

## Discussion 5: Ocean Mixed Layer

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## The State of Oceans

- ❑ Temperature
  - warm on the upper ocean, cold in the deeper ocean.
- ❑ Salinity
  - variations caused by determined by evaporation, precipitation, sea-ice formation and melt, and river runoff.
- ❑ Density
  - small in the upper ocean, large in the deeper ocean.

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## Potential Temperature

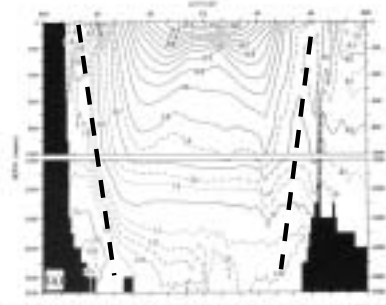


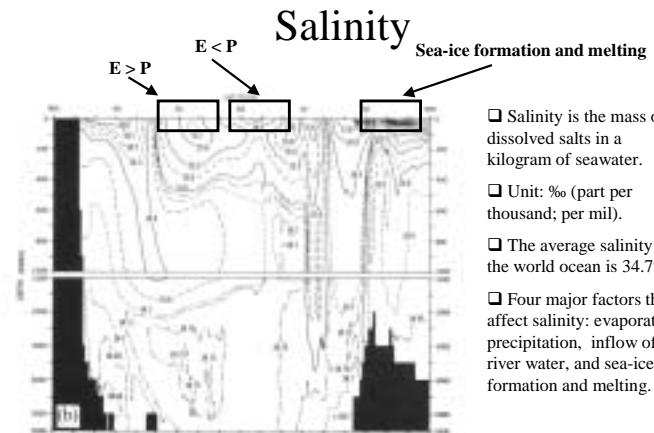
Fig. 11.1 Simultaneous time series for the global area of air potential temperature (T), and the surface fluxes (evaporation minus precipitation) potential average (E - P) in °C (Precipitation in mm).

(from *Global Physical Climatology*)

- ❑ Potential temperature is very close to temperature in the ocean.
- ❑ The average temperature of the world ocean is about 3.6°C.

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## Salinity



(from *Global Physical Climatology*)

- ❑ Salinity is the mass of dissolved salts in a kilogram of seawater.
- ❑ Unit: ‰ (part per thousand; per mil).
- ❑ The average salinity of the world ocean is 34.7‰.
- ❑ Four major factors that affect salinity: evaporation, precipitation, inflow of river water, and sea-ice formation and melting.

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