

CF meeting

16:00-19:00 UTC 9-11 June 2020

[Zoom session link](#)

## Plenary session notes

**Tuesday, 9 June 2020**

### **Governance**

89 participants!

**16:00 UTC - Welcome and Introductions (David Hassell)**

*Notes, questions, and comments - please start your comment with your name and institution.*

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**16:15 - CF Standard Names (Alison Pamment)**

*Notes, questions, and comments - please start your comment with your name and institution.*

- Matt Donovan (ORNL DAAC): How is an absence of units expressed within a variable attribute?
  - David Hassell (NCAS): The units attribute is required for all variables that represent dimensional quantities, so for a dimensionless quantity you can either omit the units attribute, or else set units="1".
  - Antonio S. Cofiño (UNICAN): What about an empty string or missing value for the "units" attribute?. I have seen it, but I'm not sure if it's conformant.
  - David Hassell (NCAS): I have seen it, too. I think that it is equivalent to "1", but I'm not sure, either ...
  - Matt Donovan (ORNL DAAC): It was mentioned that a variable like "region" wouldn't have a unit. That's more of what I was wondering about rather than dimensionless like albedo.
  - David Hassell (NCAS): I see. "" for a string-valued variable is not the same as "1", then. I don't know the exact rules for non-numeric variables.
- SJS Khalsa (U. Colorado, CIRES, NSIDC): I didn't realize "description" was fixed to the standard name. I thought one could use it to expand on the standard name
  - Ethan Davis (Unidata): You can have a "description" attribute that expands as you desire. The standard name description is part of the standard name table.

- Khalsa: I thought what Alison showed was an attribute “description” and the text was what was from the standard name table. But you’re saying the description is in the standard names table, so needn’t be in the file?
  - Ethan Davis (Unidata): Correct
- SJS Khalsa (U. Colorado, CIRES, NSIDC): regarding formation of CF standard names, things to avoid (which exist now in standard names):
  - Use of domain jargon, like “tendency” instead of time derivative
  - “Anomaly” to mean a difference from climatology
  - Abbreviations like “toa”, “stp”, etc.
  - Ah, but it’s a limited community that reviews proposals! So you’re not reaching the communities that you are expanding into if you use jargon because the self-selected group agrees to it
  - Jonathan Gregory: I agree with the principle of what you’re saying, but I would respond that we have generally minimised the use of abbreviations and jargon. More often people \*want\* to use “jargon” words and they are resisted in the discussion on the grounds of not being generally understandable - sometimes the original proposer is quite cross about not being allowed to use their normal terminology! :- ) “toa” is atmospheric jargon, indeed (just for brevity), but stp and wrt are standard abbreviations, aren’t they. It is very important that standard names \*should\* be understandable by people from all disciplines.
- Sebastien Villaume (ECMWF): the statistical processing is sometimes part of the standard name: `integral_of_X_wrt_Y` is a statistical processing. Anomaly is post processing, etc. Likewise vertical location is also sometimes in the standard name: `Top_of_atmosphere`, `surface_`, `ocean_`, etc.
  - Jonathan Gregory: The things, like `integral`, called “transformations”, are operations which convert one geophysical quantity into another. These are different from the statistical processing in cell methods, which represent in different ways the variation of a given quantity within cells, so they do not require a new standard name.
    - Why not use a `cell_method` “time: integral” or even “time:sum” (if the integral is a discrete summation) for `Y=time`? keep X as the “core” standard name and have the bounds of the integral as `time_bounds`. Jonathan: because in most cases an integral changes the units by combining them with another unit e.g. multiplied by time. Therefore it has to have a new standard name.
    - (sebastien)So the change of units is what determines if it is a new standard name or not. I agree that a time integral changes the units by multiplying by time. Now about “mean” which is a `cell_method` but in fact an integral over time followed by a division over the time period of the integration? Take precipitation rate: one integrates over time to get the amount of precipitation, then you divide by time to get the mean precipitation rate. You would use the same standard name for

precipitation rate and mean precipitation rate, same units, but the second has a cell\_method time:mean.

- Jonathan: That's right. I agree that the distinction is somewhat arbitrary. It's a practical decision that seems to have worked well enough. For most quantities, people want time-means, but few require time-integrals. Moreover I think most people would think that calculating a time-mean doesn't change the geophysical quantity, whereas an integral is a different thing which you could arrive at a different way. For example, the time-integral of power is energy, but I think most people would regard power and energy as different things, and one is not obviously a derived form of the other. On the other hand, time-mean power and instantaneous power are both power. This is arbitrary, but it suits the way we usually regard things, I feel.
- (Sebastien) I agree with all this and I am fine with it. Only picky mathematicians/physicists would care enough :) I was simply reacting to Alison's slide stating all post processing is cell\_method and no vertical information in standard names. Still I personally would prefer to have cell\_methods integrals, derivatives, etc. and add in the conventions that these change units.
- Anomaly has been discussed a few times. General solutions have been proposed, but none has been adopted because very few "anomaly" names have been requested (so far). Like with conventions, we try not to foresee things which aren't definitely needed.
- Surfaces are included in standard names when they are ones which are geophysically defined, like top of atmosphere, surface, tropopause. Surfaces which can be defined by a coordinate variable aren't included in standard names.
- Harry Singh (ONC): Question along similar lines. I see some variables in the current version such as "sea\_surface\_wave\_maximum\_height". Along similar lines, say we are collecting a variable at an hourly interval, but the dataset we release is a daily subset (a max, a min value and an average value calculated from the hourly data collected). How would that be handled? Is that considered under "statistical processing". Jonathan: Yes, those wave statistical names are an exception. The discussion decided that in those cases it was necessary to regard that as part of the definition of the geophysical quantity, and too complicated and unnecessary to try to do it e.g. with cell methods. I expect that what you describe could be done with cell methods, however.
- Kevin O'Brien (UW): Requiring the use of GitHub to request standard names seems as though it may stifle engagement by some communities. Are there any other ways to request standard names?
  - Trevor Smith (Ouranos): It seems a bit odd to need to have a GitHub account be involved, but I can see the appeal, it being free and no-nonsense. I personally would like to see something using the GitLab platform, as the data privacy issues would be a bit better handled.

- Jonathan Gregory: For standard names, no “clever” use of GitHub is needed, only typing ordinary text in an issue. After the issue is open, it can all be done with email. Before we moved to GitHub, we asked on the email list whether anyone would be put off by having to use GitHub instead, and it turned out that no-one really thought they would be. Let’s hope they haven’t left us.
  - Kevin O’Brien(UW): Thanks Jonathan. GitHub use is certainly becoming more widespread, but for those not familiar with it there is a bit of a learning curve, particularly for non-technical scientists, etc. My concern is that the added hassle of learning GitHub may reduce participation from non-traditional communities (BGC, Ecosystems, etc). As you say, guess we will just have to pay attention and hope we haven’t left those folks behind. Jonathan: I shared the unease of moving of GitHub. I still find its management of repos and changes practically incomprehensible (Daniel is about to explain this!) but issues are easy.
- Trevor Smith (Ouranos): There hasn’t yet been a reliable competitor to GitHub to come about. GitLab requires a bit more of an investment and a bit more management. If the main development occurring on the Discussion repo is simply to aggregate issues, there’s no point in changing that (yet).
- Hana Hourston (IOS): Regarding types of information that should not be included in standard names (e.g. vertical level), would the type of instrument that made measurements of your data also fall under this category (e.g. Sentinel V ADCP making vertical beam measurements), or is the inclusion of such information accepted?
  - Lou Darroch (BODC): there could be any number of instruments which produce say - temperature. Maybe be better to use a separate attribute than produce multiple standard names. Complexity is also increased when you want to reference data loggers in addition to sensors that produce a variable
  - Nan Galbraith (WHOI-OceanSITES): US NODC (now called NCEI) has a standard method for describing the instruments. See [ncei netcdf templates](#).
    - Mathew Biddle (WHOI/BCO-DMO): using additional attributes/variables.
      - Also see ACDD 1.3 instruments: [http://wiki.esipfed.org/index.php/Attribute\\_Convention\\_for\\_Data\\_Discovery#instrument](http://wiki.esipfed.org/index.php/Attribute_Convention_for_Data_Discovery#instrument) (Note from Nan G: these were adopted by ACDD but originated with NCEI/NODC)
    - Lou Darroch (BODC): Indeed this is a way of referencing multiple instruments. With NetCDF4 it is also possible to use groups. Potentially negates the need to create instrument variables without values
    - Andrew Barna: [ACDD 1.3](#) has an instrument attribute and the [NVS L22](#) has a list of instruments (and there is some way to add, but not sure how)
    - Lou Darroch - you can add and find terms through the NVS GitHub repository <https://github.com/nvs-vocabs/L22>
- Linus Kamb (UW): Does CF include instrumentation attributes?
  - Jonathan Gregory: The main idea of standard names is to indicate to data users which quantities are “the same”, meaning that they can reasonably be compared.

For most purposes, the way the data was created is not part of this - the aim of an observational dataset is often to produce an estimate of the “same” quantity as another e.g. model-generated dataset. For that reason the instrument or method is not part of the standard name. Of course, some standard names are more specific than others, and I should think it would be possible, for applications that need it, to define standard names that do describe more about the process of creation, if you regard that as an essential distinguishing characteristic of the data as a geophysical quantity, which is needed to decide whether datasets are comparable or not. If it’s still “the same” quantity, but extra information is needed, that should go in another attribute, whether standardised by CF or not.

- Daniel Lee: You could always also include instrumentation attributes as additional metadata to the standard name.
- (Nan Galbraith, WHOI-OceanSITES) there is a standard for including instrumentation information, developed by US-NOAA agency NCEI as part of their netCDF templates. <https://www.nodc.noaa.gov/data/formats/netcdf/v2.0/>
- SJS Khalsa (U. Colorado, CIRES, NSIDC): please explain how to reference another vocabulary for names in a CF file
- Jim Biard (NCSU): netCDF-LD (Linked Data) is a formalism that has the potential to address the question of multiple or alternate namespaces for attribute names and values, in a self-describing way. <https://github.com/opengeospatial/netCDF-LD/>
- Matt Donovan (ORNL DAAC): It would be great to interact more with data centers such as the ORNL DAAC since we see a lot of netCDFs that describe measured data from many sources. I see many variables with no standard name compliment.
  - Bryan (NCAS): the onus is on those writing data, or setting community conventions for campaigns, to work with the CF community ... it can’t really work the other way ...
    - At CEDA data can be rejected if it doesn’t have CF standard names ...
      - In principle all NERC funded data must be offered to a NERC data centre for archival. Large programmes are required to address proper data management issues including using (where appropriate and possible) CF compliance (either by doing it themselves, or funding NERC data centre staff to do it with them).
      - Small project data is handled the same way, with a small number of staff funded to (if possible) deal with CF compliance. These are funded by top-slicing the grants at source (ie directly by the funding agency).
      - The key words above are `_can_`, and `_in principle_`.
      - We are working with ESA on CF compliance for standard EO products.
    - Matt Donovan (ORNL DAAC): That’s interesting. We will archive most any NASA-funded datasets. In many cases it’s up to us to clean up submitted netCDFs to make them CF compliant. Many data producers do not have CF expertise to even think through submitting standard names.

- (Bryan: “it’s up to us to clean it up” will ever be the case, but the thing to do is not allow the data \*in\* the archive until it’s cleaned up. Need somehow to get the providers incentivised to take the time ... but clearly not easy, and policy is not always matched by practice.
    - Matt Donovan: That is a line we will always walk but we are also expected to provide our expertise to the data providers. Maintaining our CF expertise is part of our jobs here. So my idea is for data archive centers to play a more active role. If I understand correctly then, a data center is not welcome to submit standard names?
    - (Bryan). Sorry, that wasn’t my message at all. In a sense the exact opposite. You/we are in the business of “setting conventions” and “requiring data which conforms”. We absolutely can and should make it easier for the providers by making sure the right names exist and folks know how to use CF and CF standard names.
    - (Bryan) My point was more in response to “It would be great to interact more with data centers”. Maybe we agree with this “It would be great if more data centres interacted more in the CF community, on behalf of their user communities”?
      - Matt Donovan: I see what you’re saying, and yes, I absolutely agree. I look forward to trying this more as my job at the ORNL DAAC moves more into data standards. Maybe the standard name list will grow a little faster (!).
      - Bryan :-)
    - (Nan Galbraith, WHOI-OceanSITES) OceanSITES data management decided to use CF as the basis for their content standard long ago; we are now having to defend that while trying to incorporate bio-geo-chem data, because the CF standard names are a bit ... weak in that area, and because the BGC community seems adverse to proposing new standard names.
- Daniel Heydebreck (DKRZ, user: neumand@github): At the NERC Vocab Server there are links to the same expression in other vocabularies shown. Is it possible to provide these links manually? Do we suggest these links to other vocabularies during the proposal process of standard names? => Answered by Alison: Done by Alison and Francesca.

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## 17:30 - Governance (Ethan Davis)

*Notes, questions, and comments - please start your comment with your name and institution.*

- (Bryan L NCAS): Discussion on <http://cfconventions.org/discussion.html> still points to the trac site?
  - David Hassell (NCAS): Good spot. There is a current drive to rectify these sorts of mistakes that became mistakes when we moved to GitHub. . Jonathan: Sorry David for breaking your line. There's already an issue to fix this particular fault.
  - Antonio S. Cofiño (UNICAN): The cfconventions.org needs a tidy up... spring clean-up in fact.
    - (Bryan, NCAS) Maybe we can have a "documentation hackathon" ... but maybe we won't need that
    - Antonio: Yes, the only issue here is that there is some decision to be taken by the Governance Panel, before the hackathon. For example LICENSE and Copyright....
      - (Bryan) Wrt license, I've started thinking about that, the issue is that we need a disclaimer. It's not quite obvious what to do. Not being software ...software is relatively easy too. I started thinking about it, and got stalled. Copyright is easy. GH related issue: <https://github.com/cf-convention/cf-convention.github.io/issues/116>
      - Trevor Smith (Ouranos): Perhaps a contributor agreement could be a something that all issue or PRs must agree to prior to contribution being merged/accepted? Antonio: yes, there is an option in GH to create a Contribution License Agreement (CLA) for creating pull-requests. Trevor: Precisely what I had in mind. We've instituted this for a few projects.
        - (Bryan) But with whom is the CLA made? We don't exist (CF). Trevor: Why not come into being? This is easily enough of an initiative to be an NPO of sorts.
          - (Bryan) As it stands, I can invest in supporting CF by paying staff, but if it were an NPO it would be more complicated. Unfortunately most of this is supported by academia (via grants and core strategic funding), and while we have freedom to do this sort of thing, there are other things that are harder to do (e.g. paying subs to another organisation to do the work).
          - (Trevor) Fair enough. I can understand the heavy investment in time/resources needed. It doesn't have to be a new organisation though until it

becomes necessary. It might be enough to nest the work within Unidata or one of the main orgs.

- (Bryan) That would probably work in any given one nation, but again, it gets difficult internationally. Sadly where we are is where we ended up in 2006 in terms of putting in place some structure around what existed then. It's difficult to see how to move significantly in new directions.
- (Trevor) Not trying to be bothersome but it might be worthwhile to re-open the debate? The landscape of international collaboration has changed in the past 14 years. ;)
- (Bryan) Not bothersome at all. However, I used all my energy up on this issue then. More than happy for someone else to take the ball. As you say there are more choices now, but I think there are also more risks.
- (Trevor) Fair enough. Perhaps this would be good to migrate to a GitHub issue?
- (Bryan) That's the right place.
- And, for a disclaimer on the website, what jurisdiction, and who is "disclaiming"?
  - (Karl): If the site is maintained and served by github, perhaps there is no need for a disclaimer. But we might want a "license" statement.
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- Trevor Smith (Ouranos): What's the composition/membership of the CF governance currently? How many members? What disciplines ?
  - Alison Pamment (CEDA) The committee membership is listed on the CF website: [CF Governance](#)

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## 18:15 - Process Demo and Q&A (Daniel Lee)

*Notes, questions, and comments - please start your comment with your name and institution.*

- Sadie Bartholomew (NCAS/Reading): What would, or have, you done in the case that an Issue gets so many comments it becomes too impractical to follow?
- [SB as above]: Is the 3 week rule rigid (& fairly precisely held)? I am wondering about times such as over Christmas etc when people might be less active such that it could be 'easier' to get acceptance under that part of the rule.



- Hélène Côté (Ouranos): I think flexibility is nice as the need to reach a diversity of point of views and other communities will increase. At least the date of the end of this period should be explicit.
- SB: I would agree (at least some) flexibility is a plus.
- Jonathan: I think it's OK, within the three-week period, to "object" by saying, "I need more time." The most important thing is not the total time it took, but that the best possible consensus is achieved.
- Hélène Côté(Ouranos): I agree.
- David Hassell (NCAS): Who would be responsible for moving the issue between columns of the project board? The proposer, the moderator, or someone else? (I like the idea, by the way.)
- Trevor Smith (Ouranos): Have you considered using the automated features for moving KanBan cards? IE: Setting a rule that once a PR is accepted, it can move to a new column. I'm not sure if you can make time-based rules, but that could help reduce the human effort needed.
  - (Trevor Smith) I also like the idea of asking contributors to add their names to History and Contributors files. We currently do this for some projects.
  - David Hassell: I too like the idea of asking the proposer to do this.
- Karl Taylor (PCMDI): I liked the suggested technical changes for improving the process.
- Trevor Smith (Ouranos): Minor suggestion, but if you use the html commenting conventions ( `<-- Comments go here -->` ) contributors won't need to remove them when adding a new issue/PR.
- Jonathan Gregory, Daniel Lee: note moderator in history? Keep summary up to date but also post updates as comments? 6 week wait triggered by motion?
  - David Hassell: Also note proposer in history, so contribution is made specific.
- Kanban seems to have support as voiced by Trevor & Klaus - introducing it does not cause harm
- Jonathan: To record David's suggestion of making a comment in the issue when the summary is updated, in order that everyone will be notified, and also because the moderator's summary is part of the discussion and needs to be recorded therein for the discussion to make sense when read subsequently

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**Wednesday, 10 June 2020**

**Update, Road map, Tools, Current Enhancement Proposals**

86 participants!

**16:00 UTC - Road map: CF 1.8, CF 1.9, and Onward (David Hassell)**

*Notes, questions, and comments - please start your comment with your name and institution.*

- Chris Barker(NOAA ERD): Is there any discussion of 2.0 these days?
  - Specifically meaning not just the number, but allowing significant changes (netcdf4 features, for instance)
  - Seth McGinnis (NCAR): It certainly would be convenient to switch to 2.01 before we get to 1.10 to make it easy to parse the version sequence.
  - Ethan Davis (Unidata): There has been some discussion of using semantic versioning. We haven't had any backwards incompatible changes yet, so not 2.0
  - I think the answer was that so far we've been able to include desired features without backward-incompatible changes that would require a major version change.
- Gui Castelao (Scripps): I like the use of release candidates collecting what is targeted for the next release. The stuff that is ready to go, or working in details and but almost there. So it works as a heads up for developers what is about to
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**16:30 UTC - Software Tools and keeping up to date with CF (Kevin O'Brien, Robert Fratantonio, Rosalyn Hatcher, David Hassell)**

*Notes, questions, and comments - please start your comment with your name and institution.*

- **IOOS Compliance Checker (Robert Fratantonio)**
  - Daniel Heydebreck (DKRZ, neumand@github):
    - If we develop a plugin to the IOOS Compliance Checker, should we inform you about it via some standardized channel?
    - If we use the checker at our institution, should we notify you? => nice to show usage statistics to funding agencies for further funding.

- Lou Darroch (BODC). The IOOS compliance checker is exciting - does the checker extend into NetCDF groups?
  - Bob Fratantonio (RPS) - No i just found out it does not handle groups (yet)
- Nan Galbraith (WHOI-OceanSITES) Members of OceanSITES are using the IOOS compliance checker to (try to) ensure that our files 'work' outside our own system. Highly recommend this tool.
- Ruth Petrie (CEDA): can you chain checks together?
  - Bob Fratantonio (RPS) Yes check out the CLI arguments here:
  - <https://github.com/ioos/compliance-checker#command-line-usage>
  - <https://github.com/ioos/compliance-checker#output-text-from-multiple-input-files-to-one-output-file>
  - <https://github.com/ioos/compliance-checker#output-html-and-text-files-from-multiple-input-files-part-1>
- **CF checker (Rosalyn Hatcher)**
  - (Karl Taylor, PCMDI) With multiple CF-checkers available (and perhaps others under development), is there a need to "certify" a checker as being complete and correct? How can we know if a checker is a good one?
    - (Hélène Côté, Ouranos): they might not be complete, but they at least need to be specialized (ex global models, RCMs, observed datasets, etc)
  - Harry Singh (ONC): When is a file fully compliant? When both errors and warnings are resolved? Are errors more like a hard-stop while warnings are not?
  - Daniel Heydebreck (DKRZ), Comment: Comparing the output of both (or more) checkers may help to identify ambiguities in the CF Conventions document. E.g. my issue [#212](#) resulted from such a comparison (accidentally found the ambiguity).
  - (Martin Juckes, CEDA): Working from the CF conformance document is a good idea .. sharing test files and associated results might also be useful.
  - (Chris Barker: NOAA) If the CF community developed/maintained a set of test files with known errors, then all checkers could use them in their tests.
    - (Trevor Smith, Ouranos): I really like this idea. It would prevent us from having to create bunk data ourselves. → Could this be made available as a repo?
    - (Gui Castelao says in chat): It might be worth for CF to maintain somewhere a collection of example files with special cases that checkers should identify.
  - (Ethan Davis, Unidata): New page listing CF Software: <http://cfconventions.org/software.html> - If your software tool is not listed, please submit issue to CF Discuss repo: <https://github.com/cf-convention/discuss/issues>

- Micah Wengren (IOOS): If the CF Community can create a checker 'Certification' process, based on example files/conformance documents or other tests, it would be great to list results for both/all checkers on this site to reflect their certification status
  - (Mathew Biddle, WHOI/BCO-DMO): Back in 2016 I did a comparison w/ IOOS compliance checker and JPL compliance checker for the different NCEI templates. <https://data.nodc.noaa.gov/ncei/example/data/netcdf/v2.0/reports/>
  
- **cfdm library (David Hassell)**
  - Python package implementing CF data model
  - Daniel Heybreck (DKRZ):
    - Is it possible to get the Jupyter Notebook to present the library to my colleagues? => Was answered already.
    - Might this library be used by CF Conventions Checker to identify coordinate axes (instead of implementing this process again)? One of the hardest tasks with respect to CF Conventions seems to be to identify the coordinate axes automatically. => Was answered already.

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**Thursday, 11 June 2020**

## **Current Enhancement Proposals, Wrap-up and Conclusions**

**17:30 UTC - Report out from Breakouts (5 minutes each)**

48 attendees

*Notes, questions, and comments - please start your comment with your name and institution.*

- **Standard names**
  - <https://docs.google.com/document/d/1lopWpp666jDOnjCF2PnybiyyMADqFYGU1gwFU4xaHc/edit?usp=sharing> - summary at bottom
  - Kevin O'Brien (UW): For standard names - What is the best way to bring community-specific (ie, Ocean Chemistry) issues to the standards name panel? For example, they would like to decouple things like "mole\_concentration", "in\_sea\_water", etc . So, rather than proposing new names, they have issues with existing names and units already defined. Perhaps we could set up a standard names webinar for the Ocean Chem community and standard names panel?
  - Karl Taylor (PCMDI): The criteria for suitability of external vocabularies for adoption by CF should include, I think, an evaluation of whether new names can be added when needed without too much bureaucracy.
- **Cell methods**
  - Climatological cycles were highlighted as an important concept that distinguishes time from other dimensions. In addition to the usual diurnal and annual cycles, tidal cycles, and the weekly air pollution cycle were briefly mentioned.
  - There is a distinction between (i) a dataset that represents conditions at a specific time in a typical cycle created by averaging over a number of cycles, and (ii) a dataset that represents the time evolution over a number of cycles.
  - Without a specific mechanism (attribute) intended to identify which type of dataset it is, this distinction can only be inferred from dissecting the bounds of the time coordinate.
  - The need for a more flexible mechanism for multi-step processing (along the time dimension) was discussed. The [suggestion from Martin](#) was seen as a good starting point. It was suggested to include keywords for cycles.
  - It was concluded that more work is needed to develop a detailed proposal. To help this process it would be useful to have concrete use cases. Everyone is

encouraged to provide such, either here in this issue thread, or in the [Breakout Notes](#).

- **[Figure for bounds](#)**

- Aim: figure to indicate order of grid cell vertices in bounds variables (e.g. lon\_bnds(x,y,4)) of 2dim coordinate variables (e.g. lon(x,y))
- No further improvements with respect to figures
- Pull request submitted ([#276](#))

- **[Mesh or boundary variable](#)**

- We reviewed the presentation that Ryan Abernathy contributed.
- There was general agreement that the SGRID convention provided all the elements required to address the question.
- There was some concern at the complexity of SGRID.
- It was noted that both SGRID and UGRID conventions have repurposed the cf\_role attribute. It might be best to use a different name for this attribute.
- There was general agreement that we should continue the effort to bring SGRID and UGRID into the CF “family”.
- A simpler convention for representing a mesh grid was also sketched out. This is included in the breakout notes.

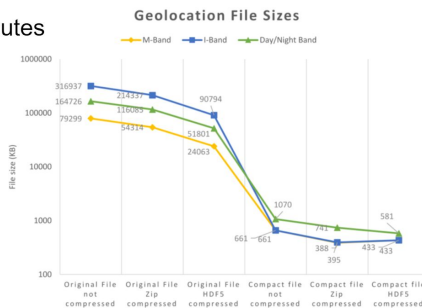
- **[Metadata handling \(provenance\)](#)**

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- **[Subsampled coordinates](#)**

- Daniel Lee (EUMETSAT): Conclusions from breakout were
  - Benefit of the approach is demonstrated.

>0.5GB/3 minutes  
= 🤖👤



We can beat log scale and outperform off-the-shelf compression!  
🤖👤

- Resume biweekly meetings, meeting details in [issue](#)
- Careful consideration needed about what aspects of the approach are considered "immutable" and thus should be stored on the interpolation construct and which should be considered specific to a given data variable

- **[CRS WKT](#)**

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- How to request adding a new unit to UDUNITS - <https://github.com/Unidata/UDUNITS-2/issues>

- **[Moderation of proposals](#)**

- Problem: A minority of discussions have grown up to a point which makes it difficult to follow or summarise.
    - Should rules encourage use of separate summary document/position paper.
    - Question: Does the initial issue description get updated as the conversation evolves?
  - Problem: Getting moderators for long or complex issues
    - Do we need to grow the number of people on committees?
    - Add a GitHub label “Needs Moderator”: this could be automatically added to each new issue
    - High-level overview of open issues (Daniel’s suggested Kanban board e.g.) would allow us to notice when issues get stuck.
    - How do people communicate with committees? For instance, to request a moderator. GitHub teams are not publicly visible. Not sure if people can @-mention teams they can’t see.
      - Klaus - Conda-forge project uses @-mentions for non-visible teams (<https://github.com/conda-forge>)
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### **18:15 - Wrap-up and Conclusions (Antonio Cofiño)**

*Notes, questions, and comments - please start your comment with your name and institution.*

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