What should CCMC’s education focus be?

*LIVE PUBLIC NOTES*

[[discussion folder](https://drive.google.com/drive/folders/1KVy3r1HMTSEw1RkHy7x8Ot-GLyplyOsW)]

**Instructions for note takers:** Please record the main points of the discussion under the relevant question. We especially request the action items suggested in the discussion to be recorded here and highlighted in some manner (bold, yellow, etc). Finally, keep all contributions to this document to a professional standard. Thank you!

**Question 1:** Does the community want CCMC to begin running periodic user workshops? How should CCMC support its user community?

* Specialized workshop for modelers
* drop in materials on how to do a particular run (maybe video on how the runs are created, how to interpret the data)
* Use wiki tools for this and below?
* Want “Idiot’s Guide” to what CCMC has, how to use it, want guidance on how to use data in a reasonable fashion. Quite helpful for new users. What format? Summer school? Videos? Manual? Need help from professional educators.
  + A simple summary as an “About” page would be quite helpful (currently there is no summary About page on the CCMC webpage; the closest thing is the FAQ)
  + Emphasis on what capabilities and models CCMC has, so new users at least know what questions to ask
* What effort/coordination is there between the Boulder summer school and CCMC?
* Previous attempts to do users’ workshop at GEM and CEdar were not well attended in the past. Current material not easily findable.
* Maybe a CCMC certificate earned through an interactive online ‘mini-course’
* How-to, what’s where, and best practices guide for new community members
* Develop local workshops for developers using the models
* **Action item:** (sample action item…)
  + Some suggestions from Digital.gov UX Summit:  
    How do you create a simple visual or presentation to teach all the data topics, geographies, and frequencies of our eight pages of surveys on census.gov? You don’t! We realized that no one should have to memorize this amount of information. The solution was to think bigger and to create a reference tool. Thus, the Survey Explorer was born. This product was designed and user experience-tested in just a few months with the right mix of people, attitude, and agile problem-solving.  
    [View the slides part 1 (PowerPoint, 13.3 MB, 9 pages)](https://digital.gov/files/how-do-you-teach-ux-part-1-ux-summit-22.pptx)  
    [View the slides part 2 (PowerPoint, 18.3 MB, 9 pages)](https://digital.gov/files/how-do-you-teach-ux-part-2-ux-summit-22.pptx)

**Question 2:** What does the community want to see from CCMC in terms of facilitating training for new members of the model development community through collaborations?

* Models require computational resources that most don’t have, so students can’t collaborate with model developers to make/test versions. Can CCMC host/support this?
* Relevant for exoplanet studies.
* Must be in collaboration or with approval of the model developer(s). Model developers don’t always have time for this
* Is this the right role for CCMC?
* Undergrads: likely interested in model outputs; grads: likely interested in editing model source code too.
* Could instead give students simplified models to learn physics and play with to learn how to develop models.
* Additional security requirement on CCMC for students making modifications to code must be considered (could do this on the cloud)
* Summer schools give opportunity for students to compare model outputs from similar runs. There isn’t a good flow for a student to learn model development.
* Model development education - not just use education
* What would you have to do to make a model useful for other planets and stars (for PHD students to work with) - students can grab the code, but where can they run it? Maybe CCMC can help with that.
* Should CCMC offer opportunity for early career scientists to learn “how can I do that?” - how to develop and modify code.
* Big security concerns with allowing students to modify code.
* Students need support to work with the models, either dedicated advisor or CCMC team. - too big a burden for ccmc?
* Do you really want people to mess with your code? Could CCMC grab a open source (Github) version and allow people to modify it?
* (type live notes here…)
* **Action item:** (sample action item…)

**Question 3:** What is the best strategy to use CCMC models and visualization resources in classrooms and outreach venues?

* How do we teach people about the strengths and weaknesses of each model? Users guide were mandated for Cassini data, maybe that would help with models?
  + See comments above for new users (CCMC for Dummies)
* Role for CCMC content in lower grades (e.g. K-2)? Into academic resources/books?
* OpenSpace has high computational demands, so run it from the cloud?
* ‘Deploy code with a toy problem’ idea can be used in lower grades too. Simple interactive visualizations (e.g. physicsclassroom.com interactives)?
* Ongoing project to use Web RTC (real time communication) in OpenSpace to run one instance of the software and allows others to tap into to allow for access on lower end machines.
* How to leverage for broadening impacts
* Identify model runs that could be good examples/demonstrations of particular events or phenomena; could be listed with a short blurb/explanation on a page for educators and/or tagged in the archive (though the archive isn’t necessarily very accessible to a non-expert educator)
* **Action item:** (sample action item…)

**Question 4:** How can CCMC best support and complement community summer schools and graduate professional development?

* Leveraging of CCMC efforts for the Summer Schools
* Summer schools have been making use of CCMC model outputs in several domains (models, iSWA, etc)
* The run archive is extremely valuable
* Summer school for code development in Boulder (same week as space weather summer school) - model/data analysis in python. Goal is to learn to code in Python to do science.
* Online certification programs in addition to summer schools? (Official thing, not just a play one for younger students.)
  + This would be self paced.
  + Who would be giving the official certificate? CCMC or a given host institution? Who would develop and maintain this? Who would be the ‘instructor’? What about enrollment and related fees? This isn’t free.
* **Action item:** (sample action item…)