

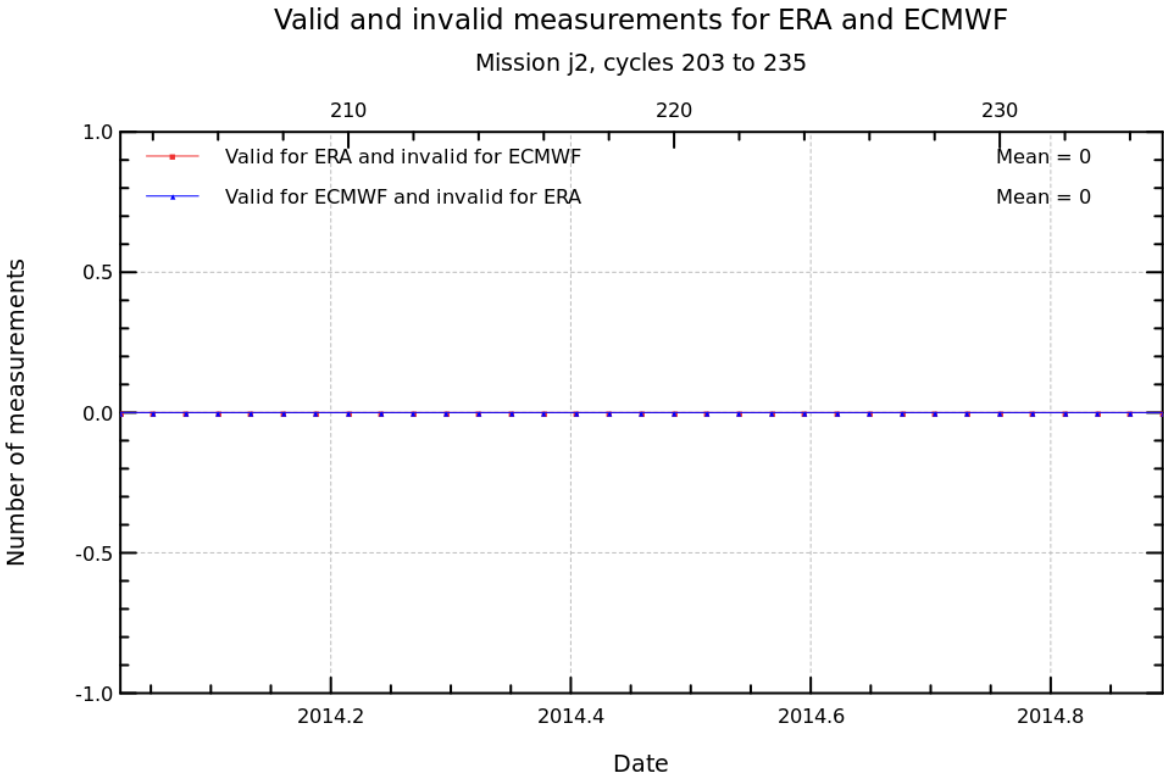
DAC atmospheric corrections comparison : ERA versus ECMWF

Study variable	ERA
Reference variable	ECMWF
Missions	Jason-2 (<i>j2</i>)
Period	[23376, 23711]

Creation date : 2015/07/01

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Diagnostic type : Mono-mission analyses	Diagnostic A000 (mission j2)	
	Name : Differences of number of valid and invalid measurements between both altimetric components	
	Input data : Along track altimetric components	
	Description : The number of valid measurements for one parameter and invalid for the other, and vice-versa.	
	<div>Valid and invalid measurements for ERA and ECMWF</div> <div>Mission j2, cycles 203 to 235</div> 	

Diagnostic A001 (mission j2)

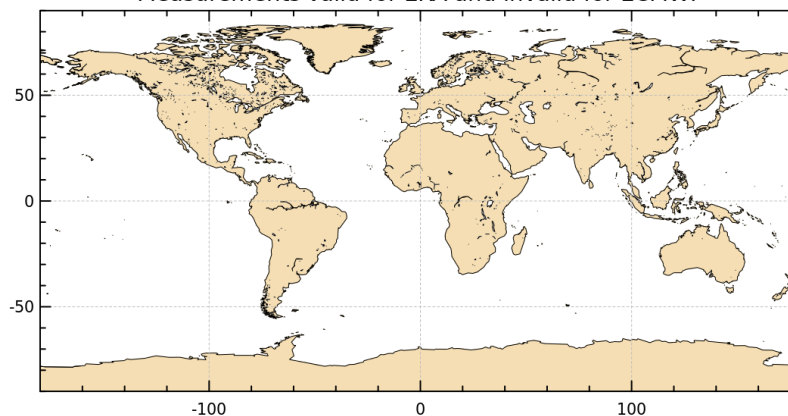
Name : Maps of differences of valid and invalid measurements between both altimetric components

Input data : Along track altimetric components

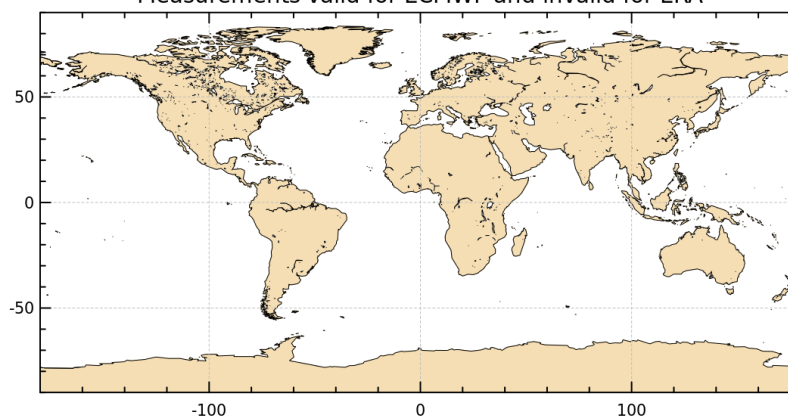
Description : The first map represents the valid measurements for one parameter and invalid for the other, and vice-versa for the second map.

Diagnostic type : Mono-mission analyses

Measurements valid for ERA and invalid for ECMWF



Measurements valid for ECMWF and invalid for ERA



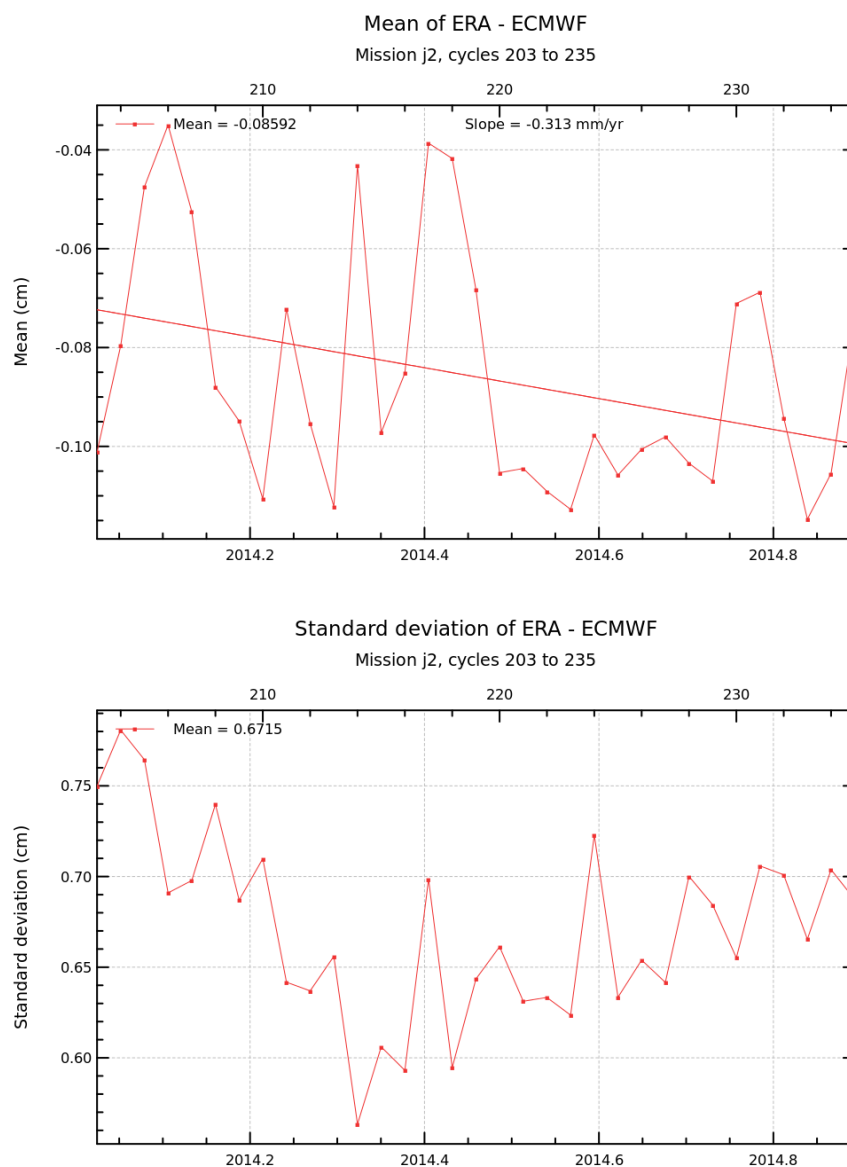
Diagnostic A001 (mission j2)

Name : Temporal evolution of differences between both altimetric components

Input data : Along track altimetric components

Description : The temporal evolution of global statistics (mean, variance, slope) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) . These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Mono-mission analyses

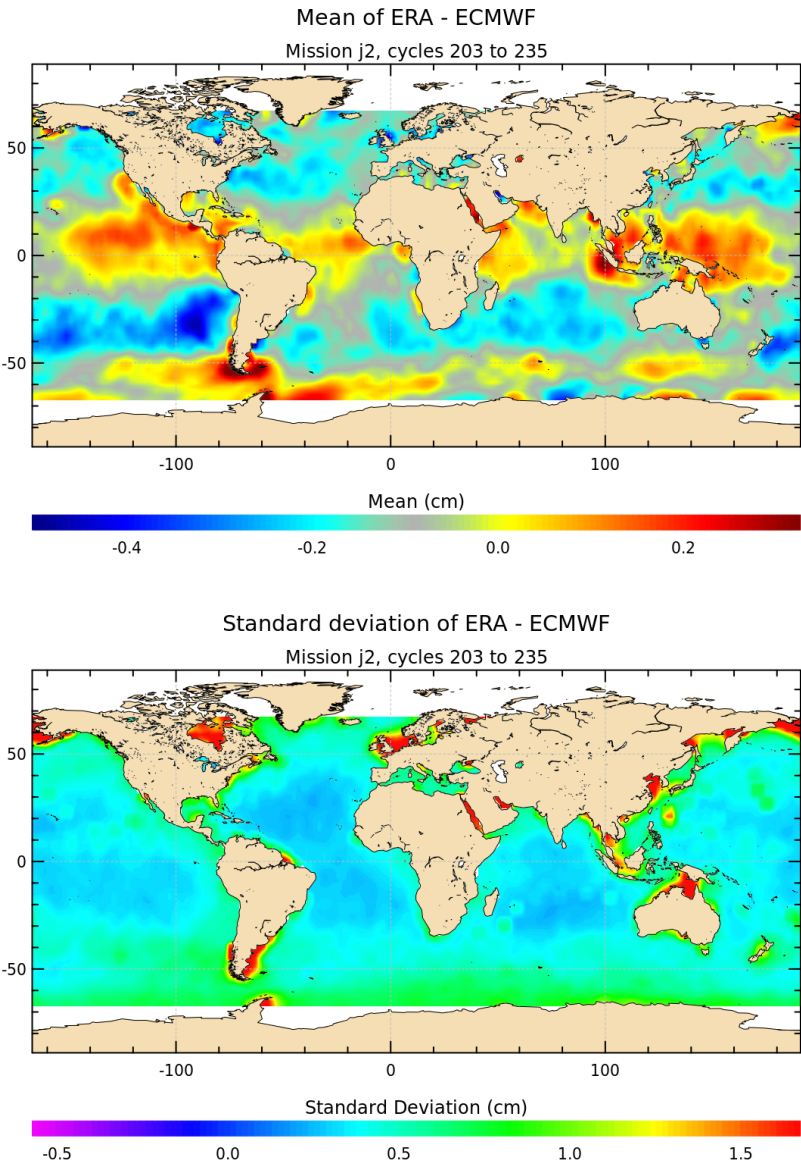


Diagnostic A002 (mission j2)

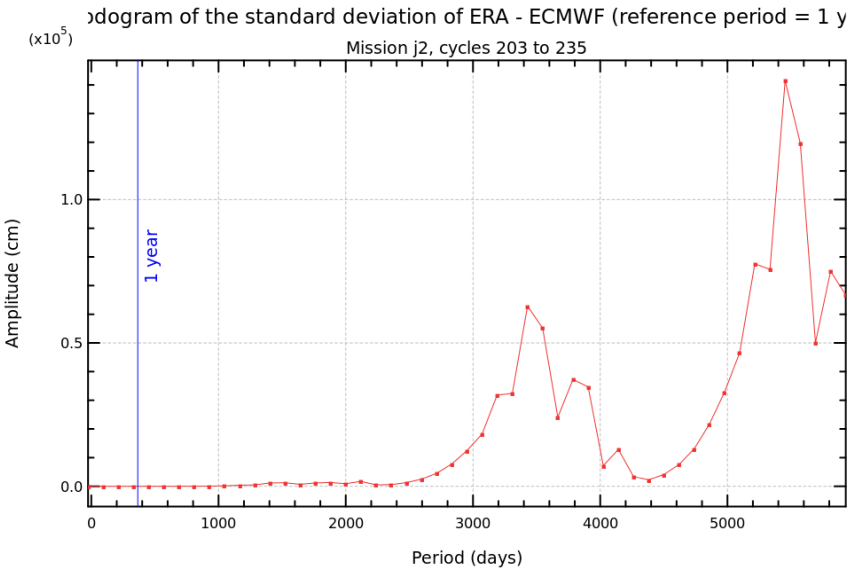
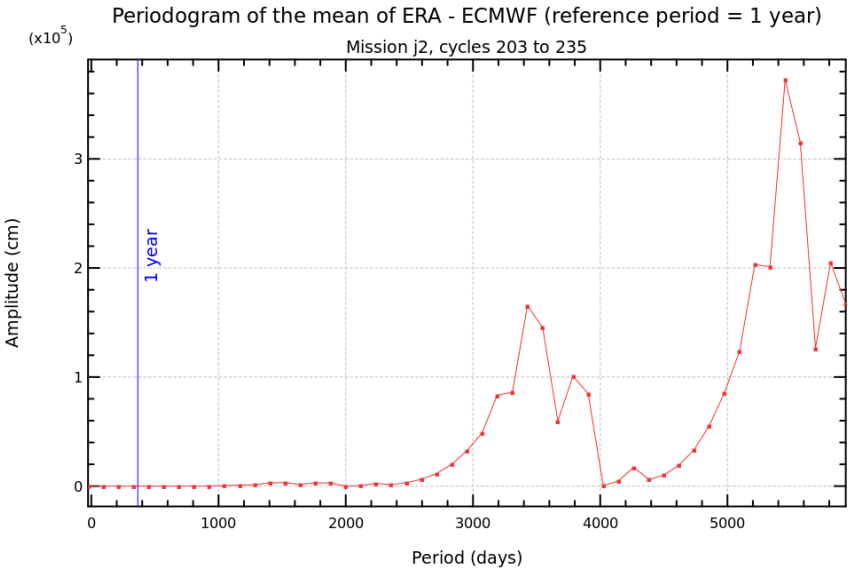
Name : Map of differences between both altimetric components over all the period

Input data : Along track altimetric components

Description : The map of global statistics (mean, standard deviation) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated over a given period which is the longer as possible to have obtain reliable statically results. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.



Diagnostic A003_a (mission j2)	
Name : Periodogram derived from temporal evolution of altimetric component differences	
Input data : Along track altimetric components	
Description : The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated for all the periods, but it can be focused on a dedicated period.	



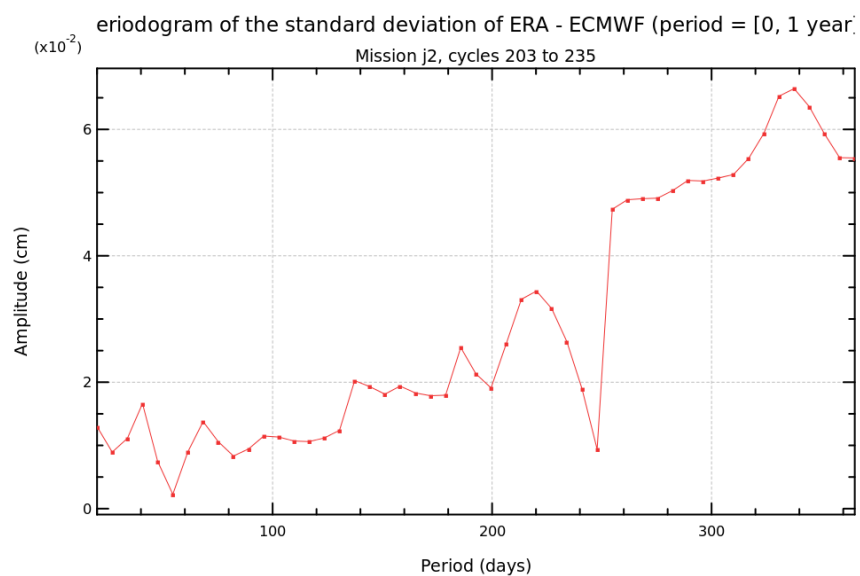
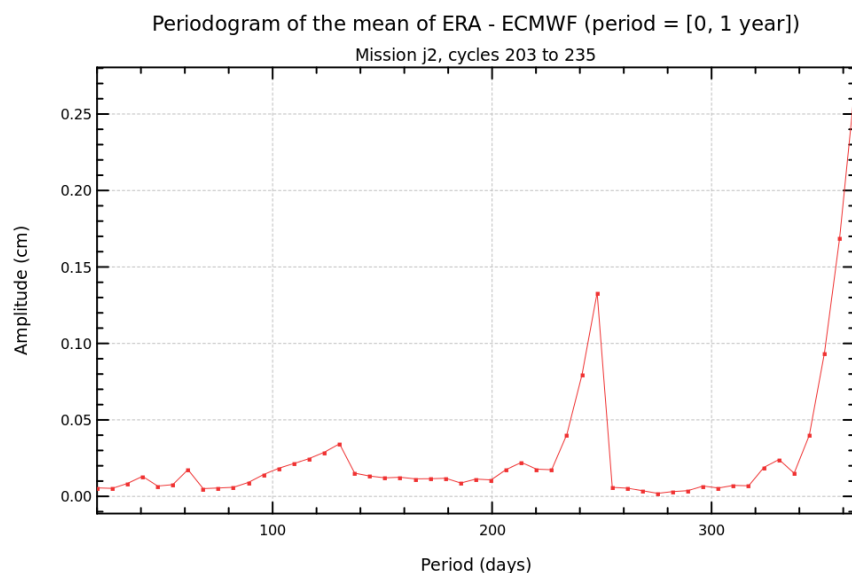
Diagnostic A003_b (mission j2)

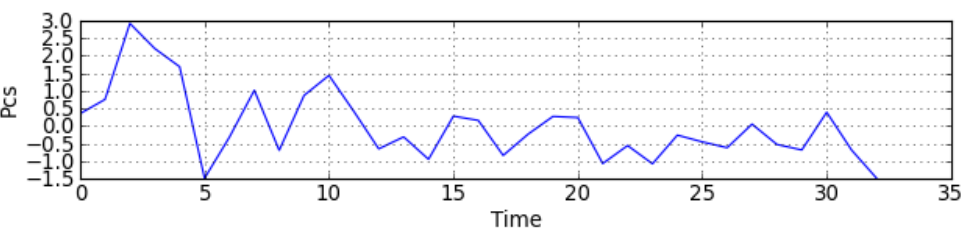
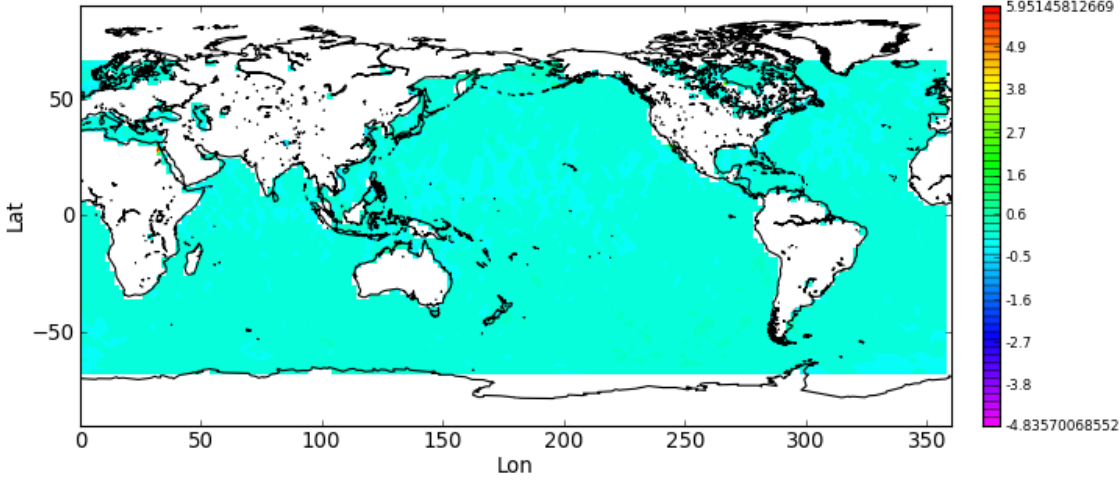
Name : Periodogram derived from temporal evolution of altimetric component differences

Input data : Along track altimetric components

Description : The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated for all the periods, but it can be focused on a dedicated period.

Diagnostic type : Mono-mission analyses



Diagnostic type : Mono-mission analyses	Diagnostic A005_a (mission j2)	
	Name : EOF Decomposition of Differences	
	Input data : Along track altimetric components	
	Description : The differences between map of SLA (mean) are calculated from the mean SLA maps (per cycle) using successively both altimetric components in the SLA calculation. The maps of the differences are analyzed through an Empirical Orthogonal Functions (EOF) decomposition.	
	<div>EOF #1-Mean- Explained Variance=7.0%</div> <div></div>	

Diagnostic A005_b (mission j2)

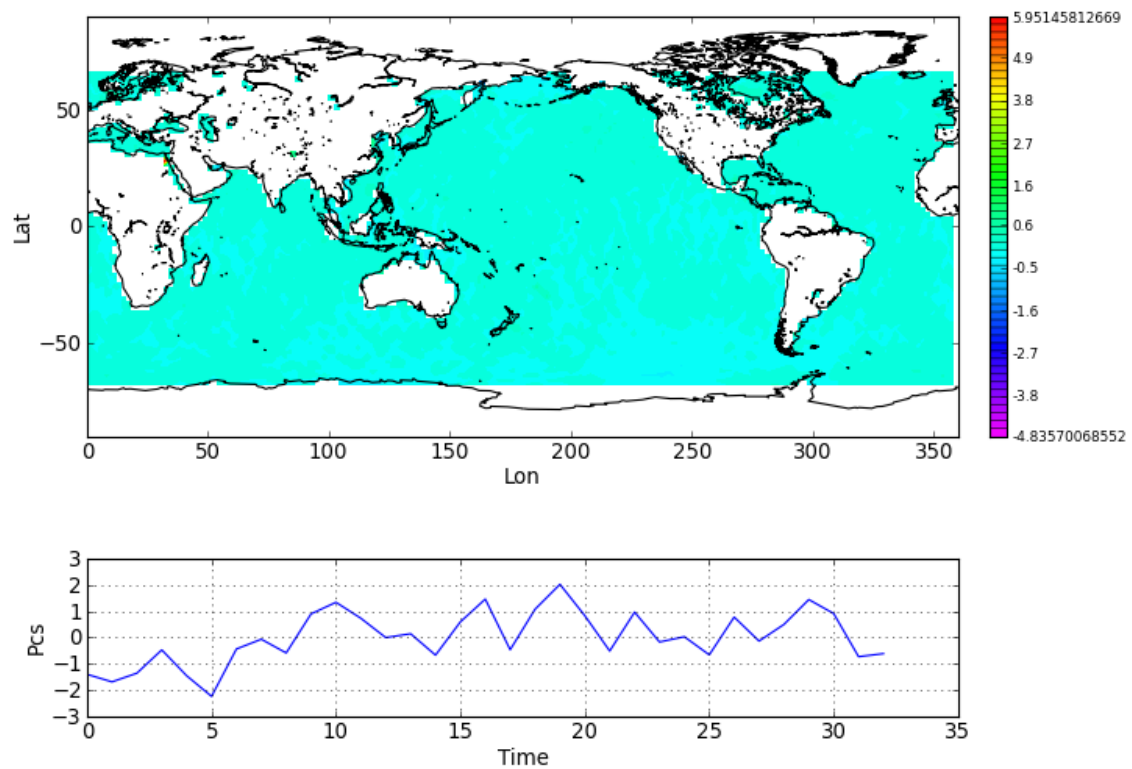
Name : EOF Decomposition of Differences

Input data : Along track altimetric components

Description : The differences between map of SLA (mean) are calculated from the mean SLA maps (per cycle) using successively both altimetric components in the SLA calculation. The maps of the differences are analyzed through an Empirical Orthogonal Functions (EOF) decomposition.

Diagnostic type : Mono-mission analyses

EOF #2-Mean- Explained Variance=7.0%



Diagnostic A005_c (mission j2)

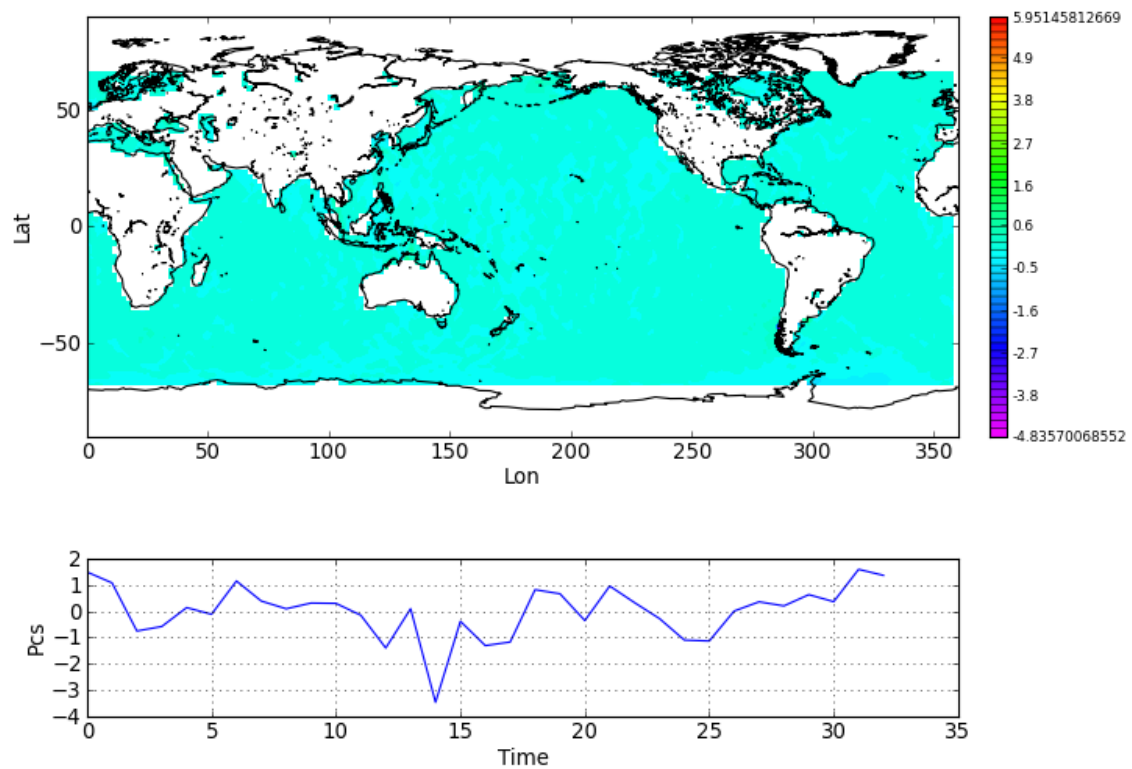
Name : EOF Decomposition of Differences

Input data : Along track altimetric components

Description : The differences between map of SLA (mean) are calculated from the mean SLA maps (per cycle) using successively both altimetric components in the SLA calculation. The maps of the differences are analyzed through an Empirical Orthogonal Functions (EOF) decomposition.

Diagnostic type : Mono-mission analyses

EOF #3-Mean- Explained Variance=6.0%



Diagnostic A005_d (mission j2)

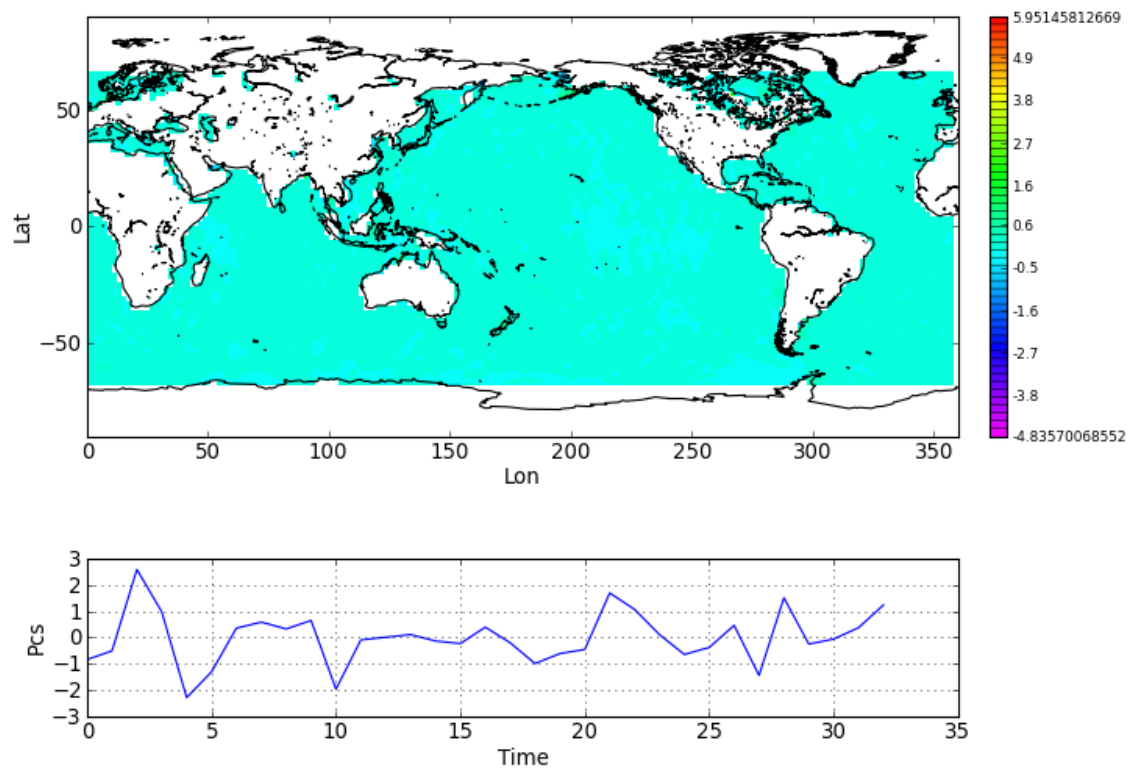
Name : EOF Decomposition of Differences

Input data : Along track altimetric components

Description : The differences between map of SLA (mean) are calculated from the mean SLA maps (per cycle) using successively both altimetric components in the SLA calculation. The maps of the differences are analyzed through an Empirical Orthogonal Functions (EOF) decomposition.

Diagnostic type : Mono-mission analyses

EOF #4-Mean- Explained Variance=5.0%



Diagnostic A005_e (mission j2)

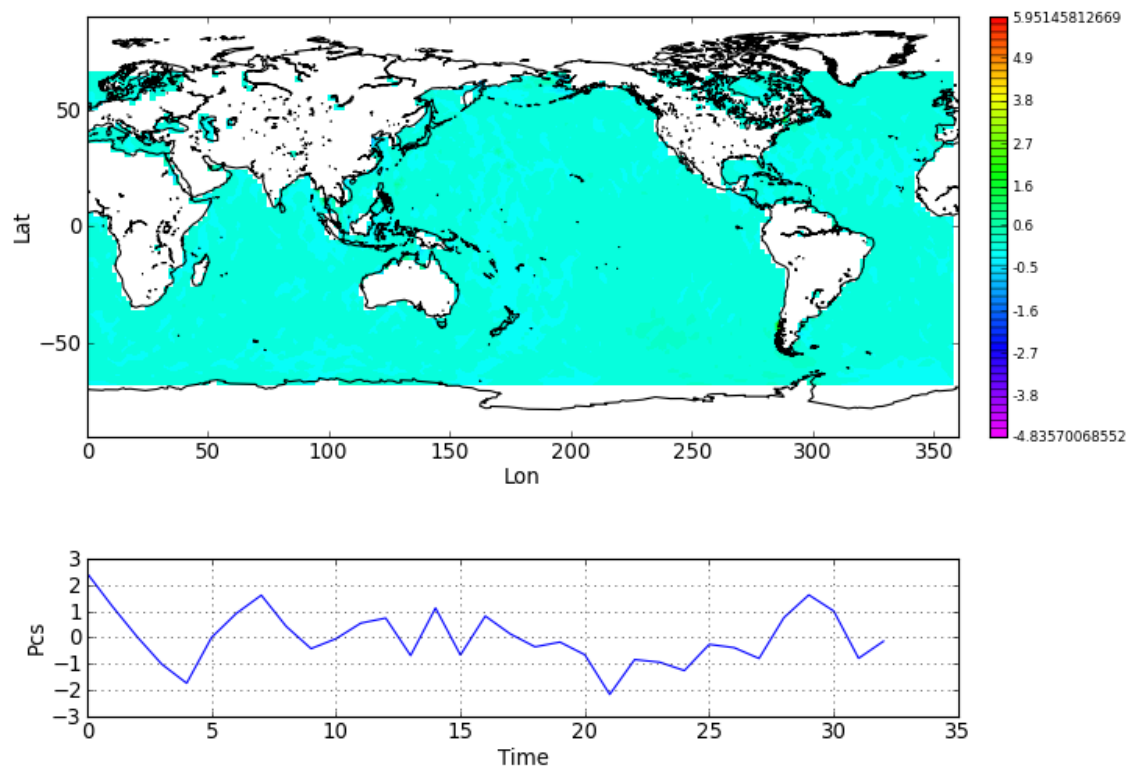
Name : EOF Decomposition of Differences

Input data : Along track altimetric components

Description : The differences between map of SLA (mean) are calculated from the mean SLA maps (per cycle) using successively both altimetric components in the SLA calculation. The maps of the differences are analyzed through an Empirical Orthogonal Functions (EOF) decomposition.

Diagnostic type : Mono-mission analyses

EOF #5-Mean- Explained Variance=5.0%



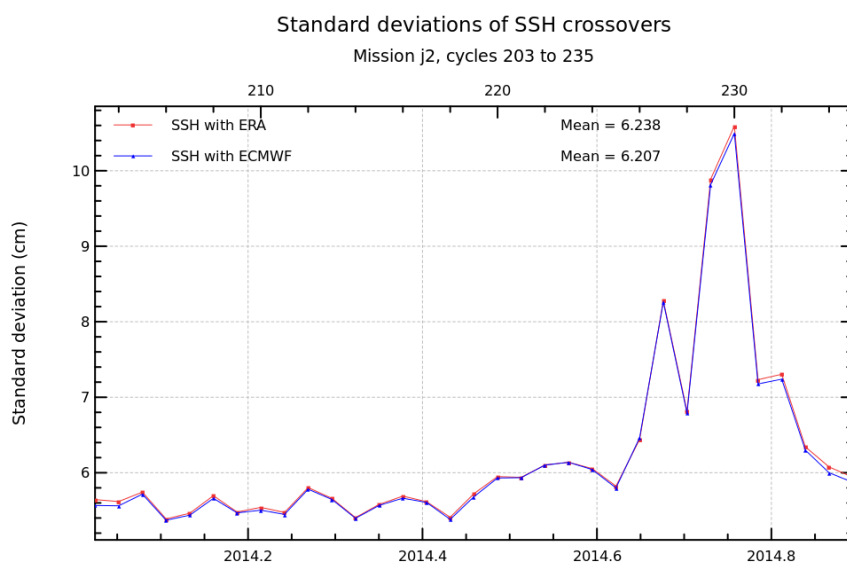
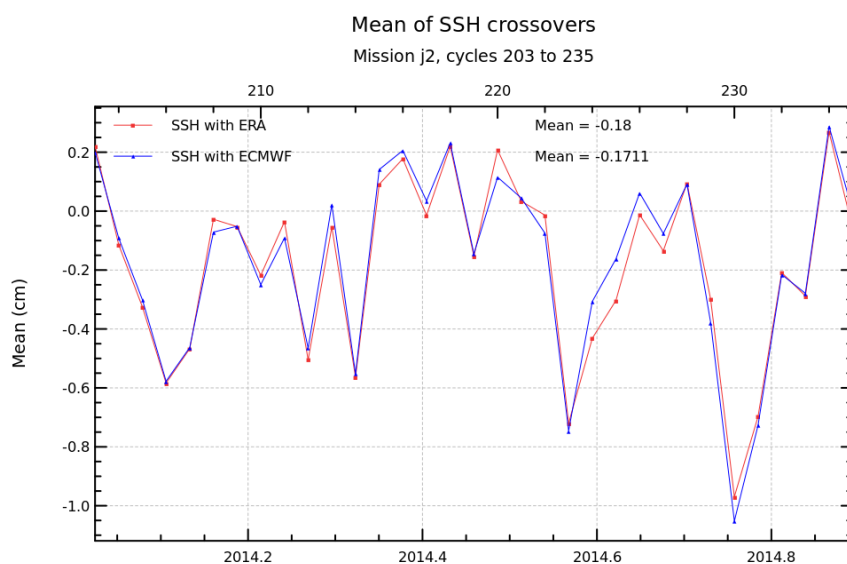
Diagnostic A101_a (mission j2)

Name : Temporal evolution of SSH crossovers

Input data : Sea Surface Height (SSH) crossovers

Description : The temporal evolution of global statistics (mean, standard deviation) of SSH differences are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower than 10 days (in order to reduce the effect of the oceanic variability).

Diagnostic type : Mono-mission analyses



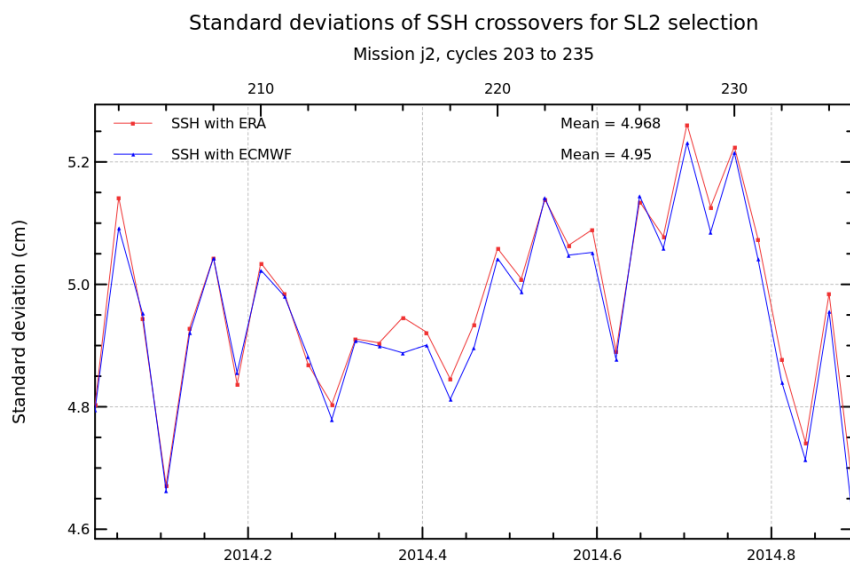
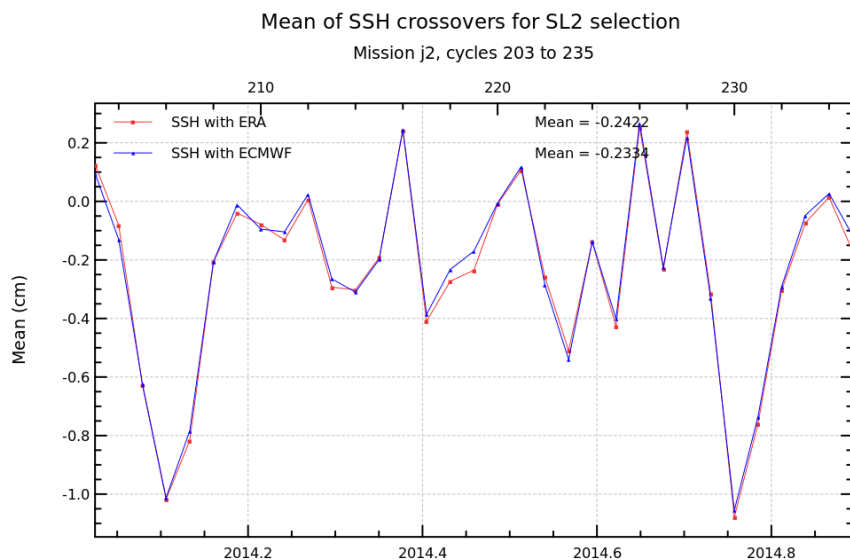
Diagnostic A101_b (mission j2)

Name : Temporal evolution of SSH crossovers

Input data : Sea Surface Height (SSH) crossovers

Description : The temporal evolution of global statistics (mean, standard deviation) of SSH differences are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower than 10 days (in order to reduce the effect of the oceanic variability).

Diagnostic type : Mono-mission analyses



Diagnostic A102 (mission j2)

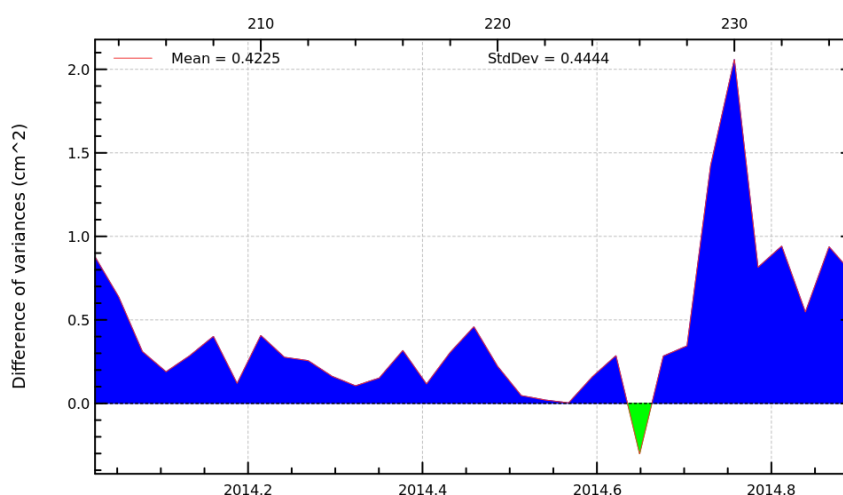
Name : Differences between temporal evolution of SSH crossovers

Input data : Sea Surface Height (SSH) crossovers

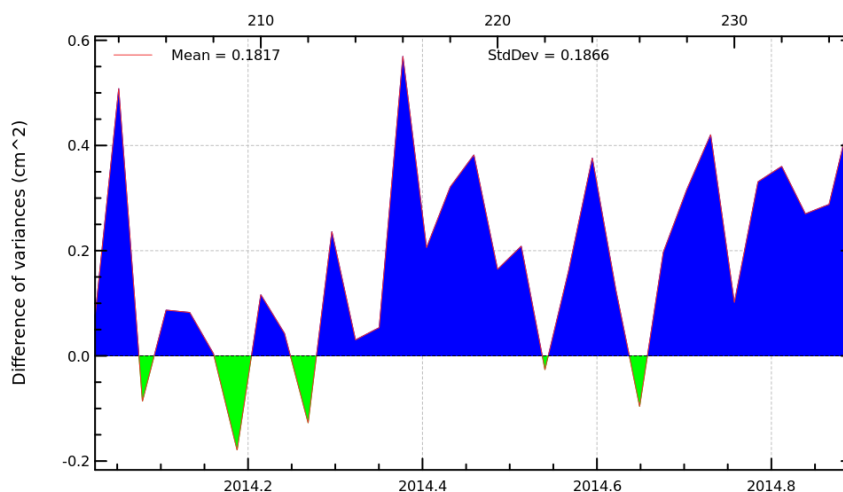
Description : The difference of temporal evolution between the global statistics (mean, standard deviation) of SSH differences are calculated using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower than 10 days (in order to reduce the effect of the oceanic variability).

Diagnostic type : Mono-mission analyses

SSH crossovers : VAR(SSH with ERA) - VAR(SSH with ECMWF)
Mission j2, cycles 203 to 235



SSH crossovers : VAR(SSH with ERA) - VAR(SSH with ECMWF) (SL2)
Mission j2, cycles 203 to 235



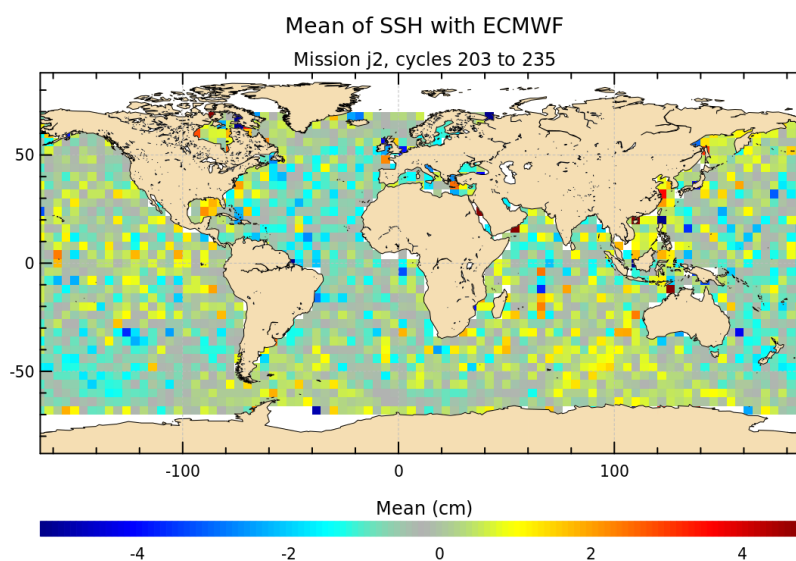
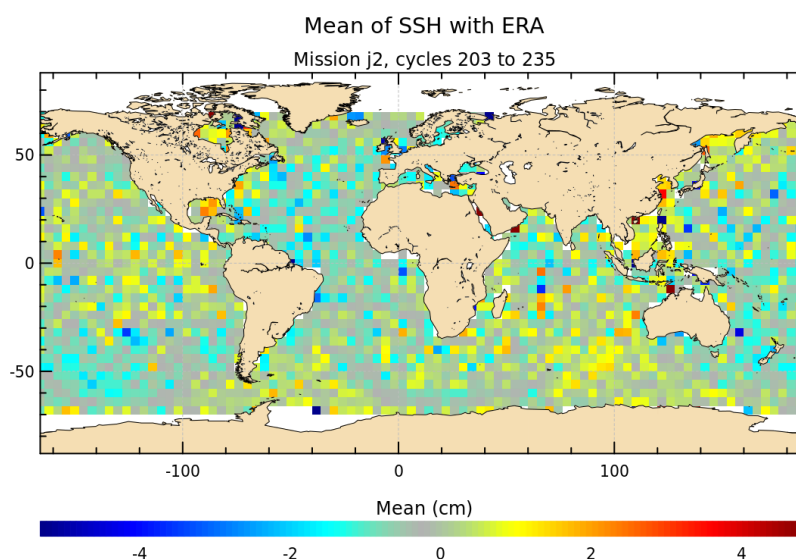
Diagnostic A103 (mission j2)

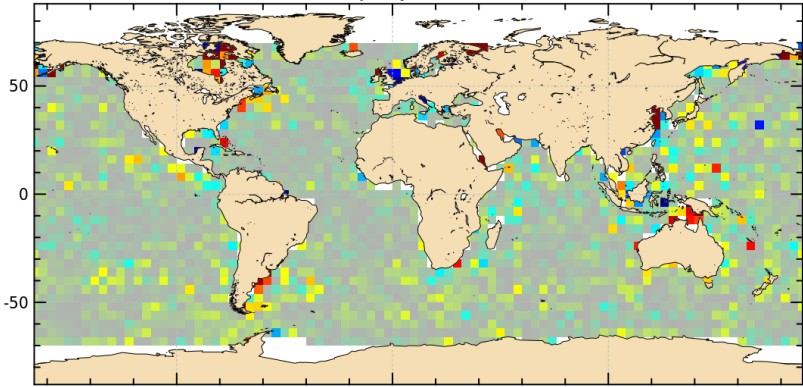
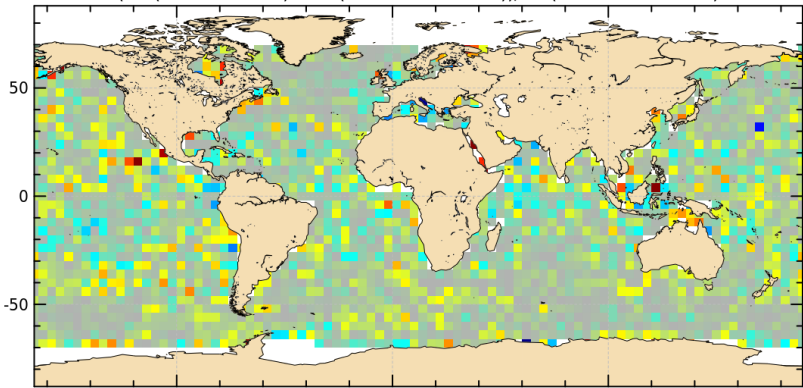
Name : Map of SSH crossovers

Input data : Sea Surface Height (SSH) crossovers

Description : The differences between maps of SSH crossovers differences (mean, variance) are calculated using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower than 10 days (in order to reduce the effect of the oceanic variability).

Diagnostic type : Mono-mission analyses



Diagnostic type : Mono-mission analyses	Diagnostic A104 (mission j2)	
	Name : Differences between maps of SSH crossovers	
	Input data : Sea Surface Height (SSH) crossovers	
	Description : The differences between maps of SSH crossovers (derived from diagnostic A103) are calculated from the SSH crossover differences (mean, standard deviation) using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower than 10 days (in order to reduce the effect of the oceanic variability).	
	<div>VAR(SSH with ERA) - VAR(SSH with ECMWF)</div> <div>Mission j2, cycles 203 to 235</div>  <div>SSH crossovers : difference of variances (cm²)</div> <div>-10 -5 0 5 10</div> <div>Percentage of X_SSH error reduction</div> <div>(Var(SSH with ERA) - Var(SSH with ECMWF))/Var(SSH with ECMWF)</div>  <div>Reduction/Increase of variance of X_SSH - ln %</div> <div>-20 0 20</div>	

Diagnostic type : Mono-mission analyses	Diagnostic A201_a (mission j2)																				
	Name : Temporal evolution of Sea Level Anomaly (SLA)																				
	Input data : Along track SLA																				
	<p>Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.</p>																				
	<div>Global MSL</div> <div>Mission j2, cycles 203 to 235</div> <table><caption>Approximate data points from the Global MSL graph</caption><tr><th>Mission Cycle</th><th>Year (approx.)</th><th>SLA with ERA (cm)</th><th>SLA with ECMWF (cm)</th></tr><tr><td>203</td><td>2014.15</td><td>0.80</td><td>0.70</td></tr><tr><td>210</td><td>2014.20</td><td>1.10</td><td>1.00</td></tr><tr><td>220</td><td>2014.40</td><td>0.80</td><td>0.75</td></tr><tr><td>230</td><td>2014.80</td><td>1.20</td><td>1.10</td></tr></table>		Mission Cycle	Year (approx.)	SLA with ERA (cm)	SLA with ECMWF (cm)	203	2014.15	0.80	0.70	210	2014.20	1.10	1.00	220	2014.40	0.80	0.75	230	2014.80	1.20
Mission Cycle	Year (approx.)	SLA with ERA (cm)	SLA with ECMWF (cm)																		
203	2014.15	0.80	0.70																		
210	2014.20	1.10	1.00																		
220	2014.40	0.80	0.75																		
230	2014.80	1.20	1.10																		

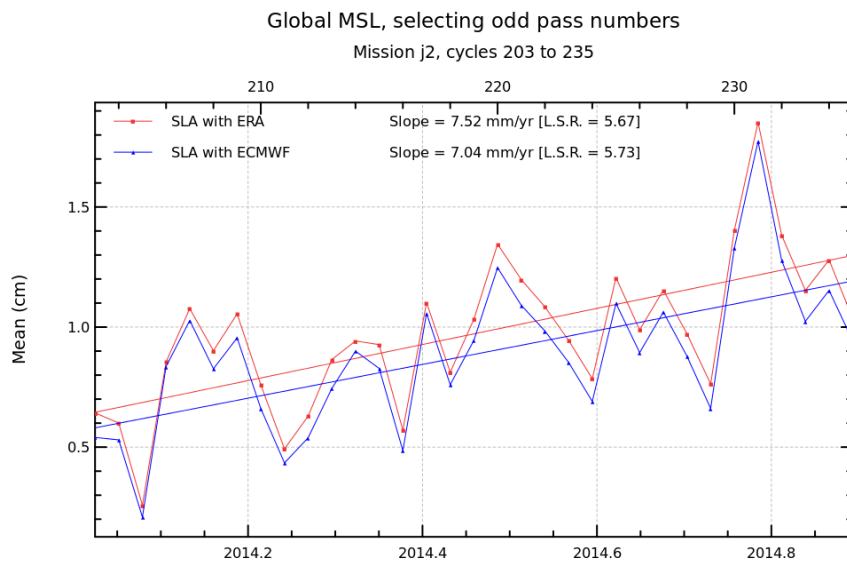
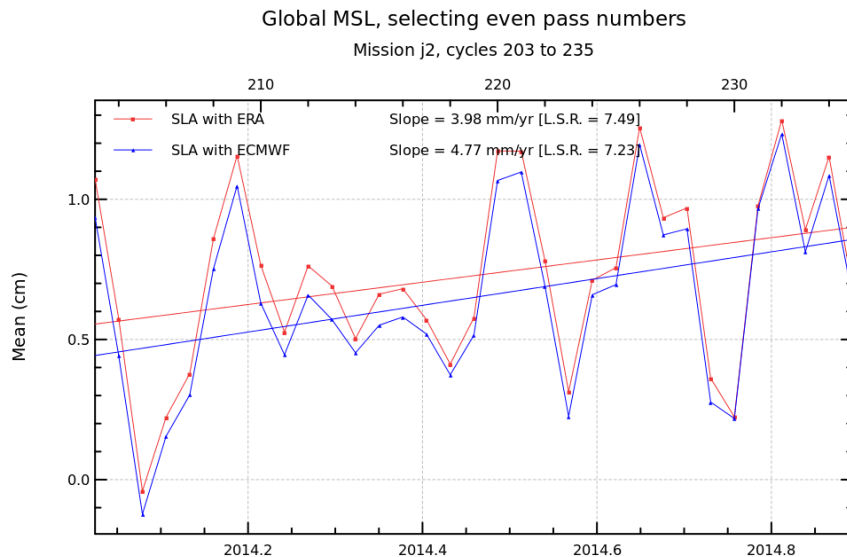
Diagnostic A201_b (mission j2)

Name : Temporal evolution of Sea Level Anomaly (SLA)

Input data : Along track SLA

Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.

Diagnostic type : Mono-mission analyses



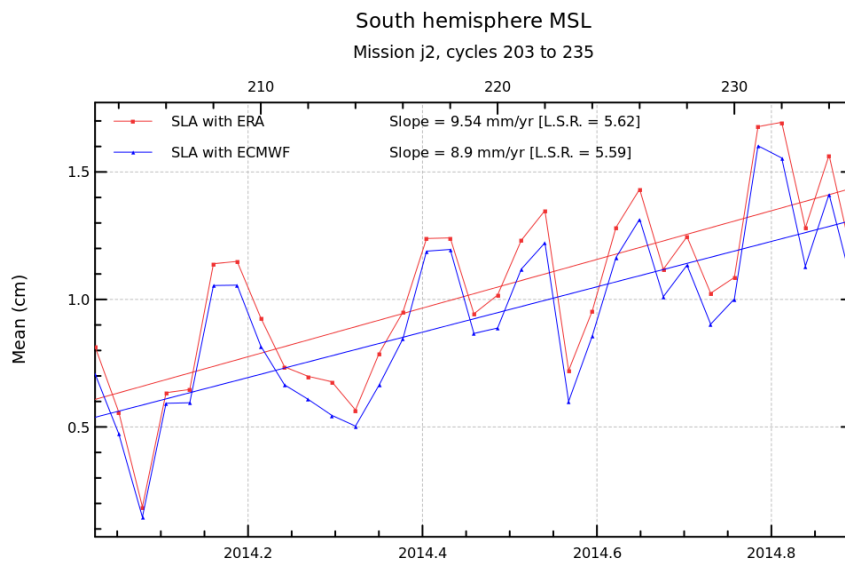
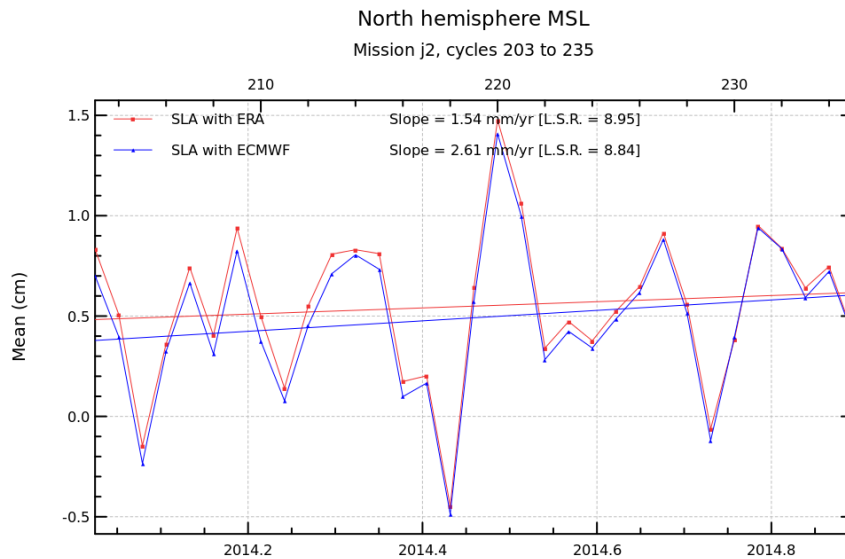
Diagnostic A201_c (mission j2)

Name : Temporal evolution of Sea Level Anomaly (SLA)

Input data : Along track SLA

Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.

Diagnostic type : Mono-mission analyses



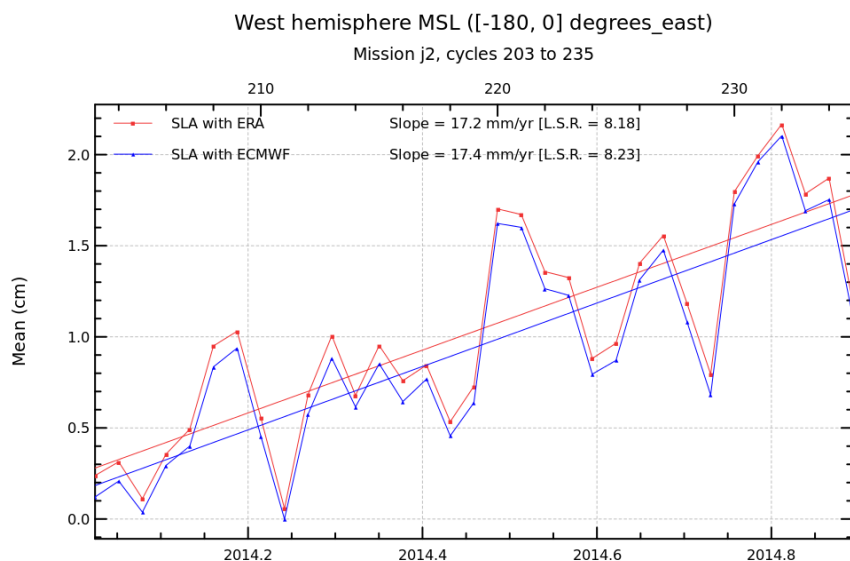
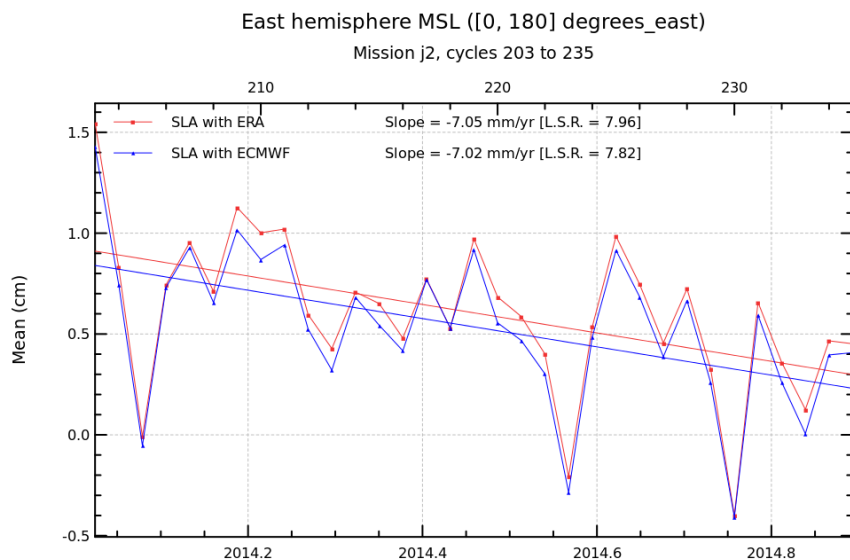
Diagnostic A201_d (mission j2)

Name : Temporal evolution of Sea Level Anomaly (SLA)

Input data : Along track SLA

Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.

Diagnostic type : Mono-mission analyses



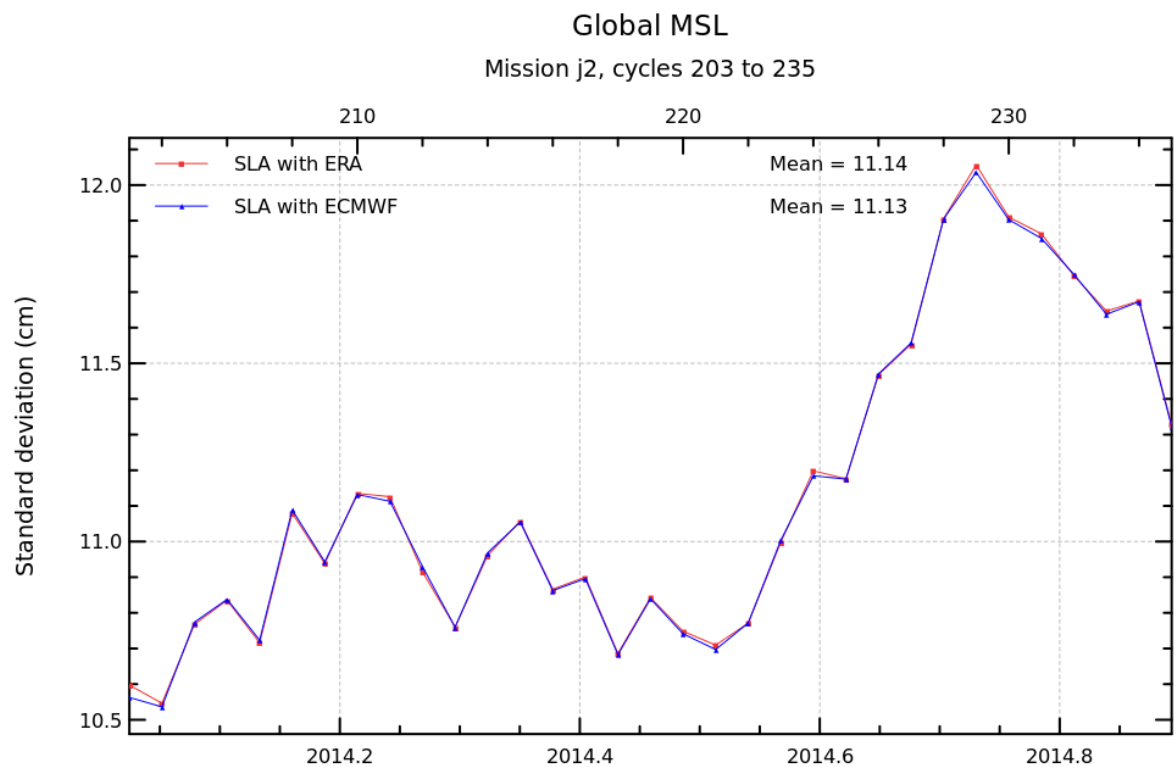
Diagnostic A201_e (mission j2)

Name : Temporal evolution of Sea Level Anomaly (SLA)

Input data : Along track SLA

Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.

Diagnostic type : Mono-mission analyses



Diagnostic A201_f (mission j2)

Name : Temporal evolution of Sea Level Anomaly (SLA)

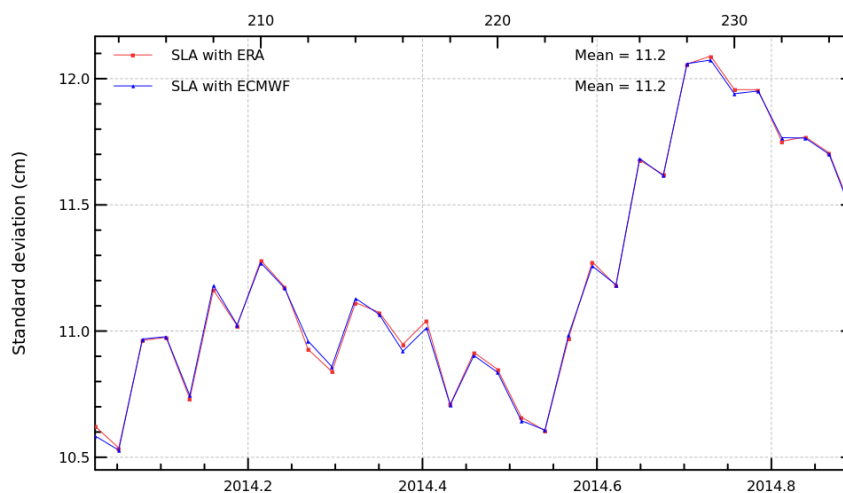
Input data : Along track SLA

Description : The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements. They are calculated globally, but also separating ascending and descending passes, or separating North and South hemispheres.

Diagnostic type : Mono-mission analyses

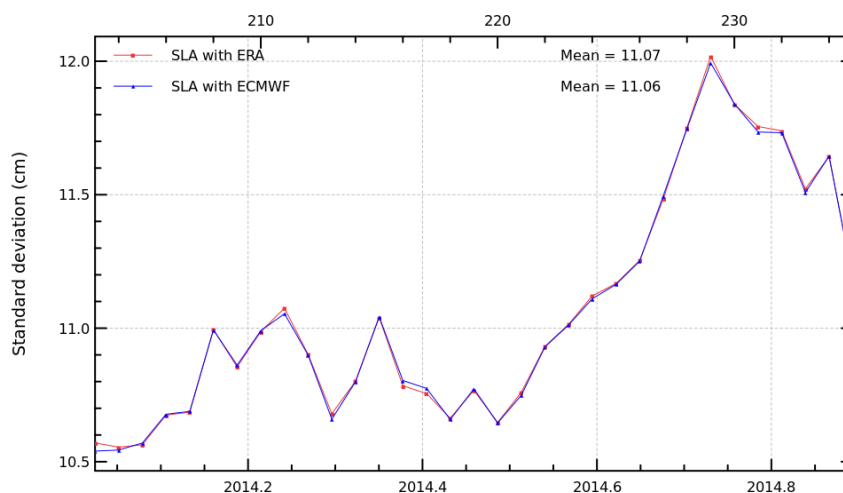
Global MSL, selecting even pass numbers

Mission j2, cycles 203 to 235

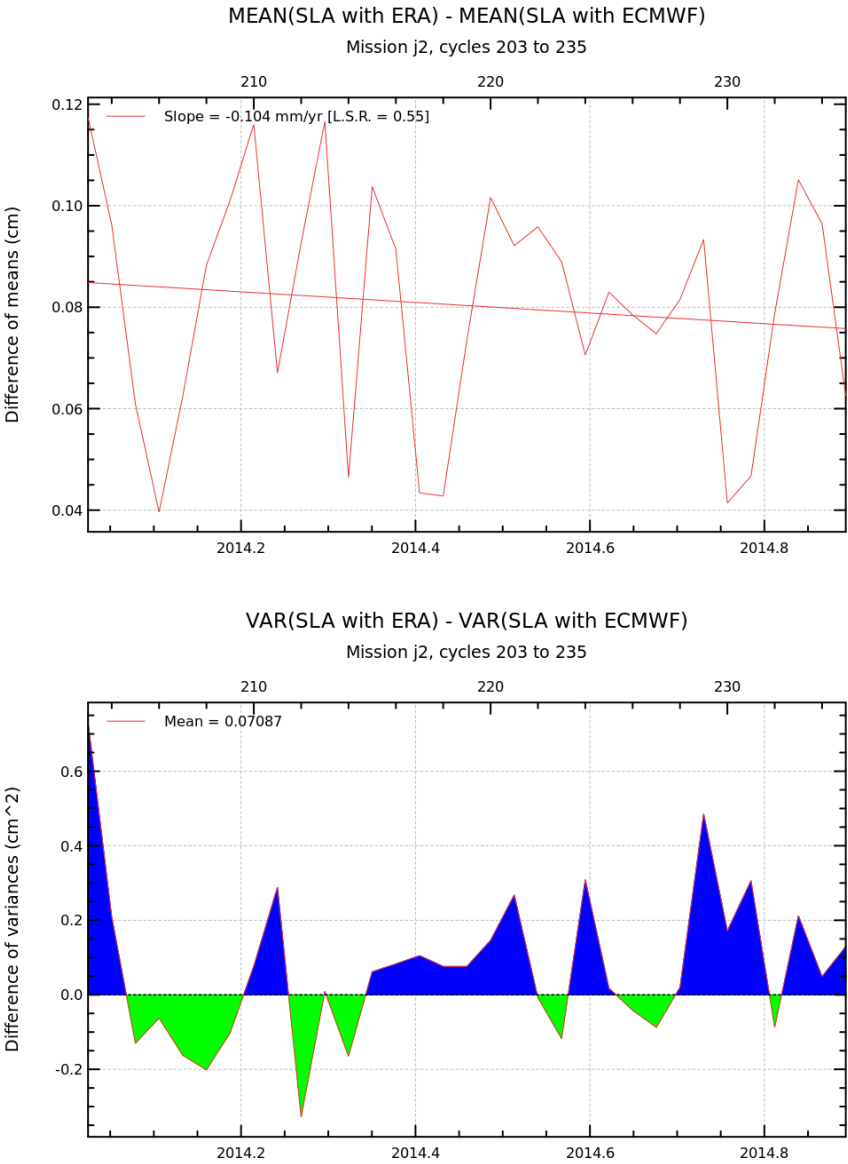


Global MSL, selecting odd pass numbers

Mission j2, cycles 203 to 235



Diagnostic A202_a (mission j2)	
Name : Differences between temporal evolution of Sea Level Anomaly (SLA)	
Input data : Along track SLA	
Description : The differences between temporal evolution of SLA are calculated from statistics derived from diagnostic A201 (mean, variance) using 2 different components in the SLA calculation. They are calculated globally, but also separating ascending and descending passes or separating North and South hemispheres.	



Diagnostic A202_b (mission j2)

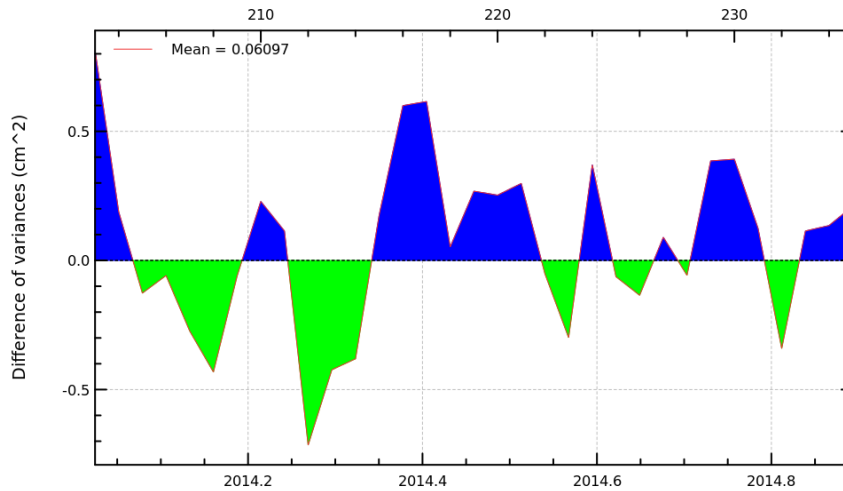
Name : Differences between temporal evolution of Sea Level Anomaly (SLA)

Input data : Along track SLA

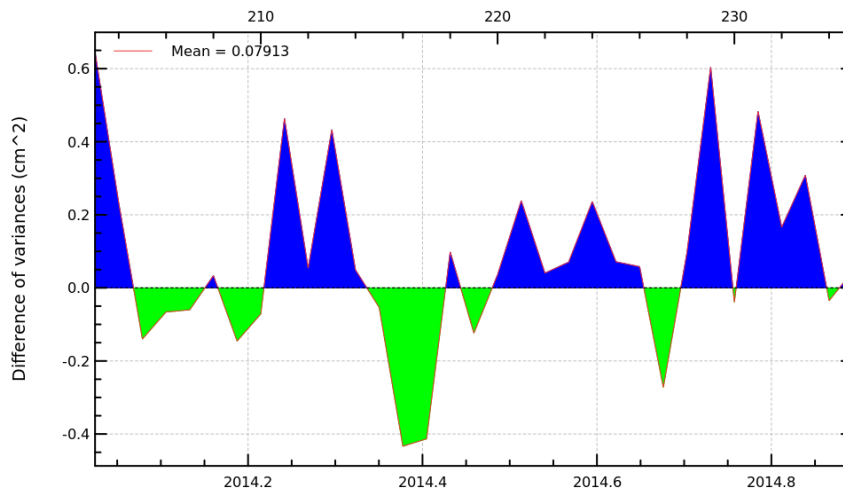
Description : The differences between temporal evolution of SLA are calculated from statistics derived from diagnostic A201 (mean, variance) using 2 different components in the SLA calculation. They are calculated globally, but also separating ascending and descending passes or separating North and South hemispheres.

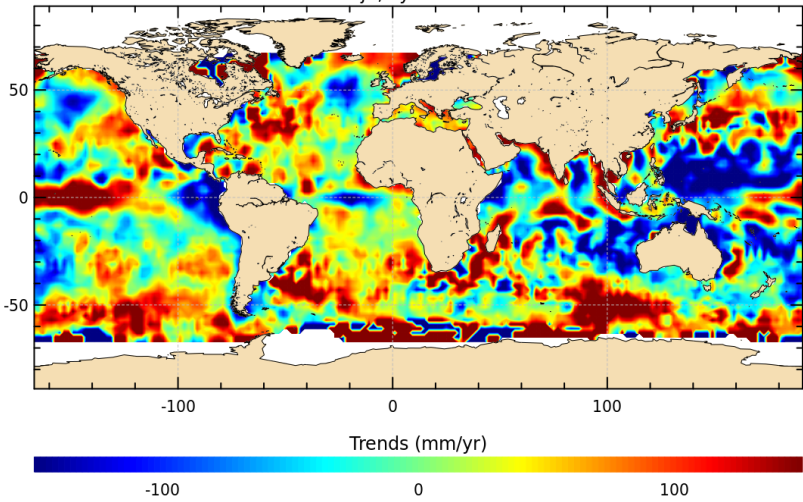
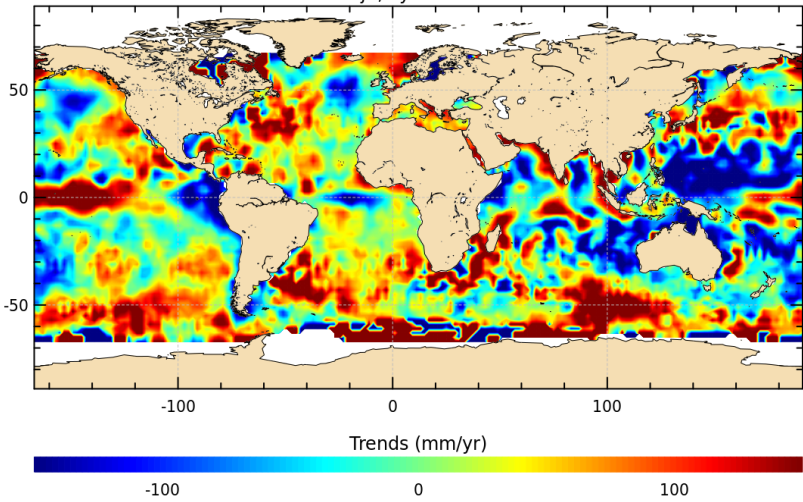
Diagnostic type : Mono-mission analyses

VAR(SLA with ERA) - VAR(SLA with ECMWF), even pass numbers
Mission j2, cycles 203 to 235



VAR(SLA with ERA) - VAR(SLA with ECMWF), odd pass numbers
Mission j2, cycles 203 to 235



Diagnostic type : Mono-mission analyses	Diagnostic A203_a (mission j2)	
	Name : Map of Sea Level Anomaly (SLA) over all the period	
	Input data : Along track SLA	
	Description : The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.	
	<div>SLA with ERA trends Mission j2, cycles 203 to 235</div>  <div>SLA with ECMWF trends Mission j2, cycles 203 to 235</div> 	

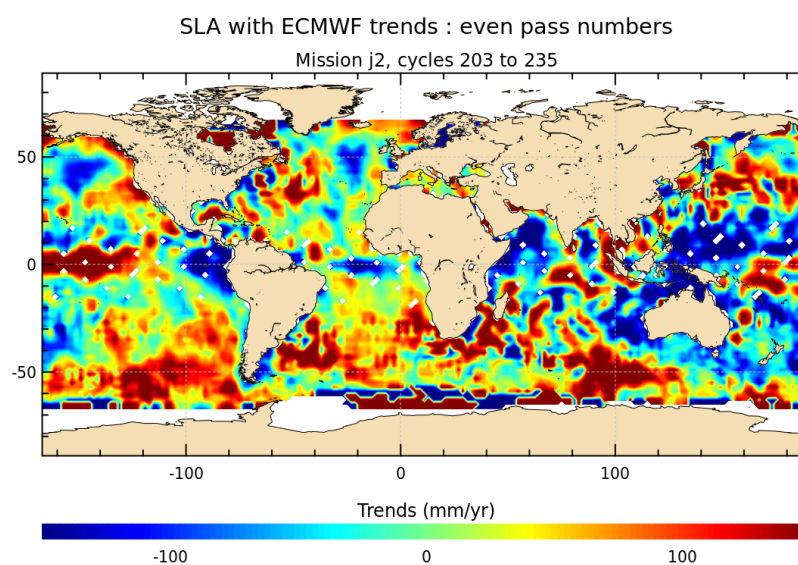
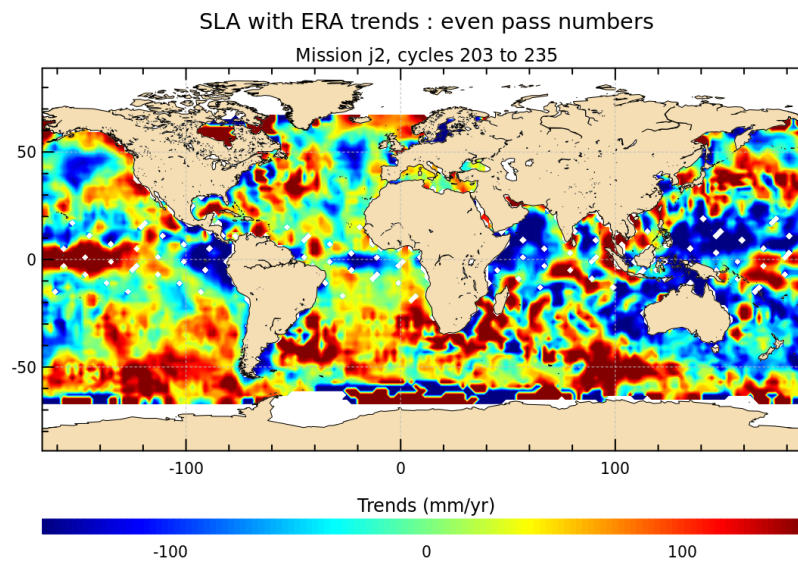
Diagnostic A203_b (mission j2)

Name : Map of Sea Level Anomaly (SLA) over all the period

Input data : Along track SLA

Description : The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Mono-mission analyses



Diagnostic A203_c (mission j2)

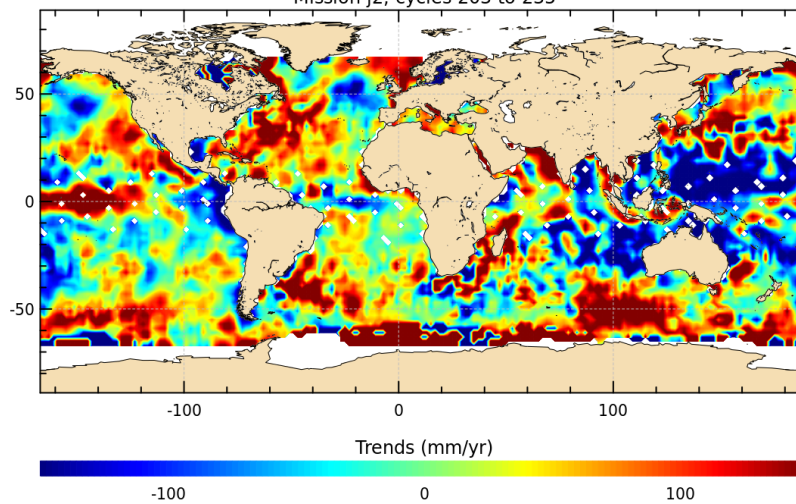
Name : Map of Sea Level Anomaly (SLA) over all the period

Input data : Along track SLA

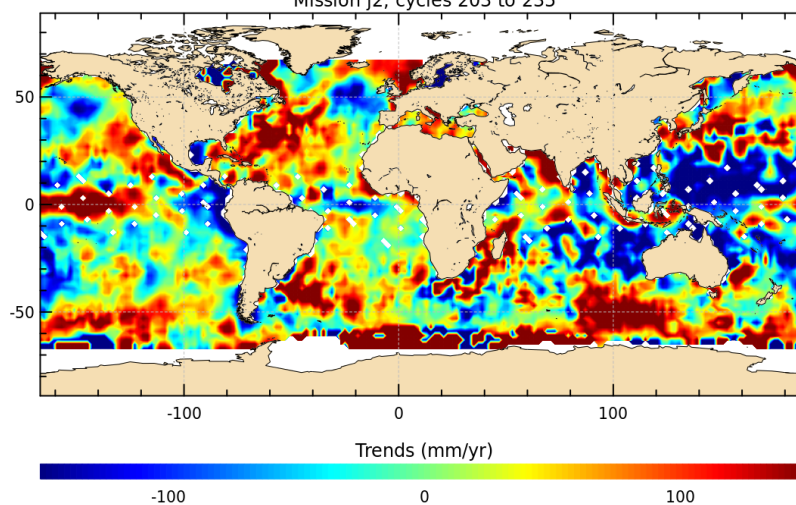
Description : The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

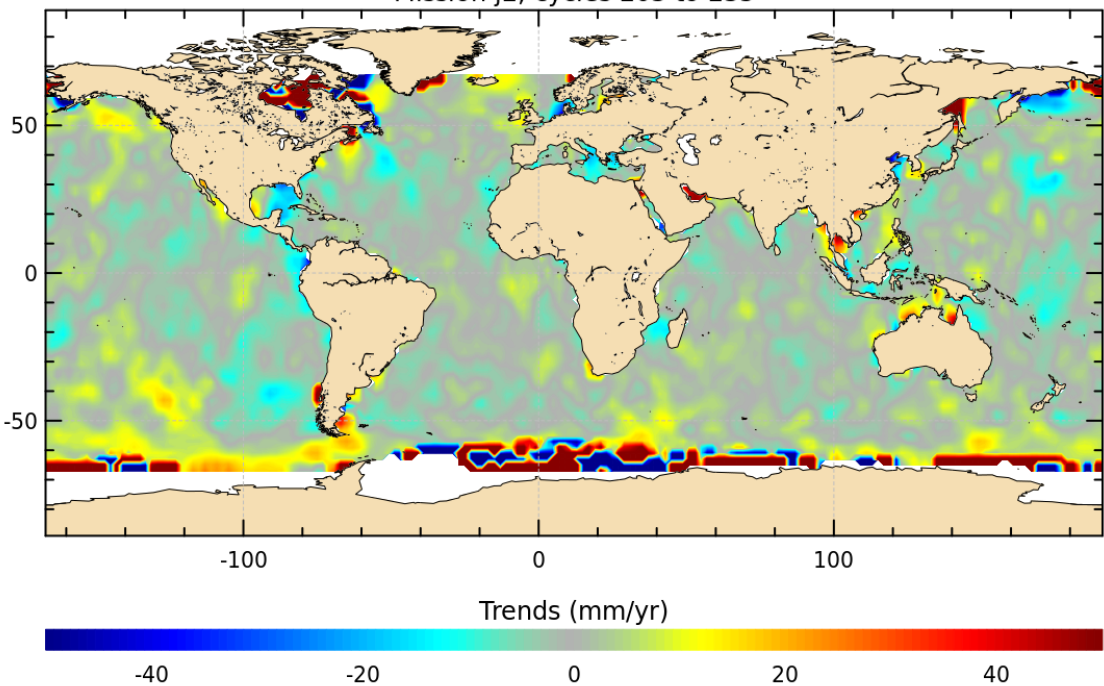
Diagnostic type : Mono-mission analyses

SLA with ERA trends : odd pass numbers
Mission j2, cycles 203 to 235



SLA with ECMWF trends : odd pass numbers
Mission j2, cycles 203 to 235



Diagnostic type : Mono-mission analyses	Diagnostic A204_a (mission j2)	
	Name : Differences between maps of SLA trends	
	Input data : Along track SLA	
	Description : The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except for SLA Grids).	
	<div>SLA with ERA trends - SLA with ECMWF trends</div> <div>Mission j2, cycles 203 to 235</div> 	

Diagnostic A204_b (mission j2)

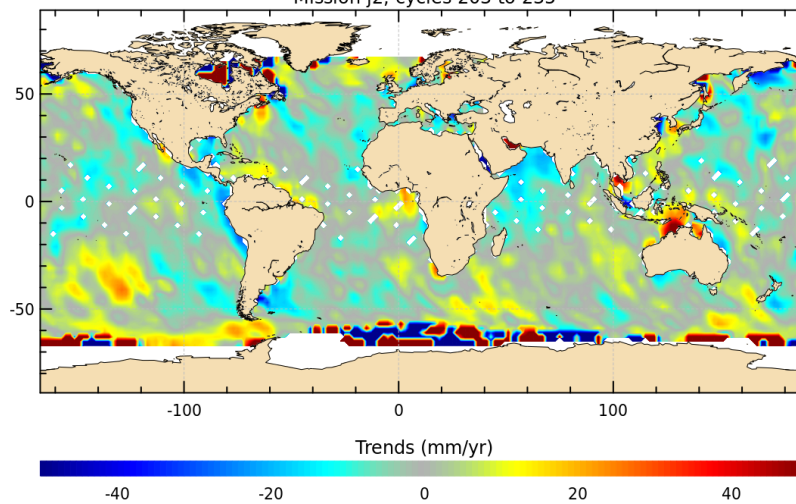
Name : Differences between maps of SLA trends

Input data : Along track SLA

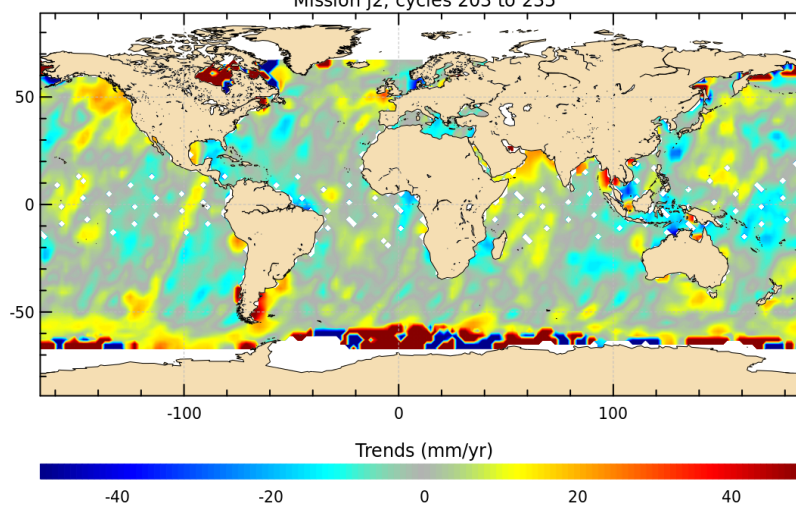
Description : The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except for SLA Grids).

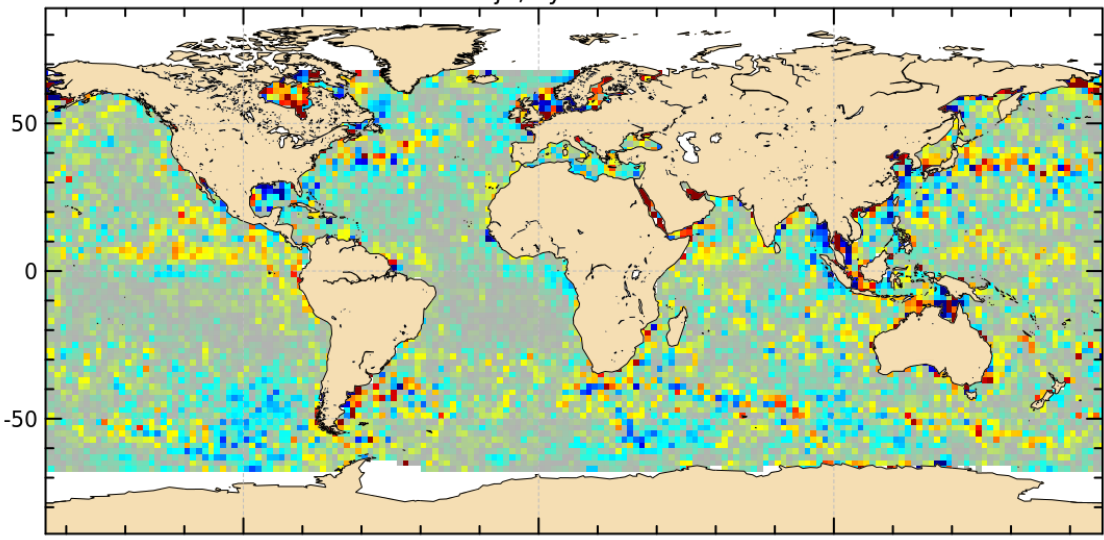
Diagnostic type : Mono-mission analyses

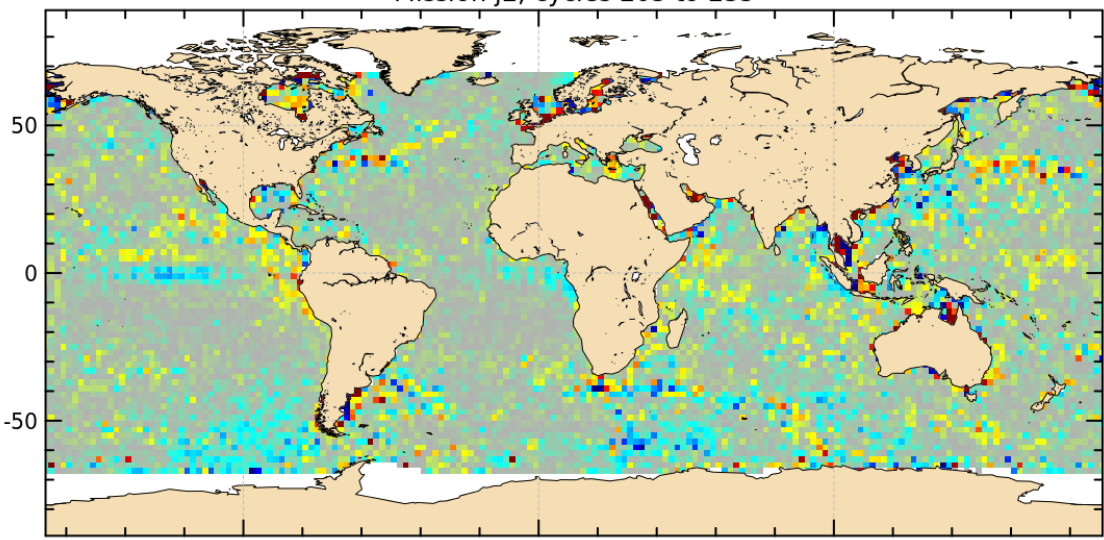
SLA with ERA trends - SLA with ECMWF trends : even pass numbers
Mission j2, cycles 203 to 235



SLA with ERA trends - SLA with ECMWF trends : odd pass numbers
Mission j2, cycles 203 to 235



Diagnostic type : Mono-mission analyses	Diagnostic A209 (mission j2)	
	Name : Differences between maps of SLA variance	
	Input data : Along track SLA	
	Description : The differences between maps of SLA are calculated from the SLA differences (mean, standard deviation) using successively both altimetric components in the SLA calculation.	
	<div>VAR(SLA with ERA) - VAR(SLA with ECMWF)</div> <div>Mission j2, cycles 203 to 235</div>  <div>Difference of variances (cm²)</div> <div><div></div><div>-4</div><div>-2</div><div>0</div><div>2</div><div>4</div></div>	

Diagnostic type : Mono-mission analyses	Diagnostic A210_a (mission j2)
	Name : Differences between maps of SLA variance for different frequency bands
	Input data : Along track SLA
	Description : The differences between maps of SLA (variance) are calculated from the mean SLA maps using successively both altimetric components in the SLA calculation filtered to separate high-frequency ($T < 1$ yr), mid-frequency ($1 \text{ yr} < T < 3$ yrs) and low-frequency ($T > 3$ yrs) signals.
	<div><p>VAR(SLA with ERA) - VAR(SLA with ECMWF) for FILTER HF</p><p>Mission j2, cycles 203 to 235</p><p>Difference of variances HF (cm^2)</p><p>-4 -2 0 2 4</p></div>

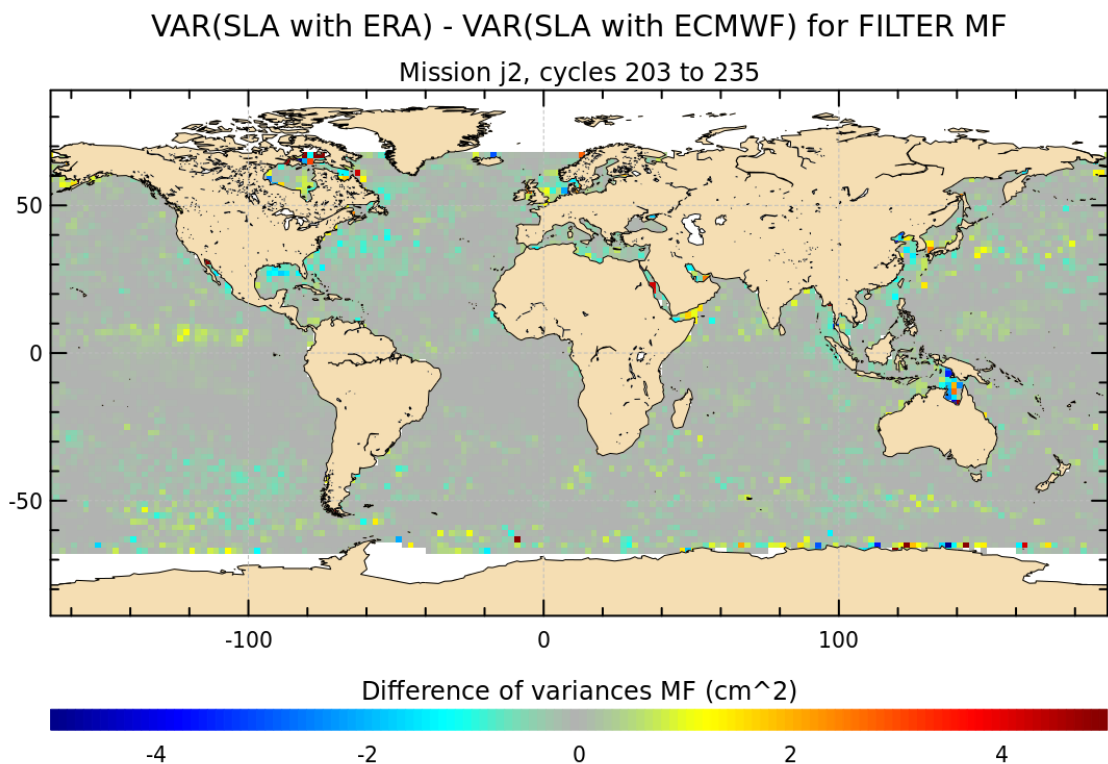
Diagnostic A210_b (mission j2)

Name : Differences between maps of SLA variance for different frequency bands

Input data : Along track SLA

Description : The differences between maps of SLA (variance) are calculated from the mean SLA maps using successively both altimetric components in the SLA calculation filtered to separate high-frequency ($T < 1$ yr), mid-frequency ($1 \text{ yr} < T < 3$ yrs) and low-frequency ($T > 3$ yrs) signals.

Diagnostic type : Mono-mission analyses



Diagnostic A210_c (mission j2)

Name : Differences between maps of SLA variance for different frequency bands

Input data : Along track SLA

Description : The differences between maps of SLA (variance) are calculated from the mean SLA maps using successively both altimetric components in the SLA calculation filtered to separate high-frequency ($T < 1$ yr), mid-frequency ($1 \text{ yr} < T < 3$ yrs) and low-frequency ($T > 3$ yrs) signals.

Diagnostic type : Mono-mission analyses

