AT745 Earth System Models 2024

Dave Randall and the Earth System All Stars

Total of 28 classes, each 75 minutes long

We will schedule make-ups for the four missed classes.

This fall AT745 will deal with "Earth System Models" (ESMs), which include representations of the atmosphere, the ocean, the land surface, sea ice, and in some cases continental ice sheets. The nature, scope and history and formulation of ESMs will be covered in general terms..

Each student will "adopt" and make two presentations about a current ESM. The first presentation will discuss the history and formulation of the model in general terms. The second presentation will zoom in on one particular aspect of the model. Both presentations will include a discussion of results produced by the model.

We will of course also compare the models with each other.

Guest lecturers will cover subjects that are far from my expertise. That's where the *Earth System All Stars* come in. The table below lists who will present what. The order of the presentations will be close to what is shown in the table, but not exactly the same.

Feel free to contact me if you have questions or suggestions.

0	Date	Who	What	Status
1	8/20	David Randall, CSU	Historical overview 1	
2	8/22	David Randall, CSU	Historical overview 2	
3	8/27	David Randall, CSU	Dynamical cores 1	
4	8/29	David Randall, CSU	Dynamical cores 2	
5	8/29			
6	9/3	Missed class		
7	9/5	Missed class		

8	9/10	Andrew Gettelman, Pacific Northwest National Laboratory	Microphysics parameterizations	agreed
9	9/12	Robert Pincus, Lamont-Doherty Earth Observatory| (virtual)	Radiation parameterizations	agreed
10	9/17	Nicholas Pedatella, NCAR/ HAO	Modeling the high atmosphere	agreed
11	9/19	Alice DuVivier, NCAR/CGD	Sea ice models	agreed
12	9/24	David Randall, CSU	Boundary layer parameterization 1	
13	9/26	David Randall, CSU	Boundary layer parameterization 2	
14	10/1	Missed class		
15	10/3	Scott Denning, CSU	Land surface and carbon cycle modeling	
16	10/8	Student presentations	Model overview	
17	10/10	Student presentations	Model overview	
18	10/15	Gokhan Danagasoglu, NCAR/CGD	Ocean models 1	agreed
19	10/17	Gokhan Danagasoglu, NCAR/CGD	Ocean models 2	agreed
20	10/22	Jadwiga Richter, NCAR/ CGD	Gravity wave drag parameterizations	agreed
21	10/24	Missed class		
22	10/29	Rich Loft, AreandDee LLC	High-performance computing for ESMs	agreed
23	10/31	Rebecca Buchholz, NCAR/ ACOM	Chemistry parameterizations	agreed
24	11/5	David Randall, CSU	Cumulus parameterization 1	

25	11/7	David Randall, CSU	Cumulus parameterization 2	
26	11/12	Peter Jan van Leeuwen, CSU	Data assimilation	agreed
27	11/14	Jon Petch, NCAR/CGD	Operational NWP	agreed
28	11/19	Pat Keys, CSU	People parameterizations	agreed
29	11/21	David Randall, CSU	Closing summary	
30	12/3	Student presentations	Model focused	
31	12/5	Student presentations	Model focused	
32	TBD	Gunter LeGuy, NCAR/CGD	Ice sheet models	emailed
33	TBD	Brian Dobbins, NCAR/CGD	Software infrastructure for ESMs	emailed
34	TBD	David Randall, CSU	Tuning	
35	TBD	David Randall, CSU	Open source and Intercomparisons including CMIP and IPCC	