



The EU-GDAC and related SST activities at Ifremer

Jean-François Piollé, Cédric Prevost,
Emmanuelle Autret, Bertrand Chapron



OSI SAF products

MSG/Seviri L3P	Atlantic	hourly	0.05 deg
GOES-13 L3P	Atlantic	hourly	0.05 deg
METOP-A/AVHRR L2P	Global	3-min granules	1km
METOP-A/AVHRR L3P GLOB	Global	12-hourly	0.05 deg
METOP-A/AVHRR L3P NAR	Atlantic North-East	12-hourly	2km
METOP/IASI	Global	3-min granules	12-40 km

MyOcean products (dissemination unit to be transferred to CNR)

L4 Atlantic North-East (Ifremer)	Atlantic North-East	daily	0.02 deg
L3 Atlantic North-East mono and multi-sensor (Meteo-France)	Atlantic North-East	daily	0.02 deg
L3 Global multi-sensor (Ifremer)	Global	daily	0.1 deg
L4 Baltic (DMI)	Baltic	daily	0.02 deg
L4 Arctic (Met No)	Arctic	daily	0.02 deg

Medspiration products (Ifremer)

L4 ODYSSEA Regional	Mediterranean, Agulhas, Brazil, Great Barrier Reef	daily	0.02 deg
L4 ODYSSEA Global	Global	daily	0.1 deg



OSI SAF products

MSG/Seviri L3P	Atlantic	hourly	0.05 deg
GOES-13 L3P	Atlantic	hourly	0.05 deg
METOP-A/AVHRR L2P	Global	3-min granules	1km
METOP-A/AVHRR L3P GLOB	Global	12-hourly	0.05 deg
M	All pushed to GDAC, GDS2.0 (or close)		
M			
M			
L4 Atlantic North-East (Ifremer)	Atlantic North-East	daily	0.02 deg
L3 Atlantic North-East mono and multi-sensor (Meteo-France)	Atlantic North-East	daily	0.02 deg
L3 Global multi-sensor (Ifremer)	Global	daily	0.1 deg
L4 Baltic (DMI)	Baltic	daily	0.02 deg
L4 Arctic (Met No)	Arctic	daily	0.02 deg

Medspiration products (Ifremer)

L4 ODYSSEA Regional	Mediterranean, Agulhas, Brazil, Great Barrier Reef	daily	0.02 deg
L4 ODYSSEA Global	Global	daily	0.1 deg



- Many other products collected and made available from O&SI SAF (historical products), US-GDAC, LTSRF, CCI-ESA,...
- Full archives available through FTP, OpenDAP, cloud access (limited)
- <http://cersat.ifremer.fr/data/collections/ghrsst>
- Ifremer not completely a GDAC (comprehensiveness) but more than a RDAC
 - Does not fit into GHRSSST model or GHRSSST model obsolete or does not take advantage of multiple and redundant dissemination sources

- Implementation of tools for SST related activities
 - Data search and access (Naiad)



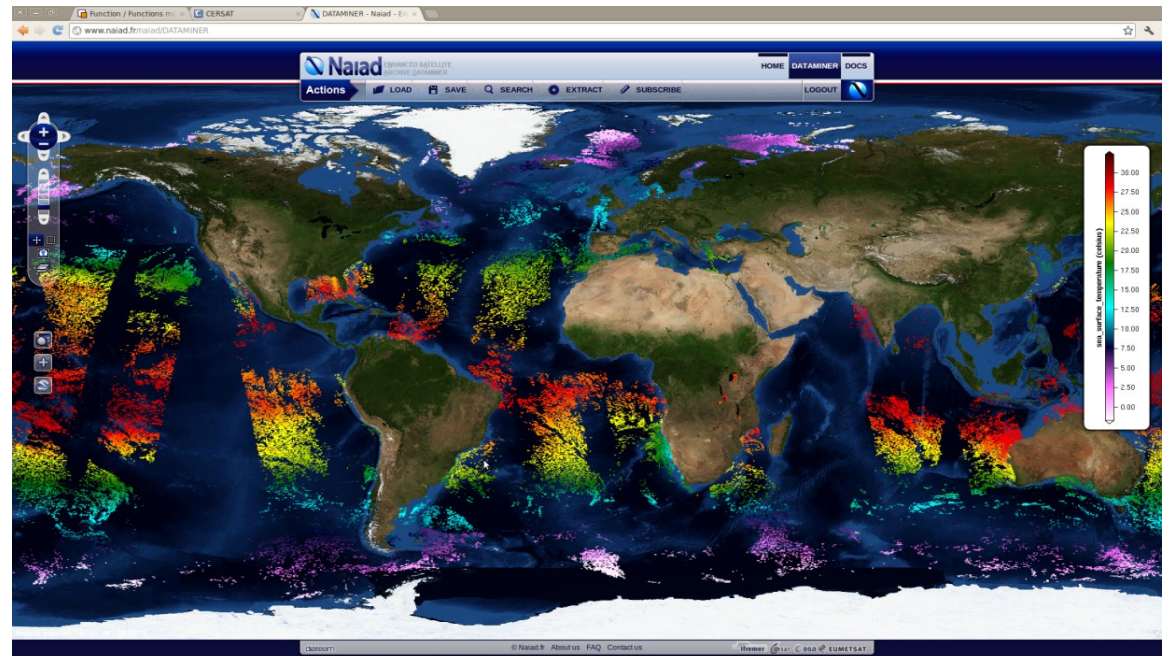


Naiad tool allows L2P selection, extraction and visualisation

- ✓ METOP-A AVHRR L2P
- ✓ METOP-A AVHRR L3P NAR
- ✓ METOP-A AVHRR L3P GLOB
- ✓ NOAA-19 AVHRR L3P NAR
- ✓ NPP VIIRS L3P NAR
- ✓ GOES-13 L3C
- ✓ SEVIRI L3C
- ✓ METOP-A IASI (ongoing)

- ✓ ...

<http://naiad.ifremer.fr>



MENU
Products
Data collections
Tools and services
▸ Calypso
▸ Indicators
▸ Match-up databases
▸ Naiad
▸ Quicklooks
▸ Nausicaa

Select a list of orbit files on space/time criteria



The following script is intended to retrieve the list and urls of the orbit files of a given product matching a user defined area and time period of interest.

The getgranulelist script

This script is written in python language and uses standard packages. It has been tested with python2.6 and python2.7, slight changes may be necessary for a different version. The main task of the script is to build the URL of the query to the webservice offering this operation and then calling this URL, so it can be very easily adapted to any of your favorite language. An example of such a call is given below. In case of any issue, feel free to [contact us](#).

Please download the script [here](#).

Usage

```
Usage: getgranulelist [options]
Options:
  -h, --help                show this help message and exit
  -p identifier, --product=identifier
                           collection (dataset) to search for granules
  -d date,date, --date=date,date
                           start and end dates for which to the search the dataset granules, expressed as <start,stop> with
                           the format YYYY-MM-DD
  -b minLat,maxLat,minLon,maxLon, --bbox= minLat,maxLat,minLon,maxLon
                           geographical selection frame, expressed as <minLat,maxLat,minLon,maxLon> with longitudes (bet
                           ween -180 and 180) and latitudes (between -90 and 90)
  -l, --list                list some of the available products
  -u, --url                list also the available URLs for each product
```

Example

Example 1

getting orbit files (L2P) for geophysical product from ERS-1 altimeter (product id = GW_L2P_ALT_ERS1_GDR, refer to the product description pages or use *getgranulelist --list* to see available products), in a 60S-60N 100W-0E geographical area on 1st February 1994. The *--url* option will display the corresponding file FTP link in addition to the file name.

```
getgranulelist --product=GW_L2P_ALT_ERS1_GDR --date=1994-02-01T00:00:00,1994-02-02T00:00:00 --bbox=-60.,60.,-100.,0., --url
```



Usage: getgranulelist [options]

Options:

- h, --help show this help message and exit
- p identifier, --product=identifier
collection (dataset) to search for granules
- d date,date, --date=date,date
start and end dates for which to the search the
dataset granules, expressed as <start,stop> with each
date as <YYYY-MM-DDThh:mm:ss>
- b minLat,maxLat,minLon,maxLon, --bbox= minLat,maxLat,minLon,maxLon
geographical selection frame, expressed as
<minLat,maxLat,minLon,maxLon> with longitudes (between
-180 and 180) and latitudes (between -90 and 90) in
degrees (ex: --bbox=-80/80/-180/180)
- l, --list list some of the available products
- u, --url list also the available URLs for each product
- x, --xml format result in XML
- i, --local provides internal local path



```
>> getgranulelist -l
```

Available products

```
-----  
ASCAT-A-L2-12_5km  
ASCAT-B-L2-12_5km  
ASCAT-B-L2B-050  
ASCATL2B-050  
AVHRR_SST_METOP_A_GLB-OSISAF-L3C-v1  
AVHRR_SST_METOP_A_NAR-OSISAF-L3C-v1  
EUR-L3P-NAR_AVHRR_NOAA_19  
GOES13-OSISAF-L3C-v1  
SEVIRI_SST-OSISAF-L3C-v1-MSG1  
SEVIRI_SST-OSISAF-L3C-v1-MSG2  
SEVIRI_SST-OSISAF-L3C-v1-MSG3  
VIIRS_SST_NPP_NAR-OSISAF-L3C-v1  
EUR-L2P-AVHRR_METOP_A  
UPA-L2P-ATS_NR_2P  
JPL-L2P-MODIS_A  
NAVO-L2P-AVHRR19_G  
NAVO-L2P-AVHRR19_L  
QSCATL2B  
...
```



```
>> getgranulelist --product=EUR-L2P-AVHRR_METOP_A --date=2014-02-01T00:00:00,2014-02-02T00:00:00 --bbox=40.,60.,-20.,0. --url
```

```
QUERYING..... http://www.ifremer.fr/naiad/naiad/services-2.3.0/index.php?method=GetListOfGranules&AUTHENTICATION=guest&TIME=2014-02-01T00:00:00/2014-02-02T00:00:00&COLLECTION=EUR-L2P-AVHRR_METOP_A&BBOX=-20.,40.,0.,60.&URL=true&PUBLIC=true
```

```
http://www.ifremer.fr/opendap/cerdap1/ghrsst/l2p/metop-a/avhrr/osisaf/data/2014/032/20140201001903-OSISAF-L2P_GHRSSST-SSTsubskin-AVHRR_SST_METOP_A-sstmgr_metop02_20140201_001903-v02.0-fv01.0.nc  
ftp://c1f2a8:top99tip@eftp.ifremer.fr/cersat-rt/project/osisaf/data/sst/l2p/avhrr_metop_a/2014/032/20140201001903-OSISAF-L2P_GHRSSST-SSTsubskin-AVHRR_SST_METOP_A-sstmgr_metop02_20140201_001903-v02.0-fv01.0.nc.bz2
```

```
...
```

- Implementation of tools for SST related activities
 - Data search and access (Naiad)
 - Cal/Val (intercomparison and match-up databases) : felyx



- Implementation of tools for SST related activities
 - Data search and access (Naiad)
 - Cal/Val (intercomparison and match-up databases) : felyx
 - Analytics (see DAS-TAG session)



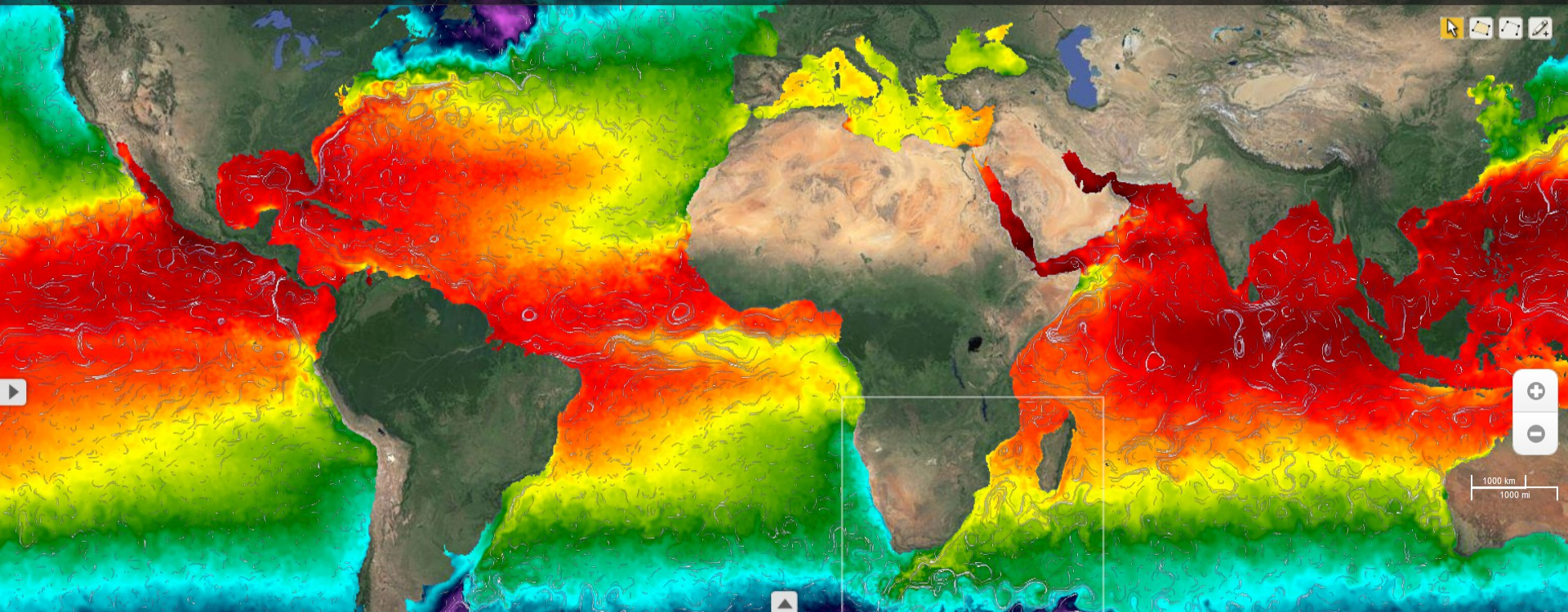
- Implementation of tools for SST related activities
 - Data search and access (Naiad)
 - Cal/Val (intercomparison and match-up databases) : felyx
 - Analytics (see DAS-TAG session)
 - Visualization (Calypso/Syntool) :
<http://ovl.oceandatalab.com>



Ocean Virtual Laboratory

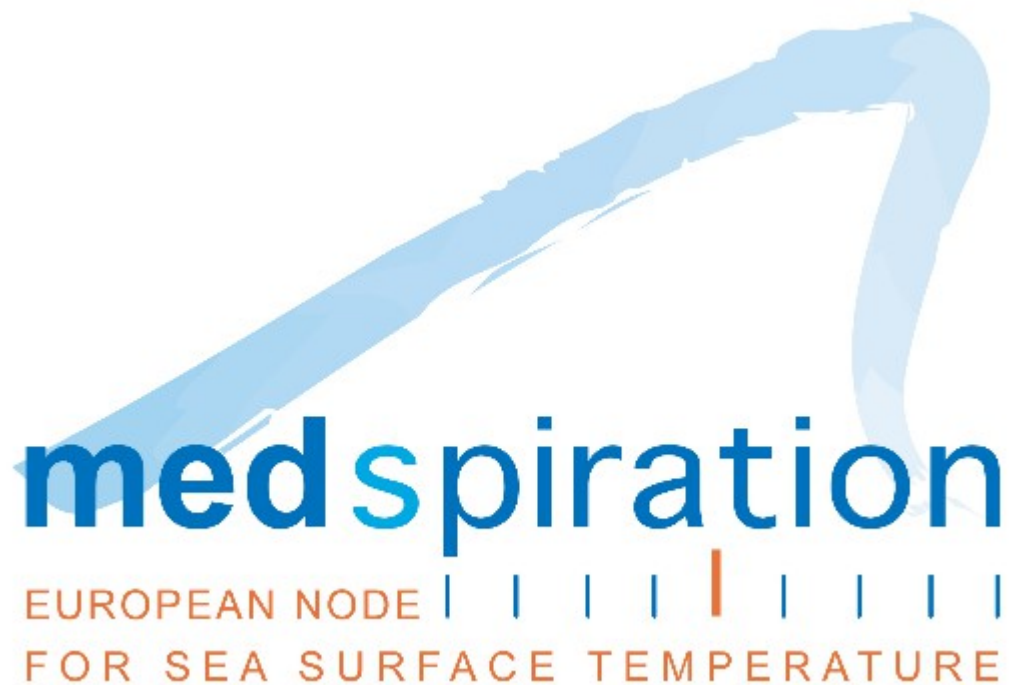
Products Hotspots Share

Settings About Help Feedback



1x Daily 3-Day Weekly 3 dataset(s) -20.04°, -33.65°





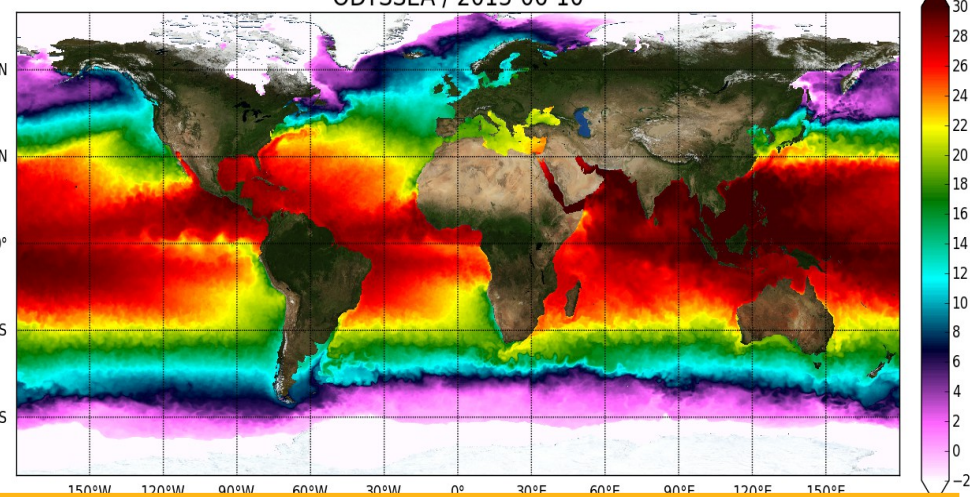
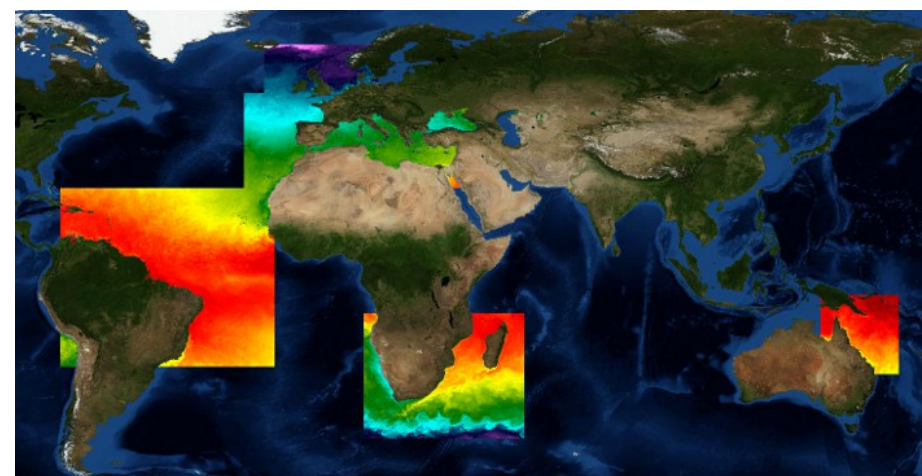
TEN YEARS GONE



- ✓ Medspiration was the first operational component of GHRSSST system (early GDS version, data routine delivery in NRT, SSES estimation, ...) - test bed for GHRSSST
- ✓ Implemented initial sets of resources such as open multi-sensor match-up databases and HR-DDS system
- ✓ The system was implemented in 6 months (automated real-time processing framework, processing chains for L2P and L4)
- ✓ Helped to bring Envisat data to end users!

- ✓ L2P for Envisat, NOAA and MSG satellites
- ✓ Ultra-high resolution (2km), daily, gap free, multi-sensor merged maps of SST in support to user requests, available the next day before 12:00 :
- ✓ Mediterranean Sea, reprocessed since 2006 (being extended to 2001, then 1991)
- ✓ South-Africa,
- ✓ N-E Australia,
- ✓ E Tropical Atlantic (Brazil)

ODYSSEA / 2013-06-10



Access : Data are accessible through FTP, OpenDAP, WMS
Static and dynamic visualisation available
Details at : <http://www.medspiration.org>

- Difficult to track down usage of the data – citation of data sources difficult when not supported by scientific publication
 - Can DOIs help improve this ? (DAS-TAG question)



Thinking strings: Additional evidence for personal ornament use in the Middle Stone Age at Blombos Cave, South Africa

Marian Vanhaeren^{a,*}, Francesco d'Errico^{a,b}, Karen L. van Niekerk^c, Rudolph M. Erasmus^d

^a Université Bordeaux 1, CNRS UMR 5199 PACEA, Equipe Préhistoire, Paléoenvironnement, Patrimoine, Avenue
^b Institute for Archaeology, History, Culture and Religious Studies, University of Bergen, Østysstgata 3, N-500
^c Institute for Human Evolution, University of the Witwatersrand, Johannesburg, South Africa
^d School of Physics, University of the Witwatersrand, Johannesburg, South Africa

ARTICLE INFO

Article history:
 Received 25 November 2011
 Accepted 1 February 2013
 Available online 14 March 2013

Keywords:
Nassarius kraussianus
 Beadwork
 Symbolism
 Morphometry
 Use-wear
 Still Bay

ABSTRACT

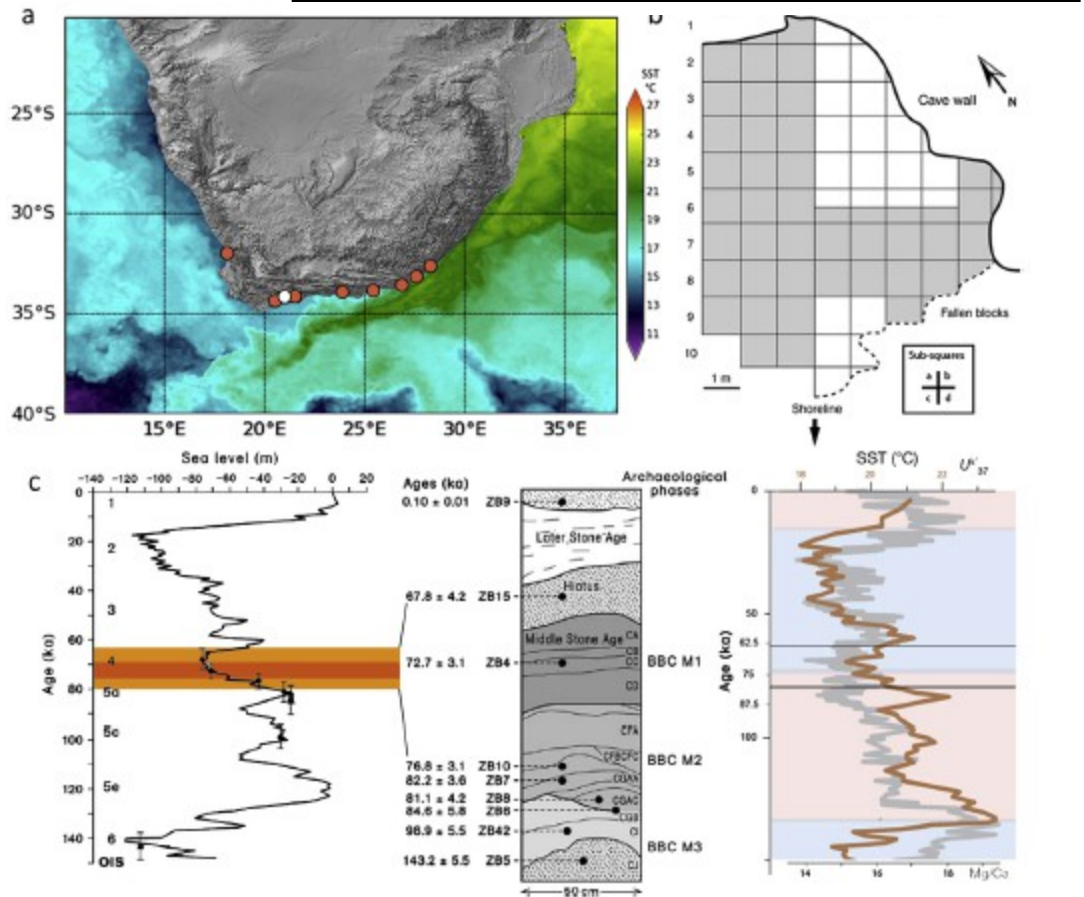
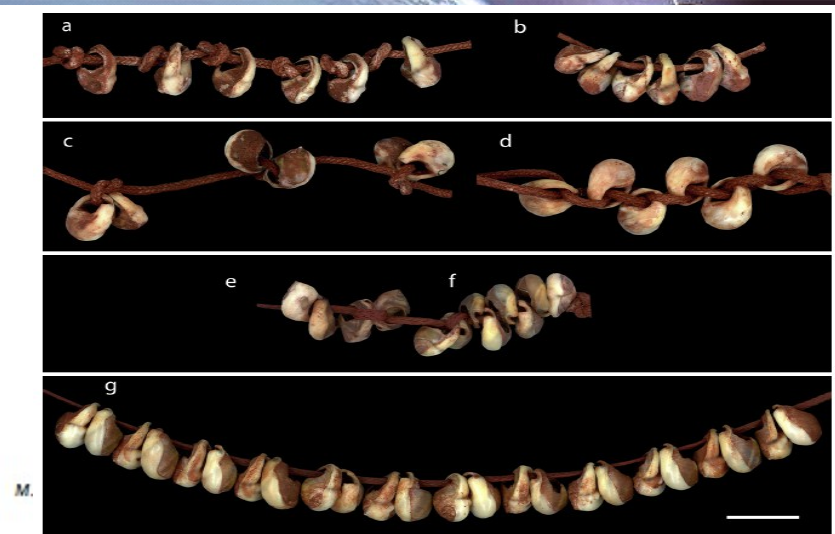
Here we report on newly identified beads and, in particular, on a cluster of 24 perforated single beadwork. Contextual information, unpublished beads and those recently found, allow us to reconstruct the most probable way reveal unexpected regularities but also variations resulting from changes in beadwork manufacture document one of the first examples of changing symbolic material culture.

Research background

In the past decade, personal ornaments have played a central role in the debate on the origin of behavioural modernity and language (Ambrose, 1998; McBrearty and Brooks, 2000; Kuhn et al., 2001; Henshilwood and Marean, 2003; d'Errico, 2003; d'Errico et al., 2003; Wadley, 2001, 2003; Vanhaeren, 2005; Chase, 2006; Kuhn and Stiner, 2006, 2007; White, 2007; Zilhão, 2007; Botha, 2008; Klein, 2008; Henshilwood and Dubreuil, 2009; d'Errico and Vanhaeren, 2007, 2009). Beads represent a behaviour specific to humans whereby standardized items are displayed on the physical body to project symbolic meaning that can be interpreted by members of the same or other groups that share a common culture. For this reason, early instances of bead use are generally regarded as evidence for the existence of complex communication systems (Henshilwood and Dubreuil, 2009, 2011; but see: Botha, 2008; Wynn and Coolidge, 2007).

Until recently, it was thought to occur with the Aurignac (Taborin, 1999; now accepted in North Africa, use in Europe 2008). Blombos Cave (Vanhaeren et al., 2009), a Middle Stone Age site from the southern border of the Cape Province, South Africa, has yielded a large number of personal ornaments made from ostrich eggshells, a Mediterranean species from the Aterian (Vanhaeren et al., 2009). The buried site is located on the southern border of the Cape Province, South Africa.

* Corresponding author.
 E-mail addresses: m.vanhaeren@pacea.u-bordeaux1.fr (M. Vanhaeren), f.derrico@pacea.u-bordeaux1.fr (F. d'Errico), karen.niekerk@ahkr.uib.no (K.L. van Niekerk), christopher.henshilwood@ahkr.uib.no (C.S. Henshilwood), rudolph.erasmus@wits.ac.za (R.M. Erasmus).



- Difficult to track down usage of the data – citation of data sources difficult when not supported by scientific publication
 - Can DOIs help improve this ? (DAS-TAG question)
- Medspiration project has supported several studies and field works : migration of sharks in South-America (dedicated product), climate change in small and medium Mediterranean islands (time series), mortality events of gorgones (series of environmental data),...
 - Required tailoring data, pre-processing, indicator generation rather than “raw” data
 - More advanced products or tools are needed by some communities (biology) : analytics, visualization, time series, trends, statistics,...must be easy to do
 - These must be associated with the existing large GDAC/RDAC archives => lively and dynamic archives, remote processing in a seamless way for the user



- Some datasets exist at US-GDAC and not at EU-GDAC, and *vice versa*. Some are more complete (or stopped) at one of the GDACs.
- it seems that generally more attention and care is paid to close national partners (existing agreements and partnerships, proximity,...)
- Some datasets can only be distributed by RDACs, not third party (data policy)
- Too many L3 and L4 product exist and no selection can be made by the GDAC (this has to be done by the user community) but for its own usage or interest or partnership
- No funding is secured for long-term GDAC operation

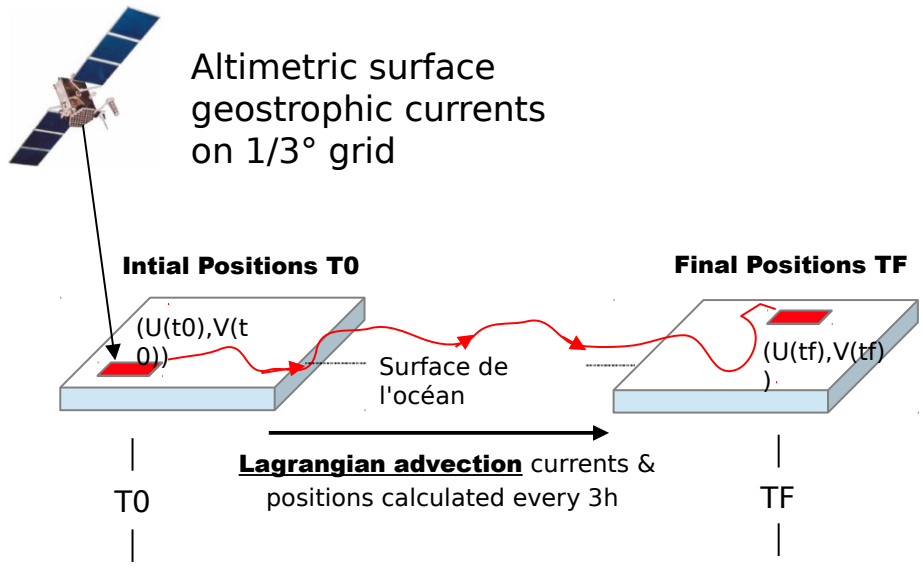
This makes the current concept of GDAC somewhat obsolete or at least inefficient

- Should be replaced with a system seemingly centralized but physically distributed
- Datasets stored physically at different (and eventually multiple) data centres (tier storage, peer-to-peer, master repository of links, ...)
- Would make the system more robust, more sustainable, and more comprehensive
- Focus on crowd sourcing and analysis tools to build data assessment and selection knowledge

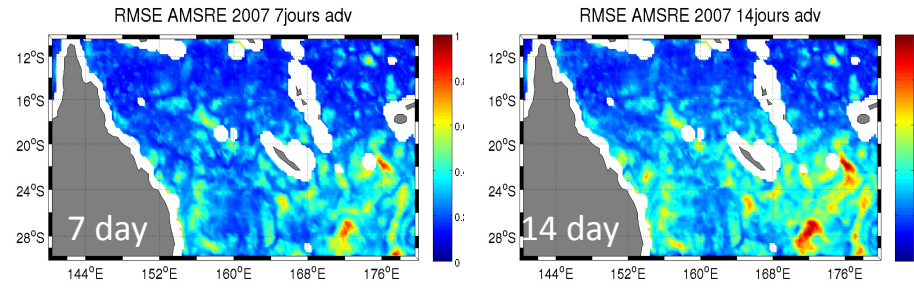
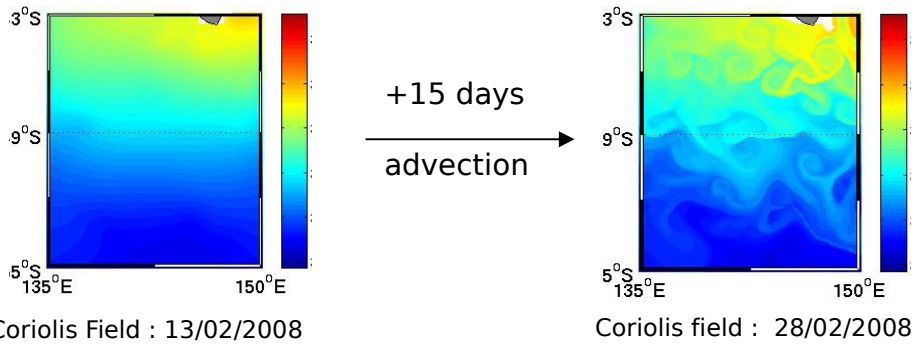
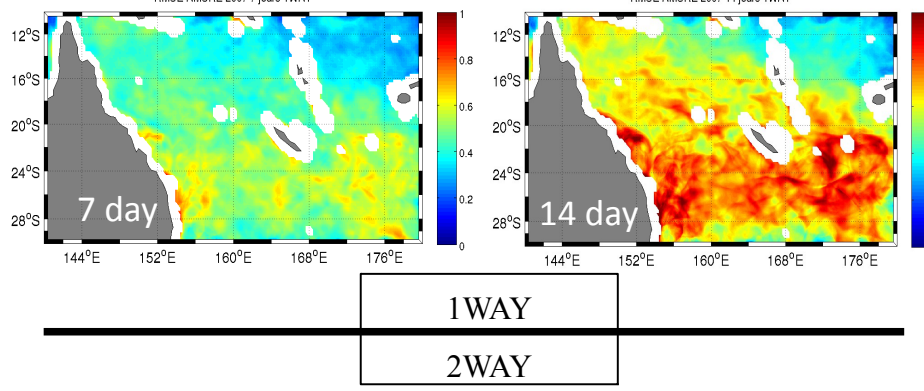


Technique : Transport passif de traceur par les particules : tester l'advection avec les vitesses issuent de OI ou interpolation dynamique

Despres et al. 2011; Dencausse et al. 2014; Rogé et al, 2015

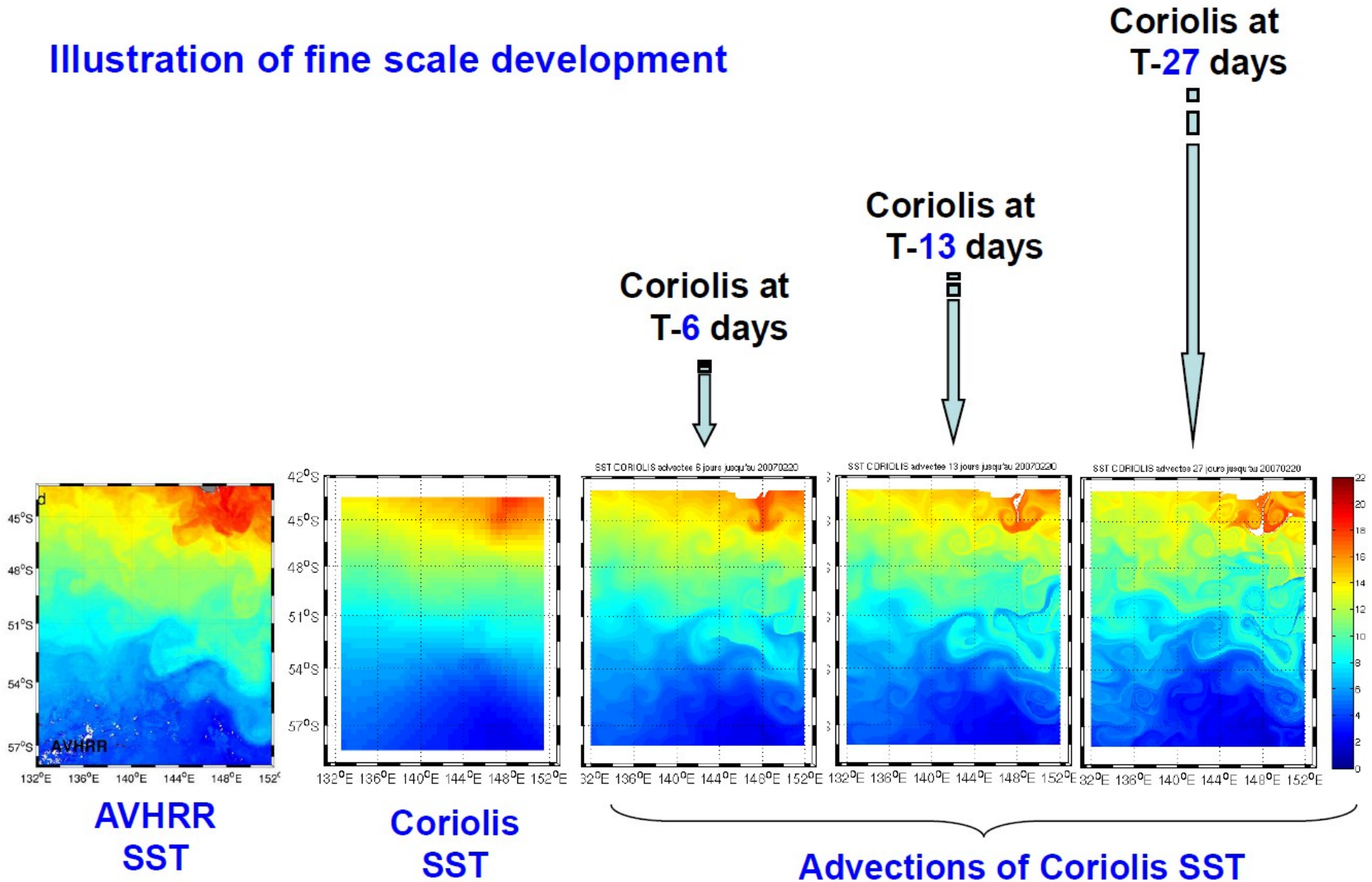


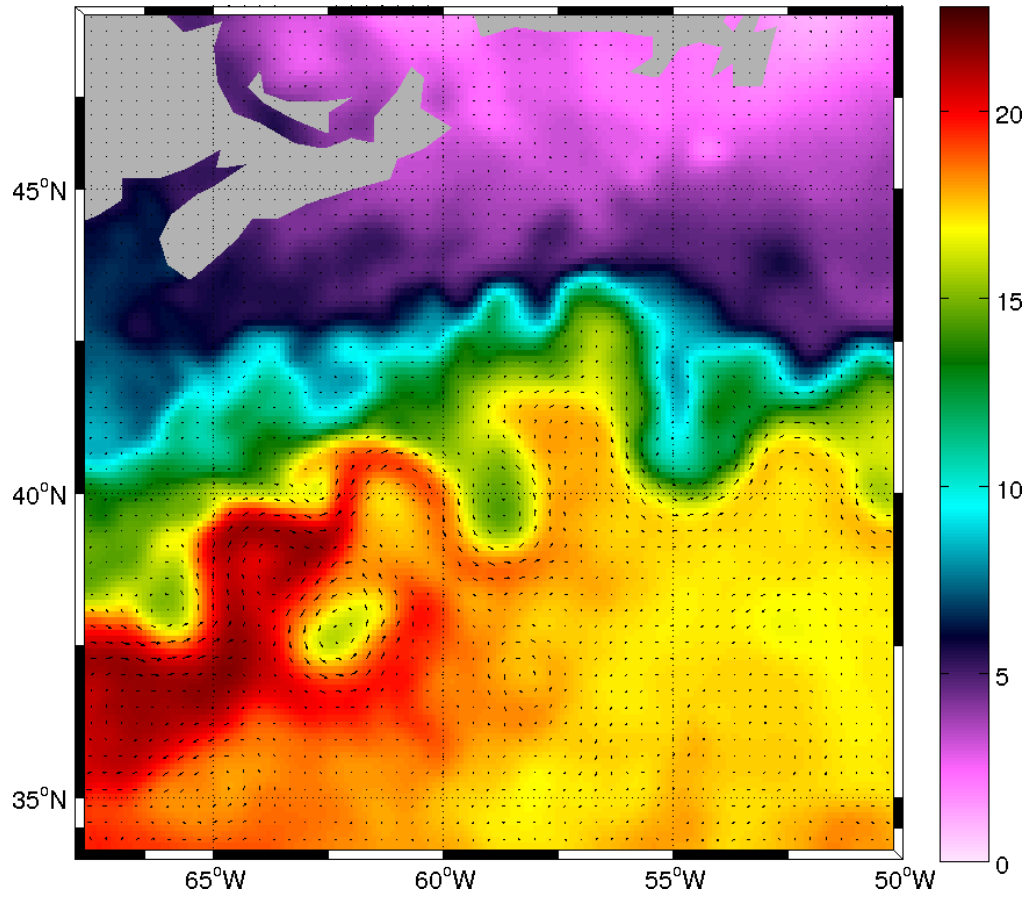
RMSE SST erreur – 1-way ou 2-way advection, 2007



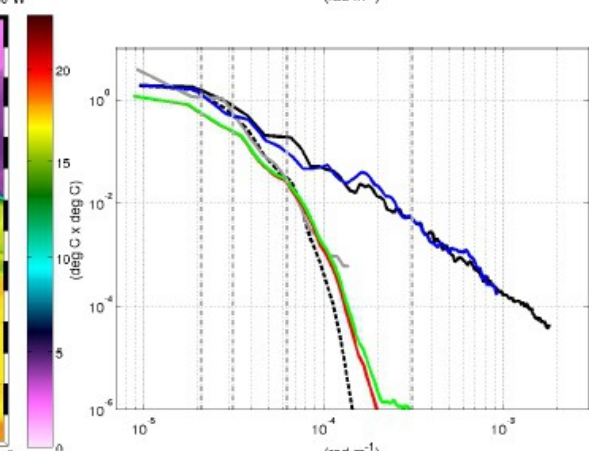
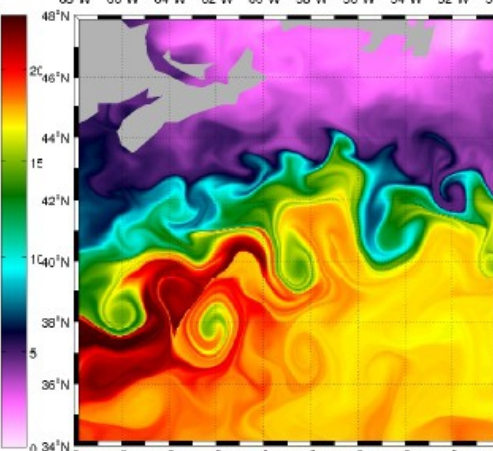
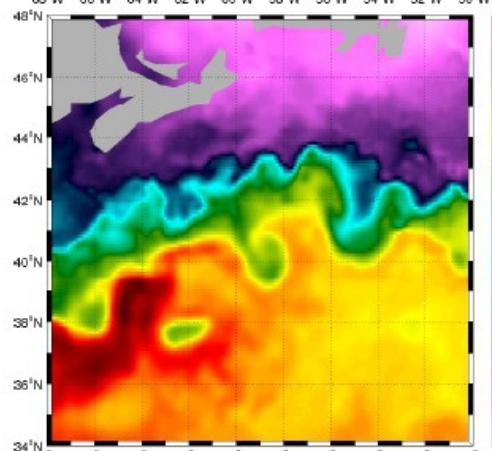
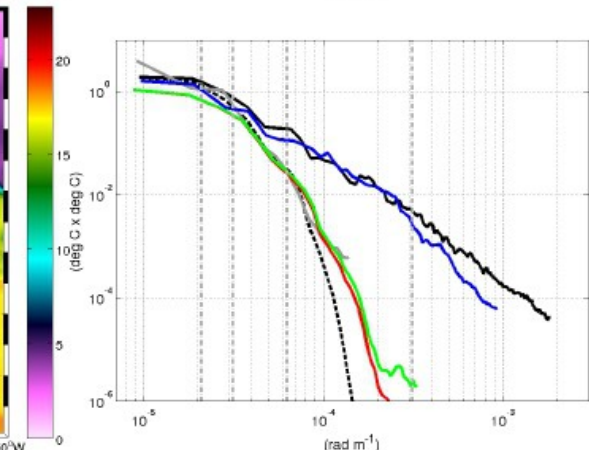
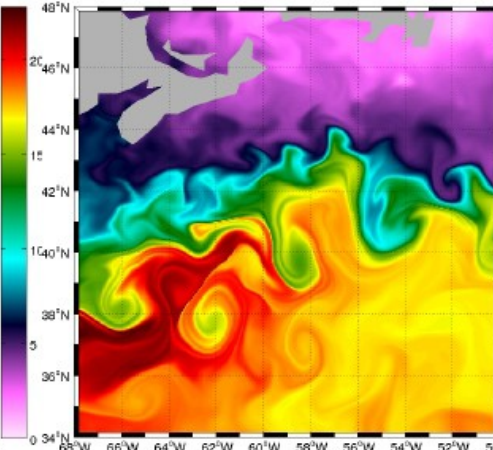
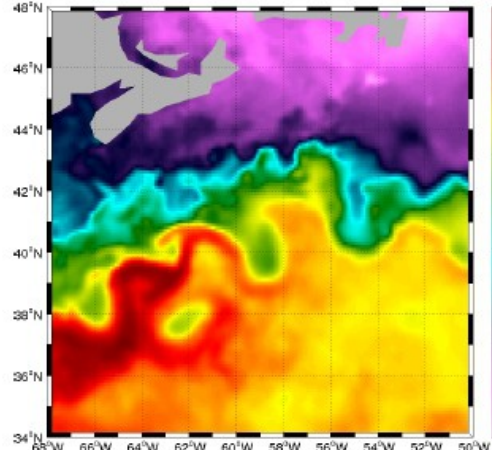
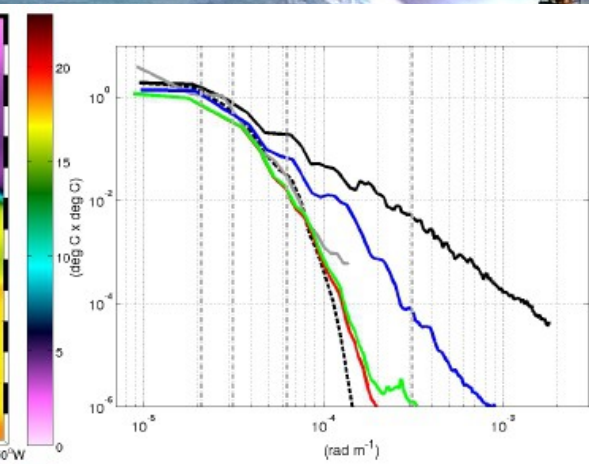
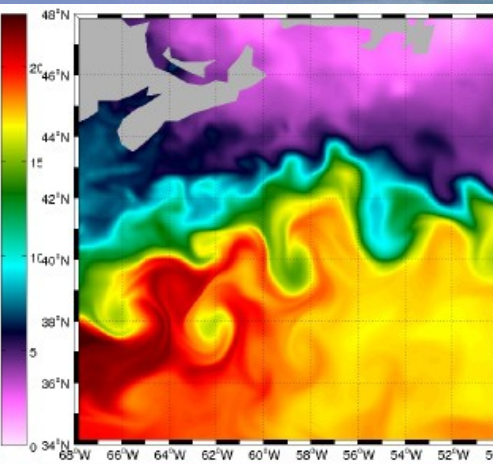
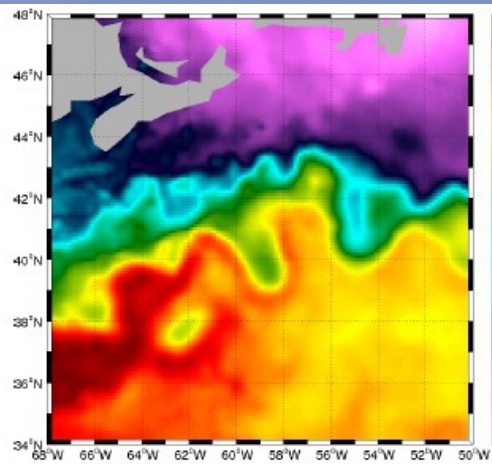
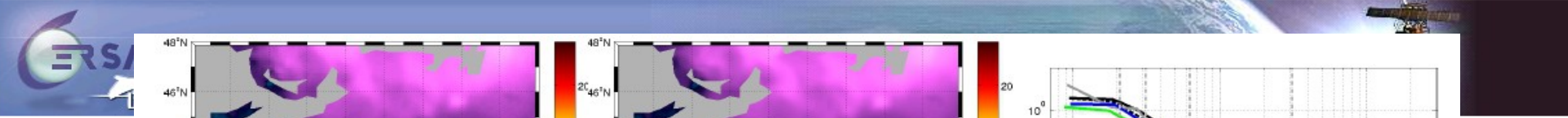
Lagrangian advection with altimetry

Illustration of fine scale development



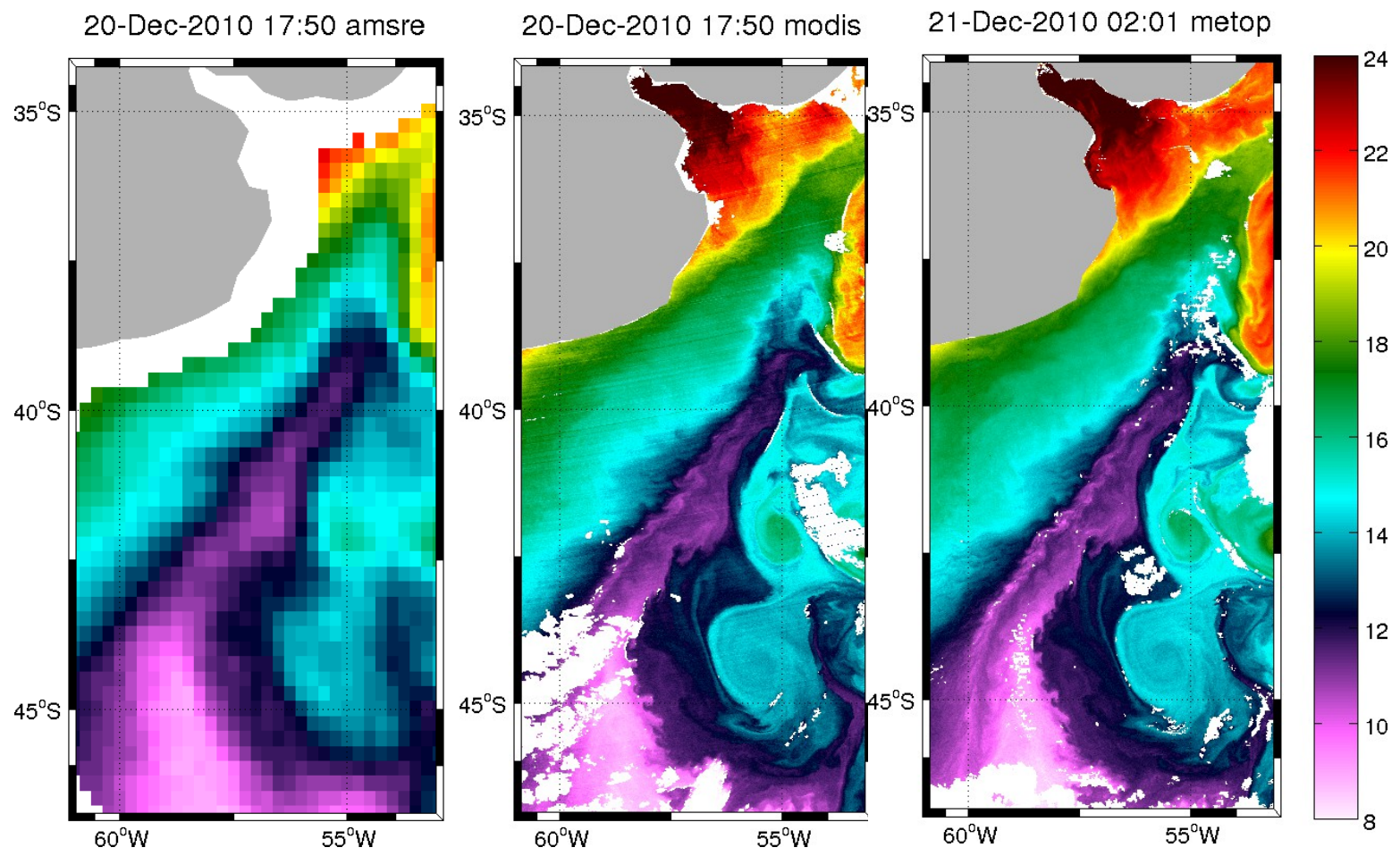


02/05/2010 – SST and AVISO



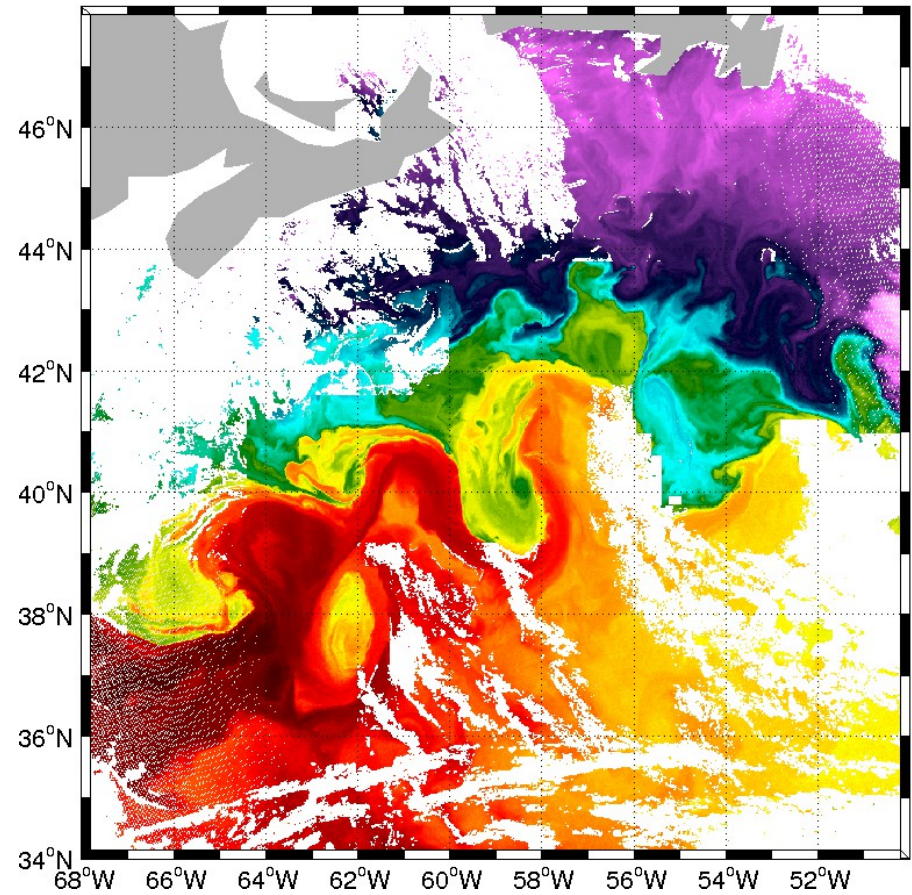


Exploring small scale / mesoscale relation with co-localized IR/MW data from AQUA

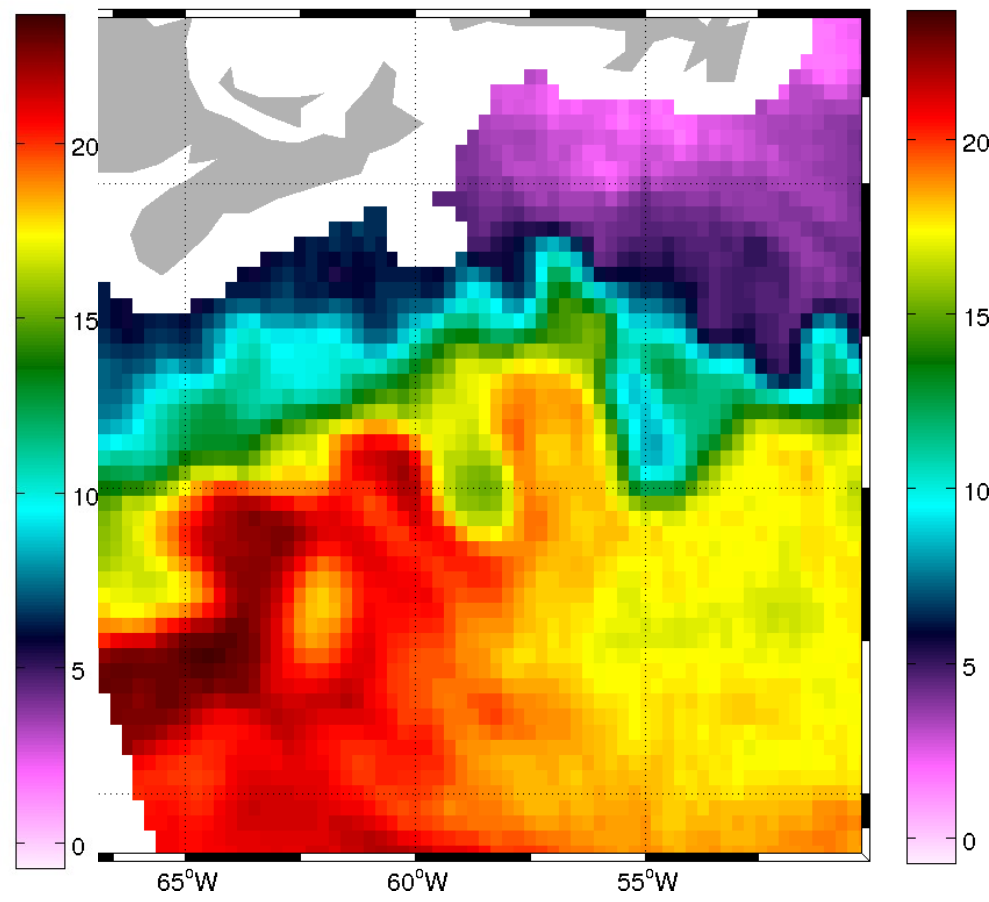


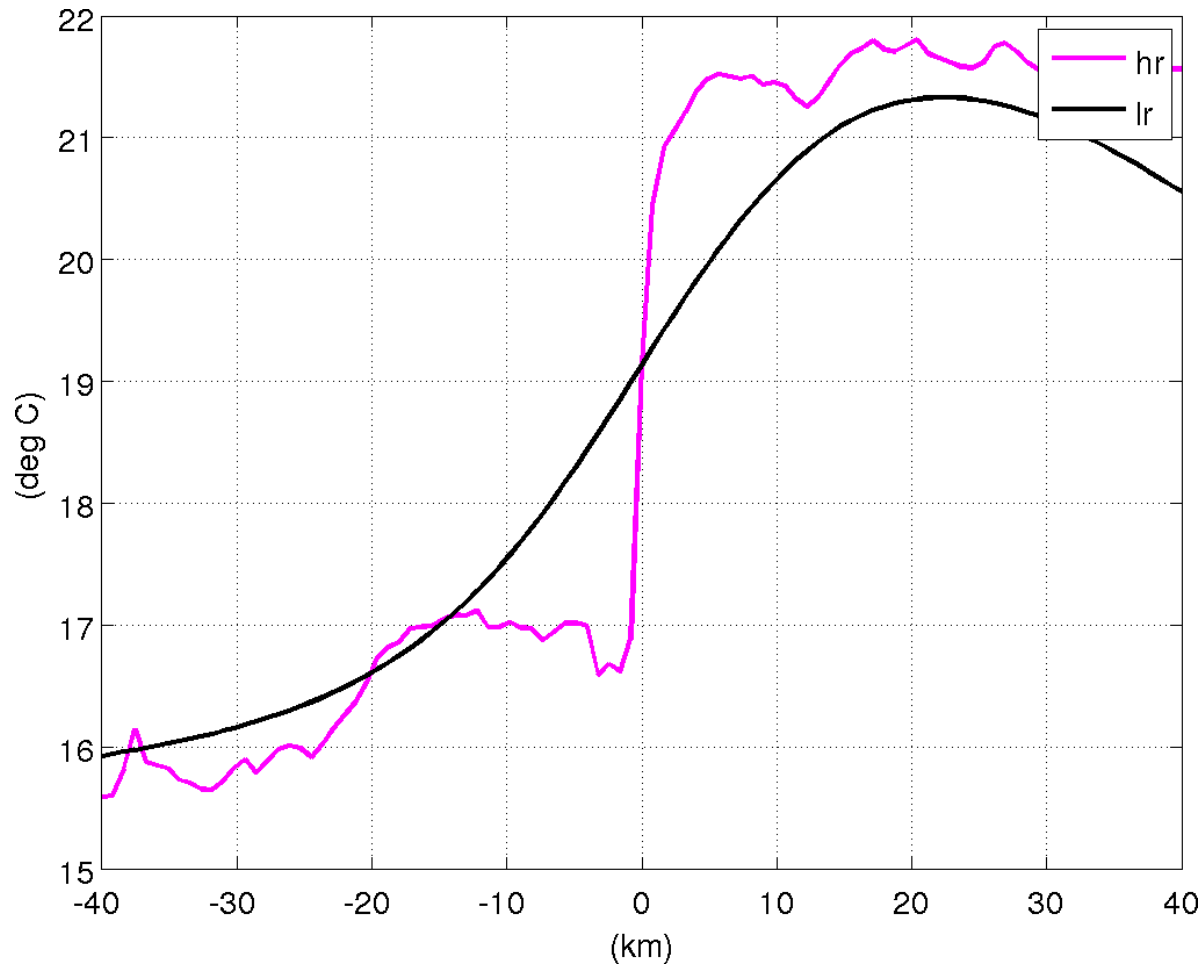
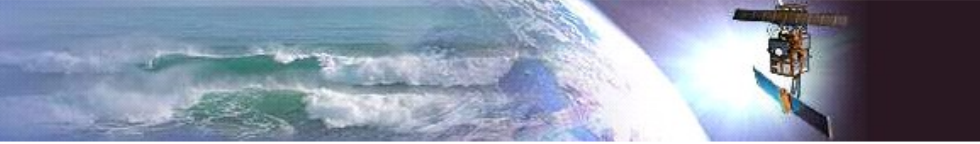


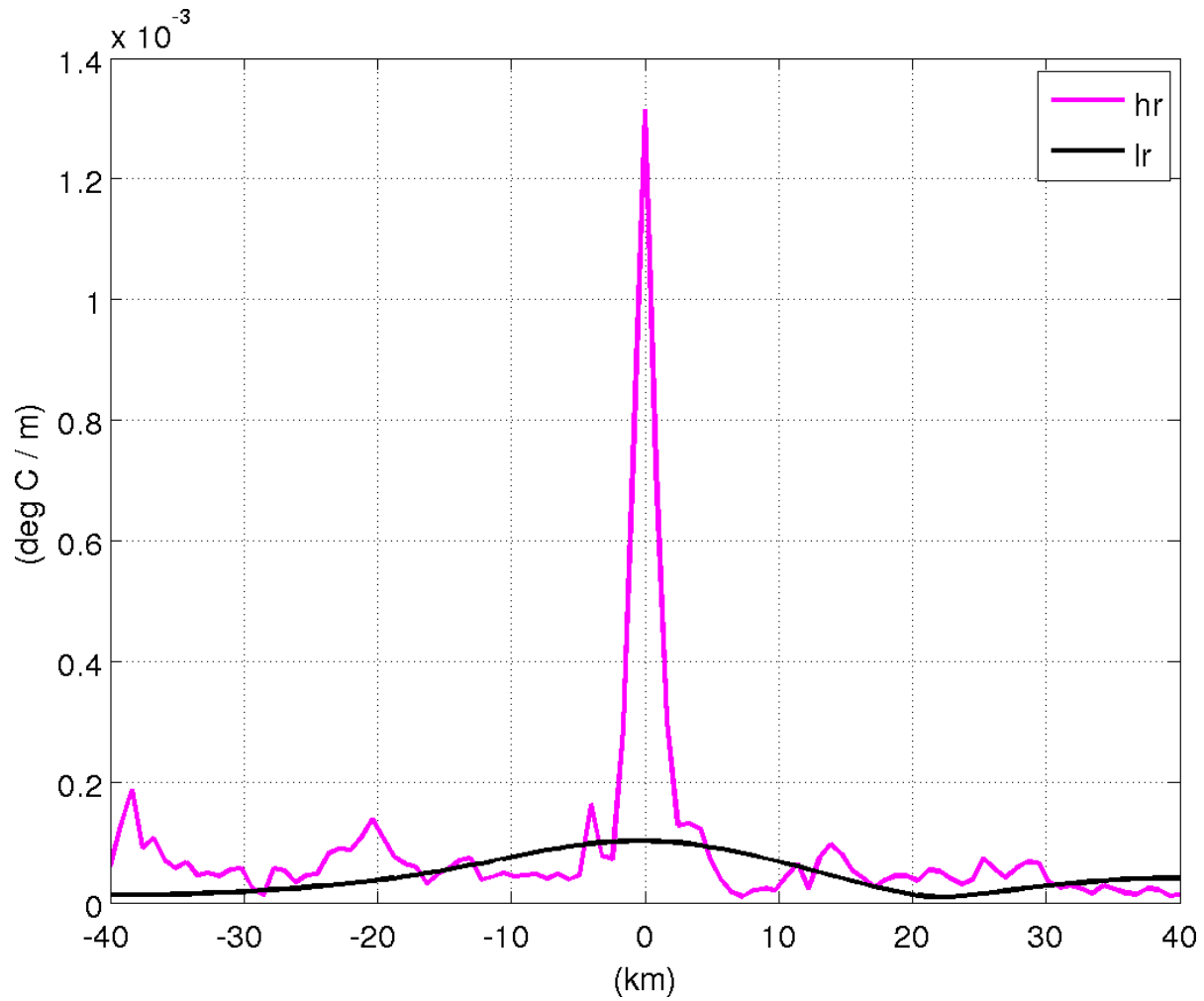
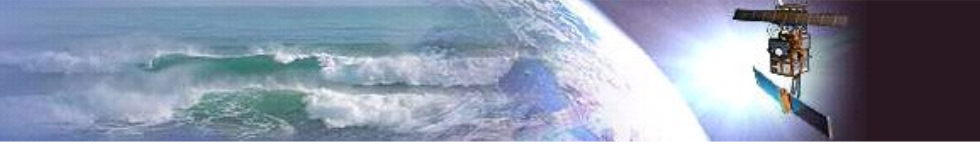
06-May-2010 17:00 modis aqua



06-May-2010 17:00 amsre



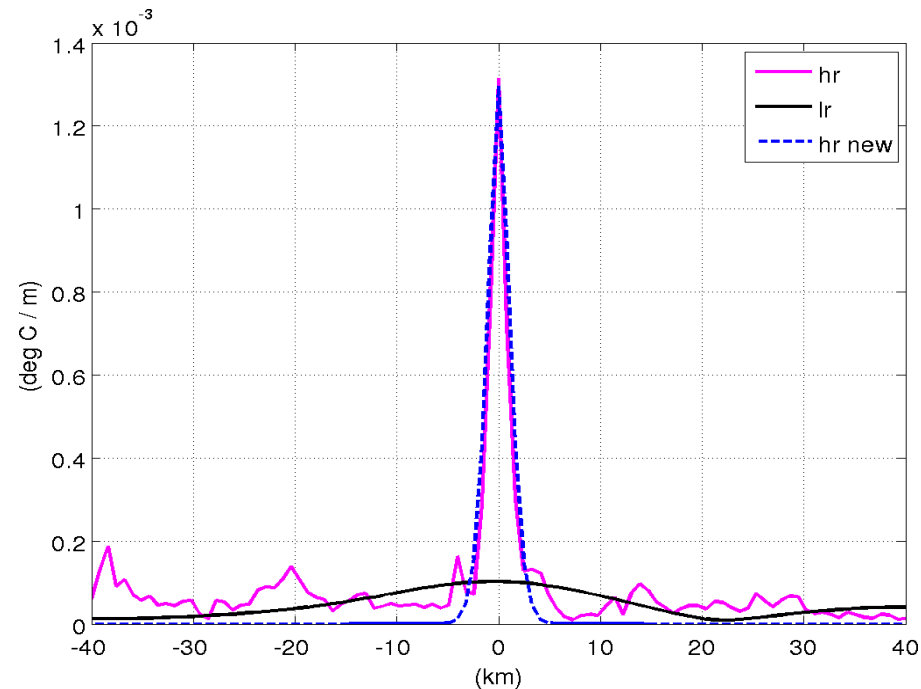






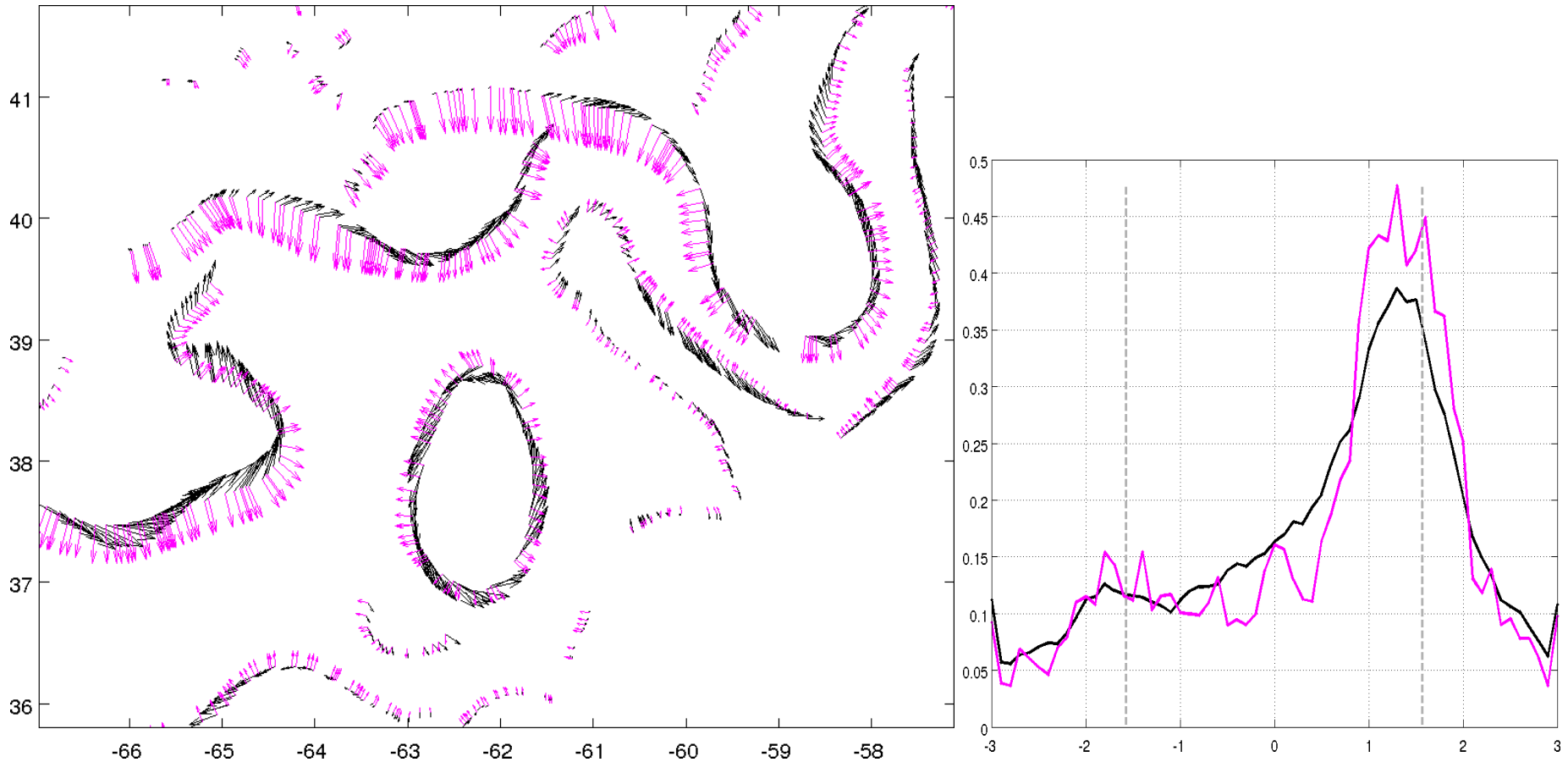
Proposition 3 :

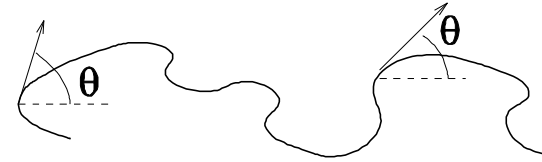
1/ gradient profile model (density function of a generalized exponential distribution) for HR and LR- \rightarrow 'transformation model'



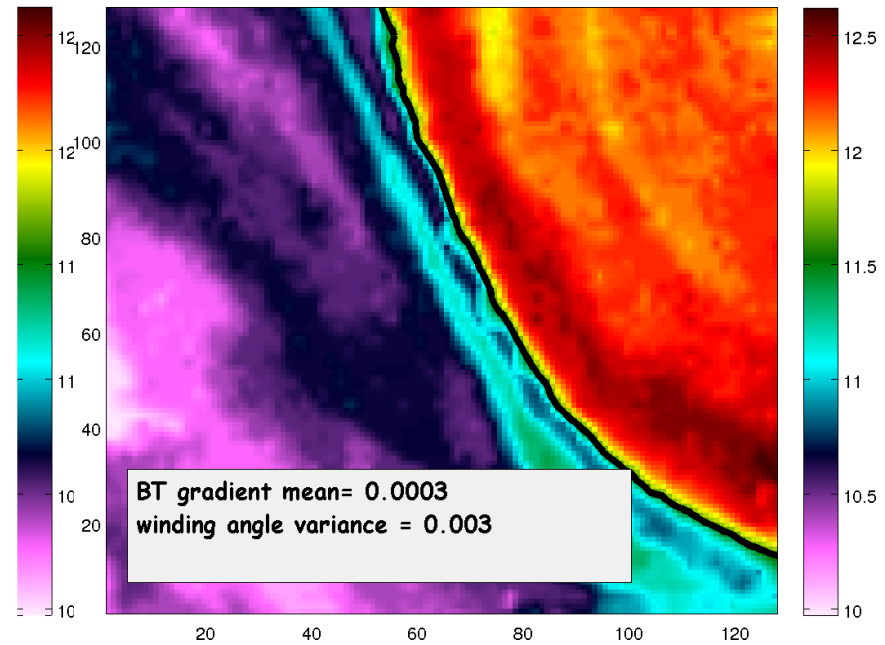
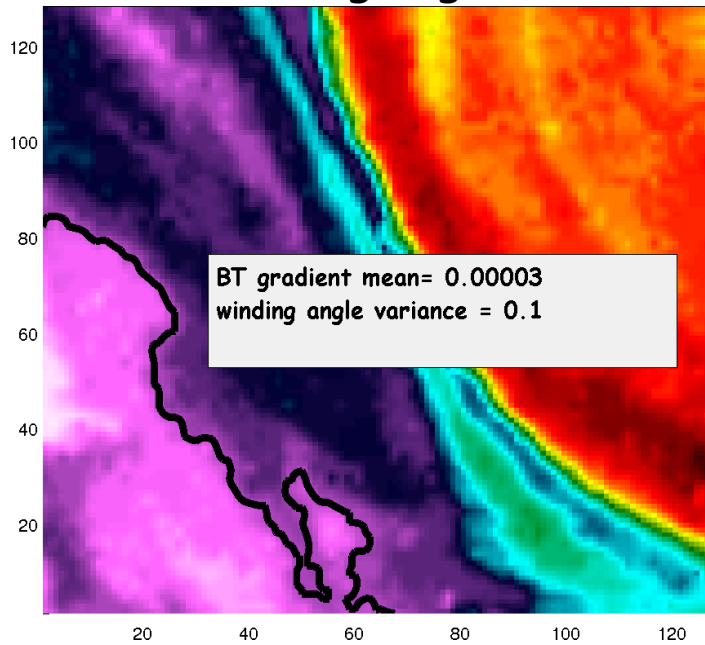


Relation between SST gradient direction and current vector
=> perpendicular to each other, increased in stronger
gradients situations





contour (winding angle) characterization





- 2km resolution L4 products don't really make sense at daily temporal resolution by definition (underlying variability)
- 10km is a more realistic target - “true” 10km should be achieved
- GHRSSST L4 products, while good on SST accuracy, should improve realism in term of ocean dynamics => improvement of gradients
- Information about local variability/dynamics should be provided together with SST
- Should be based on:
 - More dynamic methods are required : complementarity with other parameters and projects (ex: GlobCurrent) to be sought
 - Better understanding of mesoscale / small scale relations (ex: microwave/infrared) to better retrieve small scale or variability