Numbering System 0f Topographical Maps by Prof. Subhas Manna, Department of Geography, Narajole Raj College

Topographic maps are an essential part of the field of geology due to the comprehensive analysis of a particular surface. Students can explore more about the topographic map here.

Definition and Meaning of Topographic Map

A topographic map is a map that represents the locations of geographical features. Furthermore, these geographical features can be mountains, valleys, plain surfaces, water bodies and many more.

Topographic maps refer to maps at large and medium scales that incorporate a massive variety of information. All the components of topographic maps carry equal importance.

Topographic maps refer to a graphical representation of the three-dimensional configuration of the surface of the Earth. Moreover, such maps show the size, shape, and distribution of landscape features.

Also, such maps present the vertical and horizontal positions of those features whose representations take place. Most noteworthy makes use of contour lines so as to show different elevations on a map.

Structure of Topographic Map

Topographic maps have a detailed and compendious structure. The various aspects of a topographic map can be divided into three major groups:

Relief: The depiction of the relief aspect is with brown contour lines that represent the mountains, hills, valleys, plains, etc. The elevations are available in meters (or feet) above the mean sea level.

Furthermore, there are also spot elevations are shown in the black colour. Moreover, in these spot elevations, the marking of the lake level, the summit of a hill, or the road intersections takes place for the purpose of elevation.

Water: The depiction of the water aspects takes place in the blue colour. Moreover, the water aspects represent the oceans, rivers, streams, lakes, swamps etc.

Cultural: The depiction of these aspects takes place in the black colour. Furthermore, they are representative of all man-made features.

Above all, these man-made features include the roads, railroads, land boundaries, buildings, airports, urban development etc.

Contour line: A contour line refers to a type of isoline. In such a case, it is a line of equal elevation. Moreover, if one walks along a contour line, then one would not go uphill or downhill.

Mathematically speaking, a contour line refers to a curve in two dimensions on which the value of a function f(x,y) happens to be a constant.

Examples of Topographic Map

Below are some examples of topographic maps from different nations or countries:

Germany- Each federal state of Germany is in charge of producing official topographic maps. Moreover, the production and publishing of the maps which are between 1:5000 and 1:100000 take place by the land surveying offices of each federal state.

Also, the production and publishing of the maps between 1:200000 and 1:1000000 take place by a federal house(BKG) in Frankfurt am Main.

Israel- The Survey of Israel has the responsibility for carrying out the topographic and civilian mapping of Israel. Moreover, the standard map scales in Israel are 1:50000 and 1:100000. Also, one can access the 1:50000 map online. Above all, Israel is a country that contains many high elevation places.

NUMBERING SYSTEM OF INDIAN TOPOGRAPHICAL SHEETS

Geological Survey of India , a department under Ministry of science and Technology of Government of India located at Dehradun is prepare topographic maps. The maps are in 3 different scales: 1: 25,000, 1:50,000, and 1: 250,000. All maps represents some particular area and these are prepared from the top of the map towards north so that study of the map is easy. All the maps are numbered and this system of sheet numbering by survey of india is called "India and Adjacent Countries series." Each series is numbered to help to locate the areas or places.

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For the purpose of an interaction series (within 40 N to 400 N latitude and 440 E to 1240 E) at the scale oaf 1:1,000,000 is considered as a base map and this map is called million sheet map. The million sheet map which scale being 1:10,00,000 (1cm to 10 km) or1:M each covering 40 of longitude and latitude . The numbering of sheets in India is based on the number system of maps of india and these series bears the numbers like 1,2,3,4 ...upto 136 consisting of the segments that cover only land area. these 136 such sheets cover India and adjacent countries and these numbers are known as index number of the area.

For example , sheet number 79 is consider for further discussion. Its extension is from 240 N to 280 N and from 900 E to 940 E .

The million sheet has been sub divided into 16 sections(4 row and 4 column), each of 10 latitude x 10 longitude and each part is numbered with block capital letter of English alphabet A to P. the sections start from North West directions, run column wise and end in South East direction

As the extension of each section is 10 latitude and 10 longitude the scale of this sheet is 1 inch to 4 miles or 1: 250,000. The numbering of one o the sheet is 79 N and its extension is from 260 N to 270 N and from 930 E to 940 E

The 10 x10 sheets are further sub divided into four parts which is known as half inch sheet , each of 30/ latitude and 30/ longitude and the scale is 1 inch to 2 miles or 1: 125,000 . these are identified with the help of cardinal direction NE, NW, SE, and SW. let us take the figure number 3. It is extended between 260 30/ N to 270 N and from 930 30/ E to 940 E .

The 10 x10 sheets can also divided into 16 equal part or sections, numbering from 1 to 16 in a column and each of 15/ latitude and 15/ longitude. Each part will have a scale 1inch to a mile or 1:63360 or 1:50,000.

This is also known as 30/ x 30/ (Scale 1:100,000) one inch map and this is the most common type of map produced by Survey of India . the extension of the sheet is 79 N/14 and is from 240 30/ N to 250 N and 930 15/ E to 940 E.

The 1 inch sheet (15/ x 15/) can be divided into 4 sheets. Each of 7 (1/2)/ and are numbered as NE, NW, SE, and SW.the scale of this sheet is 1:25,000 or 1 inch to ½ mile. This sheets are not very much common in use.

Open Series Map' have been introduced as per the National Map Policy of 2005 by Survey of India. For the same a new map numbering system has been adopted instead of the previous India and Adjacent Countries (IAC).

The map series is based on Transverse Mercator projection on WGS-1984 datum. A numbering system based on International Map of the World (IMW) is used.

Map numbering is of the form 'A-12A-1':

1. The IMW numbering system with minor modification is used upto 1°×1°/1:250,000 scale.
   a. Since the IMW map number for India will always start with 'N' (India being in the northern hemisphere), the first letter is omitted.
   b. The next alphabet and number of the IMW map number denotes the 6°×4° region of the IMW series. So sheet with Kalyanpur (77.65489°E 24.11981°N) would be in 'G-43' (from ~~N~~G-43):
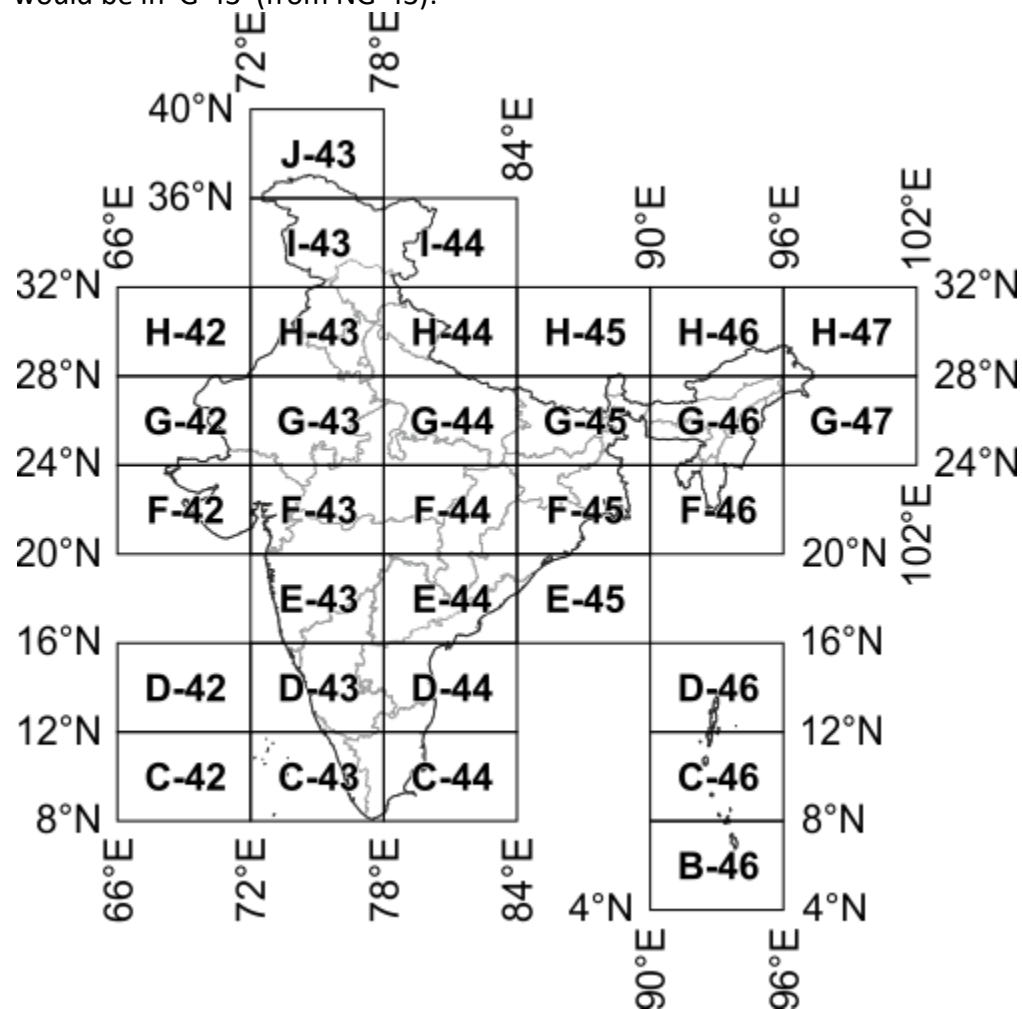
   c. Each 6°×4° rectangle is further subdivided into 24 squares of 1°×1°. Each square is indicated serially by an alphabet increasing first towards east and then towards south, starting with 'A'. So sheet for Kalyanpur (77.65489°E 24.11981°N)

falls within 'G-43X':

2. Each 1°×1° square is further divided into 16 squares of 15'×15' (15 minutes×15 minutes). Each square is indicated serially by a number increasing first towards south and then towards east, starting with '1' (similar to the system adopted in India and Adjacent Countries). So for the map sheet for Kalyanpur (77°39.293'E 24°7.187'N) would be 'G-43X-12':

Lookup Open Series Map map numbers in Map Number Lookup.