



About sense and nonsense of estimates of oceanic heat transport to or in the Arctic Ocean

Ursula Schauer and Agnieszka Beszczynska-Möller

Alfred-Wegener-Institut für Polar- und Meeresforschung, Climate Systems, Bremerhaven, Germany (ursula.schauer@awi.de)

While the concept of oceanic heat transport - or rather heat transport divergence – has been known since long time, it is often applied inaccurately. In many cases, so-called “heat transports” are computed, from both observational data or model simulations, across a partial section which means that the volume flow through such a section is not zero. In this case the “heat transports” depend entirely on the choice of the temperature scale. The consequences of such arbitrariness are demonstrated for the passages to the Arctic Ocean. To circumvent the arising difficulties stream tubes might be constructed for (pairs of) passages to define net zero volume flow boundaries. Limitations and weaknesses of this approach and consequences for observational strategies are discussed. In contrast to other oceans in the Arctic Ocean sea ice formation generates an additional problem for heat transport estimation that can hardly be solved.