

Interactive Visual Exploration of Arctic Sea Ice Extent (1978-2023)

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Motivation

The Arctic region and its ecosystem are undergoing significant changes due to climate change. One important change is decreasing ice extent. Most visualizations available offer limited opportunities for user interaction and display only one parameter – ice extent.

Data

Our prototype based on data from *National Snow and Ice Data Center* offers options for user interactions, insights into overall trends, seasonal variations, regional differences, historical comparisons, and also include temperature development.

Conclusion

Our visualization tool is a step towards interactively exploring the Arctic sea ice developments and thereby facilitating researchers to gain informed insights into the complex dynamics of a key aspect in the Arctic ecosystem



A Geospatial View

Displaying the tendency of sea ice extent development in each of the Arctic regions in a chosen month throughout the years. The coloring of the regions is ranging from blue to red with respect to the regression slope, which conveys how much the sea ice extent has decreased or expanded over time.

B Correlation View

The scatter plot shows the mean sea ice extent of a selected area for the chosen month throughout the years including a regression line. This allows the user to quickly get an overview of the temporal trend in a region.

C Timeline View

The overall timeline displays the development of the total Arctic ice extent and temperature anomalies as well as regression lines for both parameters. It reveals the fluctuation of the whole Arctic ice extent and the user can thereby relate it to the regional changes