Field Notes from the Armchair Geographer

"Just A Second!"

A discussion in one of my Virtual Class sessions about converting and rounding geographic coordinates led to this question from a student: "Who needs to deal or work with seconds?" A non geography major (and perhaps many geography majors) do not have a conception of arc or global coordinate distance, perhaps because this is (slightly) an abstract conception.

Remember the '69 mile' rule? This is an easy way to convey the impression of global distances and Great Circle routes. A Great Circle is any circle that would use the center of the Earth as the radii point. The Equator is a Great Circle. A (one) meridian is half a Great Circle. A Great Circle is the shortest distance between any two points. A Great Circle bisects the Earth into two equal pieces ("bisect" is the clue).

Assuming the 69 mile rule, students can calculate the Earth circumference, and I have them do that on quizzes. A complete circle is 360 degrees (such as a Great Circle). If we assume 69 miles per degree, then 69 x 360 = Earth circumference (with all due respect and apology to those geodesy scientists who know this is a gross exaggeration.). How does that equate into minutes? Seconds?

69 miles = one degree, then
1 minute = 69 miles / 60 minutes = 1.15 miles.

1 second = 1.15 miles / 60 seconds = .019 miles, or better 101.2 feet.

In a rough sense, if I was lost in the ocean with a GPS receiver that showed degrees-minutes-seconds, I could convey my location roughly within a 100 feet box to my potential rescue helicopter. Consider storms, waves, tides, currents, fog, rain, snow, sleet, and nighttime. How safe do you feel? Ah, when seconds count! Temporal and spatial!

GPS shows even greater (decimal place) accuracy, which makes it an important tool for surveyors and engineers for construction, military types for accurate destruction, and geography instructors for regurgitation.

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