



Characterization and variability of the main oceanic sources of moisture

R. Castillo Rodriguez, R. Nieto, L. Gimeno, and A. Drumond

University of Vigo, Environmental Physics Laboratory, Applied Physics, Ourense, Spain (rcastillo@uvigo.es)

Transport of water vapor in the atmosphere from regions of net evaporation to regions of net precipitation is an important part of the hydrological cycle.

The aim of this study is to track variations of atmospheric moisture along 10-days trajectories of air masses to identify where continental regions are affected by precipitation originating from specific oceanic regions. The proceeding was based on the method developed by Stohl and James 2004, 2005, which used the Lagrangian particle dispersion model FLEXPART v8.0 and reanalysis data ERA-40 from the European Centre for Medium-Range Weather Forecast (ECMWF). These source regions, selecting according to the largest values of divergence of the vertically integrated moisture flux are: India, North and South Pacific, North and South Atlantic oceans, Mexico-Caribbean, the Mediterranean, the Arabian, the Coral and the Red seas, as well as the Agulhas (in the waters surrounding South Africa) and the Zanzibar Current regions. And they were defined based on the threshold of 750 mm/yr.

We investigated the moisture sinks associated with each one of these evaporative sources for a period of 21 years (1980-2000) in a seasonal scale using correlations and the statistical mean. In addition, we characterized the influence of the El Niño-Southern Oscillation over the transport of moisture from the source regions selected with the composites technique from the month of June to the month of May over the years 1984-1985, 1988-1989, 1995-1996, 1998-1999, 1999-2000 in the Niña phase and 1982-1983, 1986-1987, 1991-1992, 1994-1995, 1997-1998 in the Niño phase.