

# AgMIP Data Products

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# Data as a cross-cutting theme

- Data issues comprise a fourth cross-cutting theme
  - Involves all AgMIP teams
  - Lies at the interface between teams
  - Communication between teams is essential
- Data = point of exchange between teams:
  - Climate-crop
  - Crop-economics
  - But, also:
    - Input data for transparency
    - Output data as ‘results to be published’

# AgMIP Data Policy

- Ioannis Athanasiadis and Sander Janssen led an interdisciplinary group in Tuesday's side meeting on this issue
  - Summary in next presentation
  - Breakout today 11 am – 12:30 pm – needs feedback from the group.

# Data Harmonization and Visualization

- Two breakouts
  - Thursday 1:45 pm: invited presenters – 10 min each
    - Tom Hertel – Geoshare, GTAP
    - Philip Thornton – CCAFS
    - Karen Frenken – FAO
    - Sander Janssen – Yield Gap, MACSUR, SemaGrow
    - Jetse Stoorvogel – S-World
    - Jawoo Koo - IFPRI
    - Discussions to follow
  - Friday 9:45 am: Future research plans

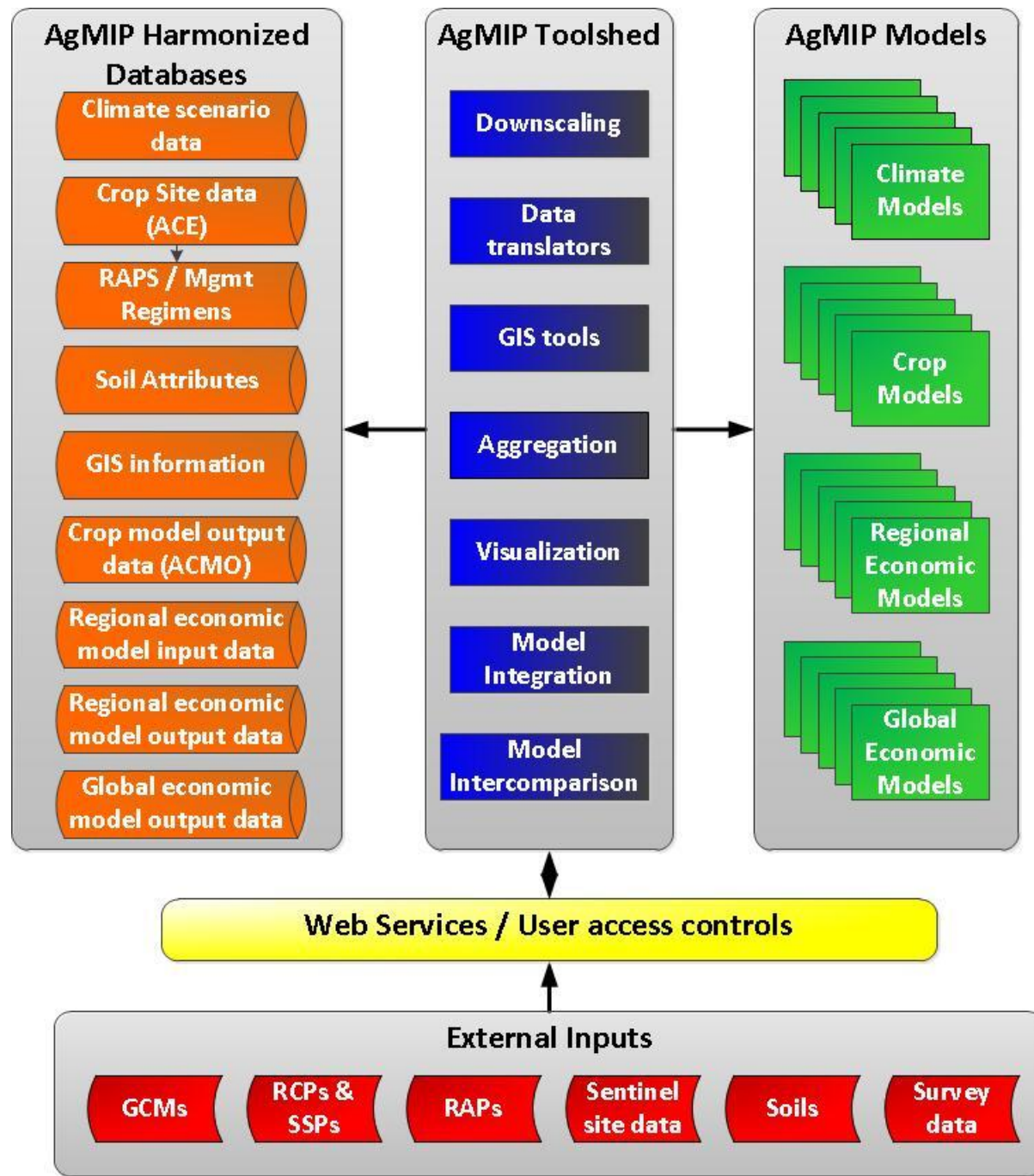
# AgMIP IT Products

- Websites
  - Public site [www.agmip.org](http://www.agmip.org) (under renovation), UPF, CU, UF
  - Research site [research.agmip.org](http://research.agmip.org) – wikis, discussion forums, downloads
  - AgMIP toolshed [tools.agmip.org](http://tools.agmip.org) (under construction)
  - CCAFS-AgMIP model documentation wiki - [www.agrimod.org](http://www.agrimod.org) (under construction)
- Tools
  - Climate tools
  - Crop model data translation tools
  - Web and desktop interfaces for modeling tools
  - Open source repositories [github.org/agmip](http://github.org/agmip)
- Databases
  - Crop Experiment / Sentinel site (operational)
  - Crop model outputs (semi-operational)
  - Crop scenarios (under development)
  - Gridded data (conceptual)

# AgMIP Data Products

# Architecture vision

[research.agmip.org](http://research.agmip.org)



# AgMIP Data Products

Most important product:

**COMMUNICATION!**

between interdisciplinary teams

# Phase 1 of development: AgMIP Crop Experiment (ACE) harmonized data format

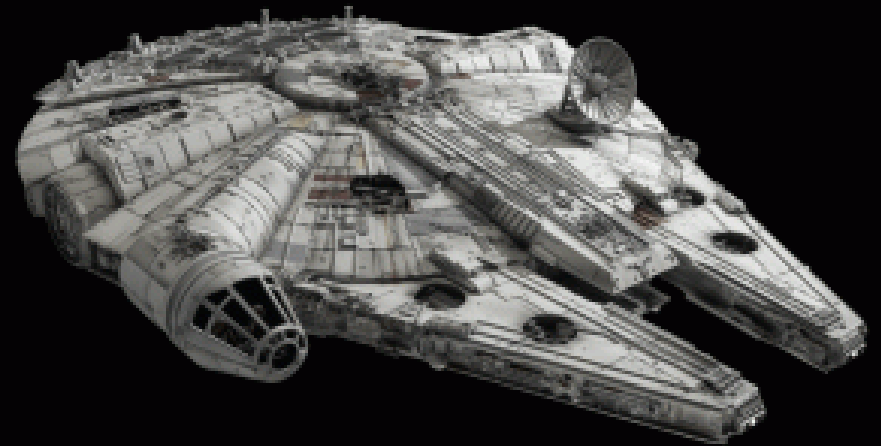
- Site based data
  - Detailed field experiments (sentinel sites)
  - Variety trials – seed companies and other breeding trials
  - Farm-level survey data
- ICASA Master Variables List – provides means of harmonization
- Collaboration with CCAFS ([www.agtrials.org](http://www.agtrials.org)) on meta-data standards



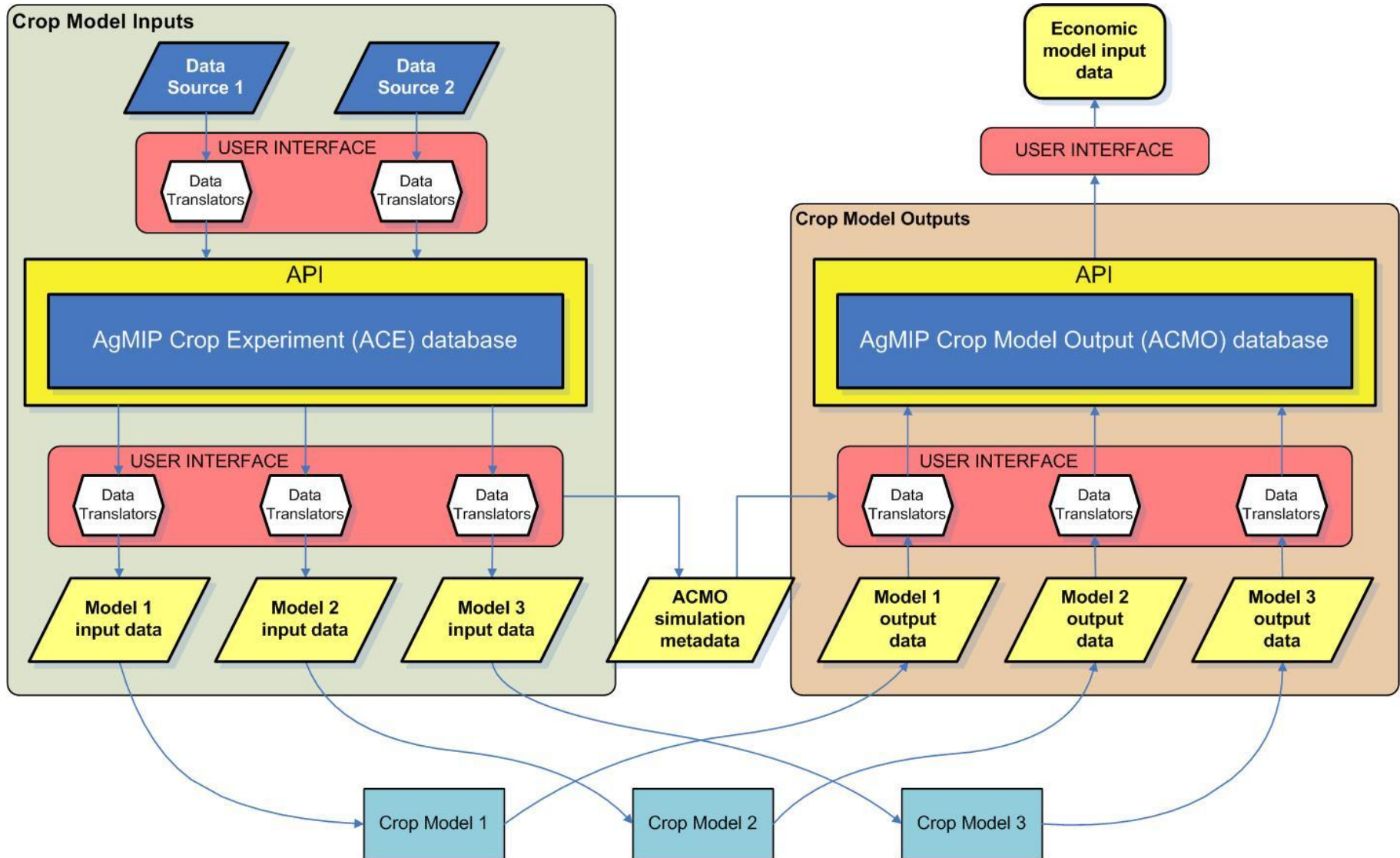


# Riak – not your father's database

- Open source, distributed database platform
- Look, Ma! NoSQL!
- Key-value system of data storage
- Distributed system, highly fault tolerant
- Fast read-write capability
- Stable
- Low cost operations
- Scales simply



# ACE-ACMO Harmonized Data



# Crop Model Input Data Translators

- Multi-model Translator Development Sprints
  - ICRISAT, Patancheru, India – February 2012
  - Gainesville, FL, USA – July 2012
  - Ames, Iowa, USA – September 2012
  - Sprint #4 – Early 2013
- Translators in development for:
  - APSIM
  - DSSAT
  - STICS
  - AquaCrop
  - EPIC
  - InfoCrop
  - CropSyst
  - SALUS
  - WOFOST
  - ORYZA2000
  - RZWQM2
  - ...

# The DOME: Data Overlay for Multimodel Export

- Fill in missing data prior to data translation so that all models use the same assumptions.

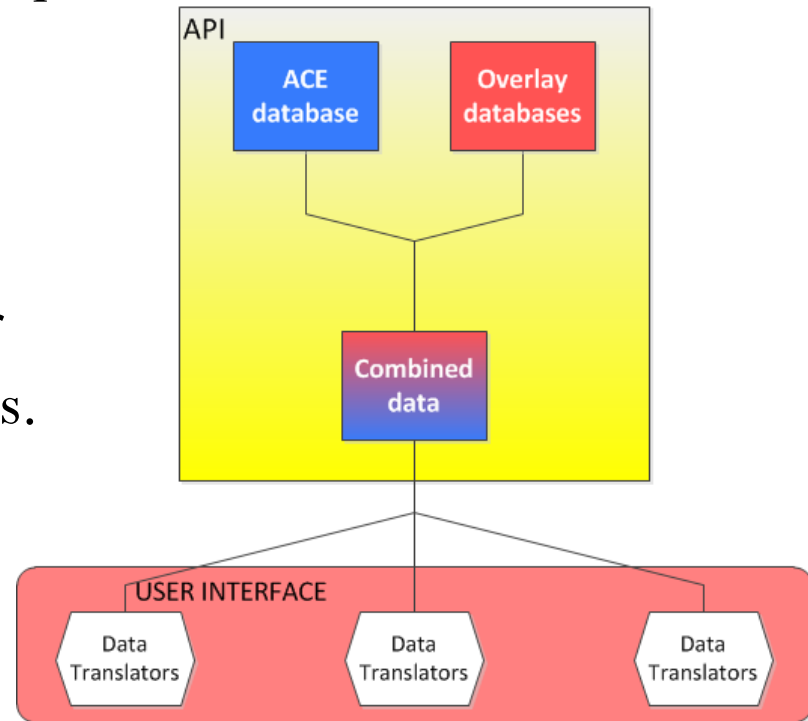
Examples:

- Planting densities
- Initial soil conditions

- Overlay a management regimen, for applying RAPs to baseline conditions.

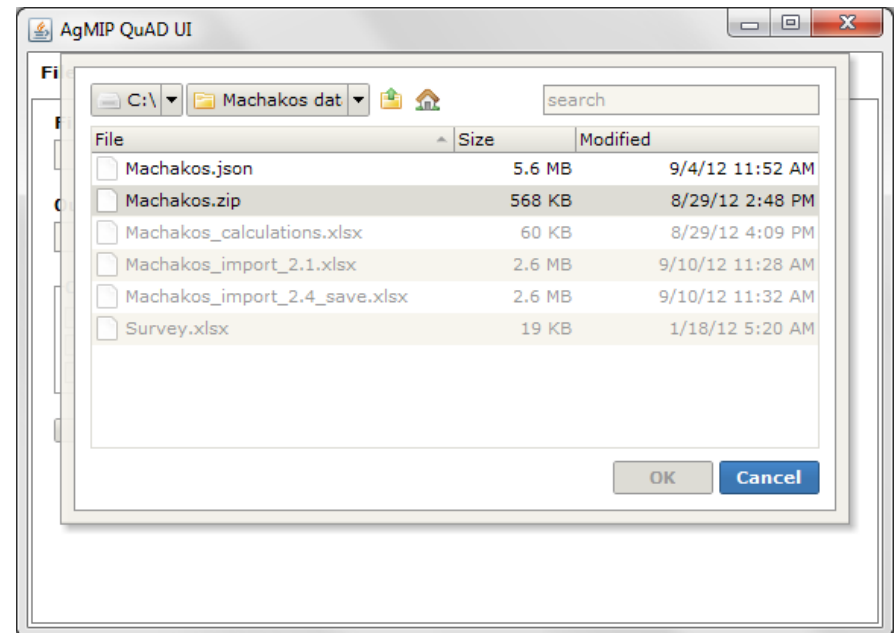
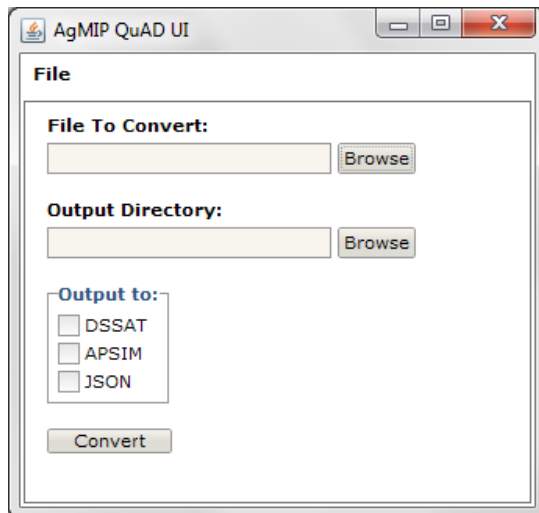
Examples:

- Fertilizer rates
- Cultivars



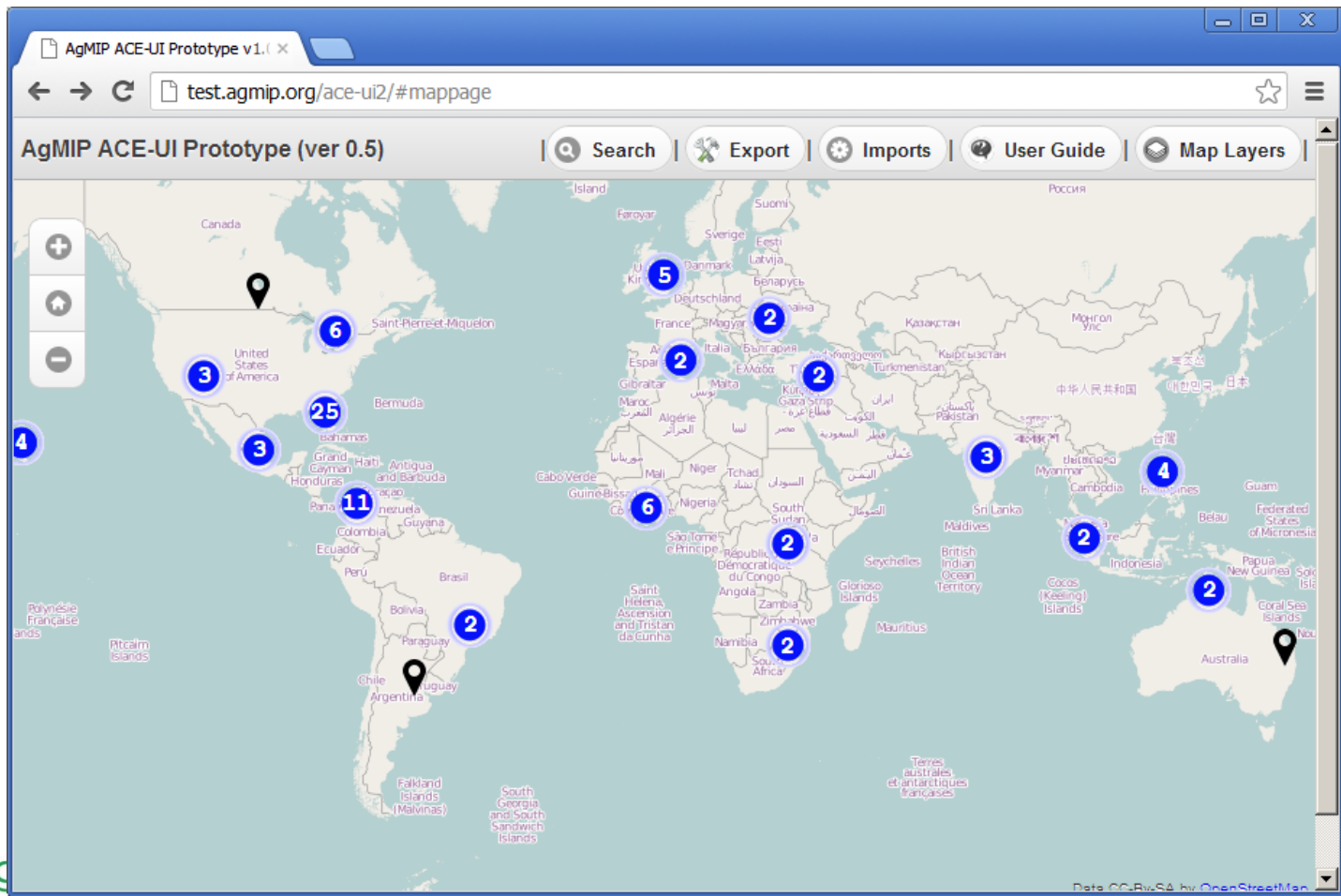
# QuadUI – desktop data translation tool

- Conversion of spreadsheet templates, JSON files, .AGMIP files and DSSAT files to AgMIP harmonized format.
- Output to model-ready files of choice (currently DSSAT or APSIM are fully functional)
- Near future: web-based application to upload and archive data, search and query, download in multiple formats.



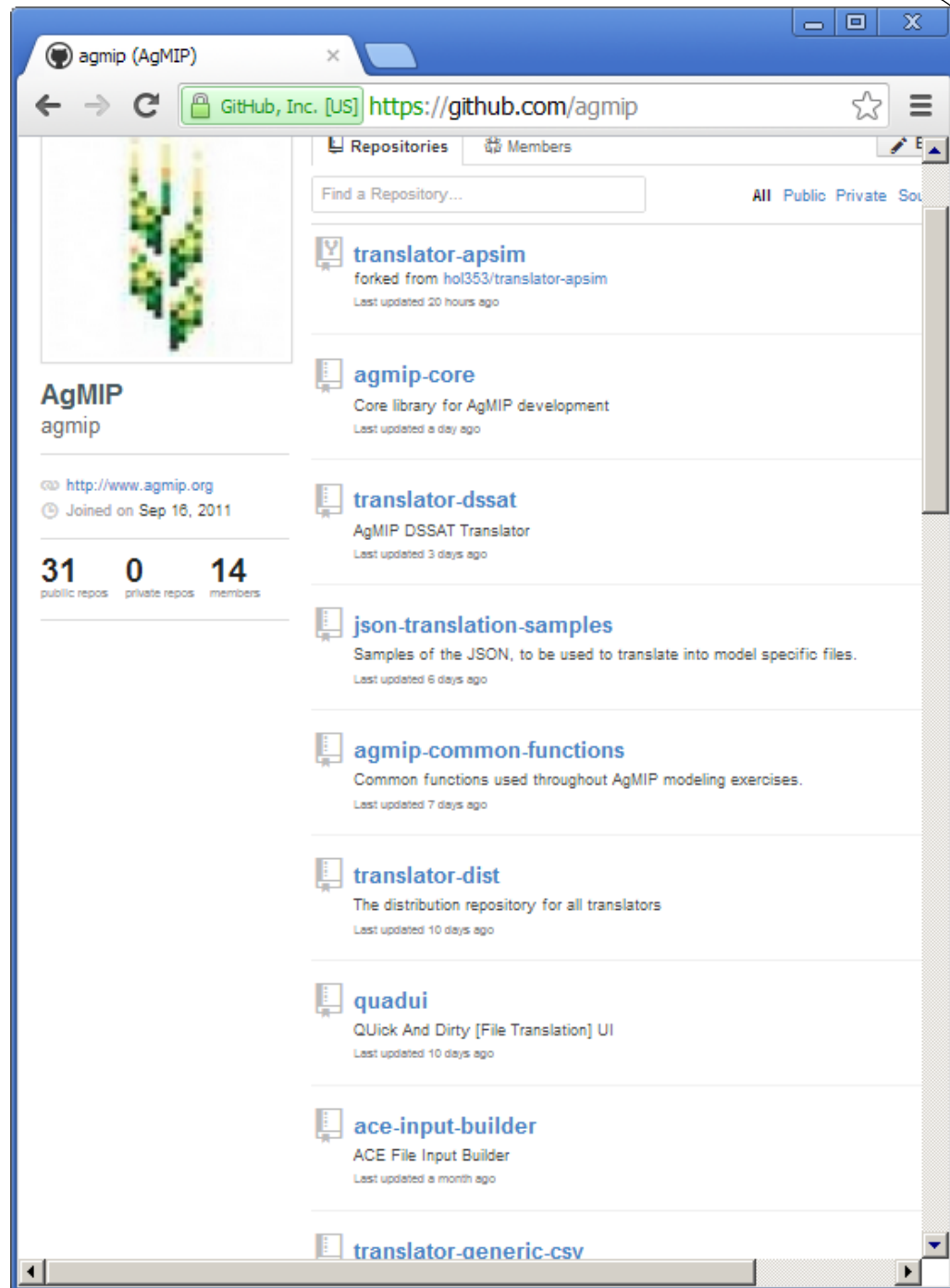
# Web-based data search

- <http://test.agmip.org/ace-ui2/#mappage>



# AgMIP GitHub repositories

[github.com/agmip](https://github.com/agmip)




agmip (AgMIP)

GitHub, Inc. [US] <https://github.com/agmip>

Repositories Members

Find a Repository... All Public Private Source



**AgMIP**  
agmip

<http://www.agmip.org>  
Joined on Sep 16, 2011

**31** **0** **14**  
public repos private repos members

**translator-apsim**  
forked from hol353/translator-apsim  
Last updated 20 hours ago

**agmip-core**  
Core library for AgMIP development  
Last updated a day ago

**translator-dssat**  
AgMIP DSSAT Translator  
Last updated 3 days ago

**json-translation-samples**  
Samples of the JSON, to be used to translate into model specific files.  
Last updated 6 days ago

**agmip-common-functions**  
Common functions used throughout AgMIP modeling exercises.  
Last updated 7 days ago

**translator-dist**  
The distribution repository for all translators  
Last updated 10 days ago

**quadui**  
QUick And Dirty [File Translation] UI  
Last updated 10 days ago

**ace-input-builder**  
ACE File Input Builder  
Last updated a month ago

**translator-generic-csv**

# Authorship noted for all AgMIP products

- Holzworth, D., I. Athanasiadis. 2012. AgMIP data translation tools for APSIM. <https://github.com/agmip/translator-apsim>
- Janssen, S., I. Athanasiadis, C.H. Porter. 2011. AgMIP use cases - [www.agmip.org/itteam/wp-content/uploads/2011/10/AgMIP-Use-Cases.pdf](http://www.agmip.org/itteam/wp-content/uploads/2011/10/AgMIP-Use-Cases.pdf)
- Janssen, S.J.C., van Kraalingen, D., Boogaard, H., de Wit, A., Franke, J., Porter, C., Athanasiadis, I.N., 2012. A generic data schema for crop experiment data in food security research, In: Seppelt, R., Voinov, A.A., Lange, S., Bankamp, D. (Eds.), 2012 International Congress on Environmental Modelling and Software, Managing Resources of a Limited Planet, Sixth Biennial Meeting. International Environmental Modelling and Software Society (iEMSs): Leipzig.
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- Villalobos, C., C.H.Porter, J.W. White. 2012. AgMIP Sentinel Site Database – An initial implementation of the crop experiment database with about 100 experiments included for initial testing and further development
- Villalobos, C., C.H.Porter. 2012. AgMIP open source development tools - [github.com/agmip](https://github.com/agmip), contains source code for crop experiment database API core, generic utilities for data translators, desktop user interface for data translation. <https://github.com/agmip/agmip-core>  
<https://github.com/agmip/ace-lookup>  
<https://github.com/agmip/webservices-impl>  
<https://github.com/agmip/translator-dist>  
<https://github.com/agmip/maven-translator-archetype>
- Villalobos, C., C.H. Porter. 2012. AgMIP tools and user interface for data import and translation <https://github.com/agmip/quadui>  
<https://github.com/agmip/ace-input-builder>
- Villalobos, C., Y. Jung, M. Zhang. 2012.
- Zhang, M., C.H. Porter, C. Villalobos. 2012. AgMIP data translation tools for DSSAT. <https://github.com/agmip/translator-dssat>



# Conclusion

- We are on the way, but much more to do
- Many more connections between teams needed
- Communication between teams is crucial/lacking/required
- Want to contribute?
  - Free to download / modify / upload to code to repositories
  - Guidance available from UF and Alterra
  - Ask me about the next development sprint