SEASONS AND TIME

X ENGLISH MEDIUM

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Seasonal change

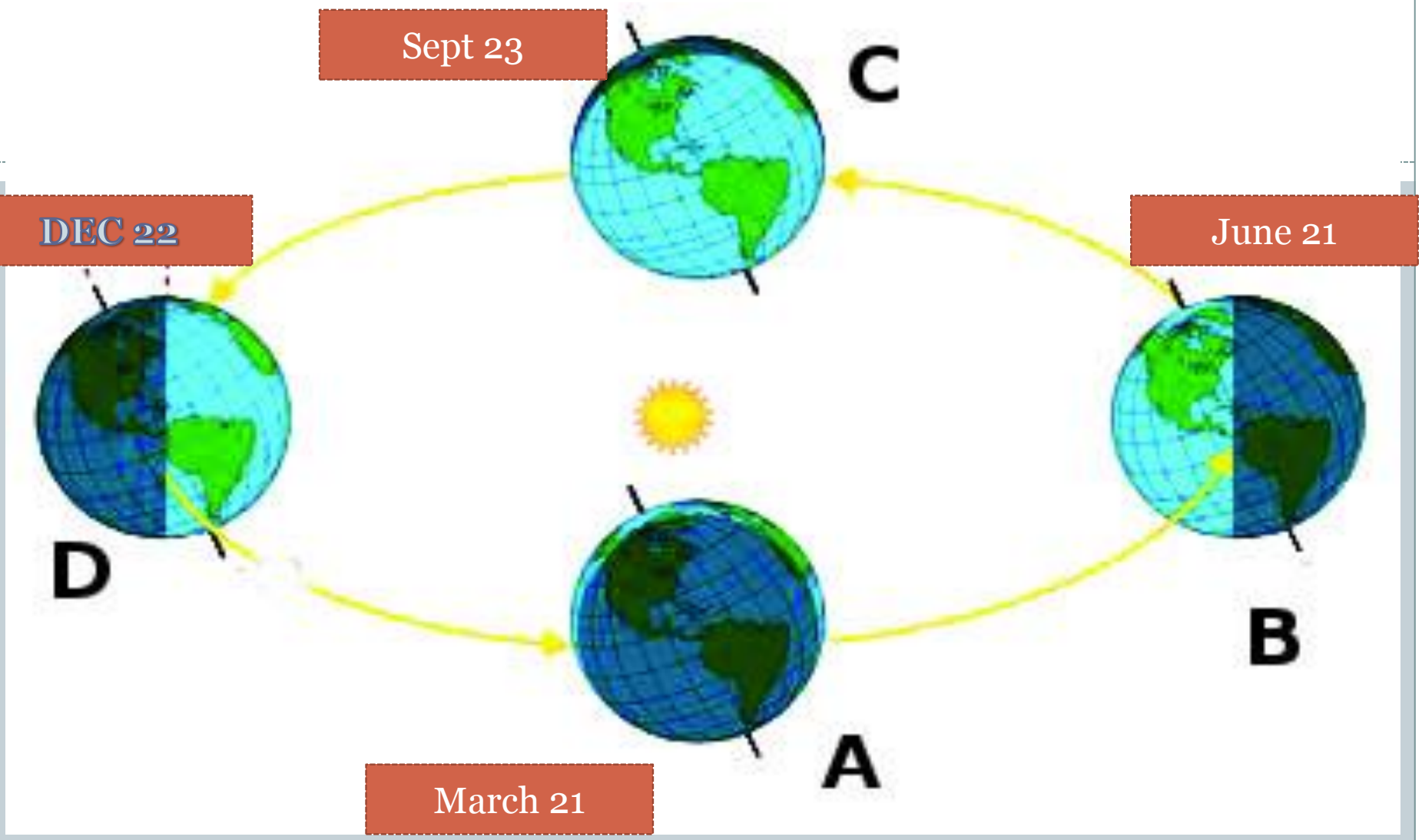
- we experience different season . reason?
- Earth Revolution
- Tilt of the axis .
- The apparent movt of the sun
- **Revolution–** The earth revolves around the sun in an elliptical orbit .This motion is known as Revolution .[365$\frac{1}{4}$days]
- What is **leap year**?
- The earth take 365days and 6days to complete one revolution. We consider a year consisting of 365 days only and 6 hours saved every year are added to make one day over a span of 4 years

Parallelism of the Earth's axis-

The axis of the earth is tilted at an angle of 661/2% from the orbital plane . If measured from the vertical plane this would be 231/2%.The earth maintain this tilt throughout its revolution .this is known as the Parallelism of the Earth's axis

The apparent movement of the sun

- The parallelism maintained throughout the Revolution , so the position of the sun in relation to the earth varies. The Sun shift apparently between tropic of cancer [23%n]and tropic of Capricorn [23%s].This is known as the apparent movement of the sun.



The sunrays fall vertically over one hemisphere during one half of the year and on the other hemisphere during the other half. Temperature will be higher over places where the vertical rays of the sun fall .The temperature will be low at places where the sun ray's are slanting.

EQUINOXES [March 21 September 23]

- Sun rays fall vertically over the Equator on March 21 September 23 .

Features

Equal amount of sunlight is received on both the hemisphere .

-The length of day and night will be equal during these days on both the hemisphere

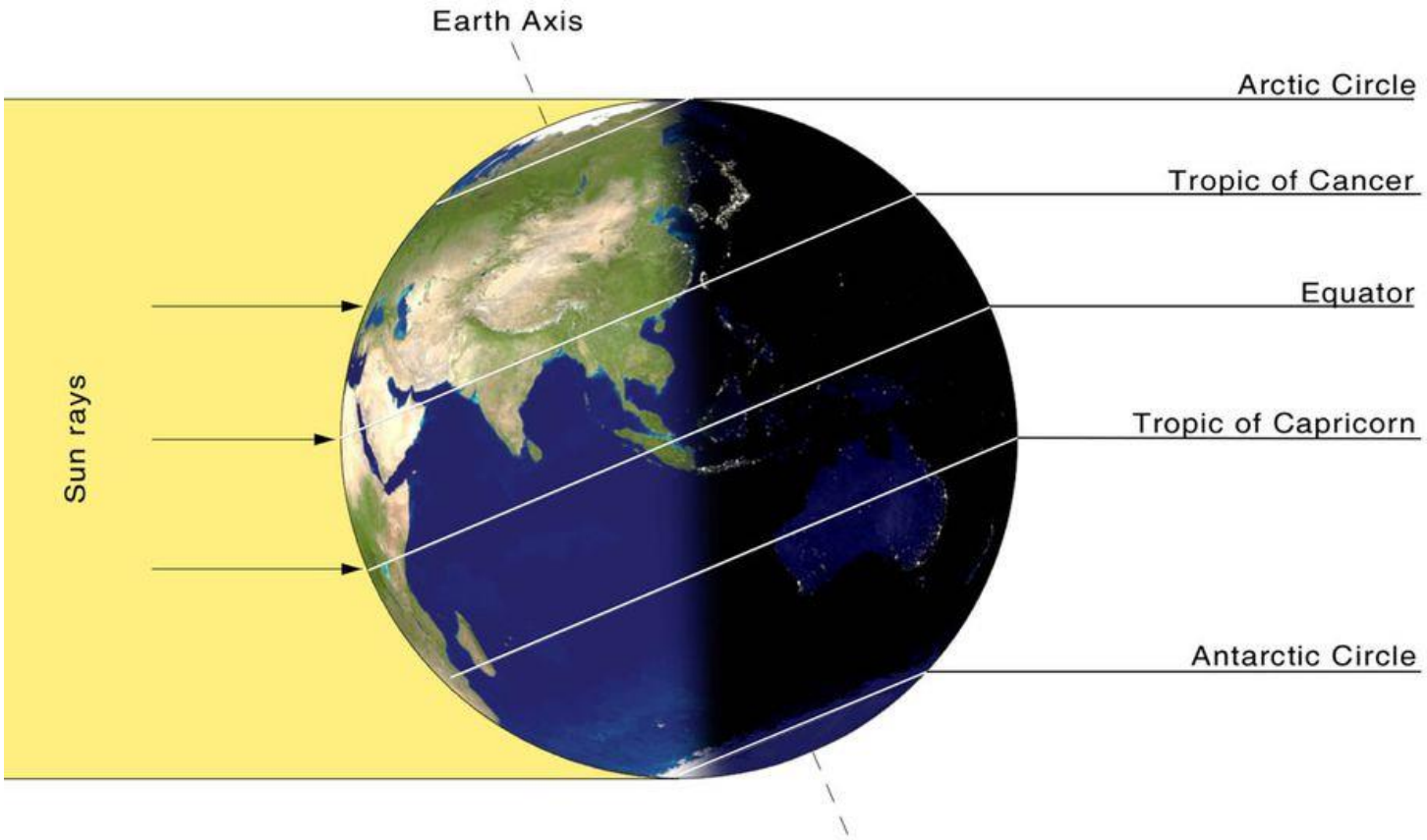
-These days are called equinoxes.

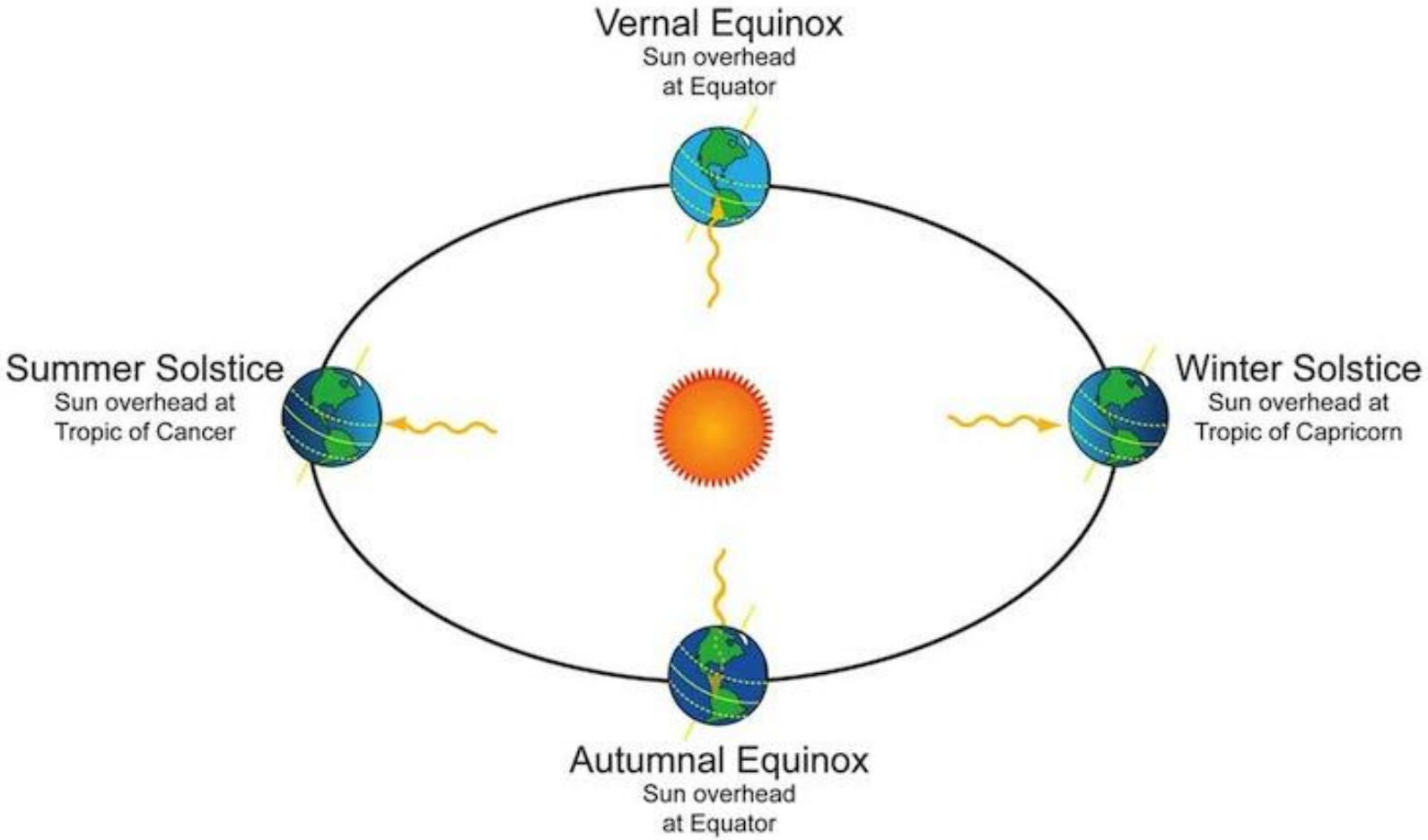
JUNE 21–Summer solstice

- The apparent position of the sun shifts from the equator to the Northern hemisphere from March 21 to June 21 .
- The sun will be vertically above the tropic of cancer on June 21. This day known as summer solstice.

features

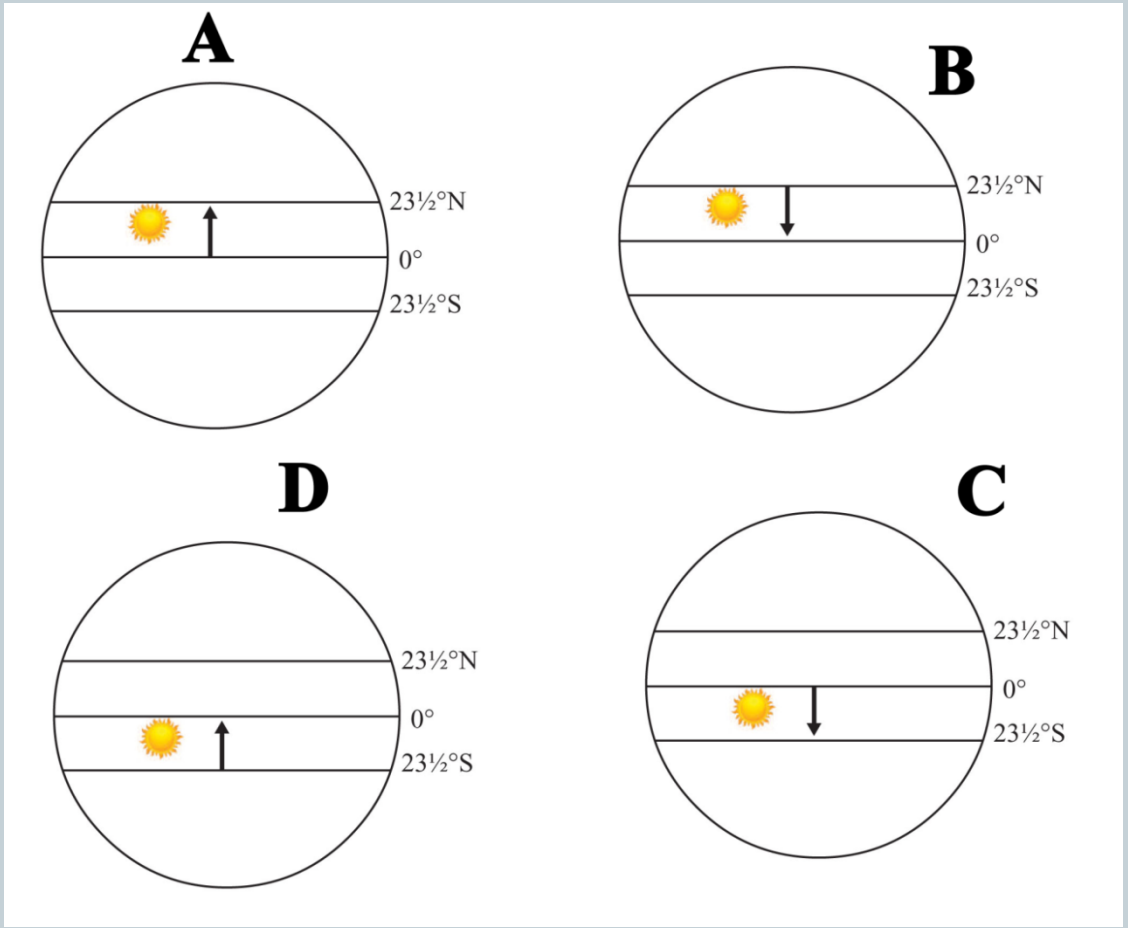
- This day experience longest day in Northern Hemisphere and the Longest night in the southern hemisphere .
- High temperature in Northern hemisphere
- Low temperature in southern hemisphere


Earth Axis
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
Sun rays


Vernal Equinox
Sun overhead
at Equator
Summer Solstice
Sun overhead at
Tropic of Cancer
Winter Solstice
Sun overhead at
Tropic of Capricorn
Autumnal Equinox
Sun overhead
at Equator

DECEMBER 22 – Winter solstice

- The apparent position of the sun shifts from the equator to the Southern hemisphere from September 23to December 22 . The sun will be vertically above the tropic of Capricorn on December 22 .
- This day known as Winter solstice
- **Features**
- This day experience longest day in Southern Hemisphere and longest night in the Northern Hemisphere.
- Low temperature in Northern hemisphere
- High temperature in southern hemisphere


A
23½°N
0°
23½°S
B
23½°N
0°
23½°S
D
23½°N
0°
23½°S
C
23½°N
0°
23½°S

Summer and winter in NH

Summer	Winter
• Sun is in the northern hemisphere from march to September it will be summer in the N H	• During the period from September to march sun is in the Southern hemisphere it will be winter in the N H

SPRING AND AUTUMN

- Spring and autumn are the two transition seasons.
- Spring is the season of transition from winter to summer
- It experience March and April in N H.
- Peculiarities- plants sprouting, Mango trees blooming and the jack fruit tree bearing buds

Autumn

- Autumn is the season of transition from summer to winter.
- It experience October and November in N H.
- Peculiarities
- The atmospheric temperature decrease
- Tress shed their leaves ,it is a form of adaptation to survive the forth coming winter.

months	The apparent movt of the sun	Season in NH	Season in SH
From march 21to june 21			
From june 21 to sept 23			
From sept 23 to dec 22			
From dec 22 to march 21			
Seasons are not visible in tropics why	Seasonal changes are visible in mid latitudes	In pole summer are cooler and shorter	In poles winter severe and longer

- The Effects of the rotation of the Earth
- ☐ Formation of days and night
- ☐ Changes in the direction of winds
- ☐ Occurrence of sun Rise, Noon & Sun set
- ☐ Concept of time
- ☐ Changes in the dates

Rotation and calculation of time

- Local time – The time estimated at each place ,based on the apex position of the sun is termed as the local time.
- Demerits
- Cannot prepare a railway time table applicable throughout the country
- Cannot give information on radio and television programs
- exams

How time calculate

- The calculation of time became more scientific and accurate. How
- The earth rotates on its axis while it revolves the sun it known as **rotation**. **The earth rotates from west to east so the sun rises first experience in the eastern side of the region** and 24 hours takes to complete one rotation.
- The angular distances of the earth is 360* 24 hours need to complete a 360*rotation
- 24hrs converting in to minutes 24x60=1440 minutes that means 1440 minutes need for one rotation

- The time required for the earth to complete the rotation of 1* longitude 1440/360=4 minutes that means 4 minutes need to complete the rotation of 1* longitude.
- The time required for the rotation of 15* longitudinal area 15x4=60 minutes (1hour) that mean 15* longitudinal area of the earth passes by the sun with in period of one hour.
- Due to earth rotates from west to east , time advances towards the east and recedes towards the west

GREENWICH MEAN TIME/PRIME MERIDIAN

- The zero degree longitude is known as the **Greenwich meridian**.
- It acquires its name from Greenwich ,the place where the Royal British observatory is situated and through which this line passes.
- Time is calculated world wide is based on the Greenwich line so this line also known as the **Prime meridian**.
- The local time at the prime meridian is known as the **Greenwich mean time**
- **TIME ZONE –**Based on the Greenwich line ,the world is divided in to 24 zones , each with a time difference of one hour .these are known as time zones

Standard time

- The local time at the longitude that passes through the middle of a country is selected as the common time for the whole country that longitude known as the **standard meridian**.
- The local time at the standard meridian is the **standard time of that country**.
- The **82 1/2 EAST** longitude considered as standard meridian of India. The local time this longitude is generally considered as the common time of India. This is known as the Indian standard time
- This line passes through the middle of the country so this longitude is considered as the standard meridian of India

International date line

- 180*longitude line known as the international date line
- There is a difference of 24 hours both side of the international date line.
- There has a difficulty that if same place records two different times with 24 hours difference . To solve this problem adjustments have been made avoiding land areas along the 180* longitude.
- This longitude marked with broken lines because avoiding some of the islands to the south of the Bering strait in the Pacific ocean.


EASTERN HEMISPHERE
Hawaii
INTERNATIONAL DATE LINE
10° N
worldatlas
EQUATOR
0°
Kiribati
Tokelau
10° S
Samoa
American Samoa
Fiji
Tahiti
Tonga
Australia
30° S
New Zealand
Pacific Ocean
160°E
180°
160°W
140°W
WESTERN HEMISPHERE
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40C
1 JANUARY 2000
3:59 NZST
NEW ZEALAND