7km Resolution [[Hybrid Coordinate Ocean Model (HYCOM) Global Forecast (1/12 deg) - CKAN](https://catalog.data.gov/dataset/hybrid-coordinate-ocean-model-hycom-global-forecast-1-12-deg#:~:text=HYCOM%20provides%20comparable%20resolution%20to,results%20in%2032%20vertical%20layers).]

3h images + missing images [[HYCOM dataset usage | Estuarine and Coastal Environment Laboratory (Jun SASAKI Laboratory), the University of Tokyo](https://estuarine.jp/2020/06/hycom-datasets/?lang=en)]

Mögliche Gliederung des Vortrags:

1. Einleitung

· Warum (Golfstrom)

o Kipppunkt etc…

wie funktioniert der Goldstrom? (Kreislauf aus warmen, kalten und untersch. salzhaltigen Wassern, Fluss aufgrund der Dichteänderungen)

2. Regionen Auswahl

· Warum diese Regionen

o Temperaturkarte

3. Vorstellung Datasets

4. Hintergrund Programmierung

5. Ergebnisse und Auswertung

-> unsere Ergebnisse

->Vergleich mit den Papern

Passende Artikel:

<https://sci-hub.ee/10.1038/s41586-018-0006-5>

<https://sci-hub.ee/10.1038/s41586-018-0320-y>

<https://worldoceanreview.com/en/wor-6/climate-change-impacts-in-the-polar-regions/the-pathways-of-heat/does-more-freshwater-in-the-arctic-ocean-weaken-the-gulf-stream/>

https://www.sciencedirect.com/science/article/pii/S2212094716300512

lasst uns die Artikel auch in der Präsentation erwähnen :)

Upper 200 m:

The upper 200 m roughly corresponds to the mixed layer globally. Through wind and turbulent mixing, variations of sea surface temperature (SST) and mixed-layer OHC are highly statistically correlated (r= 0.82 in 13-month running mean) (Chen und Tung 2018:387).

Golfstrom:

Cold dense water travels south in a very deep ocean layer all the way from the north Atlantic to the antarctica

Upwelling brings the water back to the top layers of the ocean

Thermohaline Circulation

Process ensures that the world oceans are continually mixed and heat and energy are distributed around the earth

A full circuit can take up to a thousand years to complete

Gulfstream takes a right turn and flows east, crossing the atlantic (about the hight of North Carolina)

· As it moves north east it loses heat as a result of evaporation of the very warm surface water caused by the oceans winds

· This heat energy transfers into the atmosphere and influences the local climate

· Temperatures in “Europe” are on average 10° warmer than at the same latitude in north America

· Evaporation only removes water from the ocean flow, it leaves behind the salt

o Salt molecules get trapped inside the gaps of the water molecules, all these filled up cracks create a fuller or denser structure

· Dense cold salty water is combining with the much fresher waters towards the arctic circle

o Denser water sinks

· Climate warming is happening at least twice as rapidly up in the Arctic and that means accelerated melting of the Greenland ice sheet and a rapidly decreasing volume of sea ice sitting on the arctic ocean

o All that melting is releasing huge quantities of pure water into the ocean which has the effect freshening the water

§ Fresh water is less dense than salty water, so less of it sinks

· Slows down the engine of the great global thermohaline circulation