on terrestrial climate records (like, for instance, rainfall statistics), then an estimate could be made of the frequency and strength of similar events in the past. It is nevertheless unlikely that these events generate anomalies that are strong enough to influence the overturning strength in the North Atlantic. Therefore, attempts to find correlations between occurrences of anomalous Leakage events and changes in the North Atlantic overturning circulation (e.g., Koltermann et al. 1999; Bersch et al. 1999) must be considered as showing little promise.

In light of the conclusion that the overturning circulation is rather sensitive to Agulhas Leakage, it is important to study the possible response of this Indian-Atlantic exchange in global warming scenarios. Since this exchange depends mainly on the position of the Subtropical Convergence and on the strength of the Agulhas Current, the focus should be laid on those features of the South Indian Ocean wind stress climatology that influence in particular these facets. It would be interesting to examine the suggestion whether feedbacks exist between the amount of Agulhas Leakage and the position of the line of zero wind-stress curl that may explain its relative stability (De Ruijter, personal communication).

The sensitivity estimate of the overturning strength to Agulhas Leakage could be refined by using more sophisticated models. As discussed in the former section, the use of mixed boundary conditions exaggerates the difference in damping time scales of thermal and saline anomalies, and more or less optimises the response of the overturning strength to the applied disturbances. Coupling the ocean model to a more active atmosphere may adjust the estimated sensitivity, probably to a somewhat smaller value. Furthermore, using more sophisticated ocean models, featuring a higher resolution and a better representation of physical processes (like inclusion of momentum advection, lower values of viscosity, or other mixing schemes), may yield an even more reliable estimate of the sensitivity.

Still an open question is how much Agulhas Leakage water ultimately participates in the overturning circulation. A part of this problem could be solved by studying the mixing processes that are involved in the decay of Agulhas Rings. Studying the path of drifters, deployed in newly shed Agulhas Rings, could also help in determining the ultimate fate of Agulhas Leakage water. Theoretical and model studies could help to identify the processes that control the amounts of thermocline and intermediate water that are drawn north for NADW renewal.

Currently, the MARE (Mixing of Agulhas Rings Experiment) project is in progress, aimed at understanding and quantifying the decay processes of Agulhas Rings. This project, a cooperation between the Universities of Utrecht and Cape Town, the Royal Netherlands Meteorological Institute (KNMI) and the Netherlands Institute for Sea Research (NIOZ), combines hydrographic surveys (the same Agulhas Ring will be visited three times), data assimilation techniques, regional and global modelling studies, and paleoceanographic research, to assess the impact of Agulhas Leakage for regional and global climate issues in the present and past. This will contribute to our understanding of the role of Agulhas Leakage in shaping Atlantic and global climate.

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