Plan Overview

A Data Management Plan created using DMPTool

DMP ID: https://doi.org/10.48321/D11S3B

Title: Balancing crop and ecosystem service production in the U.S. Corn Belt through spatially targeted conservation

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Principal Investigator: Lisa Schulte Moore, John Tyndall

Data Manager: Ellen Audia

Funder: Iowa State University (iastate.edu)

Funding opportunity number: PG110214

Grant: https://cchange.research.iastate.edu/

Template: G2G Draft Custom DMP Template

Project abstract:

This master’s thesis tests and provides data and methodologies for spatially targeting conservation in the Corn Belt region of the U.S.

Start date: 05-06-2019

End date: 05-06-2021

Last modified: 05-10-2023
Copyright information:

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Balancing crop and ecosystem service production in the U.S. Corn Belt through spatially targeted conservation

Documentation

Describe how your data is being documented. Provide details on metadata, data dictionaries, codebooks and README files.

All databases associated with each chapter will have metadata, all codes associated with each chapter will be thoroughly commented and have README files. These will all be housed in ISU's DataShare library. Open-source data associated with each chapter will not be housed in ISU's data repository.

Data Collection

Describe the data you will collect or generate.
Provide the details on the formats, expected file sizes, total volumes, and sources.

Chapter 2 Data: Valuing multiple ecosystem services under varying land-use scenarios in the Grand River Basin in Iowa and Missouri

<table>
<thead>
<tr>
<th>Name</th>
<th>Format</th>
<th>Resolution</th>
<th>Size</th>
<th>Source</th>
<th>Open Source?</th>
<th>File Name</th>
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<td>File Format</td>
<td>File Size</td>
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Chapter 3 Data: Mapping the Soil Vulnerability Index across broad spatial extents to guide conservation efforts
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<td>Yes - available for download at <a href="https://www.gis.iastate.edu/gisf/projects/acpf">https://www.gis.iastate.edu/gisf/projects/acpf</a></td>
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Chapter 4 Data: Jointly promoting environmental and economic benefits in Corn Belt Agriculture through spatial optimization
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**Describe how the data will be collected or generated. (MEGAN: Data Use agreement info fits well here)**

Chapter 2: All open-source data was collected from associated repositories. All .csv files and associated data were created in Excel using extensive literature searches. Data outputs were generated using the InVEST model and ArcGIS v 10.8.1.

Chapter 3: All open-source data was collected and saved by David E. James from data repositories. Python codes were original work. Output data was generated using ArcGIS v 10.8.1.

Chapter 4: All input data was generated using the ACPF toolbox in ArcGIS v 10.8.1 and gathered by Adriana Valcu-Lisman. All .csv files were generated using Excel.

**Ethics and Legal Compliance**

**Describe expected ethical and legal issues, e.g. IRB.**
There are no ethical or legal issues.

**Describe how you will manage copyright and Intellectual Property Rights (IP/IPR).**

E. Audia, L. Schulte, and J. Tyndall will own the copyright and IPR of all data.

All research outputs will be licensed under CC BY-NC

**Storage and Backup**

**Describe where and how the data will be stored and backed up.**

All open-source data will not be stored/backed up.

Chapter 2: The .csv files, .txt files, and associated metadata and README files will be stored on ISU’s DataShare library and backed up on CyBox and E. Audia's local hard drive. Any associated spatial files (i.e. .tif, .shp, .dbf) will be stored on CyBox and E. Audia's local hard drive.

Chapter 3: The .txt file and associated README file will be stored on ISU's DataShare library. The output database will be stored on ISU’s GIS ACPF page and backed up on CyBox and E. Audia's local hard drive.

Chapter 4: The .csv files, .txt files and associated metadata and README files will be stored on ISU's DataShare library and backed up on CyBox and E. Audia's local hard drive. All spatial data files will be stored and backed up on CyBox and E. Audia's local hard drive.

**Describe how you will manage access and security.**

All open-source data is accessible, and its security is not under our authority.

Chapter 2: Data associated with chapter 2 will be accessible on ISU’s DataShare library, secured there, but not released until publication.

Chapter 3: Data associated with chapter 3 is accessible and secured on ISU's GIS ACPF webpage.

Chapter 4: Data associated with chapter 4 will be accessible and secured on ISU’s DataShare library, but not released until publication.

**Data Preservation**

**Describe which data (try to be specific) have long term value and should be preserved.**

Chapter 3’s output data (field-level SVI results) will have long-term value and should be preserved.

Chapter 2’s input data (InVEST input tables) can be re-created and updated throughout time, which will influence output data. These need not be preserved long-term.
Chapter 4's input data can be re-created and updated throughout time, which will influence output data. These need not be preserved long-term.

 Describe how the data selected for preservation will be made accessible and reusable for a long period of time.

 Chapter 3's data will be made accessible and reusable on ISU's GIS ACPF webpage.

 **Data Sharing**

 Describe how your data will be shared internally with the Grass to Gas team.

 Data will be directly shared if asked until publicly available through ISU DataShare.

 Describe how the data will be shared post publication and post-award (e.g. ISU DataShare, PSU DataCommons, Dryad, etc.)

 ISU DataShare will host the data and metadata.

 **Roles and Responsibilities**

 Describe who is responsible for each aspect of data management including data collection, data validation, data analysis, and data publication. (The PI is responsible for overall management and is the single point of contact concerning data management.)

 E. Audia is responsible for the data collection, validation, analysis, and publication.

 L. Schulte Moore and J. Tyndall will oversee and advise the above data management.
**Planned Research Outputs**

**Dataset - "Iowa ACPF Soil Vulnerability Index"**

Soil Vulnerability Index classifications (runoff potential and leaching potential) of all farm fields across Iowa, USA. This dataset can be found at https://www.gis.iastate.edu/gisf/projects/acpf

**Dataset - "InVEST Input Data "**

All the input data tables and metadata needed to run the NDR, SDR, Carbon, and Pollinator InVEST modules for the Grand River Basin in Iowa and Missouri, USA and the enterprise budget used to investigate private economic outcomes.

**Text - "Soil Vulnerability Index python code"**

The python code used to generate SVI results for all farm fields in Iowa, USA.

**Dataset - "East Big Creek Optimization Data"**

All best management practice-field combination data, IMPLAN budgets and impact summaries, and metadata for East Big Creek in Polk and Boone counties of Iowa, USA.

**Text - "East Big Creek Optimization Code"**

Python code used to run the optimization model to maximize water quality and biodiversity under cost constraints in East Big Creek watershed of Iowa, USA.

**Text - "Land Cover Change Code for InVEST"**

The python code used to generate alternate land cover scenarios in the Grand River Basin of Iowa and Missouri, USA for use in the InVEST modules.

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**Planned research output details**

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<th>Initial access level</th>
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<td>Title</td>
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