Sea ice drift

Arctic:

- Beaufort Gyre
- Canadian archipelago
- Transpolar Drift
- Spitzbergen
- Fram Strait
- Greenland
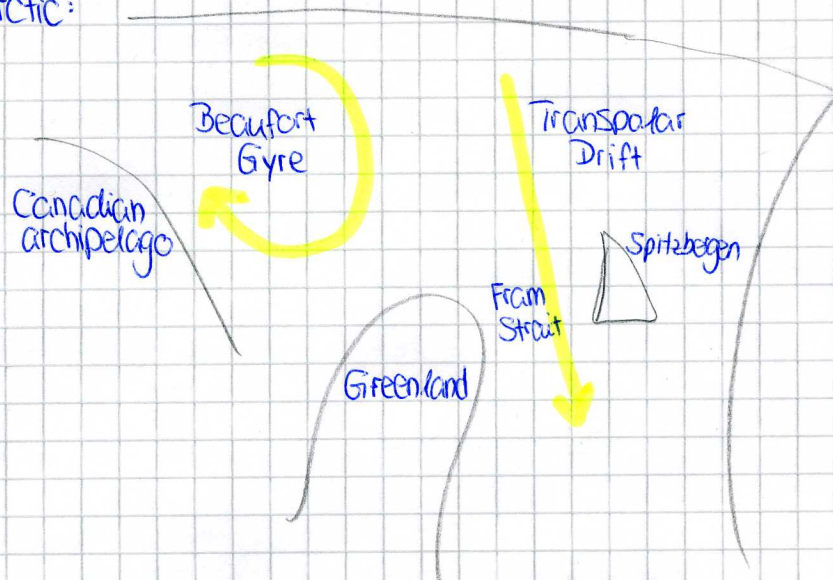
- Sea ice drift mainly due to wind not so much affected by currents

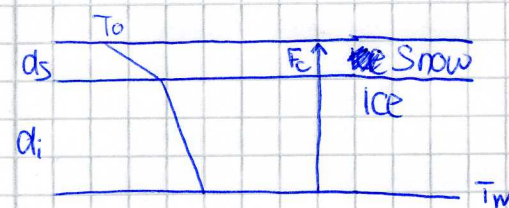$$V_{ice} = 1.5\% \; V_a \qquad (V_a : \text{Wind} \Rightarrow \text{geostrophischer Wind})$$

$$\vec{\tau}_a = \rho_a \, C_{da} \, |\vec{V}_a| \, \vec{V}_a$$

$$\vec{\tau}_w = \rho_w \, C_{dw} \, |\vec{V} - \vec{V}_w| \, (\vec{V} - \vec{V}_w)$$

Sea ice growth

- cumulative freezing temperature : $\Theta = \int (T_f - T_a) \, dt$

- parameterization of Lebedev : $d = 1.33 \, \Theta^{0.58} \; [cm]$

~~Sea ice~~ Equilibrium sea ice thickness

$$F_c = \frac{T_w - T_o}{\dfrac{d_s}{k_s} + \dfrac{d_i}{k_i}} = F_w$$

$$d_i = k_i \left(\frac{T_f - T}{F_c} - \frac{d_s}{d k_s} \right) \qquad T_f = -2°C$$

thermodynamische modale Eisdicke

Deformation

Eisdic

Häufigkeit