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# Cyclone-anticyclone asymmetry of geophysical large scale wakes in laboratory experiments

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Large scale flows are known to present an asymmetry between cyclones and anticyclones which favoures anticyclones. To study the impact of this asymmetry on vortex streets in a rotating shallow water layer, we performed laboratory experiments for various deformation radius, at the size of the obstacle and smaller. We then investigate a large range of parameters from the quasigeostrophic (small Rossby number and small surface deviation) to frontal geostrophic regime (small Rossby number and finite surface deviation).

When the deformation radius becomes smaller than the size of the obstacle, two surprising features are observed. The first one is the development of a double shear layer which remain stable several diameters behind the cylinder. This shear layer get destabilized far away from the obstacle and leads to the formation of a vortex street.

The second one is a strong asymmetry between cyclonic and anticyclonic vortices in the emerging vortex street. Cyclones tend to be more elongated and distorted whereas anticyclones remain circular. At the extreme cases (large surface deviation) only coherent anticyclones emerge in the wake.

This has for consequence to increase the Strouhal number largerly beyond its value at those Reynolds in classical von Karman streets. Finally we found that the parameter which control the asymmetry and the increase of Strouhal number is the relative surface deviation.