|  |  |  |  |
| --- | --- | --- | --- |
| **Data** | **Values** | **Source** | **Details** |
| Temp (ocean temperature) | Pole: 6C  Equator: 18C  Adjusted to 7C/17C to bring initial conditions closer to equilibrium. | https://www.ncei.noaa.gov/access/world-ocean-atlas-2018f/bin/woa18f.pl?parameter=t | 1981-2010, annual, 200m depth.  Pick values offshore Greenland for pole basin and 20N for the equator basin. |
| Salt (ocean salinity) | Pole: 35ppt  Equator: 36.5ppt  Adjusted to 35ppt/36.1ppt to bring initial conditions closer to equilibrium. | <https://www.ncei.noaa.gov/access/world-ocean-atlas-2018f/bin/woa18f.pl?parameter=s> | 1981-2010, annual, 200m depth.  Pick values offshore Greenland for pole basin and 20N for the equator basin. |
| temp\_diff (surface heat mixing coefficient) | with | <https://doi.org/10.1016/C2009-0-24322-4> via <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/diffusivity> (6th line of section 7.3.2) | I have no access to the doi. So access via the www. |
| salt\_diff (surface salinity mixing coefficient) | with | Dijkstra (2016) | Follows from temp\_diff and Dijkstra’s value for |
| (mixing layer depth) | 50 m | https://www.ncei.noaa.gov/access/world-ocean-atlas-2018f/bin/woa18f.pl?parameter=M  and personal experience | 2005-2017, annual, surface value at 20N |
| dx (width North-Atlantic basin in lateral direction) | 4800 km | https://www.britannica.com/place/Atlantic-Ocean | Width south of Ireland, 3rd paragraph |
| dy (width North-Atlantic basin in longitudinal direction) | 5200 km | https://apps.dtic.mil/sti/pdfs/ADA280358.pdf  Table 3.1, row 1 and 3.2 row 1 give a earth radius (pole) of 6357 km and (equator) 6378 km resulting in a circumference of ~40000km | If we take each box to cover ~45 degrees of latitude then dx~45 degrees~5000km. The value of 5200 is an erroneous overestimation. |
| dz (depth North-Atlantic basin) | 3650 m | https://www.britannica.com/place/Atlantic-Ocean  2nd paragraph |  |
| rho\_ref (reference density) | 1027 kgm-3 | http://dx.doi.org/10.1002/2015GL065525  2nd paragraph of section 2 |  |
| S\_ref (reference salinity) | 35 ppt | <http://dx.doi.org/10.1002/2015GL065525>  2nd paragraph of section 2 |  |
| T\_ref (reference temperature) | 10 C | <http://dx.doi.org/10.1002/2015GL065525>  2nd paragraph of section 2 |  |
| alpha\_T (thermal expansion coefficient) |  | <http://dx.doi.org/10.1002/2015GL065525>  2nd paragraph of section 2  also compare with <https://doi.org/10.1175/JPO-D-15-0080.1>  Table 1, row 1, column 4 | Notice that value drops sharply towards the pole in Table 1. |
| alpha\_S (haline expansion coefficient) |  | <http://dx.doi.org/10.1002/2015GL065525>  2nd paragraph of section 2  also compare with <https://doi.org/10.1175/JPO-D-15-0080.1>  Table 1, row 1, column 5 | The gamma coefficients in eq. (4) of <http://dx.doi.org/10.1002/2015GL065525> are neglected in the linear approximation. |
| Q\_overturning (meridional overturning flux) | 18 Sv | <https://doi.org/10.1016/j.pocean.2014.10.006> and references therein. In particular, 3rd paragraph page 91. |  |
| gamma (advective transport coefficient) |  |  | are calculated using the initial conditions in temp, salt and the equation of state. |
| temp\_air  (line 464 in stommel/\_\_init\_\_.py) | Pole: 8.5C  Equator: 26C | https://www.ncei.noaa.gov/access/world-ocean-atlas-2018f/bin/woa18f.pl?parameter=t | 1981-2010, annual, surface.  Pick values offshore Greenland for pole basin and 20N for the equator basin. |
| salt\_air  (line 469 in stommel/\_\_init\_\_.py) | Pole: 32.8ppt  Equator: 36.6ppt | https://www.ncei.noaa.gov/access/world-ocean-atlas-2018f/bin/woa18f.pl?parameter=s | 1981-2010, annual, surface depth.  Pick values offshore Greenland for pole basin and 20N for the equator basin. |
| V\_ice  (line 529 in stommel/\_\_init\_\_.py) | 3.42 106 km3 | https://en.wikipedia.org/wiki/Greenland\_ice\_sheet  in box “Greenland ice sheet” | Area (1,710,000  km2) times thickness (2 km) |
| T\_ice  (line 530 in stommel/\_\_init\_\_.py) | 100 year | For convenience guessing that it similar to timescale warming as given in the next row. |  |
| T\_warming  (line 543 in stommel/\_\_init\_\_.py) | 100 year |  | For avg\_temp\_warming (see next row) it has been decided to use the temperature difference between 2100 and 2000. |
| avg\_temp\_warming  (global warming). Used in line 28 (26) of clima\_forcing.py (clima\_forcing\_da.py) | 3 C | https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature-projections | Value taken from green line in figure on the webpage. Figure can also be found in the IPCC 4th assessment ( <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf> ) Figure SPM.5, A1B scenario. This scenario corresponds to a world with balanced energy mix (yellow box on page 44 of the report). |
| avg\_temp\_warming  (global warming). Used in line 28 (26) of clima\_forcing.py (clima\_forcing\_da.py) | 6 C | https://doi.org/10.1029/2005GL024216  in abstract | A ratio for warming pole vs. warming earth has been estimated from the given temperature increases over period 1966-2003 as mentioned in the abstract:  0.203 C/0.097 C≈ 2. The pool warming is then estimated by multiplying this ratio with the global average warming on the previous line (i.e. 6 C = 2 x 3C). |