017, 6:3 (Suppl)
DOI: 10.4172/2469-4134-C1-005

Precise agricultural monitoring based on sensor network and satellite remote sensing: Saving water usage of orchards in California

Kentaro Kuwata, Robin Woodby, Peter Oaklander, William Jennings and **Tushar Dave**
FarmX, USA

California is one of the biggest agricultural regions in the United States and a major producer of fruits, vegetables and nuts. However, there was record breaking drought during the winter seasons from 2011 through 2015. Despite above average rainfall in the winter of 2016, groundwater levels are still much lower than in past decades. Over the long term, California's increasingly arid climate has made farmers aware that water resources should be used effectively because the limited amount of water depends on an unpredictable climate condition. FarmX, an agricultural technology company in Silicon Valley, has developed a data platform to reduce irrigation to over-watered areas while ensuring plant health and permanent crop sustainability. Our platform has various types of sensors measuring weather, evapo-transpiration, soil moisture and conditions related to crop growth, allowing for frequent observations of rich field data. Such data is gathered on our cloud platform and visualized in a graph and map style on web browsers allowing growers to make better decisions. In addition, by utilizing satellite data, FarmX allows growers to monitor macro responses to sensor driven control with a lagging indicator related to crop health. Satellite remote sensing is effective to observe the entire area of fields and contributes to early detection of anomalous areas that may indicate problems related to growth. Growers can access details of their fields quantitatively through this data platform and plan more precise irrigation to benefit their yields, given limited resources. FarmX is developing a cycle of observation that provides real-time farmland information to growers from the cloud-based platform. By analyzing big data from our sensors and satellite with machine learning, we develop an automatic recommendation tool of irrigation to support more efficient and highly accurate farming activity, and contribute to sustainable development of the agricultural industry.

Biography

Kentaro Kuwata has developed an expertise in processing and analyzing satellite data in monitoring agriculture. He has experience of working at a Japanese Private Company to utilize various types of satellite data for agriculture and disaster management for two and half years. His recent research work for Doctoral thesis was applying corn yield estimation model developed with satellite data and deep learning to a new type of agricultural insurance. His special ability is processing terra-byte class satellite data with machine learning and applying it to new applications. After he received Doctoral degree in Engineering from the University of Tokyo, he joined FarmX to build an innovative data science platform to help growers become more able to cope with increasingly divergent climates.

ken@farmx.co

Notes: