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Carbon Markets for Soil Carbon Accrual: State of Play

IETA Carbon Forum North America, NYC

Wednesday, September 25th, 2019



Welcome, housekeeping

- **Thank you to IETA!**
- CFNA coffee break is 11:00-11:15, in case you need to pop out
- Please ask questions as we go! This should be interactive
- Please silence your cell phones
- SOC = soil organic carbon
- We are broadcasting via webinar, so speak up so they can hear you
- Webinar recording and speaker slides will be posted online
- Discussion paper posted online at:
<http://www.climateactionreserve.org/how/future-protocol-development/issue-papers/>

10:00 – 10:15 **SETTING THE STAGE**

Max DuBuisson, Policy Director, Climate Action Reserve

10:15 – 11:00 **NEW ADVANCES TO OVERCOME BARRIERS**

Dan Kane, Lead Researcher, Yale University Quick Carbon

Bill Salas, President, Dagan, Inc.

Kimberly Cornish, Director, Food Water Wellness Foundation

11:00 – 11:30 **NEW PROGRAMS & METHODOLOGIES**

Aldyen Donnelly, Director of Carbon Economics, Nori

Dan Harburg, Sr. Director of Systems Innovation, Indigo Ag

11:30 – 12:00 **GROUP DISCUSSION AND WRAP-UP**

Max DuBuisson, Policy Director, Climate Action Reserve

Goals for this workshop



1. Achieve a shared understanding of the challenges and opportunities around crediting for soil carbon accrual
2. Explore ways to overcome challenges
3. Learn about new initiatives for crediting soil carbon accrual
4. Discuss whether *ex post* carbon offsets are the correct solution to this problem



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Max DuBuisson, Climate Action Reserve

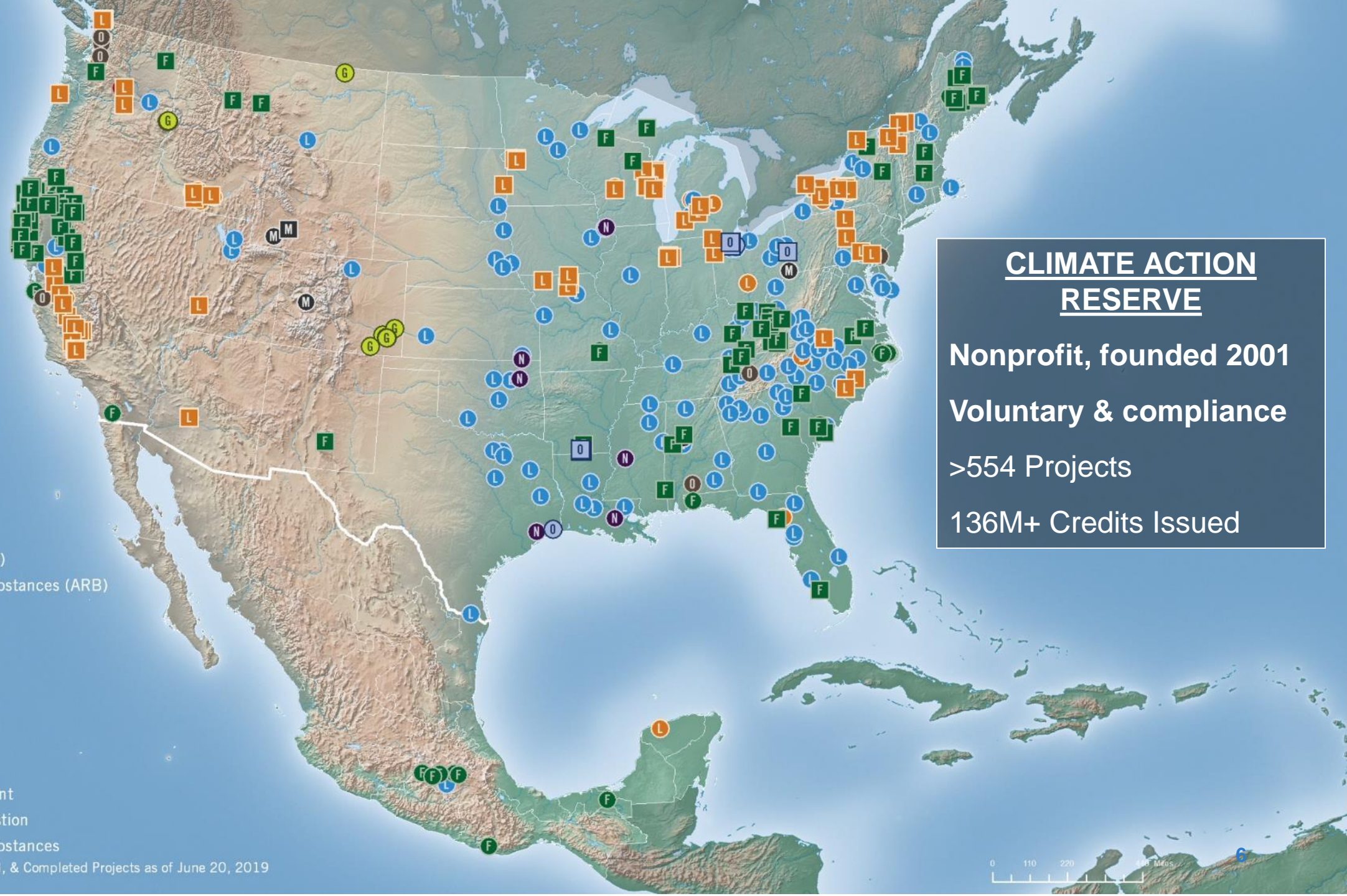
SETTING THE STAGE



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- F Forest (ARB)
- L Livestock (ARB)
- M Mine Methane (ARB)
- O Ozone Depleting Substances (ARB)
- D Composting
- F Forest
- G Grassland
- L Landfill
- L Livestock
- M Mine Methane
- N Nitric Acid Plants
- N Nitrogen Management
- D Organic Waste Digestion
- O Ozone Depleting Substances

Listed, Registered, Transitioned, & Completed Projects as of June 20, 2019



CLIMATE ACTION RESERVE

Nonprofit, founded 2001

Voluntary & compliance

>554 Projects

136M+ Credits Issued



Why soil carbon accrual?

- Globally, soils have a massive capacity for carbon storage
 - ~1 billion tonnes of C is stored in the top 1 meter of soil
- Land use change, especially crop cultivation, has depleted soil carbon all over the world
- It is well-established that changing land use and land management can rebuild soil carbon stocks
 - Land conservation and restoration
 - Regenerative agriculture
 - Sustainable grazing
- Carbon markets have not been successful at driving SOC sequestration

Scope of soil carbon discussion

- For today's purposes, we are focused on:
 - Non-forested landscapes
 - Terrestrial landscapes (not aquatic)
 - Mainly mineral soils (rather than peat or wetlands)
 - Solutions for the US, Mexico, and/or Canada
 - Although hopefully much of what we discuss will be applicable globally
 - Creation of *ex post* carbon offsets

Background on Reserve efforts

- **2005:** Forest protocol includes soil carbon as an optional pool, with limited prescriptive guidance
- **2011:** Aborted protocol development for cropland management (including tillage practices and cover cropping)
- **2012:** Issued standardized forest soil C guidance
- **2015:** Adopted avoided grassland conversion protocol
- **2017:** Contract with Ontario & Quebec to develop 13 protocols, including grassland and conservation cropping

Basic approaches to soil carbon accounting

Direct measurement of soil C stock change

Project-level process-based modeling to predict SOC changes

Standardized emission factors

Challenges



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- Costs
- Uncertainty
- Data availability
- Setting baselines
- Timing and volume of GHG reductions
- Permanence
- Additionality

Opportunities

- Cheaper/faster measurement technologies
- Remote sensing
 - Measurement of productivity to estimate SOC changes
 - Faster and more accurate stratification before sampling
 - Predictive soil mapping through machine learning
- Cost effectively managing practices that affect N₂O and CH₄
- Aggregation
- Tonne-year accounting
- Alternative permanence approaches
- Defining additionality through a suite of activities



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NEW ADVANCES TO OVERCOME BARRIERS

DAN KANE, YALE UNIVERSITY QUICK CARBON



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NEW ADVANCES TO OVERCOME BARRIERS
BILL SALAS, DAGAN, INC.



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NEW ADVANCES TO OVERCOME BARRIERS

**KIMBERLY CORNISH, FOOD WATER WELLNESS
FOUNDATION**



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NEW PROGRAMS & METHODOLOGIES
ALDYEN DONNELLY, NORI



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DISCUSSION & CONCLUSION

- Do the technologies and initiatives we've discussed go far enough to overcome the challenges?
- What else is on the horizon that we should be exploring?
- Are *ex post* carbon offsets the appropriate tool for incentivizing SOC accrual?
 - If not, what alternatives should be explored?

Thank you!

- **Max DuBuisson**, Policy Director, Climate Action Reserve
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- **Dan Kane**, Lead Researcher, Yale University Quick Carbon
- **Bill Salas**, President, Dagan, Inc.
- **Kimberly Cornish**, Director, Food Water Wellness Foundation
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Recording will be posted at: <http://www.climateactionreserve.org/resources/presentations/>

