### Topic 1: **Principles of Effective Data Visualization**

Ten Principles of Effective Data Visualization presents ten principles for improving visual messages created by scientists. So here is a summary of those principles:

1. Principle 1: Diagram First Before creating a visual, prioritize the information you want to share and design it. Focus on the core information that needs to be conveyed and how it will support your main point(s).
2. Principle 2: Use the Right Software Effective visuals often require proficiency in software designed for creating complex and technical figures. Consider learning new software or expanding your knowledge of existing software to achieve better results.
3. Principle 3: Use Effective Geometry and Show Data Geometries refer to the shapes and features used in figures. Choose appropriate geometries that represent your data accurately. Consider the data-ink ratio, which emphasizes the use of ink for displaying data rather than non-essential elements.
4. Principle 4: Highlight the Message Ensure that your visual effectively conveys the intended message. Use visual cues, such as colour, size, or position, to emphasize important information and guide the viewer's attention.
5. Principle 5: Keep it Simple Simplicity is key in data visualization. Avoid cluttering your visual with unnecessary elements or excessive complexity. Strive for clarity and ease of understanding.
6. Principle 6: Use Color Effectively Color can enhance or detract from the effectiveness of a visual. Choose colours purposefully, considering their meaning and potential interpretations. Use colour palettes that are accessible to a wide range of viewers.
7. Principle 7: Provide Context Contextualize your data by providing relevant background information, labels, scales, and reference points. Ensure that viewers can understand the significance of the data within its broader context.
8. Principle 8: Incorporate Interactivity (when appropriate) Interactive elements can engage viewers and allow them to explore the data further. Consider incorporating interactive features in your visualizations, but only when they add value and enhance understanding.
9. Principle 9: Iterate and Refine The process of creating effective visuals involves iteration and refinement. Continuously review and improve your visualizations based on feedback, testing, and new insights. Embrace a mindset of continuous improvement.
10. Principle 10: Tell a Compelling Story Data visualization is a powerful tool for storytelling. Structure your visualizations in a way that tells a coherent and compelling narrative. Consider the sequence, flow, and logical progression of information to engage and captivate viewers.