Buddhist calendar

The **Buddhist calendar** is a set of lunisolar calendars primarily used in Cambodia, Laos, Myanmar, India, Sri Lanka, and Thailand as well as in Malaysia, Singapore and Vietnam by Chinese populations for religious or official occasions. While the calendars share a common lineage, they also have minor but important variations such as intercalation schedules, month names and numbering, use of cycles, etc. In Thailand, the name Buddhist Era is a year numbering system shared by the traditional Thai lunar calendar and by the Thai solar calendar.

The Southeast Asian lunisolar calendars are largely based on an older version of the Hindu calendar,[1] which uses the sidereal year as the solar year. One major difference is that the Southeast Asian systems, unlike their Indian cousins, do not use apparent reckoning to stay in sync with the sidereal year. Instead, they employ their versions of the Metonic cycle. However, since the Metonic cycle is not very accurate for sidereal years, the Southeast Asian calendar is slowly drifting out of sync with the sidereal, approximately one day every 100 years. Yet no coordinated structural reforms of the lunisolar calendar have been undertaken.

Today, the traditional Buddhist lunisolar calendar is used mainly for Theravada Buddhist festivals. The Thai Buddhist Era, a renumbered Gregorian calendar, is the official calendar in Thailand.

Contents

- Structure
  - Epochal date
  - Month
    - Types
    - Waxing and waning
    - Number of days per month
    - Month numbering
  - Year
    - Burmese
    - Cambodian, Lao and Thai
  - New Year's Day
  - Cycle
- Accuracy
- History
- Current usage
- Computer support
- See also

Translations of Buddhist calendar	
English	Calendar of the Lord Buddha
Sanskrit	बौद्ध पंचांग
Pali	*Sāsanā Sakaraj*
Bengali	বৌদ্ধ বর্ষপঞ্জি (*Baud'dha Borshoponji*)
Burmese	သာသနာ သက္ကရာဇ် (MLCTS: *θàðənà θɛʔkəɹɪʔ*)
Chinese	佛历 (Pinyin: *Fú lì*)
Japanese	仏滅紀元 (Rōmaji: *Butsumetsu kigen*)
Khmer	ពុទ្ធសករាជ (UNGEGN: *pŭtthôsâkâréach*; ALA-LC: *buddhasakarāj*)
Korean	불멸기원 佛滅紀元 (RR: *bulmyeolgiwon*)
Lao	ປະຕິທິນພຸດທະສາສະໜາ (*patithin phudthasasana*)
Malay	*Kalender Buddhis (Indonesian)* *Takwim Buddha (Malaysian)*
Sinhala	බුද්ධ වර්ෂ / සාසන වර්ෂ (*Buddha Varsha / Sāsana Varsha*)
Tamil	புத்த நாட்காட்டி (*Putta nāṭkāṭṭi*)
Tagalog	*Kalendaryong buddhist*

Notes
References
Bibliography

	(Baybayin: [illegible])
Thai	พุทธศักราช (RTGS: *phutthasakkarat*)
Vietnamese	佛曆 Phật lịch
Glossary of Buddhism	

Thailand's version of the lunisolar Buddhist calendar

Structure

The calculation methodology of the current versions of Southeast Asian Buddhist calendars is largely based on that of the Burmese calendar, which was in use in various Southeast Asian kingdoms down to the 19th century under the names of Chula Sakarat and Jolak Sakaraj. The Burmese calendar in turn was based on the "original" *Surya Siddhanta* system of ancient India (believed to be Ardharatrika school).[1] One key difference with Indian systems is that the Burmese system has followed a variation of the Metonic cycle. It is unclear from where, when or how the Metonic system was introduced; hypotheses range from China to Europe.[note 1] The Burmese system, and indeed the Southeast Asian systems, thus use a "strange" combination of sidereal years from Indian calendar in combination with the Metonic cycle better for tropical years.[2]

Epochal date

In all Theravada traditions, the calendar's epochal year 0 date was the day in which the Buddha attained *parinibbāna*. However, not all traditions agree on when it actually took place. In Burmese Buddhist tradition, it was 13 May 544 BCE (Tuesday, Full moon of Kason 148 Anjanasakaraj).[3] But in Thailand, it was 11 March 545 BCE, the date which the current Thai lunisolar and solar calendars use as the epochal date. Yet, the Thai calendars for some reason have fixed the difference between their Buddhist Era (BE) numbering and the Christian/Common Era (CE) numbering at 543,[4] which points to an epochal year of 544 BCE, not 545 BCE. In Myanmar, the difference between BE and CE can be 543 or 544 for CE dates, and 544 or 543 for BCE dates, depending on the month of the Buddhist Era (as the Buddhist calendar straddles the Gregorian calendar —currently from April to April).

BE year	Equivalent CE years	Equivalent CE year (Thai solar)
0	544–543 BCE	
1	543–542 BCE	
543	1 BCE – 1 CE	0–1 CE
544	1–2 CE	1–2 CE
2483	1940–1941	1940 (Apr–Dec)
2484	1941–1942	1941
2565	2022–2023	2022

Month

Types

The calendar recognizes two types of months: synodic month and sidereal month.[5] The Synodic months are used to compose the years while the 27 lunar sidereal days (Sanskrit: *nakshatra*), alongside the 12 signs of the zodiac, are used for astrological calculations.[6] (The Burmese calendar also recognizes a solar month called *Thuriya Matha*, which is defined as 1/12th of a year.[7] But the solar month varies by the type of year such as tropical year, sidereal year, etc.)

Waxing and waning

The days of the month are counted in two halves, waxing and waning. The 15th of the waxing is the civil full moon day. The civil new moon day is the last day of the month (14th or 15th waning). Because of the inaccuracy of the calendrical calculation systems, the mean and real (true) New Moons rarely coincide. The mean New Moon often precedes the real New Moon.[5][6]

Type	Days	Description
Waxing	1 to 15	from New Moon to Full Moon
Full Moon	15	Full Moon
Waning	1 to 14 or 15	from Full Moon to New Moon
New Moon	15	New Moon

Number of days per month

As the Synodic lunar month is approximately 29.5 days, the calendar uses alternating months of 29 and 30 days.[5]

Sanskrit	Pali	Burmese	Khmer	Lao	Sinhala	Thai[8]	No. of days	Gregorian (approx.)
Caitra	Citta	Tagu (တန်ခူး)	Chêtr (ចេត្រ)	ຈິຕ	Bak (බක්)	Chittra (จิตร)	**29**	March–April
Vaiśākha	Vesākha	Kason (ကဆုန်)	Pĭsakh (ពិសាខ)	ວິສາຂະ	Vesak (වෙසක්)	Wisakha (วิสาข)	**30**	April–May
Jyaiṣṭha	Jeṭṭha	Nayon (နယုန်)	Chésth (ជេស្ឋ)	ເຊດ	Poson (පොසොන්)	Chettha (เชษฐ)	**29 [30]**	May–June
Āṣāḍha	Āsāḷha	Waso (ဝါဆို)	Asath (អាសាឍ)	ອາສາ ລະຫະ	Æsala (ඇසළ)	Asanha (อาสาฬห)	**30**	June–July
Śrāvaṇa	Sāvaṇa	Wagaung (ဝါခေါင်)	Srapôn (ស្រាពណ៍)	ສາວະ ນະ	Nikini (නිකිණි)	Sawana (สาวน)	**29**	July–August
Bhādrapada or Proṣṭhapāda	Poṭṭhapāda	Tawthalin (တော်သလင်း)	Phôtrôbât (ភទ្របទ)	ພັດ ທະຣະ ບົດ	Binara (බිනර)	Phatthrabot (ภัทรบท)	**30**	August–September
Āśvina	Assayuja	Thadingyut (သီတင်းကျွတ်)	Âssŏch (អស្សុជ)	ອັດສະ ວະຍຸດ	Wap (වප්)	Atsawayut (อัศวยุช)	**29**	September–October
Kārtika	Kattika	Tazaungmon (တန်ဆောင်မုန်း)	Kâtdĕk (កត្តិក)	ກັດຕິ ກາ	Il (ඉල්)	Kattika (กัตติกา)	**30**	October–November
Mārgaśirṣa	Māgasira	Nadaw (နတ်တော်)	Mĭkôsĕr (មិគសិរ)	ມິຄະ ສິນ	Undhuvap (උඳුවප්)	Mikkhasira (มิคสิร)	**29**	November–December
Pauṣa	Phussa	Pyatho (ပြာသို)	Bŏss (បុស្ស)	ປຸສສ	Dhuruthu (දුරුතු)	Putsa (ปุสส)	**30**	December–January
Māgha	Māgha	Tabodwe (တပို့တွဲ)	Méakh (មាឃ)	ມາຄ	Navam (නවම්)	Makha (มาฆ)	**29**	January–February
Phālguna	Phagguṇa	Tabaung (တပေါင်း)	Phâlkŭn (ផល្គុន)	ຜັ ຄຸນ	Mædhin (මැදින්)	Phakkhun (ผัคคุณ)	**30**	February–March

Month numbering

Various regional versions of Chula Sakarat/Burmese calendar existed across various regions of mainland Southeast Asia. Unlike Burmese systems, Kengtung, Sipsongpanna, Lan Na, Lan Xang and Sukhothai systems refer to the months by numbers, not by names. This means reading ancient texts and inscriptions in Thailand requires constant vigilance, not just in making sure one is correctly operating for the correct region, but also for variations within regions itself when incursions cause a variation in practice.[9][10]

Month	Khmer, Lan Xang, Sukhothai and Old Burmese	Kengtung, Sipsongpanna	Chiang Mai
Caitra	5	6	7
Vaisakha	6	7	8
Jyestha	7	8	9
Ashadha	8	9	10
Sravana	9	10	11
Bhadrapada	10	11	12
Asvina	11	12	**1**
Kartika	12	**1**	2
Margasirsa	**1**	2	3
Pausa	2	3	4
Magha	3	4	5
Phalguna	4	5	6

Year

The Buddhist calendar is a lunisolar calendar in which the months are based on lunar months and years are based on solar years. One of its primary objectives is to synchronize the lunar part with the solar part. The lunar months, normally twelve of them, consist alternately of 29 days and 30 days, such that a normal lunar year will contain 354 days, as opposed to the solar year of ~365.25 days. Therefore, some form of addition to the lunar year (of intercalation) is necessary. The overall basis for it is provided by cycles of 57 years. Eleven extra days are inserted in every 57 years, and seven extra months of 30 days are inserted in every 19 years (21 months in 57 years). This provides 20819 complete days to both calendars.[11] This 57-year cycle would provide a mean year of about 365.2456 days and a mean month of about 29.530496 days, if not corrected.

As such, the calendar adds an intercalary month in leap years and sometimes also an intercalary day in great leap years. The intercalary month not only corrects the length of the year but also corrects the accumulating error of the month to extent of half a day. The average length of the month is further corrected by adding a day to Nayon at irregular intervals—a little more than seven times in two cycles (39 years). The intercalary day is never inserted except in a year which has an intercalary month.[6] The Hindu calendar inserts an intercalary month at any time of year as soon as the accumulated fractions amount to one month. The Burmese calendar however always inserts the intercalary month at the same time of the year, after the summer solstice while the Arakanese calendar inserts it after the vernal equinox.[12]

Burmese

The Burmese calendar year consists of 354, 384 or 385 days.

Month	Regular year	Small leap year	Big leap year
Tagu	29	29	29
Kason	30	30	30
Nayon	29	29	30
Waso	30	30	30
2nd Waso	n/a	30	30
Wagaung	29	29	29
Tawthalin	30	30	30
Thadingyut	29	29	29
Tazaungmon	30	30	30
Nadaw	29	29	29
Pyatho	30	30	30
Tabodwe	29	29	29
Tabaung	30	30	30
Total	**354**	**384**	**385**

Note: The Arakanese calendar adds the intercalary day in Tagu, not in Nayon.

Cambodian, Lao and Thai

The Cambodian, Lao and Thai lunisolar calendars use a slightly different method to place the intercalary day. Instead of it in a leap year as in the Burmese system, the Thai system places it in a separate year. Thus, the Thai small leap year has 355 days while the Thai great leap year has 384 days.[9]

Month	Regular year	Small leap year	Big leap year
Caitra	29	29	29
Vaisakha	30	30	30
Jyestha	29	30	29
Ashadha	30	30	30
2nd Ashadha	n/a	n/a	30
Sravana	29	29	29
Bhadrapada	30	30	30
Asvina	29	29	29
Kartika	30	30	30
Margasirsa	29	29	29
Pausa	30	30	30
Magha	29	29	29
Phalguna	30	30	30
Total	**354**	**355**	**384**

New Year's Day

Since the main purpose of Buddhist calendar is to keep pace with the solar year, the new year is always marked by the solar year, which falls at the time when the Sun enters Aries.[5] The date, which at the present falls on the 17th of April, has slowly drifted over the centuries. In the 20th century, the New Year's Day fell on April 15 or 16th but in the 17th century, it fell on April 9 or 10th.[13] Thailand and Cambodia no longer use the traditional lunisolar calendar to mark the New Year's Day.

Tradition	Date in 2013	Notes
Burmese	17 April	Varies; will keep on drifting away
Khmer	14 April	Varies from 13th to 14 April
Thai	13 April	Fixed to the solar calendar

Cycle

The Cambodian, Lao and Thai systems give animal names to the years from a cycle of 12.[14] The practice also existed in Burma in the Pagan period but later died out.[15]

Year	Animal	Khmer	Lao	Thai
1	Rat	ជូត (Choot)	ຊວດ (Suat)	ชวด (Chuat)
2	Ox	ឆ្លូវ (Chhlov)	ສະຫລູ (Salu)	ฉลู (Chalu)
3	Tiger	ខាល (Khal)	ຂານ (Khan)	ขาล (Khan)
4	Rabbit	ថោះ (Thoh)	ເຖາະ (Tho)	เถาะ (Tho)
5	Naga	រោង (Rorng)	ມະໂລງ (Malong)	มะโรง (Marong)
6	Snake	ម្សាញ់ (Msanh)	ມະເສັງ (Maseng)	มะเส็ง (Maseng)
7	Horse	មមី (Momee)	ມະເມັຍ (Mameh)	มะเมีย (Mamia)
8	Goat	មមែ (Momae)	ມະແມ (Mamae)	มะแม (Mamae)
9	Monkey	វក (Vork)	ວອກ (Wok)	วอก (Wok)
10	Rooster	រកា (Roka)	ລະກາ (Laka)	ระกา (Raka)
11	Dog	ច (Char)	ຈໍ (Cho)	จอ (Cho)
12	Pig	កុរ (Kol)	ກຸນ (Kun)	กุน (Kun)

The Cambodian calendar also maintains a 10-year naming cycle (numbered one to ten). Cambodians use multiple systems to identify a given year. For instance, 2017 is identified as 2561 Buddhist Era, the year of Rooster, Nuppasak (Year 9).[16] The Thai lunar calendar also uses a similar numbered 10-year cycle. Each number in the cycle corresponds to the last digit of the year in the *Chula Sakarat* calendar.

Numbers	Names in Khmer	Khmer transliteration	Names in Thai	Thai transliteration
1	ឯកស័ក	Aekkasak	เอกศก	Ekkasok
2	ទោស័ក	Torsak	โทศก	Thosok
3	ត្រីស័ក	Treisak	ตรีศก	Trisok
4	ចត្វាស័ក	Chattvasak	จัตวาศก	Chattawasok
5	បញ្ចស័ក	Panchasak	เบญจศก	Benchasok
6	ឆស័ក	Chhorsak	ฉศก	Chorsok
7	សប្តស័ក	Sappdasak	สัปตศก	Saptasok
8	អដ្ឋស័ក	Atthasak	อัฐศก	Atthasok
9	នព្វស័ក	Nuppasak	นพศก	Nopphasok
10	សំរឹទ្ធិស័ក	Samretthisak	สัมฤทธิศก	Samritthisok

Accuracy

The Southeast Asian Buddhist calendars use lunar months but try to keep pace with the solar year, by inserting intercalary months and days on the Metonic cycle (in the case of the Burmese calendar, on a modified Metonic cycle). However, the solar year as defined by the Buddhist calendars is really a sidereal year, which is nearly 24

minutes longer than the actual mean tropical year. Therefore, like all sidereal-based calendars, the lunisolar calendars are slowly drifting away from the seasons.[17] The calendars are drifting one day approximately every 60 years and 4 months.

The accumulating drift against the seasons means the New Year's Day which used to fall on 22 March (near the vernal equinox) in 638 CE now falls on 17 April in 2013 CE. There is no known internationally concerted effort to stop this drift. Thailand has moved its "Buddhist Era" to the Gregorian calendar under the name of Thai solar calendar. In Myanmar, Burmese calendarists have tried to deal with the issue by periodically modifying the intercalation schedule in the Metonic cycle. One major downside of this approach is that it is not possible to publish future calendars more than a few years (often even a year) ahead.[note 2]

History

The Buddhist Era was first introduced to Southeast Asia along with Buddhism in the early centuries CE. It was not a separate calendar but simply a year numbering system that employed the organization and calculation methods of the prevailing lunisolar calendars in use throughout the region. In the early centuries CE, the reference civil calendar of the Buddhist calendar prevalent in Southeast Asia was the Saka Era (Mahāsakaraj Era), which is said to have been adopted by the Pyu state of Sri Ksetra in 80 CE. The Saka Era was gradually replaced by the Burmese Era or Culāsakaraj, first in Myanmar in 640 CE,[18] and in other Theravada kingdoms of Southeast Asia between the 13th and 16th centuries.[note 3] Theravada Buddhist tradition also recognizes pre-Buddhist Anjana Sakaraj (Añjana's Era) since the events of the Buddha's life are recorded in that era.[3]

Name	Epochal date	Notes
Anjana Sakaraj	10 March 691 BCE	Said to have been started by the Buddha's maternal grandfather King Añjana Used to date the events during the Buddha's lifetime
Buddhist Era	13 May 544 BCE 11 March 545 BCE	544 BCE in Myanmar; 545 BCE in Thailand
Śaka Era	17 March 78 CE	Civil calendar
Burmese Era (Culāsakaraj)	22 March 638	Civil calendar

The tradition of using different reference calendars continued in Siam in 1912 when King Vajiravudh decreed that the Buddhist Era would now track the Thai solar calendar, the Siamese version of the Gregorian calendar with the New Year's Day of 1 April. Therefore, the Thai Buddhist Era year of 2455 began on 1 April 1912 (as opposed to 15 April 1912 according to the lunisolar calendar[19]). The Thai Buddhist Era was further realigned to the Gregorian calendar on 6 September 1940 when Prime Minister Phibunsongkhram decreed 1 January 1941 as the start of the year 2484 BE. As a result, the Year 2483 was only 9 months long, and the Thai Buddhist Era equals that of the Common Era plus 543 years.

Current usage

The lunisolar calendar is used to mark important Buddhist holidays. Many of the holidays are celebrated as public holidays.

Buddhist calendar date	International date	Public holiday in	Notes
Full moon of Pausa	January	Sri Lanka	Duruthu Poya: Commemorates the first visit of the Buddha to Sri Lanka
Full moon of Magha	February	Cambodia, Laos, Sri Lanka, Thailand	Magha Puja in Cambodia, Laos, Thailand and known as Navam Poya in Sri Lanka
Full moon of Phalguna	March	Laos, Myanmar, Sri Lanka	Boun Pha Vet (Laos), Tabaung Festival (Myanmar), Medin Poya (Sri Lanka)
Almost always in Caitra, sometimes in Vaisakha	13–17 April (varies by country)	Cambodia, Laos, Myanmar, Sri Lanka, Thailand	Songkran (Southeast Asian New Year) Traditionally, the New Year's Day is marked when the Sun enters Aries but the day is now fixed in most countries; Myanmar still follows the tradition. It also marks the beginning of the next Buddhist calendar animal zodiac year for certain countries.
Full moon of Caitra	April	Sri Lanka	Bak Poya: Commemorates the second visit of the Buddha to Sri Lanka
Full moon of Visakha	May	Cambodia, Laos, Thailand, Sri Lanka, Myanmar, Malaysia, Singapore	Buddha Day (Vesak)
Full moon of Jyaistha	June	Sri Lanka	Poson Poya: Commemorates introduction of Buddhism to Sri Lanka
Full moon of Ashadha	July	Cambodia, Laos, Myanmar, Thailand, Sri Lanka	Vassa Esala Poya (Sri Lanka) Asalha Puja (Thailand)
Full moon of Sravana	August	Sri Lanka	Nikini Poya
Full moon of Bhadrapada	September	Laos, Sri Lanka	Binara Poya (Sri Lanka)
Full moon of Asvina	October	Cambodia, Laos, Myanmar, Sri Lanka	End of Vassa Boun Suang Huea (Laos); Thadingyut Festival (Myanmar); Vap Poya (Sri Lanka); Wan Ok Phansa (Thailand)
Full moon of Karttika	November	Laos, Myanmar, Sri Lanka, Thailand, Cambodia	That Luang Festival (Laos); Tazaungdaing Festival (Myanmar); Il Poya (Sri Lanka); Loi Krathong (Thailand); Bon Om Touk (Cambodia)
Full moon of Margasirsa	December	Sri Lanka	Undhuvap Poya (Sri Lanka)

Computer support

The Thai-style "Buddhist calendar", which is the Gregorian calendar with the Buddhist era, is supported in Java 8, iOS, and macOS.

See also

- Burmese calendar
- Chinese calendar
- Hindu calendar
- Horology
- Index of Buddhism-related articles
- Kalachakra
- Thai lunar calendar
- Thai solar calendar

Notes

1. (Ohashi 2001: 398–399): Astronomers of ancient India certainly knew of the Metonic cycle, and may have introduced the concept to Southeast Asia. However, the Metonic cycle, which employs tropical years, is incompatible with sidereal based Hindu calendars, and thus was not (and still is not) used in Hindu calendars. Chatterjee (1998: 151) suggests that the Metonic system was introduced to Burma by Europeans. Ohashi (2001: 398–399) rejects Chatterjee's hypothesis saying that "no other trace of European influence is found in South-East Asian astronomy." Instead, Ohashi (2001: 401–403) suggests that China may have been the source of the Metonic cycle.
2. (Irwin 1909: 26–27): In the mid-19th century, the Burmese Konbaung Dynasty tried to address the issue by introducing a new calculation methodology. However, the new solar year it chose was actually 0.56 second a year *less* accurate than the version still prevalent in the rest of Southeast Asia. The Konbaung court also modified the Metonic cycle, which did more to re-synchronize the calendar with the seasons than the less accurate solar year.
3. (Eade 1989: 11): The earliest use of the Burmese calendar in lands part of present-day Thailand dates to the mid-13th century. (Smith 1966: 11): Ayutthaya adopted the Burmese calendar in the 16th century.

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1. Ohashi 2007: 354–355
2. Ohashi 2001: 398–399
3. Kala Vol. 1 2006: 38
4. Eade 1995: 15-16
5. Clancy 1906: 56–57
6. Irwin 1909: 8–9
7. Irwin 1909: 5
8. Busyakul, 2004: 476.
9. Eade 1989: 9–10
10. Eade 1995: 28–29
11. Eade 1995: 15
12. Irwin 1909: 2–3
13. Eade 1989: 135–145, 165–175
14. Eade 1995: 22

15. Luce 1970: 330
16. "Khmer Calendar" (http://www.cam-cc.org/calendar/chhankitek.php).
17. Irwin 1909: 26–27
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19. Eade 1989: 166

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