Scientific work at MPI in Hamburg in context with COADS

Ingo Jessel
Max-Planck-Institut für Meteorologie

Abstract

The work of several authors, done at the Max-Planck-Institut for meteorology in Hamburg, is summarized. A list of the particular contributions is given below:

Authors: Oberhuber and Wright
Motivation: Determination of derived fields for forcing an ocean model and providing of appropriate upper boundary conditions.
COADS variables used: S, A, C, U, V, R, W, P.
Other data: Rainfall analysis from Shea. Surface salinity from Levitus.
Results: Atlas by Wright of fields of mean winds, cloudiness and humidity at the surface of the global ocean. Atlas by Oberhuber of the budgets of heat, buoyancy and turbulent kinetic energy at the surface of the global ocean.

Authors: Zorita and Kharin
Motivation: Investigation of the ocean-atmosphere interaction in the North Atlantic area in winter to clarify if the anomalous SST does force the atmosphere or vice versa and what the influence is upon precipitation on the Iberian Peninsula.
COADS variables used: S, P.
Other data: Precipitation from the World Monthly Surface Station Climatology from NCAR.
Results: The North Atlantic SST variability can mainly be explained as a result of atmospheric forcing. Large scale North Atlantic SST anomalies and Iberian rainfall anomalies, which appear at the same time, are related indirectly to each other via the North Atlantic Oscillation.

Author: Luksch
Motivation: Can the large scale low frequency SST variability in the North Pacific be interpreted as a response to large scale wind anomalies?
COADS variables used: S, A, W, R, U, V, X, Y.
Other data: Climatological windstress from Hellermann and Rosenstein. Surface salinity and profiles of ocean temperature and salinity from Levitus.
Results: Observed SST anomalies can be reproduced by a model experiment in winter. The dominant process in producing wintertime SST tendencies is the anomalous latent and sensible heat exchange with the atmosphere.

Author: Jessel

Motivation: Investigation of the global equatorial ocean-atmosphere interaction to obtain the relative importance of the effect of local atmospheric fluxes on the SST.

COADS variables used: S, A, Q, R, W, U, V, X, P, C.

Results: Climatology of the equatorial SST with respect to local atmospheric forcing.