Bibliometrix Analaysis for Lake Urmia Peer Reviewed Literature: 1900 to Sept. 2020

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Introduction

This is an R Markdown document. The script is modified from Bibliometrix Package. This script generates Figures 3 and 7 in the review and synthesis article by Parsinejad et al (2022).

The Scopus database was quried for articles with the key words ("Lake" AND ("Urmia" OR "orumiyeh" OR "Orumiyeh")). The quries were done in two batches: from 1) 1900 to August 2019, and 2) August 2019 to September 2020. Duplicates were removed.

This script also uses the Bibliometrix package to generate Figures A, B, C, ... K which are multiple visuals of the article dataset (see descriptions below).

Input files:

1. **Scopus-LakeUrmia-Aug8-2019.bib** - Scopus database query made on August 8, 2019 (initial batch of articles)
2. **Scopus-LakeUrmia-Sep15-2020.bib** - Scopus database query made on Sept 15, 2020 (2nd batch of articles)
3. **LakeUrmiaWaterLevel-1966-Vaheddost.xlsx** - Monthly lake level data provided by Vaheddost via email. Used in Figure 1.
4. **Lake_Urmia_WaterLevel_Precip_Data.xlsx** - Annual lake level and precipitation data provided by Parsinejad. Used in Figure 6 in Section 4.7.
5. **Lake_Urmia_Data_1995-2015-Sima.xlsx** - Lake elevation vs volume. Data from Sima et al (2021) - https://www.sciencedirect.com/science/article/pii/S2214581821000410

Ouput files:

1. **BibliometrixUrmia2020.pdf** - pdf file with all the figures
2. **UrmiaArticlesSorted2020.csv** - Comma separated values of all articles sorted by number of authros (largest to smallest)

Outputs

Plots that appear in the review article.

Figure 3. Articles versus time compared to lake level.

Figure 7. Lake restoration progress over time with different traces for target, observed, and counterfactual. Both volume and lake level.

Additional plots. Ordered A, B, C, etc.

Figure A - Version 1. Lake Level (left axis) and precipitation (right axis).

Figure A - Version 2. Lake volume (left axis).

Figure A - Version 3. Precipitation on top panel and Lake Volume on bottom panel.

Figure B. Lake Bathymetry curve (elevation versus volume).

Figures C, D, ... K. Bibliometrix plots.

Requested Citation

David E. Rosenberg (2021). "Bibliometrix Analaysis for Lake Urmia Peer Reviewed Literature: 1900 to Sept. 2020", Utah State University, Logan, Utah.

Summary of Articles from SCOPUS

Keyword search = TITLE-ABS-KEY (“Lake” AND (“Urmia” OR “Ormayeh” OR “Orumiyeh”))

Number of articles = 544

Number of authors = 1319

Number of multi-authored articles = 1283

Number of single-authored articles = 36

Figure 3. Journal articles by year vs Lake Level

```
## New names:
## * Month -> Month...3
## * Month -> Month...4
```

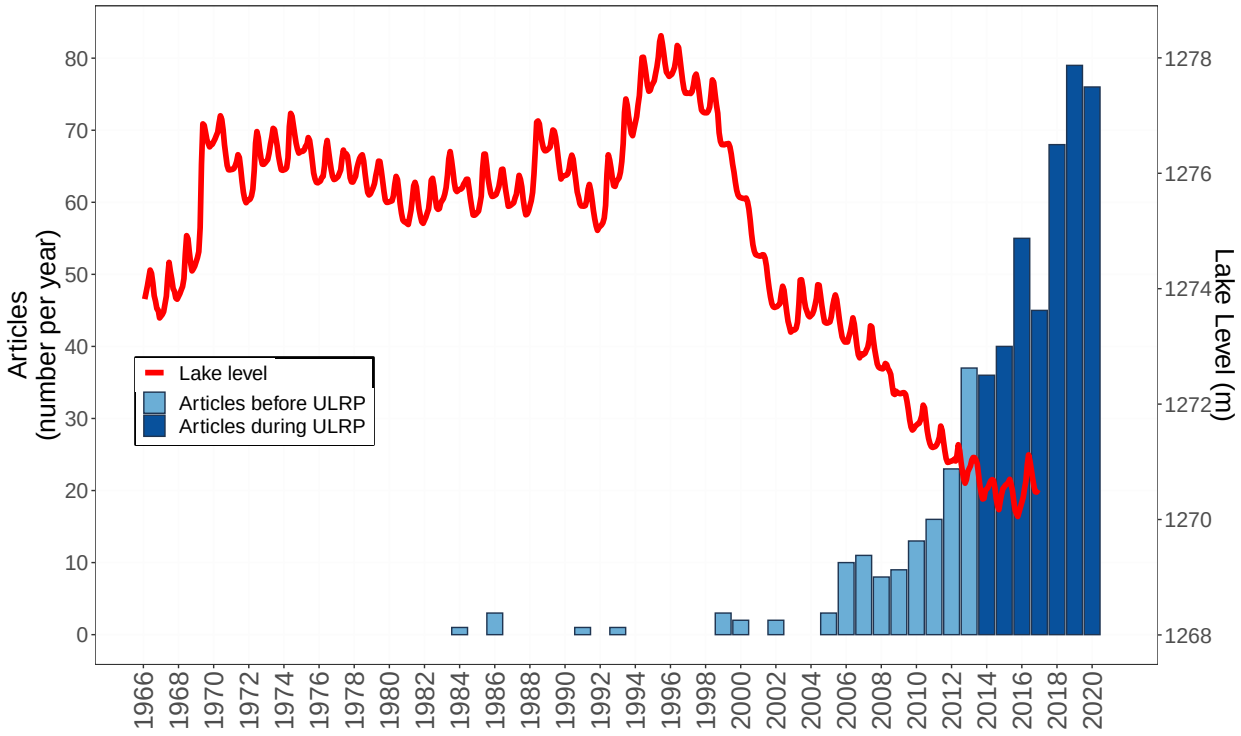


Figure A - Version 1. Lake Restoration progress over time. Lake elevation (left axis) vs Precipitation (right axis).

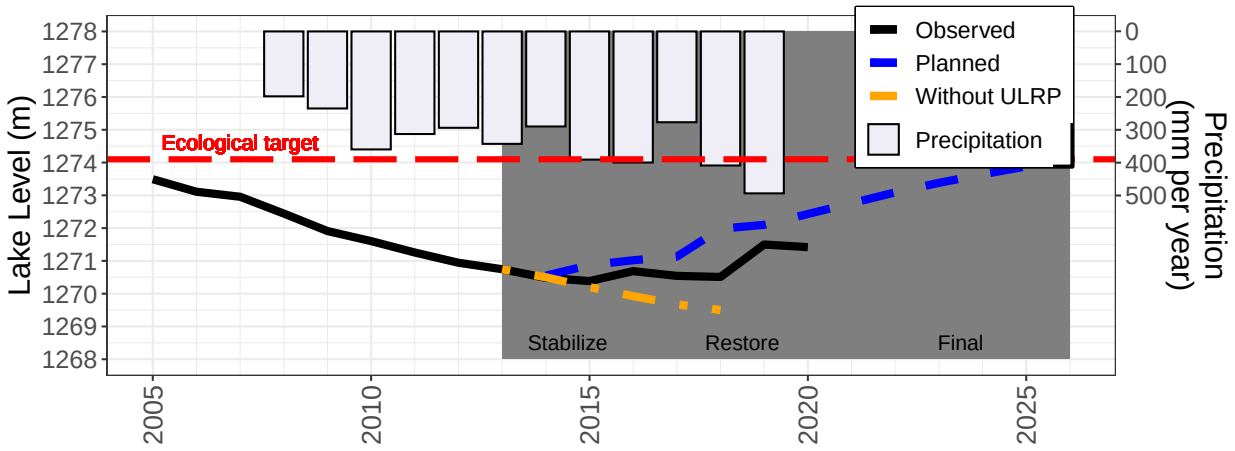


Figure A - Version 2. Lake restoration progress over time: Lake volume (left axis) vs precipitation (right axis)

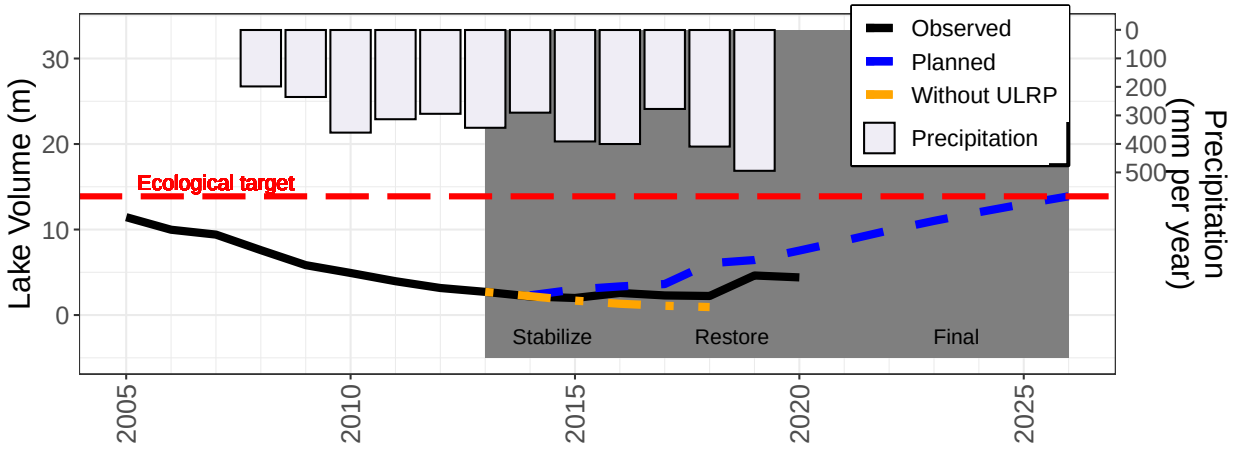


Figure 7. Restoration progress over time: Lake Volume (left axis) vs Lake Level (right axis).

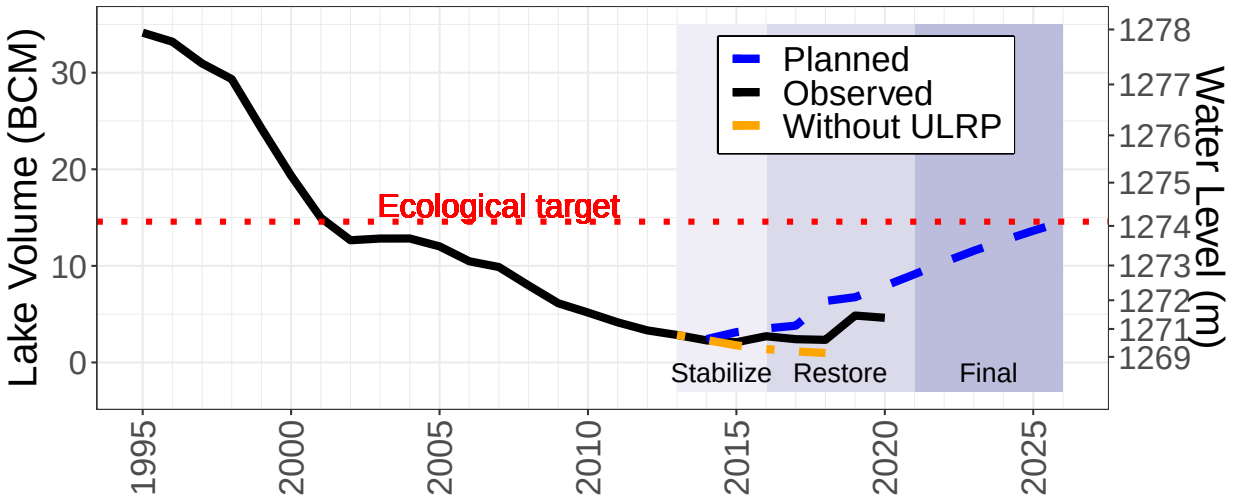
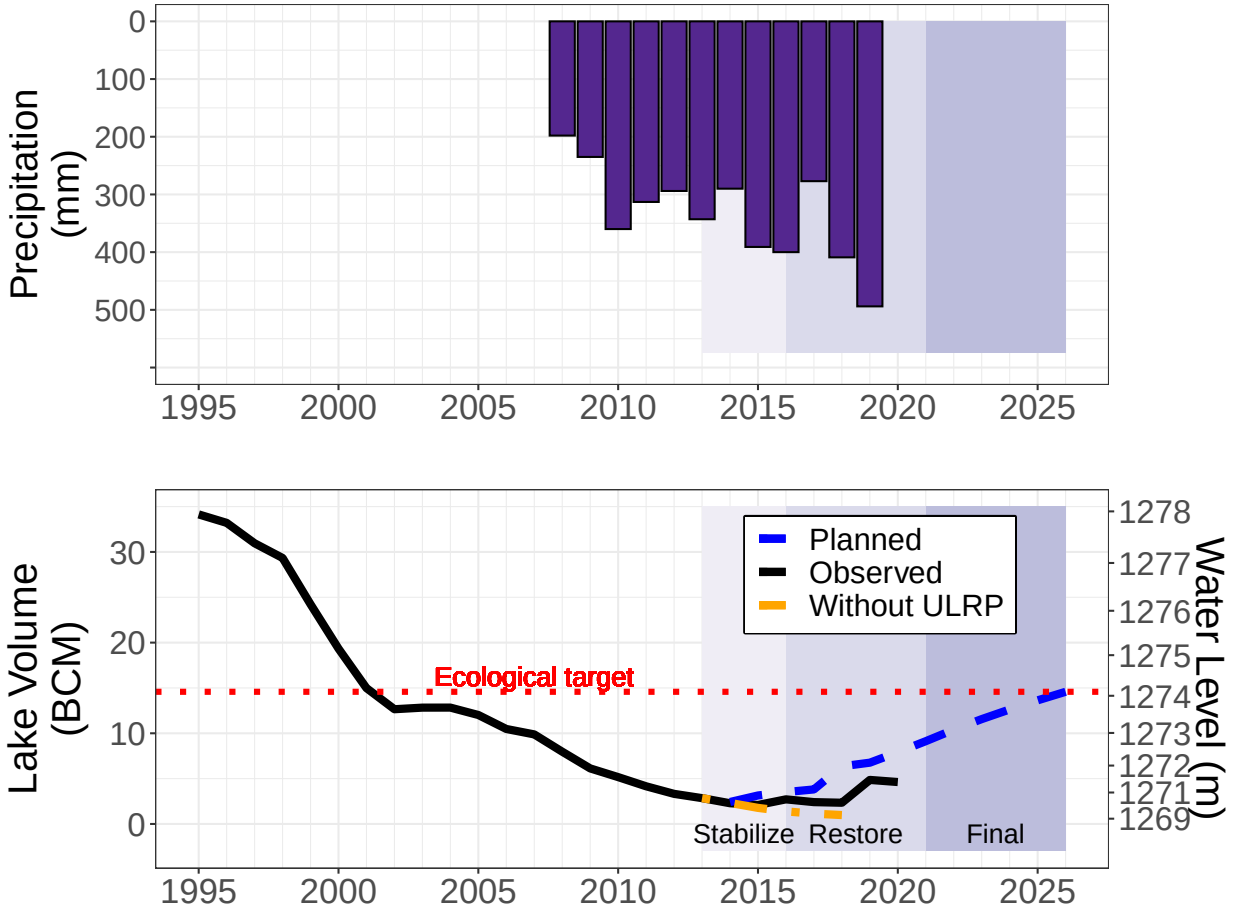


Figure A - Version 3. Lake Restoration progress over time: Precipitation (top), Lake Volume and Lake Level (bottom).



Progress towards recovery targets (1274.1 m)

Percent recovery by volume: 20.2%
Percent recovery by elevation: 27.9%

Figure B. Lake Bathymetry curve: elevation vs volume

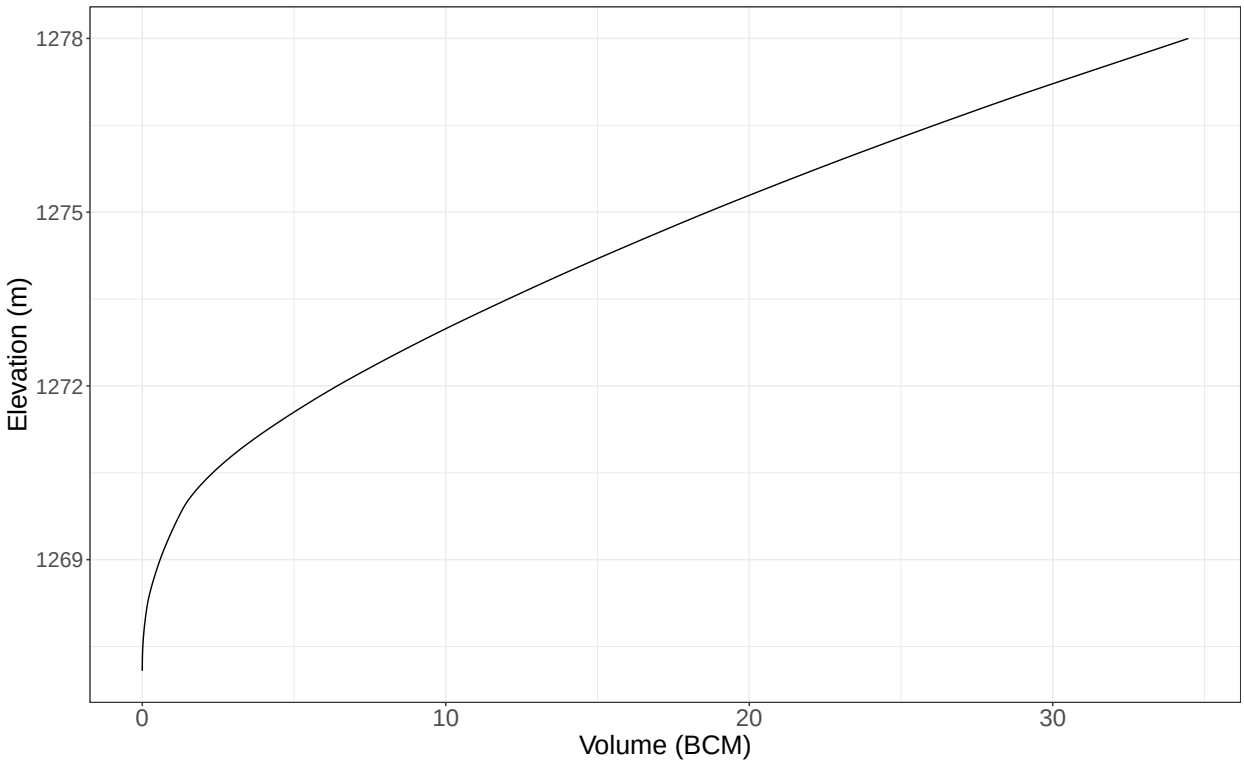


Figure C. Counts of Articles that share data and collaborate.

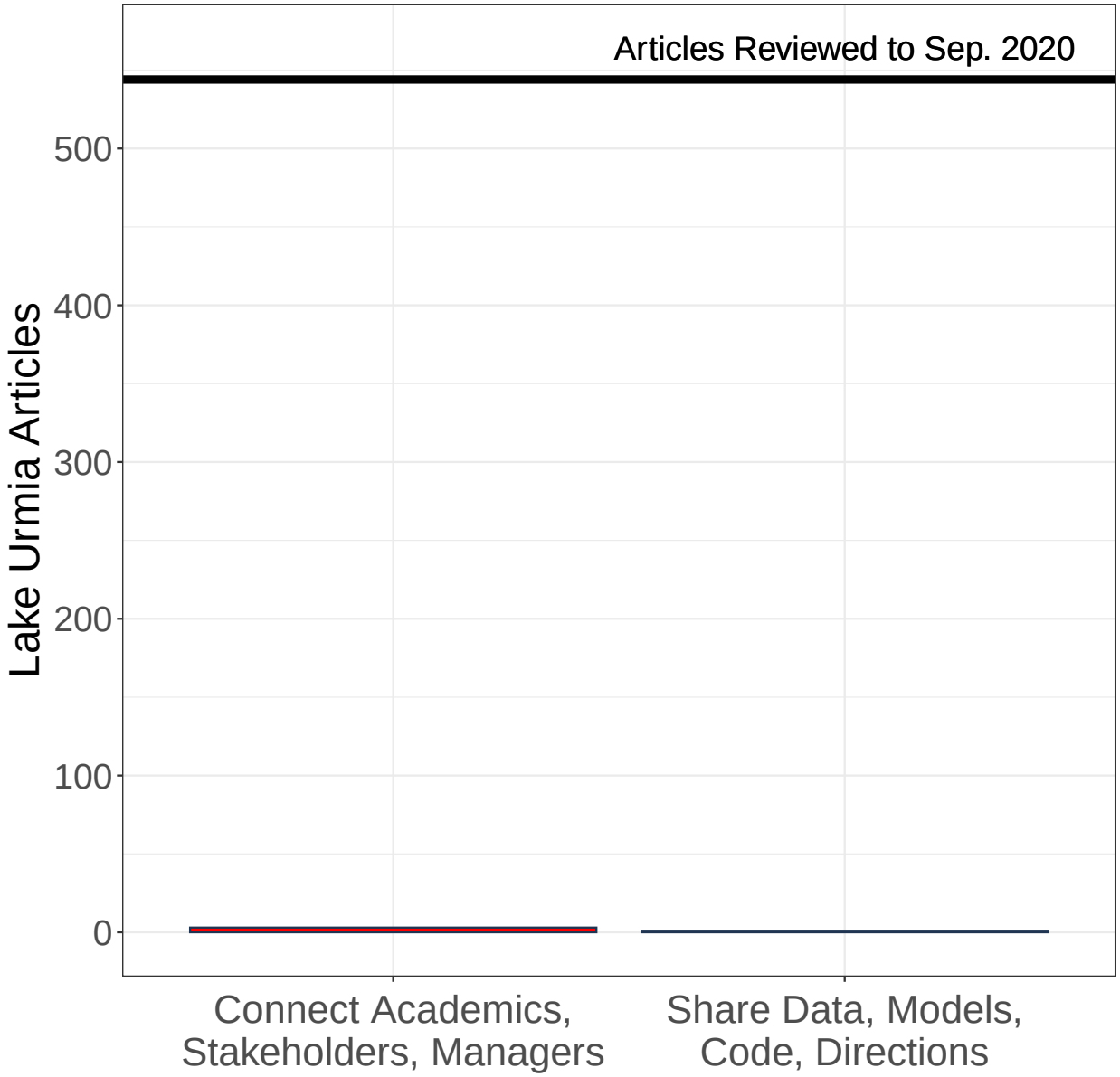


Figure D. Top cited articles.

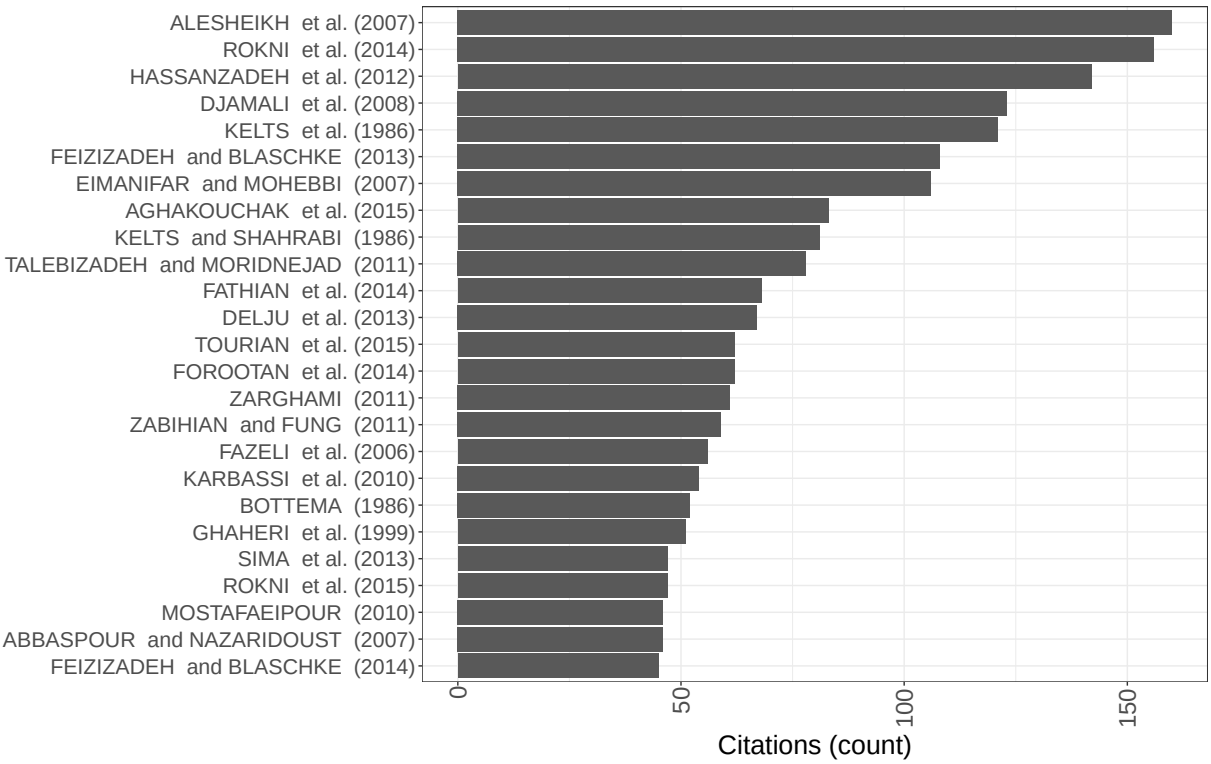
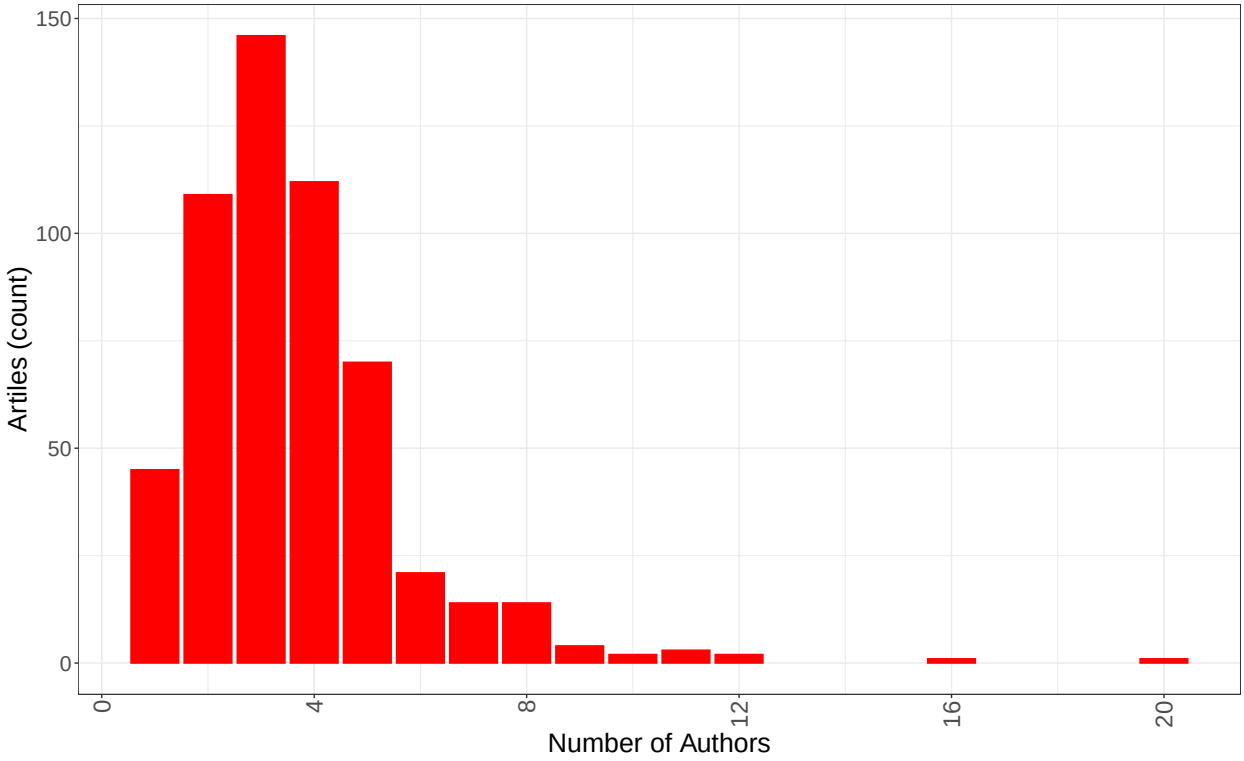


Figure E. Author team size.



Save the article data frame to the CSV file UrmiaArticlesSorted2020.csv

Articles are sorted by number of authors (largest to smallest)

Figure F. Most frequent journals.

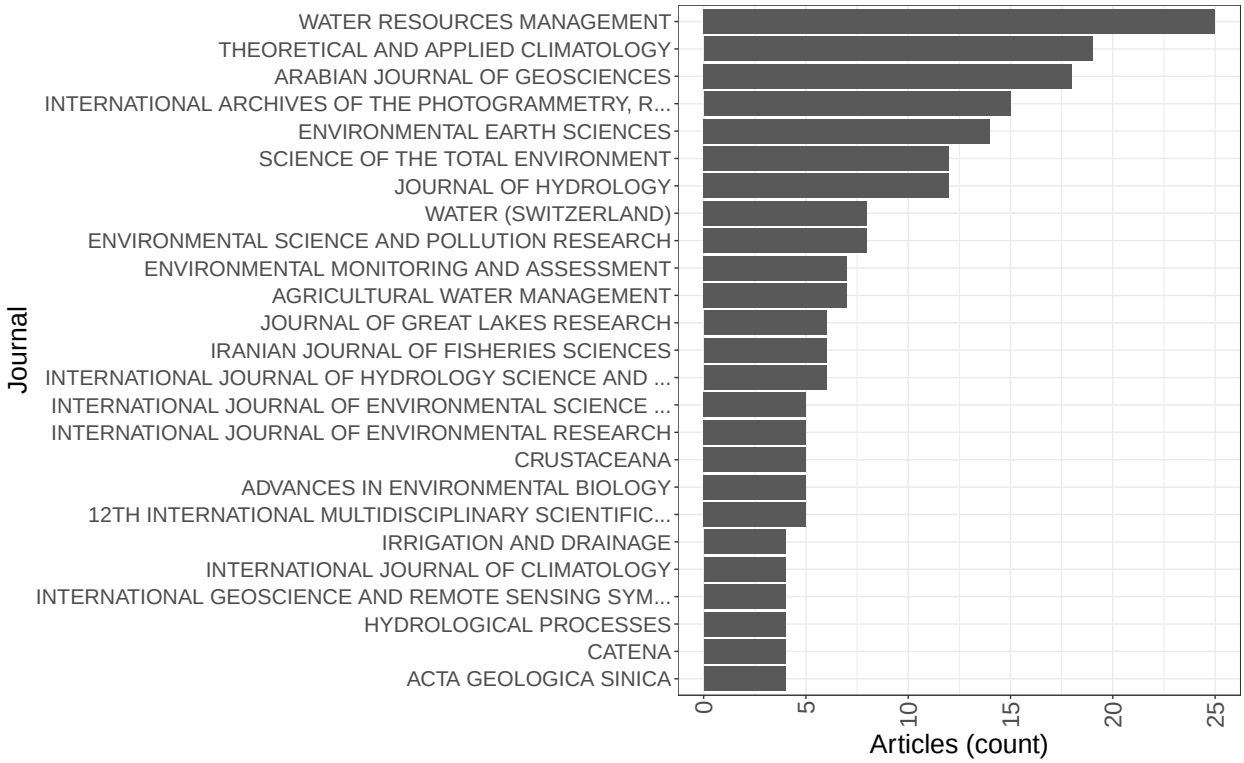
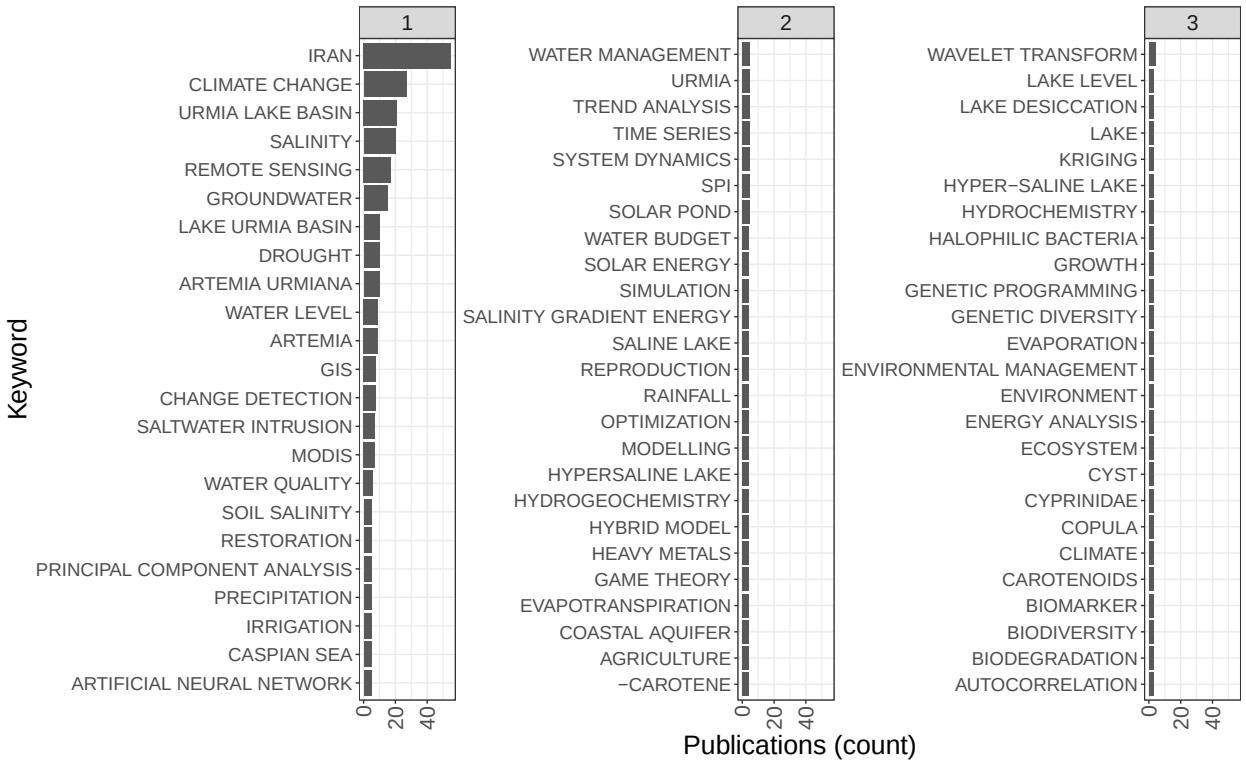
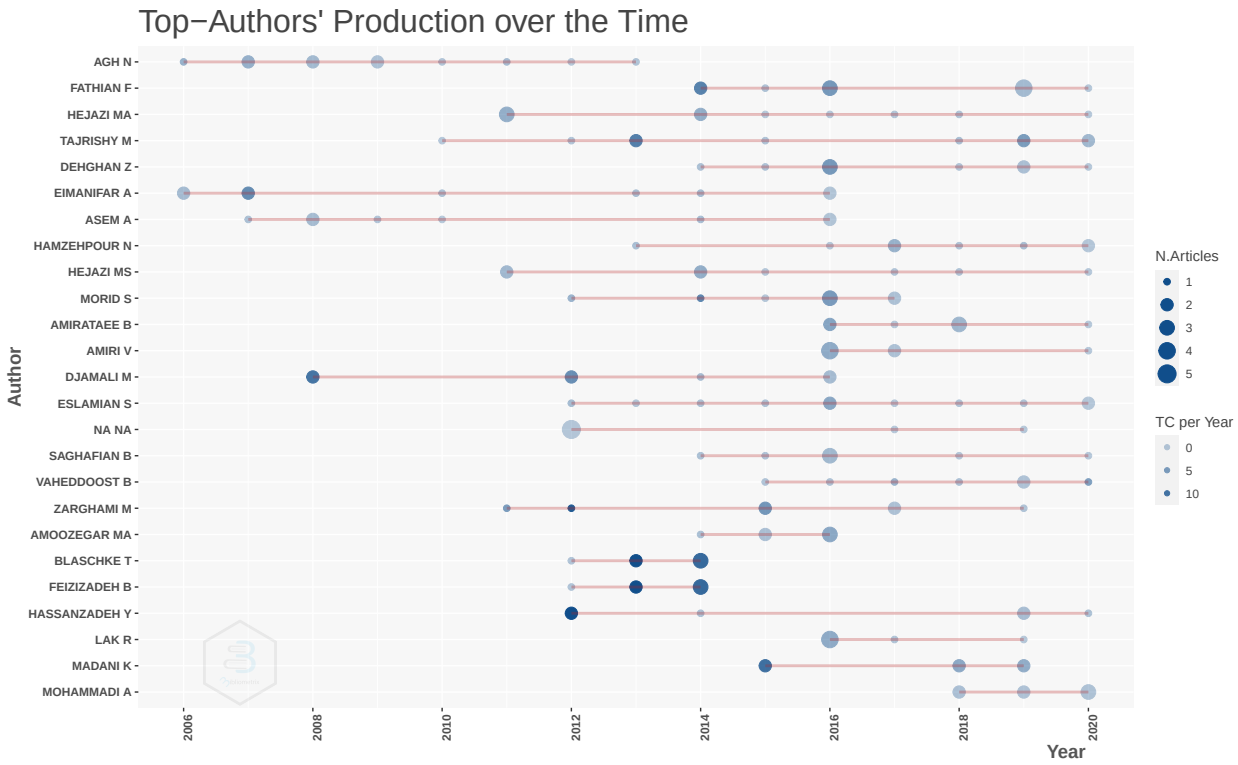
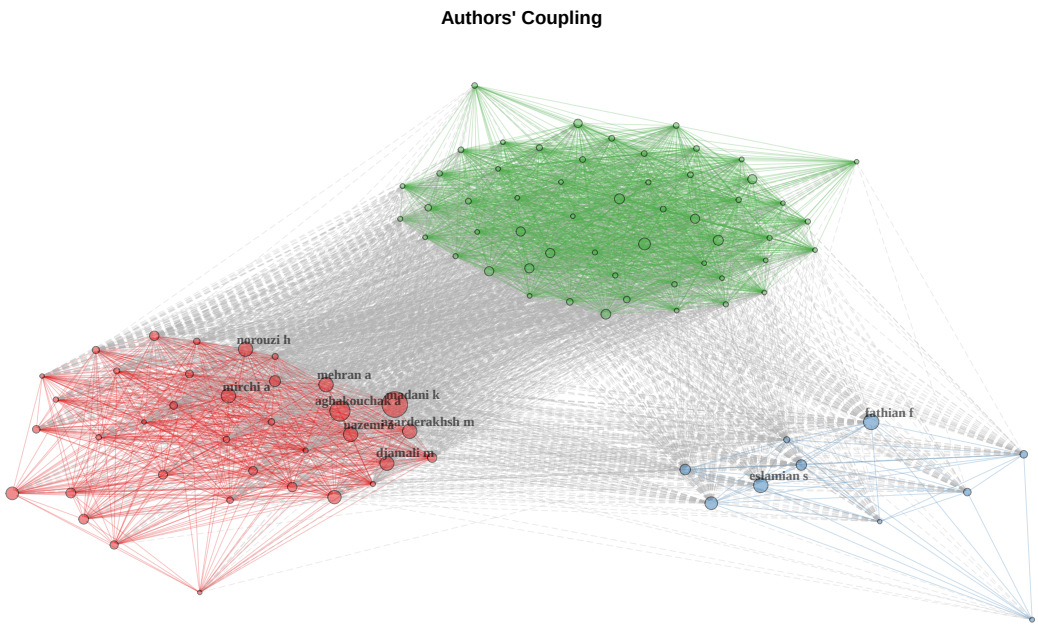


Figure G. Author keyword frequency.



Figures H, I, J. Bibliometrix network plots.





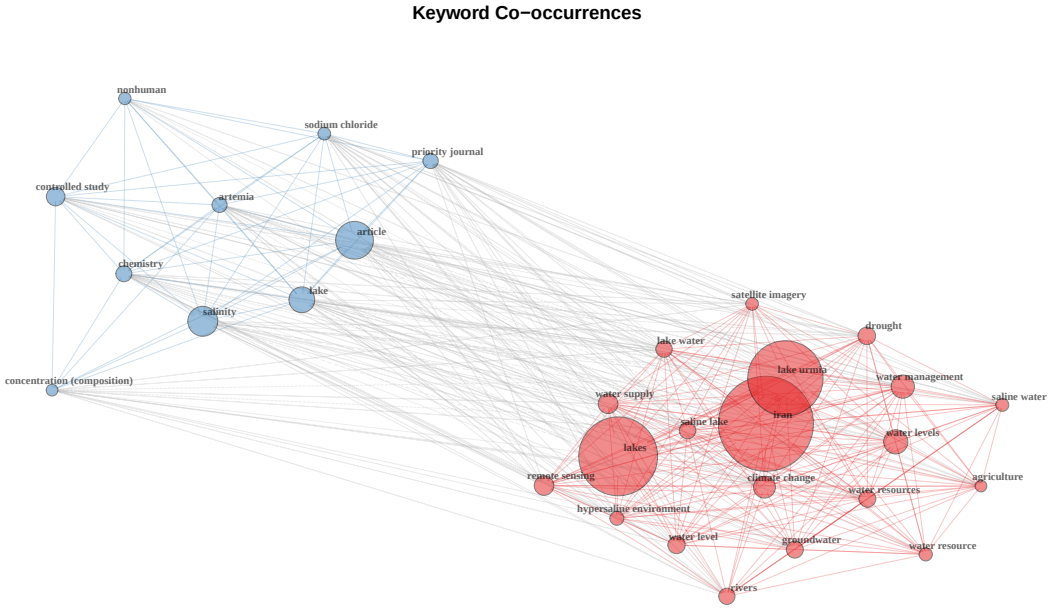


Figure K. Bibliometrix historical citation network.