



Escaping RGBland: How to make effective use of colors in meteorological visualizations

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Results of many meteorological applications are processed graphically using color palettes for coding certain parts of the meteorological information. As the amount of data and visualized products increases it becomes more and more important to choose effective palettes in order to aid and facilitate interpretation by the users.

A standard way of deriving color palettes is through transitions through a certain color space (or color model). Most of the software packages are providing palettes derived in the Red-Green-Blue (RGB) color model or “simple” transformations thereof. However, the RGB color model is based on the way how television and computer screens used to display color rather than how humans perceive color. Hence, RGB-based palettes are often highly saturated (making them hard to look at for a longer time) and “unbalanced” (due to confounding perceptual properties such as hue and brightness), making them more prone to misinterpretation. These problems can be avoided by switching from the common RGB color model to a perceptually-based color model such as Hue-Chroma-Luminance (HCL), where dimensions of the color model correspond to the dimensions of human color vision. Hence, well-balanced palettes can be derived more easily, reducing the chance of misinterpretations, enhancing readability for visually impaired viewers, and making graphics more printer-friendly (also on gray scale printers).

Based on this idea, we revamped the forecast data visualization at the Institute of Meteorology and Geophysics Innsbruck. We will juxtapose these graphics with well known examples of visualization products provided by different meteorological web platforms to highlight the advantages and improvements from using the HCL-based color palettes.