The Astrobiology Habitable Environments Database (AHED)

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AHED

Central, high quality, long-term searchable repository for astrobiologically relevant data including mineralogy and biomineralogy, morphological, textural, chemical, isotopic and crystallographic information.

objectives

The goal of AHED is to offer a user-friendly interface that will allow scientists to design their own individual databases for both archiving and collaborative sharing of astrobiologically relevant data in order to:

1) Understand and interpret planetary geology,
2) Identify and characterize habitable environments and pre-biotic/biotic processes,
3) Interpreted returned data from present and past missions,
4) Perform detailed planning for future missions,
5) Evaluate the science potential of proposed flight instruments based on archived data from well characterized standard,
6) Provide a citable and referenceable database of NASA-funded published and unpublished data (after an agreed-upon embargo period).

infrastructure

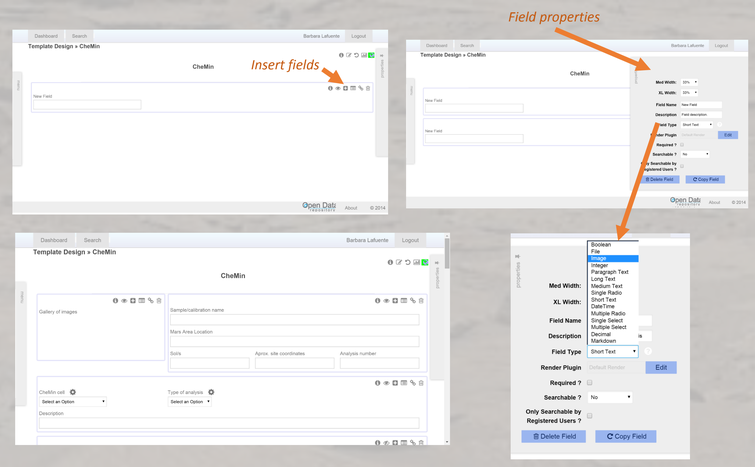
AHED uses the open-source software ”The Open Data Repository” (ODR) (see companion poster). AHED will be hosted at the NASA Advanced Supercomputing Division (NAS) at NASA-AMES.

characteristics

Research teams and individual scientist will design, populate and manage their own databases according to the characteristic of their data. The communication among databases will be managed by incorporating semantic standards such as OWL 2 (Web Ontology Language). Advanced graphics will be implemented including 3D graphing, multi-axis graphs, error bars, and similar scientific data functions together with advanced online tools for data analysis, e. g. the statistical package, R. The platform can also serve as laboratory notebook.

design

drag-and-drop procedure



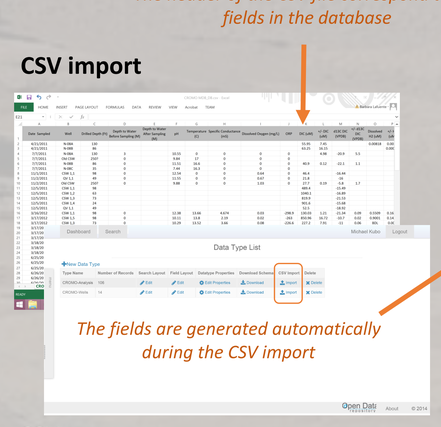
The user can select and add different field types to their data set and modify the design at any time to include new fields.

Import and export

The database will have the capability to import and export in a variety of standard formats for each data type.

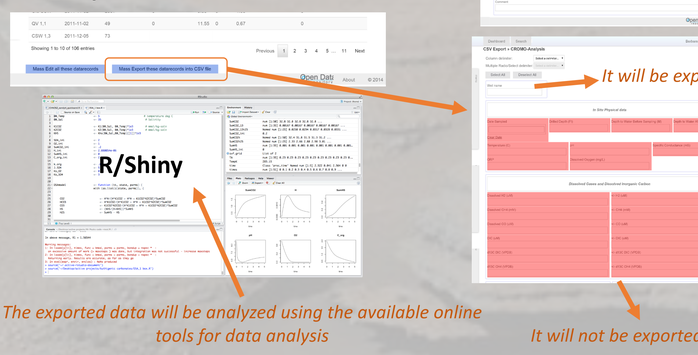
The header of the CSV file correspond to the fields in the database

CSV import



The fields are generated automatically during the CSV import

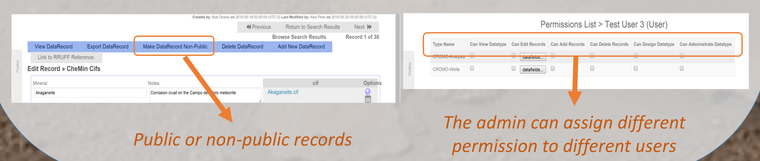
CSV export



The exported data will be analyzed using the available online tools for data analysis

Permissions

A permissions system will be put in place so that as data are being actively collected and interpreted, they will remain proprietary.



Public or non-public records

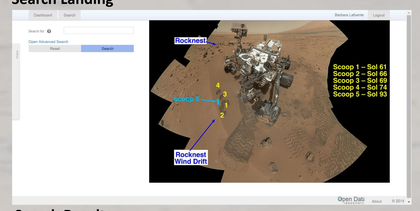
The admin can assign different permission to different users

examples

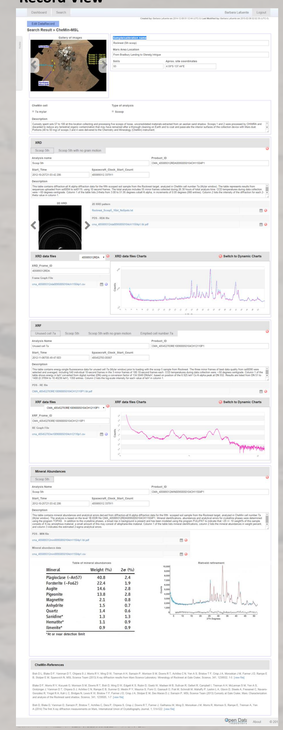
CheMin data

[odr.io/chemin]

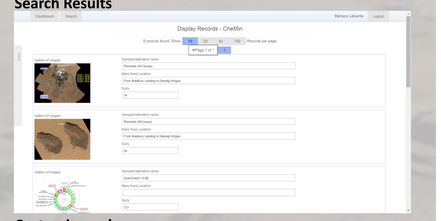
Search Landing



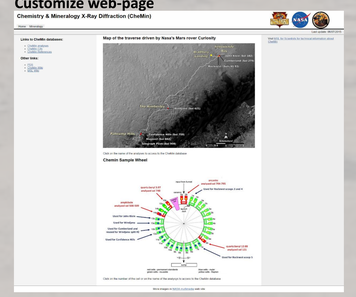
Record View



Search Results

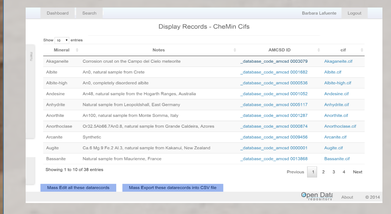


Customize web-page



CheMin Cifs

[odr.io/chemincifs]



CheMin References

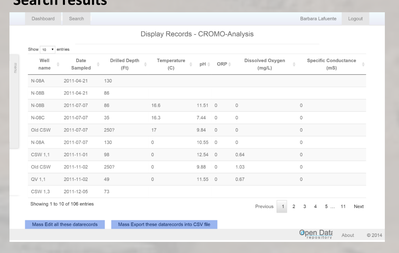
[odr.io/chemin_references]

The three CheMin databases communicate through linked records

CROMO

[odr.io/cromo _analysis]

Search results



Record view

Datasets under development:

GC-MS data
DNA/RNA sequences
Geochemical data
Spectroscopy

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http://www.opendatarepository.org/