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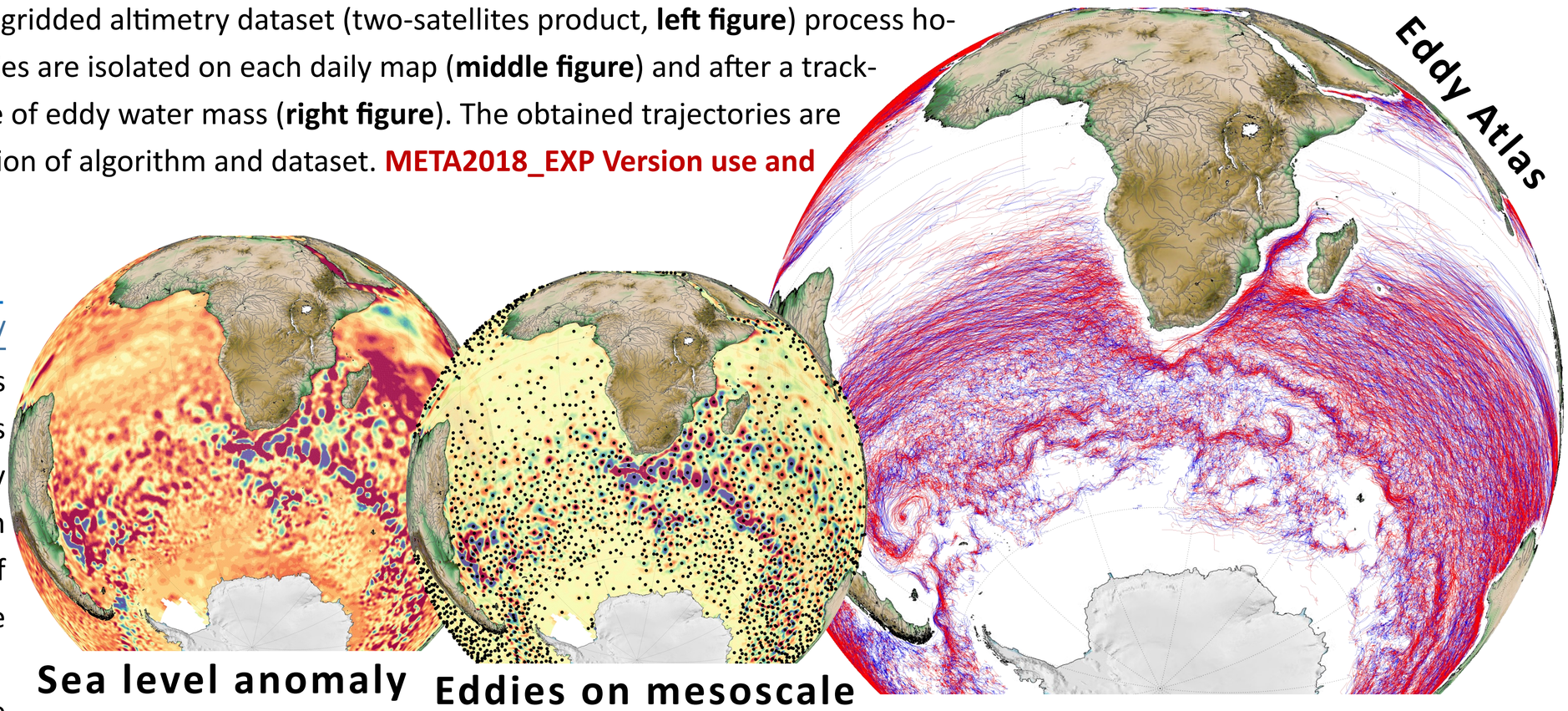
A NEW 25-YEAR MESOSCALE EDDY TRAJECTORY ATLAS ON AVISO

This eddy trajectory atlas, is based on a gridded altimetry dataset (two-satellites product, **left figure**) process homogeneously on the whole period. Eddies are isolated on each daily map (**middle figure**) and after a tracking process is applied to study the move of eddy water mass (**right figure**). The obtained trajectories are the result of choices and also imperfection of algorithm and dataset. **META2018_EXP Version use and explain in this poster is preliminary.**



META DATASET INFOS

META2017 is available on https://www.aviso.altimetry.fr. All data is stored in one file, which contains several field like previous atlas: eddy radius, eddy amplitude, eddy rotation speed, rotation type, time of observation, ID of track and some other field.

Each year, one or two updates will be performed

META2018_EXP is available in experimental product of aviso, all feedbacks are welcome.

In **META2018_EXP** one field has been added, which flag non observed eddies (field name is observed_flag), which allow to have time regular sampling of path, all the data of this flagged value are computed by linear interpolation

For more information on input dataset see :

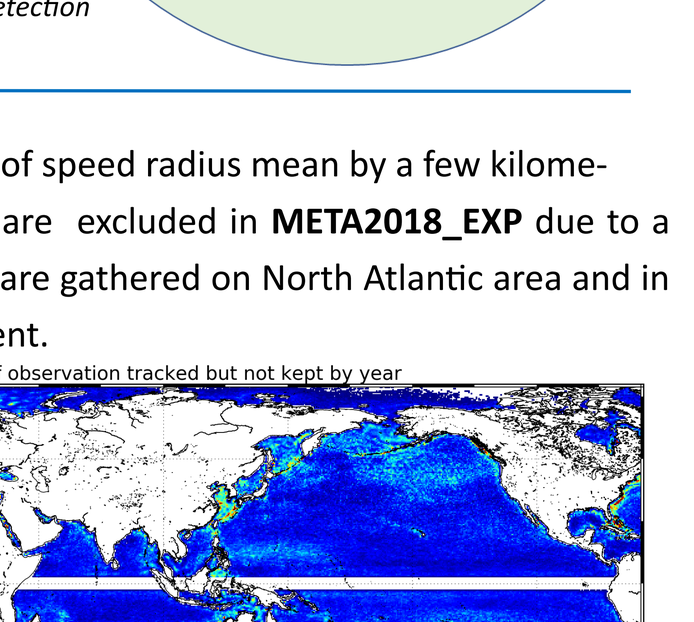
Go to META2018_EXP

A new product based on reprocessed C3S dataset will be released with major change on tracking process.

A Following the reprocessing exercise of 2018 C3S (formely known like AVISO two-sat product)sea level products, it is interresting to reprocess the mesoscale eddy trajectory atlas.

B Preprocessing filter used to isolate mesoscale process are modified to replace our previous filter specify in degrees by a second order lanczos filter specify in kilometer, which must provide a more coherent field.

C Geographic and time process of tracking are modified to solve or reduce two known problems of our process. First, we could observe spurious move on eddy path due to a too permissive research area. Secondly, eddy tracks are some times lost due to identification threshold criteria and/or map quality. To manage these two problems we studied statistic of eddy moves to have a better definition of research area. Also we introduce a method to track eddies even with a short period of non-detection.



R is the radius of research area between day and day +1. If we don't have association, research area is extended of 33 % each day. 3 consecutive non-detection are tolerated.

VALIDATION

No major change is observed on evolutions **A** and **B** (datasets and preprocessings). There is just a slight increase of speed radius mean by a few kilometers. Main changes come from tracking evolutions.

1 Each day 7 % more eddies are detected, despite the reduced research area, with regional disparities. Red color shows area with strong increase of tracked eddies.

2 We have more shorter tracks [0-200] days of lifespan. Tracks longer than 200 days in **META2017** contain jumps bigger than 80km/day in the middle of tracks, dashed lines are values for **META2018_EXP**.

3 Eddy tracks, that are excluded in **META2018_EXP** due to a too short period, are gathered on North Atlantic area and in Circumpolar current.

4 Density of eddies detected, but never tracked