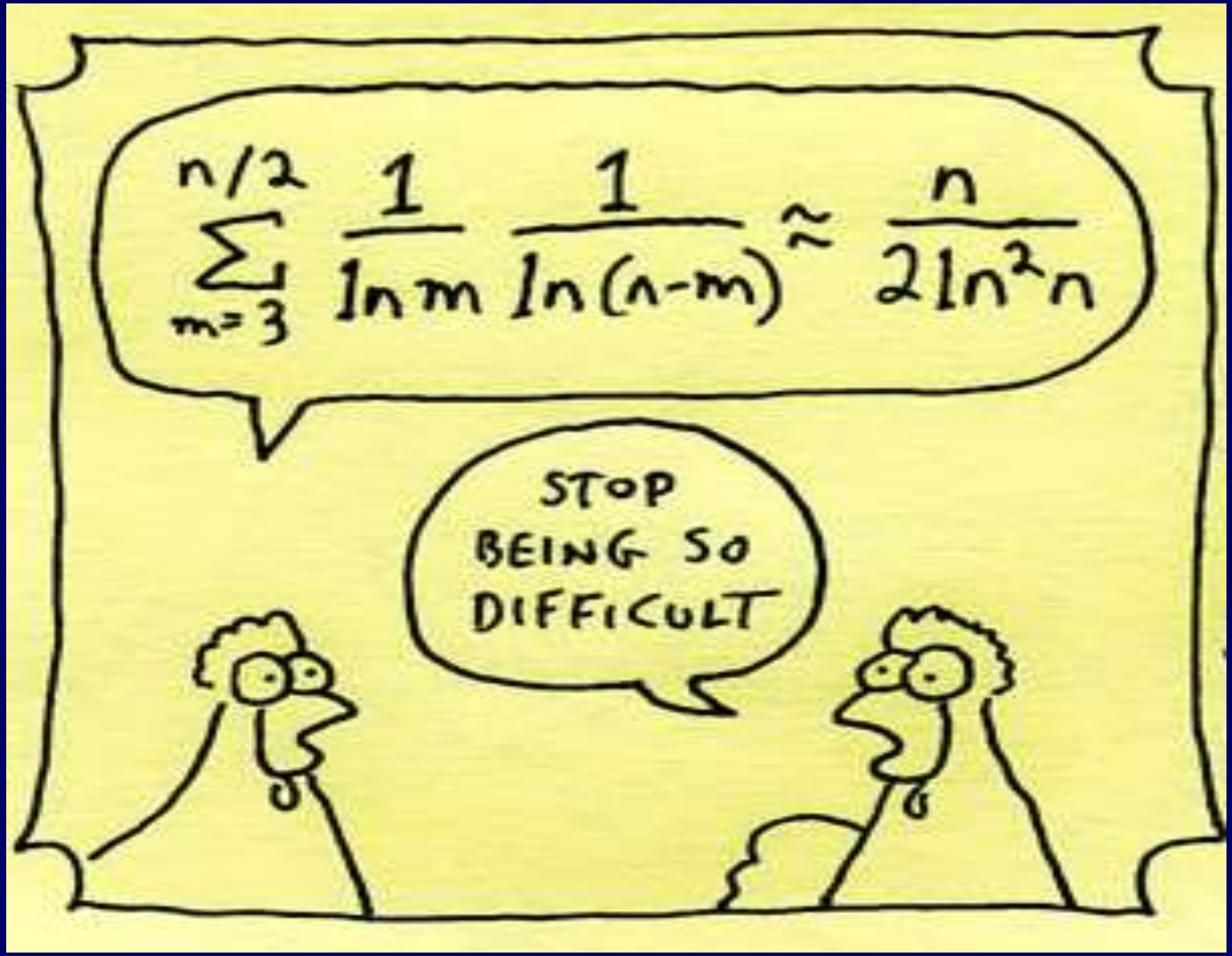
GEOSPATIAL

SEMINAR

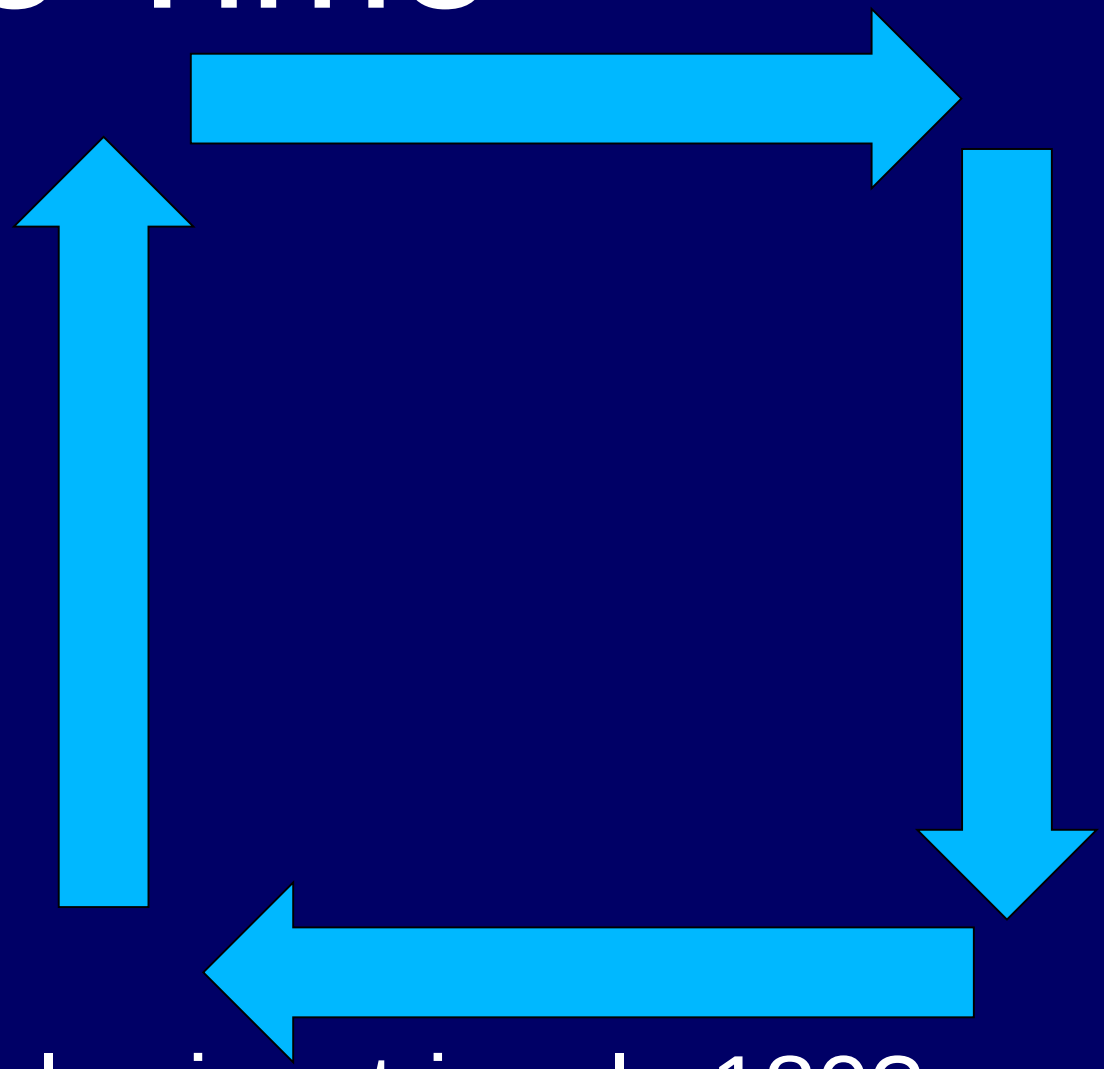
DISCLAIMER

"THE VIEWS EXPRESSED ARE THE PERSONAL VIEWS OF THE SPEAKER. ANY RESEMBLENCE TO ANY PERSON LIVING OR DEAD IS ENTIRELY COINCIDENTAL"


$\sum_{m=3}^{n/2} \frac{1}{\ln m} \frac{1}{\ln(n-m)} \approx \frac{n}{2\ln^2 n}$
STOP BEING SO DIFFICULT

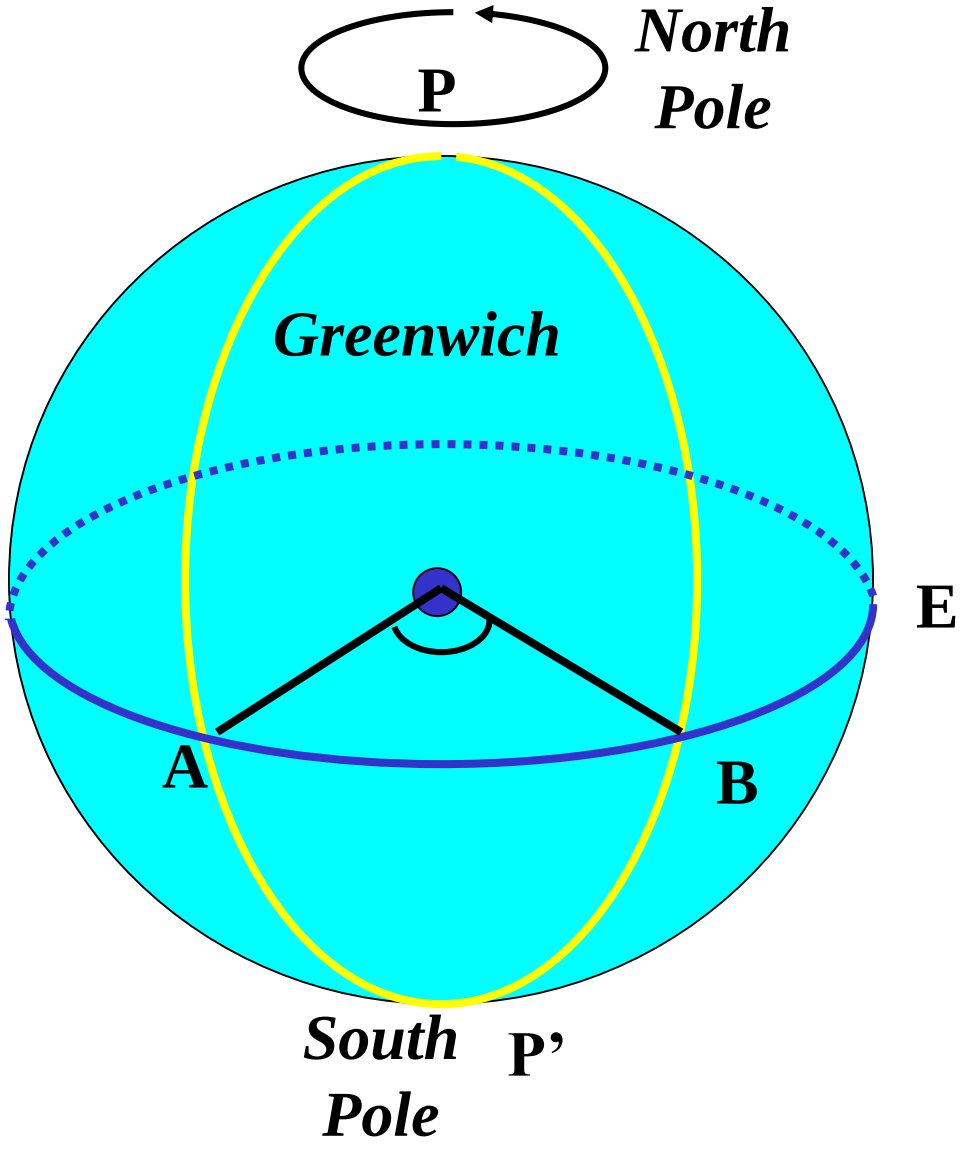
Puzzle Time

If you started from this auditorium and travelled (successively)100 km North, East, South and West…would you reach back where you started from?



Is the sum of the angles in a triangle 180?
…Always???

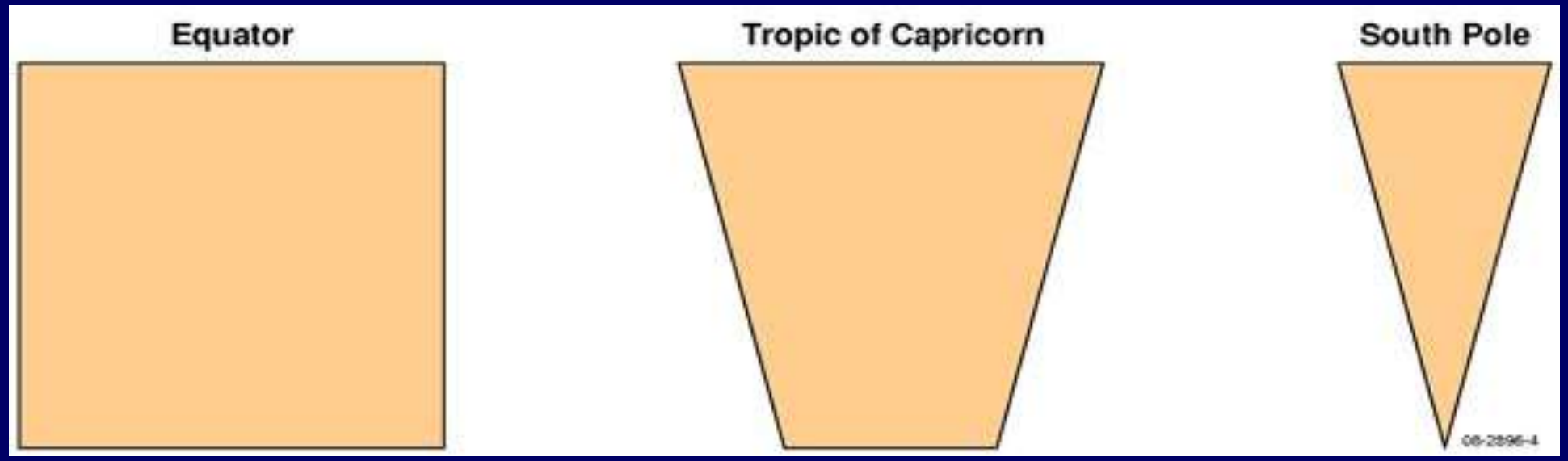
Let Us Take an Extreme Case



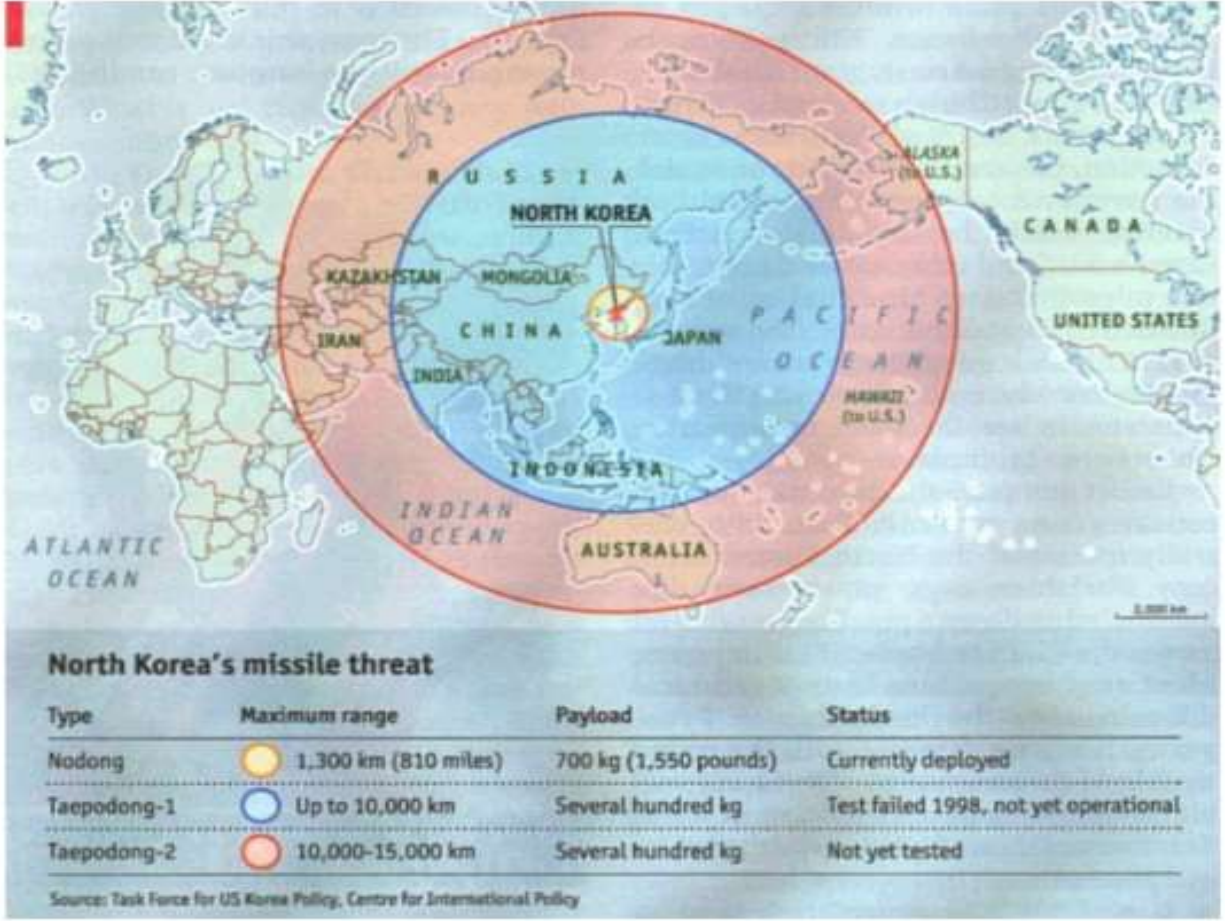
A PERSON MOVING 100 KM NORTH – EAST – SOUTH – WEST WILL NOT REACH THE STARTING POINT!

THE SUM OF THE ANGLES IN A TRIANGLE IS NOT 180!

A LINE OF CONSTANT BEARING (RHUMB LINE) IS NOT THE SAME AS A GREAT CIRCLE (SHORTEST DISTANCE BETWEEN TWO POINTS)



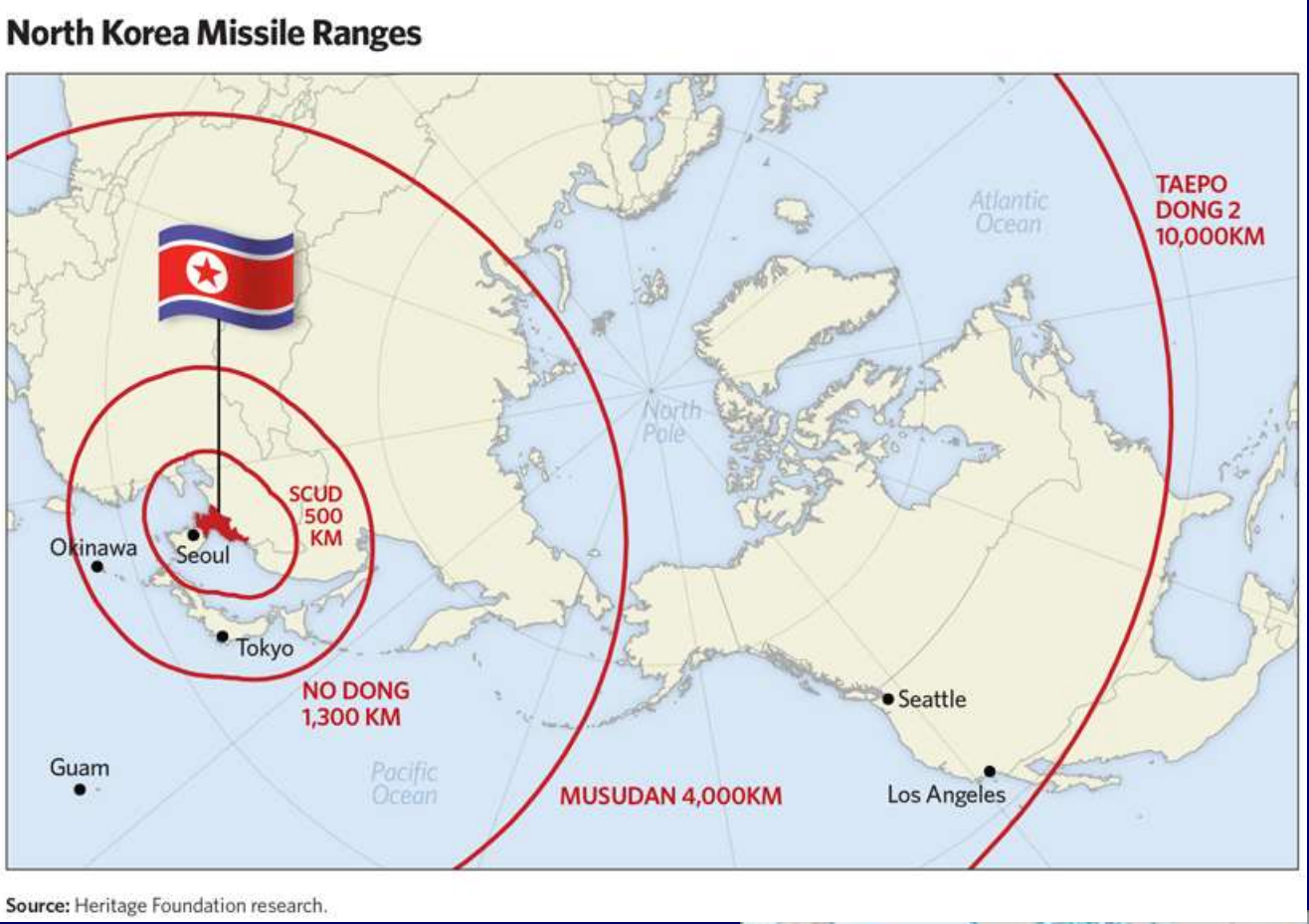
How does this childish stuff effect us?



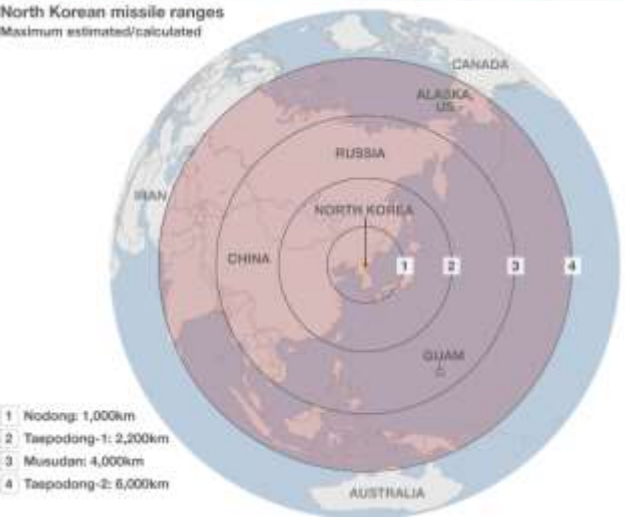
North Korea's missile threat

Type	Maximum range	Payload	Status
Nodong	1,300 km (810 miles)	700 kg (1,550 pounds)	Currently deployed
Taepodong-1	Up to 10,000 km	Several hundred kg	Test failed 1998, not yet operational
Taepodong-2	10,000-15,000 km	Several hundred kg	Not yet tested

Source: Task Force for US Korea Policy, Centre for International Policy



Source: Heritage Foundation research.



What's a few thousand kilometres between friends???

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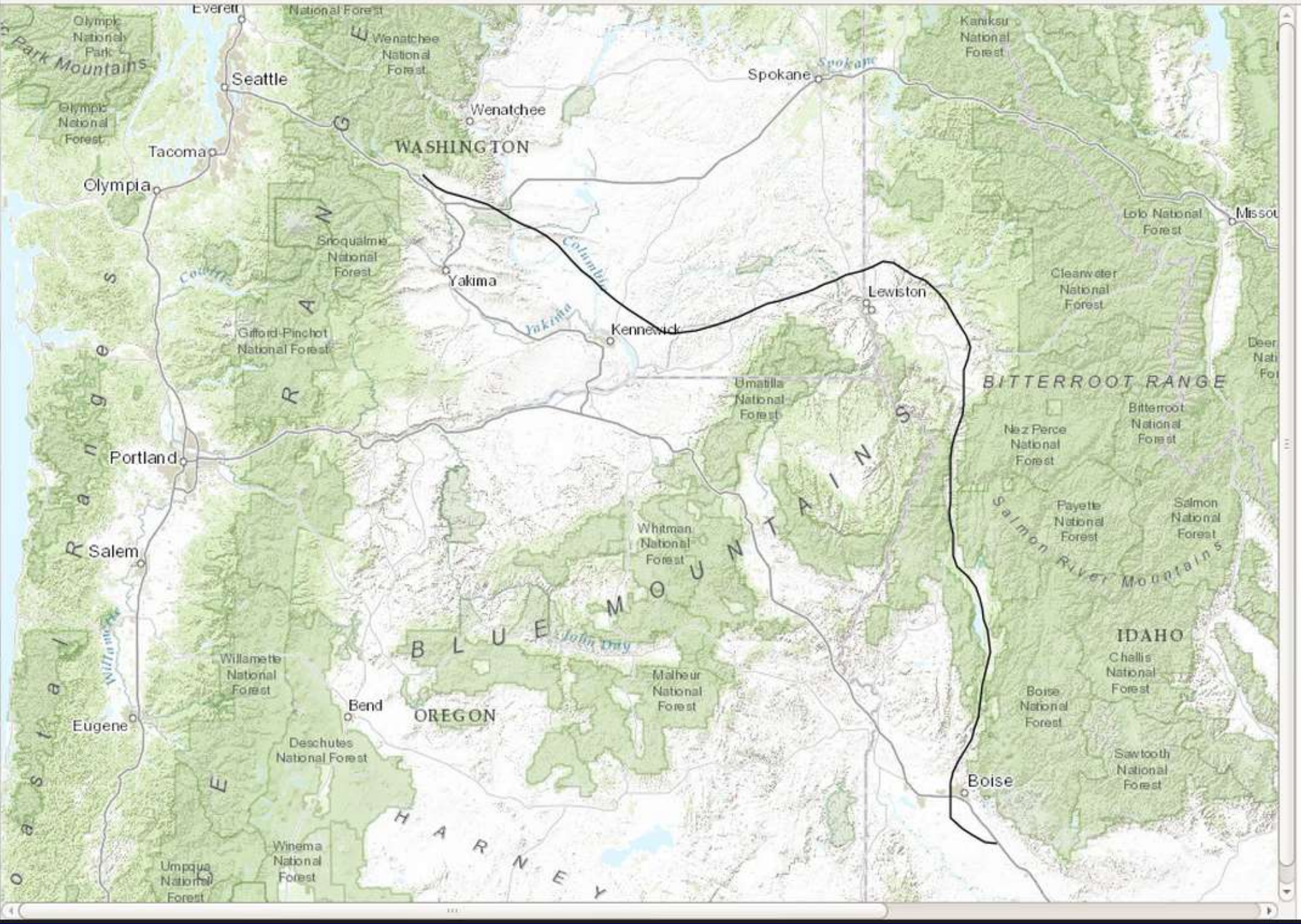


This sample shows the differences in linear and areal measurements performed in Web Mercator, State Plane, and UTM. *The State Plane and UTM values are appropriate for northwestern Oregon only.*

If you want to use this sample code in a different geographic location, you need to modify the well-known IDs (WKIDs) for StatePlane and UTM.

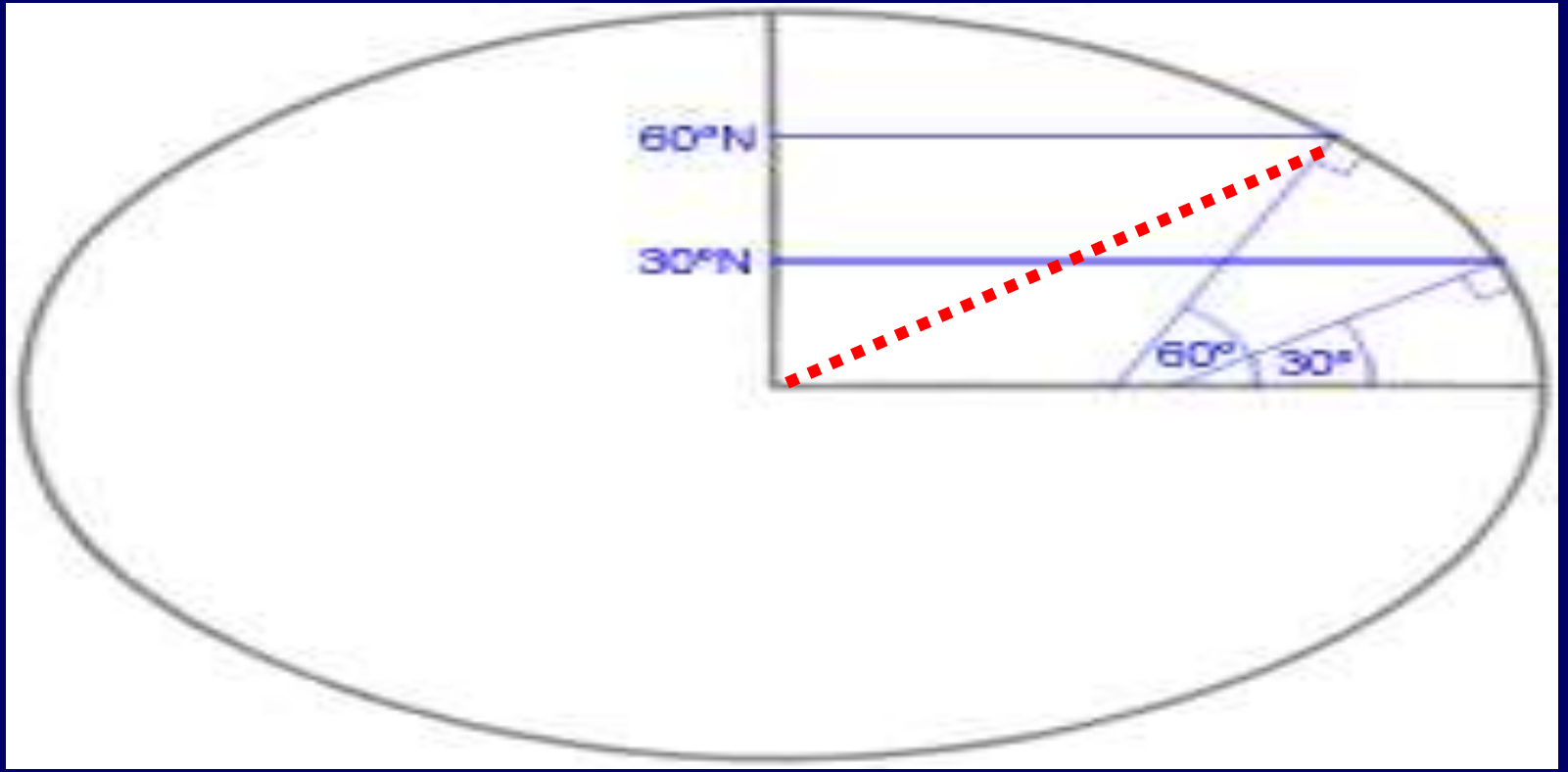
Draw polyline | Draw polygon

Web Mercator (WKID:102100)
Length:1092586 meters

State Plane Oregon North(WKID:32126)
Length:762861 meters

UTM Zone 10 (WKID:32610)
Length:764417 meters

DEFINITION OF LATITUDE

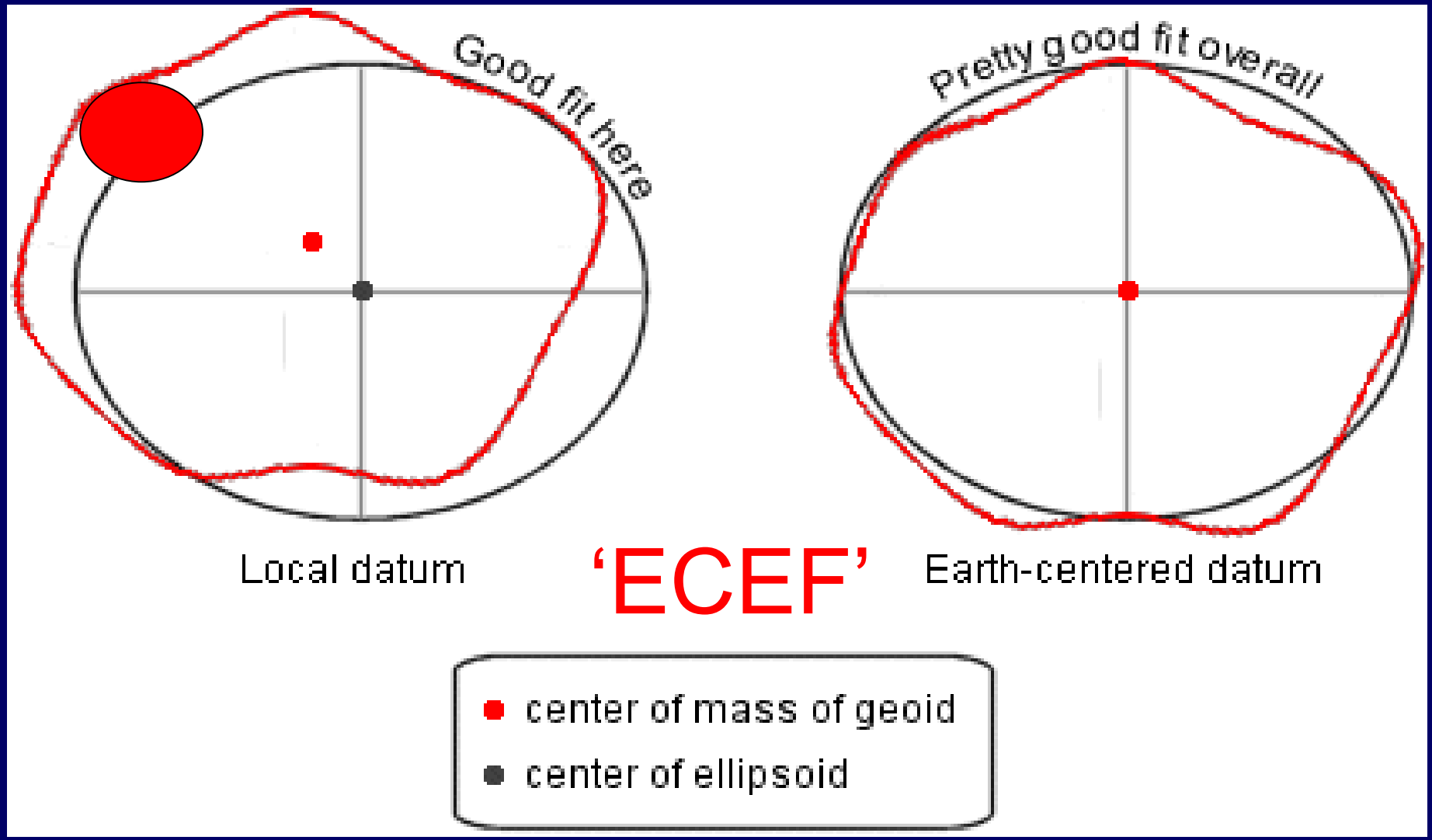


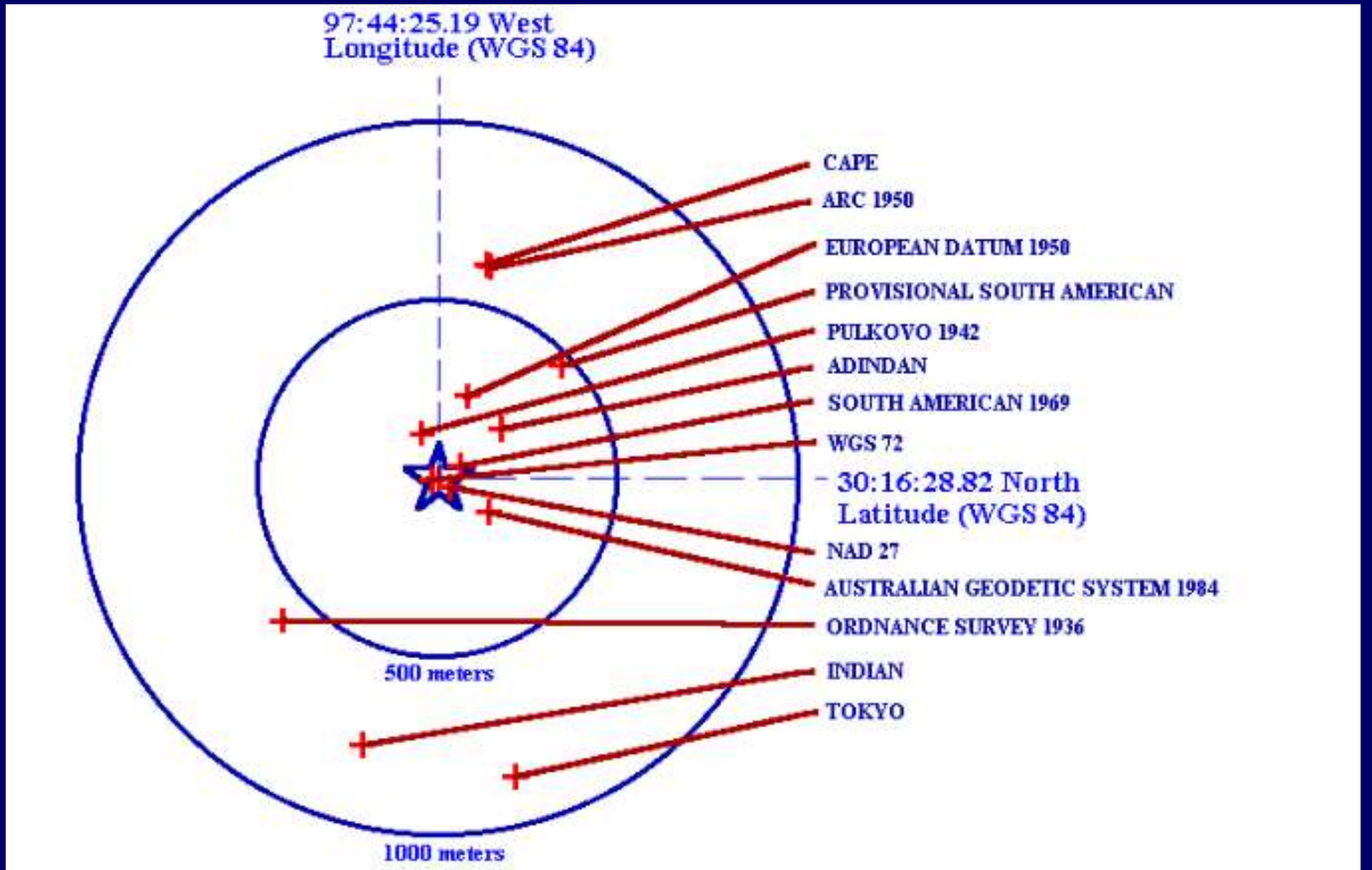
When the terms ‘latitude’ and ‘longitude’ are used without qualification they are normally assumed to mean GEODETIC

TABLE 3.—*Corrections for auxiliary latitudes on the Clarke 1866 ellipsoid*

[Corrections are given, rather than actual values. For example, if the geodetic latitude is 50°N., the conformal latitude is 50° − 11′29.7″ = 49° 48′30.3″ N. For southern latitudes, the corrections are the same, disregarding the sign of the latitude. That is, the conformal latitude for a ϕ of lat. 50° S. is 49° 48′30.3″ S. From Adams, 1921]

Geodetic (ϕ)	Conformal ($\chi-\phi$)	Authalic ($\beta-\phi$)	Rectifying ($\mu-\phi$)	Geocentric ($\phi_g-\phi$)	Parametric ($\eta-\phi$)
90°	0′ 00.0″	0′ 00.0″	0′ 00.0″	0′ 00.0″	0′ 00.0″
85	− 2 01.9	−1 21.2	−1 31.4	− 2 02.0	−1 00.9
80	− 4 00.1	−2 40.0	−3 00.0	− 4 00.3	−2 00.0
75	− 5 50.9	−3 53.9	−4 23.1	− 5 51.3	−2 55.4
70	− 7 31.0	−5 00.6	−5 38.2	− 7 31.4	−3 45.4
65	− 8 57.2	−5 58.2	−6 43.0	− 8 57.7	−4 28.6
60	−10 07.1	−6 44.8	−7 35.4	−10 07.6	−5 03.6
55	−10 58.5	−7 19.1	−8 14.0	−10 58.9	−5 29.3
50	−11 29.7	−7 40.1	−8 37.5	−11 30.2	−5 45.0
45	−11 40.0	−7 47.0	−8 45.3	−11 40.5	−5 50.2
40	−11 29.1	−7 39.8	−8 37.2	−11 29.4	−5 44.8
35	−10 57.2	−7 18.6	−8 13.3	−10 57.4	−5 28.9
30	−10 05.4	−6 44.1	−7 34.5	−10 05.6	−5 03.0
25	− 8 55.3	−5 57.3	−6 41.9	− 8 55.4	−4 28.0
20	− 7 29.0	−4 59.7	−5 37.1	− 7 29.1	−3 44.8
15	− 5 49.2	−3 53.1	−4 22.2	− 5 49.2	−2 54.9
10	− 3 58.8	−2 39.4	−2 59.3	− 3 58.8	−1 59.6
5	− 2 01.2	−1 20.9	−1 31.0	− 2 01.2	−1 00.7
0	0 00.0	0 00.0	0 00.0	0 00.0	0 00.0


Good fit here
Pretty good fit overall
Local datum
'ECEF'
Earth-centered datum
center of mass of geoid
center of ellipsoid

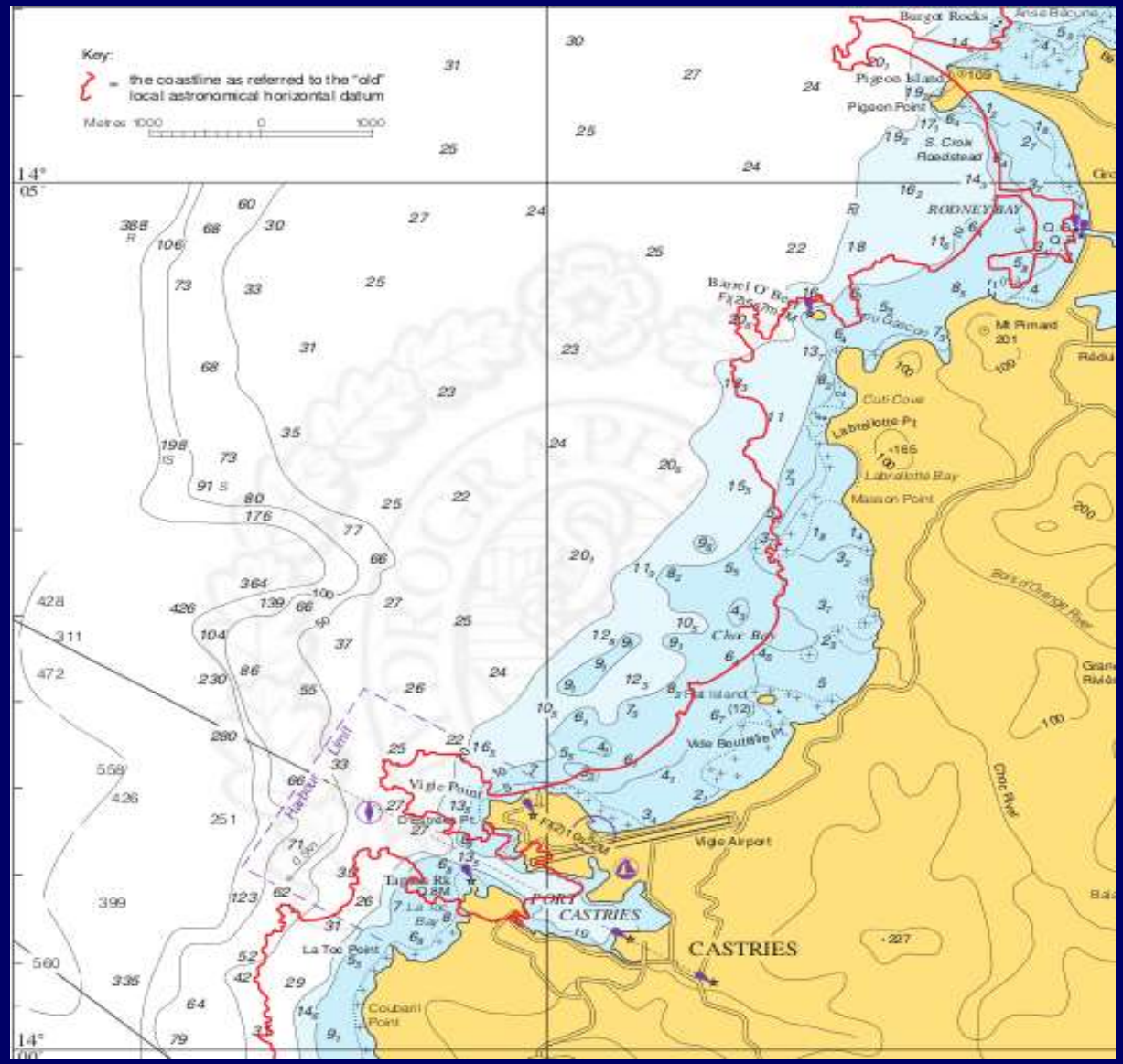


Position Shifts from Datum Differences

Texas Capitol Dome Horizontal Benchmark

Peter H. Dana 9/1/94

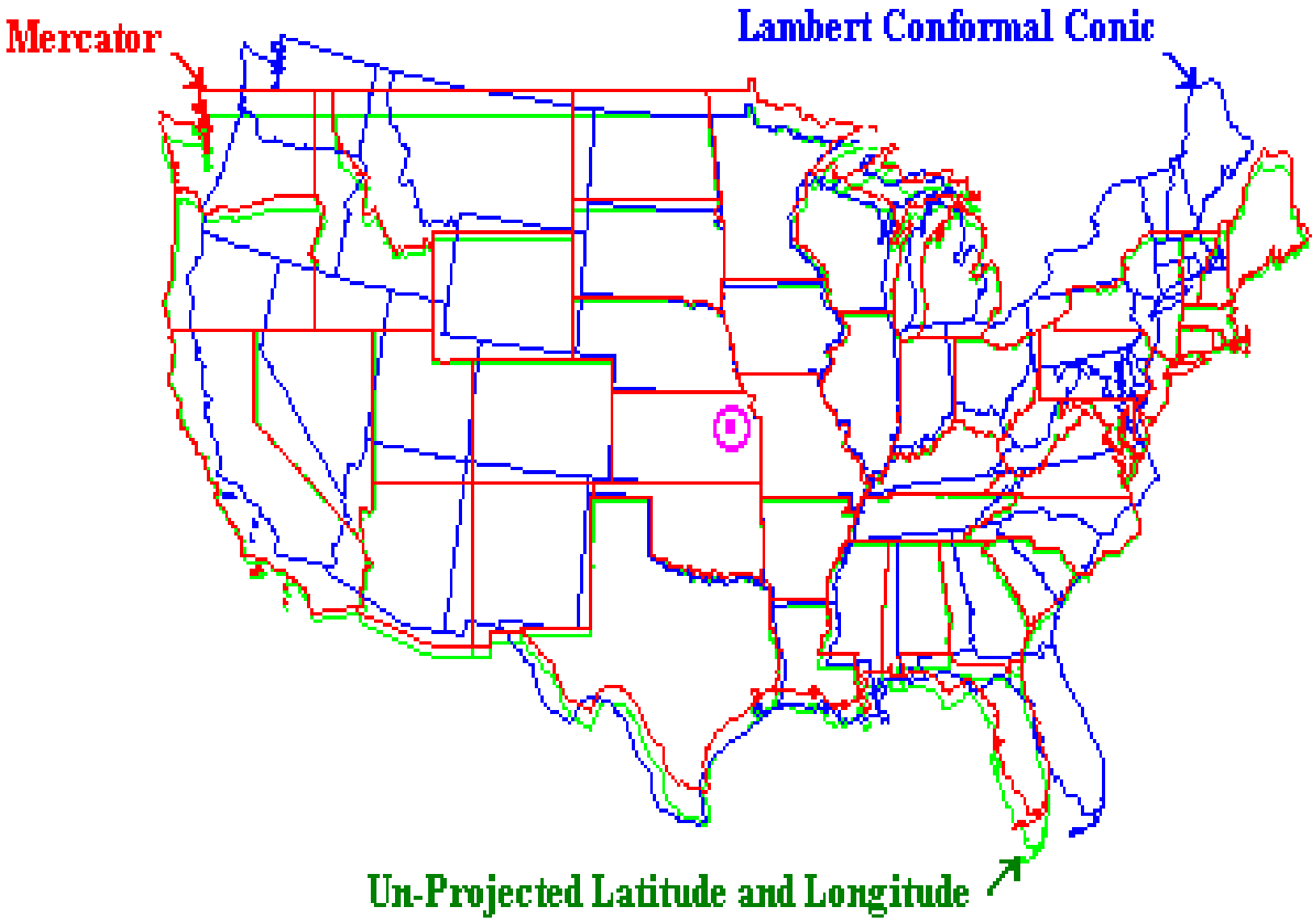
Will the Map change if I change the REFERENCE DATUM ?



The largest difference between satellite navigation derived and charted position reported so far is 7 miles in the Pacific Ocean, but even larger undiscovered differences may exist

THE MARINER'S HANDBOOK
NINTH EDITION 2009

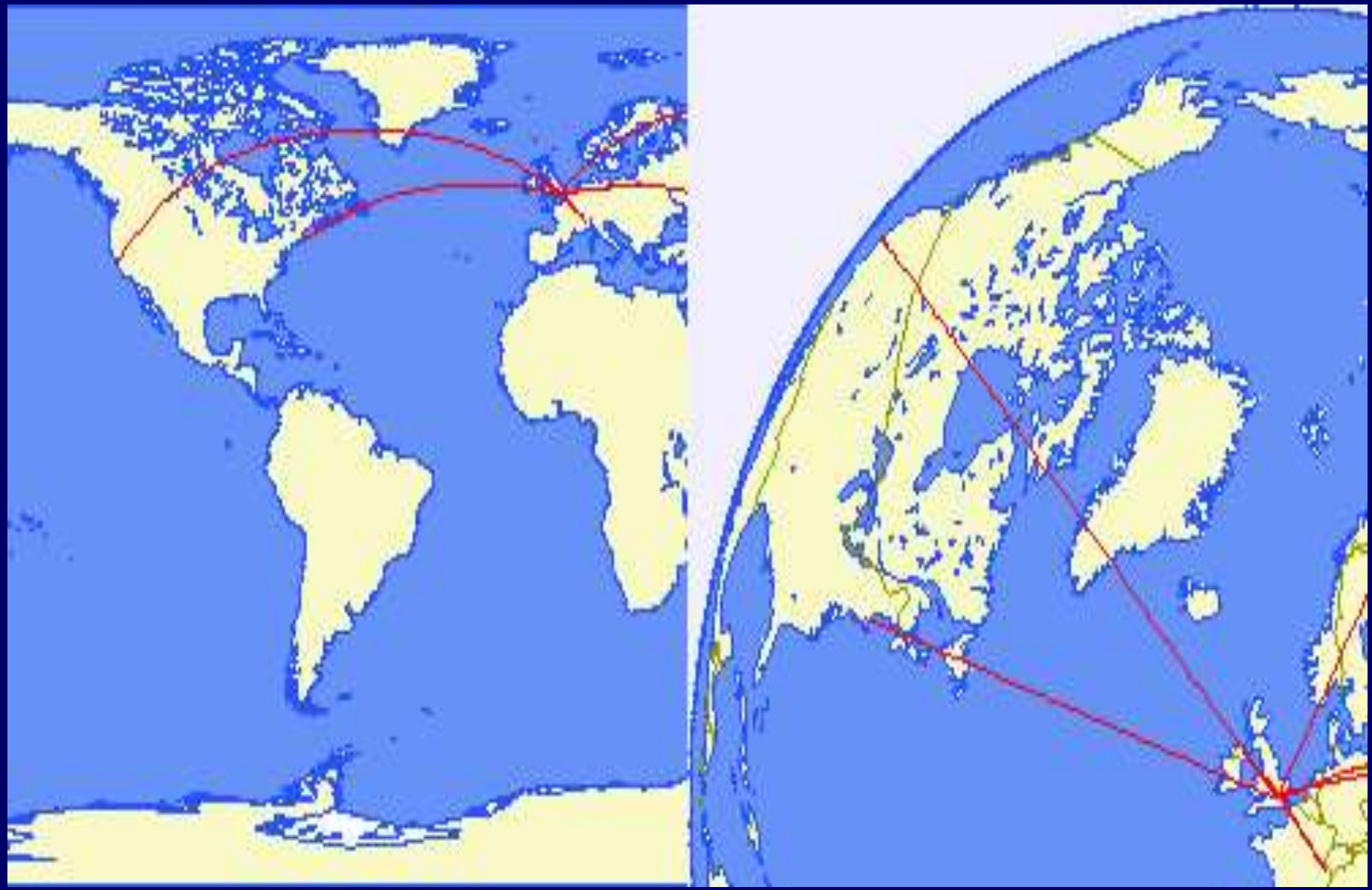
Three Map Projections Centered at 39 N and 96 W

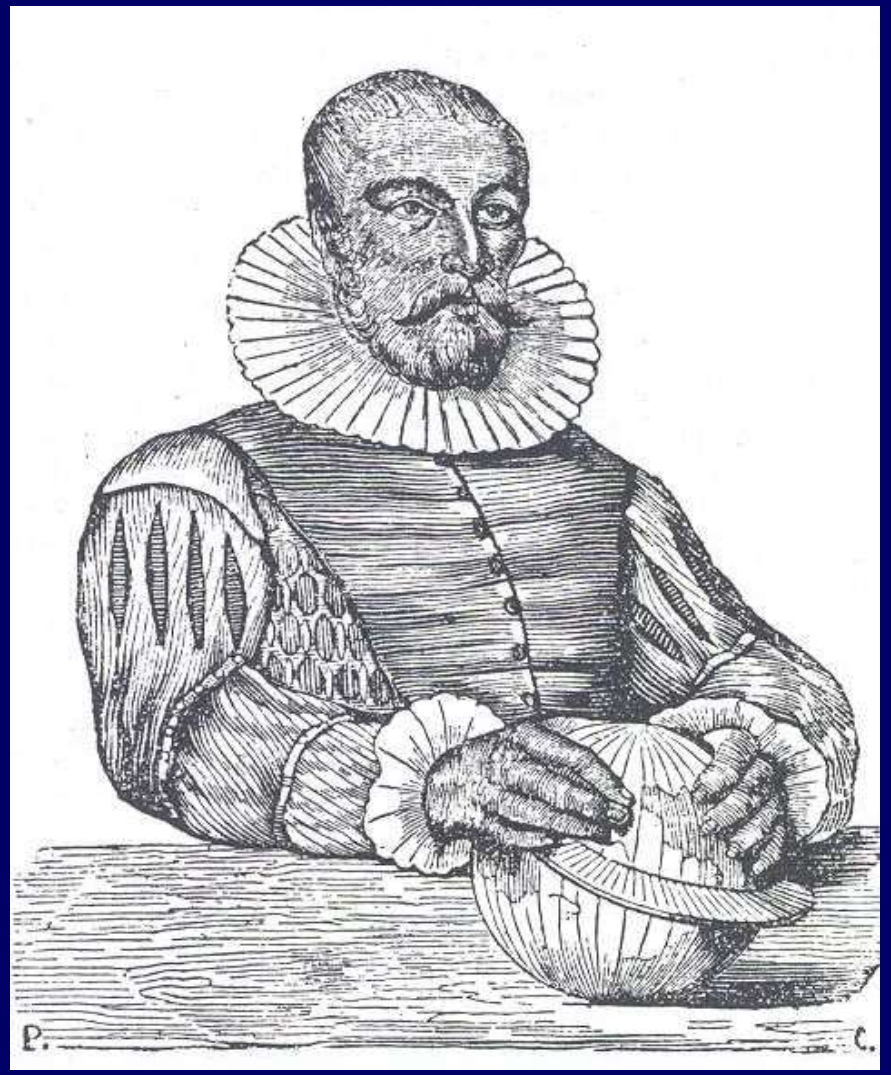


Peter H. Dana 6/23/97

The Earth in two different global projections just east of Houston. On the left is a Mercator projection and the right is a Sinusoidal projection. The yellow arrow indicates the same oxbow lake-like feature being measured in both projections. In the Mercator projection this distance is **492 meters** while it is **510 meters** in the Sinusoidal projection.

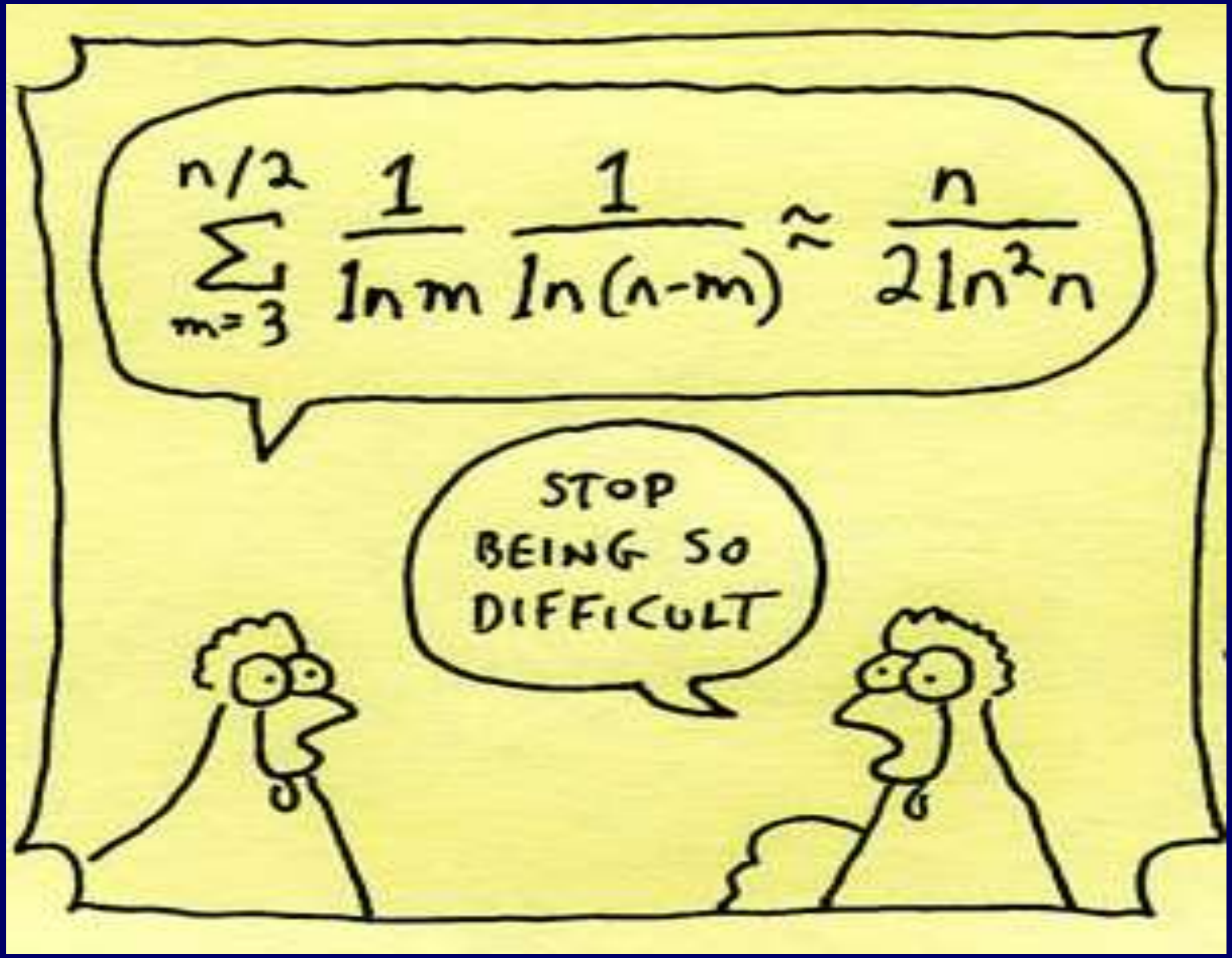

Heringsdorf
(4)
RehaKliniky
1,5
2,5
45,5
Präsidentenberg
Wildpark
WW





Pedro Nunes
(1502-1578)

“I have decided, for this reason, to polish up some of the things I have written and set about studying philosophy and abandon mathematics, in the study of which, I have irretrievably lost my health”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