

JIWAJI UNIVERSITY, GWALIOR

SCHOOL OF STUDIES IN TRAVEL & TOURISM MANAGEMENT

BTM(Bachelor in Tourism Management) VITH SEMESTER

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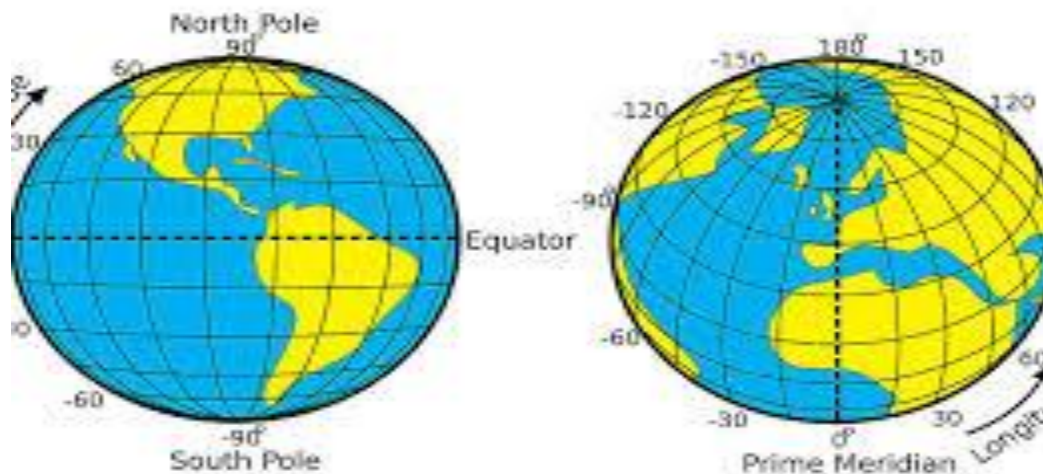
1. Concept of longitude and latitude

Earth is not completely spherical in shape the top part of the earth is little flat. This is the reason why the diameter of earth from N → S is less as compared to its diameter of earth from W→ E. This shape of earth is called as **Geoids or Spheroid**.

The axis of earth is little tilted approximately $23\frac{1}{2}^{\circ}$. There are many imaginary lines runs on earth's surface, the imaginary lines which runs from west to east are known as **latitude** whereas imaginary lines running from north to south are known as **longitudes**. The imaginary line 0° latitude is known as **equator** which divides the earth into two equal halves i.e Northern hemisphere and Southern hemisphere.

There are 90 imaginary lines parallel to latitude in northern hemisphere and 90 imaginary lines parallel to latitude in southern hemisphere. It means there are 180 total latitudes running parallel to each other.

The imaginary lines of longitude running north to south are also known as Meridian of longitude. These lines are not parallel to each other instead they are touching each other at northern tip and southern tip. There are 180 meridian of longitudes in eastern hemisphere and 180 meridians of longitudes in western hemisphere. So, there are total number of $180+180 = 360$ longitudes of meridians. Meridian at 0° is known as **Prime meridian**, directly opposite to prime meridian is International Date Line (IDL).



2. TIME ZONE

Meridians of longitudes are very important in calculating time of any location. Difference between each meridian of longitude is 4 minutes.

There is total $180 + 180 = 360$ longitude of meridians,

Hence, if we want to calculate total number of hours taken by earth in completing one rotation we can follow below method

Degree of longitude of meridian \times 4 min (difference between each meridian is 4 min) divided by 60 (as 60 min = 1hour)

$$360 \times 4\text{min} = 1440 \text{ min}$$

$$\text{Converting into hours, } 1440/60 \text{ hours} = 24 \text{ hours}$$

This is how meridians of longitudes divide earth into different time zones based on position of the place (i.e. latitude & longitude) we can calculate the time of any place. While calculating we can follow simple rule EGA (East Gain and Add) and WLS (West Loose and Subtract) which means if the geographic position of any place is in East the time zone will be in plus (+) i.e heading from time meridian and if the geographic position is in West the time zone will be negative (-) i.e lagging behind the time meridian

2.1 Given below are few examples:-

1. India is towards eastern side at 78.9629° E , on calculating the time zone

$$78.9629 \times 4 \text{ min} = 315.8516 \text{ min}$$

Converting into hours

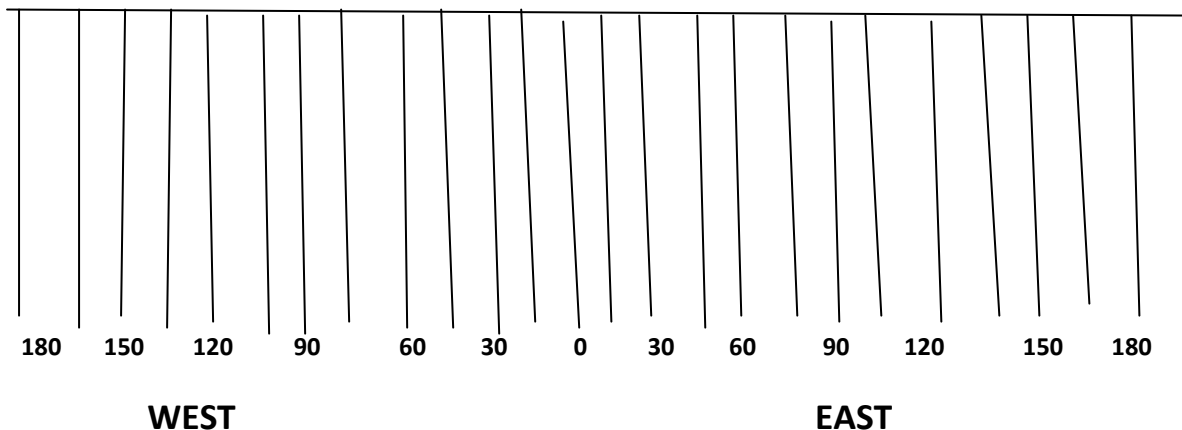
$$315.8516 / 60 = 5.26 \text{ hour (+5.30 hour approx)}$$

2. Montreal city in Canada is towards western side at 73.5673° W. On calculating its time zone

$$73.5673 \times 4 \text{ min} = 294.2692 \text{ min}$$

Which on converting into hours comes to approximately to (-) 5 hours.

2.2 Flying time calculation



WLS (West Loose Subtract)

EGA (East Gain Add)

Example 1

If current time at 90° W = 2 Pm and flight travelled time = 2 hours then find the arrival time of flight if destination is 60° towards east after travelling for 2 hours?

Solution:

Current time at 90°W is 2 pm after travelling for 2 hours it will reach at 90°-60°=30° W at

2pm +2hours = 4 pm

After travelling 60° towards east from 30° W it will reach to 30°E

Since to travel every 15° it takes 1 hour

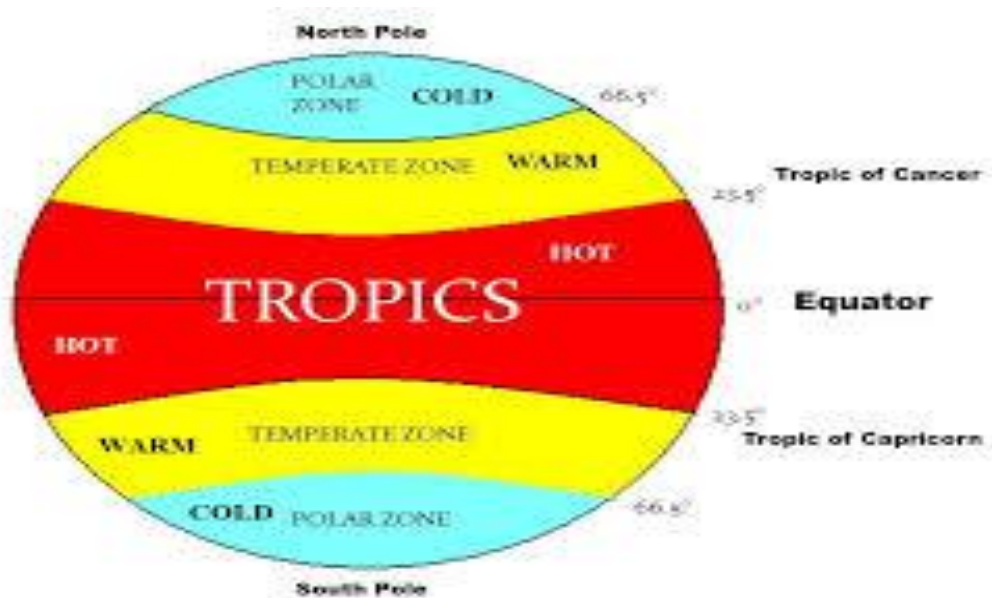
Hence to travel 60° it takes 60/15= 4 hours

Hence,

Flight will reach at 30° E = 4pm+4hours= 8 pm

3. Climate Zones

These imaginary lines also play vital role in dividing earth into different climatic zones.



3.1 Equatorial Zone: It is the hottest region which gets direct sunlight throughout the year. This is the reason why the places located in this region experiences summer throughout the year and also is the cause of less density of population these regions. However one can find evergreen forests in this region.

At $23\frac{1}{2}^{\circ}$ N we have Tropic of Cancer and at $23\frac{1}{2}^{\circ}$ S we have Tropic of Capricorn. This passes through India. Rainfall is ensured in this region and that is why it is good for growing crops. Which provide all necessary products for the dense population to survive? This region also experiences a little hotter climate.

3.2 Temperate zone: After crossing the tropic of cancer and tropic of Capricorn we reach the Arctic and Antarctic circles. Places located in these regions experience temperate climate i.e neither too hot nor too cold. In this region one can enjoy all four seasons (winter, spring, autumn and summer) one can easily see and observe the changes in nature.

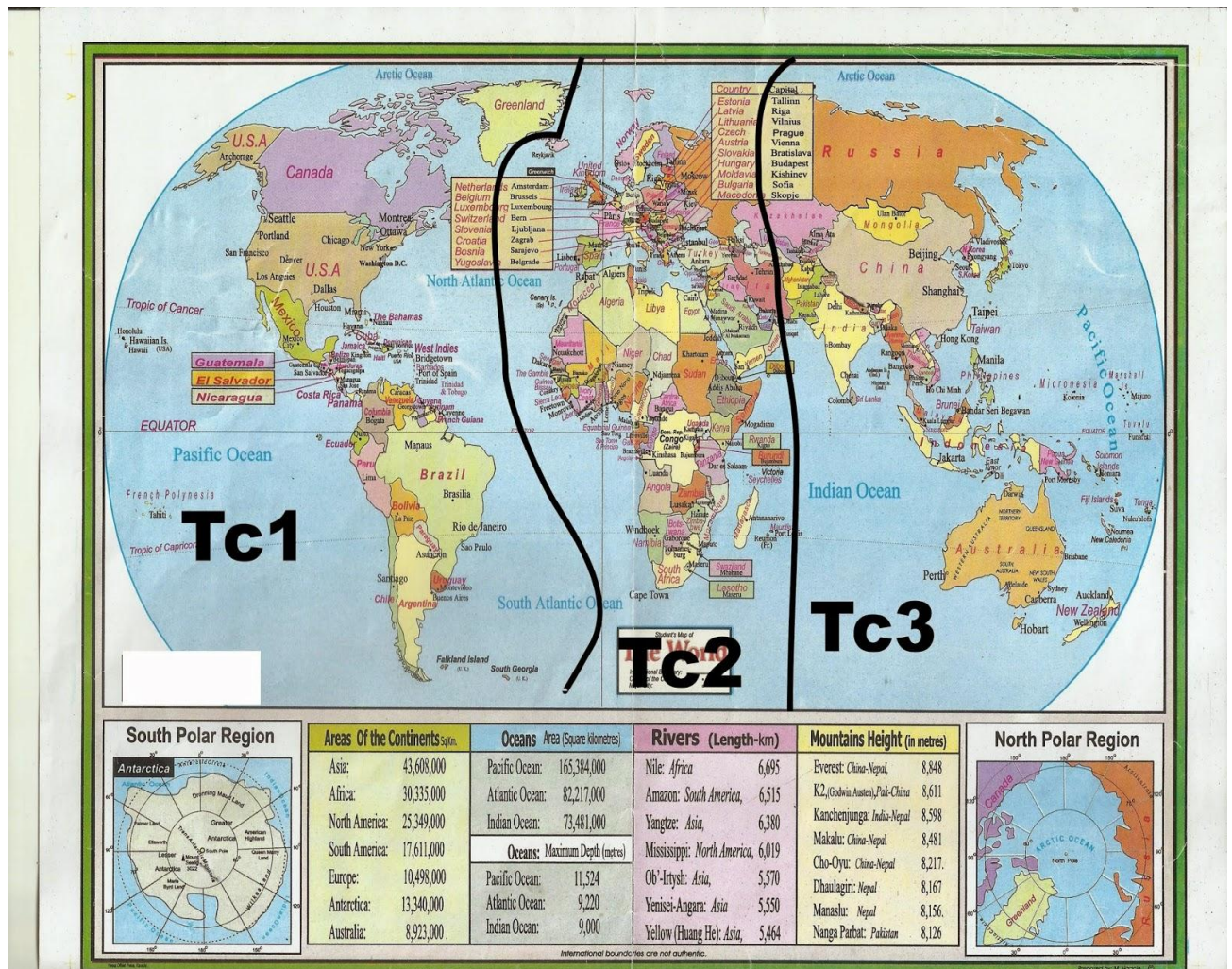
3.3 Tundra Zone: This region is very close to poles and it has extreme climatic conditions this is why very less vegetation is found here, only short trees or shrubs grow in this region. One can find dense population this region.

3.4 Frigid Zone: As the name suggests places in this zone experience extreme cold, it is located nearest to poles. Climatic conditions do not support vegetation hence very less vegetation and very less population is found here. Most special feature of this region is that for 6 months it have day and for other 6 months it have night.

4. IATA Traffic Conference Area

World geography is an important part for travel, tourism and aviation industry. Every professional should have knowledge of world geography and should be able to identify places or cities by the location, country, area and subareas under the categories specified by IATA. The earth can be divided into two parts Eastern hemisphere and Western hemisphere which are further divided by IATA into 3 traffic conferences which are further subdivided into subareas.

The three IATA traffic conferences are denoted as TC1, TC2 and TC3 where TC1 is known as Western hemisphere and TC2 & TC3 together forms Eastern hemisphere.



Map showing IATA Traffic conferences (Source : Google)

4.1 IATA TRAFFIC CONFERENCE AREA 1 or TC1

It is composed of American continent and Atlantic continent.

4.1.1 Subareas of Traffic Conference Area 1

Sub areas under America region are as follows

- ❖ North America: Canada, U.S, Mexico and St.Pierre

- ❖ Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.
- ❖ Caribbean sub-area: Bahamas, Bermuda, Guyana, Caribbean islands
- ❖ South America: Argentina, Uruguay, Colombia, Ecuador, Bolivia, Panama, Peru, Venezuela, Brazil, Chile.

4.1.2 Sub areas under Atlantic continents

- ❖ North Atlantic: Canada, Greenland, Mexico, Puerto Rico and US Virgin Islands.
- ❖ Central Atlantic: It is composed of Caribbean areas.
- ❖ South Atlantic: Brazil, Uruguay, Argentina, Chile, Paraguay.

4.2 IATA TRAFFIC CONFERENCE AREA 2 or TC2

It is composed of Antarctic Europe continents, Middle East and African continents

4.2.1 Subareas of Traffic Conference Area 2

It is further divide into three main sub areas, which are follows:

- ❖ Europe: All European countries (such as Germany, Norway, Poland, Greece, Italy, Latvia, Belgium, Bulgaria, Spain, Luxembourg, Sweden, Switzerland, Turkey, Czech Republic, Denmark, Finland, Ukraine, Netherland and Russian province.
- ❖ Africa: This is further subdivided into six sub regions
 - Eastern Africa- Ethiopia, Kenya, Burundi, Tanzania, Uganda and Somalia
 - Western Africa- Congo-Brazzaville, Gabon, Ghana, Guinea, Mali, Mauritius, Nigeria, Sao Tome, Sierra Leone, Angola, Burkina Faso.
 - Libya
 - Central Africa- Zambia, Zimbabwe, Malawi
 - Southern Africa- Namibia, South Africa, Botswana, Swaziland
 - Indian Ocean Islands- Mauritius, Seychelles, Mayotte, Madagascar
- ❖ Middle East: Bahrain, Qatar, UAE, Iraq, Kuwait, Egypt, Saudi Arabia, Yemen, Iran, Jordan, Sudan, Lebanon.

4.3 IATA TRAFFIC CONFERENCE AREA 3 or TC3

It is composed of Asia continent and Oceania continent

4.3.1 Subareas of Traffic Conference Area 3

Traffic conference area is further divided into four sub areas:

- ❖ Japan & Korea
- ❖ Indian Sub continent- Afghanistan, Maldives, Nepal, Sri Lanka, Pakistan, Bhutan, Bangladesh, India.
- ❖ South East Asia- Kazakhstan, Macao, Singapore, Philippines, Russia, Thailand, Laos, Malaysia, Taipei, Indonesia, Macao, Myanmar, Hong Kong, Turkmenistan.
- ❖ South West Pacific- Nauru, Tonga, Solomon Island, Futuna Island, Australia, Fiji, Papua New Guinea, American Samoa

Sample Questions:

1. Explain the concept of latitude and longitude.
2. What is the significance of longitude in time zone calculation?
3. Calculate GMT time zones for the following
 - (i) Unites States of America, 95.7129° W
 - (ii) Nairobi (Kenya), 36.8219° E
 - (iii) Nashville, 86.7816° W
 - (iv) Bangkok, 100.5018° E
4. Write a short on different climate zones of the world.
5. Explain IATA traffic conference areas.

