

## Comparison of Rx\_Del between CCI IF and IPF

Study variable	<b>RX_DEL_CCI</b>
Reference variable	<b>RX_DEL_IPF</b>
Missions	Envisat ( <i>en</i> ), Jason-1 ( <i>j1</i> )
Period	[19265.898824964341, 21890.898723935312]

Creation date : 2011/10/30

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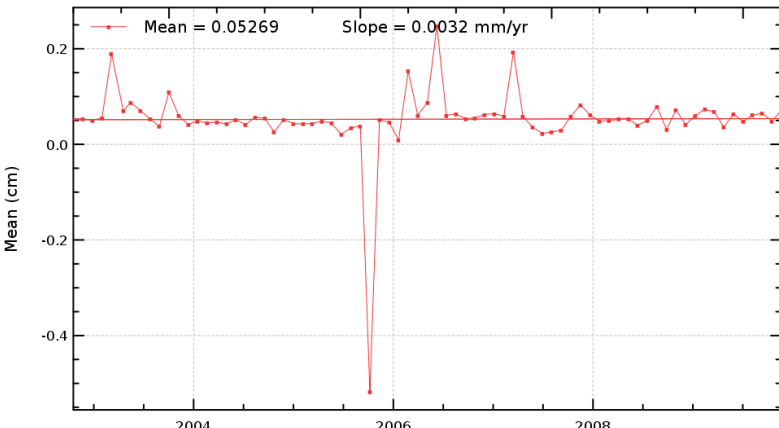
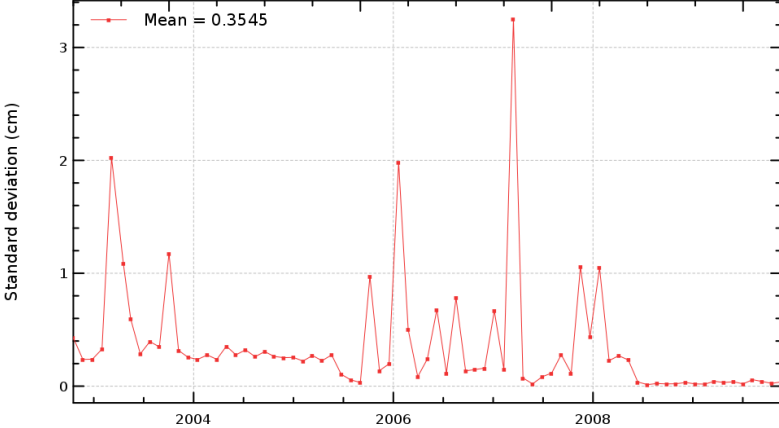
## Study overview

In this study, the new Rx Del with the CCI USO correction developed in the frame of sea-level CCI project has been compared to the IPF Rx Del with the CMA USO correction to observe the impact of the CCI USO correction on the ENVISAT sea surface height (SSH) in Ku-Band.

The impact of using these two Rx Del and USO correction on the SSH calculation has been analyzed for ENVISAT mission from October 2002 (cycle 10) to December 2009 (Cycle 84).

The Rx Del is the coarse measure of the altimeter range provided by the level 1b of ENVISAT ground segment. In the CCI, the Rx Del includes the CCI USO correction. This correction is computed in order to correct the USO drift along the mission. It is known that many problems of abnormal USO jumps happened in the IPF products. So a CMA USO correction was developed to correct those abnormal jumps. In the frame of CCI, isardSAT provides a new USO correction directly included in the Rx Del value, replacing the IPF one.

All the validation diagnostics displayed in this report have been performed in agreement with the Sea-Level CCI Product Validation Plan (PVP).

Diagnostic A001 (mission en)	
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.	
<div><div><div>Mean of RX_DEL_CCI - RX_DEL_IPF Mission en, cycles 10 to 84</div><div><div><div>20</div><div>40</div><div>60</div><div>80</div></div><div><div>Mean = 0.05269</div><div>Slope = 0.0032 mm/yr</div></div><div></div></div><div><div>Standard deviation of RX_DEL_CCI - RX_DEL_IPF Mission en, cycles 10 to 84</div><div><div><div>20</div><div>40</div><div>60</div><div>80</div></div><div><div>Mean = 0.3545</div></div><div></div></div></div></div></div>	



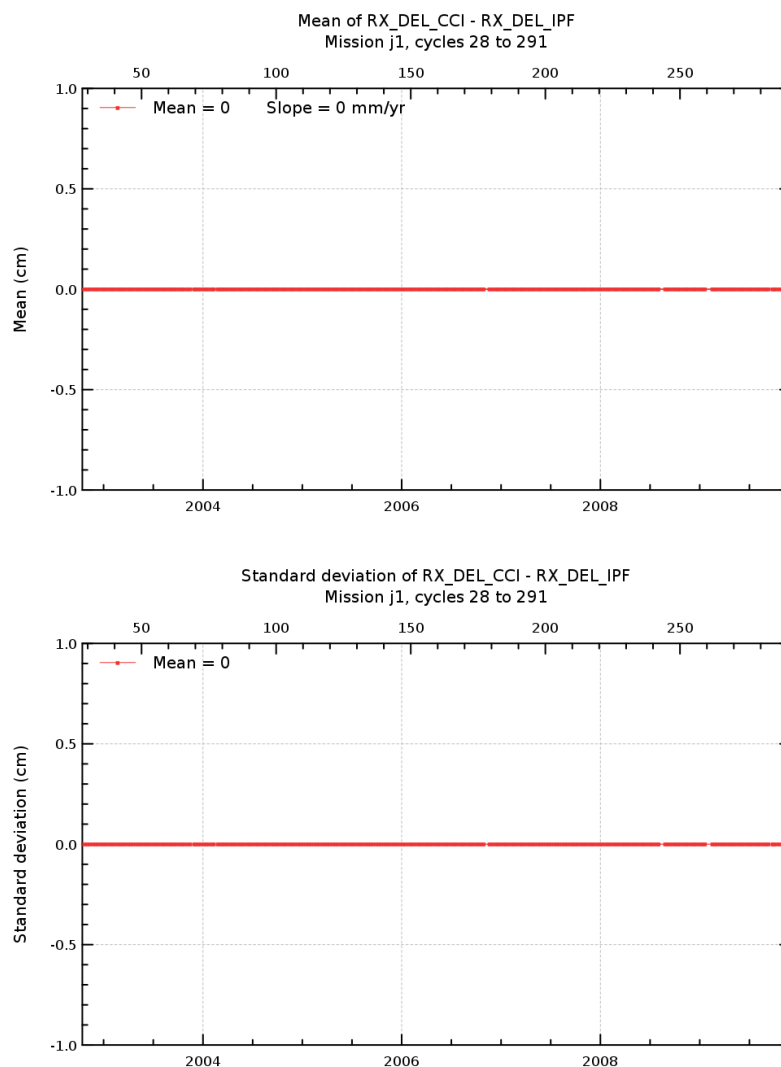
## Diagnostic A001 (mission j1)

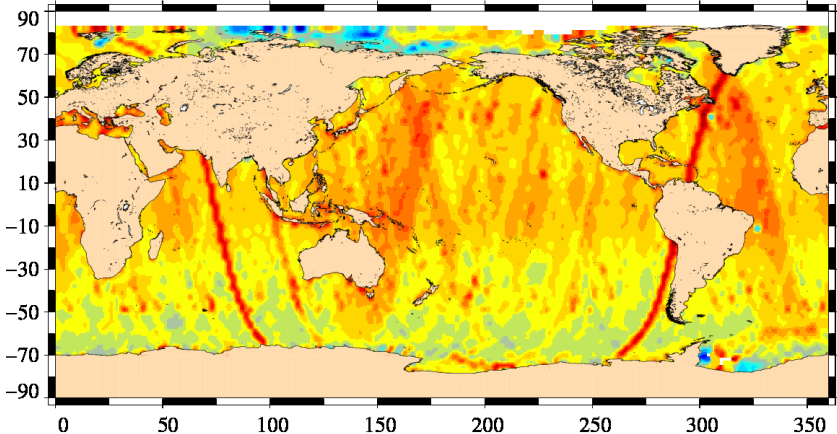
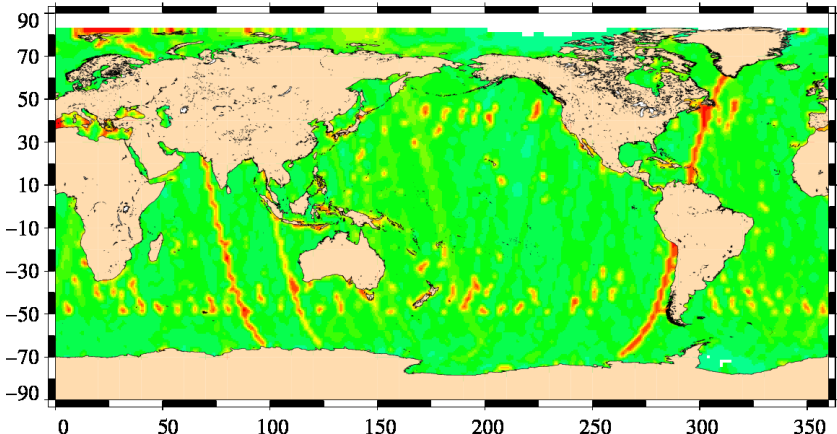
**Name :** Temporal evolution of differences between both altimetric components

**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 : Global internal analyses



Diagnostic type : Global internal analyses	<div>Diagnostic A002 (mission en)</div>
	<div>Name : Map of differences between both altimetric components over all the period</div>
	<div>Input data : Along-track altimetric components</div>
	<div>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.</div>
	<div><div><div>Mean of RX_DEL_CCI – RX_DEL_IPF</div><div>Mission en, cycles 10 to 84</div><div><div>-0.12   -0.048   0.024   0.096</div><div>Moyenne</div></div></div><div><div>Standard deviation of RX_DEL_CCI – RX_DEL_IPF</div><div>Mission en, cycles 10 to 84</div><div><div>-0.8   -0.32   0.16   0.64</div><div>Ecart-type</div></div></div></div>

## Diagnostic A002 (mission j1)

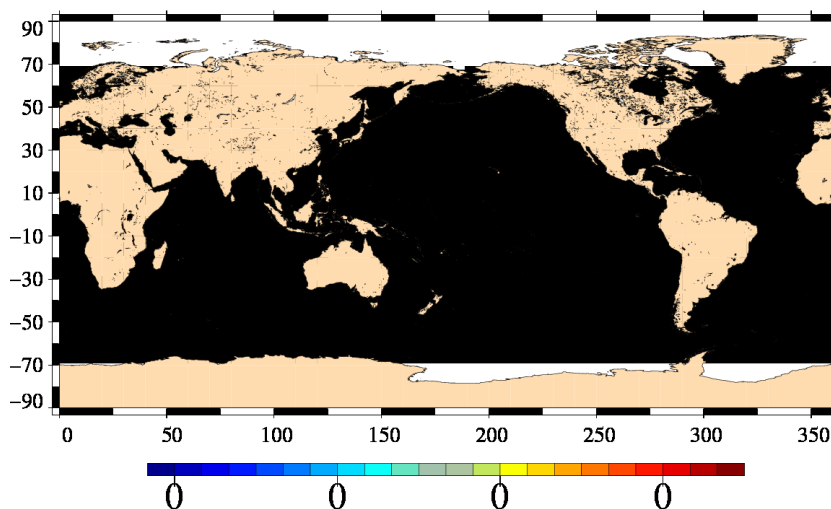
**Name :** Map of differences between both altimetric components over all the period

**Input data :** Along-track altimetric components

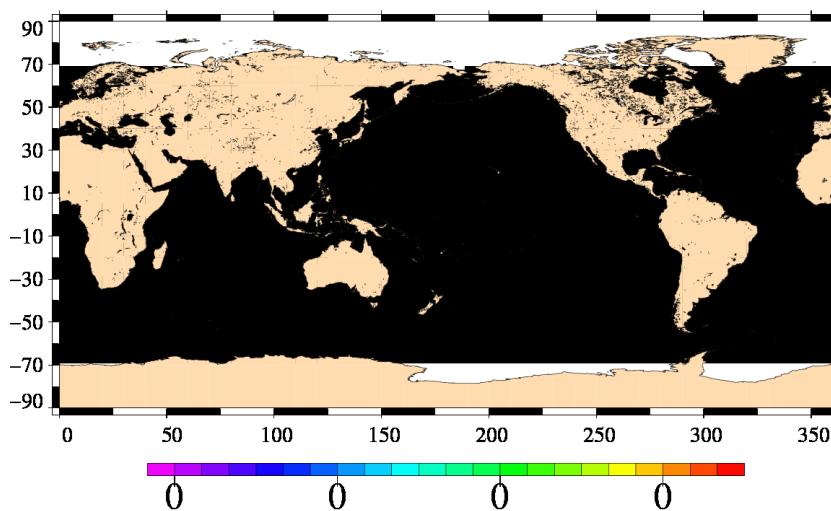
**Description :** The map of global statistics (mean, standard deviation) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated over a given period which is the longer as possible to have obtain reliable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

Diagnostic type : Global internal analyses

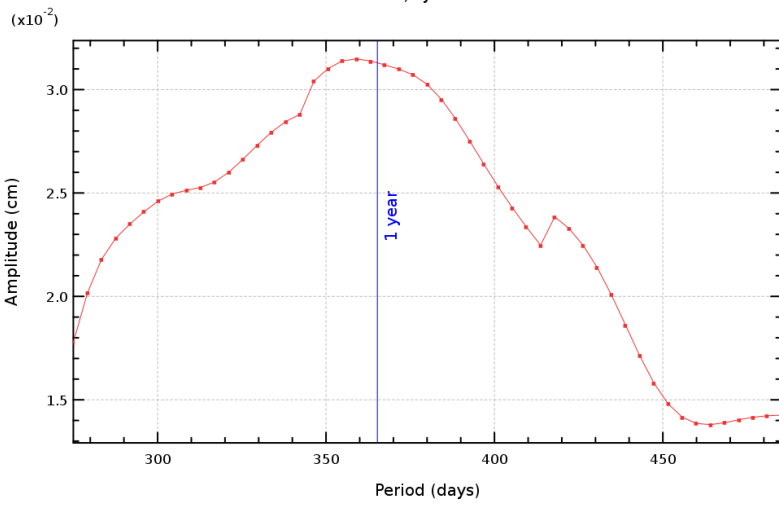
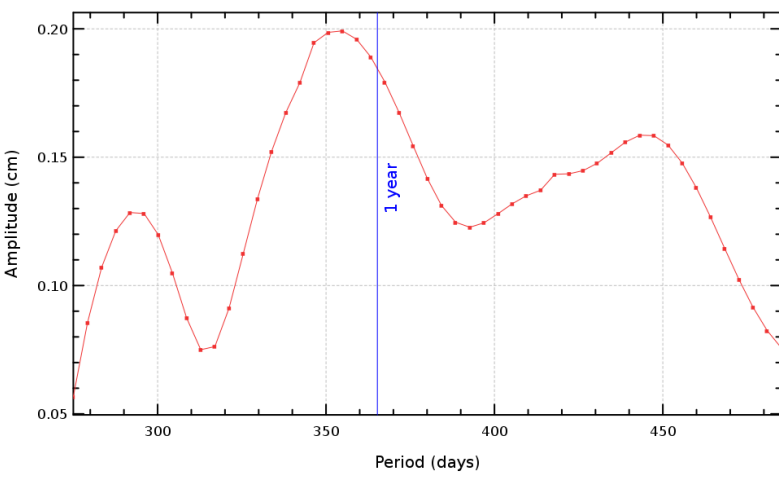
Mean of RX\_DEL\_CCI – RX\_DEL\_IPF  
Mission j1, cycles 28 to 291



Moyenne  
Standard deviation of RX\_DEL\_CCI – RX\_DEL\_IPF  
Mission j1, cycles 28 to 291



Ecart-type

Diagnostic A003_a (mission en)	
Name : Periodogram derived from temporal evolution of altimetric component differences	
Input data : Along-track altimetric components	
<p><b>Description :</b> 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.</p>	
<div><p>Periodogram of the mean of RX_DEL_CCI - RX_DEL_IPF (reference period = 1 year) Mission en, cycles 10 to 84</p><p>Periodogram of the standard deviation of RX_DEL_CCI - RX_DEL_IPF (reference period = 1 year) Mission en, cycles 10 to 84</p></div>	

## Diagnostic A003\_b (mission en)

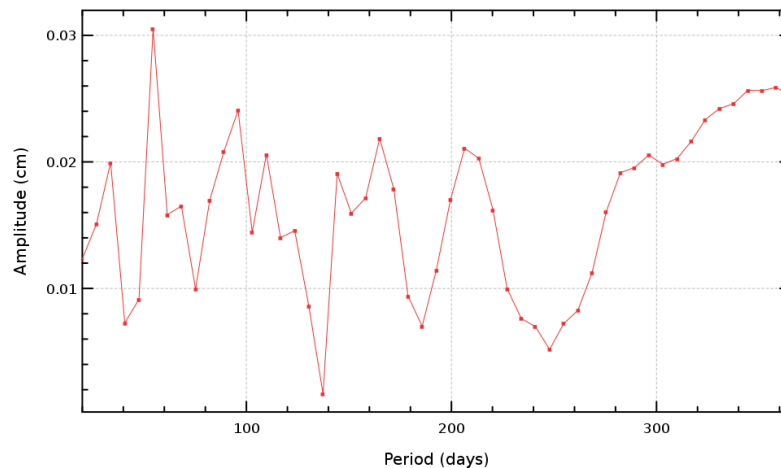
**Name :** Periodogram derived from temporal evolution of altimetric component differences

**Input data :** Along-track altimetric components

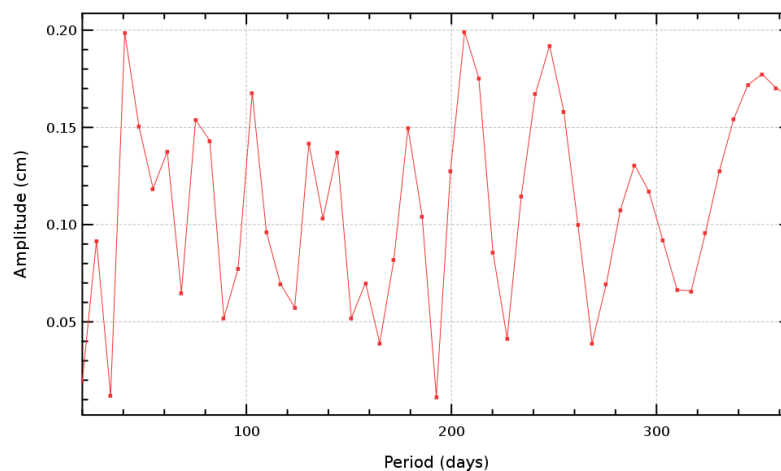
**Description :** The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated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

Diagnostic type : Global internal analyses

Periodogram of the mean of RX\_DEL\_CCI - RX\_DEL\_IPF (period = [0, 1 year])  
Mission en, cycles 10 to 84



Periodogram of the standard deviation of RX\_DEL\_CCI - RX\_DEL\_IPF (period = [0, 1 year])  
Mission en, cycles 10 to 84



## Diagnostic A003\_a (mission j1)

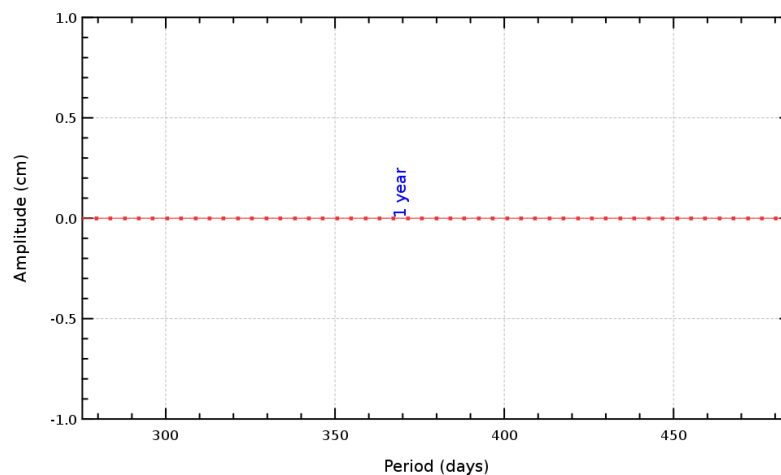
**Name :** Periodogram derived from temporal evolution of altimetric component differences

**Input data :** Along-track altimetric components

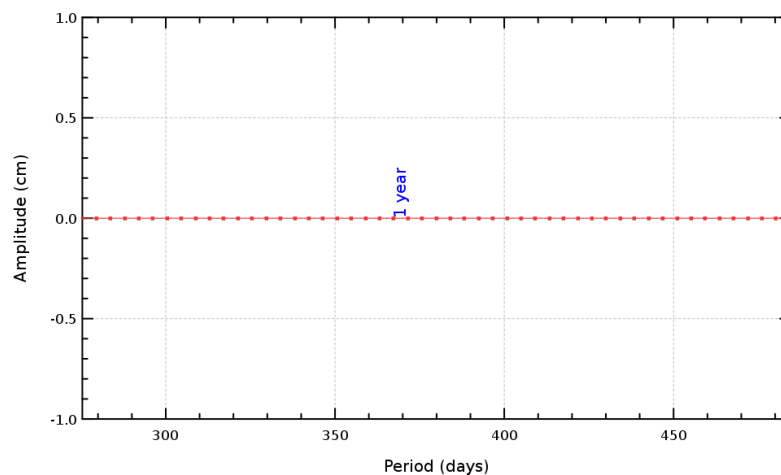
**Description :** The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated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

Diagnostic type : Global internal analyses

Periodogram of the mean of RX\_DEL\_CCI - RX\_DEL\_IPF (reference period = 1 year)  
Mission j1, cycles 28 to 291



Periodogram of the standard deviation of RX\_DEL\_CCI - RX\_DEL\_IPF (reference period = 1 year)  
Mission j1, cycles 28 to 291



## Diagnostic A003\_b (mission j1)

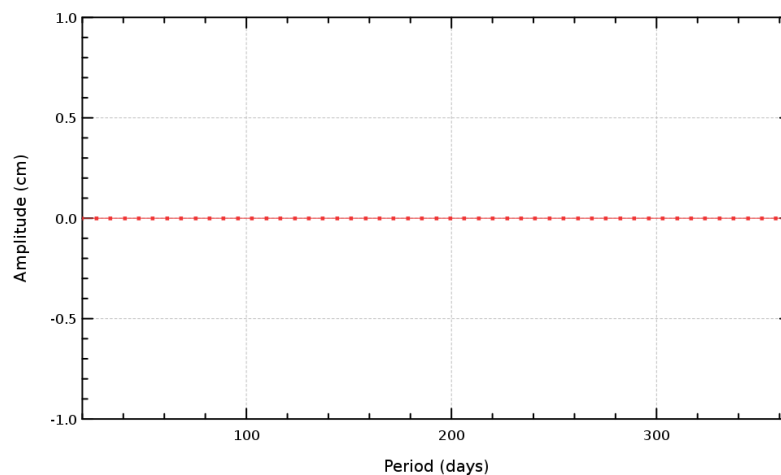
**Name :** Periodogram derived from temporal evolution of altimetric component differences

**Input data :** Along-track altimetric components

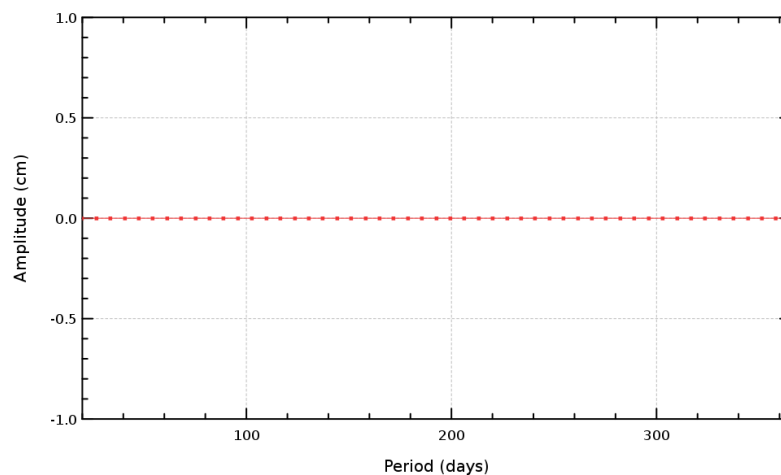
**Description :** The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated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

Diagnostic type : Global internal analyses

Periodogram of the mean of RX\_DEL\_CCI - RX\_DEL\_IPF (period = [0, 1 year])  
Mission j1, cycles 28 to 291



Periodogram of the standard deviation of RX\_DEL\_CCI - RX\_DEL\_IPF (period = [0, 1 year])  
Mission j1, cycles 28 to 291



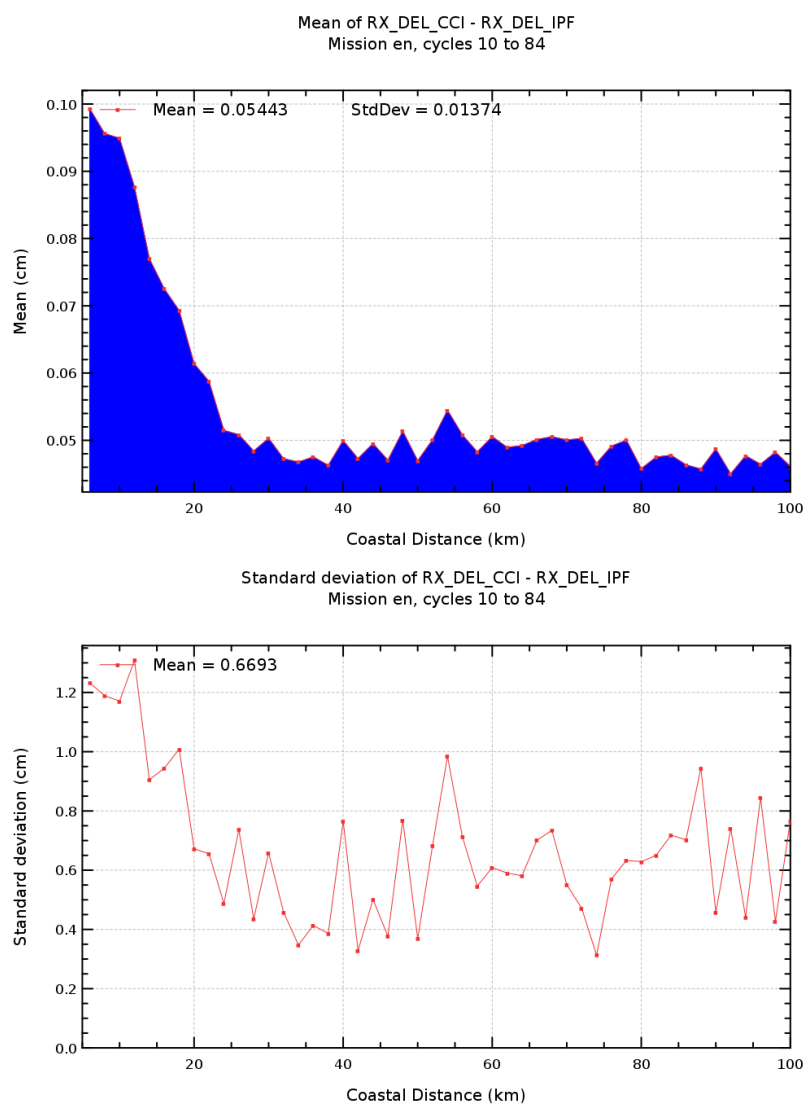
**Diagnostic A004 (mission en)**

**Name :** Altimetric component differences versus coastal distances

**Input data :** Along-track altimetric components

**Description :** Mean and standard deviation of the differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are computed and plotted in function of coastal distances between 0 and 100 km.

Diagnostic type : Global internal analyses





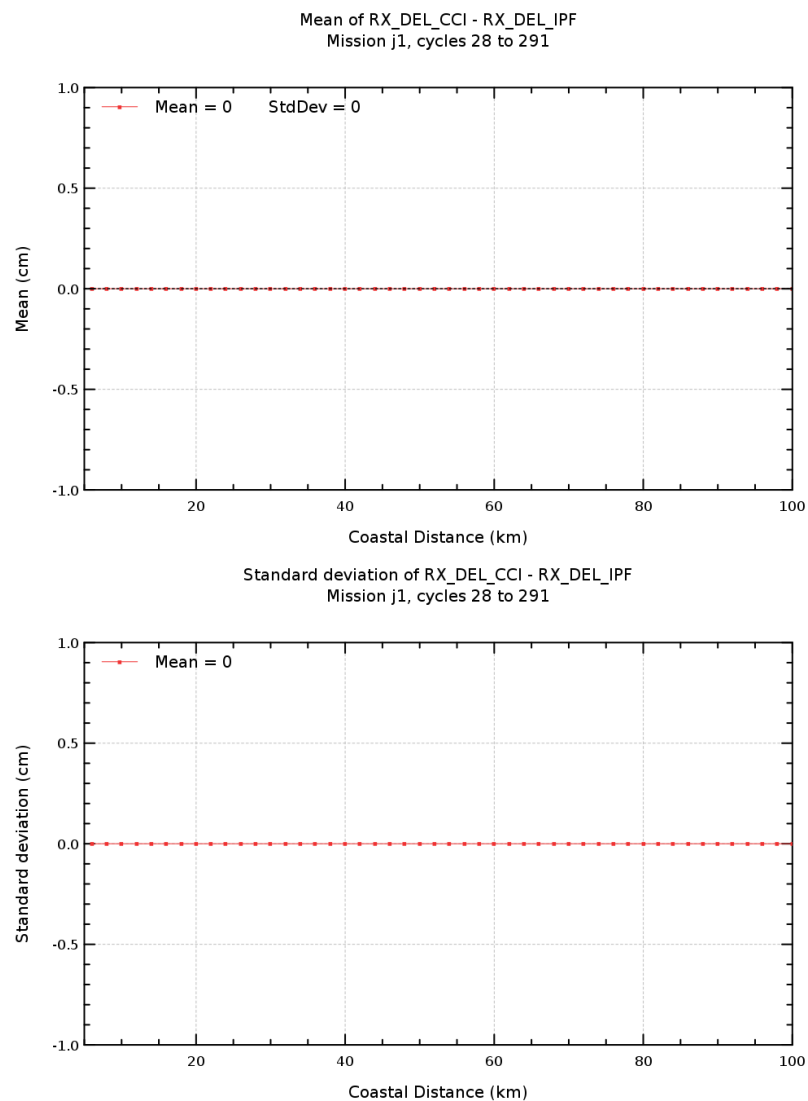
## Diagnostic A004 (mission j1)

**Name :** Altimetric component differences versus coastal distances

**Input data :** Along-track altimetric components

**Description :** Mean and standard deviation of the differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are computed and plotted in function of coastal distances between 0 and 100 km.

Diagnostic type : Global internal analyses



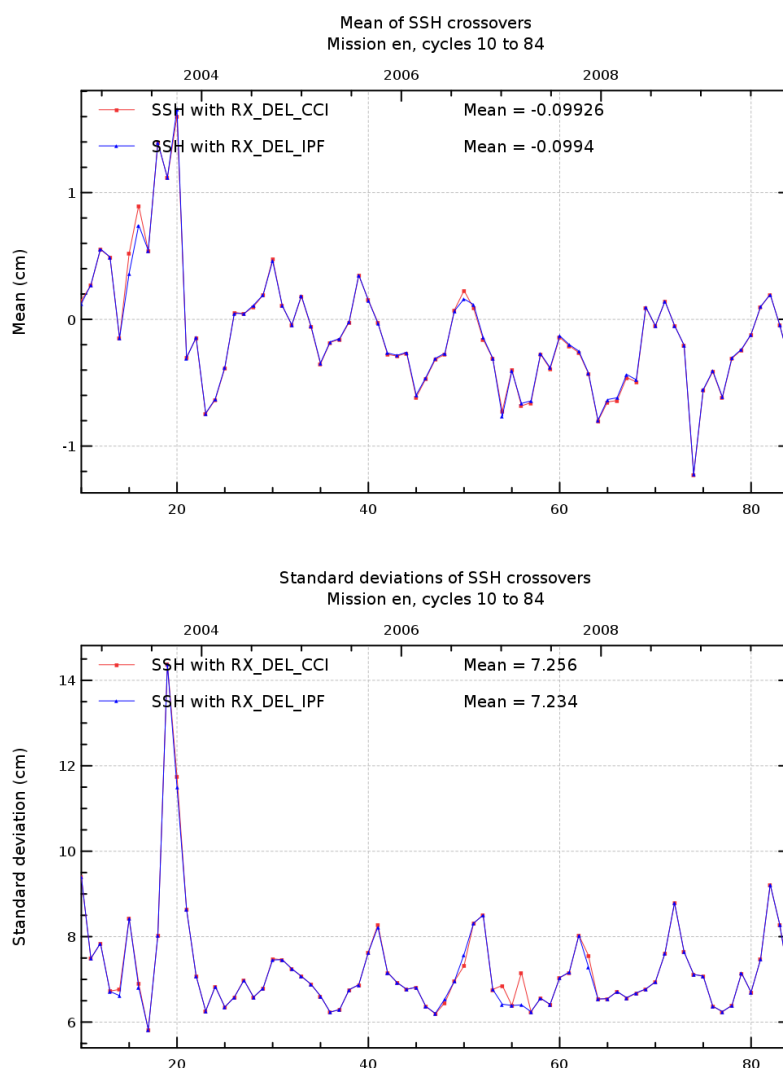
## Diagnostic A101 (mission en)

**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 : Global internal analyses



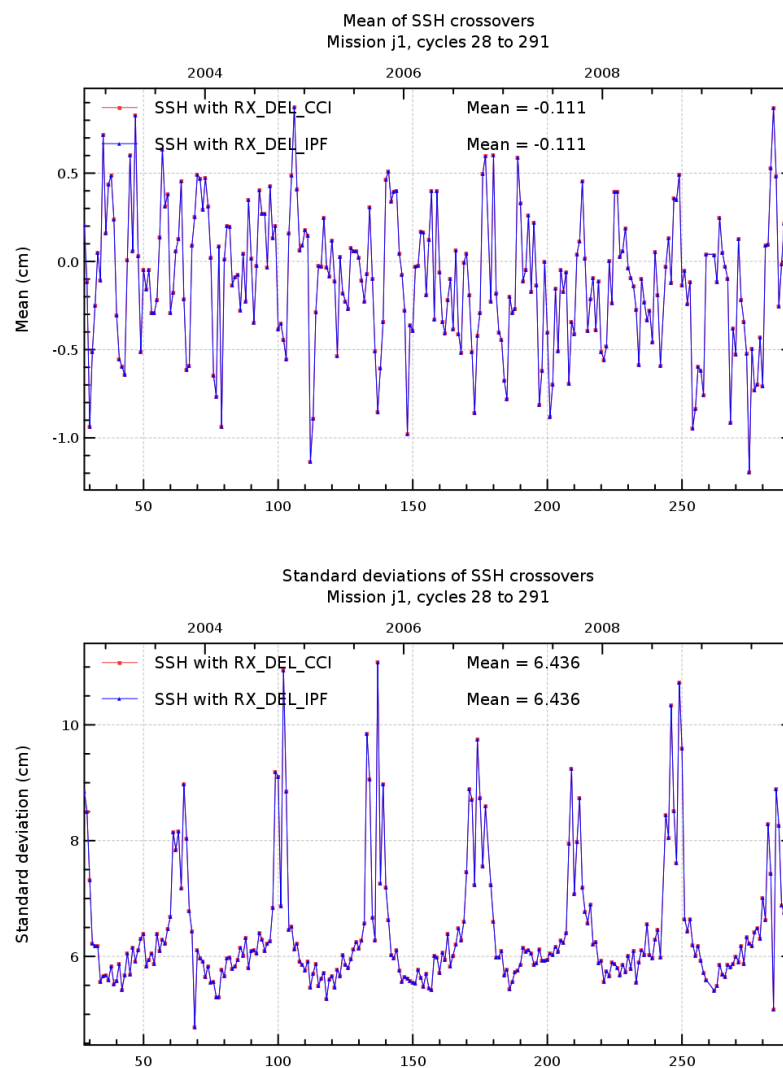
## Diagnostic A101 (mission j1)

**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 : Global internal analyses



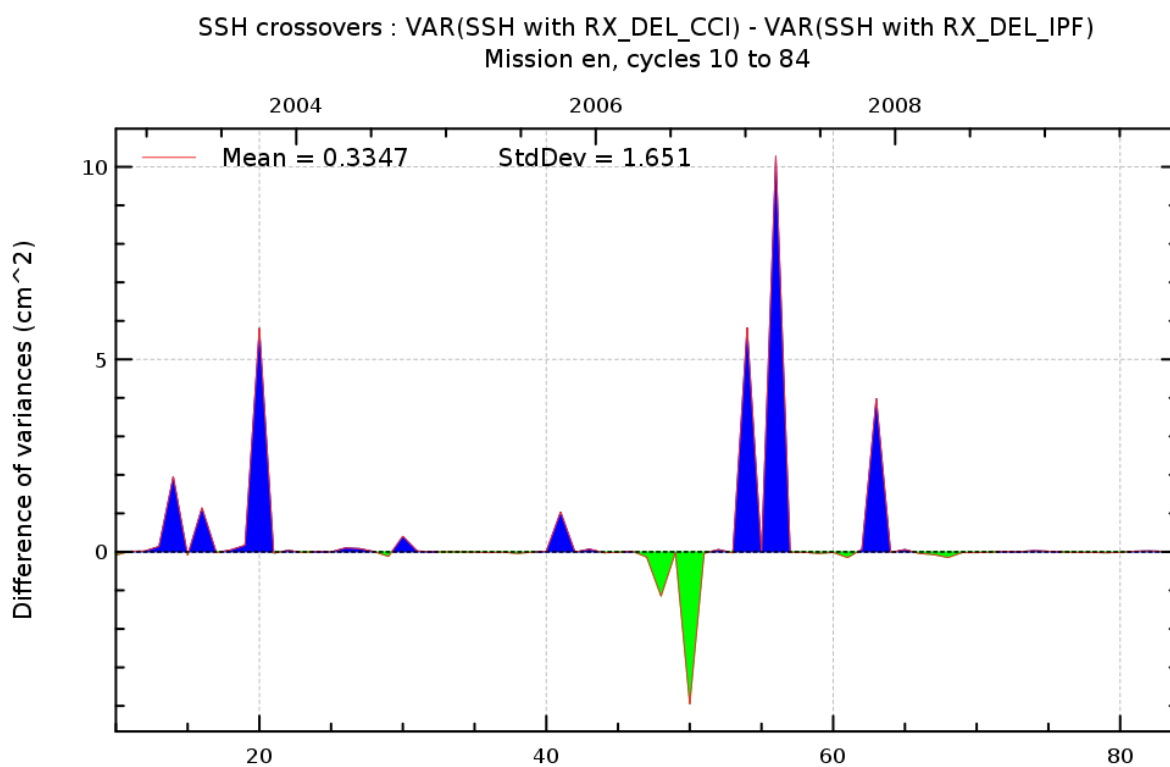
**Diagnostic A102 (mission en)**

**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 : Global internal analyses



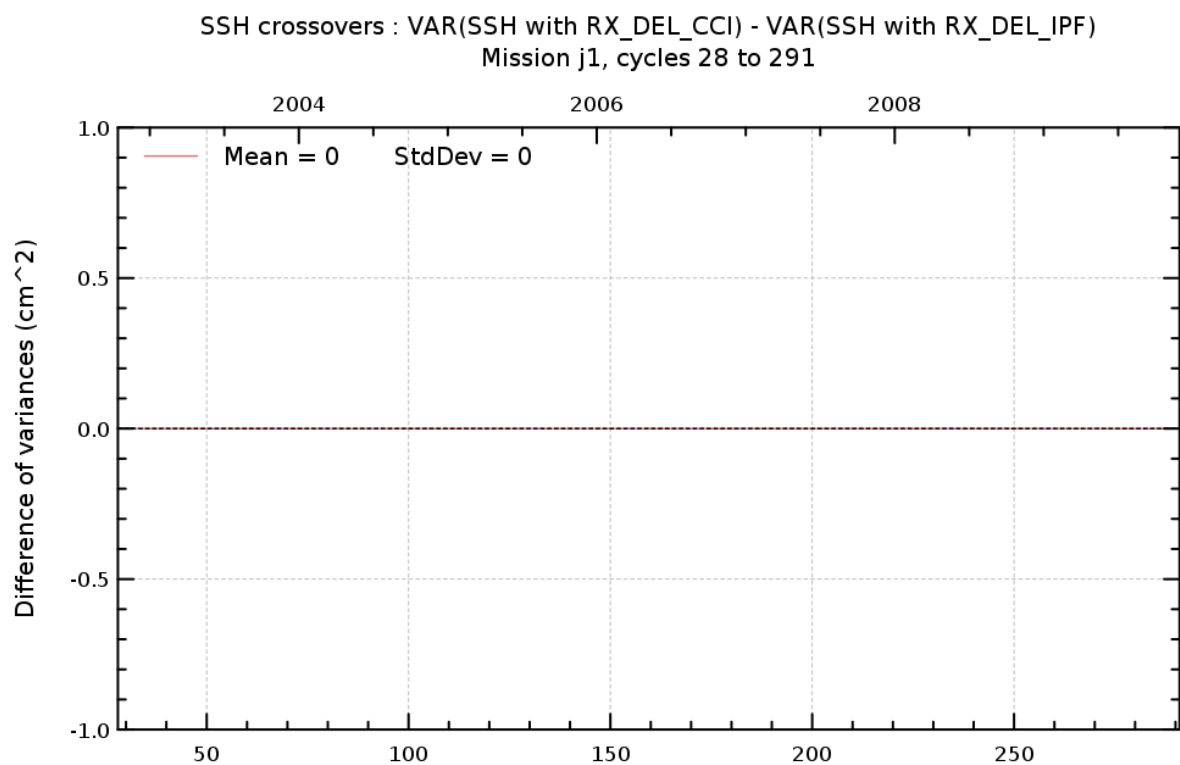
## Diagnostic A102 (mission j1)

**Name :** Differences between temporal evolution of SSH crossovers

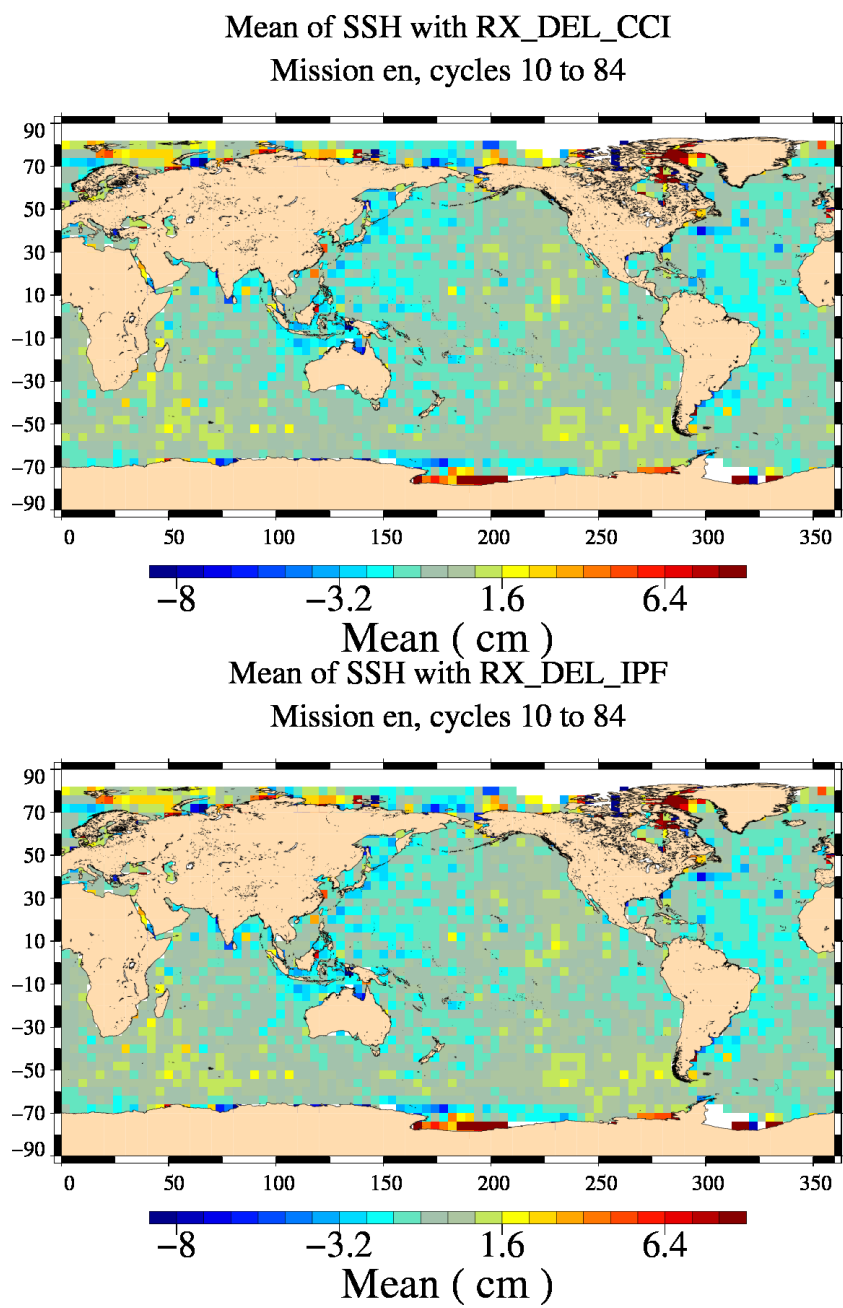
**Input data :** Sea Surface Height (SSH) crossovers

**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 : Global internal analyses



Diagnostic A103 (mission en)	
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 A103 (mission j1)

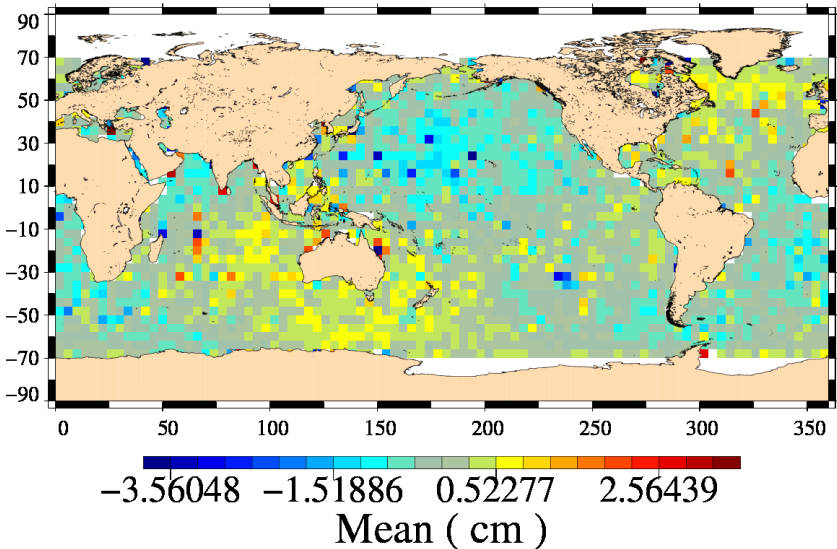
**Name :** Map of SSH crossovers

**Input data :** Sea Surface Height (SSH) crossovers

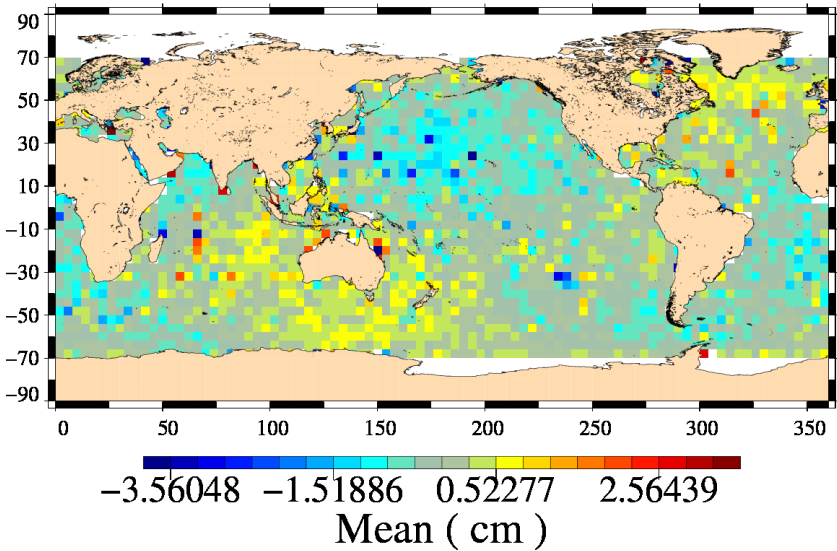
**Description :** The differences between maps of SSH crossovers differences (mean, variance) are calculated using successively both altimetric components in the SSH calculation. SSH crossovers are the differences between ascending and descending passes for time differences between both passes lower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

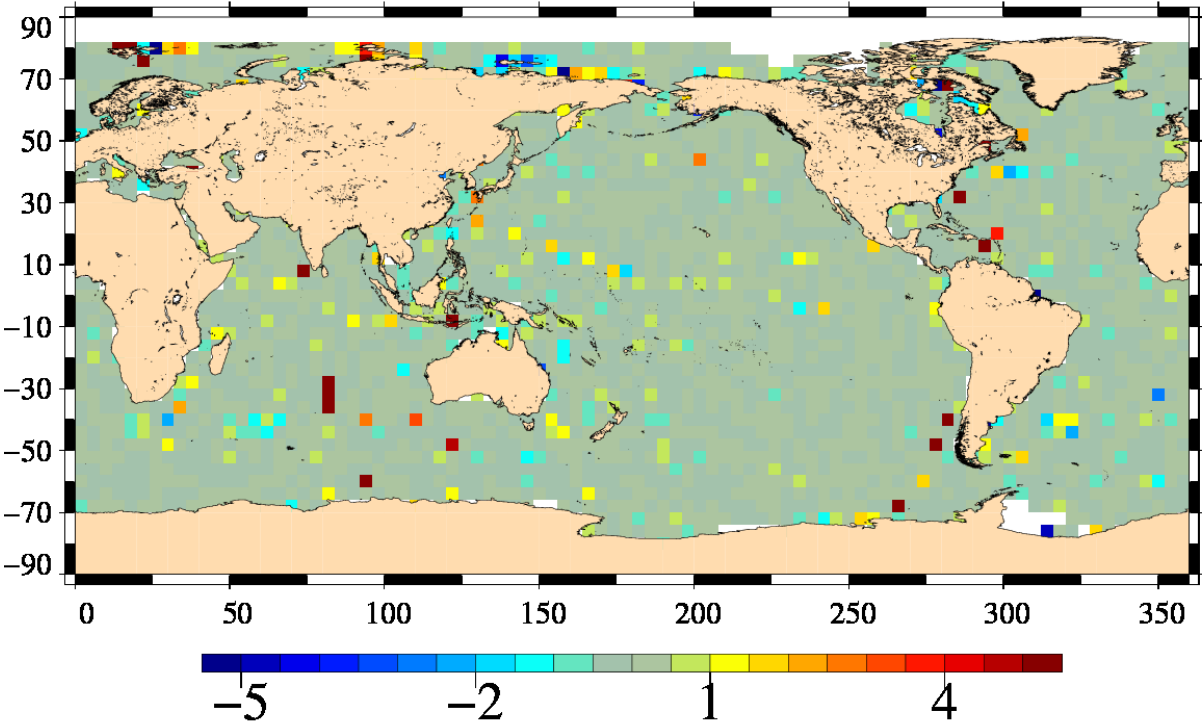
Diagnostic type : Global internal analyses

Mean of SSH with RX\_DEL\_CCI  
Mission j1, cycles 28 to 291



Mean ( cm )  
Mean of SSH with RX\_DEL\_IPF  
Mission j1, cycles 28 to 291



Diagnostic type : Global internal analyses	Diagnostic A104 (mission en)	
	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 RX_DEL_CCI) – VAR(SSH with RX_DEL_IPF)</div> <div>Mission en, cycles 10 to 84</div> <div></div> <div>SSH crossovers : difference of variances ( cm^2 )</div>	



Diagnostic A104 (mission j1)

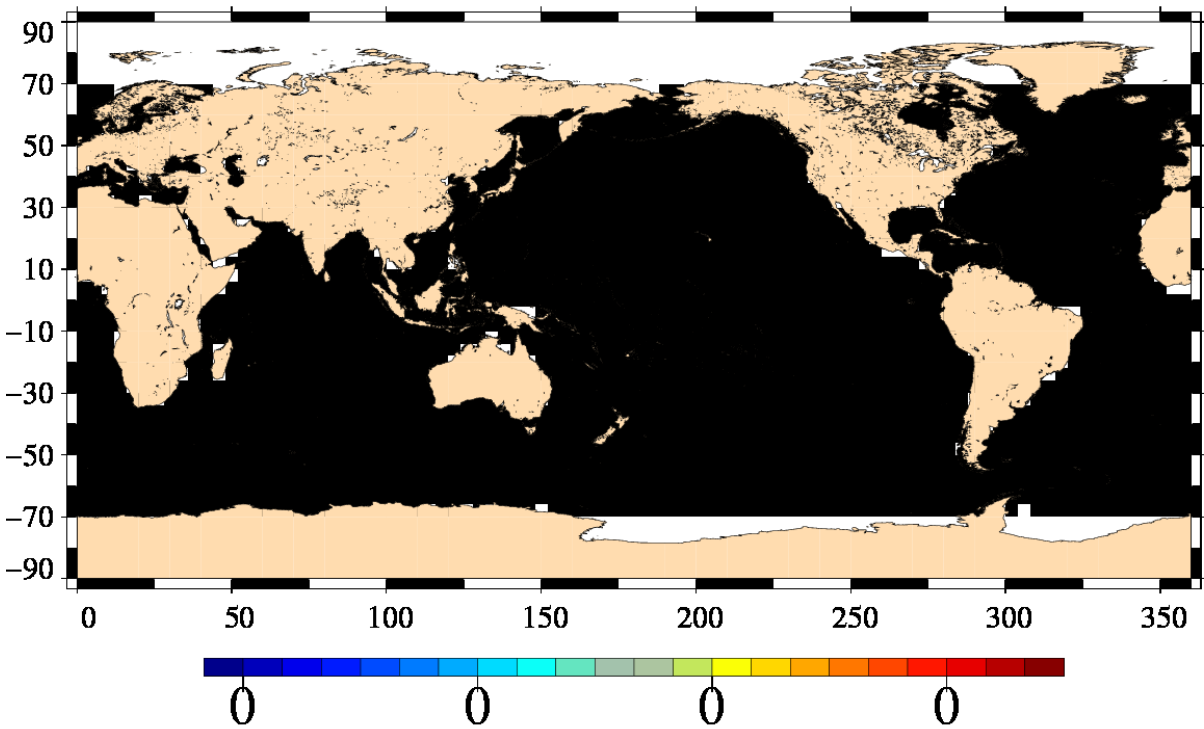
Name : Differences between maps of SSH crossovers

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).

Diagnostic type : Global internal analyses

VAR(SSH with RX\_DEL\_CCI) – VAR(SSH with RX\_DEL\_IPF)  
Mission j1, cycles 28 to 291



SSH crossovers : difference of variances ( cm<sup>2</sup> )

Diagnostic type : Global internal analyses	Diagnostic A201 a (mission en)	
	Name : Temporal evolution of Sea Level Anomaly (SLA)	
	Input data : Along track SLA	
	<p><b>Description :</b> 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 (except for SLA Grids) , or separating North and South hemispheres.</p>	
	<div>Global MSL Mission en, cycles 10 to 84</div> <p>—●— SLA with RX_DEL_CCI      Slope = 0.683 mm/yr [L.S.R. = 0.141]</p> <p>—▲— SLA with RX_DEL_IPF      Slope = 0.693 mm/yr [L.S.R. = 0.141]</p> <p>Mean (cm)</p> <p>2004      2006      2008</p>	

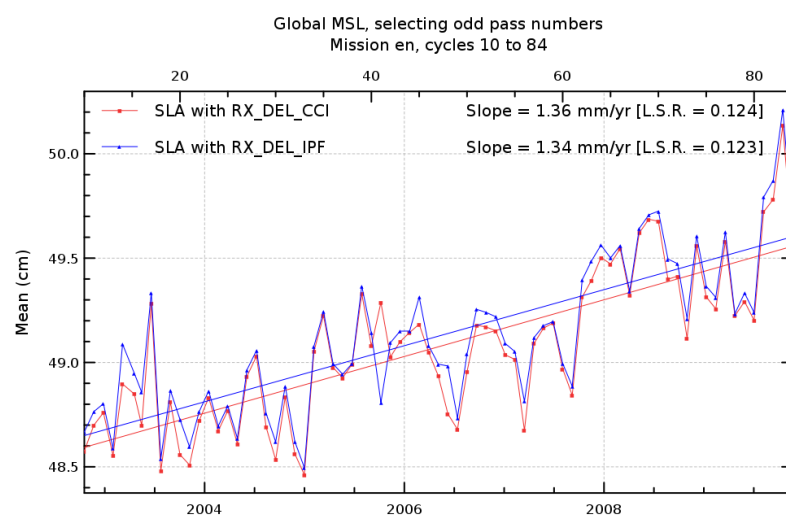
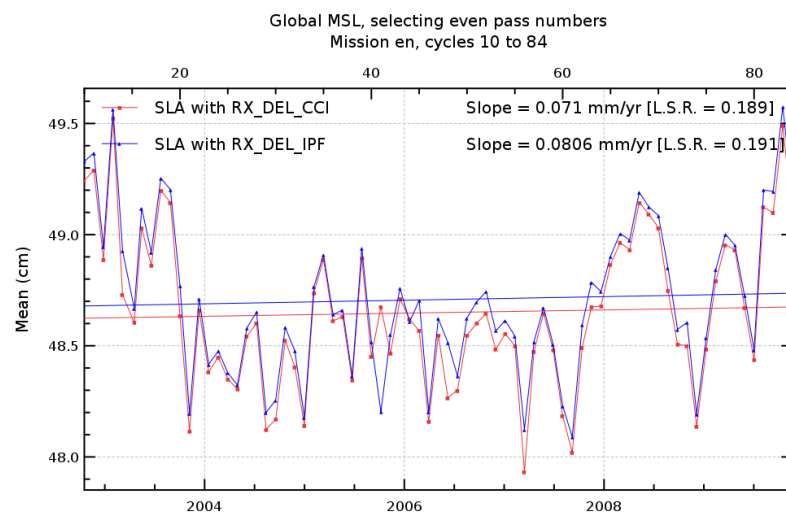
## Diagnostic A201\_b (mission en)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses



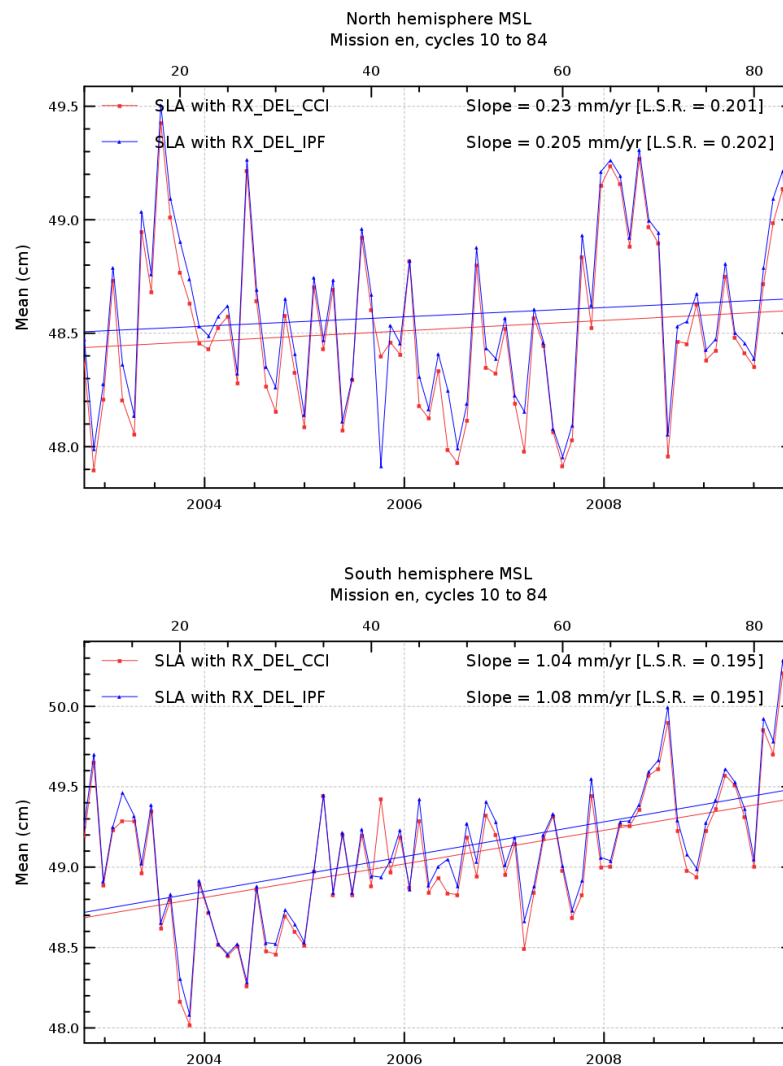
## Diagnostic A201\_c (mission en)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses



## Diagnostic A201\_d (mission en)

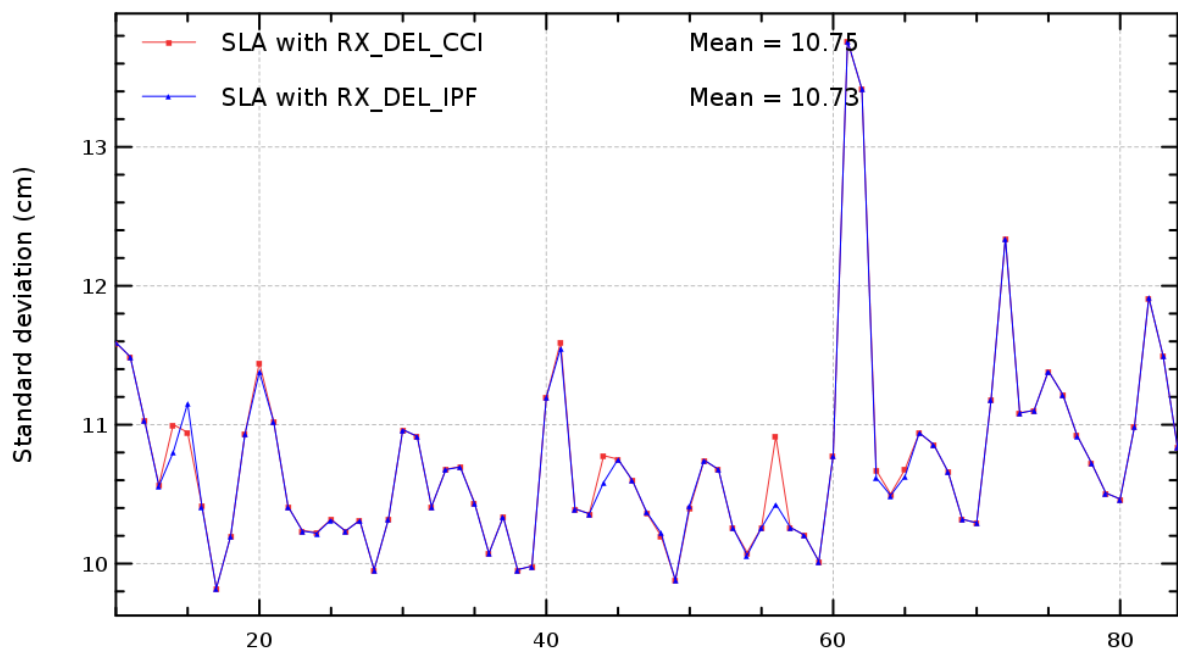
**Name :** Temporal evolution of Sea Level Anomaly (SLA)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses

Global MSL  
Mission en, cycles 10 to 84



## Diagnostic A201\_e (mission en)

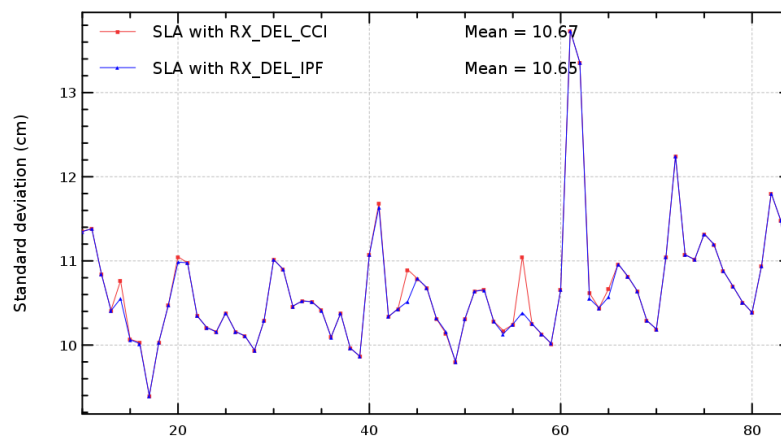
**Name :** Temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

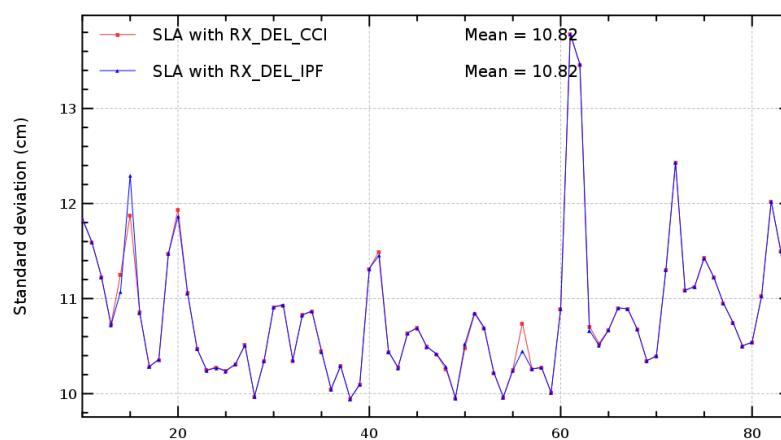
**Description :** The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements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

Diagnostic type : Global internal analyses

Global MSL, selecting even pass numbers  
Mission en, cycles 10 to 84



Global MSL, selecting odd pass numbers  
Mission en, cycles 10 to 84



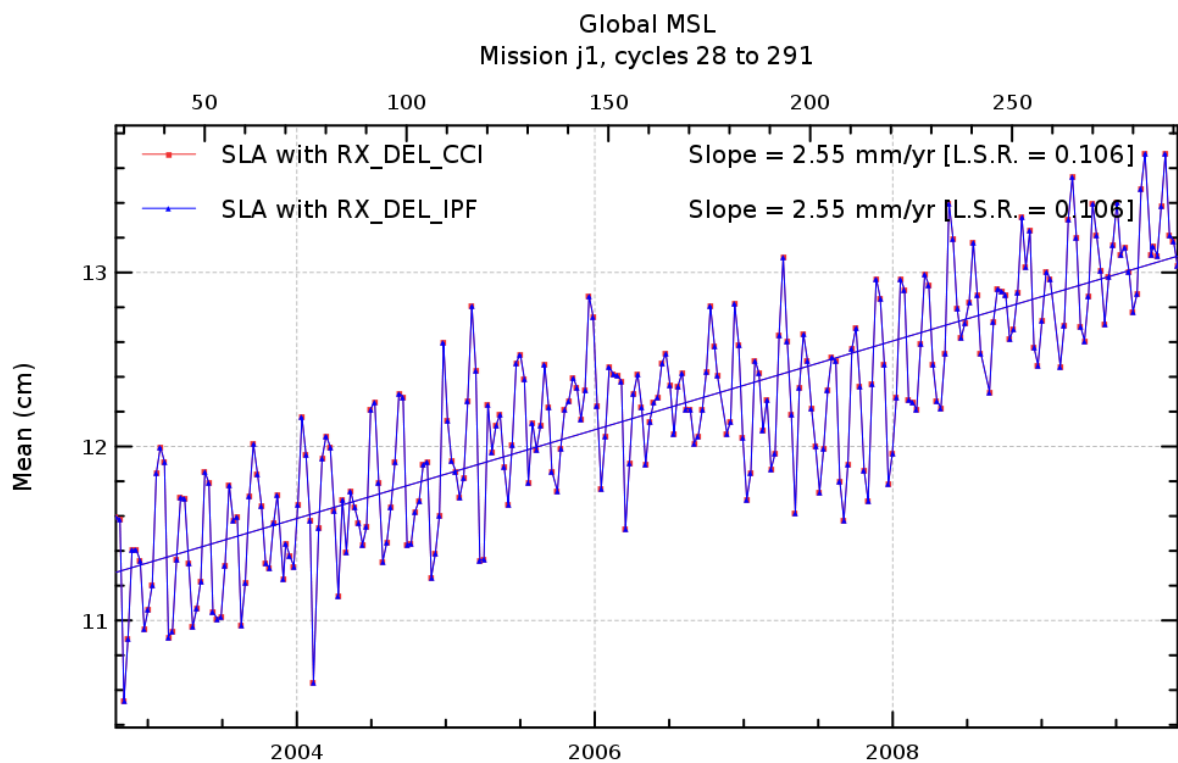
## Diagnostic A201\_a (mission j1)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses



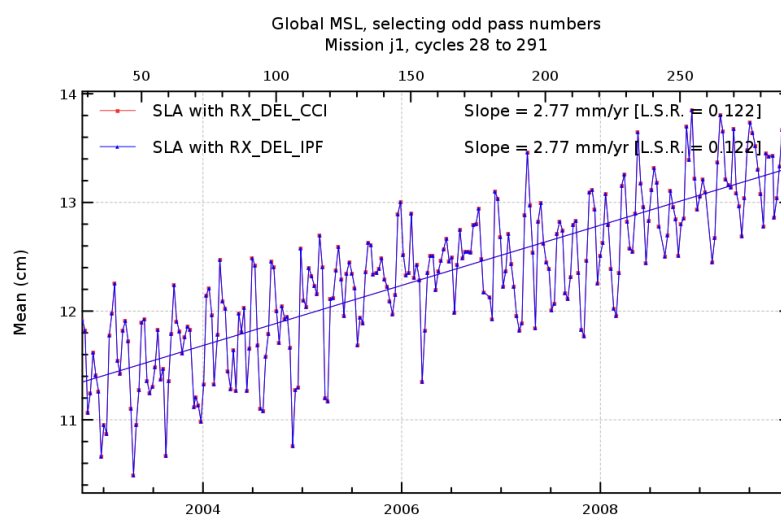
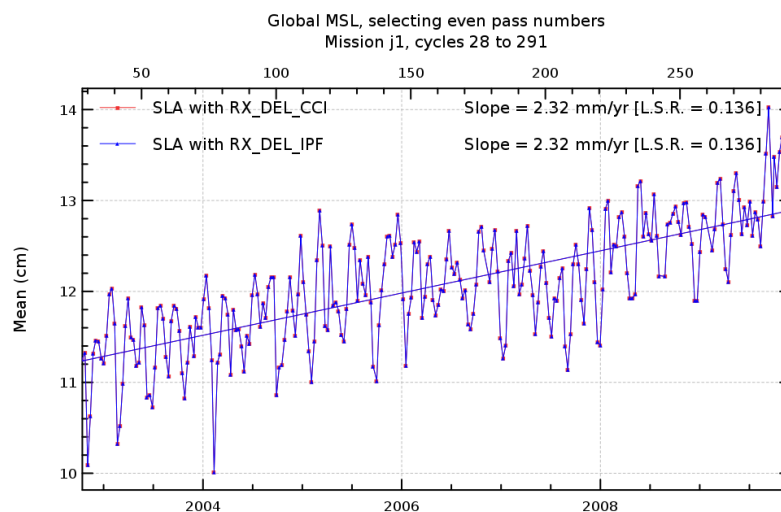
## Diagnostic A201\_b (mission j1)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses





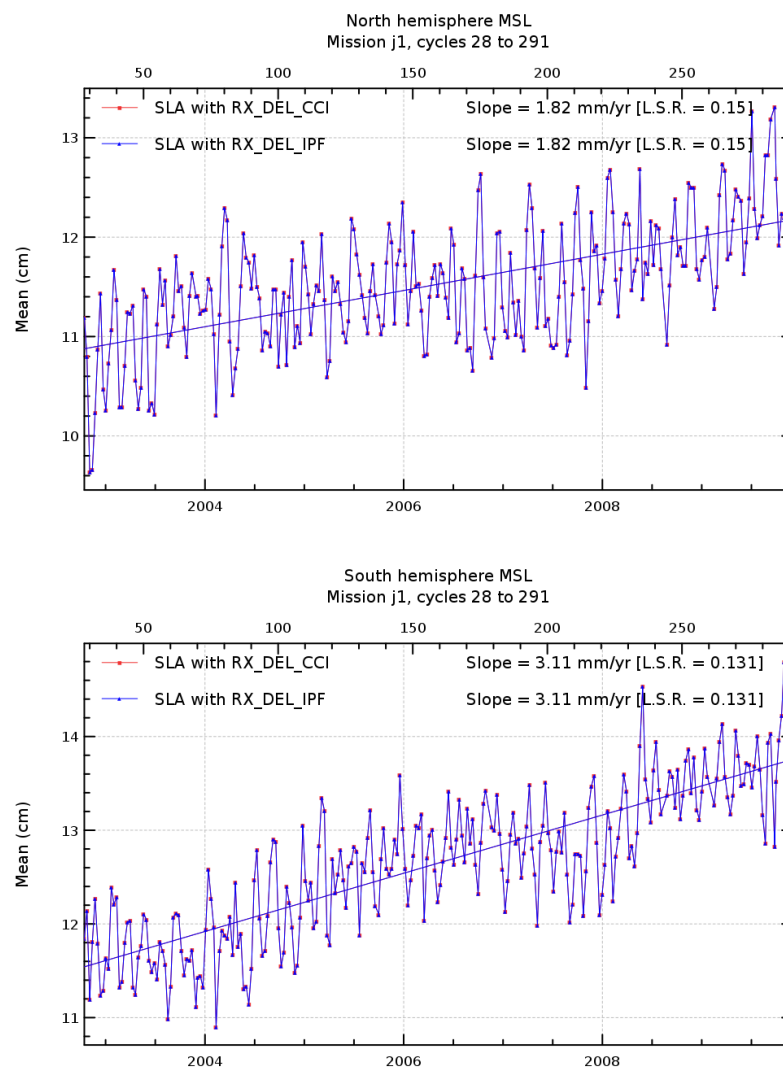
## Diagnostic A201\_c (mission j1)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses



## Diagnostic A201\_d (mission j1)

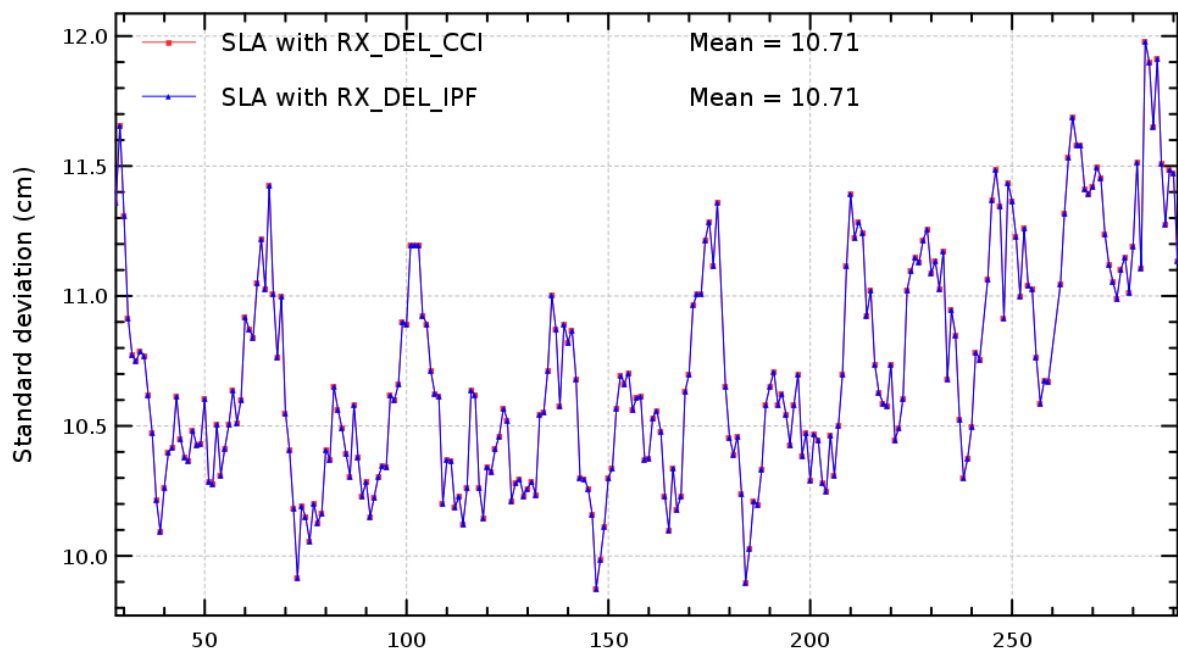
**Name :** Temporal evolution of Sea Level Anomaly (SLA)

**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 (except for SLA Grids) , or separating North and South hemispheres.

Diagnostic type : Global internal analyses

Global MSL  
Mission j1, cycles 28 to 291



## Diagnostic A201\_e (mission j1)

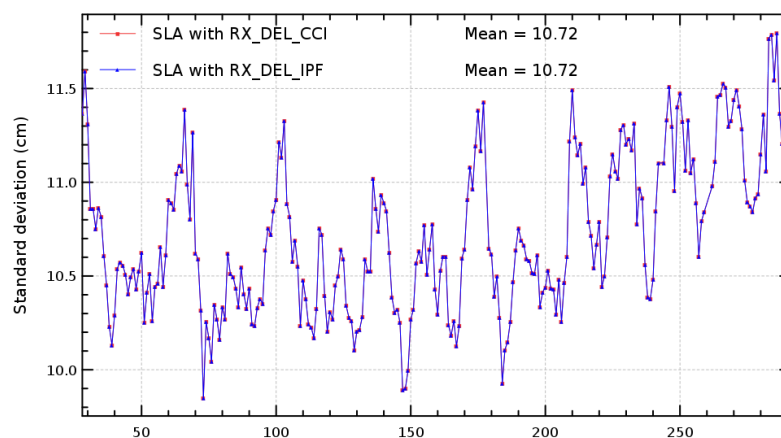
**Name :** Temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

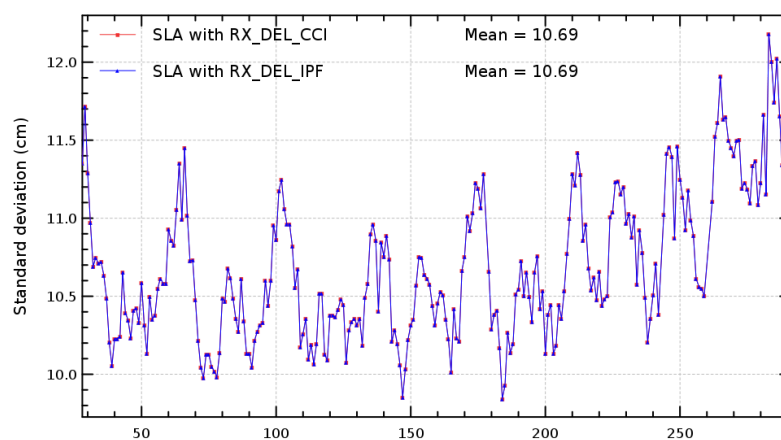
**Description :** The temporal evolution of SLA statistics (mean, standard deviation) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly) using successively both altimetric components in the SLA calculation. These statistics are calculated from 1 Hz altimetric measurements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

Diagnostic type : Global internal analyses

Global MSL, selecting even pass numbers  
Mission j1, cycles 28 to 291



Global MSL, selecting odd pass numbers  
Mission j1, cycles 28 to 291



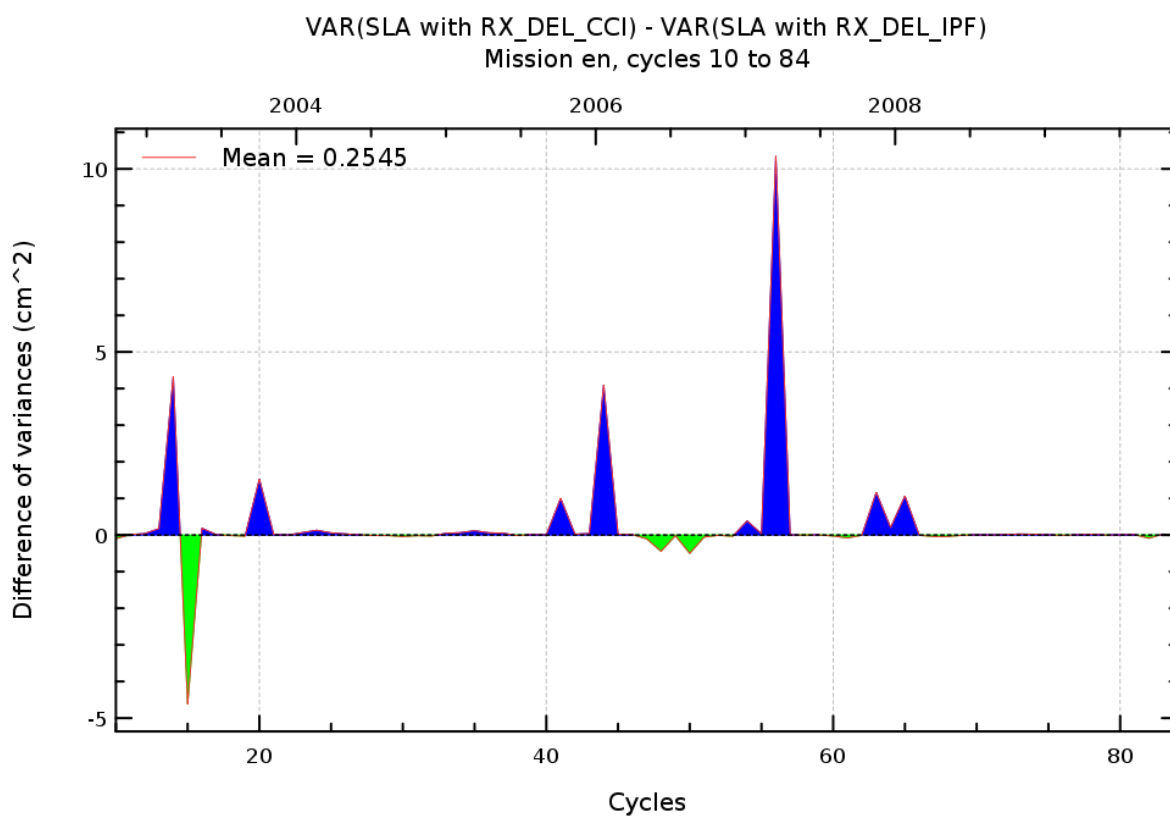
**Diagnostic A202\_a (mission en)**

**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 (except for SLA Grids) or separating North and South hemispheres.

Diagnostic type : Global internal analyses



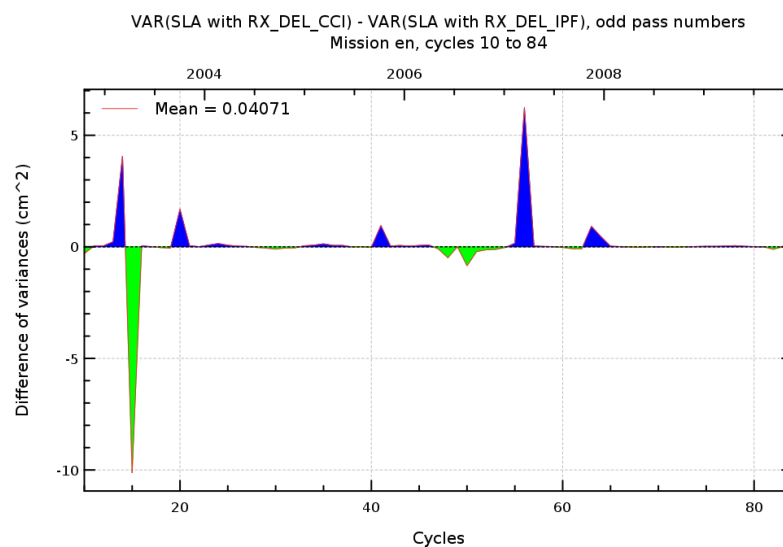
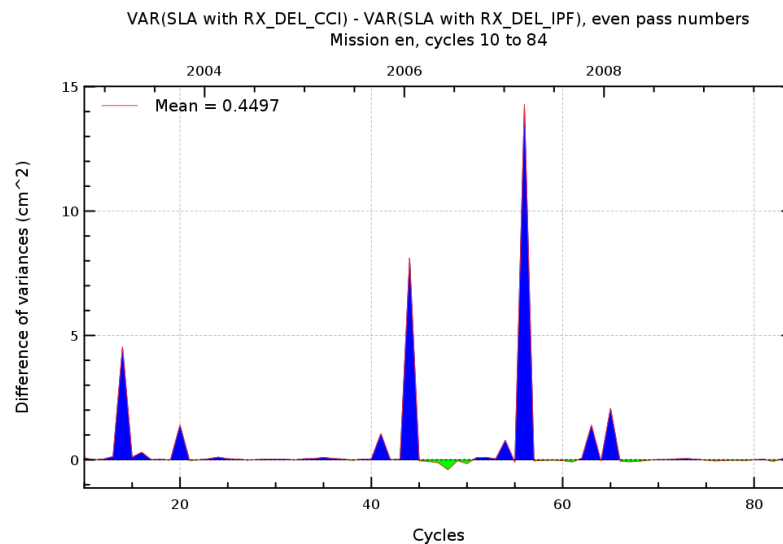
## Diagnostic A202\_b (mission en)

**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 (except for SLA Grids) or separating North and South hemispheres.

Diagnostic type : Global internal analyses

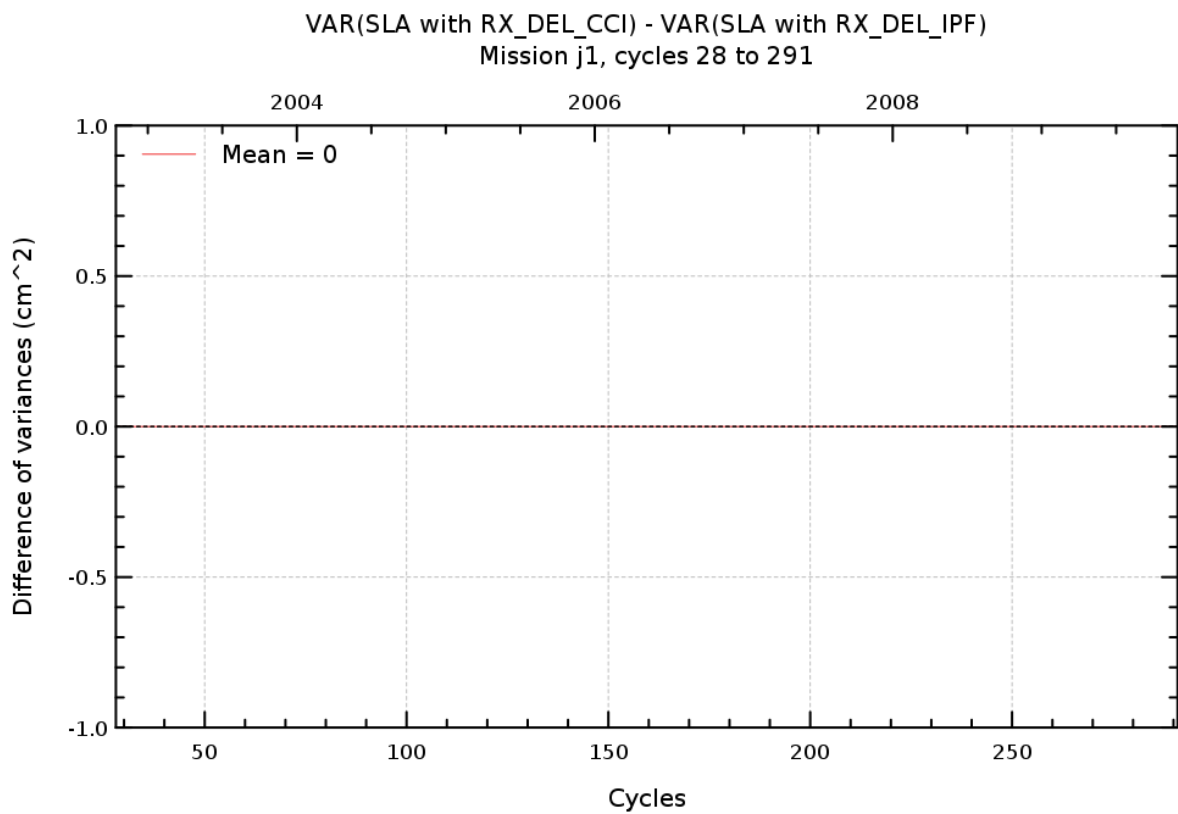


**Diagnostic A202\_a (mission j1)**

**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 (except for SLA Grids) or separating North and South hemispheres.



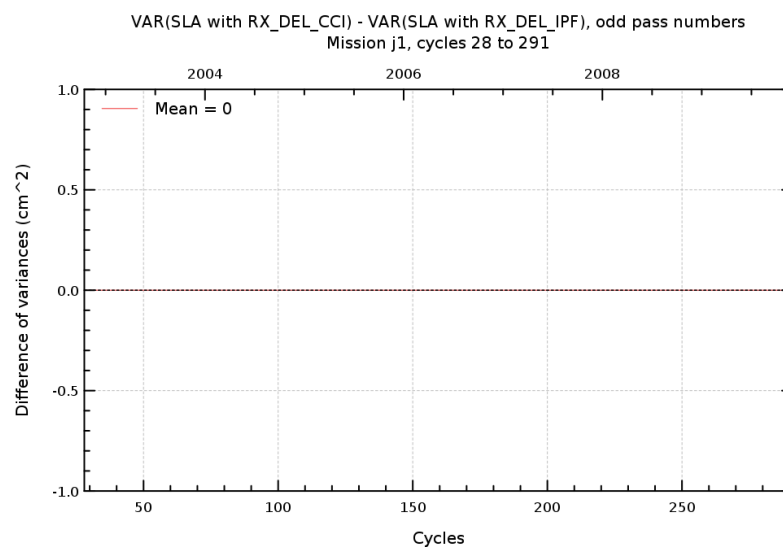
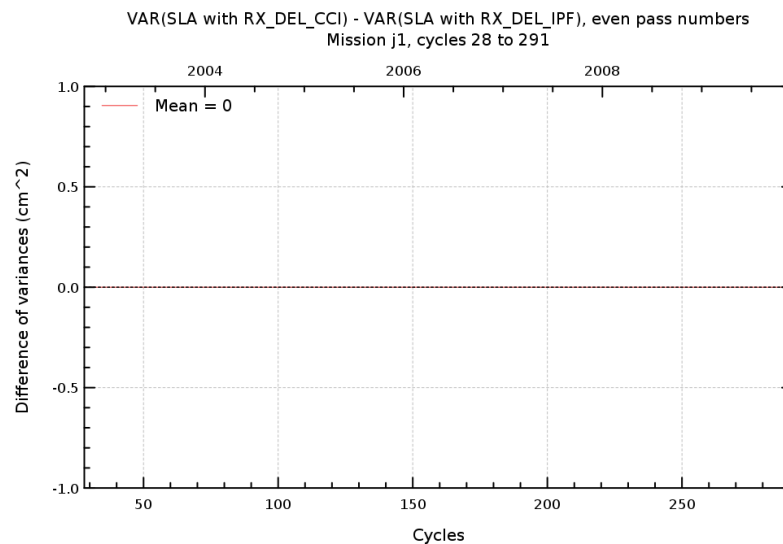
## Diagnostic A202\_b (mission j1)

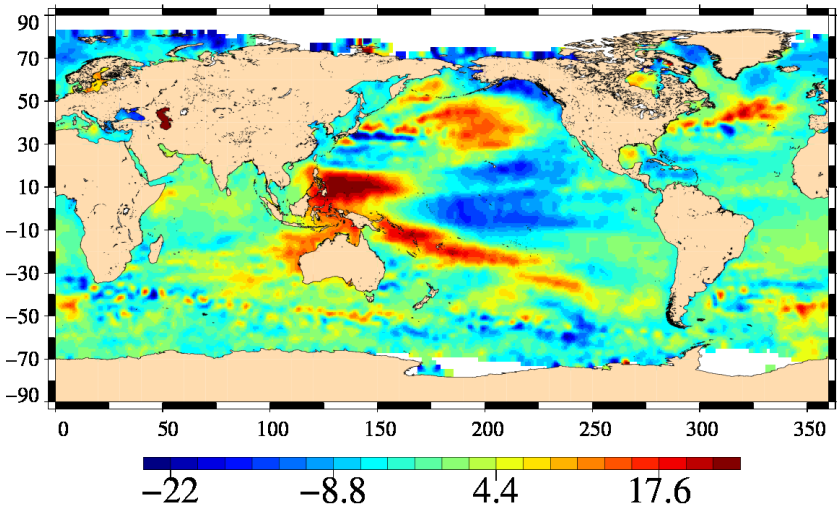
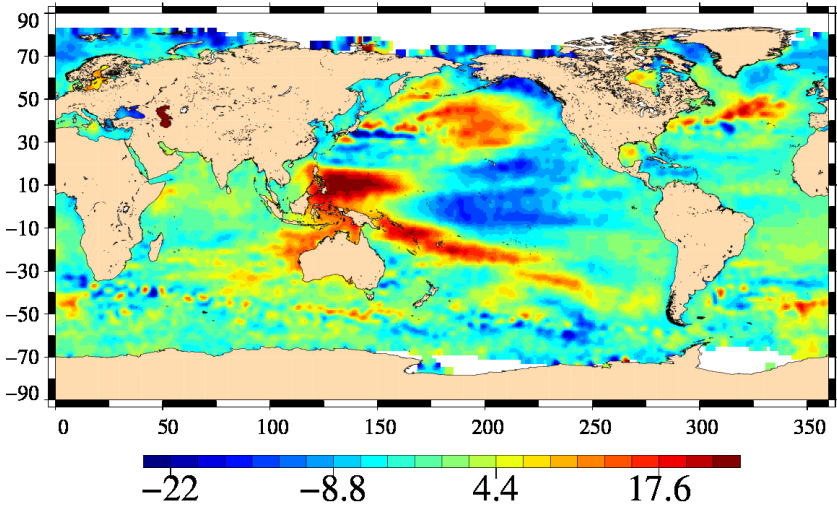
**Name :** Differences between temporal evolution of Sea Level Anomaly (SLA)

**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 (except for SLA Grids) or separating North and South hemispheres.

Diagnostic type : Global internal analyses



Diagnostic type : Global internal analyses	Diagnostic A203_a (mission en)	
	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 RX_DEL_CCI trends Mission en, cycles 10 to 84</div>  <div>Trends (mm/yr)</div> <div>SLA with RX_DEL_IPF trends Mission en, cycles 10 to 84</div>  <div>Trends (mm/yr)</div>	



## Diagnostic A203\_b (mission en)

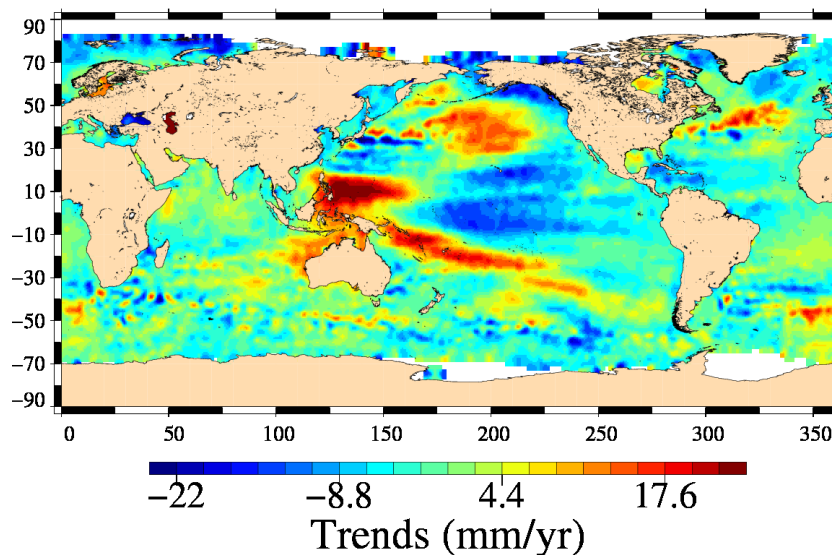
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

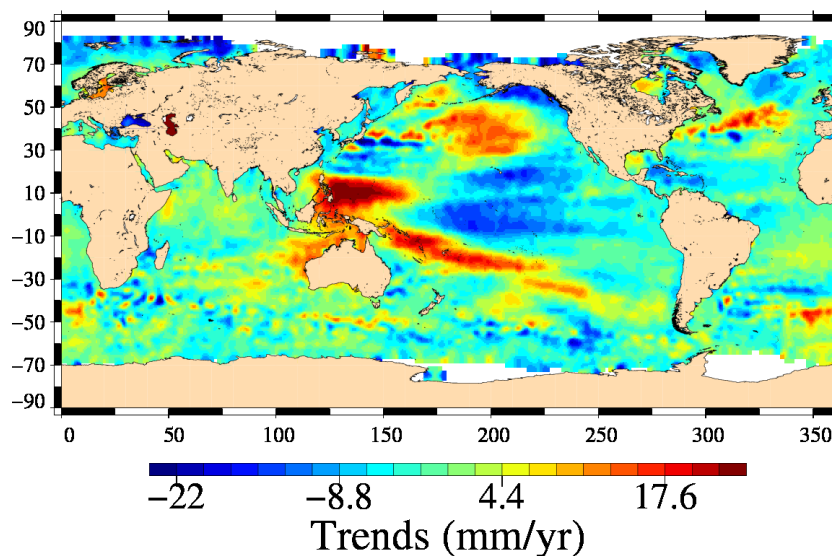
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Global internal analyses

SLA with RX\_DEL\_CCI trends : even pass numbers  
Mission en, cycles 10 to 84



SLA with RX\_DEL\_IPF trends : even pass numbers  
Mission en, cycles 10 to 84



## Diagnostic A203\_c (mission en)

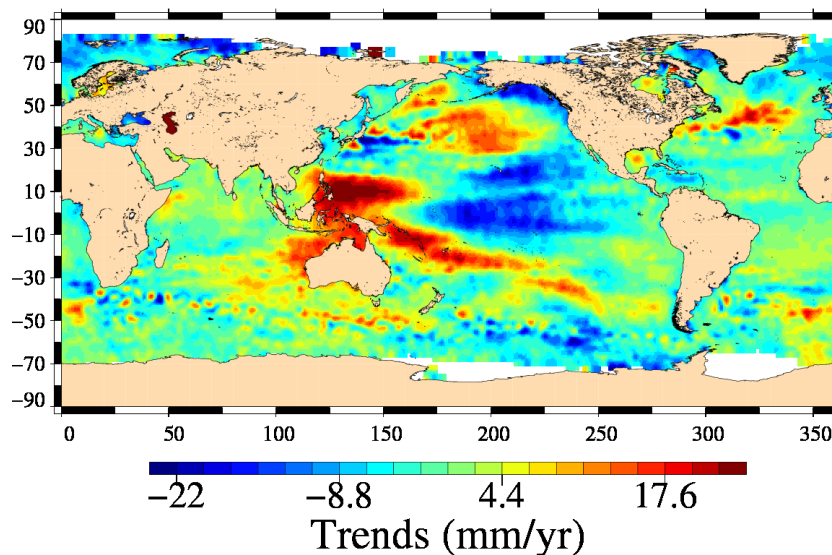
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

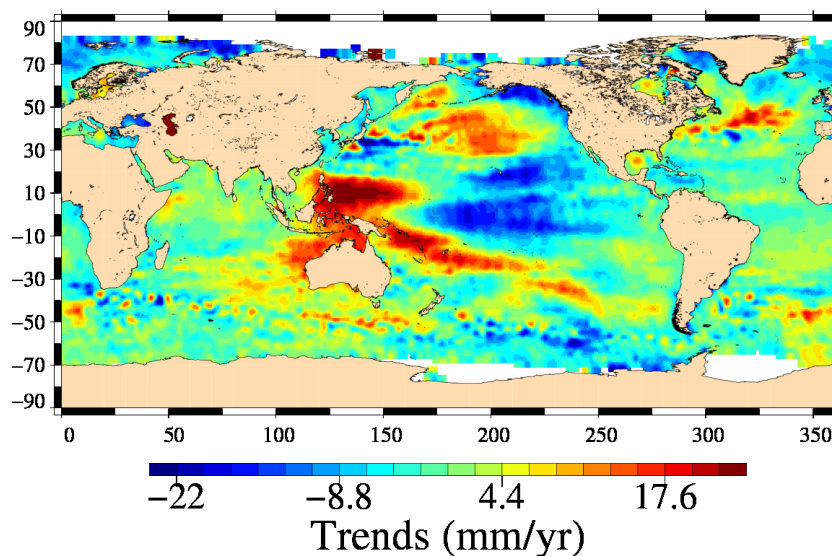
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Global internal analyses

SLA with RX\_DEL\_CCI trends : odd pass numbers  
Mission en, cycles 10 to 84



SLA with RX\_DEL\_IPF trends : odd pass numbers  
Mission en, cycles 10 to 84



## Diagnostic A203\_a (mission j1)

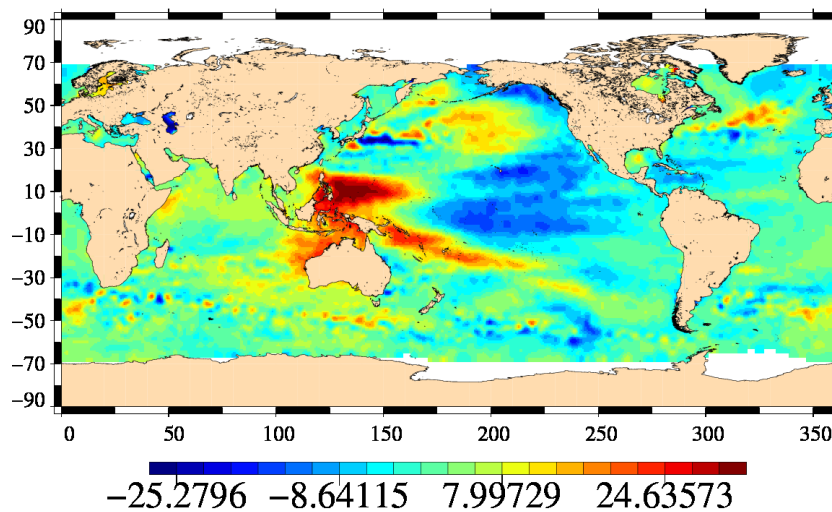
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

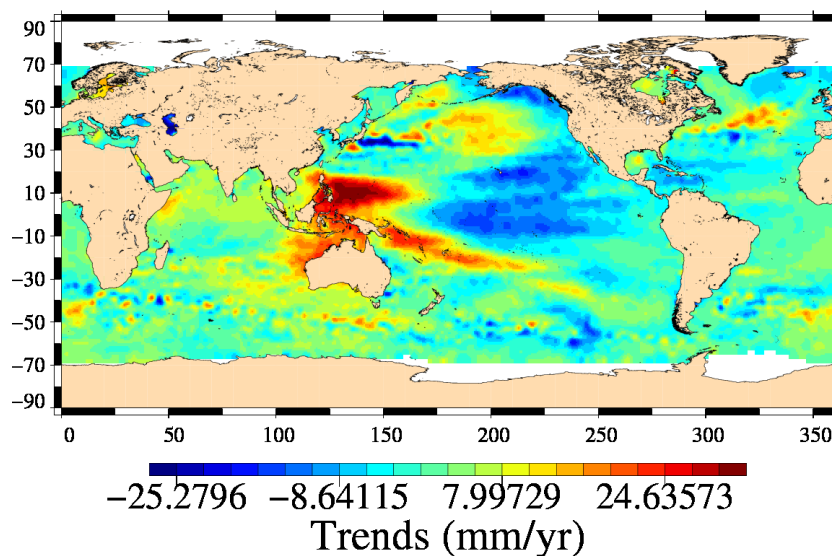
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Global internal analyses

SLA with RX\_DEL\_CCI trends  
Mission j1, cycles 28 to 291



SLA with RX\_DEL\_IPF trends  
Mission j1, cycles 28 to 291



## Diagnostic A203\_b (mission j1)

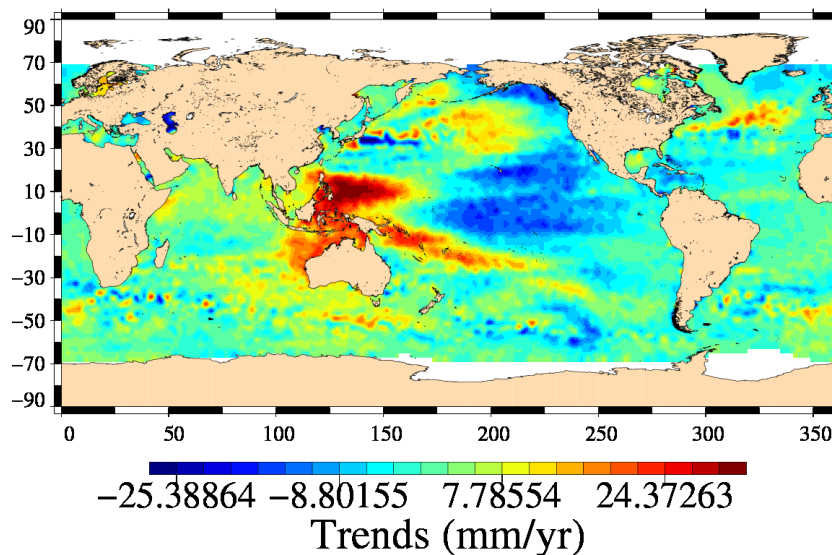
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

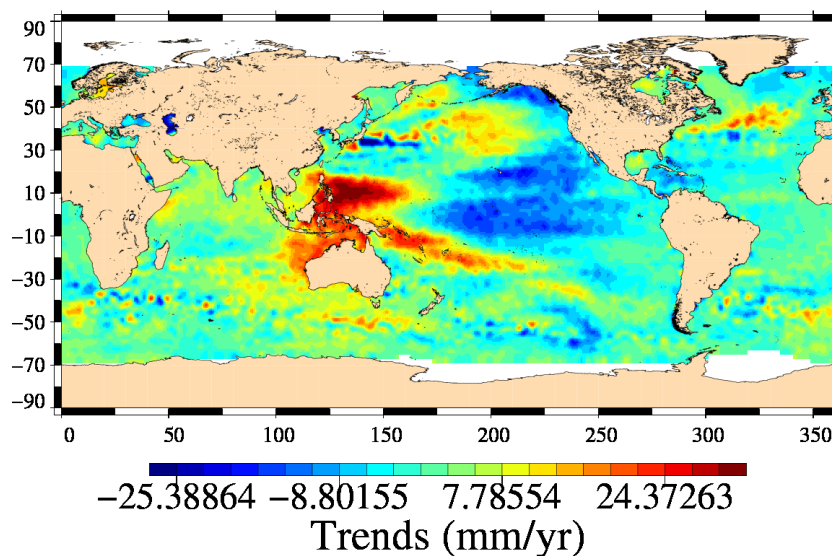
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Global internal analyses

SLA with RX\_DEL\_CCI trends : even pass numbers  
Mission j1, cycles 28 to 291



SLA with RX\_DEL\_IPF trends : even pass numbers  
Mission j1, cycles 28 to 291



## Diagnostic A203\_c (mission j1)

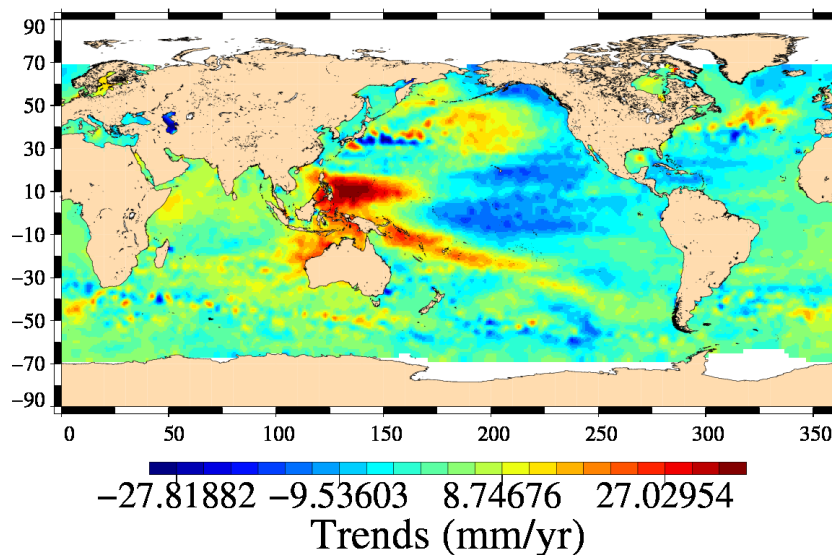
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

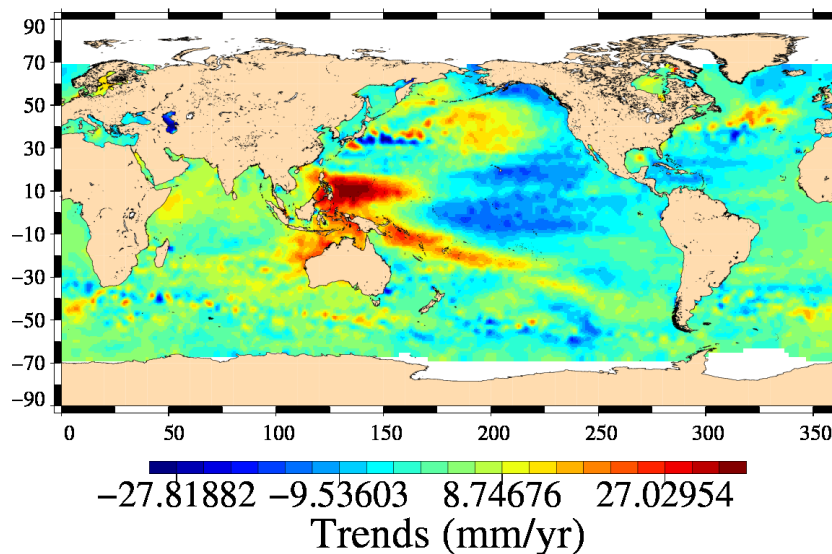
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

Diagnostic type : Global internal analyses

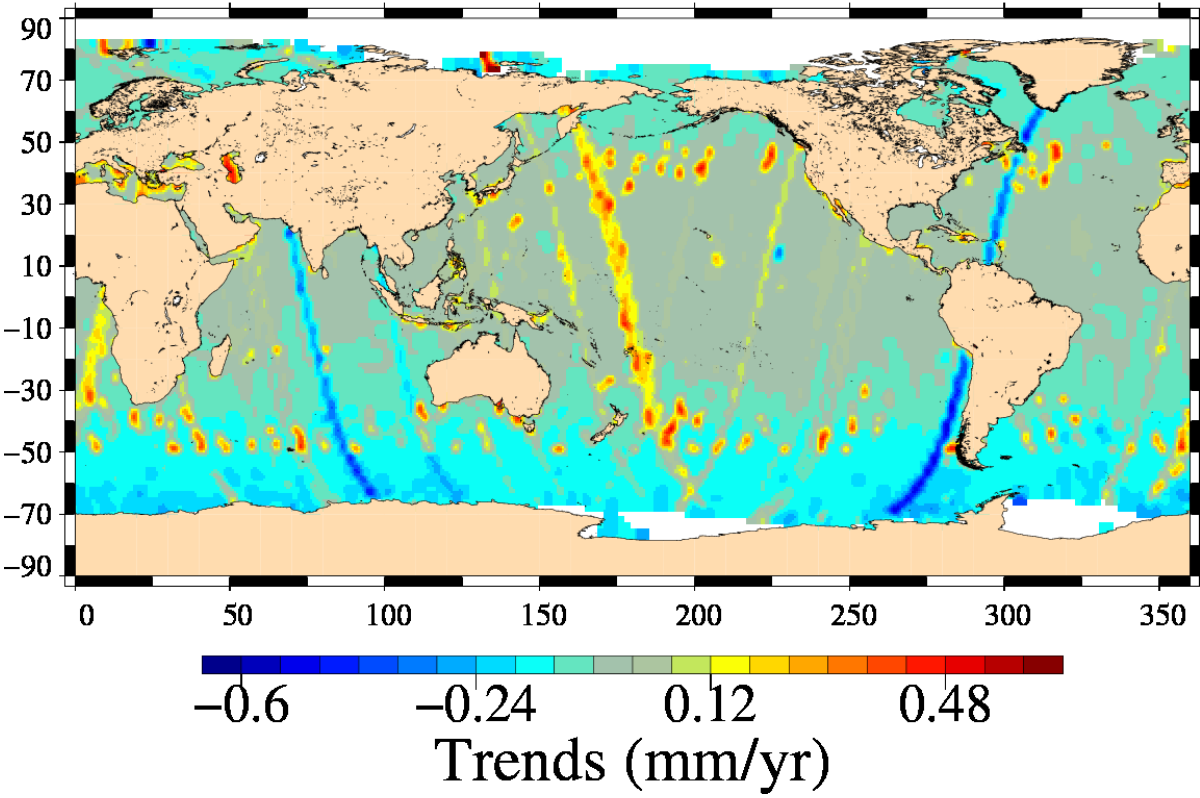
SLA with RX\_DEL\_CCI trends : odd pass numbers  
Mission j1, cycles 28 to 291



SLA with RX\_DEL\_IPF trends : odd pass numbers  
Mission j1, cycles 28 to 291





Diagnostic type : Global internal analyses	Diagnostic A204_a (mission en)	
	Name : Differences between maps of SLA	
	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 RX_DEL_CCI trends – SLA with RX_DEL_IPF trends</div> <div>Mission en, cycles 10 to 84</div> 	

## Diagnostic A204\_b (mission en)

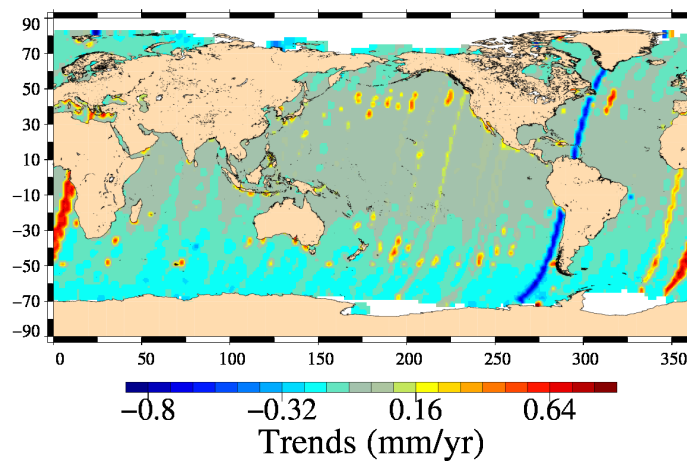
**Name :** Differences between maps of SLA

**Input data :** Along track SLA

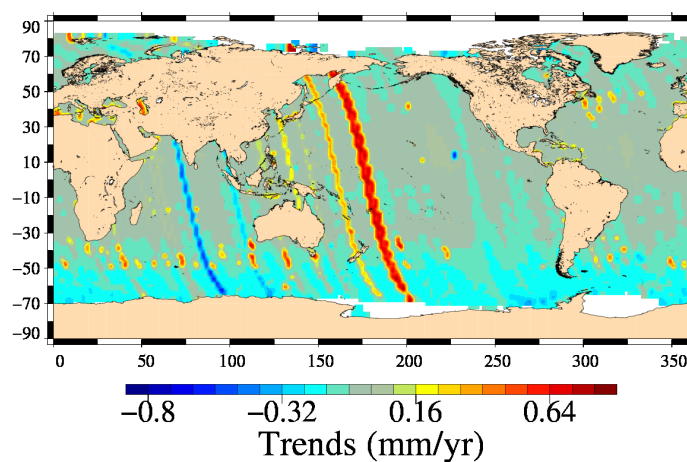
**Description :** The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except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

Diagnostic type : Global internal analyses

with RX\_DEL\_CCI trends – SLA with RX\_DEL\_IPF trends : even pass num  
Mission en, cycles 10 to 84



with RX\_DEL\_CCI trends – SLA with RX\_DEL\_IPF trends : odd pass num  
Mission en, cycles 10 to 84



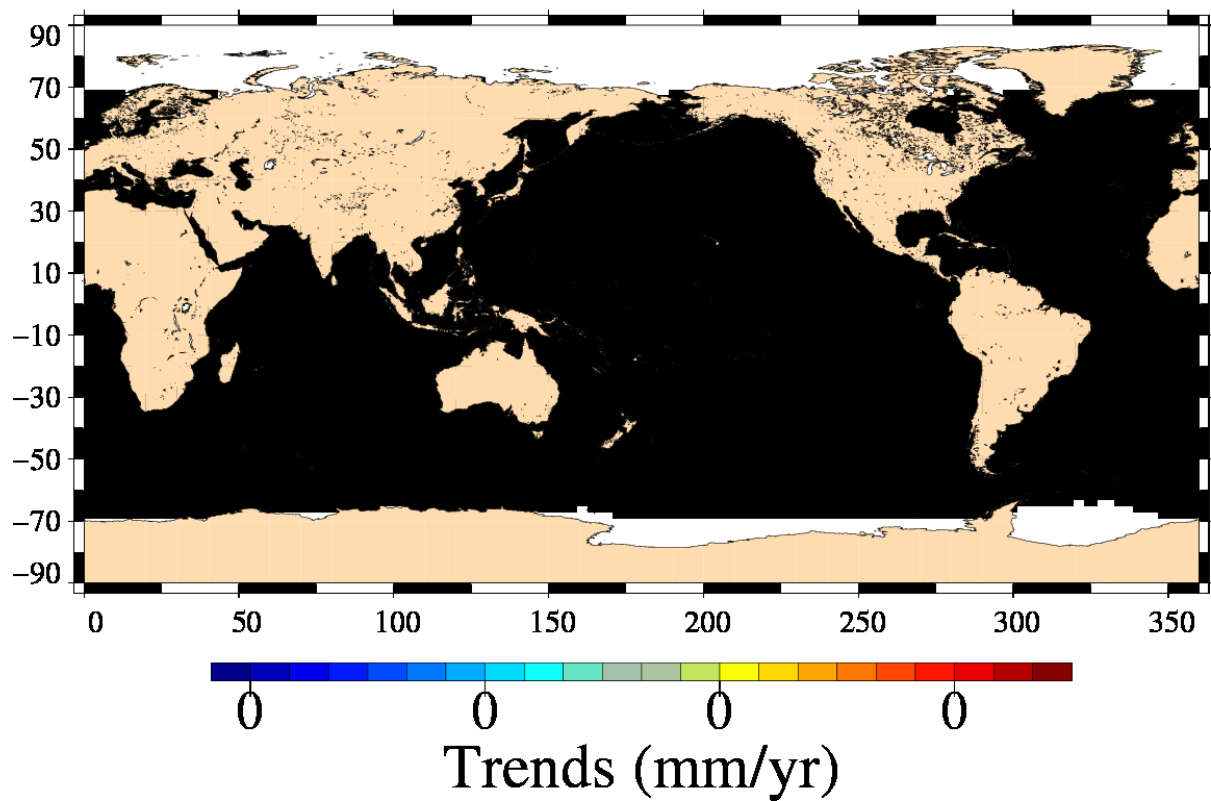
## Diagnostic A204\_a (mission j1)

**Name :** Differences between maps of SLA

**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).

SLA with RX\_DEL\_CCI trends – SLA with RX\_DEL\_IPF trends  
Mission j1, cycles 28 to 291





## Diagnostic A204\_b (mission j1)

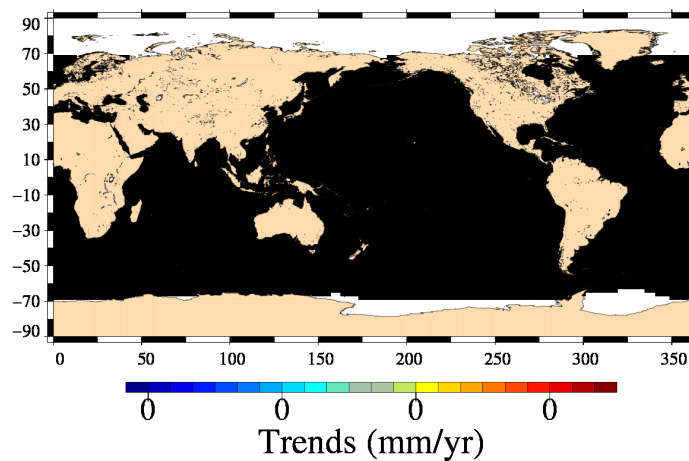
**Name :** Differences between maps of SLA

**Input data :** Along track SLA

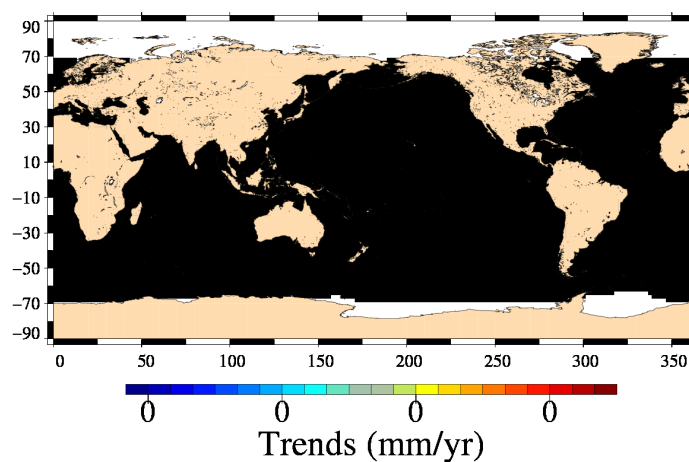
**Description :** The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except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

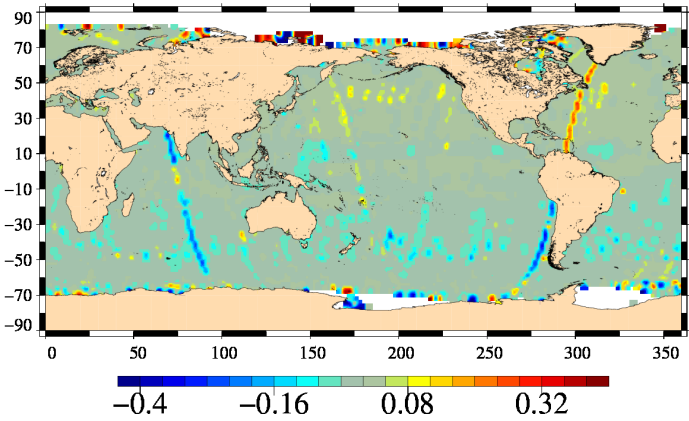
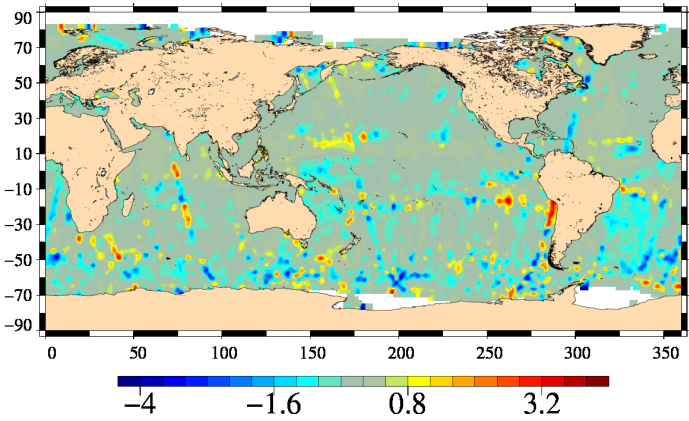
Diagnostic type : Global internal analyses

with RX\_DEL\_CCI trends – SLA with RX\_DEL\_IPF trends : even pass num  
Mission j1, cycles 28 to 291



with RX\_DEL\_CCI trends – SLA with RX\_DEL\_IPF trends : odd pass num  
Mission j1, cycles 28 to 291



Diagnostic type : Global internal analyses	Diagnostic A205_a (mission en)	
	Name : Differences between maps of SLA (2)	
	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).	
	<p>with RX_DEL_CCI amplitude – SLA with RX_DEL_IPF amplitude : annual signal Mission en, cycles 10 to 84</p>  <p>Amplitude (cm)</p> <p>LA with RX_DEL_CCI phase – SLA with RX_DEL_IPF phase : annual signal Mission en, cycles 10 to 84</p>  <p>Phase (degree)</p>	

## Diagnostic A205\_b (mission en)

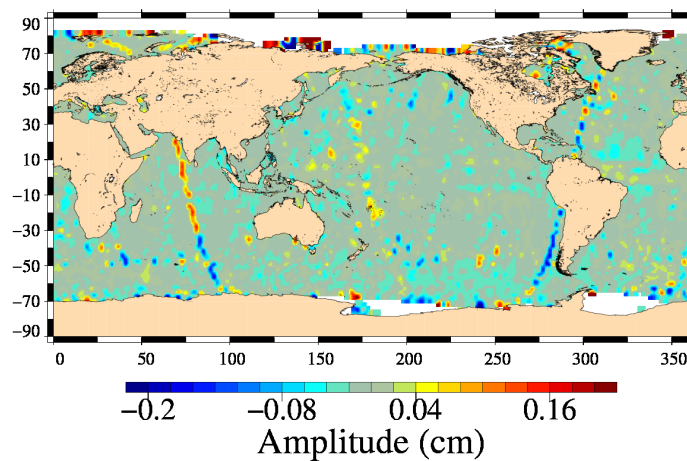
**Name :** Differences between maps of SLA (2)

**Input data :** Along track SLA

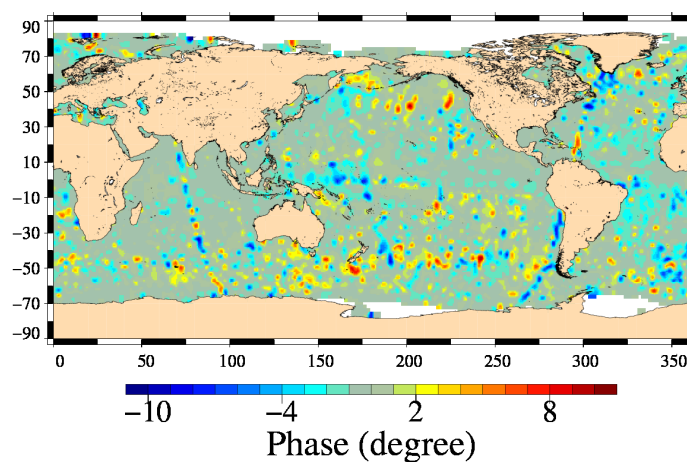
**Description :** The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except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

Diagnostic type : Global internal analyses

1 RX\_DEL\_CCI amplitude – SLA with RX\_DEL\_IPF amplitude : semi-annu  
Mission en, cycles 10 to 84



, with RX\_DEL\_CCI phase – SLA with RX\_DEL\_IPF phase : semi-annual si  
Mission en, cycles 10 to 84



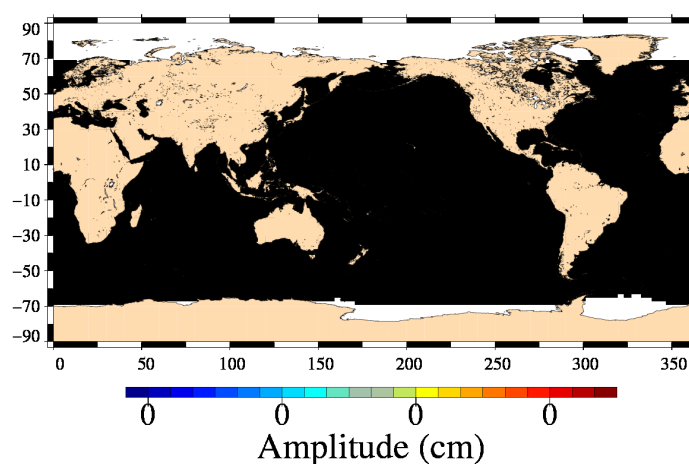
## Diagnostic A205\_a (mission j1)

**Name :** Differences between maps of SLA (2)

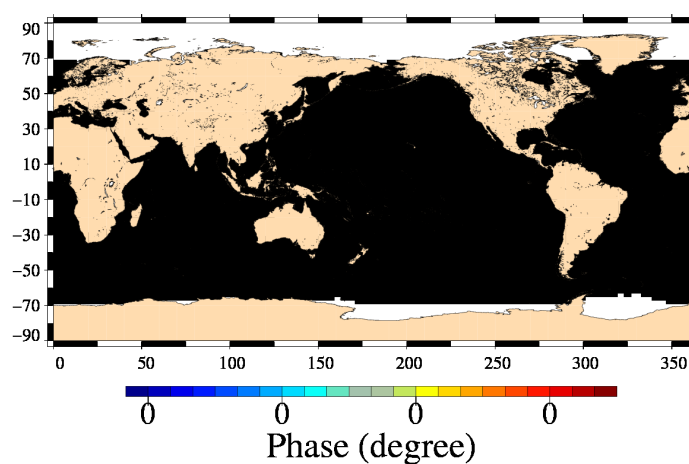
**Input data :** Along track SLA

**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).

with RX\_DEL\_CCI amplitude – SLA with RX\_DEL\_IPF amplitude : annual signal  
Mission j1, cycles 28 to 291



LA with RX\_DEL\_CCI phase – SLA with RX\_DEL\_IPF phase : annual signal  
Mission j1, cycles 28 to 291



Diagnostic A205\_b (mission j1)

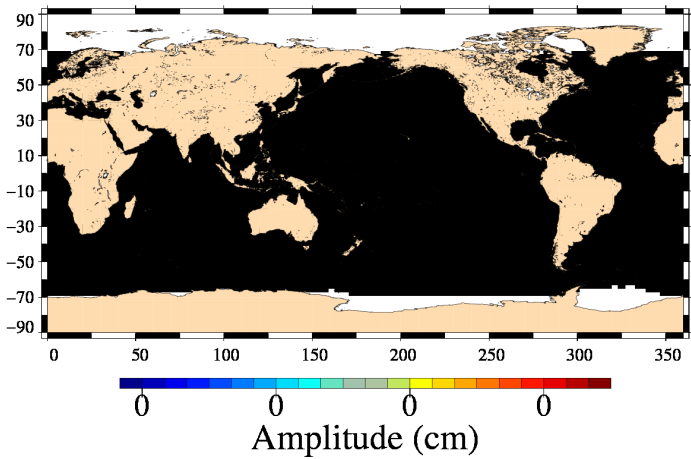
Name : Differences between maps of SLA (2)

Input data : Along track SLA

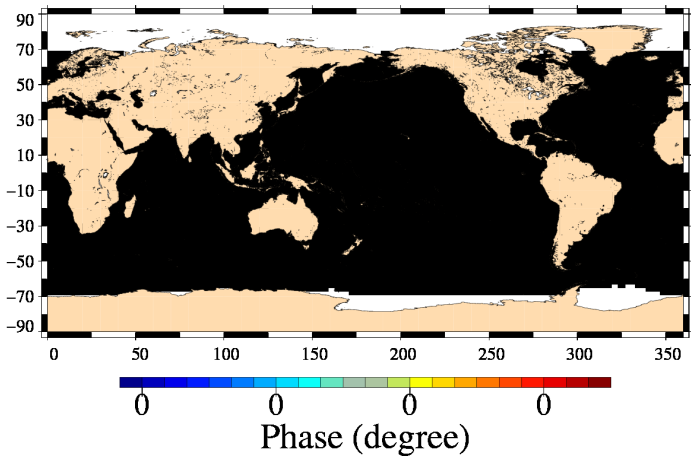
Description : The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except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

Diagnostic type : Global internal analyses

1 RX\_DEL\_CCI amplitude – SLA with RX\_DEL\_IPF amplitude : semi-annu  
Mission j1, cycles 28 to 291



, with RX\_DEL\_CCI phase – SLA with RX\_DEL\_IPF phase : semi-annual si  
Mission j1, cycles 28 to 291

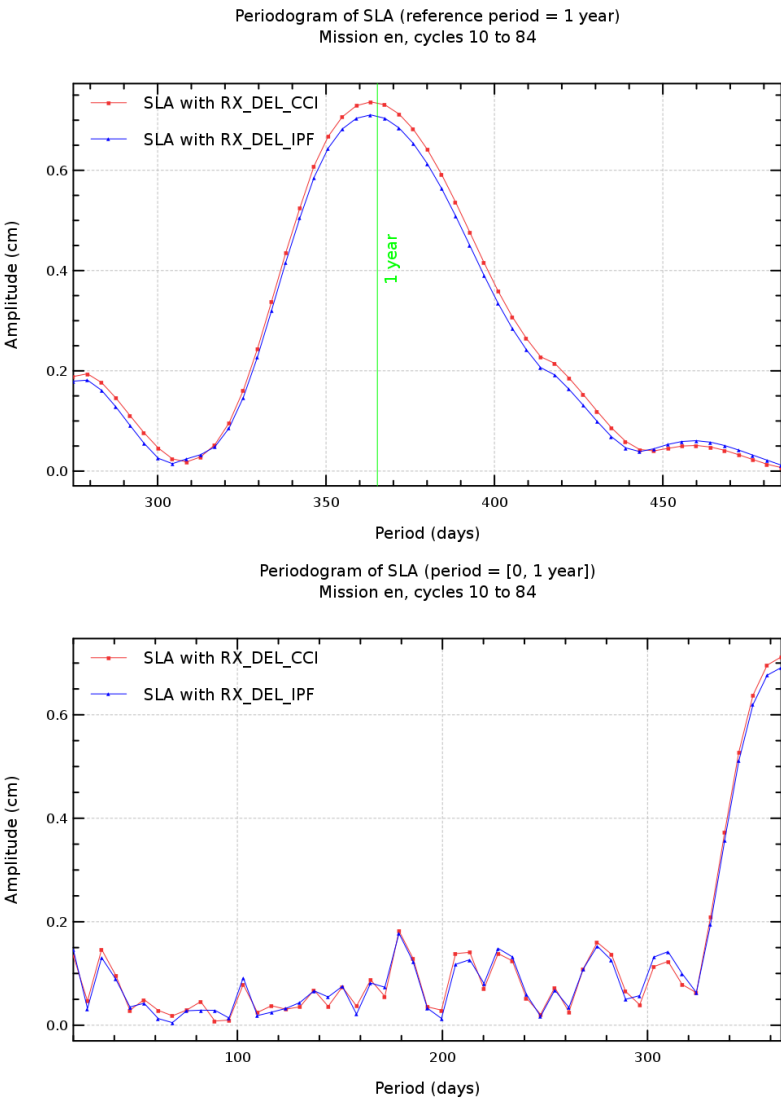


Diagnostic A206\_a (mission en)

**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.



## Diagnostic A206\_b (mission en)

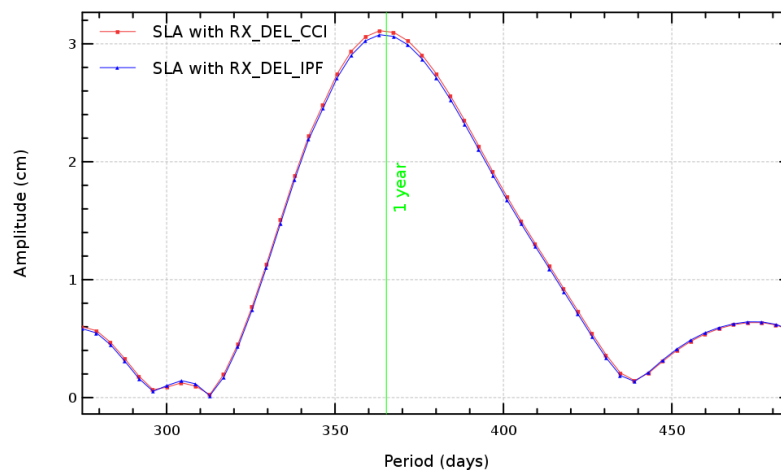
**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

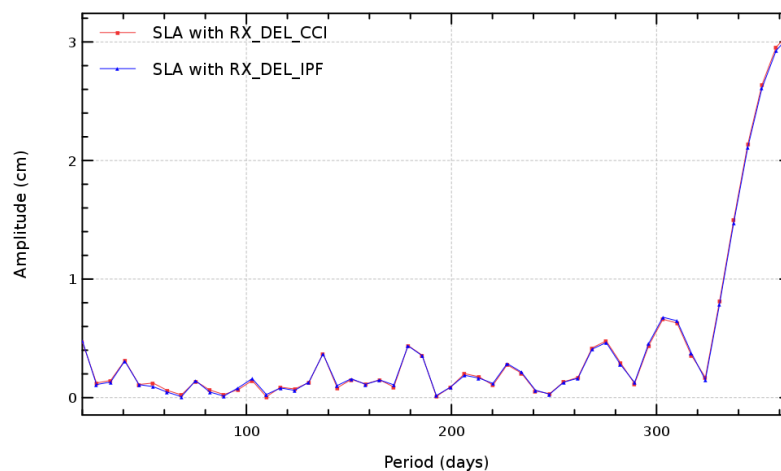
**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.

Diagnostic type : Global internal analyses

Periodogram of north hemisphere SLA (reference period = 1 year)  
Mission en, cycles 10 to 84



Periodogram of north hemisphere SLA (period = [0, 1 year])  
Mission en, cycles 10 to 84



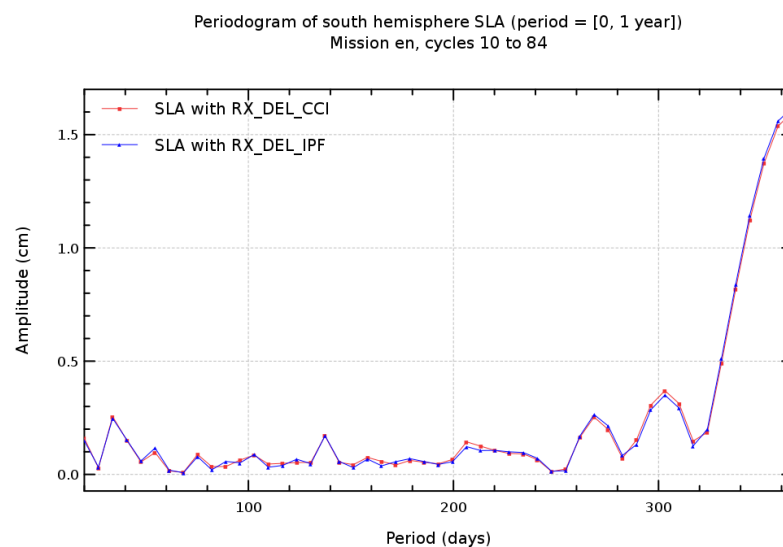
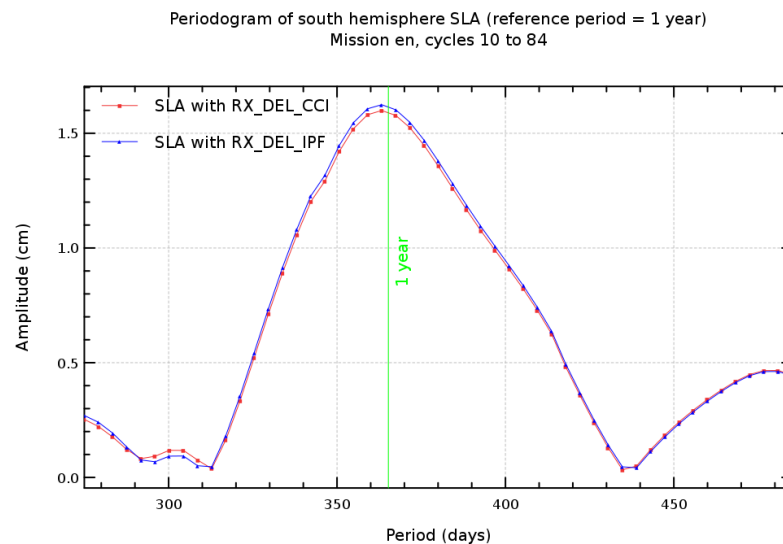
## Diagnostic A206\_c (mission en)

**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.

Diagnostic type : Global internal analyses





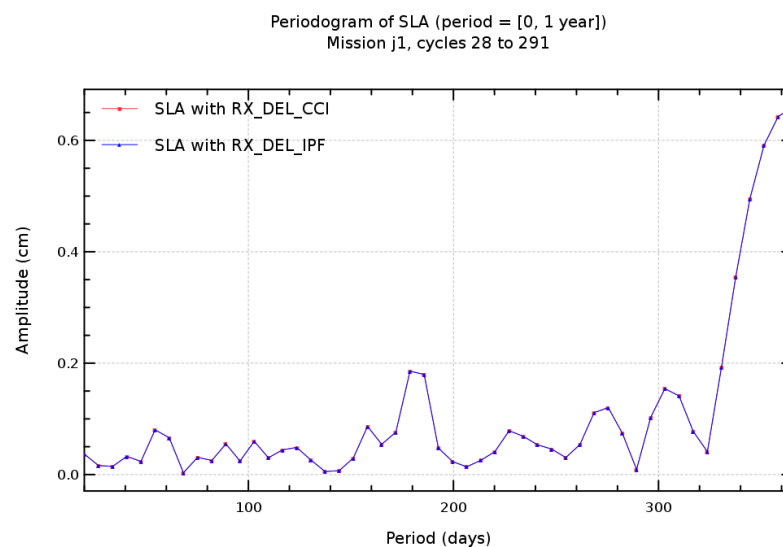
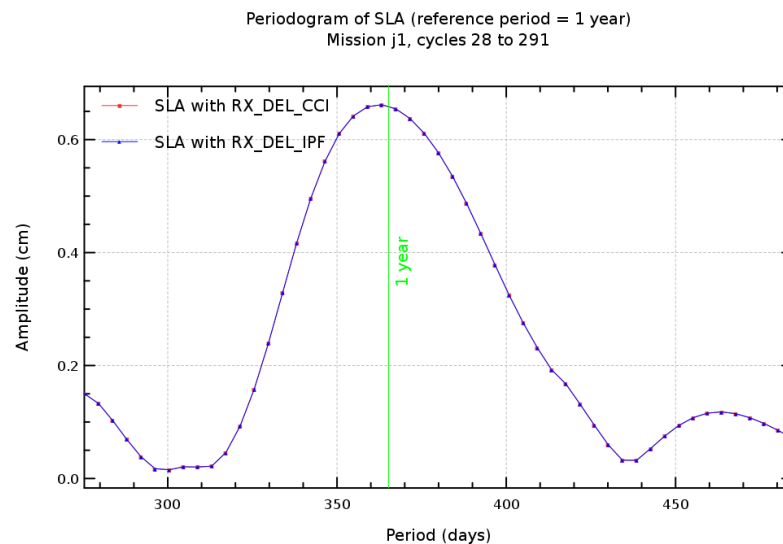
## Diagnostic A206\_a (mission j1)

**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.

Diagnostic type : Global internal analyses



## Diagnostic A206\_b (mission j1)

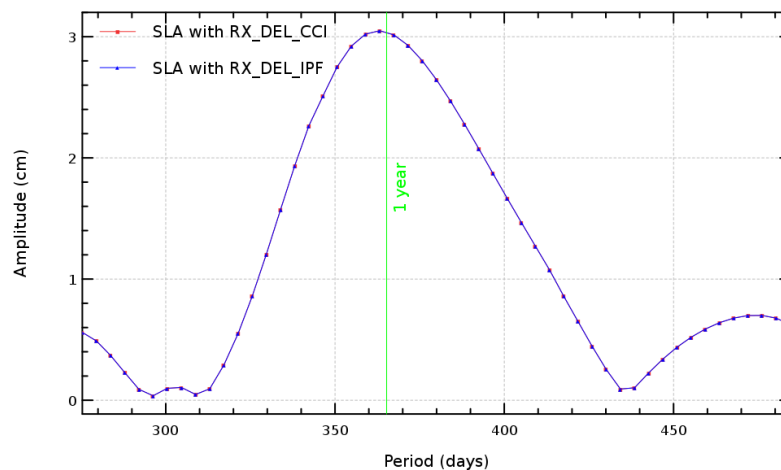
**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

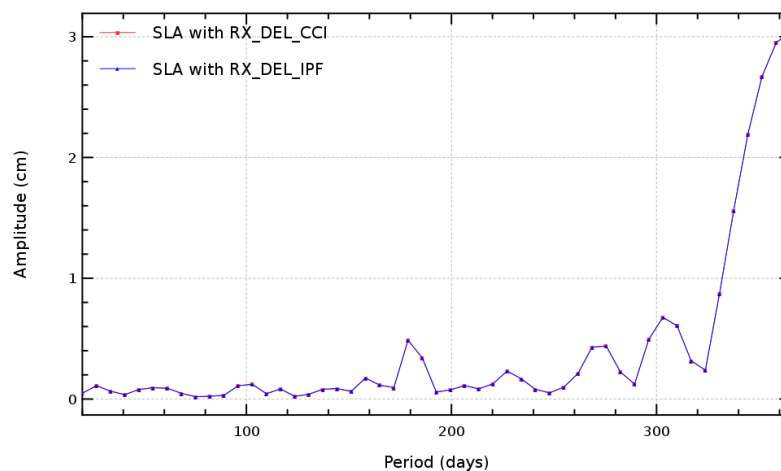
**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.

Diagnostic type : Global internal analyses

Periodogram of north hemisphere SLA (reference period = 1 year)  
Mission j1, cycles 28 to 291



Periodogram of north hemisphere SLA (period = [0, 1 year])  
Mission j1, cycles 28 to 291



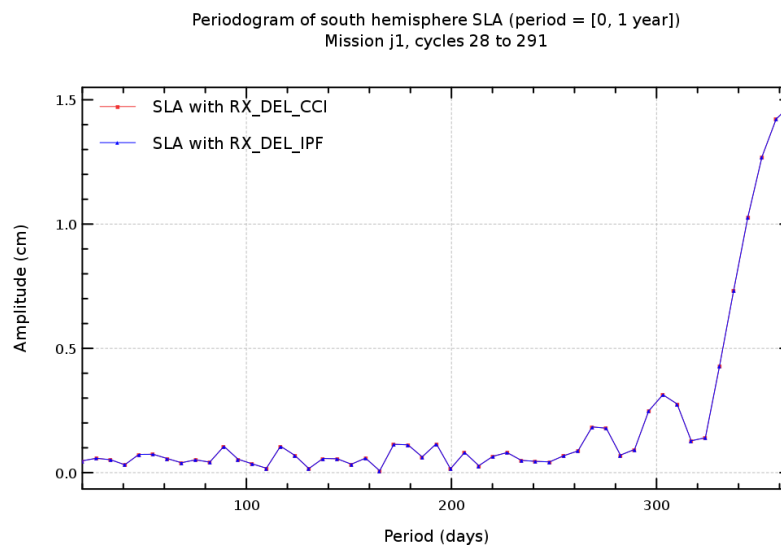
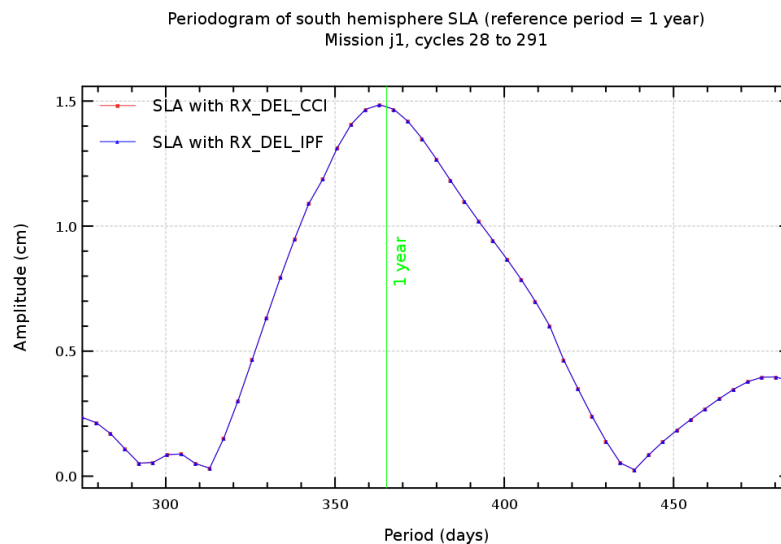
## Diagnostic A206\_c (mission j1)

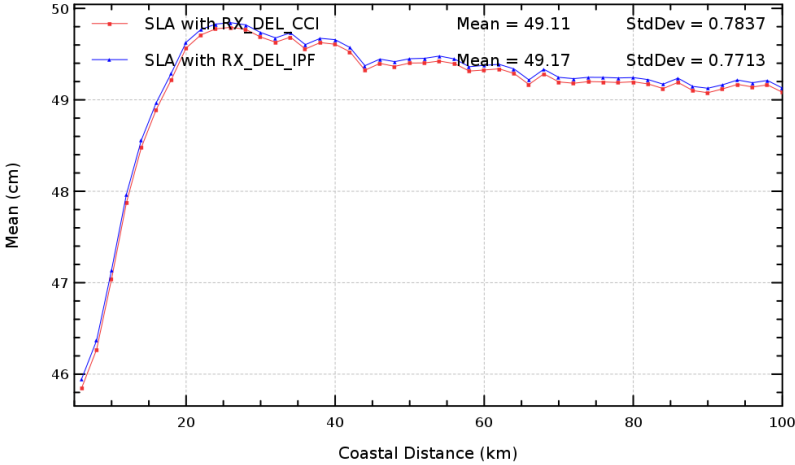
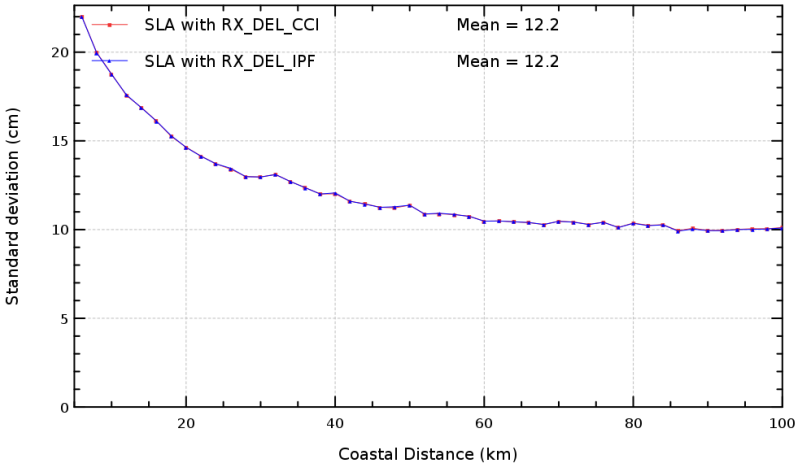
**Name :** Periodogram derived from temporal evolution of Sea Level Anomaly (SLA)

**Input data :** Along track SLA

**Description :** The periodogram derived from temporal evolution of SLA (global, northern or southern hemisphere) can be done over all periods or focusing on particular periods, such as annual, semi annual or 60 day signal. Therefore mean of SLA differences are computed (every day or cycle), and time data series are plotted as a periodogram.

Diagnostic type : Global internal analyses



Diagnostic type : Global internal analyses	Diagnostic A207 (mission en)	
	Name : Sea Level Anomaly (SLA) versus coastal distance	
	Input data : Along track SLA	
	Description : Mean and standard deviation of SLA - computed by using successively both altimetric components - are plotted in function of coastal distances between 0 and 100 km.	
	<div><p>Global MSL Mission en, cycles 10 to 84</p><p>Mean (cm)</p><p>Coastal Distance (km)</p><p>SLA with RX_DEL_CCI    Mean = 49.11    StdDev = 0.7837</p><p>SLA with RX_DEL_IPF    Mean = 49.17    StdDev = 0.7713</p></div> <div><p>Global MSL Mission en, cycles 10 to 84</p><p>Standard deviation (cm)</p><p>Coastal Distance (km)</p><p>SLA with RX_DEL_CCI    Mean = 12.2</p><p>SLA with RX_DEL_IPF    Mean = 12.2</p></div>	

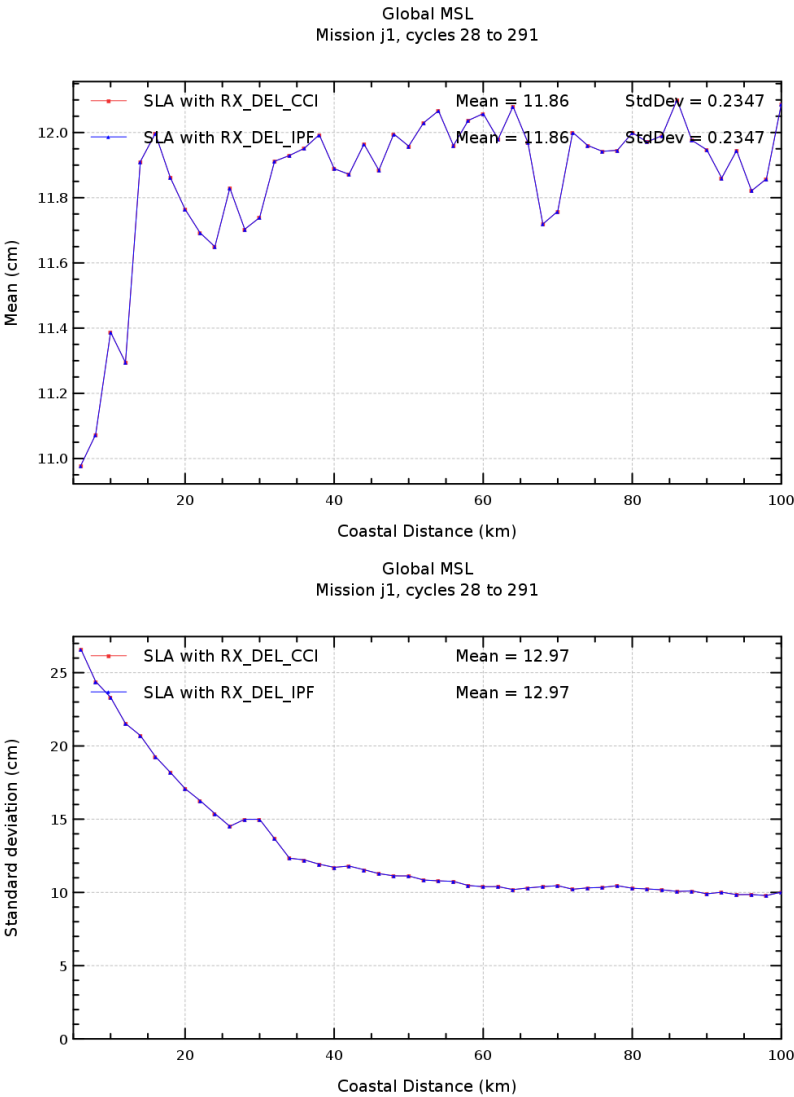
## Diagnostic A207 (mission j1)

**Name :** Sea Level Anomaly (SLA) versus coastal distance

**Input data :** Along track SLA

**Description :** Mean and standard deviation of SLA - computed by using successively both altimetric components - are plotted in function of coastal distances between 0 and 100 km.

Diagnostic type : Global internal analyses



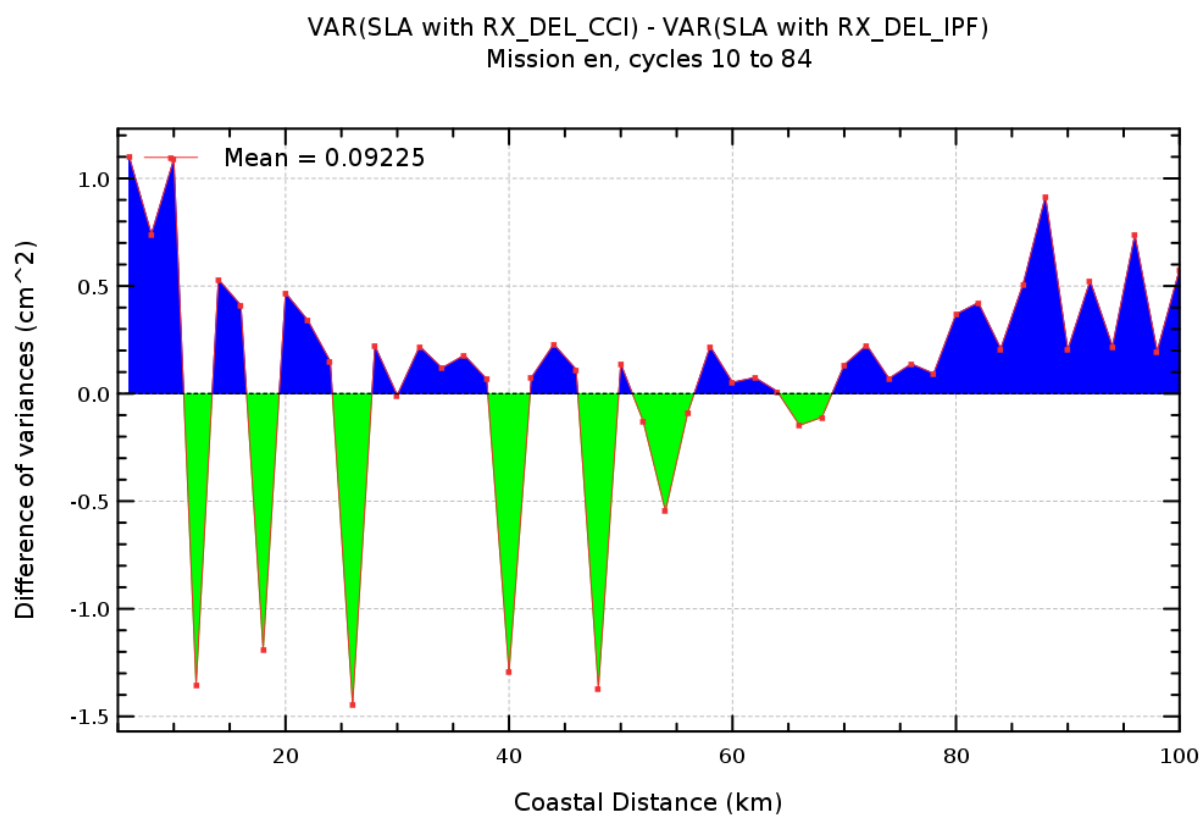
**Diagnostic A208 (mission en)**

**Name :** Sea Level Anomaly (SLA) differences versus coastal distance

**Input data :** Along track SLA

**Description :** The differences of SLA variances - computed by using successively both altimetric components - are plotted in function of coastal distances between 0 and 100 km.

Diagnostic type : Global internal analyses



## Diagnostic A208 (mission j1)

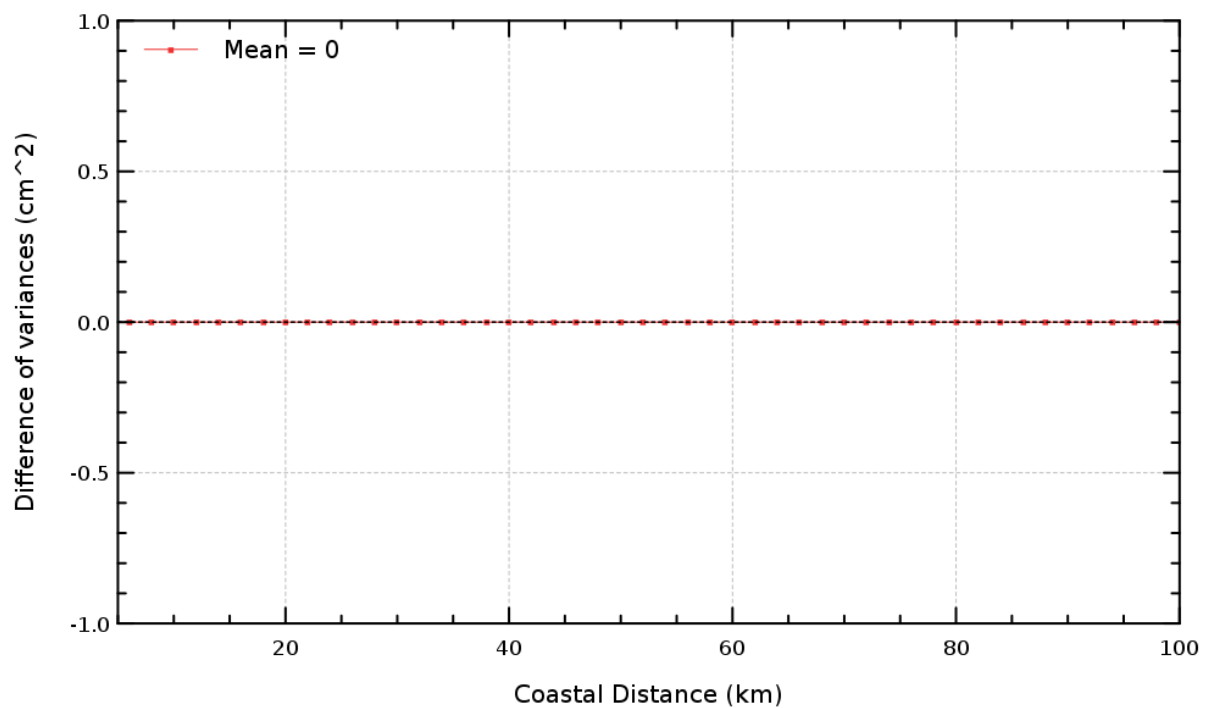
**Name :** Sea Level Anomaly (SLA) differences versus coastal distance

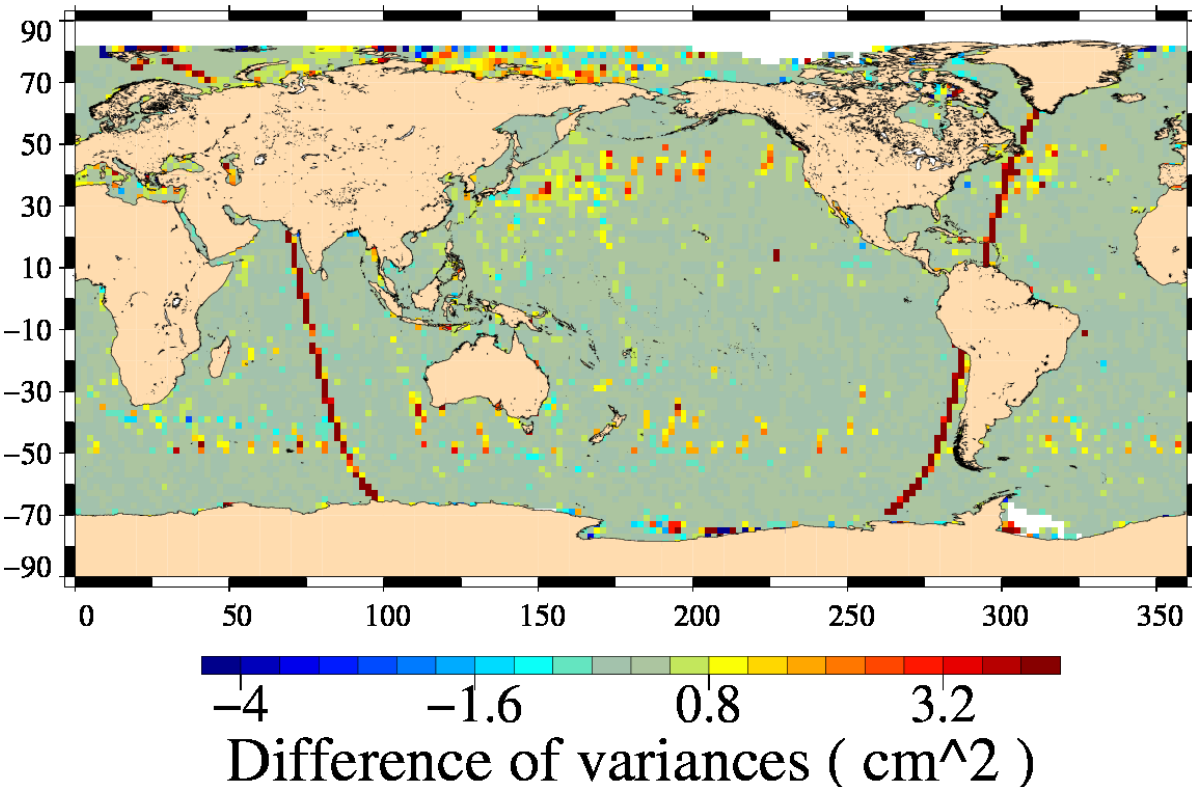
**Input data :** Along track SLA

**Description :** The differences of SLA variances - computed by using successively both altimetric components - are plotted in function of coastal distances between 0 and 100 km.

Diagnostic type : Global internal analyses

VAR(SLA with RX\_DEL\_CCI) - VAR(SLA with RX\_DEL\_IPF)  
Mission j1, cycles 28 to 291



Diagnostic type : Global internal analyses	Diagnostic A209 (mission en)
	Name : Differences between maps of SLA (3)
	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 RX_DEL_CCI) – VAR(SLA with RX_DEL_IPF) Mission en, cycles 10 to 84</div> 



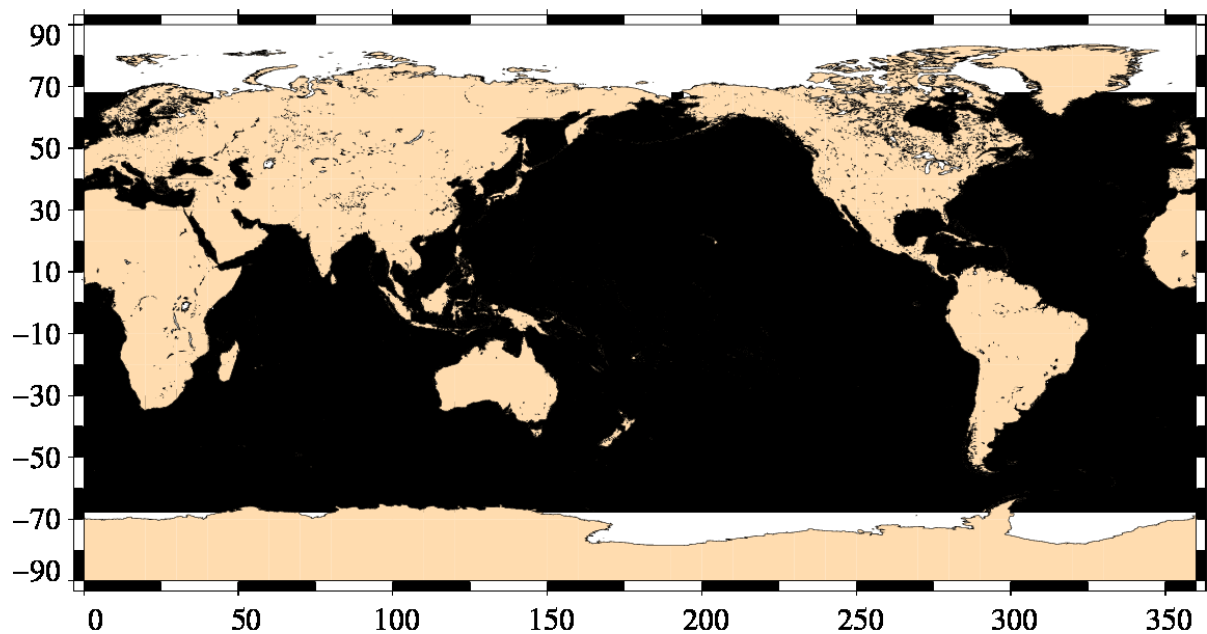
## Diagnostic A209 (mission j1)

**Name :** Differences between maps of SLA (3)

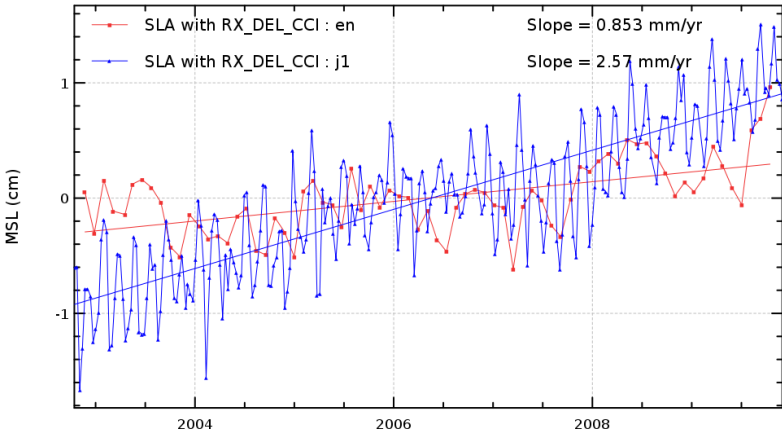
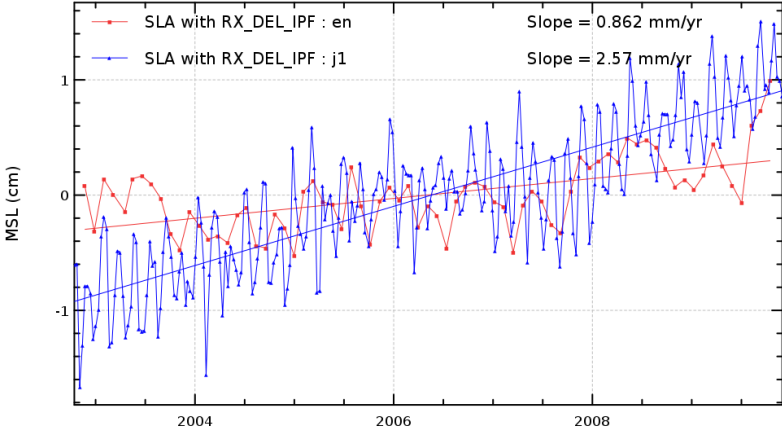
**Input data :** Along track SLA

**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.

**VAR(SLA with RX\_DEL\_CCI) – VAR(SLA with RX\_DEL\_IPF)**  
Mission j1, cycles 28 to 291



0 0 0 0  
Difference of variances (  $\text{cm}^2$  )

Diagnostic B201_a	
Name : Temporal evolution of Sea level Anomaly (SLA) for 2 missions over the same period	
Input data : Along track SLA	
<p><b>Description :</b> Temporal evolution of SLA statistics (mean, standard deviation) of 2 or more missions are computed over the same period as longest as possible using successively both components in the SLA calculation. This can be done globally, or separating in ascending and descending or in northern and southern hemisphere. In order to assure comparability, statistics are computed using sea level standard calculation (mean per box of 2x2 and weighted by cosine of latitude for the global mean) limited to 66 latitude.</p>	
<div><p>Global MSL Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)</p><p>MSL (cm)</p><p>—•— SLA with RX_DEL_CCI : en      Slope = 0.853 mm/yr —•— SLA with RX_DEL_CCI : j1      Slope = 2.57 mm/yr</p></div> <div><p>Global MSL Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)</p><p>MSL (cm)</p><p>—•— SLA with RX_DEL_IPF : en      Slope = 0.862 mm/yr —•— SLA with RX_DEL_IPF : j1      Slope = 2.57 mm/yr</p></div>	

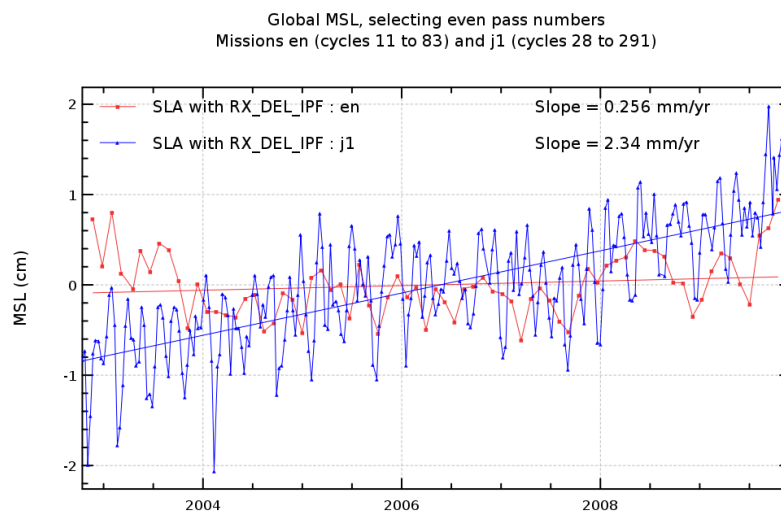
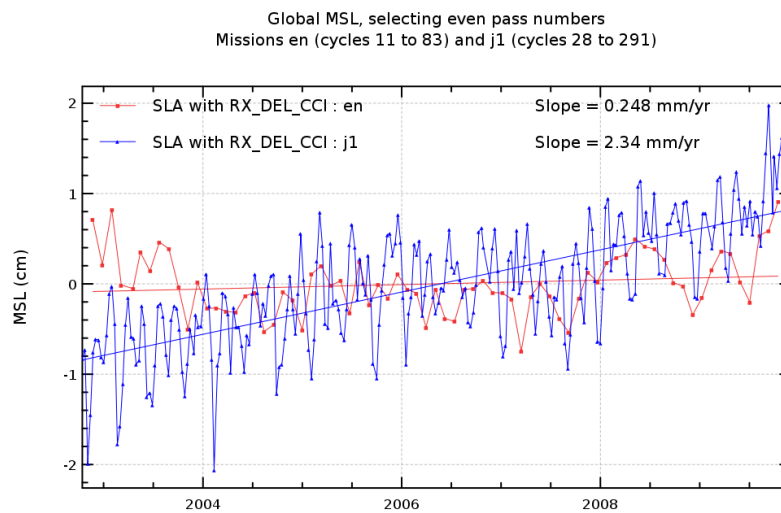
## Diagnostic B201\_b

**Name :** Temporal evolution of Sea level Anomaly (SLA) for 2 missions over the same period

**Input data :** Along track SLA

**Description :** Temporal evolution of SLA statistics (mean, standard deviation) of 2 or more missions are computed over the same period as longest as possible using successively both components in the SLA calculation. This can be done globally, or separating in ascending and descending or in northern and southern hemisphere. In order to assure comparability, statistics are computed using sea level standard calculation (mean per box of 2x2 and weighted by cosine of latitude for the global mean) limited to 66 latitude.

Diagnostic type : Global multi-mission comparisons



## Diagnostic B201\_c

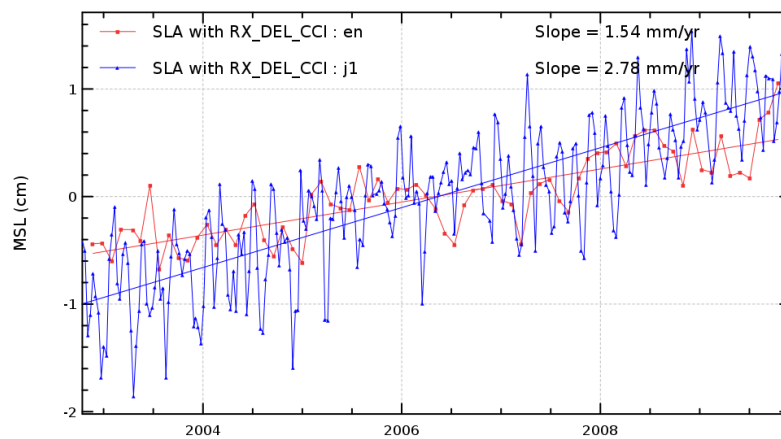
**Name :** Temporal evolution of Sea level Anomaly (SLA) for 2 missions over the same period

**Input data :** Along track SLA

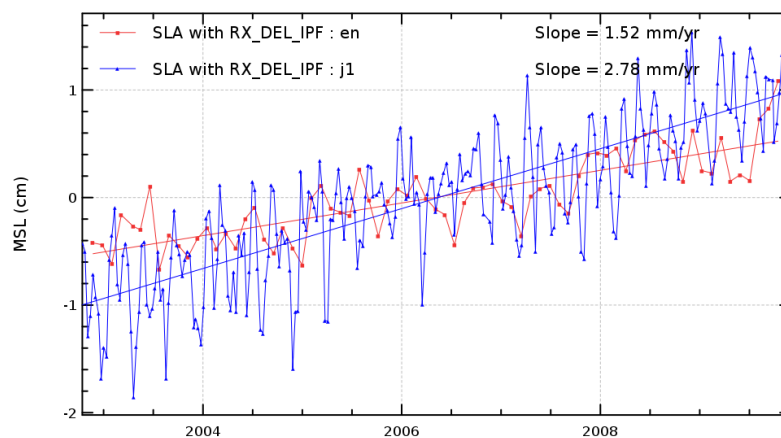
**Description :** Temporal evolution of SLA statistics (mean, standard deviation) of 2 or more missions are computed over the same period as longest as possible using successively both components in the SLA calculation. This can be done globally, or separating in ascending and descending or in northern and southern hemisphere. In order to assure comparability, statistics are computed using sea level standard calculation (mean per box of 2x2 and weighted by cosine of latitude for the global mean) limited to 66 latitude.

Diagnostic type : Global multi-mission comparisons

Global MSL, selecting odd pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)



Global MSL, selecting odd pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)



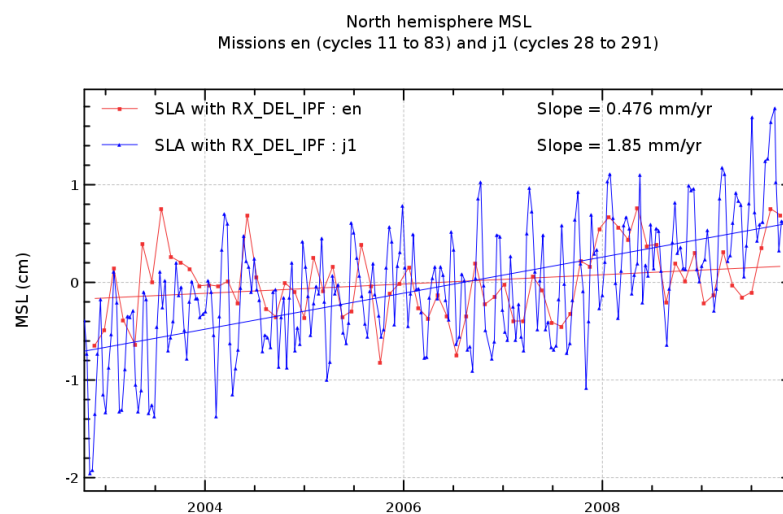
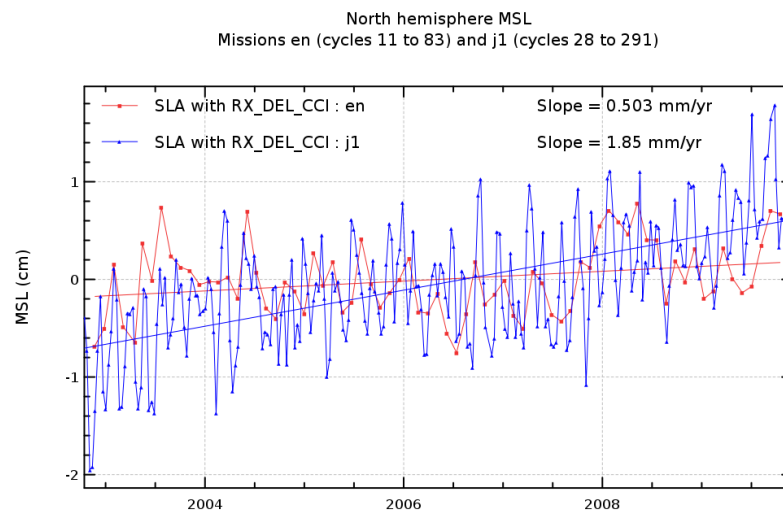
## Diagnostic B201\_d

**Name :** Temporal evolution of Sea level Anomaly (SLA) for 2 missions over the same period

**Input data :** Along track SLA

**Description :** Temporal evolution of SLA statistics (mean, standard deviation) of 2 or more missions are computed over the same period as longest as possible using successively both components in the SLA calculation. This can be done globally, or separating in ascending and descending or in northern and southern hemisphere. In order to assure comparability, statistics are computed using sea level standard calculation (mean per box of 2x2 and weighted by cosine of latitude for the global mean) limited to 66 latitude.

Diagnostic type : Global multi-mission comparisons



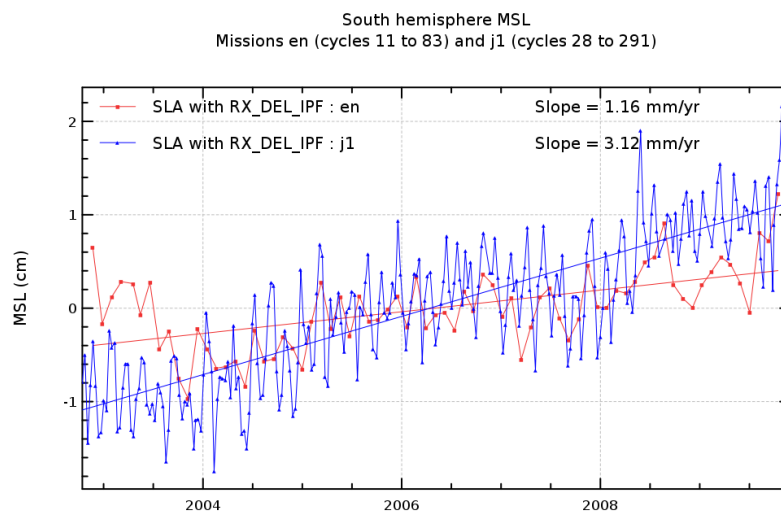
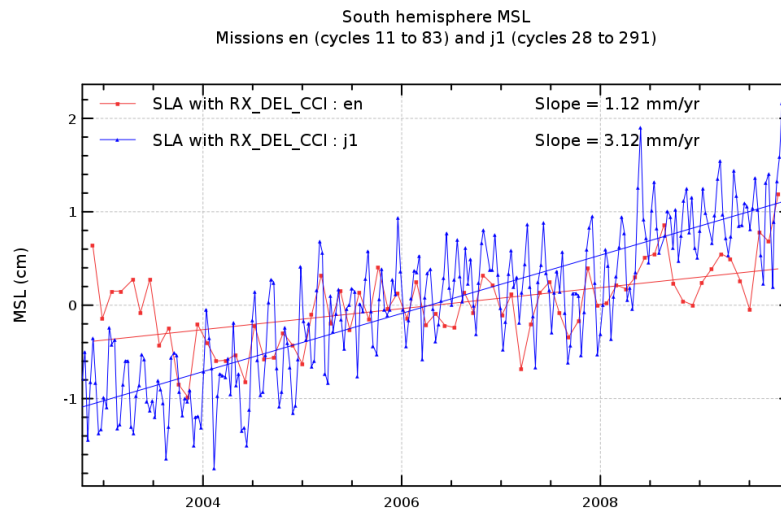
## Diagnostic B201\_e

**Name :** Temporal evolution of Sea level Anomaly (SLA) for 2 missions over the same period

**Input data :** Along track SLA

**Description :** Temporal evolution of SLA statistics (mean, standard deviation) of 2 or more missions are computed over the same period as longest as possible using successively both components in the SLA calculation. This can be done globally, or separating in ascending and descending or in northern and southern hemisphere. In order to assure comparability, statistics are computed using sea level standard calculation (mean per box of 2x2 and weighted by cosine of latitude for the global mean) limited to 66 latitude.

Diagnostic type : Global multi-mission comparisons



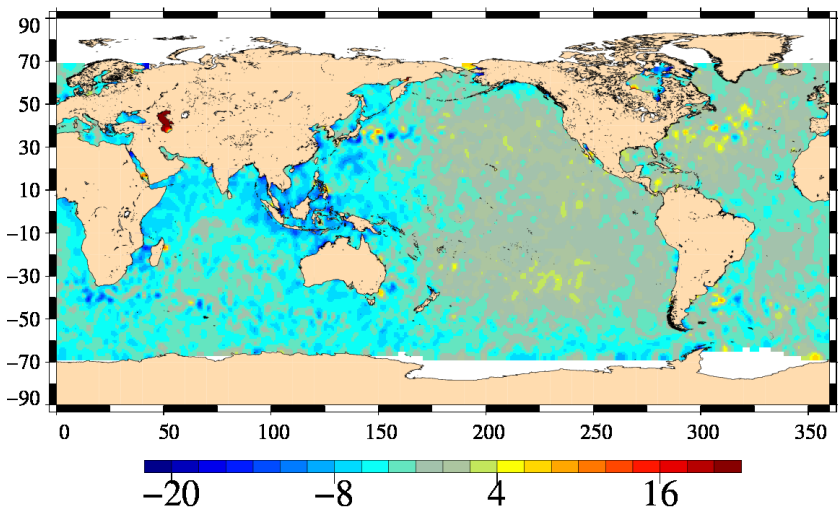
Diagnostic B202\_a

**Name :** Differences between maps of Sea Level Anomaly (SLA) for 2 missions over the same period

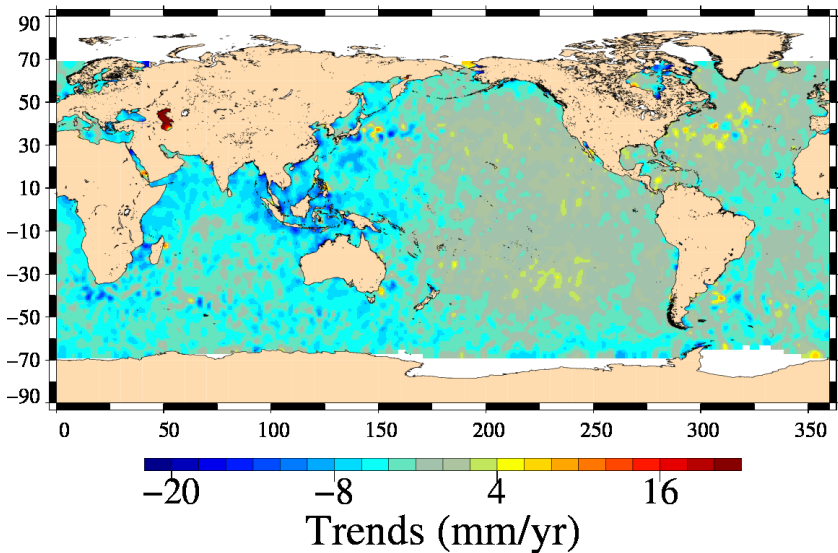
**Input data :** Along track SLA

**Description :** The differences between maps of SLA (mean, variance or slope) derived from 2 altimetric missions are computed over the same period (as long as possible) using successively both altimetric components in the SLA calculation. Maps are calculated globally, they can be also calculated separating ascending and descending passes.

SLA with RX\_DEL\_CCI differences : en – j1  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)



SLA with RX\_DEL\_IPF differences : en – j1  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)





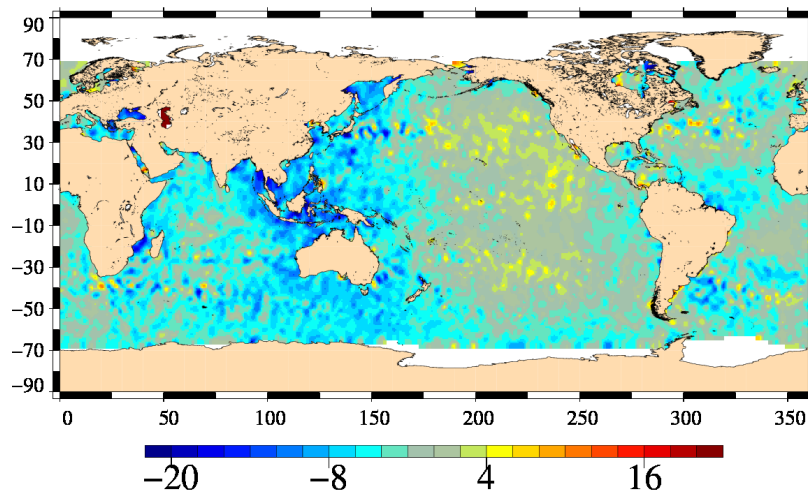
## Diagnostic B202\_b

**Name :** Differences between maps of Sea Level Anomaly (SLA) for 2 missions over the same period

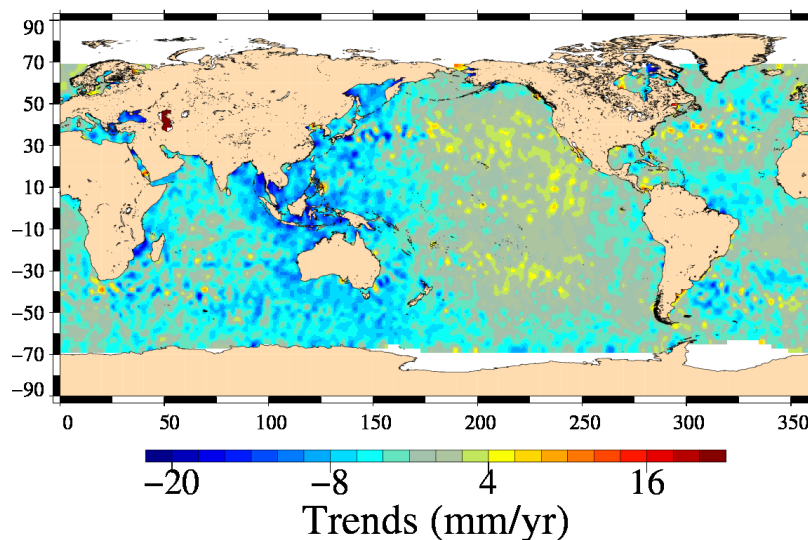
**Input data :** Along track SLA

**Description :** The differences between maps of SLA (mean, variance or slope) derived from 2 altimetric missions are computed over the same period (as long as possible) using successively both altimetric components in the SLA calculation. Maps are calculated globally, they can be also calculated separating ascending and descending passes.

SLA with RX\_DEL\_CCI differences : en – j1, even pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)



Trends (mm/yr)  
SLA with RX\_DEL\_IPF differences : en – j1, even pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)





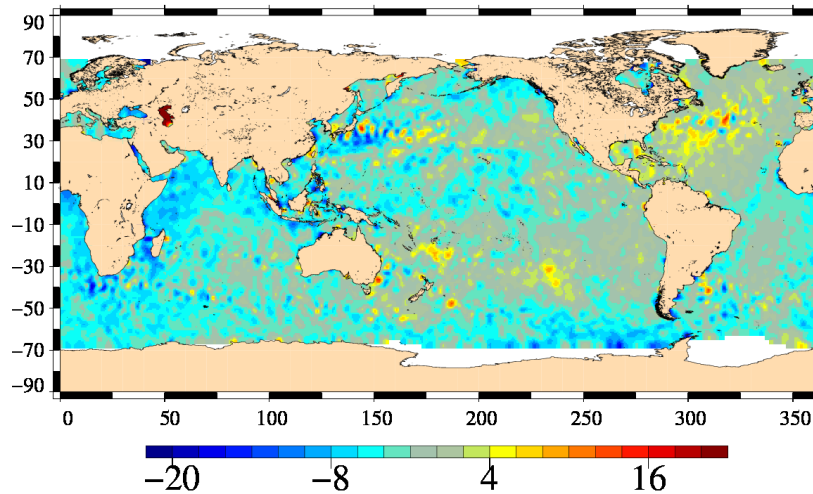
## Diagnostic B202\_c

**Name :** Differences between maps of Sea Level Anomaly (SLA) for 2 missions over the same period

**Input data :** Along track SLA

**Description :** The differences between maps of SLA (mean, variance or slope) derived from 2 altimetric missions are computed over the same period (as long as possible) using successively both altimetric components in the SLA calculation. Maps are calculated globally, they can be also calculated separating ascending and descending passes.

SLA with RX\_DEL\_CCI differences : en – j1, odd pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)



Trends (mm/yr)  
SLA with RX\_DEL\_IPF differences : en – j1, odd pass numbers  
Missions en (cycles 11 to 83) and j1 (cycles 28 to 291)

