

Plan Dynamical Meteorology 2022-2023 (NS-MO402M) (version 22/11), Wednesday 13:15-17:00; Friday 9:00-12:45 and 13:15-15:00

week	location	day	lecture	part*	topic
46	1 BBG 001	wed:16/11	0&1	A	Lecture: introduction, schedule/plan, literature, grading, variables & basic equations, "forcing and response in the atmosphere" Tutorial: study part A of the lecture notes; problems 1.2 and 1.3
46	2 KBG 208	fri:18/11	2	A	Lecture: potential temperature, Boussinesq approximation, buoyancy introduction to weather forecast competition, forming teams of 4-5 students Tutorial: problems 1.1, 1.4 and 1.7
47	3 BBG 001	wed:23/11	3	A	Lecture: buoyancy oscillations and hydrostatic (in)stability, Convective Available Potential Energy (CAPE), radiative equilibrium temperature (semi-qualitative) introduction to project 1 (problem 1.6) Tutorial: project 1, questions about previous part A, including the problems of the first two tutorials
47	4 BBG 001 BBG 079	fri:25/11	4	B, C	Lecture: moisture in the atmosphere and its effects - 1 Tutorial: project 1, problems 1.8 and 1.11
48	5 BBG 001	wed:30/11	5	C, D	Lecture: moisture in the atmosphere and its effects - 2 introduction to the effect of rotation, illustrated with the Hadley circulation and the sea breeze Tutorial: Problems 1 and 2 in Box 1.8 (p. 88), problem 1.12 (tephigram)
48	6 BBG 001 BBG 079	fri:2/12	6	D	Lecture: the influence of rotation (Coriolis-effect) illustrated with the sea breeze; introduction to geostrophic flow and its stability introduction to project 3 (problem 1.14) Tutorial: project 3, problem 1.12 (tephigram)
49	7 BBG 001	wed:7/12	7	D	Lecture: stability of geostrophic balance, inertial oscillations and instability. thermal wind and jets, energetics of meridional exchange of cold and warm air masses in middle latitudes Guest talk by Nadia Bloemendaal (Finished master Climate Physics in 2016) Tutorial: project 3, problem 1.17
49	8 BBG 001 BBG 079	fri:9/12	8	D	Lecture: circulation and vorticity, potential vorticity (conservation), isentropic density, the tropopause, division of the atmosphere into an Underworld, Middleworld and Overworld Tutorial: project 3, problem 1.18
50	9 BBG 001	wed:14/12	9	E, F	Lecture: pressure and potential temperature as a vertical coordinate; Hadley-, Ferrel-circulations and residual circulation of mass (Brewer-Dobson circulation) introduction to project 5 (problem 1.24) Tutorial: project 5: hand in hypothesis before end Monday 19/12/2022
50	10 KBG 208	fri:16/12	10	E	Lecture: eddies and breaking planetary waves, meridional fluxes of mass: mean and eddy contributions, conservation of potential vorticity, vorticity equation in flux form; interpretation of vorticity as a substance, impermeability theorem, Tutorial: project 5, problems 1.20 and 1.21
51	11 BBG 001	wed:21/12	11	G, H	Lecture: quasi-balance, quasi-geostrophic approximation, quasi-geostrophic (barotropic) vorticity equation, a linear theory of planetary (Rossby) waves Tutorial: project 5, problems 1.22, 1.34
51	free	fri:23/12			
2	12 BBG 001	wed:11/1	12	G	Lecture: balanced circular vortex (e.g. "cold-core cyclone" & tropical cyclone), thermal wind balance and potential vorticity inversion; Kleinschmidt's principles Tutorial: problems 1.29, 1.30, 1.33
2	13 BBG 001 BBG 079	fri:13/1	13	G, H	Lecture: different manifestations of planetary (Rossby) waves: baroclinic instability, jetstreaks, potential vorticity-mixing and Sudden Stratospheric Warmings Tutorial: problems 1.35, 1.37
3	14 BBG 001	wed:18/1	14	G, H, I	Lecture: accelerations/decelerations of the jet stream in relation to ageostrophic motion (jet streaks), vertical motion in relation to propagating Rossby waves, formation of fronts (frontogenesis) Tutorial: presentations of project 5
3	15 BBG 001 BBG 214	fri:20/1	15	I	Lecture: large-scale slanted vertical motion in a hydrostatically stable atmosphere in relation to frontogenesis (omega-equation) Tutorial: presentations of project 5
4	BBG 001	wed:25/1			Tutorial: problem 1.38, practice multiple choice questions, any other questions final score of the weather forecasting competition
4	BBG 001 BBG 214	fri:27/1			Tutorial: any questions
5	EDUC-BETA	wed:1/2			EXAM (13:30-16:30)

*See page 13 and 14 of the **Lecture Notes**: <https://webspace.science.uu.nl/~delde102/AtmosphericDynamics%5b2022%5dCh1.pdf>

Detailed information about the course of 2022-2023: <https://webspace.science.uu.nl/~delde102/dynmeteorology.htm>