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CF Standard Names

ESIP Summer Meeting
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SCIENCE AND TECHNOLOGY FACILITIES COUNCIL
NATURAL ENVIRONMENT RESEARCH COUNCIL

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What is a standard name?

What is a standard name?

A standard name identifies the geophysical quantity in a data variable, e.g. air_temperature.

Attach the standard name to a data variable using the CF `standard_name` attribute:

```
float psl(lat,lon) ;
   psl:units = “hPa” ;
   psl:standard_name = “pressure_at_mean_sea_level” ;
```

Standard names facilitate data exchange by providing unambiguous identification of variables.

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CF standard name table

- Most recent (Version 73, June 2020) contains 4422 names
- Approximately 40 names under active discussion

Standard Name	Canonical Units
air_temperature_anomaly “Anomaly" means difference from climatology. Air temperature is the bulk temperature of the air, not the surface (skin) temperature.	**K**
surface_upward_latent_heat_flux The surface latent heat flux is the exchange of heat between the surface and the air on account of evaporation (including sublimation). In accordance with common usage in geophysical disciplines, "flux" implies per unit area, called "flux density" in physics.	**W m-2**

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CF standard names: basic rules

- Any variable labelled with the `standard_name` attribute **must** use a value from the published standard name table
- Standard names consist of letters, digits and underscores, no whitespace.
- English language with US spellings
- Case sensitive
  - Mixed case used for chemical element symbols, e.g.

  integral_wrt_time_of_radioactivity_concentration_of_112Ag_in_air
- (Almost) all standard names have an accompanying description
- Names are never removed once they have been added
  - Name can be modified using an ‘alias’

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Canonical units

- Canonical units are agreed at same time as standard name – they go hand in hand, e.g.
    - mass_concentration → kg m-3
    - mole_concentration → mol m-3
- String valued
- Must be supported by Unidata UDUNITS2 package
- Conversion between recognized units – temperatures in degrees Celsius are OK!

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What isn't described in the standard name

- Vertical level and geolocation, e.g. 2m air temperature
  - Use coordinate variables or region labels
- Statistical processing, e.g. mean, maximum, etc.
  - Use cell_methods attribute
- Portions of grid cell, e.g. mean surface albedo over snow area
  - Use cell_methods attribute plus area_type coordinate variable
- Units
  - Use units attribute

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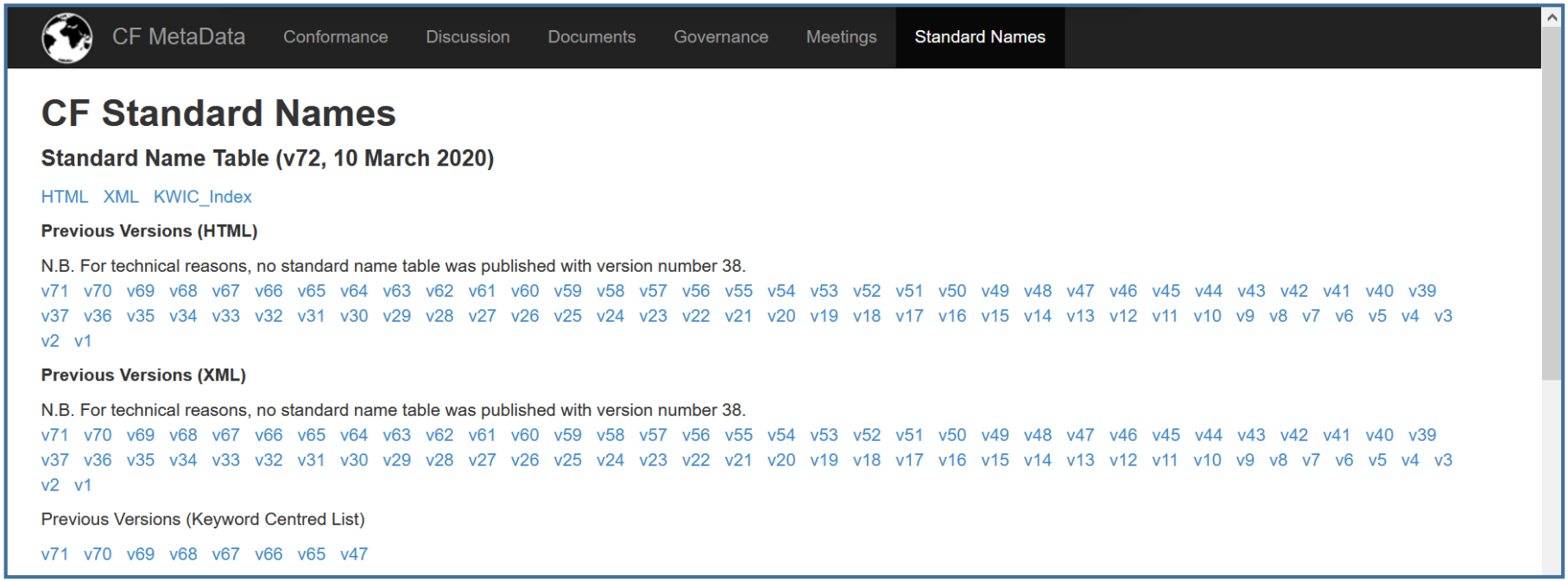
Browsing published names

All versions of standard name table are available on CF website:

http://cfconventions.org/standard-names.html



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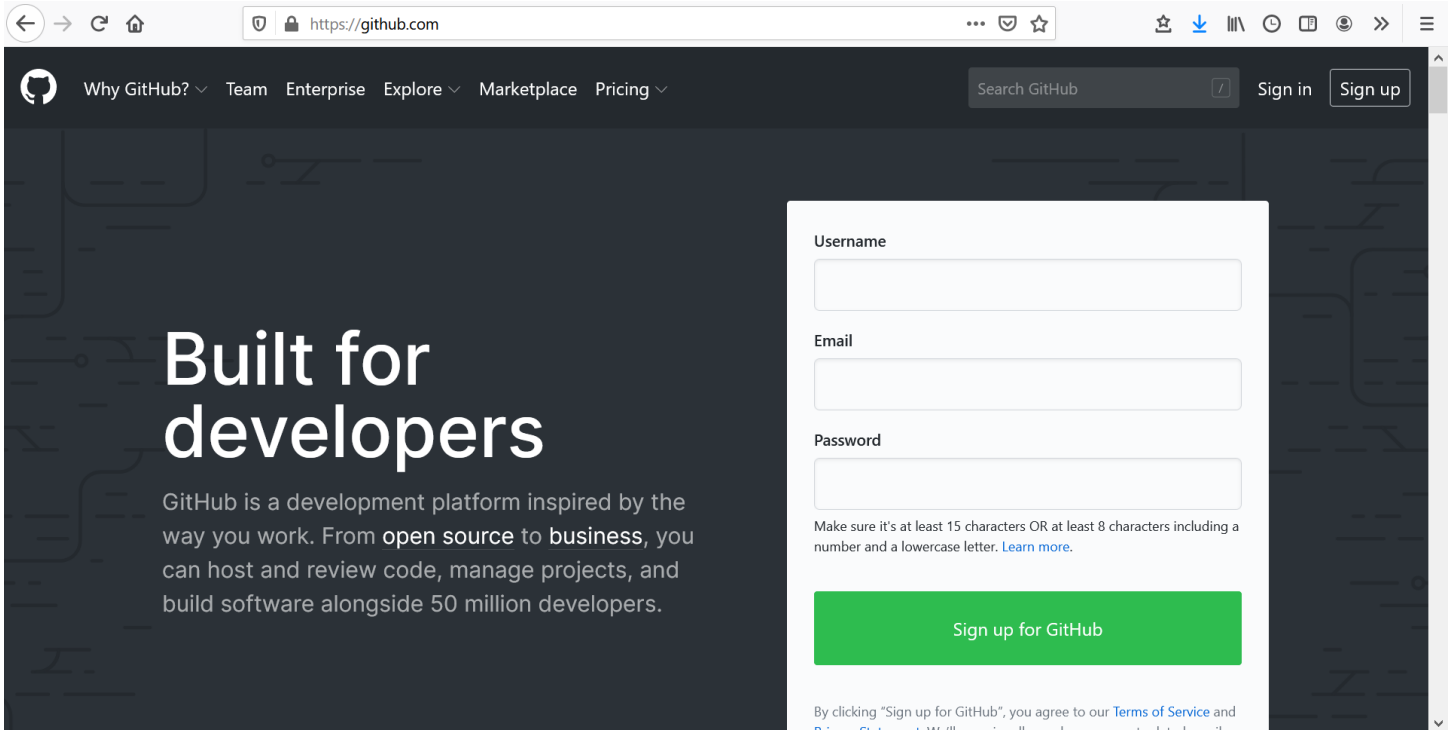
Standard names process

How do I ask for a new standard name?

STEP 1

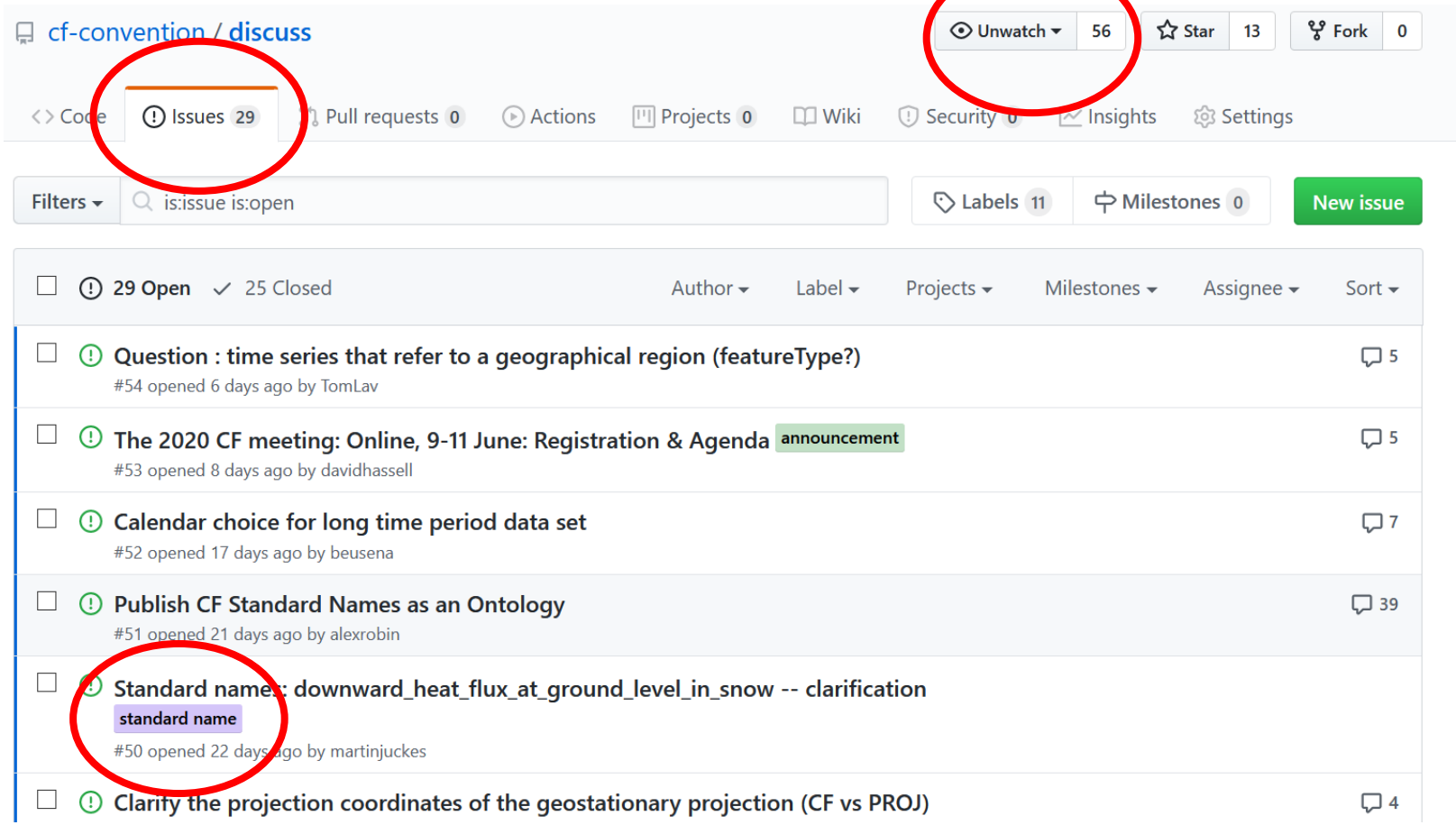
Sign up for an account on GitHub
https://github.com/



How do I ask for a new standard name?

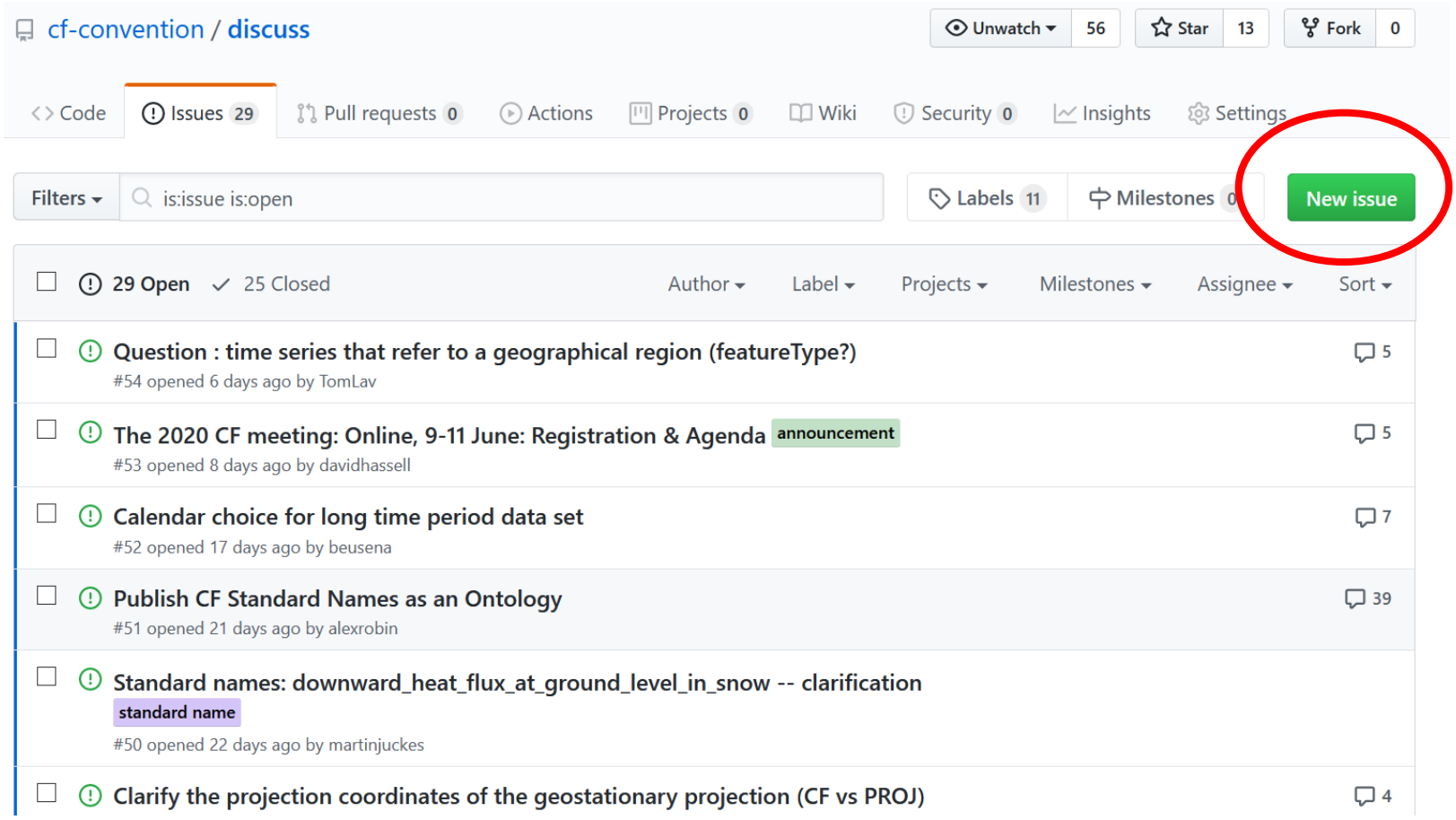
STEP 2

Navigate to the CF “discuss” repository (repo)
https://github.com/cf-convention/discuss



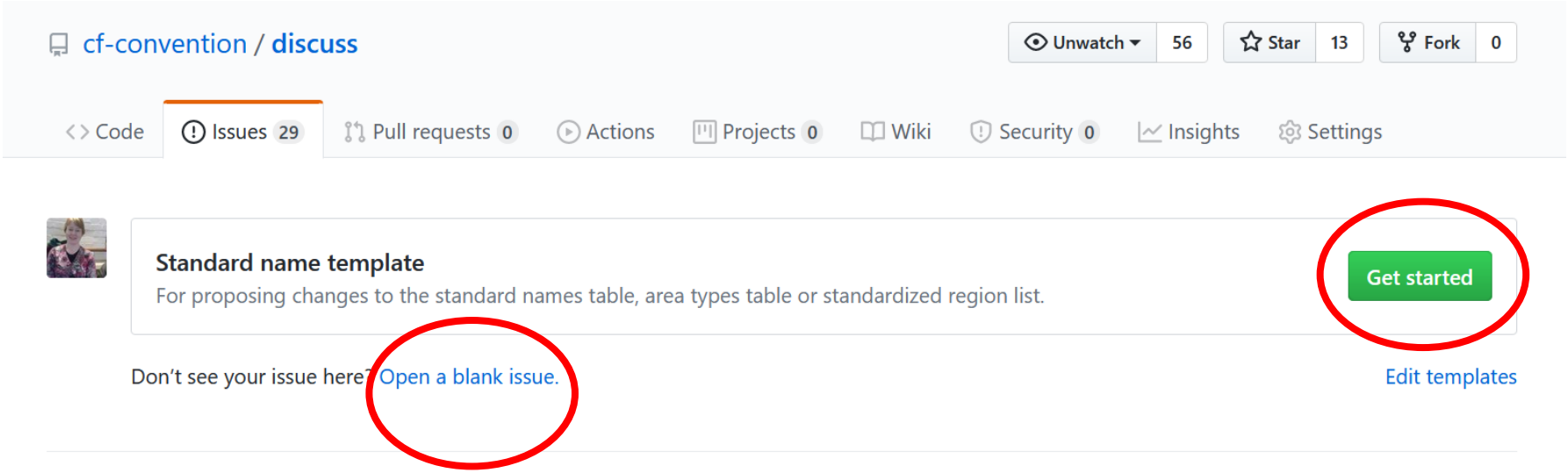
How do I ask for a new standard name?

STEP 3 Open a new issue



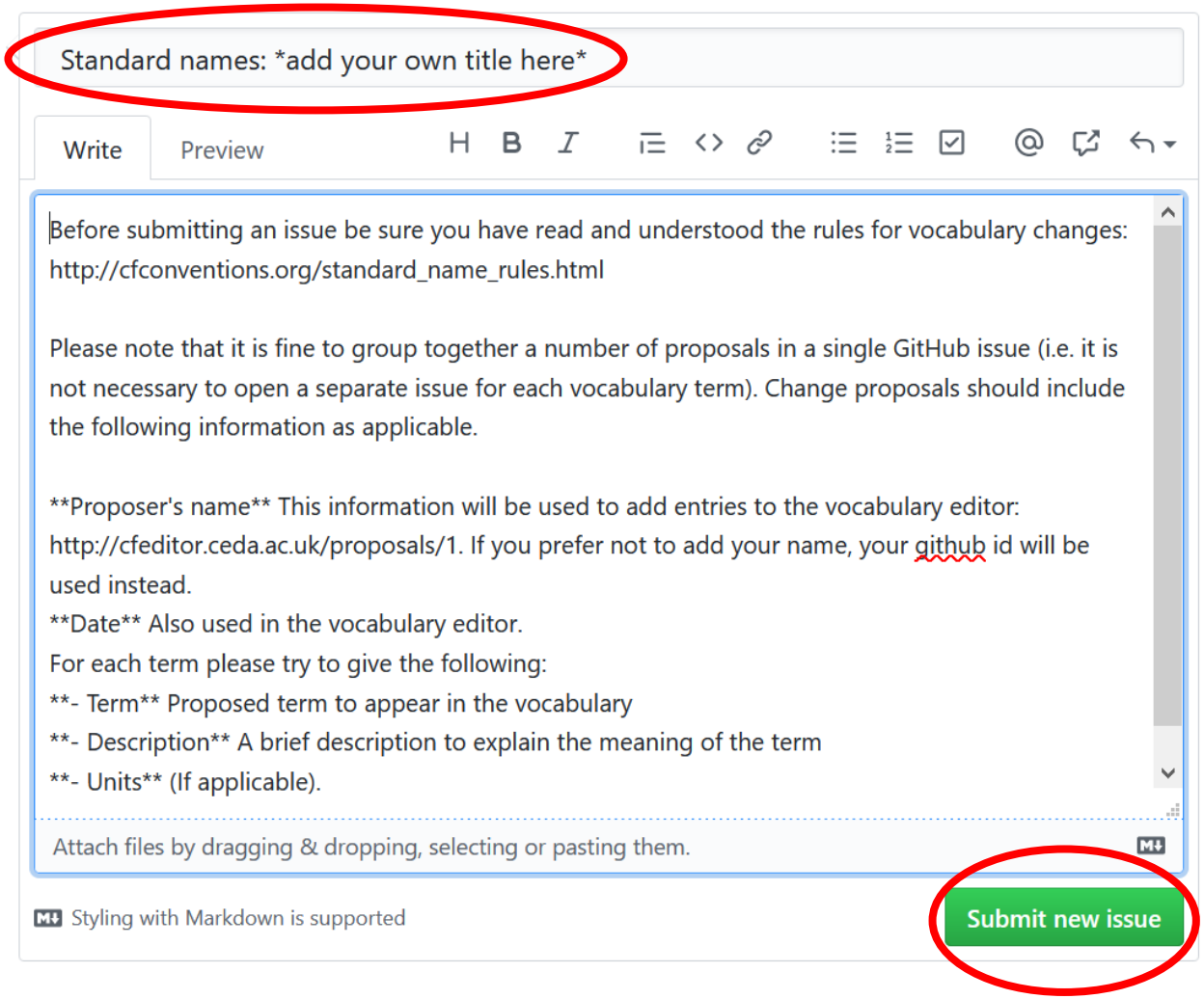
How do I ask for a new standard name?

STEP 4 Select the standard name template



How do I ask for a new standard name?

STEP 5 Use the template to write your proposal



CF standard name rules

- Any member of the community may comment on proposals
- Aim of the discussion is to achieve consensus (we now have two moderators!)
- Rules are laid out at http://cfconventions.org/standard_name_rules.html
- Provision for “fast tracking” new names that are very similar to existing terms, subject to checking
- CF standard names committee can be asked to vote if consensus cannot be achieved

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Where next for CF standard names?

- The standard name table continues to grow – names for modelled and observed quantities continue to be added
- A few standard names are used as pointers to external vocabularies:
  - Land cover
  - Biological taxa

This provides a mechanism for benefitting from the work of other communities and may be needed increasingly in the future

- Publish standard names as an ontology within CF namespace

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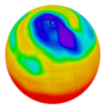
Thank you!

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