

# Subjects and guidelines for student presentations

EPS131, Introduction to Physical Oceanography and Climate

Eli Tziperman

## Instructions

Prepare a *ten minute/ten slides* presentation on descriptive/ observational aspects of one of the following topics.

Please email us (CC-ing all members of the presenting group) a draft of your presentation following the guidelines below. Send the draft at least one week before the date on which you will present. We will provide feedback by email and then meet with you during office hours a few days before the presentation to suggest additional feedback, allowing you sufficient time to incorporate the feedback. The presentation preparation will typically require several iterations with us.

Please email us the final presentation file (as a Google Slides presentation) by 7 am 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 us or come talk to us.

Guidelines for presentation:

- Concentrate on observations and phenomenology, avoid theory/ equations
- Use Google Scholar ([scholar.google.com](https://scholar.google.com)) to find information from scientific papers in addition to a regular web search
- Make your slides interesting and fun
- Use a large, clear font; avoid slides with only text; minimize the use of bullet points and the 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, captions explaining what exactly is shown in the graphics, and a summary sentence at the bottom with the main take-home
- Each slide should have a clear objective/focus, reflected in its contents, title, and take-home message
- 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
- Practice to make sure your presentation is 9–10 min long
- If presenting in a group, **alternate speaker every slide**, so that all group members are familiar with all aspects of the talk.
- Come 10 min early to class on the day of your presentation to set up your presentation before class starts and to be ready to begin presenting at 10:30.

## Subjects

Subjects 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) Global and regional sea level change
  - (b) Atlantic Ocean, and North Atlantic Deep Water (NADW),
  - (c) Southern Ocean, Antarctic Intermediate Water (AAIW), Antarctic Bottom Water (AABW)
  - (d) Marginal seas
  - (e) Mediterranean: Levantine Intermediate Water (LIW), Adriatic/ Ionian/ West Mediterranean deep water, Atlantic Water (AW). Mediterranean deep water in the North Atlantic
  - (f) 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. 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) Internal waves
  - (e) Ocean eddies, “Meddies”, rings
5. Other physical processes
- (a) Coastal upwelling zones and the accompanying fisheries (**Friction**)
6. More on major currents (**Horizontal circulation II**)
- (a) Abyssal circulation and deep western boundary currents
  - (b) Ekman pumping and the great ocean subpolar and subtropical gyres
7. The oceans and climate change and variability (**AMOC, El Niño**)
- (a) El Niño’s global teleconnections: Australia’s fires, South American floods, North American rains, African droughts
  - (b) The Atlantic Meridional Overturning Circulation
  - (c) The Atlantic Multi-Decadal Oscillation
  - (d) Ocean acidification
8. Sea ice
- (a) Antarctic Polynyas
  - (b) The disappearing summer Arctic sea ice
  - (c) The abrupt reduction in Antarctic winter sea ice.