Pair of physicists endorse continuing time change in the US

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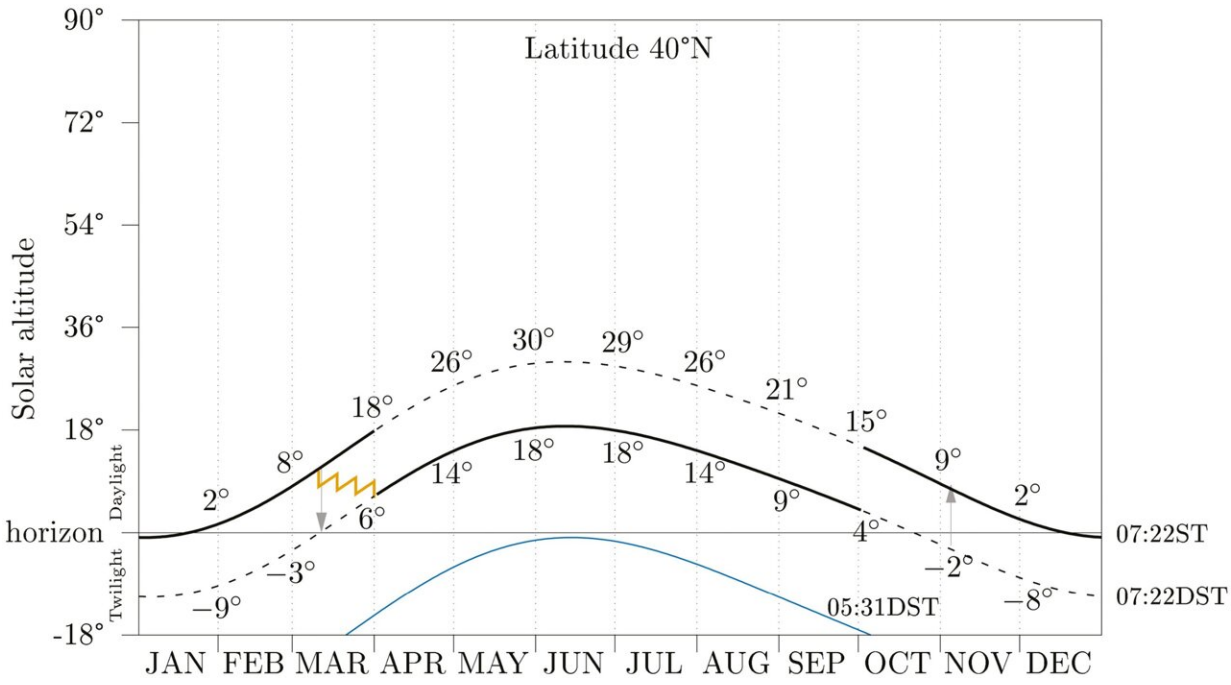

The yearly evolution of the solar altitude at the hour of the winter sunrise (top thick black line, designated 07:22 ST); at 1 h ahead (medium thick black line, designated 07:22 DST or 06:22 ST); and at the summer sunrise (bottom thin blueish line, designated 05:31 DST) for the 40 °N circle of latitude (the latitude of New York and Madrid). The winter sunrise is a synchronizer for the onset of human activity [6, 7]. When DST is set from early April to early October, the onset of the human activity occurs in daylight and delays at most 01 h 51 min from the sunrise. This proposition is noted by solid lines. The vertical arrows annotate the current transition dates in the United States. Numbers inside the graph annotate solar altitude at the beginning of calendar months. The orange zigzag line sketches a four-stroke circadian preadaptation to the spring transition

(from the standard clock to the daylight saving clock) achieved by an alarm clock. Credit: *Sleep* (2023). DOI: 10.1093/sleep/zsac309

Putting the clocks forward does not affect the length of the daylight period—a natural phenomenon beyond human control—but rather makes it possible to optimize its use by using early morning light for activities and thus to enjoy more hours of leisure time during the day.

This is the crux of the article that José María Martín-Olalla and Jorge Mira Pérez, lecturers at the University of Seville and the University of Santiago de Compostela, have just published in the journal *Sleep*, where they analyze the naturalness and usefulness of putting the clocks forward, in response to a manifesto of the Sleep Research Society that calls for its abolition in the United States and the adoption of permanent winter time.

Regarding the time change due to take place in the United States on March 12, the researchers believe that "canceling the time change will not improve the current scenario in the range of latitudes where the United States is located."

However, they believe that the springtime change occurs too early in the United States, and the autumn time change is too late, which particularly affects people who work earlier in the working day. In the view of the researchers, if it is accepted that the dates of time changes must be adjusted for the benefit of the people, the springtime change should occur after the equinox, in early April, as was the case in the United States until 2007.

"Likewise, if the autumn time change were to occur in early October, as it was until 1954, many workers and schoolchildren would no longer

suffer the stressful twilight hours of October mornings," the authors explain in their paper.

The researchers go on to argue that modern societies, governed by pre-set schedules, can only seasonally regulate their activities by one hour increments, as with the current change. The temporary disruption, according to experts, is offset by better alignment of when people begin their activities and sunrise. In their paper they point out that, in practice, people do not change their schedules after the changes, which is an indication of the success of the measure, according to Jorge Mira Pérez and José María Martín Olalla. "It is not easy to keep a strict schedule all year round, when sunrise times change from winter to summer, we relieve that need by seasonal time changes, and if we didn't, we would change working hours seasonally," they say.

Pre-adaptation

The authors stress the fact that winter days are short, which affects human activity, while summer nights are also shorter, which affects people's ability to fall asleep, whether or not they change the hour.

"We highlight the fact that winter sunrise and summer sunset are twelve hours apart, irrespective of latitude. If human activity begins with the winter sunrise and seasonal time regulation is applied, then the start of human activity in summer and the summer sunset are separated by eleven hours, which is probably sufficient for adequate sleep. Those who start their activities earlier than the winter sunrise time may find that the clock changes are less appropriate in summer. But it is notable that the changes themselves have helped to prevent human activity from taking place before the winter sunrise," they explain.

"In summer, either you go to bed early, soon after nightfall, or you get up late, long after dawn," explains Jorge Mira, who was a member of the

Spanish Government's commission to examine the official time. José María Martín Olalla, who researches the social uses of time, with particular emphasis on human adaptation to the seasonal cycle of light and darkness, adds "we know the disadvantages of putting the clocks forward that is, the nuisance of changing the clock twice a year; we forget its benefits and we don't know the drawbacks of not having done so."

The greatest concern of the chronobiological and sleep community lies in the risks of putting the clocks forward. Thus, the authors propose preventative adaptation by, for example, changing the alarm clock's time in the weeks running up to putting the clock forward in spring by four increments of 15 minutes, three of 20 minutes or two of 30 minutes. In Europe, the time change will take place on Sunday, March 26, while in New Zealand, Australia and Chile it will take place on Sunday, April 3.

More information: José María Martín-Olalla et al, It is time to understand daylight saving time, *Sleep* (2023). DOI: 10.1093/sleep/zsac309

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