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Intrinsic variability of oceanic flows above topography anomalies

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We describe a stochastic variability mechanism which is genuinely internal to the ocean. The key ingredients are the concomitant existence of sufficiently large bottom topography anomalies and geostrophic eddies produced by mixed barotropic-baroclinic instabilities. This configuration leads to the formation of a robust but highly variable vortex above the topography anomaly. The vortex dynamics integrates the white noise forcing of oceanic eddies into a red noise signal for the large scale volume transport of the vortex. A cut-off frequency for this integration is set by bottom friction. The strong interannual fluctuations of the transport of the Zapiola anticyclone (about 100 Sv) in the Argentine basin are argued to be due to such eddy-driven stochastic variability.