

GeoNLP-Powered Equitable Distribution of Basic Amenities to Mitigate Water Scarcity in Under-served and Vulnerable Nigerian Communities



Gideon George, Olubayo Adekanmbi, Anthony Soronnadi,

ABSTRACT

Millions in Nigeria lack reliable access to drinking water, making resource allocation a critical challenge. This study leverages GeoNLP technologies, combining geospatial data with natural language processing, to accurately identify water scarcity hotspots. By integrating natural conversations and geographic coordinates, we develop a framework that pinpoints areas in urgent need of water intervention. The findings provide policymakers with crucial insights to plan targeted, effective water interventions, ultimately improving access to drinking water and enhancing social well-being in Nigeria. This research offers a transformative approach to tackling water scarcity on a large scale.

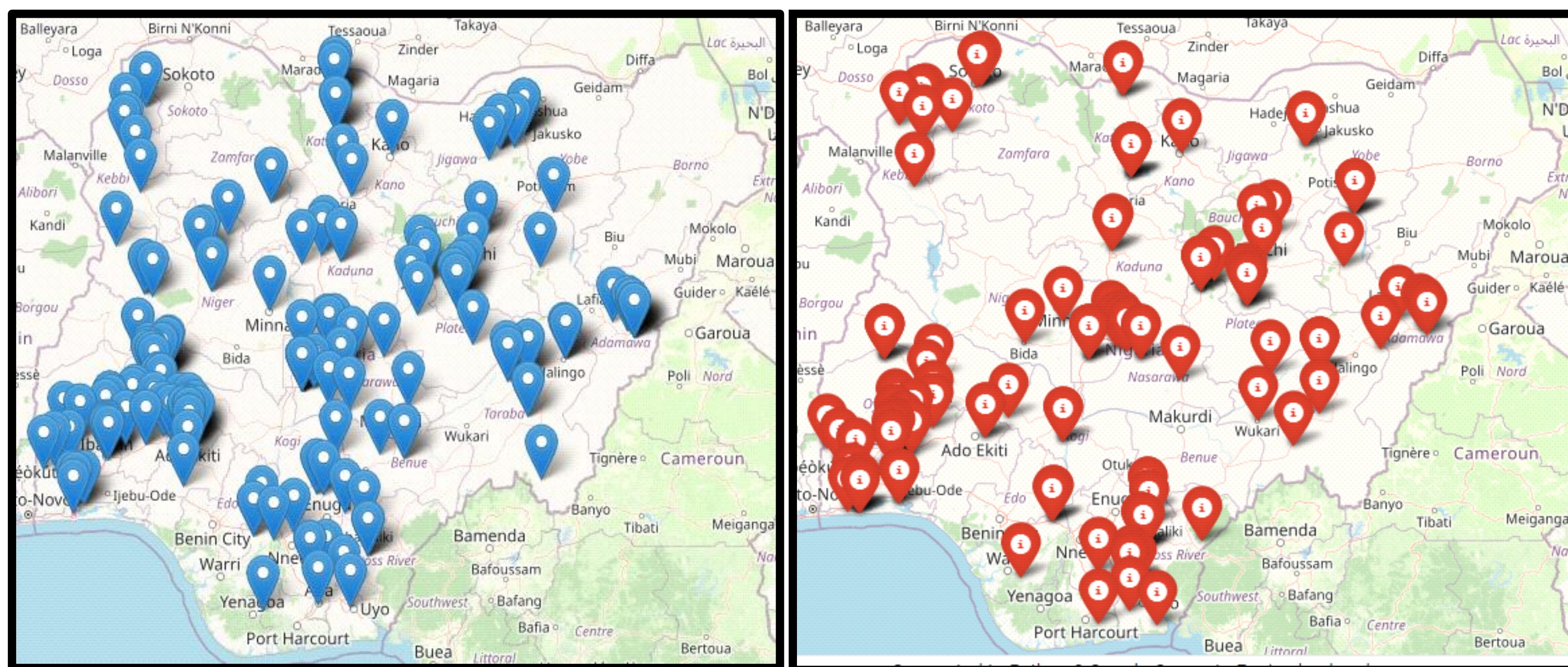
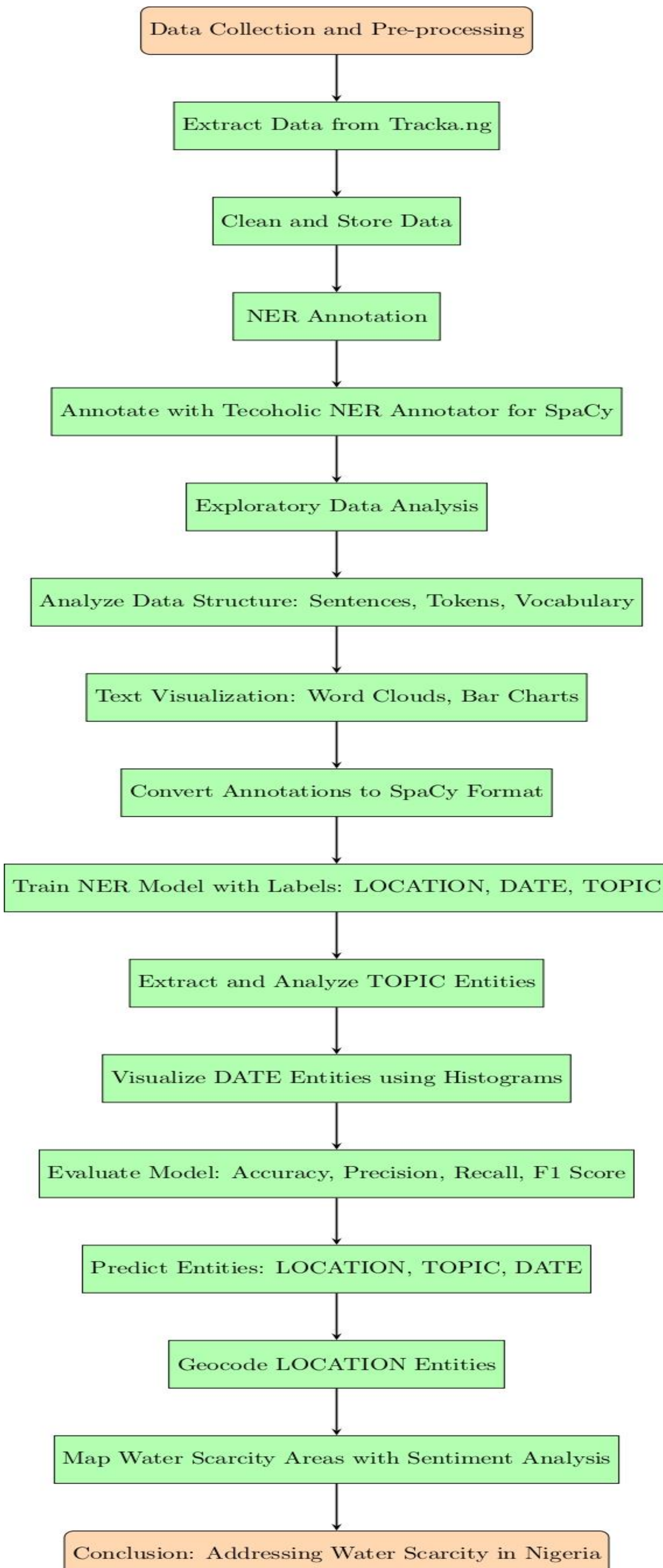


Fig 1: An image showing the locations with satisfactory water systems in blue and hotspots of water scarce areas in red.

METHODOLOGY



RESULTS

S/N	Water Scarcity Location	State	Latitude	Longitude
1	Mutum Biyu, Wukari	Taraba	7.877332	9.7790227
2	Akinyele/Lagelu	Oyo	7.5951955	3.9177323
3	Jos	Plateau	9.8965273	8.8583309
4	Hayin Kara, Kafur	Katsina	11.6572072	7.73522
5	Mutum Biyu to Gassol	Taraba	8.6450352	10.7718025
6	Issele uku	Delta	6.3197052	6.4663286
7	Aniocha	Delta	6.3460797	6.471658
8	Ilorin-Shao Road	Kwara	8.5373356	4.5443923
9	Ajaokuta	Kogi	7.5583504	6.6344177
10	Paiko	Niger	9.4353804	6.6344177
11	Iffe-olukotun	Ekiti	7.9304347	5.761583
12	Edda and Afikpo	Delta	5.891094	7.9306863
13	Mbiabong Etim, Ini	Akwa Ibom	5.3157446	7.7022988
14	Afikpo North	Ebonyi	5.8938594	7.9432825
15	Olorunredo	Ondo	7.0705566	3.2885925
16	Akinmorin, Afijio	Oyo	7.7967566	3.9444905
17	Gamawa	Bauchi	12.1359226	10.5380494
18	Batagarawa	Katsina	12.9049462	7.6032892
19	Birnin Kebbi	Kebbi	12.4508482	4.0025142
20	Ibadan North	Oyo	7.4101675	3.9164585
21	Sanya, Oshodi-Apapa Expressway	Lagos	6.4874889	3.3250004
22	Bogoro	Bauchi	9.6679241	9.6049091
23	Mbokpu Eyoakan, Urue Offong Oruko	Akwa Ibom	4.7006432	8.1557066
24	Nyanya	Abuja	8.9526607	7.6738023
25	Zing, Yorro, and Lau	Taraba	8.9951994	11.7466898

Total number of identified Locations: 115
 Areas with resolved coordinates: 98
 Areas with unresolved coordinates: 17

CONCLUSION

This research utilizes GeoNLP to tackle water scarcity in underserved Nigerian communities by combining geospatial data and natural language processing (NLP). Through detailed data analysis, it identifies areas struggling with water shortages, guiding targeted interventions and resource allocation. The study underscores the importance of equitable resource distribution and showcases GeoNLP's potential to enhance water security and social equity, contributing to a more sustainable future in Nigeria.

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