

## How to use the demo system

The demo system <https://goo.gl/UNbdok> is optimized to run in Chrome and Safari.

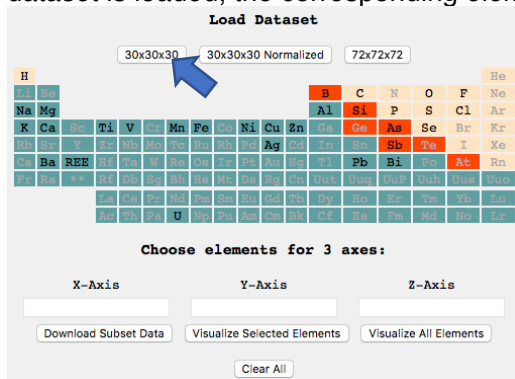
There are three datasets for the demo system:

- 1) A 30\*30\*30 3D matrix for mineral species numbers. The value in each cell represents the number of minerals species that contain the three element X, Y and Z.
- 2) A 30\*30\*30 3D matrix for mineral species fractions. The value in each cell represents the fraction of mineral species containing Z that also contain both X and Y.
- 3) A 72\*72\*72 3D matrix for mineral species. The value in each cell is the result of a chi-squared test to show the effect of the presence of element Z on the correlation between elements X and Y in mineral species?'

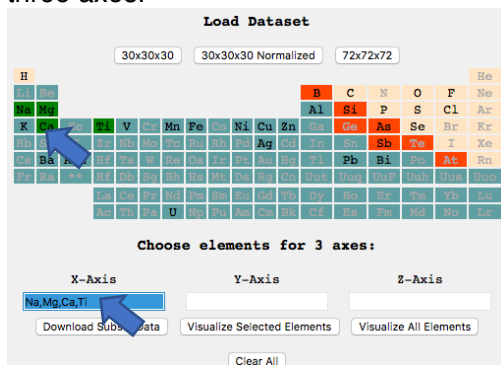
All three datasets are from the DTDI research team members (credit RRUFF.info and [dtdi.carnegiescience.edu](http://dtdi.carnegiescience.edu)).

The general workflow is as below:

- 1) Go to <https://goo.gl/UNbdok>. A user can load one of the three datasets by click a button. Once the dataset is loaded, the corresponding elements in the dataset will be highlighted in the periodic table.

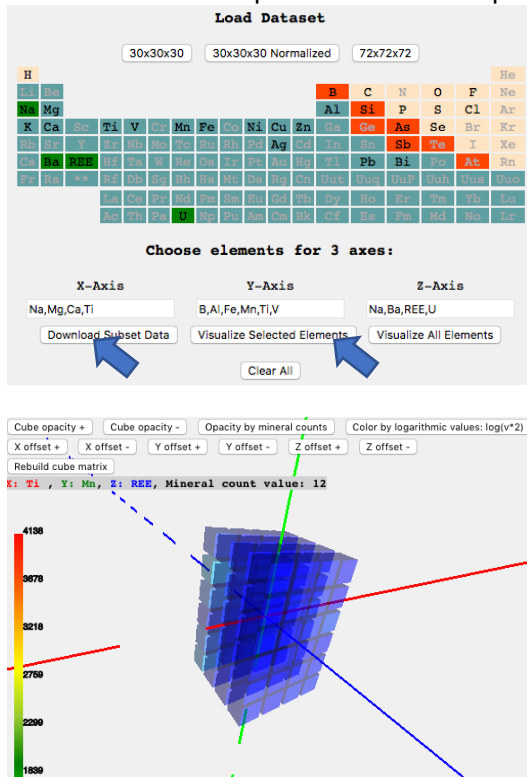


- 2) The user can select elements to be listed along each axis in the output cube matrix, First click the input box for an axis then make selections by clicking nodes in the periodic table. The selected elements will show up in the input box of that axis. The option is same for the input box of all the three axes.



- 3) When the data selection is done, the user can download the selected dataset (csv format) or visualize it in a cube matrix by clicking the corresponding buttons. The visualization function will

open a new page. In the new page, the user can interact with the visualization result in various ways: rotate, zoom in, zoom out, or change the distance between cubes along each axis, do a logarithmic transformation to improve visualization pattern, etc.



4) For each loaded dataset, the user can also click the ‘Visualize All Elements’ button to visualize everything in the raw data, which however is not recommended because that will take a lot of computation power and may crash the memory of your computer, especially for the 72\*72\*72 dataset.

5) On the main user interface, the user can click Clear All to clear the current element selections and start a new session.

The demo system is still under development. You are welcome to contact Marshall Ma (max@uidaho.edu) for suggestions and comments.

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