

## ***Interactive comment on “Wind increase above warm Agulhas Current eddies” by M. Rouault et al.***

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We agree that the original findings of this new study with respect to the previous ones could be better outlined in the paper. However

1) This is one of the few study that gives real instantaneous values of wind speed increase to due SST increase across a front and the first that includes some extreme values, most other studies, if not all others studies, filter the wind and SST data and do not provide instantaneous values .

2) Our study is one of two studies that consider strong SST gradients or SST perturbation in eddies presenting a 1 C to 6 C compared to surrounding water. Most other studies consider small SST gradient or perturbation (between -1C and 1 C or -1C/100 km and 1C/100km). We have established a database of 800 case of wind increase above eddies who present extreme SST perturbation of 1 C to 6 C.

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3) It is the only study that shows that the increase in wind speed is actually not occurring all the time but 30 % of the time. It is an important result. Former studies tend to suggest the increase should occur at all time.

4) Most important, this is the first study stating clearly that there is no linear relationship between SST perturbation and wind increase for strong gradient. This is the first study which openly challenges most other studies that proposed that there is a linear relationship between SST perturbation wind, wind stress and wind stress curl increase.

5) We also propose a few theoretical considerations on why this linear relationship does not occur.

6) Far for being descriptive, we have established a database of 2500 collocated values of wind speed increase, SST perturbation or SST gradient and sea level anomaly encompassing all seasons for a period of two years available on request on a Matlab format.

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