

Map Projections – Practical Selection with Use and Current Research Directions

Workshop at the AutoCarto 2022

The 2022 AutoCarto conference took place on November 1st – 4th. The conference venue was the campus of the Environmental Systems Research Institute (Esri) in Redlands, California. A pre-conference workshop titled “Map Projections – Practical Selection with Use and Current Research Directions” was organized by Sarah Battersby and Fritz Kessler and held on November 1st. There were 12 participants in attendance. Representatives from private industry, government, and academia were represented at the workshop.

The workshop began with introductions of everyone in attendance. Then, time was devoted to the recognition and remembrance of Dr. E. Lynn Usery, a leading figure in the field of projections and a steadfast member of the ICA’s Commission on Map Projections (<https://ica-proj.kartografija.hr/>).

The workshop format was designed to facilitate discussion among the participants covering a range of projection topics. Out of that discussion, the following four topics served as the organizing framework used to report the ensuing discussion.

First, each participant mentioned what they felt were the important challenges when working with projections. Various topics were summarized that included the decisions needed to consider when selecting a projection, the confusing world of projection terminology, and understanding projection distortion.

Second, attention shifted toward exploring recent research and what it has revealed about peoples’ cognitive understanding of projections. This discussion concluded that while recent research has been productive, there is still much work that needs to be done. One of the concerns discussed about recent research revealed that fundamental knowledge of projections is not well understood by both researchers (especially those without a cartographic background) and participants. This misunderstanding impacts how the research is developed and the kinds of tasks that are asked of the participants.

Third, discussion summarized the importance of projection education. One participant gave a presentation on the structure and topics of a course on projections that they teach. Special emphasis was placed on the details of the class assignments. They concluded their presentation with a demonstration of their hand-made illuminated globe. Inside the translucent globe, a light bulb was placed. When the light was illuminated, a piece of paper could be juxtaposed to the globe’s surface. The shadows cast on the paper illustrated how the graticule and landmass would be projected. By changing the position and shape of the piece of paper, different arrangements of the graticule and landmass (i.e., projections) could be visualized.

Fourth, participants reviewed how the Commission on Map Projections could become more engaged in communicating information about projections to the broader scientific community via public outreach efforts. For example, one idea proposed was to produce a series of example map vignettes. These vignettes would explain the

appropriateness of choosing a projection property for a given map purpose. Each vignette map pair would be illustrated by a side-by-side map comparison. One map would show a data set cast on an appropriate projection while the second map would show the same data set but would be cast on an inappropriate projection. Accompanying descriptive text would explain why one projection was appropriate and not the other. One outreach venue could be through the UCGIS (Geographic Information Science & Technology) Body of Knowledge (<https://www.ucgis.org/gis-t-body-of-knowledge>).

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