InfraVis course on Visualisation of geographic data

Are you dealing with geographically referenced data in your research or in collaborations with other researchers? Then this workshop might help you to better understand the principles of representing and visualising geographically referenced data.

While there exist numerous GIS-based tools to handle geographically referenced data on a high level, understanding the fundamentals of geographically referenced data and mapping becomes important as soon as we want to integrate this data with visualisations of other research data that is represented in a Euclidean spatial domain.

This workshop-session provides an introduction into different alternative ways of representing geographically referenced data and it shows how to visualise this kind of data in combination with standard plotting/visualisation techniques for data visualisation.

Audience: Researchers & students working with data visualisation and applications within geographical contexts.

Duration: 4 hours
Course instructor: Stefan Seipel
Time and place: 10-12 and 13-15, 18th of October 2022, Teatrum Visuale

Theory:

- Representations of geo-referenced data
- Raster based geo-data – Vector based geo-data
- Geographic reference frames and coordinate systems
  (Geographic vs. Euclidean coordinates)
- Map projections
- Multiple pathways of plotting geo-referenced data in Euclidean 2D/3D domains (in MATLAB)

Practical examples/exercises (MATLAB):

- Plotting geo-referenced observations of scalar data (*proportional symbol maps*)
- Plotting geo-referenced boundaries (vector data) in space
- Plotting regional data (*choropleth maps*)
- Plotting georeferenced raster data/heatmaps
- Plotting 3D geospatial data – *digital elevation models* (DEMs)
- (Visualising georeferenced 3D volumetric scalar data in spatial context)