POLAR ZENITHAL EQUAL-AREA PROJECTION

Introduction:

This projection has the property to maintain equal area. The area between any two parallels on the projection is equal to the corresponding area on the globe. It is a non-perspective projection. The parallels are all concentric circles with varying radii. Meridians are all straight lines.

Procedure of calculation:

Step 1: Radius of the Generating Globe (R)= Actual Radius of the Earth/Denominator of R.F.

Step 2: Distance from the pole to draw the parallels/Radius of the selected parallels=2R $sin(90^{\circ}-\phi)/2$

Procedure of construction:

- 1) Draw two lines intersecting each other as shown
- 2) Mark the intersection point as the pole, as pole is represented by a dot
- 3) From the intersection point draw the other parallels with the calculated radii
- 4) After the parallels are drawn the meridians will be drawn
- 5) On the outermost parallel mark, the meridians with a round protractor at an interval as asked in the specific problem of the projection
- 6) Mark all the parallels and meridians

Final steps for completing the projection:

- 1) Write the name of the projection
- 2) Mention the R.F.
- 3) Mention the interval of the meridians and parallels
- 4) Mention the specified extension

The following problem will clarify the procedure of calculation and construction of the projection

Problem:

Draw graticules of Northern Hemisphere on Polar Zenithal Equal Projection with R.F. 1:125,000,000 and interval 10°

Solution:

The selected parallels with 10° interval- 0°, 10°N, 20°N, 30°N, 40°N, 50°N, 60°N, 70°N, 80°N, 90°N

Step 1: Radius of the Generating Globe = 640,000,000/125,000,000=5.12cms

ø	(90-ø)/2	2R sin(90°-ø)/2	Radius in cm
0°	45°	7.24	7.2
10°	40°	6.58	6.6
20°	35°	5.87	5.9
30°	30°	5.12	5.1
40°	25°	4.33	4.3
50°	20°	3.50	3.5
60°	15°	2.65	2.7
70°	10°	1.78	1.8
80°	5°	0.89	0.9
90°	-	-	

Step 2: Radius of the selected parallels

Construction:



NOTE THE MARKING OF PARALLELS AND MERIDIANS

SIMILARLY, WE CAN DRAW POLAR ZENITHAL EQUAL AREA PROJECTION FOR SOUTHERN HEMISPHERE



NOTE THE MARKING OF PARALLELS AND MERIDIANS

References:

Saha, Pijushkanti and Basu, Partha (2015), "Advanced Practical Geography", Books and Allied (P) Ltd., Kolkata