

Leap years prevent 'calendar climate change'

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Without leap years, Earth would experience "calendar climate change" and the seasons would completely swap every 750 years, a Queensland University of Technology scientist says.

Astronomy expert Dr Stephen Hughes said leap years kept the calendar in [sync](#), otherwise the middle of summer would become the middle of winter - as once happened in [ancient Egypt](#).

"The year, defined as when the sun arrives back at the same place in the sky on its apparent circuit around the Earth, is not exactly 365 days long," Dr Hughes said.

"Rather, it's 365 days, 5 hours and 48 minutes. In other words, the calendar is out of sync by about one day out every four years.

"So, every four years an extra day puts the Earth calendar in sync."

Dr Hughes, from QUT's [Science](#) and Engineering Faculty, said the additional day in February still did not perfectly compensate for extra time.

"Because the extra time required for the sun to get back to the same position is just short of one quarter of a day, three leap days are missed out every 400 years," he said.

"Years divisible by 100, such as 1900 or 2100, are not leap years. Years divisible by 400, for example, 2000, are leap years.

"If there were no leap years, the seasons would completely swap every 750 years - i.e. the middle of summer would become the middle of winter - calendar [climate change](#).

"This actually happened in ancient Egypt.

"The Egyptian calendar year was exactly 365 days in length. In the Sinai Peninsula there is a carving by an Egyptian worker complaining that it has become summer in winter."

Provided by Queensland University of Technology

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