3 Ways Earth Observation is Tackling Food Security

One of the key global challenges is food security. A number of reports issued last week, coinciding with World Food Day on the 16th October, demonstrated how Earth Observation (EO) could play a key part in tackling this.

Climate change is a key threat to food security. The implications were highlighted by the U.S. Geological Survey (USGS) report who described potential changes to suitable farmland for rainfed crops. Rainfed farming accounts for approximately 75 percent of global croplands, and it's predicated that these locations will change in the coming years. Increased farmland will be available in North America, western Asia, eastern Asia and South America, whilst there will be a decline in Europe and the southern Great Plains of the US.

The work undertaken by USGS focussed on looking at the impact of temperature extremes and the associated changes in seasonality of soil moisture conditions. The author of the study, John Bradford said "Our results indicate the interaction of soil moisture and temperature extremes provides a powerful yet simple framework for understanding the conditions that define suitability for rainfed agriculture in drylands." Soil moisture is a product that Pixalytics is currently working on, and its intriguing to see that this measurement could be used to monitor climate change.

Given that this issue may require farmers to change crops, work by India's Union Ministry of Agriculture to use remote sensing data to identify areas best suited for growing different crops is interesting. The Coordinated Horticulture Assessment and Management using geoinformatics (CHAMAN) project has used data collected by satellites, including the Cartosat Series and RESOURCESAT-1, to map 185 districts in relation to the best conditions for growing bananas, mangos, citrus fruits, potatoes, onions, tomatoes and chilli peppers.

The results for eight states in the north east of the country will be presented in January, with the remainder a few months later, identifying the best crop for each district. Given that India is already the second largest producer of fruit and vegetables in the world, this is a fascinating strategic development to their agriculture industry.

The third report was the announcement of a project between the University of Queensland and the Chinese Academy of Sciences which hopes to improve the accuracy of crop yield predictions. EO data with an improved spatial, and temporal, resolution is being used alongside biophysical information to try to predict crop yield at a field scale in advance of the harvest. It is hoped that this project will produce an operational product through this holistic approach.

These are some examples of the way in which EO data is changing the way we look at agriculture, and potential help provide improved global food security in the future.