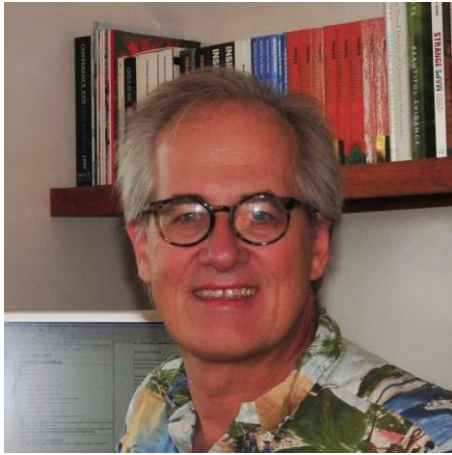


New frontiers in eclipse cartography

Bio Michael Zeiler



I, Michael Zeiler, am a GIS professional who enjoys combining my twin passions for maps and solar eclipses. Eclipse maps are amazing artifacts of our civilization that combine geography, science, exploration, history, wonder, artistry, and imagination. They also have great value in inspiring youth in science education and invite us all to witness the greatest spectacle in nature, a total eclipse of the sun.

In 2009, I was preparing for my fourth total solar eclipse on board the Costa Classica. I was interested in using my GPS receiver to locate where we would see the eclipse but existing eclipse maps lacked a graticule (grid of latitude and longitude values) for navigation at sea. So I decided to make my own eclipse maps. First I used path data from Fred Espenak's NASA web site. A fortuitous email exchange with Bill Kramer led to a collaboration on some detailed eclipse maps utilizing GIS surface modelling techniques that I had recently written a book on. I received many encouragements to continue eclipse mapping after I published this map, <http://bit.ly/1fUhgPv>

After the 2009 eclipse, Bill Kramer and I continued to refine our technique. After the JAXA/Kaguya laser altimeter data from the Moon became available, Bill quickly made adjustments to his calculations that I adopted to make the first eclipse maps with eclipse durations and contact times corrected for the precise lunar limb. As my collection of historic eclipse maps was growing and I was making more eclipse maps, I launched <http://eclipse-maps.com> in January 2011 as a repository of old and new eclipse maps.

Since 2012, I've been working with Xavier Jubier on further refinements of eclipse maps and volume production. Xavier built a customized eclipse calculator which allows me to more efficiently compute eclipse circumstances and add further corrections such as atmospheric refraction, important at the sunrise and sunset lines of central eclipses.

At the Solar Eclipse Conference in Cloudcroft, I will talk about the history of eclipse mapping from 1654 on and how I am using state-of-the-art GIS technology for eclipse maps and animations. I will also present a new digital atlas of solar and lunar eclipses that I have been working on with Xavier with newly computed Besselian elements by Fred Espenak.

I was born in 1956 in Germany and immigrated to the United States when I was very young. I earned a B.A. in Physics from the University of California, Berkeley. I've been a professional geographer and cartographer since 1984 and have been employed as a technical writer at www.esri.com since 1995. I've written 7 books on geographic information systems (GIS) technology and data modelling. I sit on the IAU Working Group for Solar Eclipses and live in Santa Fe, New Mexico. My wife, Polly White, is also an eclipse enthusiast and will attend the conference with me.