ECV consistency

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Outline of work

- Assess cross-consistency of marine ECVs (ocean colour, SST, sea level, sea ice conc.)

- Assimilation experiments with physical-biogeochemical ocean model (FOAM-HadOCC)

- Assess now using current product versions
  - OC: V2
  - SST: V1.1
  - SL: V1.1
  - SIC: OSI SAF

- Repeat (in part) at end of Phase 2 using final Phase 2 releases

Experiments

- Statistical assessment of observations
- Model runs assimilating ECVs individually and in combination
  - 1° : 1998-2010
  - ¼ °: 2008-2010
- Assess consistency of spatial features, temporal variability, and climate indices

Results

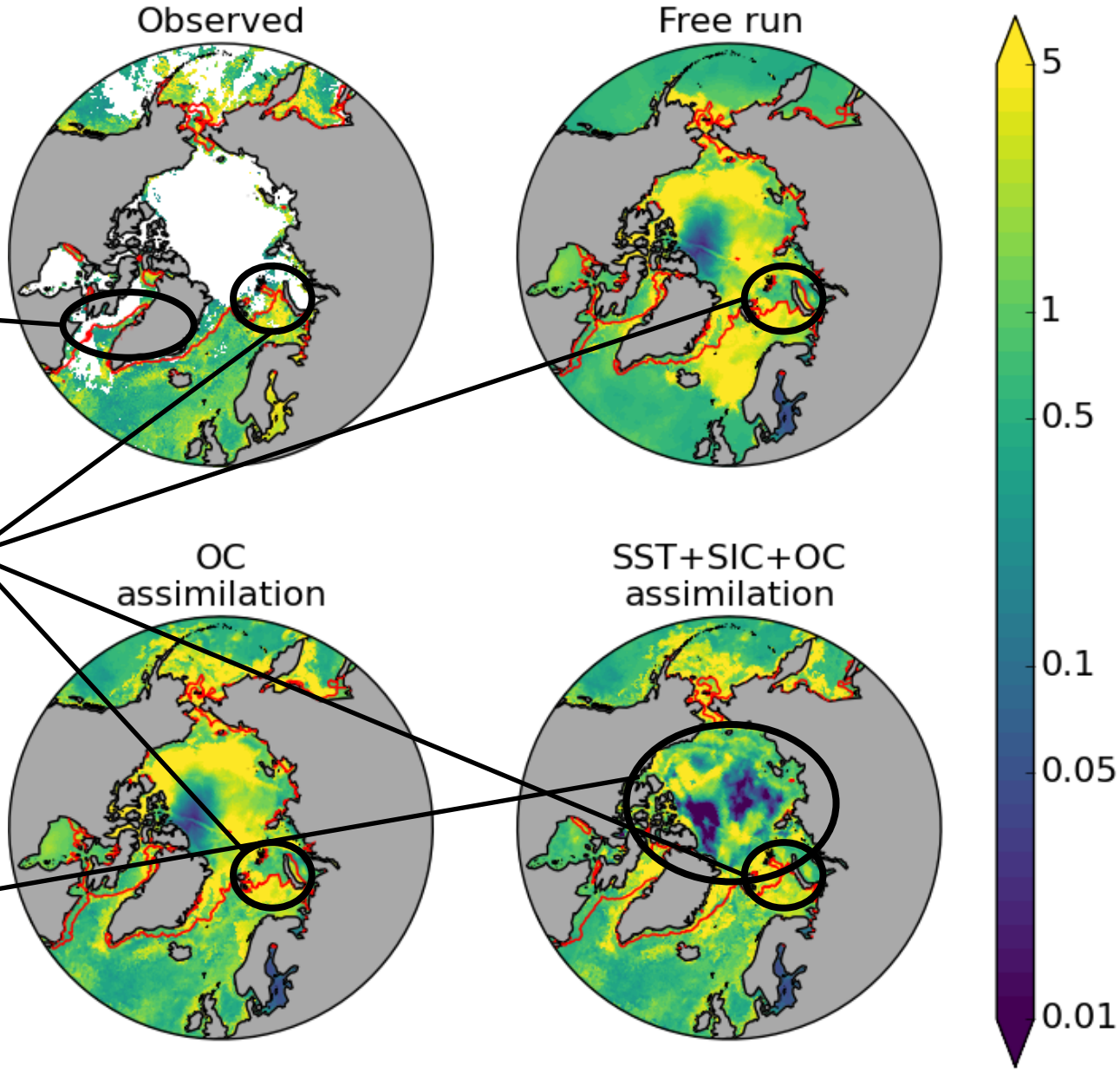
- Results shown here are illustrative for an example day/period, and may not be fully representative
- Full results will follow over coming months
- Will include inter-comparison with ECMWF

Chlorophyll (mg m^{-3}) and ice edge (15%) – 01 June

Good match of OC coverage edge and SIC edge (exact match not expected in these plots)

Best chlorophyll detail around ice edge when OC and SIC assimilated

More chlorophyll features in ice zone when SIC assimilated



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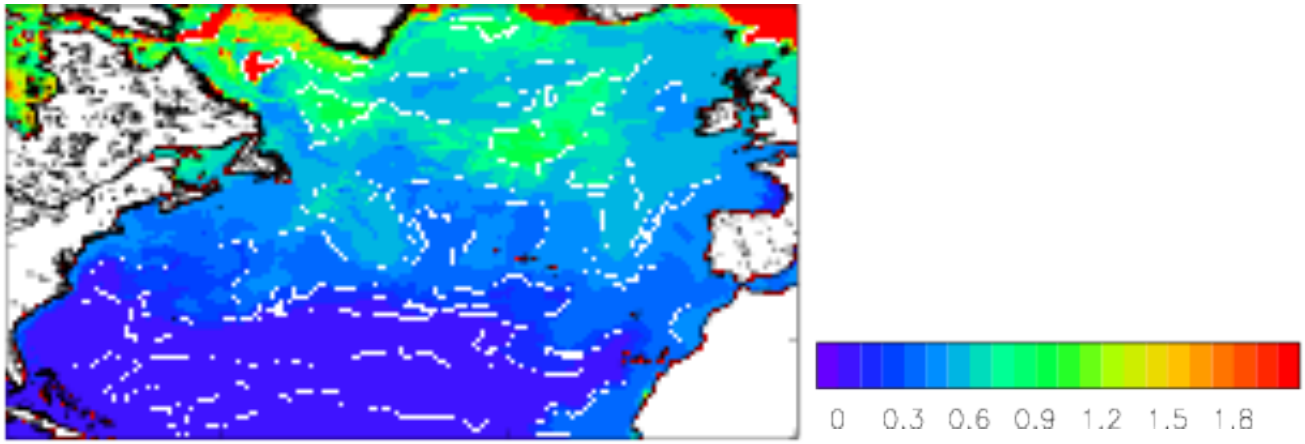
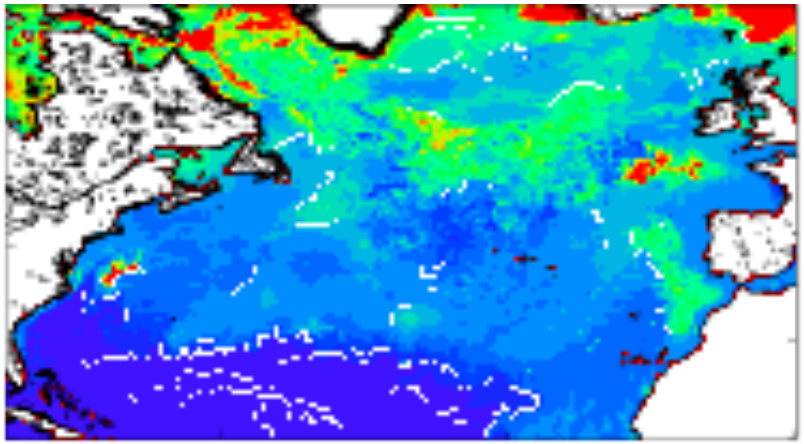
Chlorophyll fronts - 01 June 2009

Automatic detection using SIED (Cayula and Cornillon, 1992)

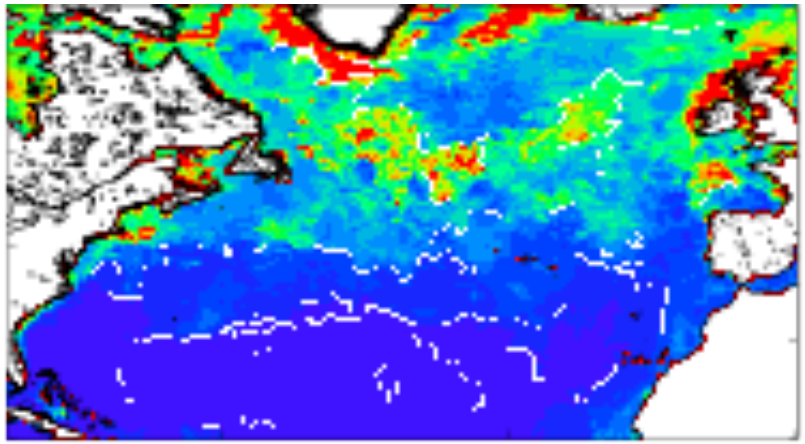
More features with SST assim, broadly better matching OC assim, suggesting consistency of dynamic features

Free run





Assimilating SST



Assimilating OC

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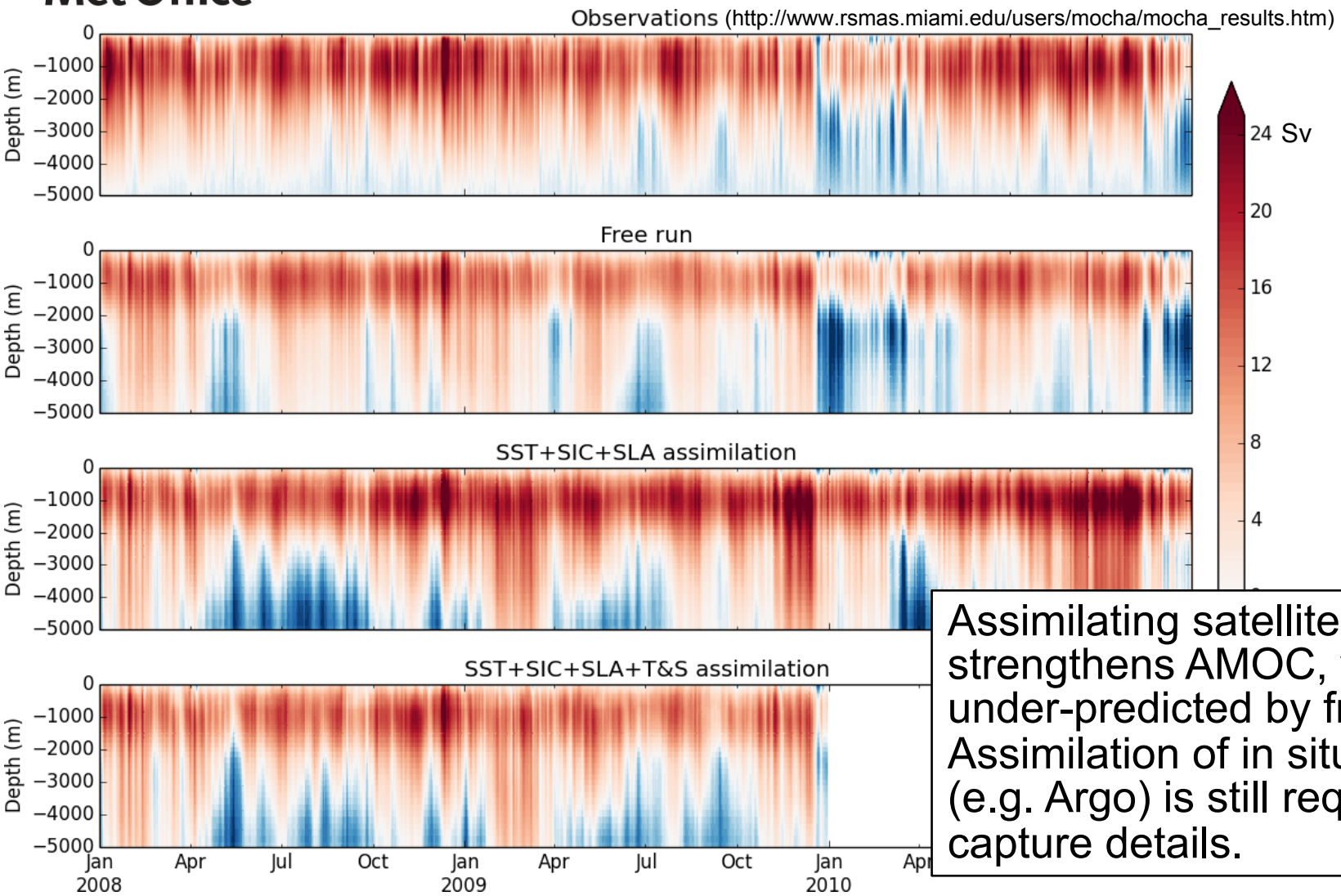
Atlantic Meridional Overturning Circulation at 26°N



Assimilating satellite ECVs strengthens AMOC, which is under-predicted by free run. Assimilation of in situ profiles (e.g. Argo) is still required to capture details.

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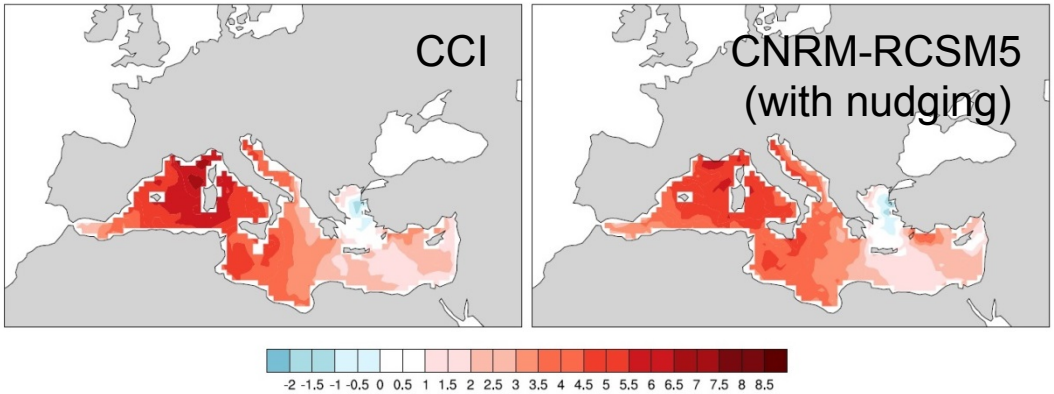
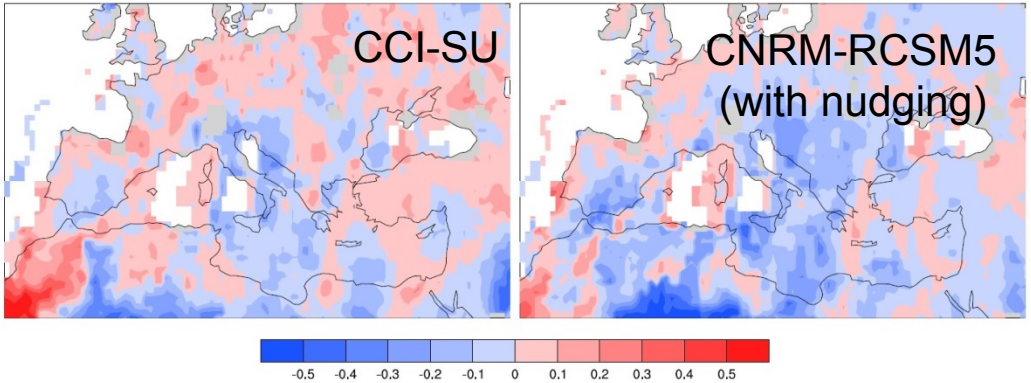
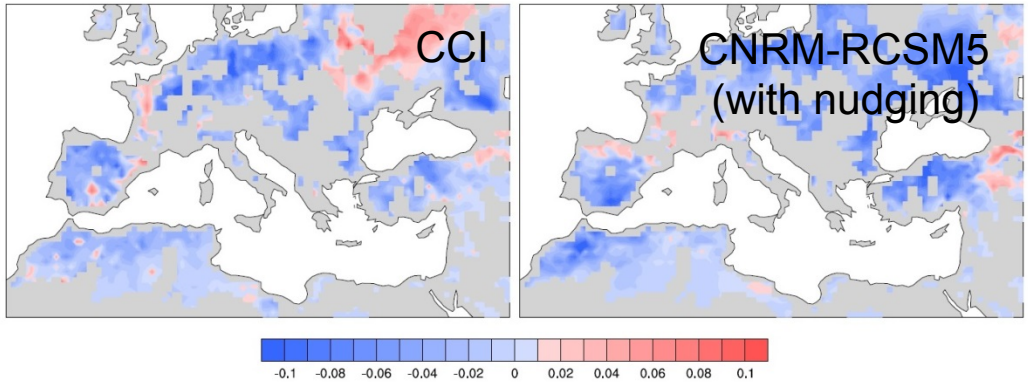
Mean differences between July and June 2006 (heat wave over the Western Mediterranean area)

Sea Surface Temperature



Aerosol Optical Depth



Soil Moisture