Subjects and guidelines for student presentations

EPS131, Introduction to Physical Oceanography and Climate

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Instructions

Please choose two subjects from the list below and fill out the spread sheet from Camille's email. Please respond by this weekend...

Prepare a *ten minute/ten slide* presentation on descriptive/ dynamical aspects of one of the following topics, based on textbooks or other sources chosen with our help. Some topics include a suggested lab demo; although check with us that the demos are doable this year first.

Please email us (CC-ing all members of the presenting group) a draft of your presentation that is consistent with the guidelines below, at least one week before the date in which you will present. This will allow sufficient time for feedback on the presentation during our office hours, and give you time to implement it.

Email the final presentation file (in pdf/PowerPoint/Google slides) to us by 7am on the day of your presentation. It will be posted to the course home page after your presentation. If you are interested in presenting a subject that's not listed, please write or come talk to us.

Guidelines for presentation:

- Concentrate on observations and phenomenology, avoid theory/ equations.
- Use Google scholar (scholar.google.com) to find information from scientific papers in addition to a regular web search.
- Make your slides interesting and fun.
- Use 24 points and above; avoid slides with only text; minimize use of bullet points and amount of text; use high resolution graphics.
- A typical slide (example) should have a clear title noting what the main message of the slide is, some graphics, a caption explaining what exactly is shown in the graphics, and a summary sentence at the bottom with the main take-home.
- Make sure slides are not too dense with information, yet also not too sparse.
- Use no more than one or two schematics, focus on photos and observations.
- If presenting in a group, **alternate speaker every slide**, so that all group members are familiar with all aspects of the talk.

Subjects

Subject are grouped by general area and listed roughly in the order in which they will be presented in class, with the related section in the syllabus in red. Each item enumerated by a letter is a possible subject for a presentation.

1. Water masses, regional oceanography (Temperature-Salinity)
   (a) Atlantic ocean, and North Atlantic Deep Water (NADW),
   (b) Southern ocean, Antarctic Intermediate Water (AAIW), Antarctic Bottom Water (AABW).
   (c) Marginal seas, Mediterranean water in the Atlantic, Levantine Intermediate Water (LIW), Adriatic/ Ionian/ West Mediterranean deep water.
   (d) MODE (18 degree) waters

2. Making observations (Temperature-Salinity, horizontal circulation I)
   (a) Satellites: SST, chlorophyll, scatterometer, altimeter, salinity, gravity
   (b) Ship-based observations: CTD, Nansen/ Niskin sampling bottles, ADCP, SONAR for ocean depth. Biology: trawls, Secchi disk. Historical: inverting thermometers, bucket temperature.
   (c) Floats: ARGO, profiling floats, SOFAR, RAFOS, ALACE, PALACE, APEX
   (d) Moorings and current meters
   (e) Ocean Observatories Initiative

3. Major currents (Horizontal circulation I)
   (a) Gulf stream, rings, recirculation
   (b) Kuroshio, and its two steady states
   (c) The antarctic circumpolar current (ACC)
   (d) Somali current and the monsoons; the Agulhas current
   (e) Indonesian through-flow and Equatorial currents and undercurrents.

4. More on major currents (Horizontal circulation II)
   (a) Abyssal circulation and deep western boundary currents.
   (b) Ekman pumping and the great ocean gyres (subpolar and subtropical, focus on North Atlantic and North Pacific).

5. Other physical processes
   (a) Diffusion

(b) Coastal upwelling zones and the accompanying fisheries (Friction)

6. Waves, tides, eddies (Waves I)
   (a) Tides
   (b) Tsunamis
   (c) Wind waves: swell, Beaufort, fetch, freak waves, scatterometer, wave breaking and air-sea exchanges.
   (d) Fundamental wave properties
   (e) Surface gravity waves
   (f) Internal waves
   (g) Ocean eddies, "Meddies", rings

7. The oceans and climate variability (Thermohaline circulation, El Niño)
   (a) El Nino's global teleconnections: African drought, South American floods, North American rains
   (b) Thermohaline circulation
   (c) Anthropogenic CO_2 increase and ocean acidification
   (d) Atlantic multi-decadal oscillation.

8. Sea ice
   (a) Antarctic Sea Ice and Polynyas
   (b) Thinning Arctic sea ice (and global warming)

9. Climate
   (a) The fate of Greenland ice under global warming
   (b) West Antarctica and the antarctic ice shelves
   (c) Sea level change (Temperature-salinity)