Surface fluxes of energy, water, and momentum:

- Effected by interactions of two turbulent boundary layers
- Described reasonably well by "bulk formulas"; require wind speed, surface air temp., specific humidity, and – as the only oceanic quantity – sea surface temperature
- Evaporation E and precipitation P have negligible direct influence on oceanic mass transports and circulation
- Influence of E-P on surface salinity crucial; can usually be approximated by "virtual surface salinity flux"

Thermal surface boundary conditions:

- First physically-based formulation by Haney (1971); assumes constant atmospheric conditions; SST restored to "apparent atmospheric temperature" on characteristic timescale, O(60d)
- Does not imply large atmospheric heat capacity
- Davis (1976), empirically: Over timescales of several months, atmosphere drives ocean

Surface salinity boundary conditions

- E-P both independent of SSS; yet often restoring condition for SSS is used; no physical justification
- Crudest physically-based approximation: Virtual salinity flux
- Restoring condition for SST; fixed flux for SSS: "**Mixed (thermohaline) boundary conditions"**