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Visualizing Relationships between Global Indicators

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Visualizing Relationships between Global Indicators

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- There is a large amount of data collected across all countries annually, over a range of socio-economic indicators. For example the World Development Indicators Database^[1] has data that covers 225 countries and regions, spanning 40 years for more than 500 indicators. While having more information is definitely better, visualizing this becomes a harder problem!
- Our project focuses on developing an interactive interface to select slices from this large volume of data and perform correlation analysis, in turn displaying the results on a correlation matrix and a pseudo-colored world map.
- The objective of this visualization is to begin to investigate deeper questions regarding the relationship between various global indicators and countries.

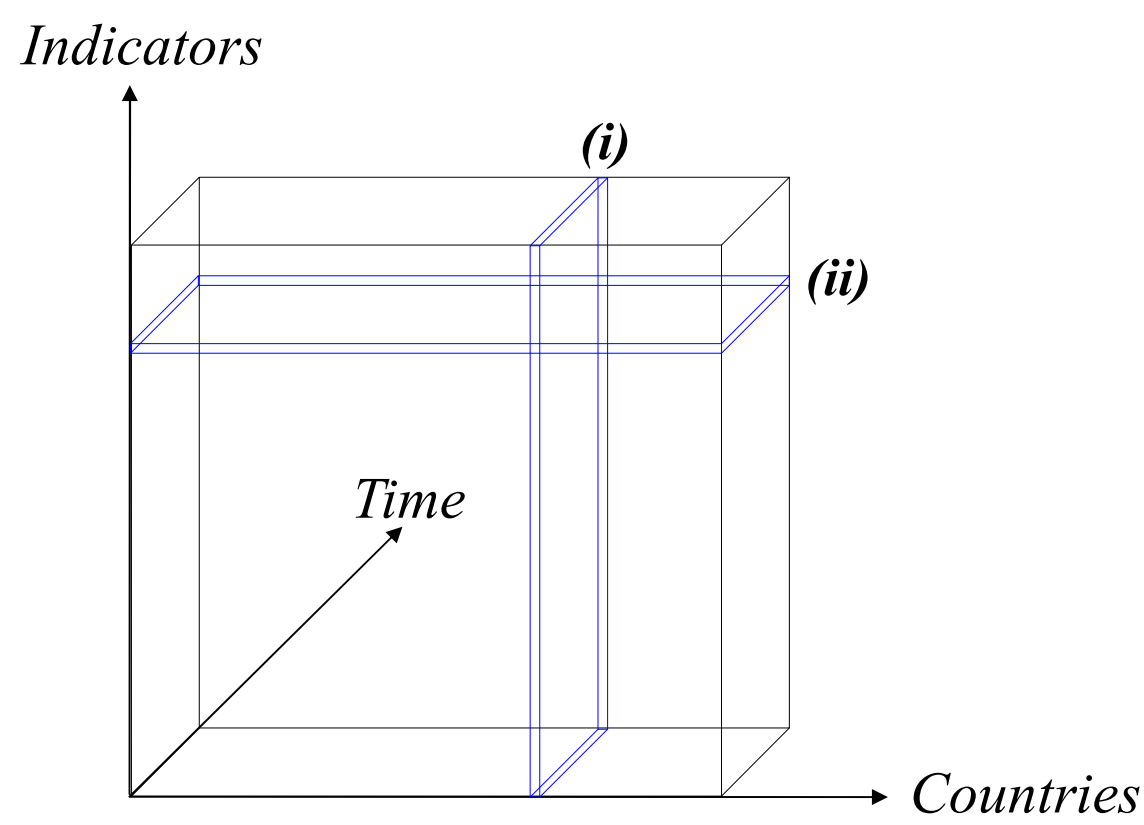


Figure 1: The 3-dimensional volume of indicator, country and year data, with (i) a vertical 2D slice highlighted which shows times series data for all indicators for a specific country, and (ii) a horizontal 2D slice showing time series data for a single indicator over all countries

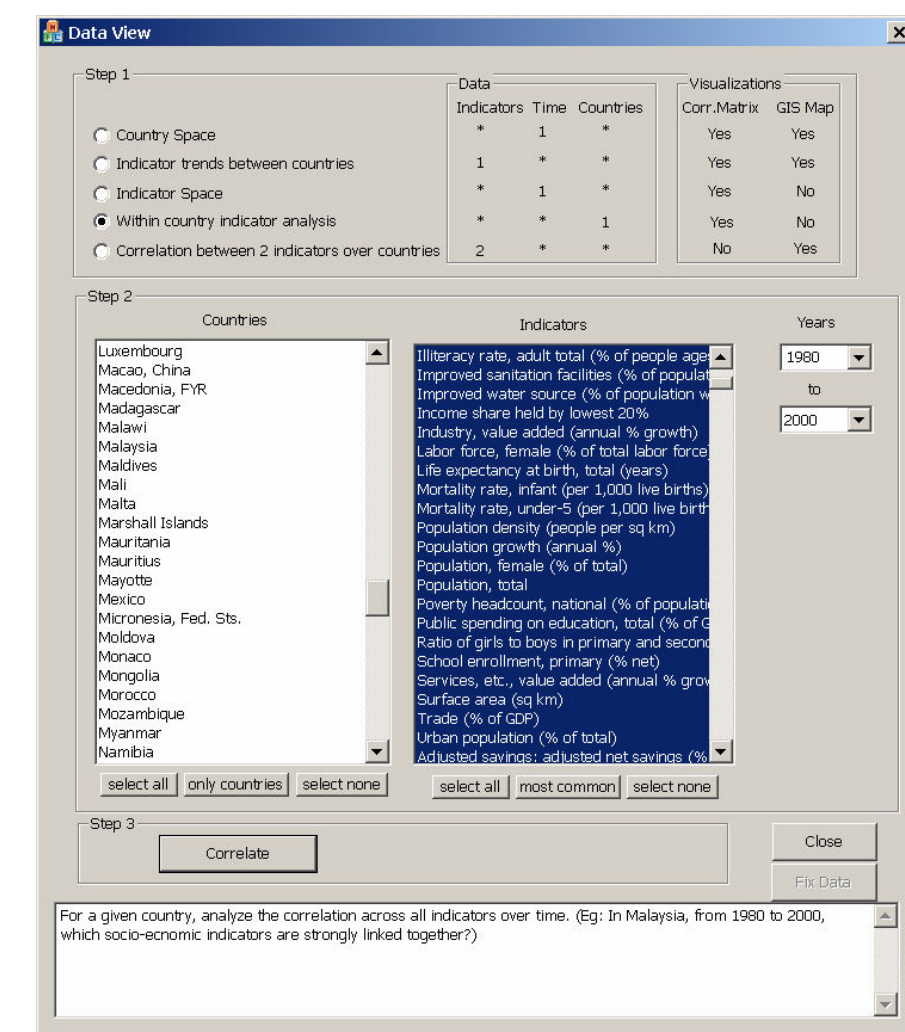


Figure 2: The main interface, which allows user to pick a query type and select a set of countries, indicators and a time period.

(i) Multiple indicator correlation for a single country : We can study the correlation of multiple indicators over time for a specific country. This allows us to look at questions such as ‘From 1980 to 2000 in Malaysia, which socio-economic indicators were strongly linked together?’

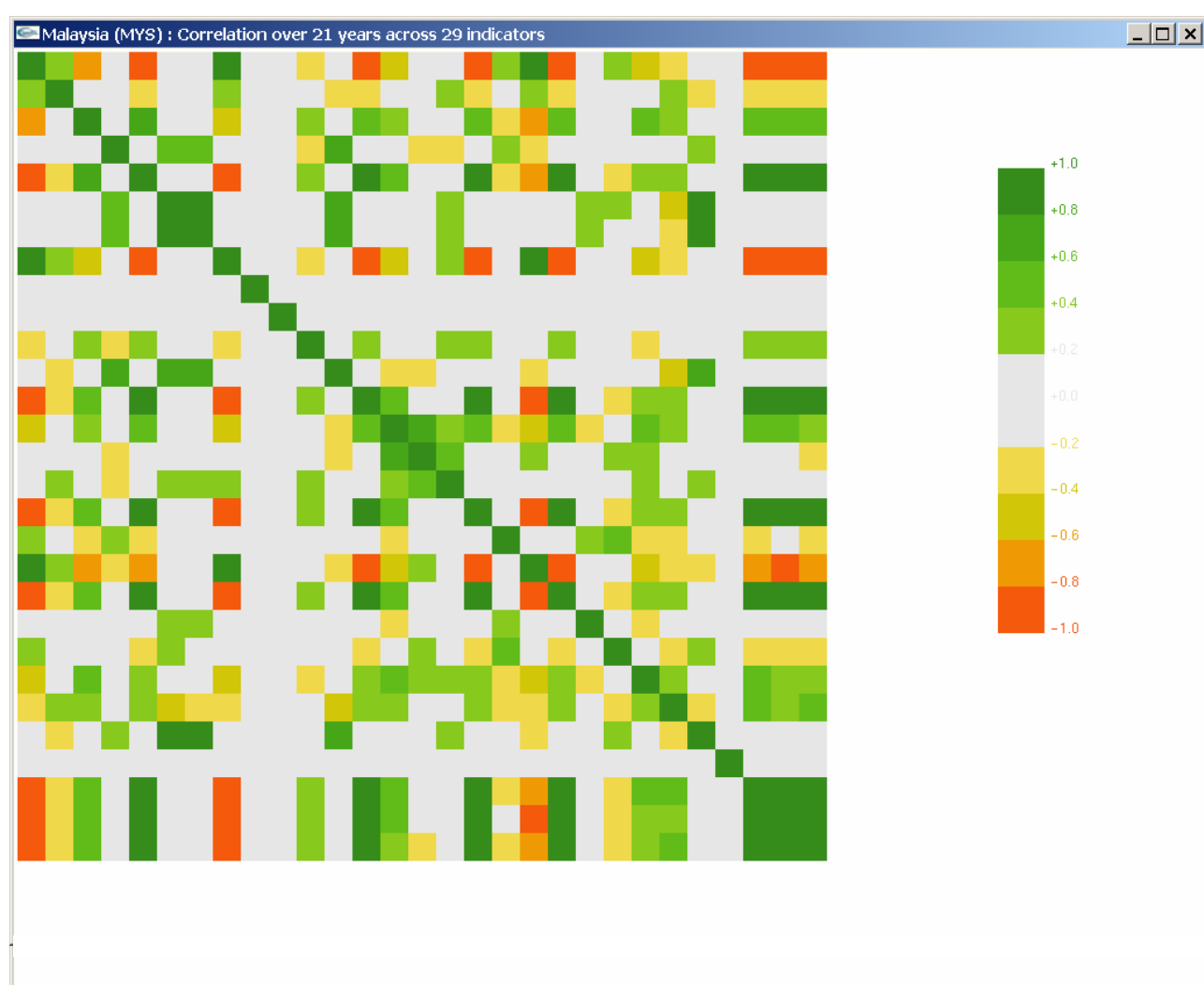


Figure 3: Correlation matrix for 29 indicators in Malaysia, from 1980 to 2000. Each cell represents the correlation coefficient C_{ij} between the two indicators along the i^{th} row and j^{th} column, which can be identified using the interface.

→
Pick a single indicator
(a column) and sort.

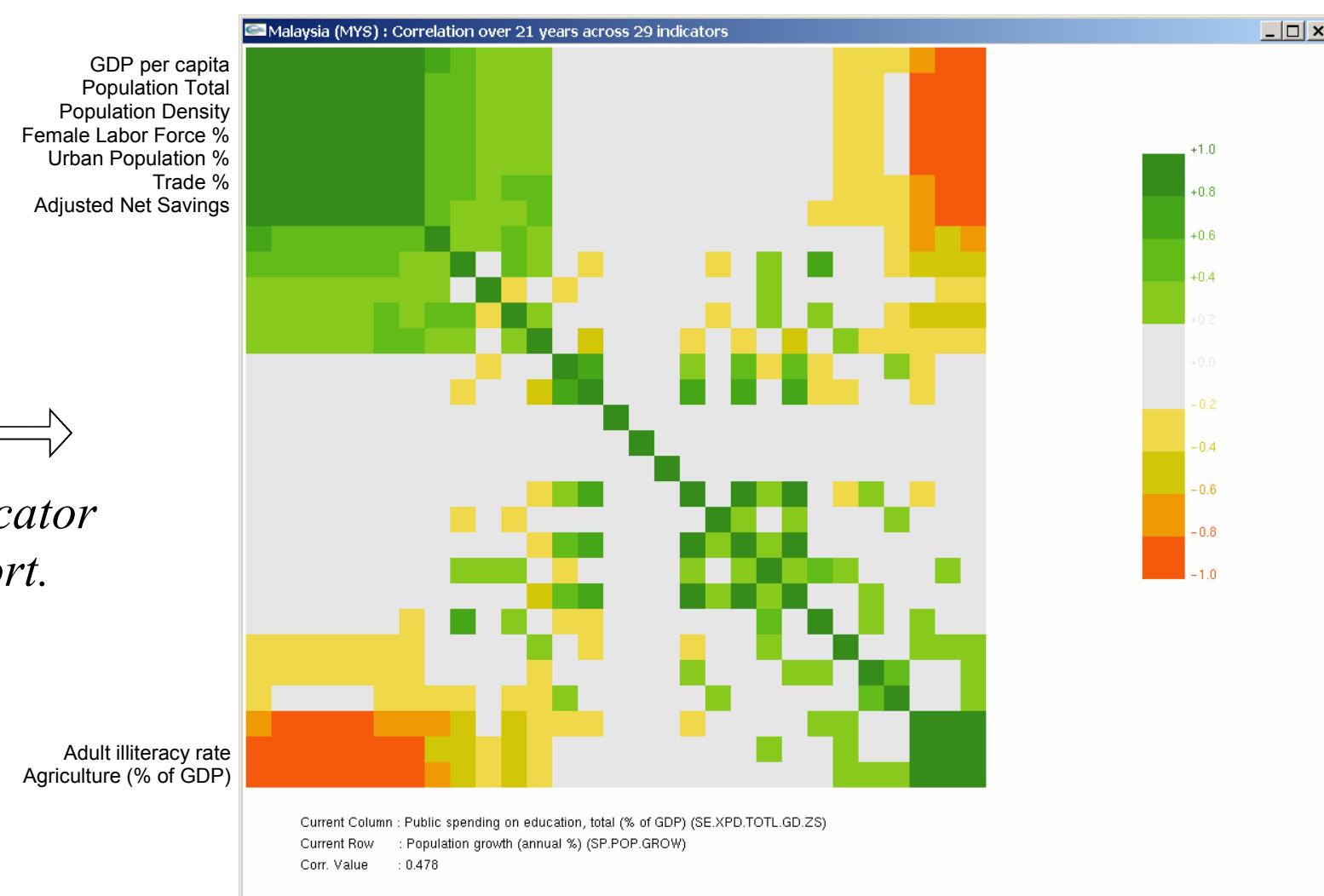
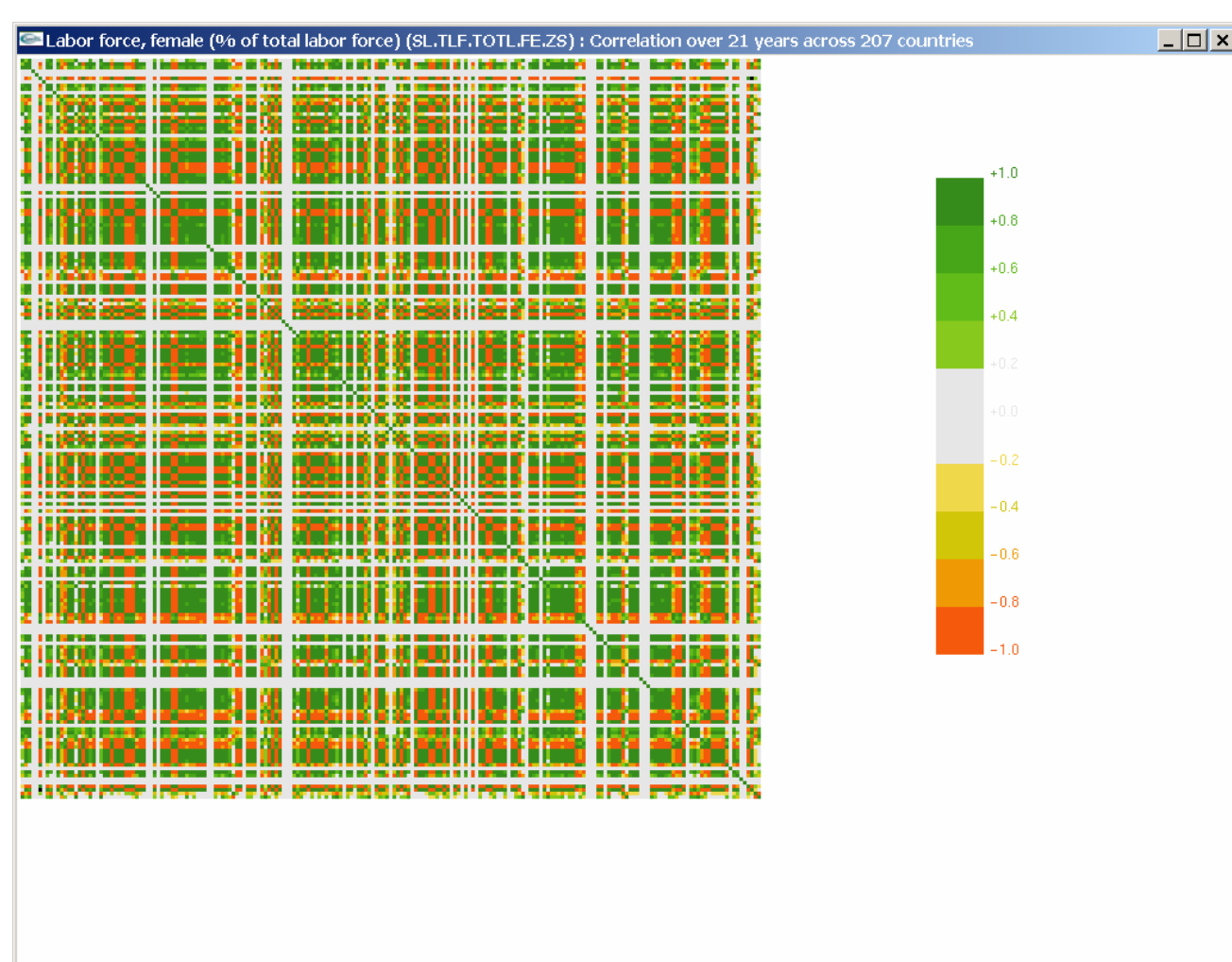


Figure 4: The correlation matrix sorted on ‘GDP per capita’ column, making it easier to identify the indicators that correlate well or inversely with GDP.

(ii) Indicator trends between countries : It may also be insightful to compare how a single indicator varied over a time, across a set of countries. For example, the changes in the female labor force from 1980 to 2000.



→
Pick a single country
and visualize
that column on a
world map.

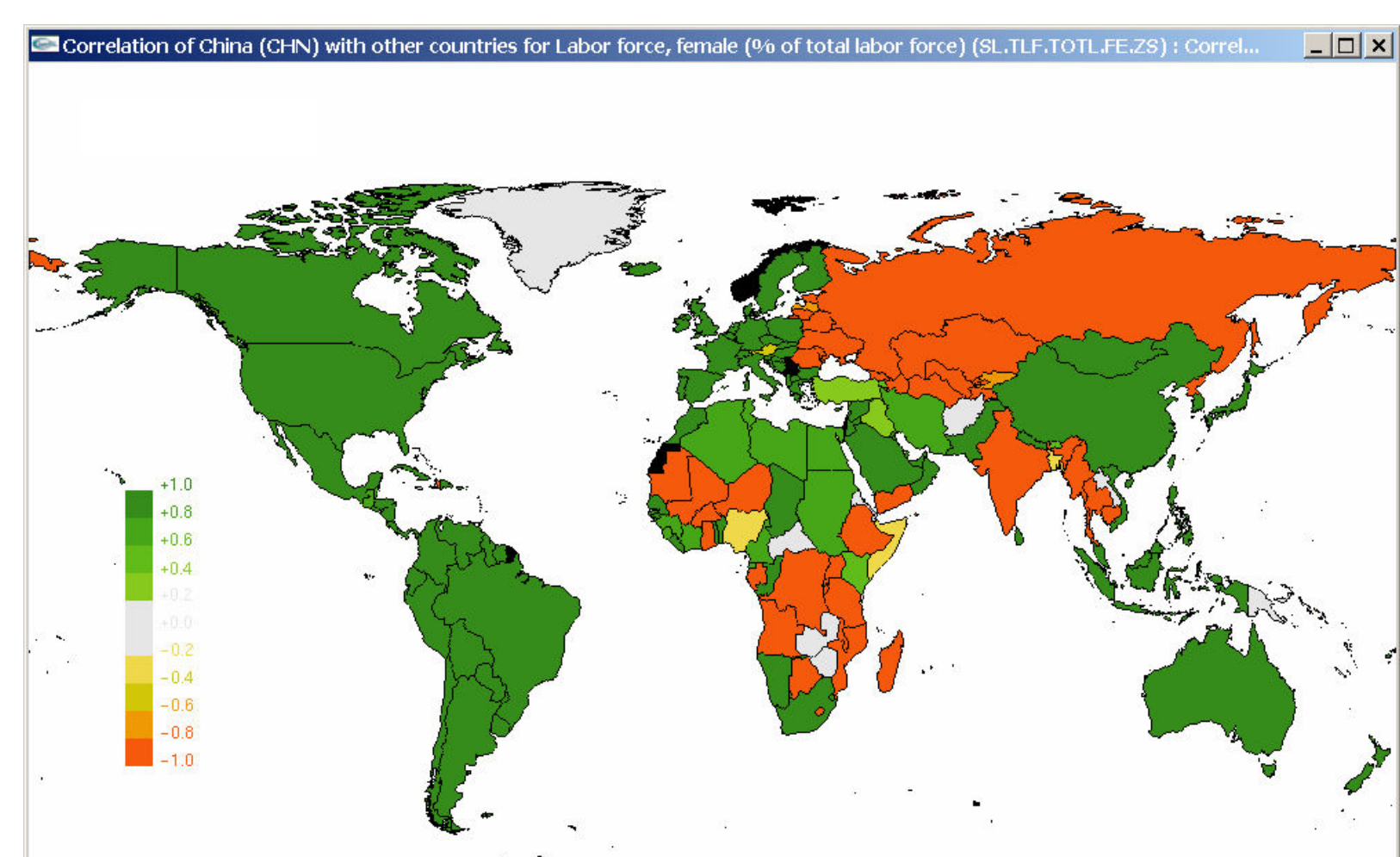


Figure 5 : Correlation matrix for 207 countries, on female labor force (as % of total) from 1980 to 2000. While this matrix shows all the countries, it is easy to select only a subset of countries to reduce the amount of data shown.

Figure 6 : After picking out a single country (China), we can visualize the correlation of female labor force between the chosen country and other countries.

References

[1] World Development Indicators 2002, World Bank.