

FOSTERING OPEN SCIENCE IN METEOROLOGICAL RESEARCH, OPERATIONS, AND EDUCATION

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KEY POINTS

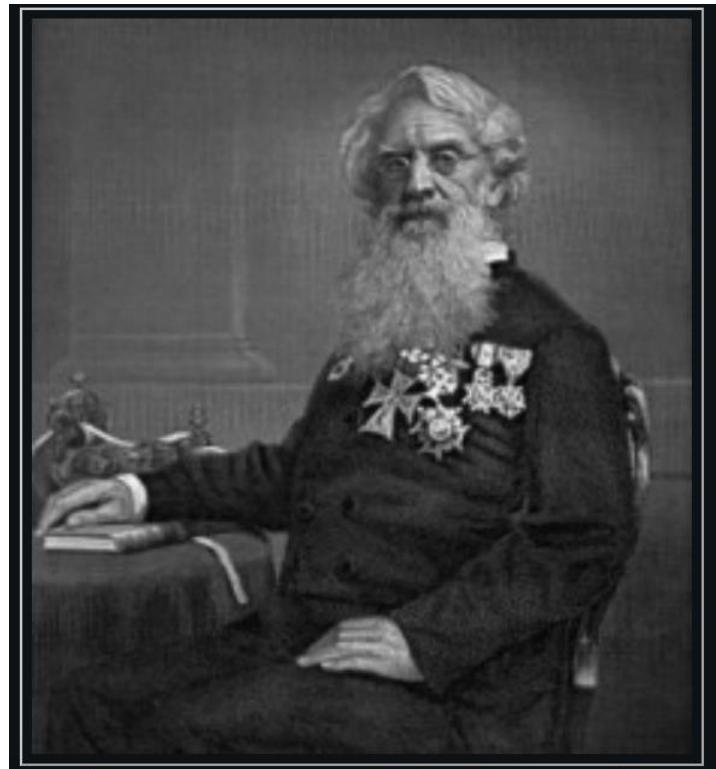
- Developing a culture of sharing data and models by building trust through collaborations
- Removing barriers by use of “honest brokers” in establishing public-private partnerships
- Addressing a trend toward privatizing data in areas of high societal importance
- Ensuring rapid access by graduate students and early career scientists to data and opportunities for early discovery and scientific leadership.



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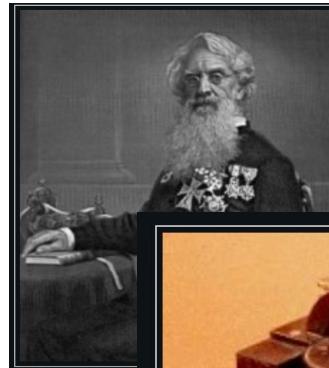
CULTURE OF SHARING

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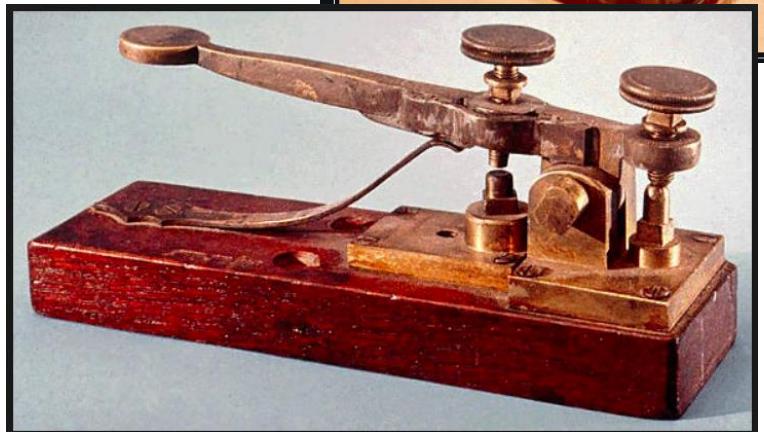
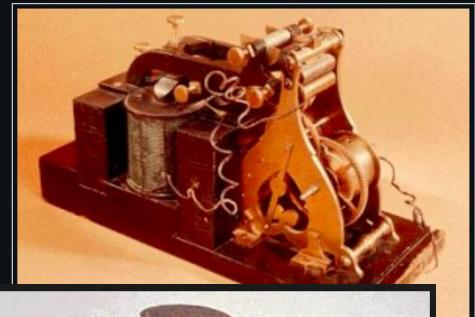
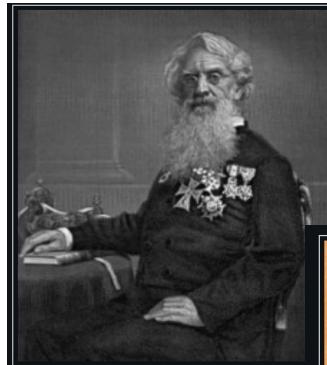
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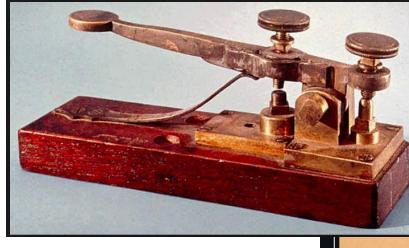
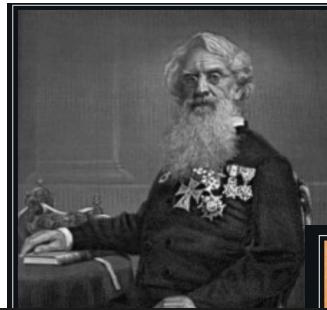
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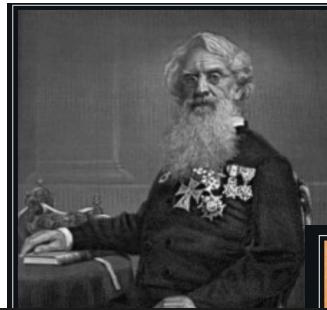
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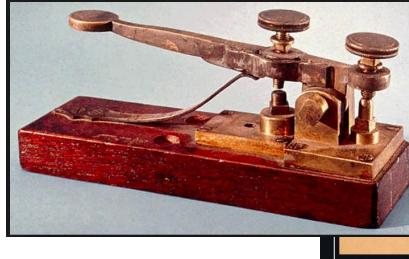
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- which led to real time weather maps and a culture of sharing that now includes complex data sets and numerical models for advancing the use of science for the public good.



<http://morsetelegraph.weebly.com>



<https://www.thinglink.com/scene/615668189820354560>



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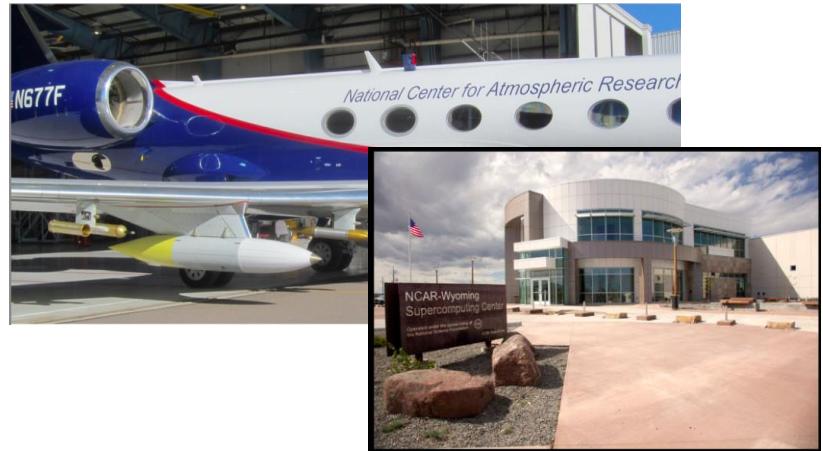
BUILDING COLLABORATION – LEGACY EXAMPLE

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<https://www.aviationcv.com/aviation-blog/2017/10-facts-about-planes-and-flying5114>



Constantino Brumidi, US Senate

CULTURE OF SHARING – REMOVING BARRIERS: THE HONEST BROKER

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CULTURE OF SHARING – DISTURBING TRENDS

- Long-term, complex, multi-disciplinary and expensive field observations having high innovation and potential economic value are not being fully supported by public funds.
- As a consequence, consortia are forming to acquire and market data to a narrow set of clients at rates that recover costs of expensive data collection.
- Restricting access to data of high potential economic value to those who have resources to pay can lead to undesirable societal consequences.



USDA



USDA

EXAMPLE OF THE NEED FOR OPEN SCIENCE

- By mid-century one year out of ten is projected to have a five-day heatwave that is 13°F warmer than the end of the 20th century in the food-producing Midwest.
- Key long-term plant, microbial, soil, and micrometeorological *field information* is lacking for understanding basic plant processes such as vegetative and reproductive failure “points” and nutritional quality of food grains grown in *climatically changing field conditions*.
- This creates high uncertainty in our ability to design a sustainable system for producing a sufficient and nutritious global food supply for the changing climate of the 21st Century.



<http://asi.ucdavis.edu/programs/rr/education-and-outreach/photos/cornfield.jpg/view>



<https://3c1703fe8d.site.internapcdn.net/newman/gfx/news/hires/2016/couldglobalw.jpg>

OPEN SCIENCE AND EARLY CAREER SCIENTISTS

- Restrictions on open science can disproportionately impact graduate students and early career scientists who experience barriers to opportunities for early discovery and exercising scientific leadership.
- Graduate students have new and advanced analytical tools that may lead to unique insights.
- Restrictions in publishing results from data generated under highly restrictive confidential agreements reduce productivity.
- High costs of publishing may artificially limit early career productivity.



<http://cropwatch.unl.edu/2017/growers-statewide-share-farm-research-results>



<https://www.igb.illinois.edu/article/team-calls-integrated-midwest-field-research-network>

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