



Initialization methods and ensembles generation for the IPSL GCM

Sonia Labetoulle (1), Juliette Mignot (2), Eric Guilyardi (1), Sébastien Denvil (3), and Sébastien Masson (4)

(1) LOCEAN/IPSL/CNRS, Paris, France (sonia.labetoulle@locean-ipsl.upmc.fr), (2) LOCEAN/IPSL/IRD, Paris, France, (3) IPSL, Paris, France, (4) LOCEAN/IPSL/UVSQ, Paris, France

The protocol used and developments made for decadal and seasonal predictability studies at IPSL (Paris, France) are presented. The strategy chosen is to initialize the IPSL-CM5 (NEMO ocean and LMDZ atmosphere) model only at the ocean-atmosphere interface, following the guidance and expertise gained from ocean-only NEMO experiments. Two novel approaches are presented for initializing the coupled system. First, a nudging of sea surface temperature and wind stress towards available reanalysis is made with the surface salinity climatologically restored. Second, the heat, salt and momentum fluxes received by the ocean model are computed as a linear combination of the fluxes computed by the atmospheric model and by a CORE-style bulk formulation using up-to-date reanalysis. The steps that led to these choices are presented, as well as a description of the code adaptation and a comparison of the computational cost of both methods. The strategy for the generation of ensembles at the end of the initialization phase is also presented. We show how the technical environment of IPSL-CM5 (LibIGCM) was modified to achieve these goals.