

What's (definitely and possibly) going into CF 1.13

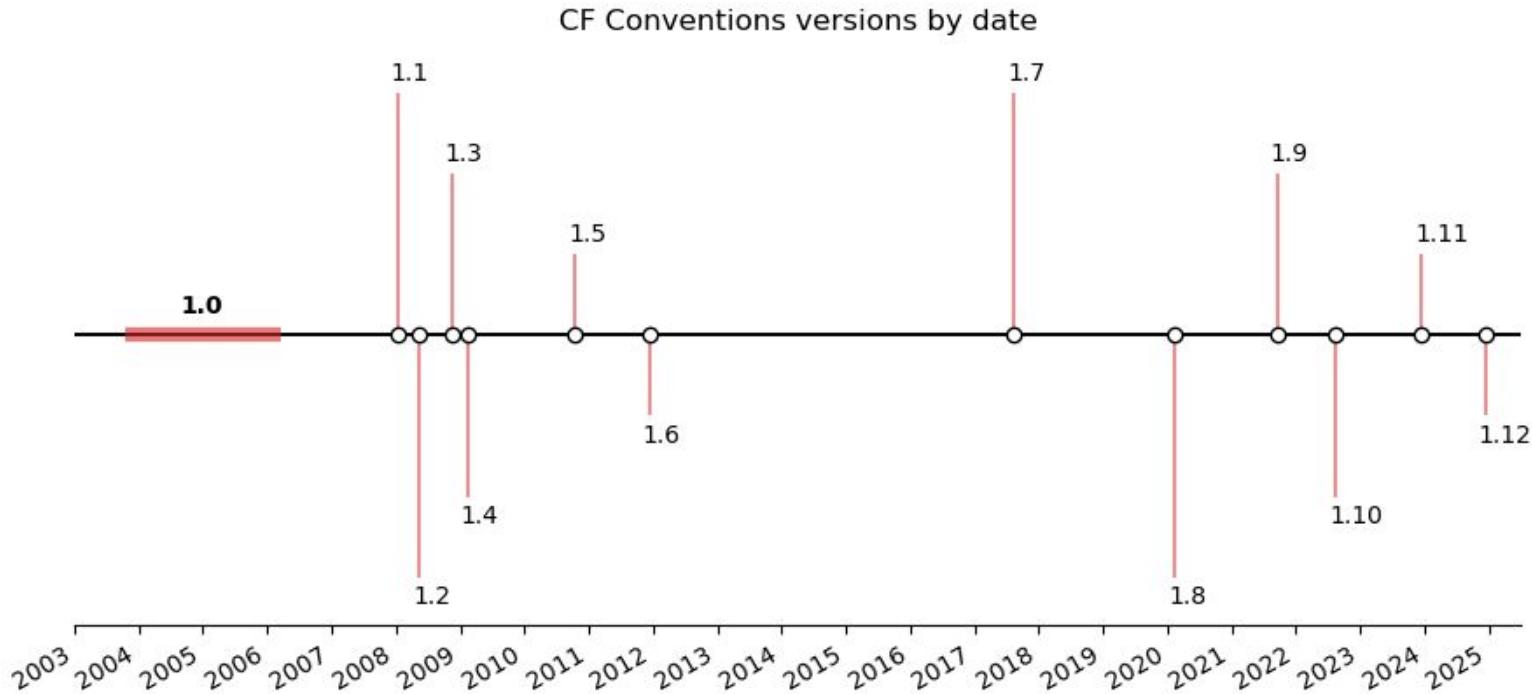
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CF Conventions Annual Workshop 2025 Plenary, 22nd September 2025

A (very) brief history of CF *releases*

Where are we at? What's our version strategy?

A timeline of CF (canonical document) versioning*



*Note the controlled vocabularies have their own independent versioning, mostly since the standard names are released much more often than the Conventions document itself (with current Standard Name Table version **92**, released late July 2025)



CF versioning strategy

- **As of 2020**, releases have been every year (quite erratic pattern before then as per timeline of previous slide!)
- **As of 2023**: yearly release date scheduled a *short time after* (previously was *just before*) the annual workshop, to allow items decided on at the meeting to make it more rapidly into the published conventions" on a date agreed during the workshop
- **The idea**: regular releases whereby we can discuss and aim to progress and ideally conclude/merge unresolved loose ends during each yearly workshop
- For example, last year's workshop was in late September with the release early December - so about 2.5 months later - and aiming for similar this year for 1.13



Latest CF Conventions release: CF v1.13 (due out Nov./Dec. 2025)

Replacing current latest CF v1.12 (Dec. 2024)

So what's changing?

Definitely (i.e. already included) in CF 1.13



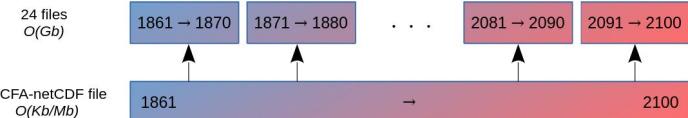
Note new items are listed in the (draft) document ‘Revision History’ (Appendix G), in this case at:

https://cfconventions.org/cf-conventions/cf-conventions.html#_version_1_13_draft, or you can consult the GitHub milestone for any (made or upcoming) release, here: <https://github.com/cf-convention/cf-conventions/milestone/8>

- Including a TZ offset in time units [[#584](#)]
 - Allowing Z as time-zone offset consistent with UDUNITS syntax & recommending it
- Incorporating the CFA convention for aggregated datasets [[#508](#)]
 - Notably introducing aggregation variables
- Clarifications and corrections to the text:
 - Correcting ‘most rapidly varying dimension’ definition in terminology section [[#583](#)]
 - Clarifying that grid_mapping can also be used for converting spatial bounds [[#590](#)]
 - Clarifying that rules for attributes of boundary variables (including BI and BO) also apply for attributes of climatological boundary variables [[#593](#)]
- Housekeeping (not listed in the ‘Revision History’ but nonetheless important!)
 - E.g. fixing a defect for cell_methods in Example 7.13 [[#587](#)]



Some definite inclusions, illustrated



Aggregation
schematics by
David Hassell

```
netcdf January-December.nc {
    dimensions:
        // Aggregated dimensions
        time = 12 ;
        latitude = 73 ;
        longitude = 144 ;
        // Fragment dimensions
        f_time = 2 ;
        f_latitude = 1 ;
        f_longitude = 1 ;
        i = 3 ; // i = number of aggregated dimensions
        j = 2 ; // j = maximum of fragment dimension sizes
    variables:
        double temp ; // Aggregation variable, encoded as a scalar
        temp:standard_name = "sea_surface_temperature" ;
        temp:units = "K" ;
        temp:cell_methods = "time: mean" ;
        temp:aggregated_dimensions = "time latitude longitude" ;
        temp:aggregated_data = "location: aggregation_location
                                file: aggregation_file
                                format: aggregation_format
                                address: aggregation_address" ;
        float time(time) ;
        time:units = "days since 2023-01-01" ;
        float latitude(latitude) ;
        latitude:units = "degrees_north" ;
        float longitude(longitude) ;
        longitude:units = "degrees_east" ;
        // Aggregation instruction variables
        string aggregation_address(f_time, f_latitude, f_longitude) ;
        string aggregation_format ;
        string aggregation_file(f_time, f_latitude, f_longitude) ;
        int aggregation_location(i, j) ;

    // Global attributes
    :Conventions = "CF-1.12" ; // Assuming CFA were to be incorporated into CF-1.12

    data:
        time = 0, 31, 59, 90, 120, 151, 181, 212, 243, 273, 304, 334 ;
        temp = - ;
        aggregation_location = 6, 6, // Each fragment spans half the time range
                               73, - // All fragments span the whole latitude range
                               144, - ; // All fragments span the whole longitude range
        aggregation_file = "file:///data1/Jan-June.nc", "file:///data2/July-Dec.nc" ;
        aggregation_format = "nc" ;
        aggregation_address = "tos1", "tos2" ;
```

aggregated_dimensions:
Dimensions of the aggregated data

aggregated_data:
Instructions for aggregating the fragments

location:
Locations of fragments in the aggregated data

format:
Formats of fragment files

file:
URLs of fragments

address:
Addresses of data in fragment file

Dimensions indexing the number of fragments along each aggregated dimension

Dimensions indexing the fragment data sizes along each aggregated dimension (padded with missing values as required)

The time zone offset Z must be in one of the following five formats, where numeric hours may optionally be prefixed with a + or - sign:

- The letter Z indicating zero offset, sometimes referred to as "Zulu Time".
- H, the hour alone, of one or two digits e.g. -6, 2, +11, which is sufficient for many time zones.
- H:M, where H is hour and M minute, each of one or two digits, e.g. 5:30 .
- four digits, of which the first pair are the hours and the second the minutes e.g. 0530 .
- three digits, of which the first is the hour (0—9) e.g. 530 .

If the time zone offset is the letter Z or begins with a sign, the space before it may be omitted.

While the default (of omitting the Z component) is an offset of zero, we suggest that a zero offset be specified to avoid any confusion where omitting it might be misunderstood as indicating local time.



Screenshot of HTML view
of the draft 1.13 document



May or may not be in CF 1.13 🕒 ?

- Conventions for anomalies [[#582](#)]
 - Formalise description of the calculation of an anomaly (i.e. deviation) from the reference/baseline of a geophysical quantity, which is important but complicated for climatological statistics
- Revision(s) to the handling of leap seconds introduced in CF v1.12 [[#400](#)]
 - UTC and TAI are currently treated as calendars in CF. Some participants argue these are clocks/time standards rather than calendars, and the way the spec phrases things as of 1.12 is misleading.
 - UTC as a standard with leap seconds only came into effect in 1972 - some have expressed they think there should be more clarity regarding UTC-dated data before 1972, or even that UTC should therefore be restricted to only apply from 1972-01-01 00:00:00



Many thanks to everyone who contributed* in any way to CF 1.13! 🙏 CF is a community effort and we rely on the endeavours of people like you.



*or will contribute still - you have a month or so!



In summary

- Since 2023 we've performed **yearly releases** made shortly after each annual workshop
- **CF 1.13** is this year's imminent version, which we hope to make within a few months
- Changes definitely going into 1.13 are:
 - formalising **aggregation** by introducing aggregation variables;
 - recommending **timezone offsets** in datetimes;
 - **clarifications** such as that `grid_mapping` can also be used for converting spatial bounds and that the rules for BI (Bounds Inherit) attributes also apply to climatological bounds;
 - **corrections** to the text such as for the 'most rapidly varying dimension' definition in the terminology section;
 - and **housekeeping** alterations;
- Further changes which may go in if they get concluded in time include:
 - conventions for **anomalies**;
 - revision(s) to the handling of **leap seconds** introduced in CF v1.12.

