Big Data in Soils and Agriculture

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## Whats big with big data and agriculture?

SOME COOL QUOTE?



<http://www.cgiar.org/wp-content/uploads/2017/05/BIG-DATA.png>

In 2017 [CGIAR](http://www.cgiar.org/) (aka the Consultative Group for International Agricultural Research) commenced a six-year [Platform for Big Data in Agriculture](http://bigdata.cgiar.org/) to harness “the power of big data for agricultural research and development.” CGIAR is a major player in international agricultrual research and, whether as a herald or Johnny-come-lately, the decision to have big data thematically underpin the breadth of their work speaks to the volume, velocity, and variety of the potentials and promises of big data itself in agriculture. So what is all the hype about?

### Uses & Applications

The proliferation of various agricultrual data types from satelite imagery, the outputs of a growing coprus of internet of things in agriculture ([Verdow, Wolfert, and Tekinerdogan, 2016](https://www.researchgate.net/publication/312164156_Internet_of_Things_in_agriculture)), financial, regulatory, and yeild data have all expanded the opportunity horizon of big data in agriculture. But nothing has captured the [imaginations](http://fortune.com/2014/05/30/cropping-up-on-every-farm-big-data-technology/) and [markets](https://www.reuters.com/brandfeatures/venture-capital/article?id=14966) quite like the promise of precision agriculture.

* Precision Agriclture is likely the idealized nexus of big data and agriculture.

Various organizations are now focused on addressing some

[Global Open Data for Agriculture & Nutrition](http://www.godan.info/)

#### References

* Shekhar, S., Schnable, P., LeBauer, D., Baylis, K., & VanderWaal, K. Agriculture Big Data (AgBD) Challenges and Opportunities From Farm To Table: A Midwest Big Data Hub Community Whitepaper. Retrieved from <https://pdfs.semanticscholar.org/c815/75e059a826f39b47367fceaac67a8f55fb07.pdf>
* Verdouw, C. N., Wolfert, S., & Tekinerdogan, B. (2016). Internet of Things in agriculture. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 11. Retreived from <https://www.researchgate.net/publication/312164156_Internet_of_Things_in_agriculture>

## Soil Carbon and Big Data

As interest and opportunities with big data have grown, so too have a handful of organizations focused big data and on soil carbon.

At the global scale there is the [International Soil Carbon Network](http://iscn.fluxdata.org/), a “collaborative organization composed of scientists who recognize a need for and value in large-scale synthesis of soil carbon science.” Other entitis and project have a regional focus, like the [Permafrost Carbon Network](http://www.permafrostcarbon.org/) which aims to “synthesize existing research about permafrost carbon and climate in a format that can be assimilated by biospheric and climate models”. The[Woods Hole Research Center’s newly funded project](https://portal.nifa.usda.gov/web/crisprojectpages/1012267-soil-carbon-cycle-science-in-the-big-data-era.html) focuses on the Great Plains to vet research to “build a methodology to rapidly predict numerous soil properties from one rapid and inexpensive measurement”.

The [Soil Carbon Information Hub](https://powellcenter-soilcarbon.github.io/SOC-Hub/) beyond the goal of being an informational resource is distinct in its focus on on radiocarbon and fractioning data.

## Outlook and Caveats

As with any tools, technology can be weilded in various ways and more recently concerns have arose about the relationship between data, those who produce it, and those who control it.

#### References

* Fraser, A. (2018). Land grab/data grab: precision agriculture and its new horizons. The Journal of Peasant Studies, 1-20. Retreived from <https://www.tandfonline.com/doi/abs/10.1080/03066150.2017.1415887>