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Advanced visualization of big data for adoption of agriculture on climate change

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Since the mid-20th century, the Earth's climate has been rapidly changing. Amongst others, this includes changes of average, maximum and minimum temperatures, rainfall patterns including the number of days without rain or with heavy rainfall, as well as altered wind patterns. Climate change poses a serious challenge for many production sectors, and especially for agriculture. Climate change could bring new crop pests and diseases. Changes in seasonal temperature and rainfall patterns could result in flooding, drought and more frequent extreme weather events. Climate change is a major global driver, which has influence on the world agricultural product market. Adoption of agriculture on climatic change requires collection, storage, sharing and analysis of large quantities of spatially and non-spatially referenced data. These data flows currently present a hurdle to uptake of precision agriculture as the multitude of data models, formats, interfaces and reference systems in use, result in incompatibilities. In order to plan and make economically and environmentally sound decisions, a combination and management of information is needed. Big data is moving into agriculture in a big way. Sensors on fields and crops are starting to provide data points on soil conditions, as well as detailed info on wind, fertilizer requirements, water availability and pest infestations, GPS units on tractors, can help determine optimal usage of agriculture machinery, Unmanned aerial vehicles, or drones, can patrol fields and alert farmers to crop ripeness or potential problems, RFID-based traceability systems can provide a constant data stream on farm products as they move through the supply chain, from the farm to the compost or recycle bin. Individual plants can be monitored for nutrients and growth rates.

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