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TRACMASS 7.0 - A Lagrangian trajectory code for atmosphere and ocean sciences

Aitor Aldama Campino[1], Kristofer Döös[1], Sara Berglund[1], Dipanjan Dey[1], Joakim Kjellsson[2,3], and Bror Jönsson[4]

[1]Stockholm University, Department of Meteorology, Stockholm, Sweden
[2]GEOMAR Helmholtz Centre for Ocean Research, Kiel, Germany
[3]Christian-Albrechts-Universitat zu Kiel, Kiel, Germany
[4]Plymouth Marine Laboratory, Plymouth, United Kingdom

The latest version of the **TRACMASS** trajectory code, version 7.0 will be presented. The latest version includes several new features, e.g. water tracing in the atmosphere, generalisation of the tracer handling, and improvements to the numerical scheme. The code has also become more user friendly and easier to get started with. Previous versions of **TRACMASS** only allowed temperature, salinity and potential density to be calculated along the trajectories, but the new version allows any tracer to be followed e.g. biogeochemical tracers or chemical compounds in the atmosphere.

TRACMASS calculates Lagrangian trajectories offline for both the ocean and atmosphere by using already stored velocity fields, and optionally tracer fields. The code supports most vertical coordinate systems, e.g. z-star, z-tilde, sigma, and hybrid sigma-pressure coordinates. Hence, **TRACMASS** supports a range of atmosphere and ocean models such as ECMWF IFS, NEMO, ROMS, MOM, as well as reanalysis products (e.g. ERA-5) or observations (e.g. geostrophic currents from AVISO satellite altimetry). The fact that the numerical scheme in **TRACMASS** is mass conserving allows us to associate each trajectory with a mass transport and calculate the Lagrangian mass transport between different regions as well as construct Lagrangian stream functions.

A short course on how to set up, configure and run the **TRACMASS** code will be given separately, **SC5.17**.