1145-AD-1627   **Julie Barnes*** (`jbarnes@email.wcu.edu`) and **Beth Schaubroeck**
(`beth.schaubroeck@usafa.edu`). *Crafting contours of complex functions based on dynamical properties.*

Julia sets of complex polynomials are the well-known sets of points where the functions are bounded under iteration. Roughly ten years ago, we began exploring two sets related to Julia sets: the set of points bounded in the real direction under iteration and the set of points bounded in the imaginary direction under iteration. This led us to look at the surfaces obtained by the real part and the imaginary part of iterated complex rational functions. To better analyze the dynamical properties of the functions behind these surfaces, we started generating the associated contour plots. Stunning artistic designs appeared. This has led us back to the mathematics to learn more about what the contour lines themselves indicate, and what properties are necessary to produce more intricate designs from contours. We end this presentation by discussing how this research turned into a coloring book and how we are working to produce more images for a mathematical calendar. (Received September 23, 2018)