

**EAPS 53600 Introduction to General Circulation of the Atmosphere****Spring 2020**

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Class: 9:00a-10:15a TR HAMP 3214

**Dates and topics below are subject to change.****All due dates are tentative and will be announced in class.**

Week	Topic	Book Reading <u>prior to class</u>	Homework	Lab	Semester project (peer review for each milestone)
<b>1</b> (01/13) DRC GONE TUES 01/14	Intro / Does the atmosphere have to move?	(Review of basics: Hartmann Ch 1.1-1.7, 3.1-3.2) Hartmann Ch 2, 3.8, 3.10-3.11			
<b>2</b> (01/20)	Radiative equilibrium, radiative convective equilibrium / Tank lab 1: hadley cell and baroclinic instability		HW 1 due		
<b>3</b> (01/27)	What if the Earth didn't rotate? / Observed atmospheric circulation	Hartmann Ch 6 VallisE Ch 11.1		Lab 1 report due	M1a: three hypotheses of interest + methods to test (as specific as possible) <i>Just to get the juices flowing</i> Peer review (1-5): 1) creativity; 2) clarity; 3) feasibility.
<b>4</b> (02/03)	Equations of motion / Shallow water system: non-rotating gravity waves	VallisE Ch 2 / (Review basics of waves: VallisE Ch 6.0-6.2) VallisE Ch 4.0-4.4  (note: internal gravity waves are covered in Ch 7)			
<b>5</b> (02/10)	Rotating gravity waves, Kelvin waves / Tank lab 2: geostrophic adjustment		HW 2 due		
<b>6</b> (02/17)	Potential vorticity, quasi-geostrophic system / f variable (beta): Rossby waves	VallisE Ch 5.2.2-5.2.3, 5.5 VallisE Ch 6.3-6.5		Lab 2 report due	M1b: three topics of interest related to large-scale circulations

<b>7</b> (02/24)	in-class modeling lab / Equatorial waves	Notes			
<b>8</b> (03/02)	Barotropic instability	VallisE Ch 8.0-8.3	HW 3 due		M1c: final three topics + hypotheses + methods
<b>9</b> (03/09)	Baroclinic instability	VallisE Ch 8.4-8.5 + p. 162 box, 8.7		Lab 3 report due	M2: half-page proposal (hypothesis + method + expected outcome)
<b>10</b> (03/16)		<b>SPRING BREAK</b>			
<b>11</b> (03/23)	Hadley cell (Held- Hou) / <b>MIDTERM</b>	VallisE 11.1-11.3			M3: final half-page proposal (hypothesis + method + expected outcome) + proof of concept
<b>12</b> (03/30)	Monsoon / Walker cell	Hartmann 6.5.1 <a href="http://worldmonsoons.org/where-monsoons-are-found/">http://worldmonsoons.org/where-monsoons-are-found/</a> <a href="http://worldmonsoons.org/why-monsoons-happen/">http://worldmonsoons.org/why-monsoons-happen/</a> Hartmann Ch 8.3 VallisE Ch 16.4			M4a: 3-slide presentation hypothesis/methods + initial results + next steps
<b>13</b> (04/06)	Madden-Julian Oscillation (MJO) / Wave-mean flow interaction and the Eliassen-Palm Flux	Hartmann Ch 8.2.2 VallisE Ch 9.0-9.2			M4b: <1 page draft bullet- point extended outline (hypothesis/methods/initial results+plots; plots not included in page limit); 3- minute oral presentation (same format)
<b>14</b> (04/13)	Transformed Eulerian Mean (TEM) / Jet formation, surface winds, and the Ferrel cell	VallisE Ch 9.3-9.4, 12.1 VallisE Ch 12.2-12.3			M4c: (same format as M4b) final extended outline + concrete results testing hypothesis; 3-minute oral presentation
<b>15</b> (04/20)	Stratosphere / Advanced topics (Gross Moist Stability, Sverdrup balance)	VallisE Ch 12.4			M5a: draft paper (methods/results); 3- minute oral presentation
<b>16</b> (04/27)	Advanced topics (Tropical cyclones) / oral presentations				M5b: draft paper
<b>FINAL</b>	<b>Semester project final report due noon Thurs 05/07</b> <b>No final exam</b>				