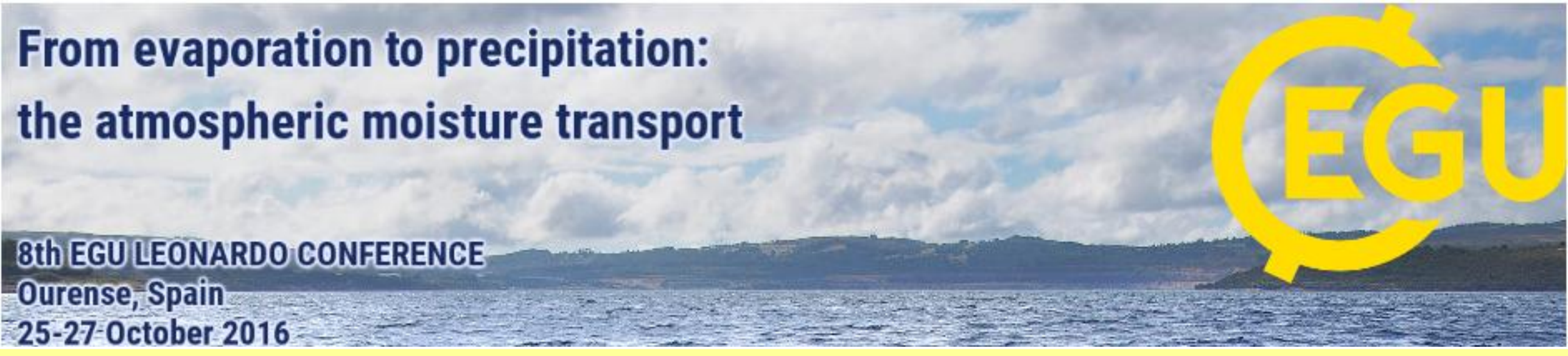

ANALYSIS OF CHANGES ON MOISTURE SOURCES CONTRIBUTIONS FOR ARCTIC REGION IN FUTURE CLIMATE SCENARIOS IN CMIP5

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INTRODUCTION

- Climate change on Arctic region: Arctic Amplification (increase on temperature) and the sea ice extent and snow cover extent decrease (Cohen at. al., 2014; Kwok and Rothrock, 2009);
- Climate change on Northern Hemisphere middle latitudes: extreme events (IPCC, 2014);

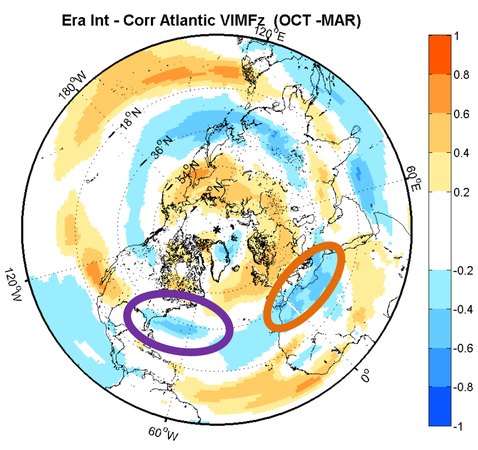
CHANGES IN MOISTURE TRANSPORT NH MIDDLE LATITUDES → ? → **CHANGES IN ARCTIC REGION**

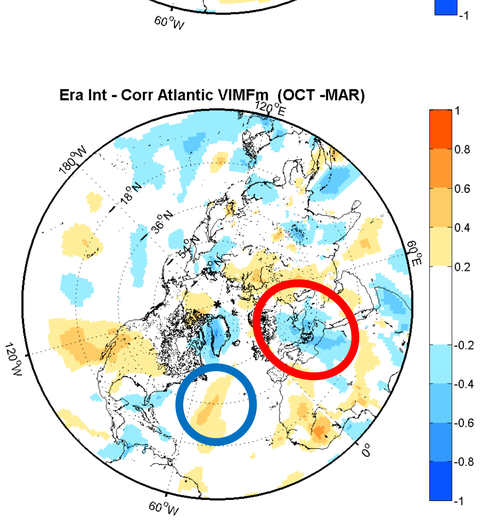
Zhang et al. (2012)

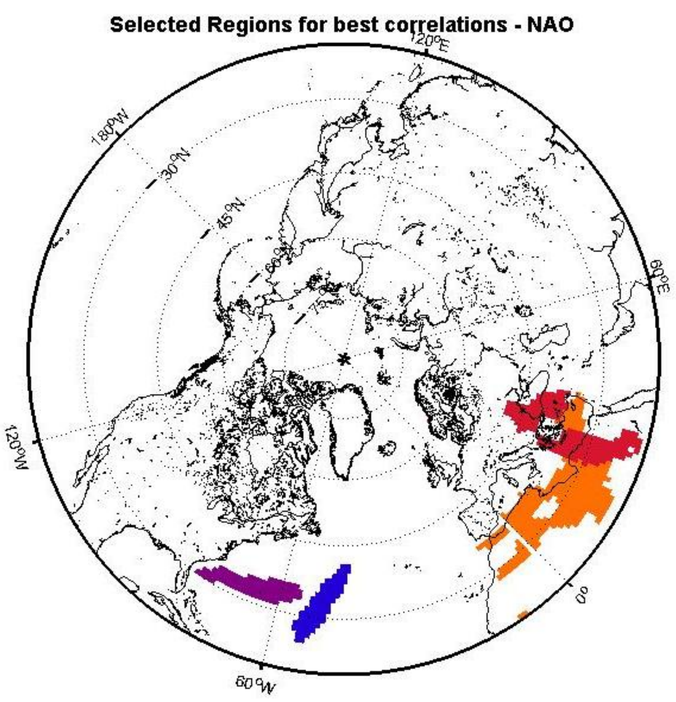
METHODOLOGY

- North Atlantic Ocean (NAO) is one of the main sources moisture regions to the Arctic (Gimeno et al, 2015);
- Contribution of NAO to Arctic precipitation using the Lagrangian Dispersion Particle Model FLEXPART for october-march 1980-2000(Ps);
- Selection of regions with significant correlations (r) between Ps and vertical integrated moisture fluxes (VIMF) in zonal and meridional directions (ERA Interim data);
- Analysis of changes in zonal and meridional vertical integrated moisture fluxes in two future scenarios (RCP4.5 and RCP8.5) for an ensemble of 22 CMIP5 Models in the period 2073-2096 in these regions.

RESULTS







Selected regions (**M1**, **M2**, **Z1**, **Z2**) with a significant correlation between Ps and VIMF fields for NAO source region

Region	r signal	RCP4.5 2073-2096 compared to 1980-2000	RCP8.5 2073-2096 compared to 1980-2000	Conclusion (source contribution)
M1	+	↑	↑	↑
M2	-	↓	↓	↑
Z1	-	↓	↓	↑
Z2	-	↑	↑	↓

CONCLUSIONS

- For both scenarios analyzed, the results suggest that the contribution for Arctic moisture by the regions located on North Atlantic Ocean, North Africa and Middle East enhanced;
- The increase in the moisture contribution is bigger in RCP8.5 scenario;
- This results may indicate an increase in moisture transport from these regions to Arctic.

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