

the E.R.S.C. and the table are inter-related for the telling of world standard times in a more comprehensive manner.

The standard time of a country does not necessarily follow the E.T. set by its nearest longitudinal hour indicator. This is because the country may prefer a neighbouring longitudinal hour indicator to serve as its local standard time reference for politico-economic considerations. It is to resolve this problem that the table is a necessary point of reference to determine the time-alignments of countries and dependencies with their respective longitudinal hour indicators and to co-relate this on the face of the E.R.S.C. Thus alterations have to be made in the table only when regions change their time-alignments.

The few places that are mentioned in an interconnected manner under each longitudinal hour indicator in the map are representative of all the other regions within its respective grouping in the table, as it is impossible to include all of them in a similar manner in the E.R.S.C. Hence the G.M.T. which each longitude indicates for the few places is actually applicable to all the regions within the respective group as listed in the table. Thus with cross-reference to the table, the E.R.S.C. can tell world standard times simultaneously at any moment, and it can even tell the correct day of the week and date for any place. This is because the G.M.T. of London which is indicated by the prime longitudinal hour indicator (0°) is the focal point of global G.M.T. references, while the International Date Line along longitude 180° resolves the days and dates for all regions.

Moving parts of the E.R.S.C.

1 Rotating disc with 24 longitudinal hour indicators

This is represented by a clockwise rotating disc featuring the antipodes map with the 24 longitudinal hour indicators that can tell the true geographical E.T. simultaneously world-wide. The smallest marked interval within an hour is equivalent to 15 minutes.

2 Minute hand

It is similar in movement to the contemporary time-pieces. Its course is denoted in 5 minute intervals along the outermost ring.

3 Seconds hand

It is similar in movement to the contemporary time-pieces. The dotted minutes represent the seconds too.

Correct setting of the E.R.S.C.

It is important to align the prime longitudinal hour indicator (0°) to its correct G.M.T. in the clock-face of the E.R.S.C. All the remaining 23 longitudinal hour indicators will be correct automatically.

The International Date Line and its relevance to time and dates

When crossing the International Date Line from west to east 24 hours has to be subtracted, and when crossing it from east to west 24 hours has to be added. The one day date differential should be borne in mind as the dateline is an international demarcator of time, serving the purpose of international convenience. Otherwise longitude 180° could very well have served the purpose in a geographically correct manner, being the anti-meridian of the prime-meridian.

The E.R.S.C. can tell world standard times and the correct days of the week spanning a 24 hour period.

Glancing at the clock-face of the E.R.S.C. shown in the opposite page and by referring also to "The table facilitating the reading of world standard times through the longitudinal hour indicators of the E.R.S.C." it is G.M.T. 9.30 hrs. in Winnipeg (representing a region in Canada) and the same time in Honduras. It is G.M.T. 15.30 hrs. in London (representing U.K.) and the same time in Sierra Leone and Gambia. It is G.M.T. 21.30 hrs. in Dhaka (representing Bangladesh) and also in Bhutan. If all the G.M.Ts. are of a Sunday, then it is G.M.T. 3.30 hrs. of a Monday in Anadyr (representing a region in Russia) and the same time and day in Marshall Islands. After another 30 minutes it will be Monday for Singapore too.

Note that all the times are the local standard times of the places which are indicated through the respective countries' preferential alignments with the longitudinal hour indicators of the E.R.S.C.

A scientific and rational way of deciding the place that will be the first to herald the new day

To settle this debate scientifically and in accordance with the rationale of the earth's rotation with reference to the position of the sun, the longitudinal hour indicators denoting the true geographic E.Ts. play a decisive role. In this respect the International Date Line (I.D.L.) is the most legally binding demarcator of days and dates including time, as it is aligned along longitude 180° , although it deviates a few degrees east and west of it to accommodate international boundary requirements. Thus the slightly zig-zaging I.D.L. equates with 180° in order to satisfy international norms pertaining to times and dates. If it is G.M.T. 12 hrs. of a Sunday indicated by longitude 0° for all places along it, then it could be midnight G.M.T. 24 hrs. of the same day for all places close to the west of the I.D.L. and west of longitude 180° . (Remember that G.M.T. 24 hrs. of Sunday = G.M.T. 0 hrs. of Monday and G.M.T. 0 hrs. of Sunday = G.M.T. 24 hrs. of Saturday).

Thus within the legality of the I.D.L. context Uelen (66.01°N , 169.81°W) could be the first to herald the new day (Monday), and Attu Is. (52.76°N , 172.01°E) could be the last to do so. However within the geographically correct context based on longitude 180° , Nukulaelae (9.5°S , 179.83°E) could be the first to usher in Monday and Chatham Is. (44°S , 176.5°W) could be the last.

Some anomalies of time caused by the earth's 23.5° axial tilt

If a person stands on the point of the north pole during an equinox (March 22 or September 21) and faces the prime meridian indicating midday, then his back is towards longitude 180° indicating midnight, his right hand is towards 90°W indicating sunrise and his left hand is towards 90°E indicating sunset. Thus all times of day and night seem to converge at the north pole during an equinox. This is true of the south pole too during an equinox. The earth's tilted rotation while circling the sun is also responsible for the poles' six-monthly seasons of complete daylight followed by complete night and also for the phenomenon known as "land of the midnight sun".

Extensive countries/dependencies that span more than two time-zones geographically

The number of time-zones are given in brackets : Antarctica (24), Russian Federation (11), U.S.A. (7), Canada (6), Greenland (4), Brazil (3), Australia (3), China (3), Indonesia (3) and Kiribati (3).

Of all the regions mentioned above, China is the only country that has a single local standard time.