



## **An exploratory analysis of the ENSO and NAO influence in sources and sinks in the wintertime water cycle from a back-trajectory analysis of atmospheric water vapor**

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We have checked the influence of ENSO and NAO in the sources and sinks of moisture by comparing the winter water cycle in “a-priori” selected areas during very different phases of these modes of variability (1999-2000 and 2000-2001 for Niña versus 2002-2003 and 2004-2005 for Niño; 2000-2001 and 2003-2004 for negative NAO versus 2001-2002 and 2002-2003 for positive NAO) and using a robust and contrasted Lagrangian method of diagnosis (Stohl and James [2004, 2005]). Our study uses the Lagrangian particle dispersion model FLEXPART [Stohl et al., 1998] and meteorological analysis data from the ECMWF to track atmospheric moisture along trajectories. In the work reported here we used the tracks of more than 1.3 millions of particles computed using ECMWF operational analysis available every six hours (00, 06, 12 and 18 UTC) with a  $1^\circ \times 1^\circ$  resolution. We traced (E-P) backwards/forwards from different areas of interest, including oceans and river basis, limiting the transport times to 10 days, which is the average time that water vapour resides in the atmosphere. All the particles residing over the target areas were identified every six hours and tracked backwards/forwards for 10 days. We calculated (E-P) on a  $1^\circ \times 1^\circ$  grid and averaged over the selected periods.