

Coordinating data and data availability to support modeling and comparative research

- Why is this action item important/why should it be addressed?
 - Major gap for lag with curating and archiving social science data within ag research.
 - Because we need this data to improve our models via hindcastings.
 - Data can be re used for greater value than the original research intent. Other people may think of novel uses for your data.
 - Add feedback form to databases so that data users can provide their experiences/quality issues when using data. Important information for other users on how to use data sets for which purposes.
 - Share science globally
 - Without better solutions on this we keep the research integration across disciplines too constructed and limited.
 - Because it will allow space for time substitutions
 - Data will not be lost
 - Because we need to understand G-E-M interactions
 - We want to collaborate with others around the world
 - Like the “rate of change” with climate change is faster, most scientists don’t have/know good data mitigation skills yet to align to and meet emerging regulations.
 - We need a comprehensive accessible database because it will accelerate our understanding of agronomic systems.
 - Because we need to understand trends
 - Because many different formats exist
 - For sharing data
- Extra page
 - Interoperability allows us to cooperate across institutions, projects, and time without foreknowledge of the details of those cooperations.
 - Wider Scope
 - Why Important? \$ We spend money to create data. Inter op makes efficient use of data.
 - Combining data spatially and temporally allows much more information to be gained.
 - To understand climate change in different systems
 - Why important? Data interop can help explain biophys systems and relationships to climate.
 - To make modeling more robust
 - Obeying standards allows the use of community-developed tools for date manipulation and analysis.
 - Food security. – data interop can alleviate food constraints through enhancing management practices?
 - Data integration enable trans disciplinary work that may be unique.
 - Bigger audience
 - By standardizing data and access, we can develop common ways of measuring the use, re-use of data. (instrumentation)
 - Identify common research questions/directions
 - Data interoperability is key to data integration.

- Data interoperability will increase reusability and decrease data collection and integration costs.
- Data interoperability will foster collaboration within the ag community and beyond.
- What
 - Standards
 - Refine/develop ontologies and key ag vocabularies
 - Community adoption of standards such as ag observation and measurement. ISO-19156
 - Common data format/translation protocols
 - Common vocabulary
 - Ensure data is well-described using some core set of metadata
 - Develop a national structure for ag data
 - Common metadata
 - Standards are needed
 - Standards harmonization (terminology and formats)
 - Basic difference between measured data and processed higher level data
 - Disciplinary standards need calibration
 - Metadata and data policies for use need development
 - Data identification to allow linkage between data and data citation
 - Develop repositories (or refine them) to industry standards on interoperability (eg sumarchtech)
 - Infrastructure
 - Intelligent data search routines
 - Databases online with API functions allowing standard data transfer and querying
 - Data warehouse/portal for easy access to data set and queries across databases
 - Tools which allow data upload . Tools which allow data manipulation and use.
 - Global network capabilities need improvement
 - Data infrastructures that allow data publication, data storage, data discovery, and access.
 - Networking software and protocols need improvement.
 - Enabling Conditions
 - Encourage farmers to keep data
 - Incentivize researcher data work to be interoperable.
 - Need to create incentives for researchers to share data.
 - Incentivize (carrots) data sharing- and sticks as well
 - Capacity
 - A work-through (e.g. "how to") on creating metadata for social science datasets (at least survey data) write an SOP!
 - Development of skilled people who can curate data by documentation, maintenance, etc.
 - Education of the farmers on the need for data keeping
 - Equip specialists with the tools needed to create metadata, manage repositories, etc.

- Money
 - Engage prof. societies and others (businesses) to get funding organizations to recognize the financial need.
 - Adequate funding of data mining through the designated institutions.
 - Investment in foundational layers of data sharing- getting data into networked repositories with standards- based access methods.
 - Form an AridCer “task force” (eg, a working group) to stay coordinated and begin pushing for initial money to fund data management services and support.
 - Practical demonstration of the value of data interoperability may help spare investment
 - Need to have significant funding source for collecting storing, and accessing data.
 - Need to lobby professional societies USDA, NSF, to support this effort.
 - We need more funding!
 - Money and funding needed.
- Institutional
 - Need more interoperability experts
 - Need to create a group such as NCI pub med that will take lead responsibility
 - Long-term data conservation and availability
 - Need to coordinate nationally and internationally with others who are working on this issue.
 - Data interop needs to be a higher priority politically? Economically? Culturally?
 - Government to mandate research institute to keep adequate data and release them when needed.