Cultivating a Climate & Agriculture Cluster [1]

  Submitted by Wteng on Wed, 2013-05-01 13:49   Thursday, July 11, 2013 - 15:30 to 17:00
Event: Summer Meeting 2013 [2]
Session Type: Breakout [3]
Collaboration Area: Climate Education Working Group [4]
Decisions [5]
Energy and Climate [6]
Abstract/Agenda:

- An informal gathering to gauge interest in, and possibly kick off, the formation of a new Climate and Agriculture Cluster.

- What are the needs/goals of the cluster?

- What are the role(s) of the cluster (data provider, service provider, data/service integrator)?
- How should the cluster relate to existing ESIP groups (e.g., Collaboration Area: Climate Education Working Group, Decisions, Energy and Climate)?
- How should the cluster relate and contribute to ongoing, existing efforts (e.g., USDA's LTAR)?
- Inventory of ESIP member resources/related activities (e.g., NASA data archives, NASA-funded projects).
- Inventory of non-ESIP resources/related activities (e.g., ARS experimental watersheds, NRCS SCAN sites).

We'll start off with our first invited speaker, Mr. Bill Hohenstein, Director, USDA Climate Change Program Office, who will give a remote presentation on "Climate Change and Agriculture." Following that will be our second invited speaker, Dr. Mark R. Walbridge, National Program Leader, Water Availability and Watershed Management, USDA/ARS and Program Leader, Long-Term Agroecosystem Research (LTAR) Network, who will give a remote presentation on "The Long-Term Agro-ecosystem Research (LTAR) Network."

Some references:

USDA ARS National Program 212: Climate Change, Soils, and Emissions (Charles Walthall)

http://www.ars.usda.gov/research/programs/programs.htm?NP_CODE=212 [7]

Mission: "The ARS National Climate Change, Soils, and Emissions Program has as its mission: to improve the quality of atmosphere and soil resources affected by, and having an effect on agriculture, and to understand the effects of, and prepare agriculture for, adaptation to climate change."

USDA ARS National Program 211: Water Availability and Water Management, Long-Term Agroecosystem Research (LTAR) Network (Mark Walbridge, Simon Liu)

http://www.ars.usda.gov/research/programs/programs.htm?np_code=211&docid=22480 [8]

"As the 21st century unfolds, agriculture will face a series of challenges - in the United States and globally - in providing sufficient food, fiber, and fuel to support a growing global population while our natural resources, environmental health, and available arable land decline and climate changes."

http://www.ars.usda.gov/SP2UserFiles/Program/211/LTAR%20Walbridge%20and%20Shafer%202011%20Paper.pdf [9]

Bartuska, Walbridge, and Shafer, 2012. Long-Term Agro-ecosystem Research (LTAR) and the Global Challenges to Food and Agriculture, Water Resources Impact, 14(5), 8-10.

USDA Climate Change Adaptation Plan

http://www.usda.gov/oce/climate_change/index.htm [10]

Notes:

Participants: Bill Teng, Emily Law, Nancy Hoebelheinrich, Pat Reiff, Richard Eckman, Barry Weiss, Annette Schloss, Carol Meyer, Reid Boehm, Steve Kempler, Shailendra Kumar, Chunming Peng

Participants Online: Bill Hohenstein, Chung-Lin Shie, Mark Walbridge

Bill Teng provided some background about the path to today's session, coming out of the January 2013 ESIP Meeting.

Bill Hohenstein, Director, USDA Climate Change Program Office, Office of the Chief Economist

- Why USDA cares about climate change:

- climate change/variability have effects on ag production
- crops/grazing lands exist in an atmosphere that is increasing in carbon dixoide
- Ag & forest systems are important sources of greenhouse gasses and carbon sinks

- Climate already changing and the expectation is that it will be changing at a more rapid rate.

- Temperature increases
- Precipitation changes
- Intensity of precip events
- increasing carbon dioxide concentrations

- Want to work with climate modelers to improve model outputs

- Climate change results in:

- higher night time temps; high temps during pollination, water stress, extreme events, frost
- more pests, pathogens & weeds
- feed grain and foraging reduction; animal heat & humidity stress; disease & pests in

livestock

- 2012 USDA Climate Change Adaptation Plan

- Greenhouse Gas Mitigation Options and Costs for Ag Land and Animal Production report

- Climate change impacts vary by region of the US - regional hub approach to provide assessment services, technical support

- Climate change impacts are crop-specific

NOAA, DOI - interested in engaging with climate modelers, forecasters; land grant universities, private sector (climate adaptation), state, local & regional governments

Nancy Hoebelheinrich - What kind of visualization needs do farmers have for interpreting data?

-- This is a challenge. Growing recognition among farmers that the climate is changing - need to rely on the science. Farmers view USDA information as reliable information.

Bill Teng - Should the ESIP Federation form a new cluster in the area of climate and agriculture? Generators of data/information; technical/tool developers; Users/information consumers - what gaps exist that might be filled by the ESIP Federation? What are the needs you have?

-- NRCS doing a data gathering exercise on carbon soil storage across the US. using mapping to allow farmers to access data. Also, need help with regional downscaling of data, based on what a local user needs. Need this to be automated. State conservationists, water resource managers, crop consultants to use decadal climate information & how to use it.

-- high priority: facilitate farmers access to regional downscaled climate info.

Bill Teng - Does your USDA use remote sensing data?

-- Forest land cover uses it; carbon (NRCS). Their office using more applied products.

-- No direct use of RS data.

Mark Walbridge, LTAR & National Program Leader, Water Availability & Watershed Management Program

Long-Term Agro-Ecosystem Research Network (LTAR)

- Population by 2050 - 9 billion projected (need food, feed, fiber & fuel)

- Want to do this without depleting natural resources or degrading environment - Sustainable Intensification will have to support production on existing ag lands (FAO 2011)

-- Sustained intensification is key

- Why?

- infrastructure for research
- support long term investigations into key components of intensification
- historical data records

With the fiscal climate, ARS already had infrastructure in place; long term appropriations to start

network in place thru other things

7 criteria in sites

- Productivity of research team
- Infrastructure Capacity
- Data Richness
- Data Availability/Accessibility
- Geographic Coverage
- Existing Partnerships
- Institutional Commitment

21 ARS locations voluntarily submitted info in response to criteria; 10 chosen by a panel of experts

Data records are 12 - 100 years old; sites vary in size (.57) to 6200 km.

Vision - sophisticated platform for transdisciplinary research conducted over decades on the land in different regions of the country; data collected would be geographically scalable; research would support the sustainable intensification of existing ag lands.

All research would use shared protocols to address common research questions that are coordinated across sites.

Shared research strategy for LTAR - 4 key priorities:

- agro-ecosystem productivity
- climate variability/climate change
- conservation & environmental quality
- socio-economic viablity & opps

4 key products

- new knowledge of process & systems
- new tech & managment processes

The Future:

- LTAR Network is ARS' research platform to support future conservation network
- Want to link to CZO, LTER, NEON and other networks,
- Address Key Gaps by adding:
  - new ARS sites
- Interested in building partnerships (esp universities, networks and agencies)
- Want to build NEON-like capacity for instrumentation and measurement

Key difference between climate hubs and ag networks - need to balance needs = sustainable intensification; want to build a network of cascading data sets that build on data coming from other sites in the network.

Bill Teng - How much of the data in the LTAR network is currently interoperable?

- mix hydro & non-hydro data sites; working to find the common data across sites and enable all sites to collect those
- interested in a common data repository (getting guidance from NEON)

General Discussion:

Possible Next Steps:

- Create inventories of ESIP-agriculture related products & what is going on externally to ESIP
- Want telecons & wiki to be productive uses of time and activity to move us forward
- Identify opportunities to supply to data to LTAR (data/tools/use)
- Share technological capabilities
- Remote sensing data products & other models
- Gap analysis of their data needs/tech needs (both farmers & analyst/decision makers)
- Set up a wiki page; telecons (frequency TBD)
- Aim for January meeting to do something

Session Leads:

Name: Bill Teng [11]
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Name: Carol Meyer [14]
Organization(s): Foundation [15]
Email: carolbmeyer@esipfed.org [16]

Presenters:

Name: William Hohenstein [17]

Name: Mark R. Walbridge [18]

Notes takers:

Name: Carol Meyer [19]
Organization(s): Foundation for Earth Science [20]

Teaser: Cultivate a new ESIP cluster!
Accepted:
Keywords: Climate [21]
agriculture [22]
decisions [23]
security [24]
mitigation [25]

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