New Zealand Standard Time

Overview:

The History of New Zealand Standard and Daylight time is critical for understanding the longterm continuity of time series records.

All Time-Series hydrological records collected by Horizons Regional Council (and its predecessors) have been archived to New Zealand Standard Time.
Daylight Savings Time is not utilised for Archiving of Time-Series due to the effects and inconsistencies of the time-shifts at the point of implementation (at the point of change over).

All field records will be referenced to New Zealand Standard Time. To ensure this adhered to: all logsheets have a record space for both Standard Time and Daylight time, to prompt staff to verify the record time.

Only the Standard Time is archived. Care need to be taken at the point of change over; to ensure effective/recorded time conforms to NZST and with the advent of mobile computer systems: staff need to ensure that time settings are preserved as NZST.

The active period that Daylight Savings has been applied has changed over the last 80 years; the rest of this document covers the history of New Zealand Standard & Daylight Time; to provide detailed context for future reference (www.dia.govt.nz/Daylight-Saving-home)

Reporting Time

Expressing time correctly is critical to time-series data.

When generating Time-series data or statistics; one should consider the following:

1. For Regional or National Reporting or Provision:
    a. Time shall be reported as NZST (24 hour clock)
    b. The *basic format* is [hh][mm][ss] and the *extended format* is [hh]:[mm]:[ss].

2. Federation - National or International:
    a. Time shall be reported as UTC time, conforming to ISO 8601.
    b. Time shall be reported as 24 hour clock.
        i. Midnight shall be reported as 00:00:00 rather than 24:00:00
    c. For more information:
        i. http://en.wikipedia.org/wiki/ISO_8601

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Daylight Saving Dates

These dates are calculated under the New Zealand Daylight Time Order 2007.

Any changes to the Order will likely change these dates. You may wish to check closer to the time before relying on this information.

- Daylight Saving began on Sunday 28 September 2014 (clocks went forward one hour)
- Daylight Saving will end on Sunday 5 April 2015 (clocks go back one hour)

Year	End	Start
2007		
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015	5 April	27 September
2016	3 April	25 September
2017	2 April	24 September
2018	1 April	30 September
2019	7 April	29 September
2020	5 April	27 September

History: Development of New Zealand Standard Time

New Zealand was one of the first countries in the world to officially adopt a nationally observed standard time. New Zealand Mean Time, adopted on 2 November 1868, was set at 11 hours 30 minutes ahead of Greenwich Mean Time. Greenwich Mean Time was established by British Railways in the 1840s but was not made Great Britain's standard time until 1880.

In 1941, due to emergency regulations in the Second World War, clocks were advanced half an hour in New Zealand. This advance was made permanent by the Standard Time Act 1945. The Act provided that New Zealand Standard Time was set 12 hours in advance of Greenwich Mean Time or Universal Time.

In the late 1940s the development of the first atomic clock was announced and several laboratories began atomic time scales. A new time scale based on the readings of atomic clocks, known as Co-ordinated Universal Time, was adopted internationally in 1972.

"New Zealand Standard Time" is currently defined in the Time Act 1974 as meaning 12 hours in advance of Co-ordinated Universal Time. The time for the Chatham Islands was set 45 minutes in advance of New Zealand Standard Time.

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History: Daylight Saving Since 1974

1. The Time Act 1974 provided that the Governor-General could declare, by Order in Council, a period of Daylight Time (daylight saving). Daylight Time is fixed as a one-hour advance on New Zealand Standard Time, and in the case of the Chatham Islands, is fixed at one hour forty-five minutes ahead of New Zealand Standard Time.
2. The public response to a trial period of daylight saving in 1974/75 was generally favourable:
    a. **New Zealand Time Order 1975 fixed the period of daylight saving from the last Sunday in October each year to the first Sunday in March of the year following.**
3. In 1985, the Department of Internal Affairs undertook a comprehensive survey of public attitudes towards daylight saving and its effects on work, recreation and society. The results of the survey demonstrated that 76% of the population wanted daylight saving either continued or extended.
4. In 1988, as a consequence of the survey and further feedback from the public, the Minister of Internal Affairs arranged for a trial period of extended daylight saving to be held from the second Sunday in October to the third Sunday in March. The Minister invited the public to write to him with their views on the five-week extension.
5. Again the public response was generally favourable and a new Daylight Time Order was made in 1990.
    a. **1990** It declared that Daylight Time would run for 24 weeks from the **first Sunday in October each year until the third Sunday in March** of the following year**.**
6. The end of daylight saving in **2006** generated public debate, which led to a review of the period. A petition to extend daylight saving was presented to Parliament with an estimated 42,000 signatures.
    a. The Minister of Internal Affairs Hon Rick Barker announced on 30 April **2007** that the period of daylight saving would be extended to run from the **last Sunday in September until the first Sunday in April**.

History: Origins of Daylight Saving in New Zealand

Entomologist and astronomer George Hudson was the earliest known advocate of daylight saving in New Zealand. Hudson presented a paper to the Wellington Philosophical Society in 1895 advocating for seasonal time adjustment. However society members ridiculed his idea. It was not until 1909 that the issue was next raised, by Parliamentarian Hon Sir Thomas Sidey who argued for putting clocks forward by one hour during summer so that there would be an additional hour of daylight in the evenings.

In that year he introduced a Member's Bill to put this idea into effect. The Bill was rejected, but Sidey was persistent, reintroducing it every year for the next 20 years. It almost became law in 1915 and again in 1926 when it was passed by the House of Representatives, but was rejected by the Legislative Council (which was New Zealand's upper house of Parliament until 1951).

In **1927** Sidey was successful. The passing of the Summer Time Act that year authorised the advancement of clocks by **one hour between 6 November 1927 and 4 March 1928**. The Act was only operative for one year.

The Summer Time Act **1928** was passed extending the period of summer time from **14 October 1928 to 17 March 1929**, the period of advancement was changed to just half an hour. This made New Zealand Summer Time 12 hours in advance of Greenwich Mean Time.

The Summer Time Act **1929** enacted the provision of a 30-minute time advance from the **second Sunday in October to the third Sunday in March** the following year.

In **1933** the period was extended from the **first Sunday in September to the last Sunday in April** of the following year.

This continued until **1941**, when the period of Summer Time was extended by emergency regulations to cover the whole year. **This change was made permanent in 1946 by the Standard Time Act**.

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Leap Years

The following pseudocode determines whether a year is a *leap year* or a *common year* in the Gregorian.

The *year* variable being tested is the integer representing the number of the year in the Gregorian calendar, and the tests are arranged to dispatch the most common cases first.

Care should be taken in translating mathematical integer divisibility into specific programming languages.

if (*year* is not divisible by 4) **then** (it is a common year)
else
if (*year* is not divisible by 100) **then** (it is a leap year)
else
if (*year* is not divisible by 400) **then** (it is a common year)
else (it is a leap year)