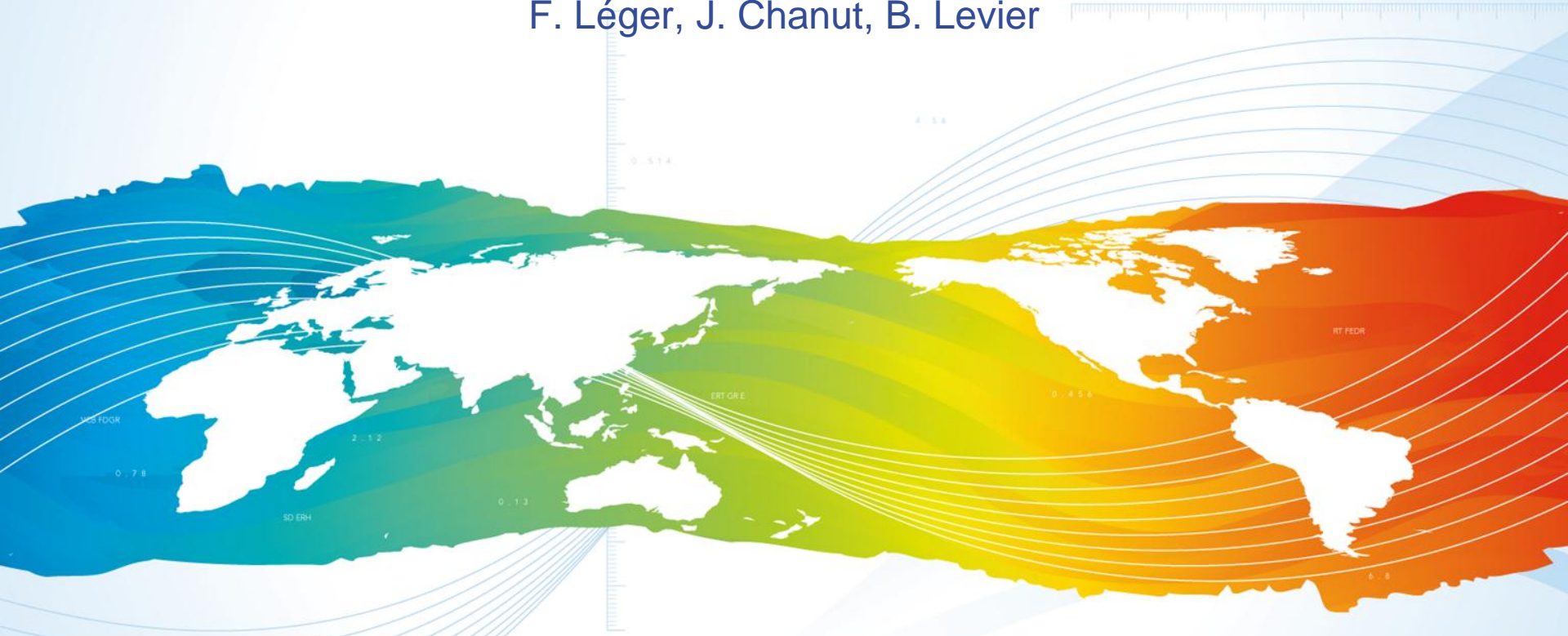


Comparisons of operational systems with observations in the IBI-ROOS area

F. Léger, J. Chanut, B. Levier



**Mercator
Ocean**
Ocean Forecasters

Outline

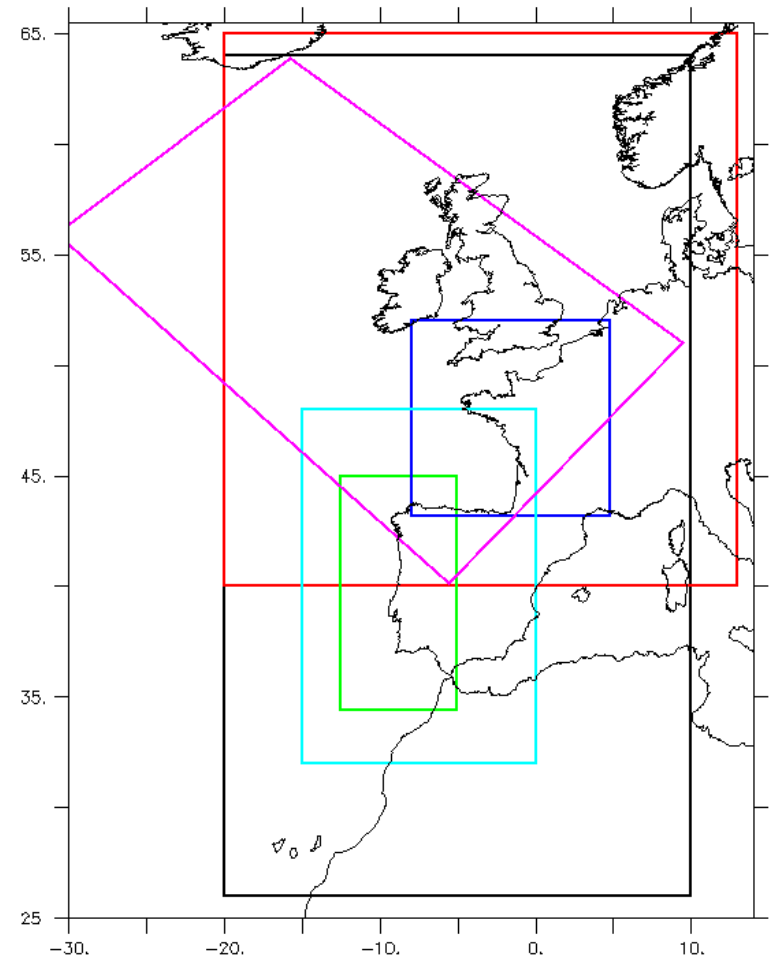
- **Operational systems and observations**
- **Method**
- **SST satellites**
- **SST in-situ**
- **Sea Level in-situ**
- **Focus on August 2011**

Operational Systems (1)

	IBI36	NW Shelf	MI	MARS3D	ESEOAT	MOHID
Institutions	Mercator/PDE	MetOffice	Marine Institute	Ifremer	Puertos del Estado	IST MARETEC
Country	France	UK	Ireland	France	Spain	Portugal
Model	NEMO	NEMO	ROMS	MARS3D MANGA	POLCOMS	MOHID
Limits	26°N/64°N 20°W/10°E	40°N/65°N 20°W/13°E	40°N/63,8°N 30,7°W/9,5°E	43,2°N/52°N 8°W/4,8°E	32°N/48°N 15°W/0°E	34,4°N/45°N 12,5°W/5,1W
Horizontal resolution	~2 km 1/36°	~7 km	~ 2,5 km	~4 km	~5,5 km 1/20°	~4 km
Vert. coord Nbr of levels	z 50	sigma 32	sigma 40	sigma 30	sigma 32	z 50
Data assimilation	Periodic initialization: Weekly	SST	Periodic initialization: Semi-annual	NO	Periodic initialization: weekly	?

Operational systems (2)

- **IBI36**
- **NW**
- **MI**
- **MARS3D**
- **MOHID**
- **ESEOAT**



- **Sea Surface Temperature from satellites measurements**
 - L3 multisensor (supercollated) product from CMS Lannion
 - SST_EUR_SST_MULTIOBS_L3_NRT_OBSERVATIONS_010_009_a
 - Daily product
- **Temperature from in-situ measurements (moorings)**
 - INSITU_GLO_TS_NRT_OBSERVATIONS_013_001_a
 - INSITU_IBI_TS_NRT_OBSERVATIONS_013_007_a
 - INSITU_NWS_TS_NRT_OBSERVATIONS_013_020_a
 - Daily/monthly product
- **Sea Level Elevation from in-situ measurements**
 - INSITU_IBI_SEALEVEL_NRT_OBSERVATIONS_013_019
 - INSITU_NWS_SEALEVEL_NRT_OBSERVATIONS_013_021
 - Daily/monthly product

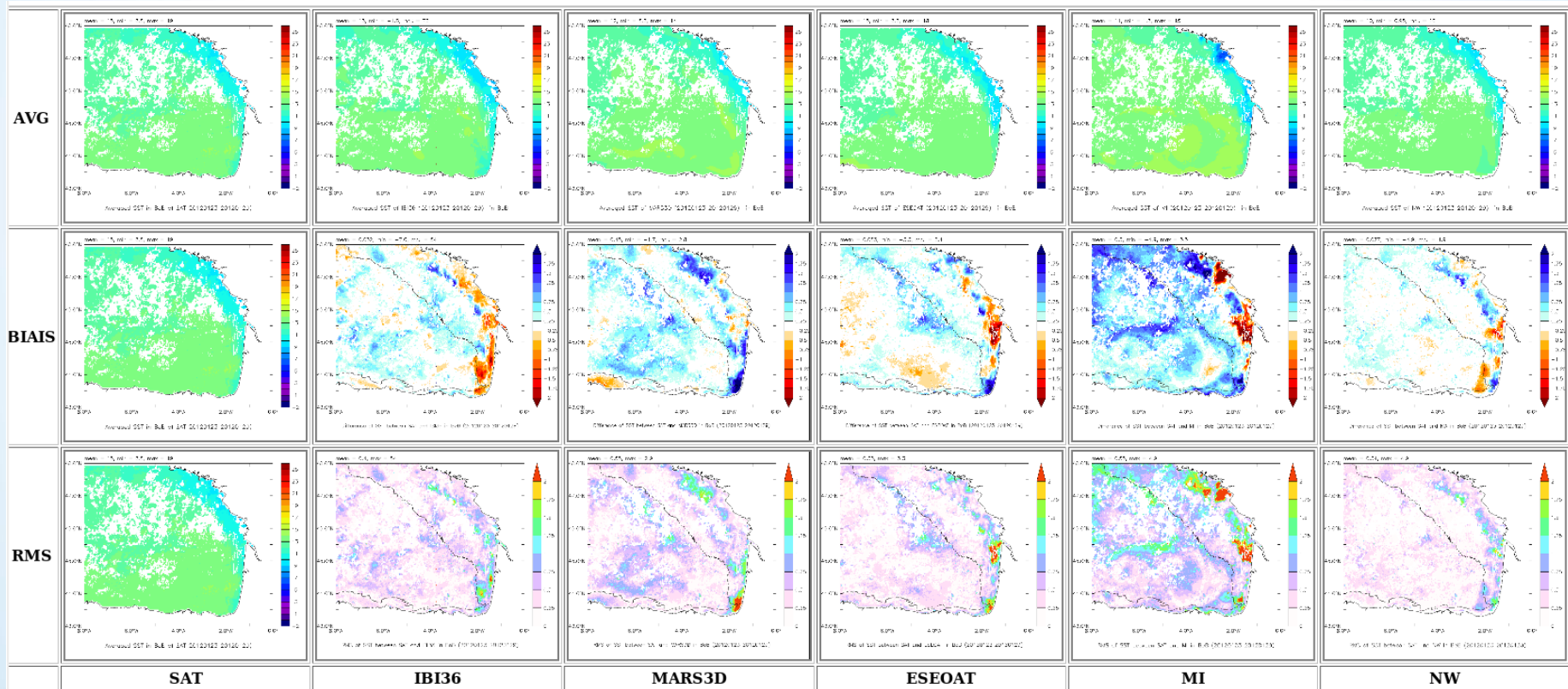
Method

Daily	Weekly (monday)	Monthly
<ul style="list-style-type: none">- Download of the daily forecast for each system- Computation of the daily average (if needed)- Download of the SST measurements (satellite)	<ul style="list-style-type: none">- Colocation of the models SST fields on the observations grid- Computation of weekly statistics (spatial/temporal stat by regions)- Results on the intranet	<ul style="list-style-type: none">- Download of the in-situ measurements (T, SSH)- Stat for sat SST (spatial/temporal stat, histogram)- Stat for in situ temperature- Stat for in situ Sea Level (harmonic analysis)- Intranet

Tools: ksh, fortran, ferret, excel, tappy

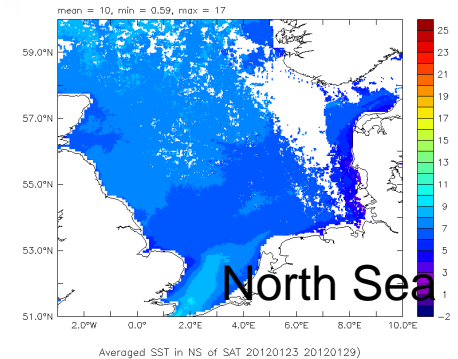
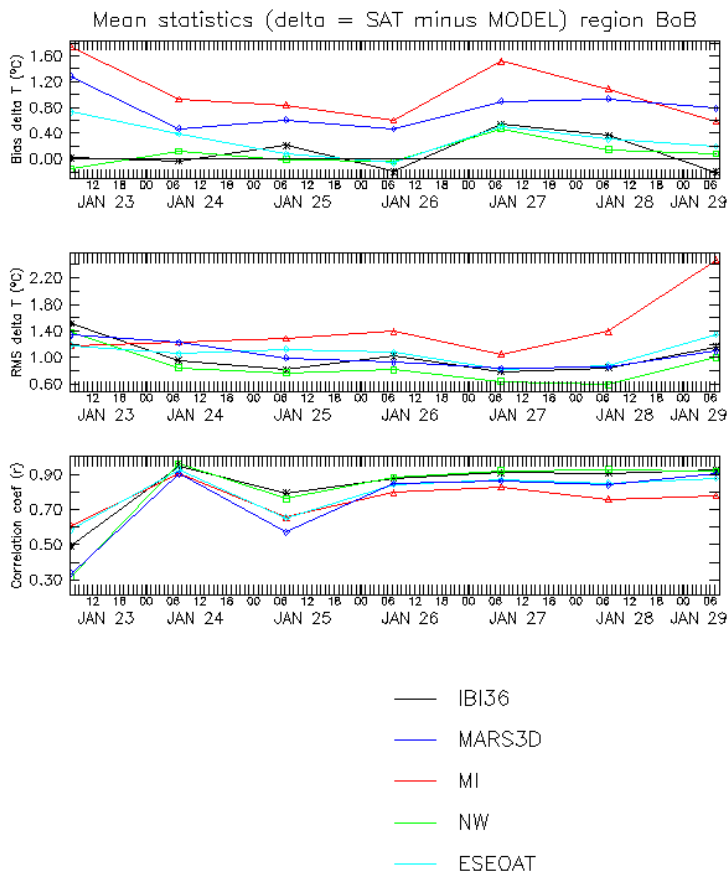
Sea Surface Temperature: comparisons with satellites measurements (1)

Weekly statistics (2012 January 23-29), Bay of Biscay

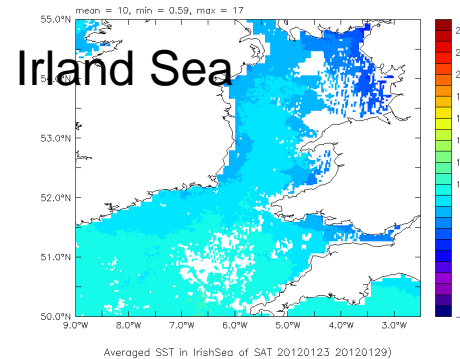


Sea Surface Temperature: comparisons with satellites measurements (2)

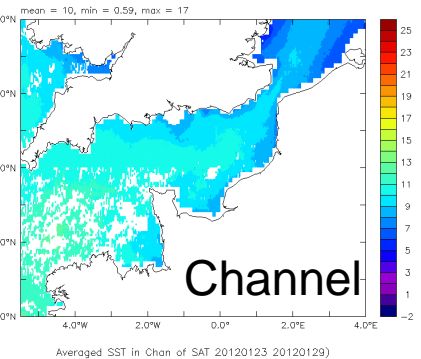
Weekly statistics (2012 January 23-29) Bay of Biscay



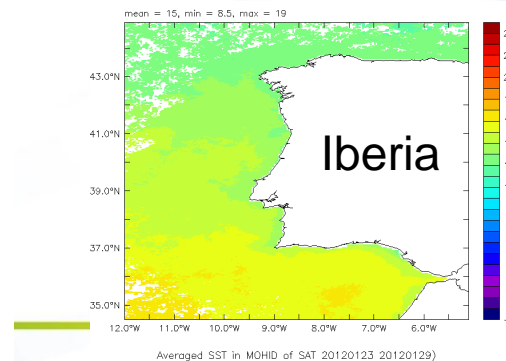
Ireland Sea



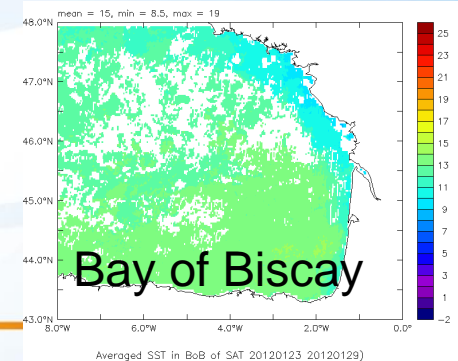
Channel



Iberia

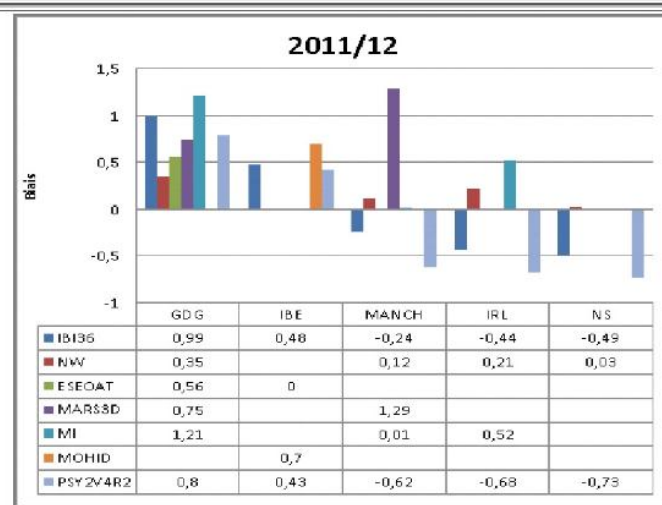
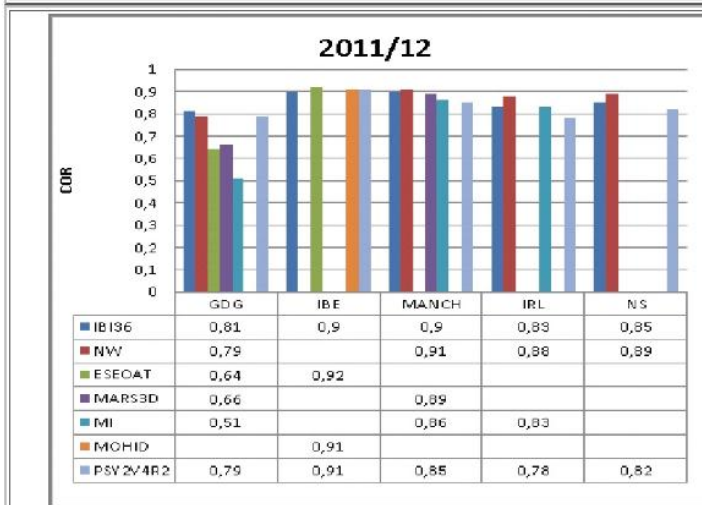
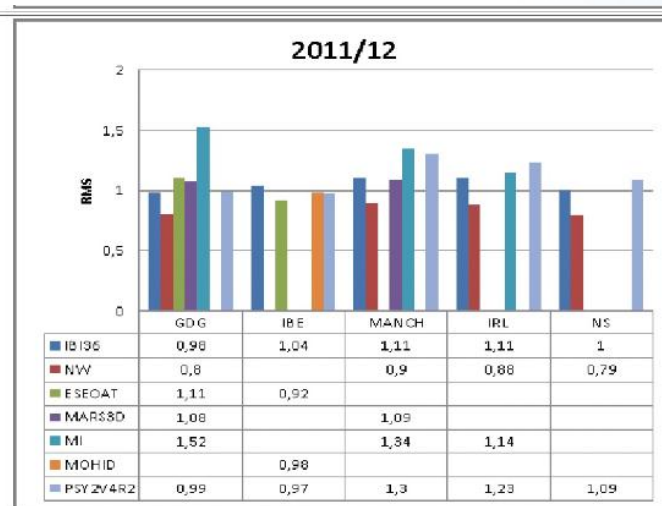
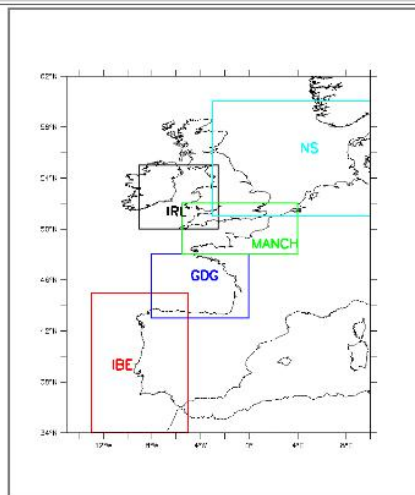


Bay of Biscay



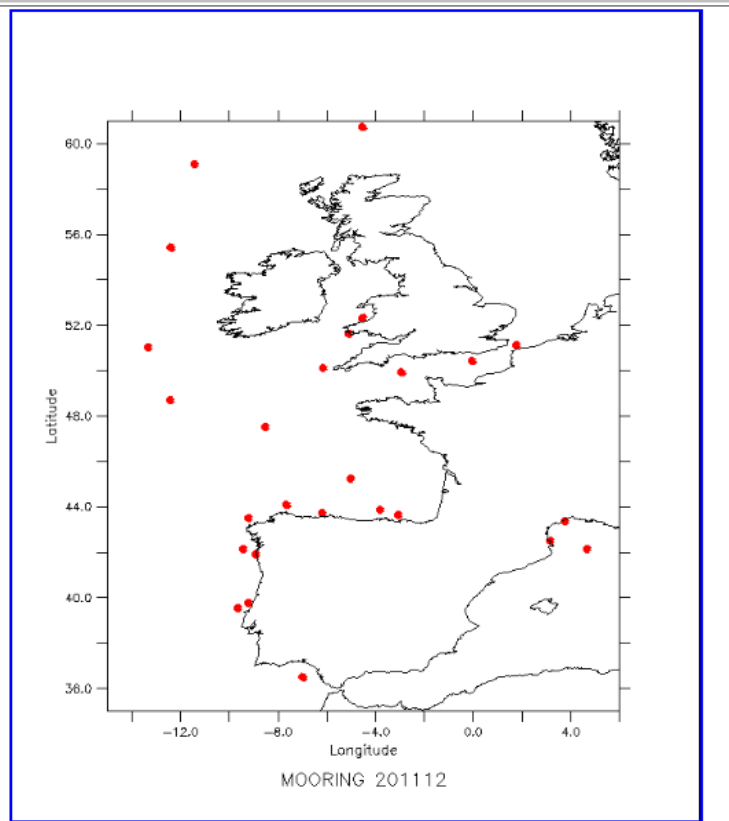
Sea Surface Temperature: comparisons with satellites measurements (3)

Monthly statistics (December 2011)

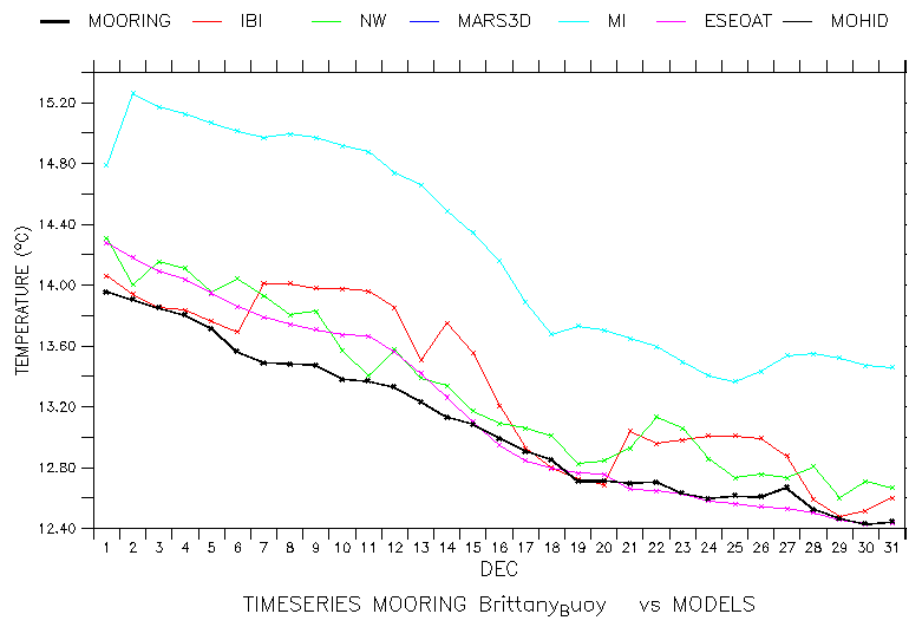


Sea Surface Temperature: comparisons with in-situ measurements (1)

Monthly statistics (December 2011), Bay of Biscay

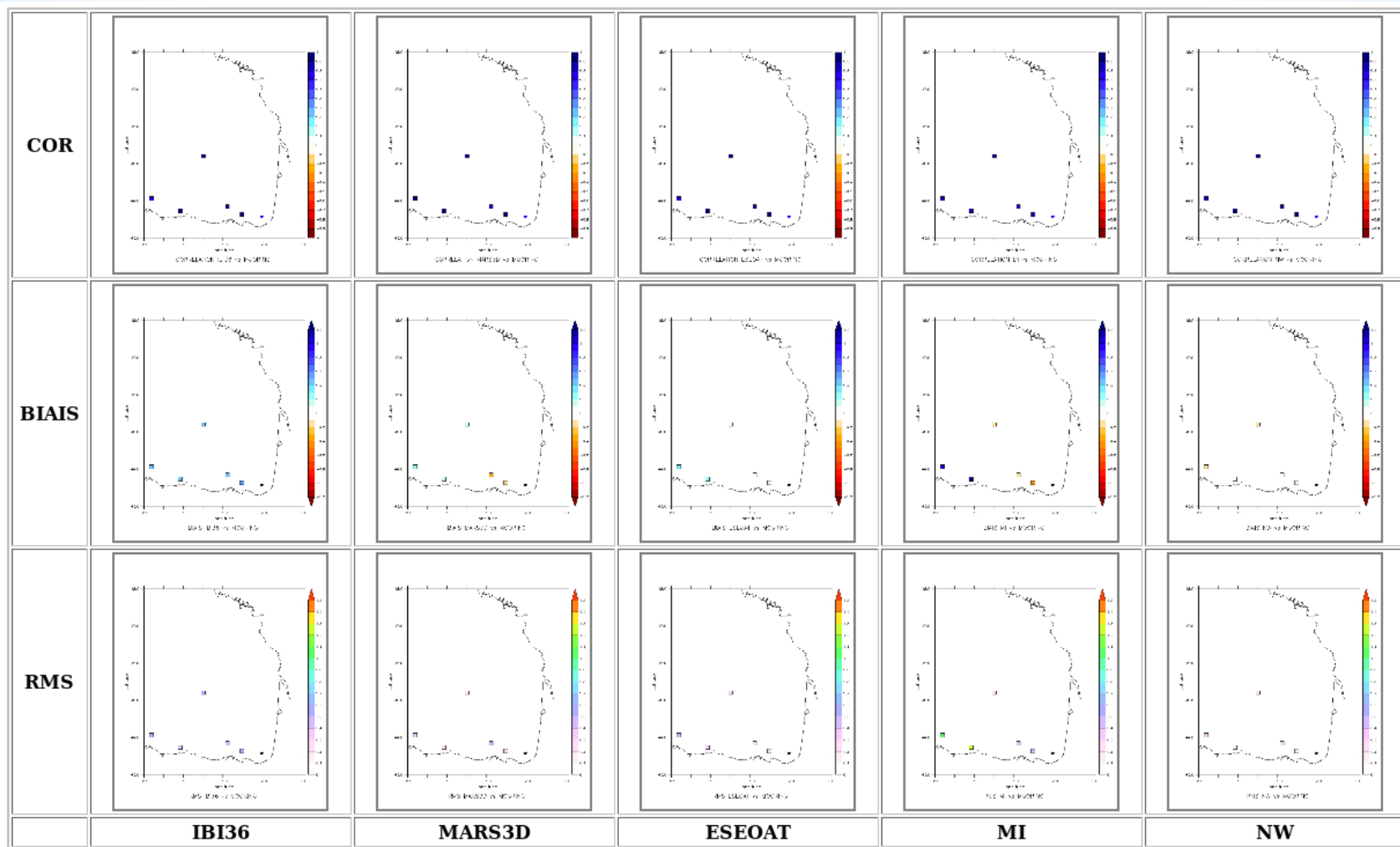


Select your Mooring



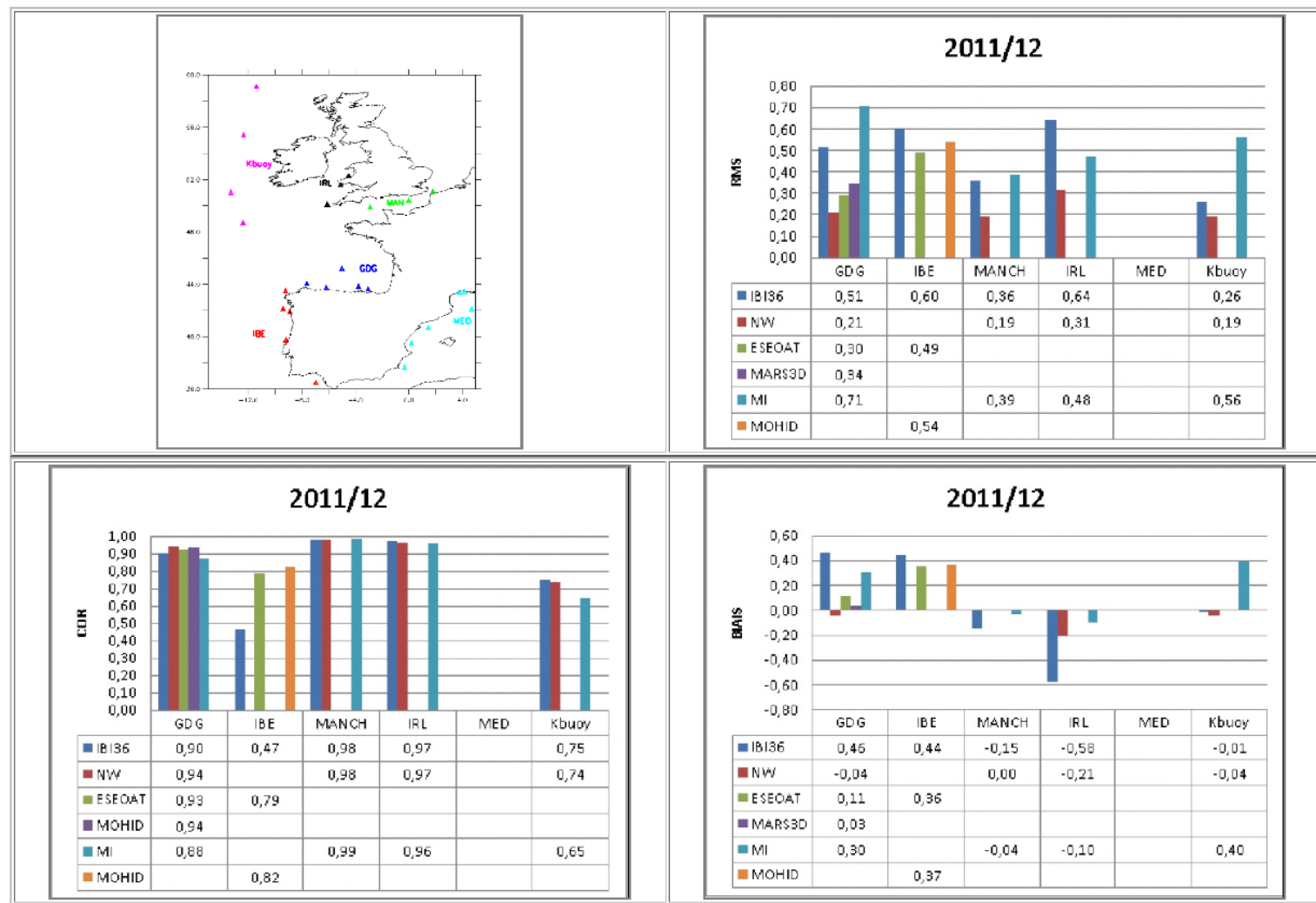
Sea Surface Temperature: comparisons with in-situ measurements (2)

Monthly statistics (December 2011), Bay of Biscay



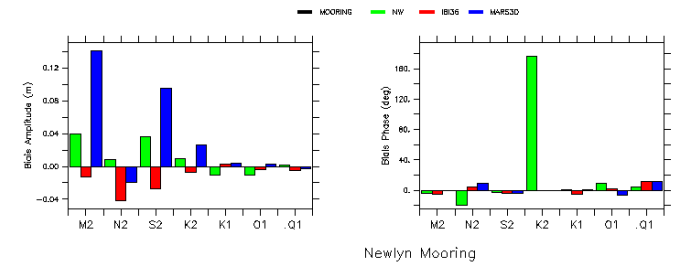
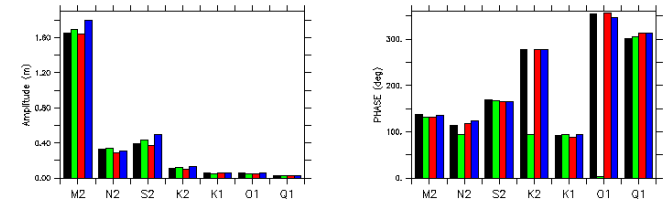
Sea Surface Temperature: comparisons with in-situ measurements (3)

Monthly statistics (December 2011), Bay of Biscay



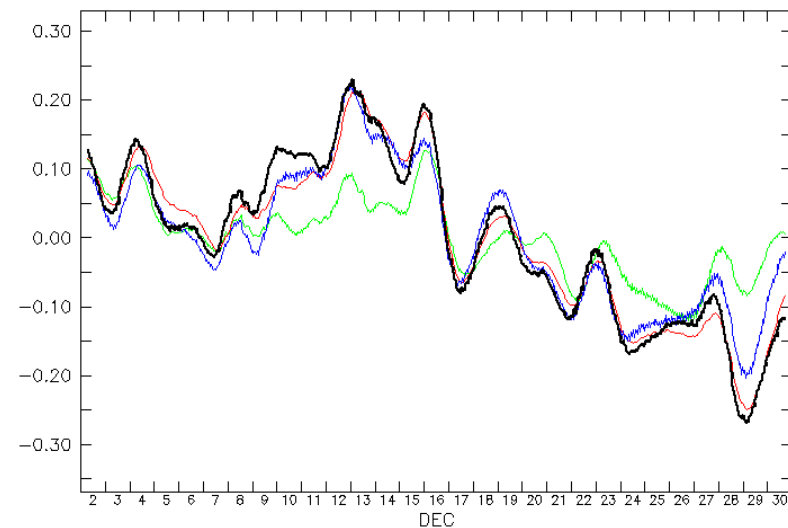
Sea Level Elevation: comparisons with in-situ measurements (1)

Monthly statistics (December 2011)

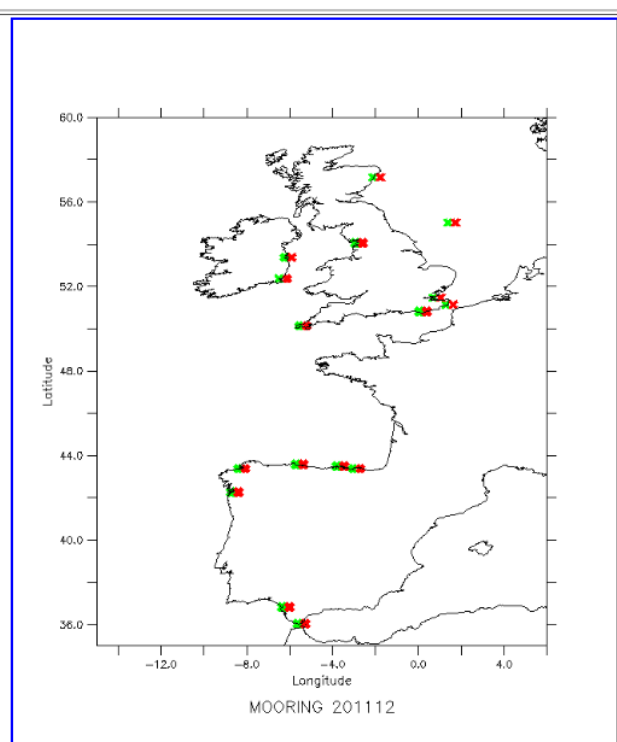


Harmonics (amplitude and phase)

Residual Elevation Newlyn



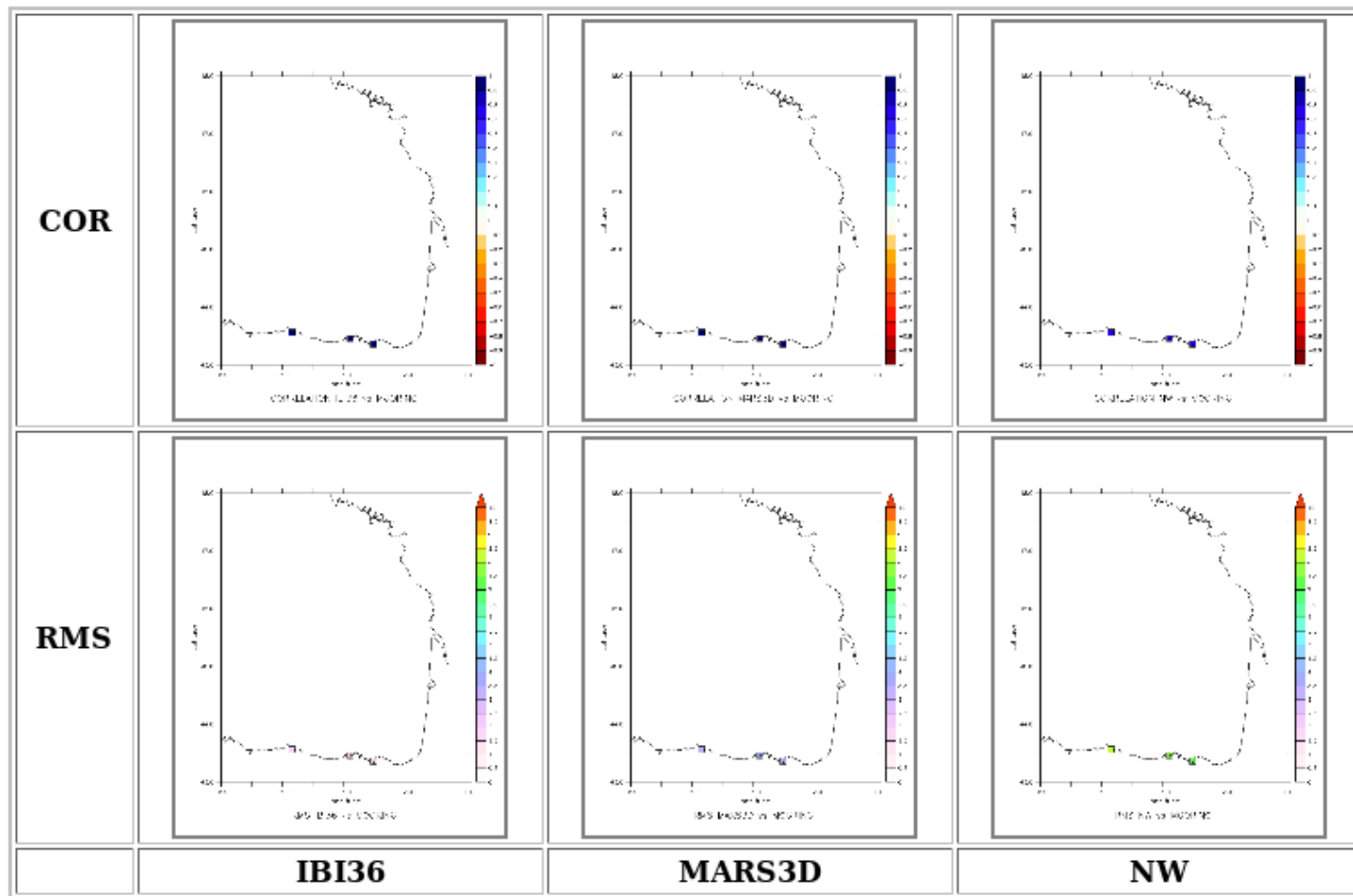
IB36 MARS3D MOORING NW



ct your Mooring, RED=>SSH Timeseries / GREEN=>Harm

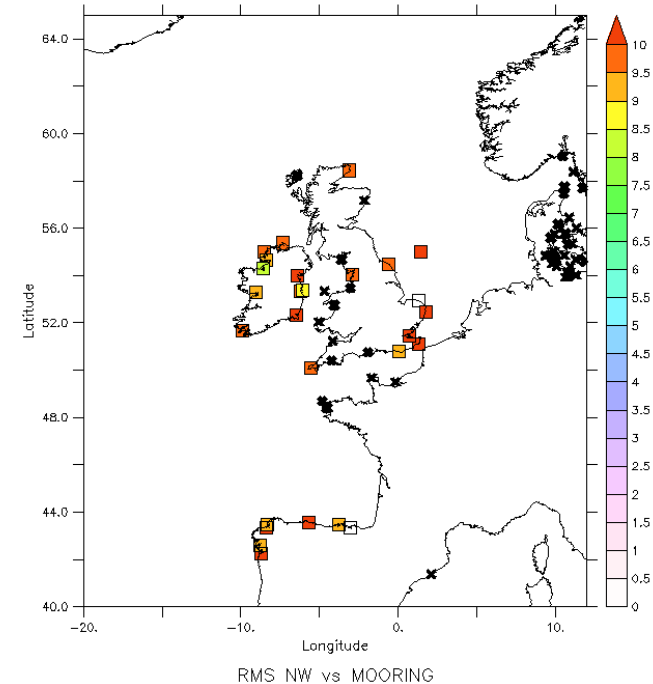
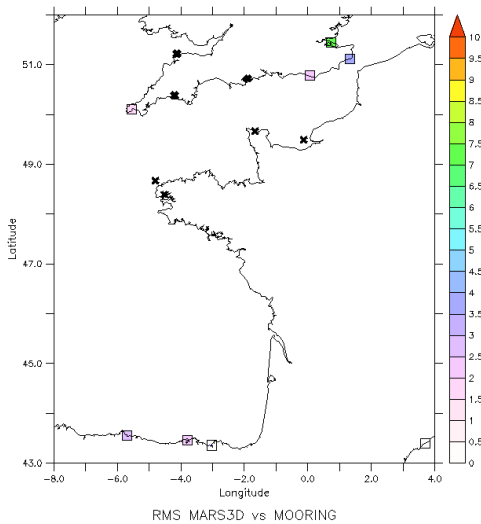
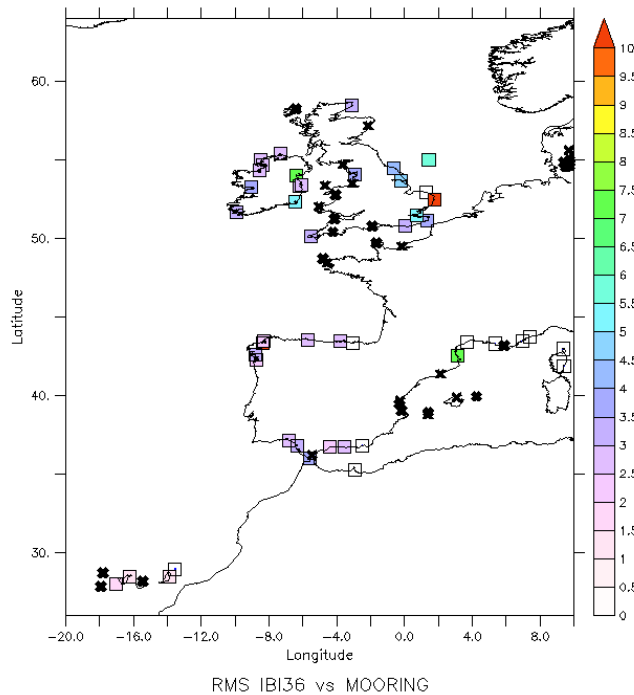
Sea Level Elevation: comparisons with in-situ measurements (2)

Monthly statistics (December 2011), Bay of Biscay



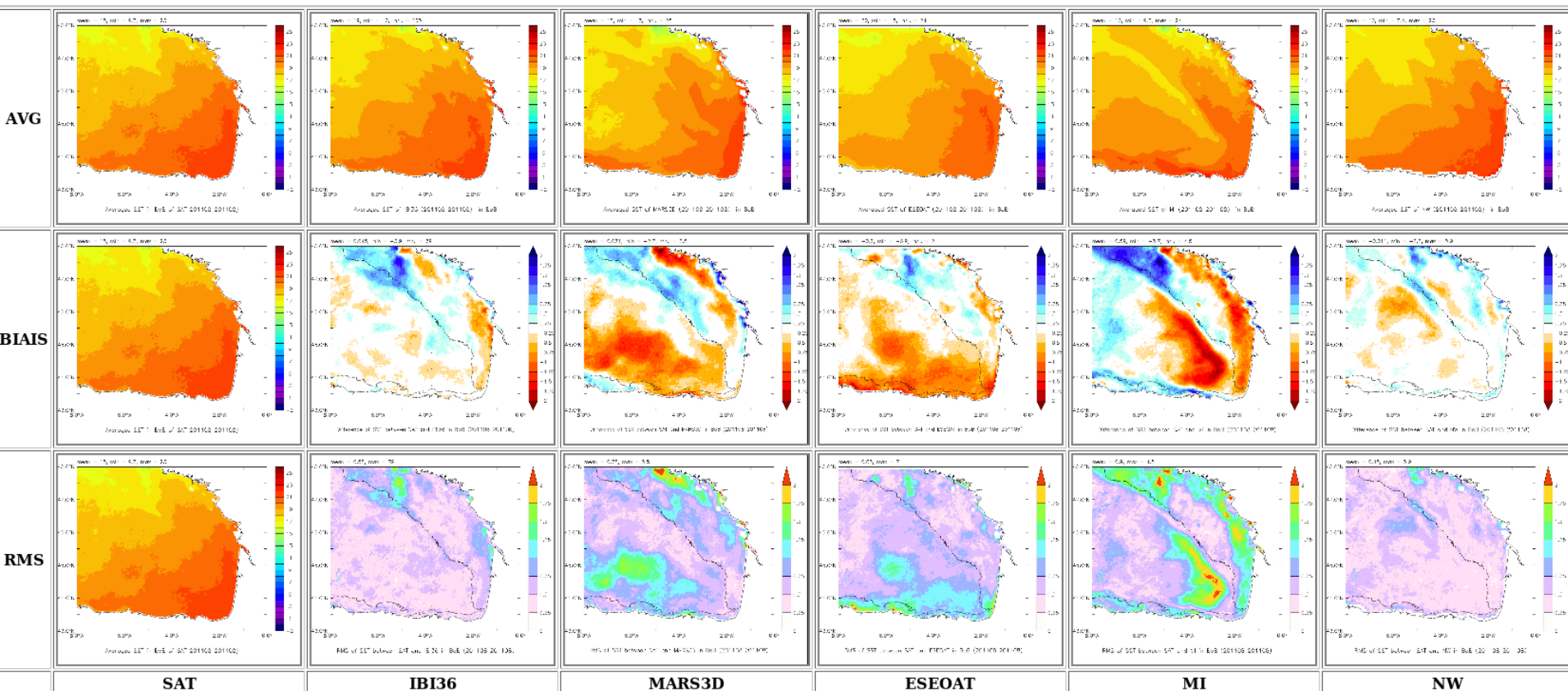
Sea Level Elevation: comparisons with in-situ measurements (3)

Monthly statistics (December 2011)



Comparisons with satellites SST observations (Biscay)

TEMPERATURE : MOIS 11/11/08

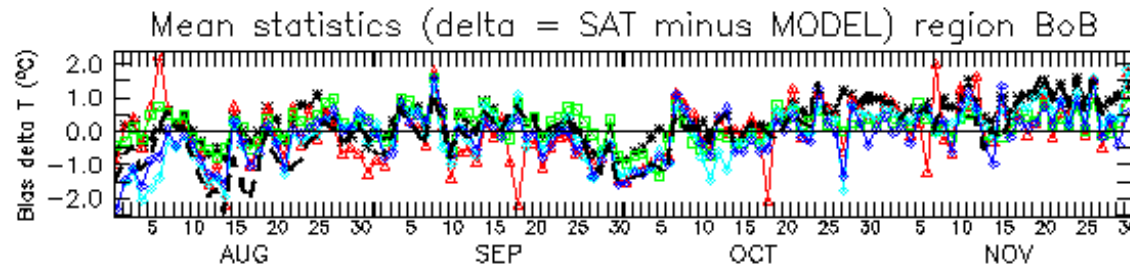


Similar errors patterns between shelf/deep ocean with sigma coordinates (without data assimilation)

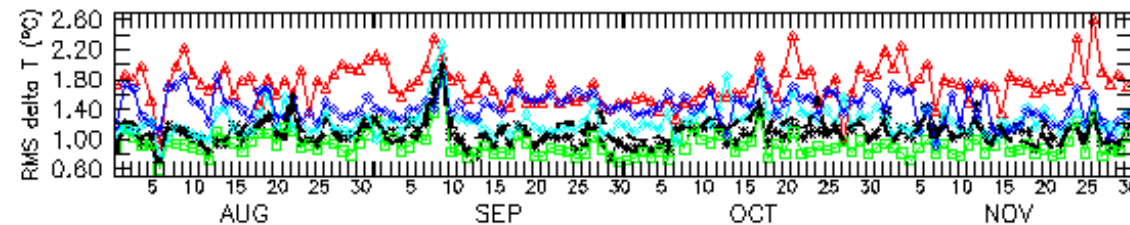
Reveals uncertainties in the representation of shelf warm tongue between models

Comparisons with satellites SST observations (Biscay)

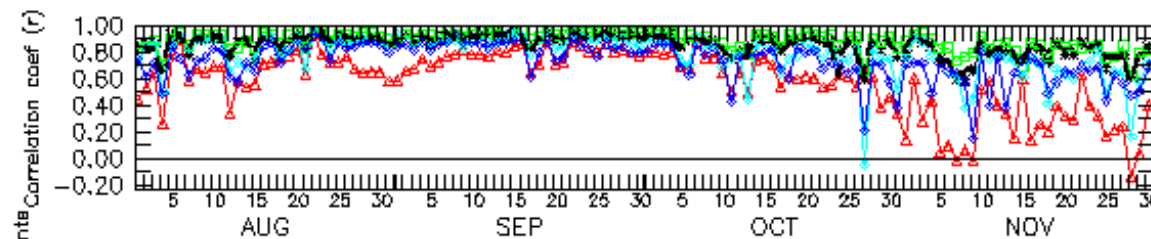
BIAS



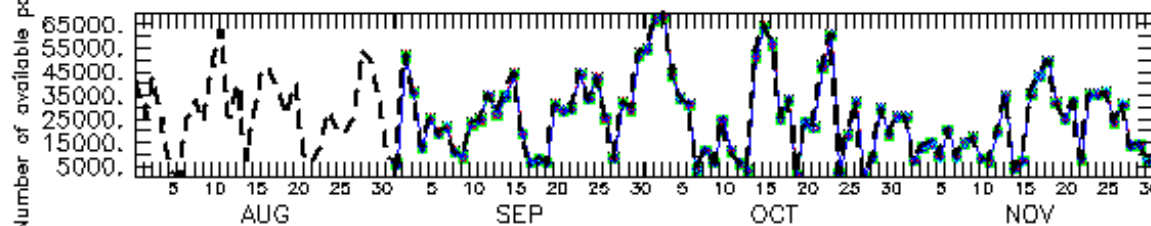
RMS



COR

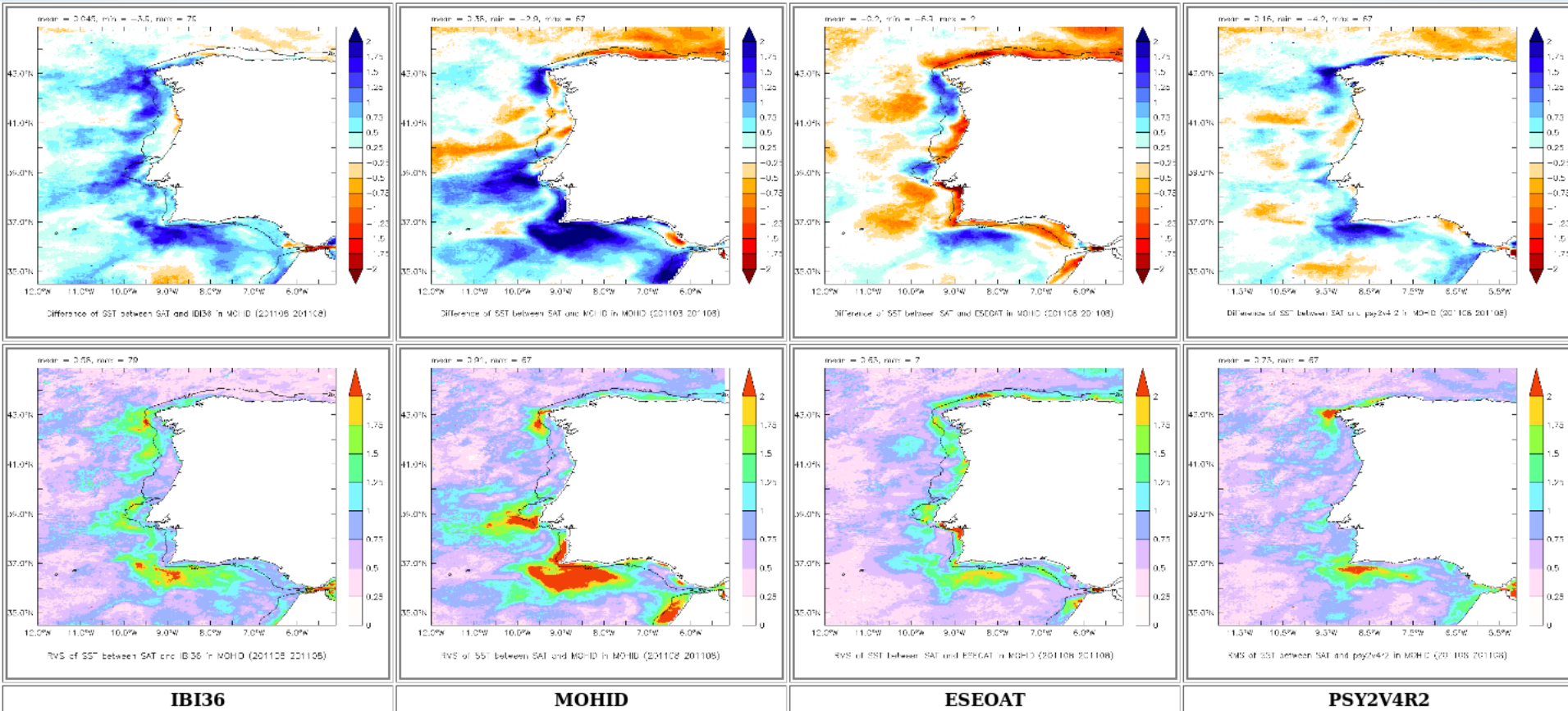


Obs Nb



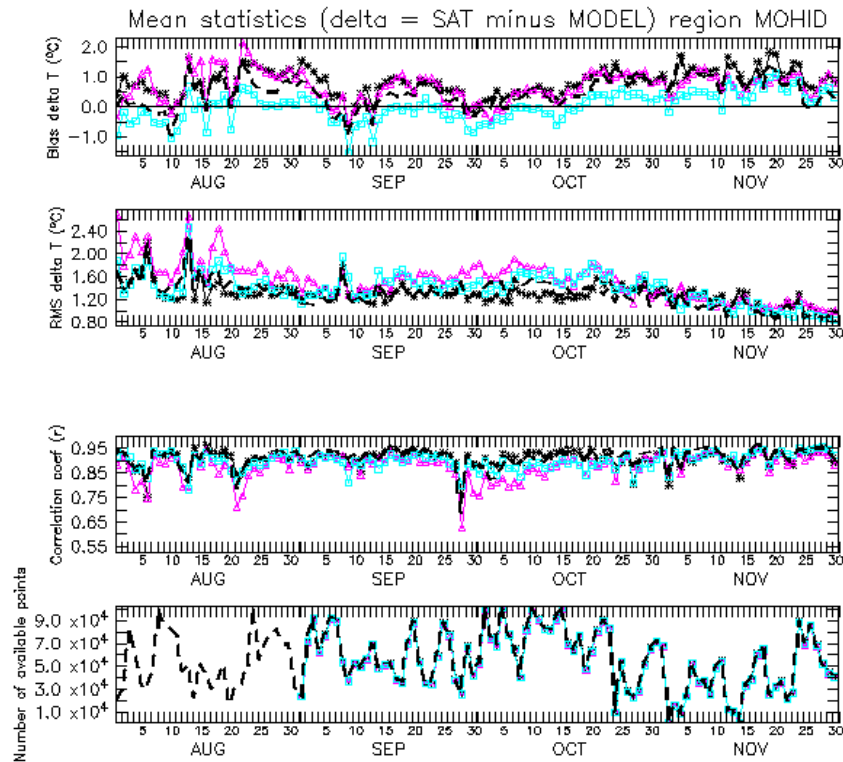
— IBI36
— MARS3D
— MI
— NW
— ESE0AT
— PSY2V4R2

Comparisons with satellites SST observations (Iberia, August 2011)

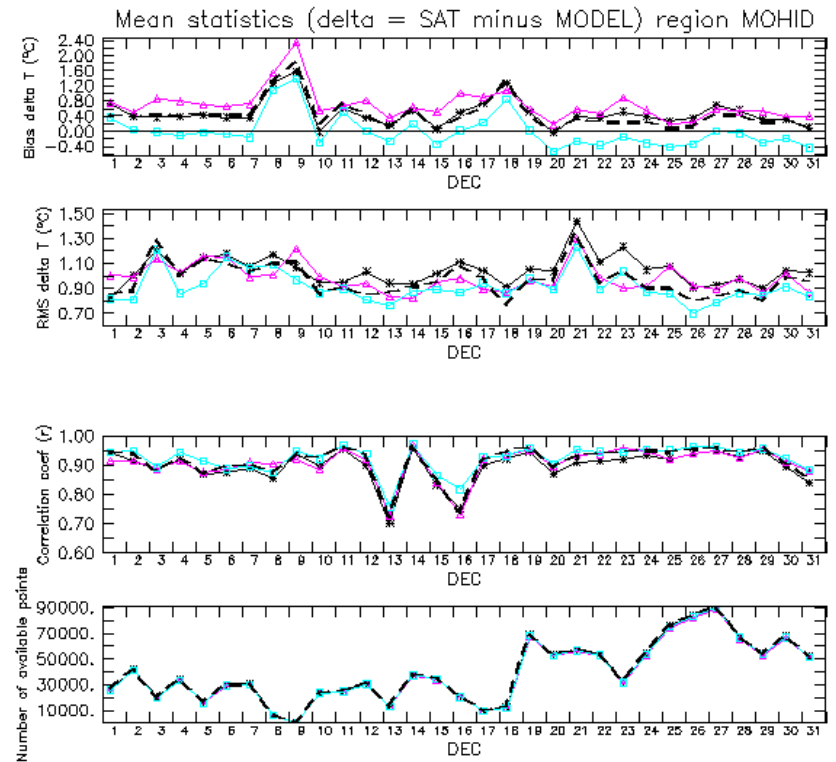


Similar errors patterns linked to difficult prediction of upwelling fronts and slope currents in the Gulf of Cadiz

Comparisons with satellites SST observations (Iberia)

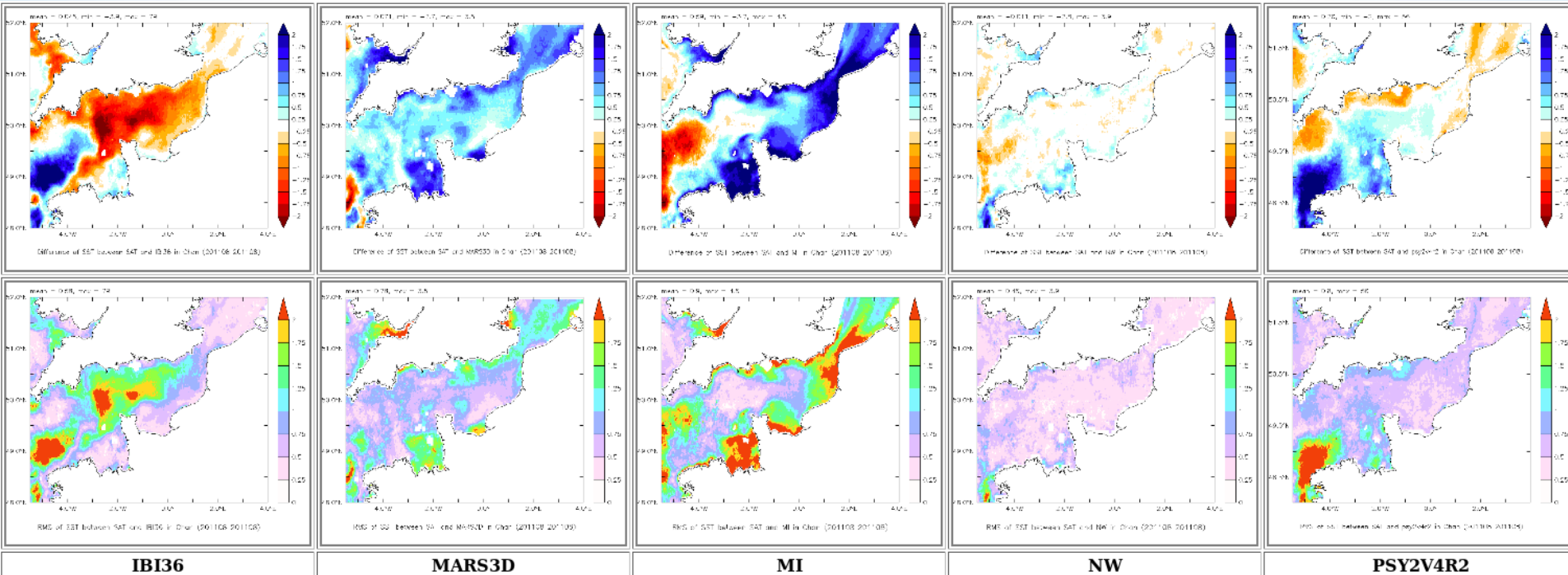


— IBI36
— MOHID
— ESEOAT
-- PSY2V4R2



— IBI36
— MOHID
— ESEOAT
-- PSY2V4R2

Comparisons with satellites SST observations (Channel, August 2011)



Comparisons with satellites SST observations (August 2011)

