Aarhus summer school feedbacks

The students

June 5-16, 2017

Contents

1 How is your overall feeling about the course – was it useful for you? 1
2 What topics would need improvements? 2
3 Was there any topics missing that you think should be included in the future? 3
4 What is your overall feeling about the lectures? 4
5 Was the course book useful and should it be continued as a hardcopy? 4
6 What is your overall feeling about the coding sessions? 5
7 What do you think about the workload during the course? 7
8 Have you enjoyed the social activities? 8
9 Any other comments? 8

1 How is your overall feeling about the course – was it useful for you?

- I liked the course, and have gained a lot of knowledge about modelling, but I’m not sure I’ll use it again. However, it has given me much perspective about models and modelling in general.

- This course was one of the best courses I have ever taken. I feel that I learned a lot, and I am sure that I will later use the knowledge I gained during the course. I think it was obvious that the course organizers really wanted to make this course as good as possible.
• The course was interesting, useful and funny. I learnt a lot about Fortran and especially the makefile. The physical part was also interesting.

• My overall feelings are absolutely positive. Part of it comes from interesting topics, part comes from intensive and hard work, and part comes from all the great people. The usefulness of the course comes mainly from getting overall picture of atmospheric chemistry, modelling and the challenges there (for me and generally). Hands-on experience with modelling and Fortran is probably the most important lesson for me.

• Very useful. I feel I learned a lot. I could keep up even without any prior modelling experience.

• Overall the course was very useful to me. I got hands on experience in modelling and had a lot of fun.

• Very good course, good to learn about the different parts included in the model to get an idea of how the model is built. My impression is that the course is very well thought through.

• Definitely useful! I will most likely use the content of the lectures in the next future and I have already started to use fortran.

2 What topics would need improvements?

• Fluxes where mentioned as a side note. At least put them right – there are more ways to measure flux than REA.

• Generally all the topics were good.

• Maybe the aerosol part. I found difficult to code it, I was lost at the beginning because I didn’t understand the meaning of all the variables in the box model.

• I would say that everything we implemented in the model, was well covered, and more importantly, had to be understood on some level in order to be able to model it. So for me the deposition, although the lecture was good, is still in practical terms a bit vague subject. I will try to look in to deposition later though.

• The different topics (meteorology, chemistry and aerosols) were equally well presented in my opinion.

• I think the deposition lecture wasn’t good enough, Pontus seems not to understand it excellent enough to teach. And also it seems that Marianne’s part is serving too much modeling course, while she could show something more of her specialities.
• I would perhaps spend a little time on understanding the results. For example on why the representation of meteorology gets better from K1 to K3.

• The skeleton code was a nice idea, however, the structure of aerosol code was very different from the other skeleton codes, which made the implementation of that code a bit more difficult. Although, it was also a good experience to work with different styles of codes, as that’s probably how it is working with different people within modelling. The final lecture about the future of modellers needs a bit work, it didn’t really include any specifics about modellers and it felt therefore a bit like waste of time.

• We could have spent more time on the aerosol lectures, but it would require more time (and I am probably biased)

3 Was there any topics missing that you think should be included in the future?

• I would have liked to have a bit more about how you compare your own measurements to a model or how you actually put a model up with your own observations.

• No.

• My general knowledge of atmospheric sciences is so thin, that I cannot not answer this question.

• I think all the basics were covered and there is not much room for anything else.

• I didn’t enjoy the ESM modeling part, I think it is not close enough related with the other topics. The lecture was much focused on the climate dynamics, while the 1 D model we develop is more oriented on chemistry, emission and aerosols. As I understand the ESM doesn’t have a chemistry module at all. Therefore, I would suggest to replace it by regional chemistry transport models which have aerosol modules with bin modes rather than modal modes (in ESM models). As for chemistry, they have modules like RACM, SARPAC or CBM-Z, which can also be run using KPP. For emission, they also use the MEGAN model.

• Would be cool to have some cloud in the model! I would prefer this over for example dry deposition (where the parametrization was hard to understand and there was a lot of just writing in equations).
• Would be interesting to include clouds.

• I suppose that would be nice to include instrumentation modelling so that the simulated data generated by the code could be comparable to field data (but it implies that you should provide those data). It’s probably too time consuming.

4 What is your overall feeling about the lectures?

• They should be shorter – 45-50min and then a SHORT break. I didn’t gain anything from Anttis lecture. Karris lecture gave some insight to the bigger models and was a nice perspective.

• Lectures were generally good. Fortran lectures felt a bit boring, as I already had solved all the exercises that we went through there. It might have been better to focus on more advanced things.

• The lectures were interesting and well done.

• I found the lectures generally very interesting and I found them easy to follow. The lectures usually covered a very broad subject so they had to be introductory, and for me as a bachelor student this worked very well.

• The lectures were good.

• As for potential new content, I would like to have more, but there’s no enough time.

• Lectures were really good.

• Good lectures that connected well to the current topics of the code, nice to start every new topic with a lecture. Nice with the lecture about the earth system models to put our small model in a bigger perspective, also good with the lecture motivating the importance of the smaller scale (e.g. 1D) models.

• Great! Well balanced. It triggers the will to get more details.

5 Was the course book useful and should it be continued as a hardcopy?

• I found it very useful to have a printed copy in front of me.

• Yes, I think the book was useful and it helped to have it as a hard copy when copying the equations from the book.
• The results part is useful when we want to compare what we plot. The others chapters were also useful sometimes so I think it’s good to continue printing the book.

• Definitely useful, and I used it a lot. The format (binding) was perfect because it enabled me to spread several pages in front of me.

• The folder was useful. In my opinion printed content is easier for following the lectures and comparing the results than a pdf file.

• The lecture about future career was not useful. I’m just talking about the matter itself, if this part is required, just ignore me.

• I think the printed version of textbook are really not needed. I anyway used the pdf version, and the paper version became something precious to throw away but what becomes burden to take home.

• Unfortunately, I think it was nice to have it in hard copy. But not everything needs to be printed. The lectures that did not lead to result in stuff that goes into the model could be taken out.

• It was good with a hard copy when working with the code, and during the lecture to take notes. Hard copy hand outs before the lecture is always good for students with dyslexia as they have time to focus on the lecture and not only panic about having time to note all important information.

• I don’t think that we need every single slide printed out. Some are necessary, such as the results and the equations to be implemented in the programs, but we have the presentation available on the website, so not everything should be in the hardcopy. I would suggest the equations, the results and some blank pages for taking notes in the hardcopy.

6 What is your overall feeling about the coding sessions?

• It was okay. In the beginning I had too much time just set up Model 1, 2 and 3, but lacked a bit time later, so for me it would have been better to go ahead a bit earlier, but that is difficult because some had great trouble setting this up. Pontus code was made in a very pedagogical way – may it would have a better start if the first steps very put more in this way and then keeping the later things more “unclear” so you have to solve this out yourself.
• Good, the lecturers were eager to help and also were very patient. It was also nice and useful to compare my code and problems with other students. However, it would have helped to have one more lecturer to ask help from in the end of the course (after one of the lecturers had left). Also, some of the essential things about the code (such as boundary conditions) were not told us clearly enough, which caused some unnecessary work.

• The coding sessions were interesting but also frustrating sometimes. But the teachers were here to help us and we (the students) could sometimes help each others.

• In the beginning of every new section of coding I was quite troubled and felt the pressure of deadline. The sessions were peaceful and for me it was easy to concentrate to my work. If I needed help, I could get it. Individual coding is absolutely necessary, but I found it good that people helped each other. In the end, when the code worked, the feeling was sensational. The coding was the backbone of the whole course.

• The skeleton codes were done in different styles and there was some overlap in variable naming. I think that in the future they should have a consistent style that is as much as possible in line with best practices. I believe this could alleviate the code clutter and teach the students good programming style. The final version of the 1d model was perhaps computationally too heavy for the course (took 40 min to run).

• Coding sessions were great! Coding with help is a huge privilege. Perhaps it could have made it easier if all the results for comparison were named (as K1 - K3) and it was clear what was included to get these results? I was for example unsure about whether or not mixing was included in the aerosol results for the 1D model.

• Some days the coding sessions felt a bit short. A lot of good help from the assistants.

• Again great! I had a well balanced mixture of frustration and happiness, which I think defines good coding sessions. I had help when I needed. We had the possibility to stay long in the evening which was great, but the access to the building and the lecture room could have been improved if we all had an access card. Concerning the code that we produced, it is not optimal, and I don’t think that we should try to optimize it at first, but some little changes in the code can accelerate a lot the simulation, and also the debug process. For instance, in each subroutine all variables, including the arrays, are declared, therefore
allocated, which is fine if run only once, but time consuming when repeated a lot. The purpose of declaring the variable in the subroutine being to remind the end user what is used and manipulated, I would suggest to have a global module for all variables, but the local one, and a commented list of variable in each subroutine. Also, if it’s possible, it would be interesting to add more intermediate results when the code starts getting more complicated. For instance, for the integration in the 1D model of the aerosol box module, having the results with a constant condensation sink would speed up the debugging process.

7 What do you think about the workload during the course?

- It was fine – it was a shame that the time didn’t allow for an afternoon to see a bit more of the city.
- For me the work load felt good. I enjoyed the fact that getting the model working during the time that we had felt challenging, but not too hard. I also think that there was a nice relaxed atmosphere thanks to the course organizers, which made the course less stressful.
- In my opinion, the workload was right. Maybe you could simplify the chemistry part because there were a lot of differential equations from chemical reactions to implement. For example, you could give the code with the differential equation already done for OH because this one is very long in comparison with the others.
- For me, just the right amount. There was a lot of work, and I used a lot of extra time for coding, but I quite like that kind of holistic approach.
- It was intense, but not too intense.
- The work load was good, but there could have been more optional work to adjust for people being finished at different times.
- Good workload
- I guess that we can all agree on the fact that it is a quite big workload that we have during the summer school, but it is also why we came there in the first place: intensive learning. Also, it is probably not a good idea to try and append more lecture/topic because we can probably not keep this pace for much longer than 10 days.
8 Have you enjoyed the social activities?

- Yes, but maybe one of the days we could have stopped early to see the city – now that we are not in the middle of a forest.

- Social activities were nice; especially the trip to the outdoor museum was great. However, I must admit that I missed the kayaking that was mentioned when the course was advertised.

- It was very funny and everybody was very kind. I would have liked if there were more sport activities.

- I enjoyed them, although I found it quite hard to take my mind off of coding. The weekend happened to be the most intensive moment of the process, so I was very anxious to get back to work. That said, the break in coding probably helped me to get the bugs out. Had there not been scheduled activities, I would have worked to exhaustion.

- Yes, these should stay in the program (maybe add more, especially sports).

- The sport was great, I love football. However maybe we should barbecue only once.

- Social activities were very nice and (I think) necessary. Good

- Nice social activities, I liked that they weren’t to focused on sports atmosphere, nice people.

- Really nice! I would have enjoyed the sport activities on a daily basis had the weather agreed.

9 Any other comments?

- Maybe make it clear in the beginning how the data is arranged in the beginning and point out that it is easiest to be consistent with the arrangement from the beginning. E.g. keeping box calculations as vectors and use the vector to calculate each layer to a matrix in the main code. To me it seemed like some had the most problems with the lack of consistency from the beginning.

- Great course, thanks a lot!

- Not enough orange juice

- For me this was absolutely great experience, and I find it hard to think of any criticism or real improvement.
• The hotel rooms were pretty small for two people staying for two weeks.

• Last but not least, I would like to express my gratitude’s towards all teachers. Although my comments are sharp, I fully appreciate everyone’s effort and I don’t mean any harm. If there are something replacing the ESM, I might think about coming another time.

• Great course, hope you can continue having it after 2018 :)

• It was worth it. I will advice people to participate to the next editions.