

# Wet Troposphere atmospheric corrections comparison : GPD versus RAD

Study variable	<b>GPD</b>
Reference variable	<b>RAD</b>
Missions	Envisat ( <i>en</i> ), Jason-1 ( <i>j1</i> ), Jason-2 ( <i>j2</i> )
Period	[22000, 23375]

Creation date : 2014/08/21

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## Study overview

In this study, the wet tropospheric correction computed by the University of Porto, Faculty of science in the scope of the Sea level CCI project (WP2710) has been compared with the composite correction used in CNES/AVISO products to calculate the Envisat sea-level height (SSH).

The impact of using these wet tropospheric corrections on the SSH computation has been analyzed for Jason-1, Jason-2 and Envisat missions:

- for Jason-1 : from April 2010 (cycle 304) to June 2013 (Cycle 529)
- for Jason-2 : from March 2010 (cycle 64) to December 2013 (Cycle 200)
- for Envisat : from April 2010 (cycle 89) to April 2012 (Cycle 113)

The major aim of this solution is to provide a wet tropospheric correction for the coastal zone, applicable to all missions, fully compatible with respect to the microwave radiometer (MWR) based correction that shall be adopted in the open ocean, and ensuring its continuity and consistency in the open ocean/coastal transition zone. It has been produced by the university of Porto, Faculty of science (J. Fernandes).

This study has been performed on points where the studied correction is a valid estimate (GPD flag=1) and on non corrupted ocean points where it equals the radiometric correction (GPD flag=0).

For Envisat mission, the composite wet tropospheric correction is the reference: the radiometric wet tropospheric correction present in GDR products is used for coastal distances greater than 50 km while the ECMWF operational correction model is used for coastal distances lower than 50 km. The ECMWF operational correction is adjusted on the radiometric wet tropospheric correction to provide the continuity in the wet troposphere correction dataset. All the validation diagnostics displayed in this report have been performed in agreement with the Sea-Level CCI Product Validation Plan (PVP).

Diagnostic type : Mono-mission analyses	Diagnostic A000 (mission en)	
	Name : Differences of number of hits between both altimetric components	
	Input data : Along track altimetric components	
	Description : The difference of number of hits between both parameters.	
	<div><div>Difference of number of hits GPD - RAD</div><div>Mission en, cycles 89 to 113</div><div><div><div>(x10<sup>4</sup>)</div><div>90</div><div>95</div><div>100</div><div>105</div><div>110</div></div><div><div>Hits</div><div>0</div><div>-2</div><div>-4</div><div>-6</div><div>-8</div></div><div><div>2010.5</div><div>2011.0</div><div>2011.5</div><div>2012.0</div></div></div></div>	

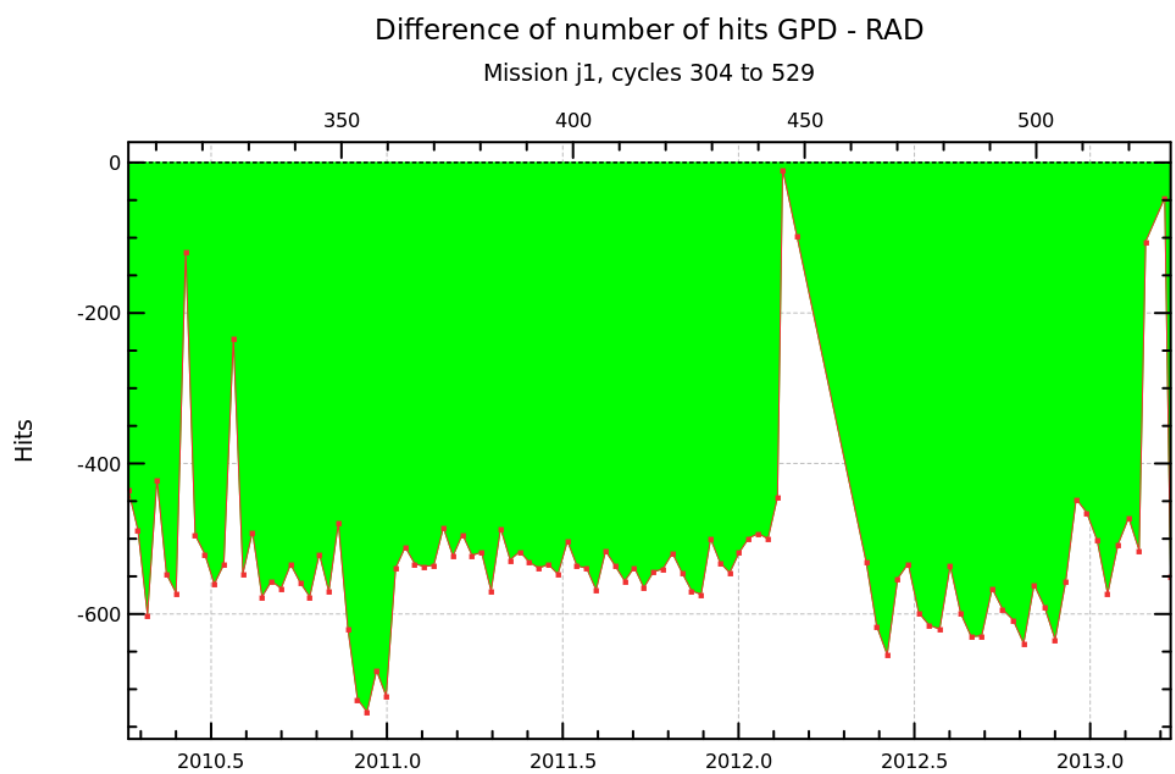
## Diagnostic A000 (mission j1)

**Name :** Differences of number of hits between both altimetric components

**Input data :** Along track altimetric components

**Description :** The difference of number of hits between both parameters.

Diagnostic type : Mono-mission analyses





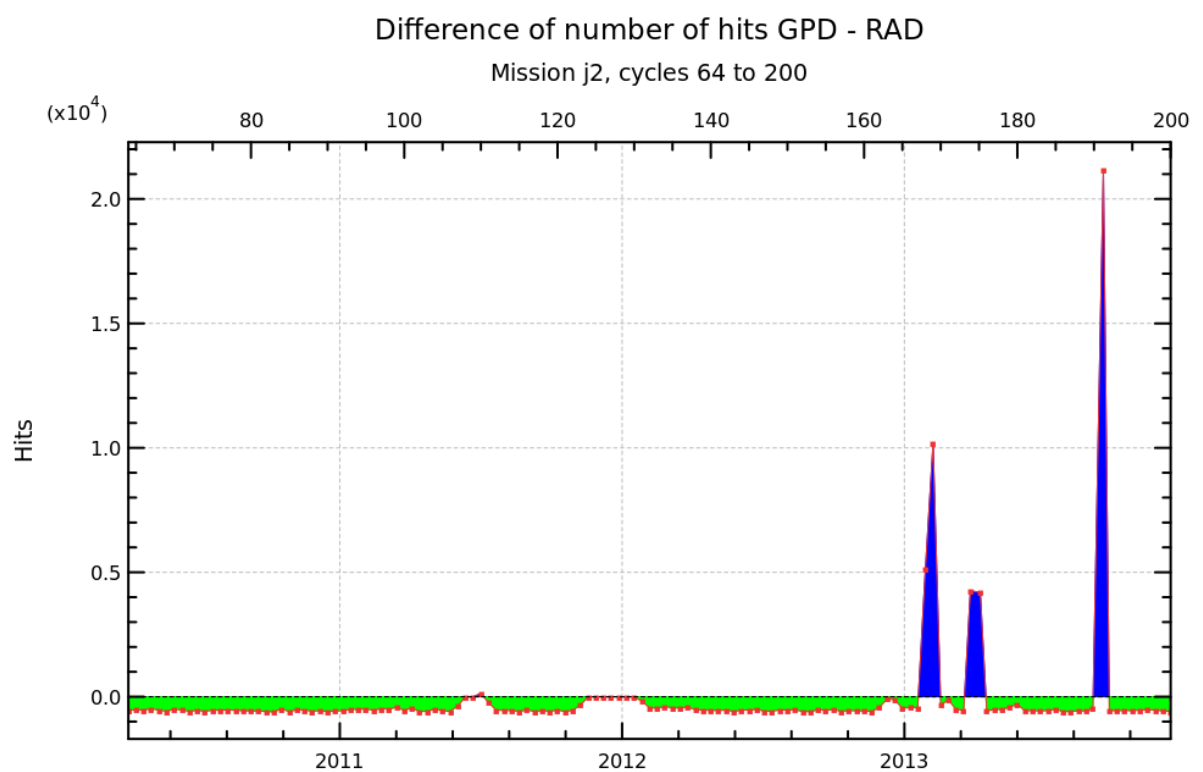
## Diagnostic A000 (mission j2)

**Name :** Differences of number of hits between both altimetric components

**Input data :** Along track altimetric components

**Description :** The difference of number of hits between both parameters.

Diagnostic type : Mono-mission analyses



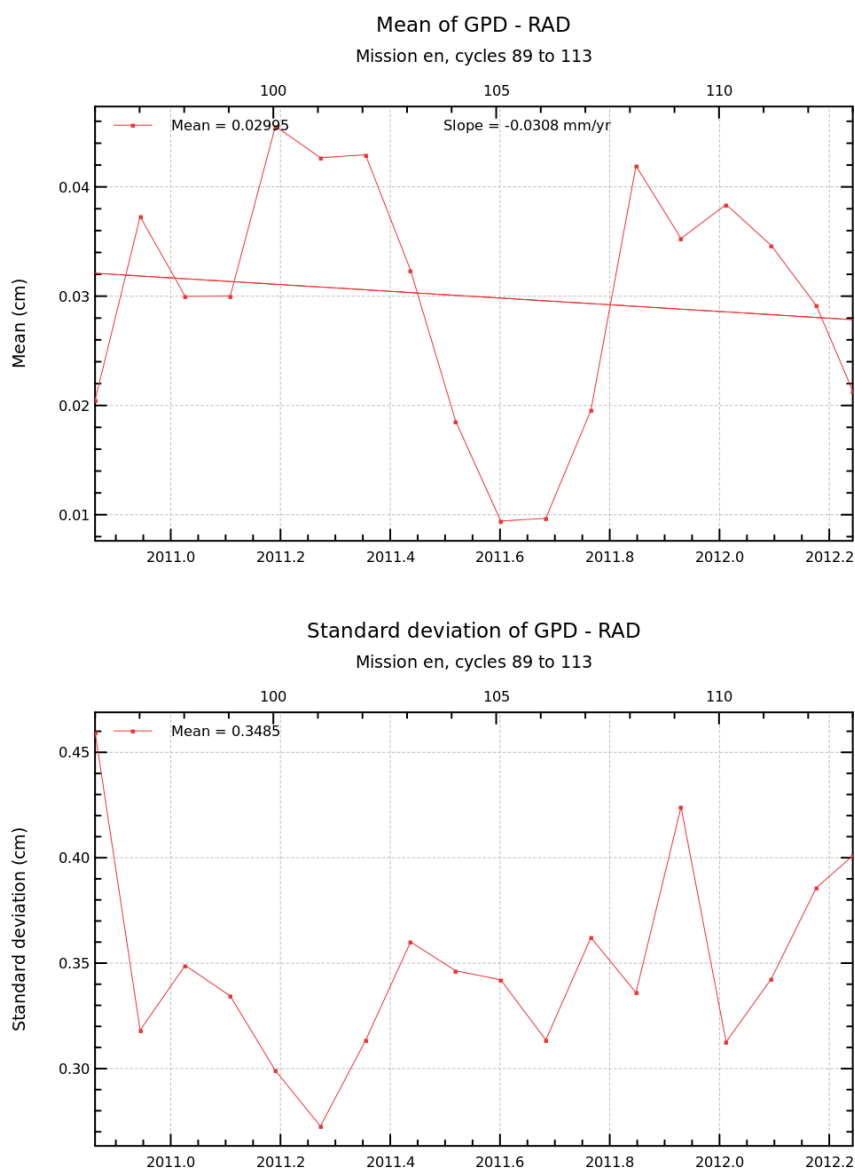
## Diagnostic A001 (mission en)

**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.

Diagnostic type : Mono-mission analyses



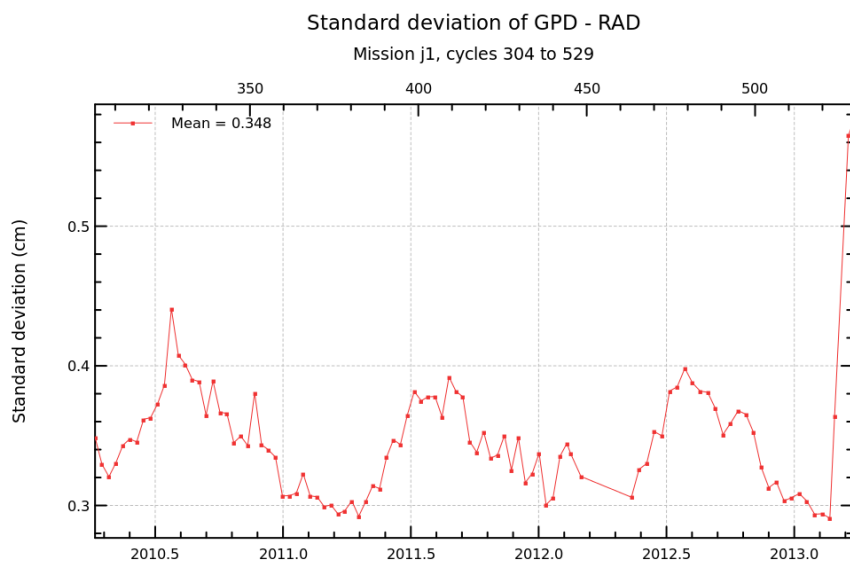
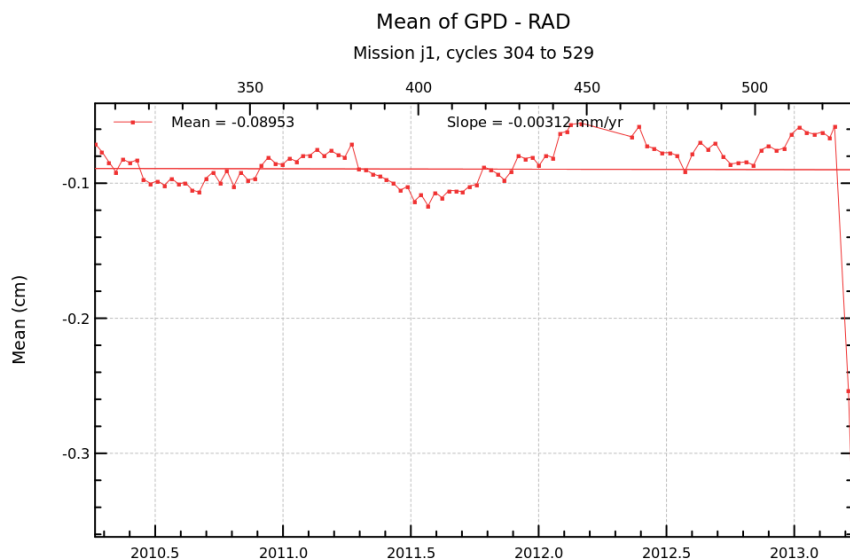
## Diagnostic A001 (mission j1)

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

**Input data :** Along track altimetric components

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Diagnostic type : Mono-mission analyses



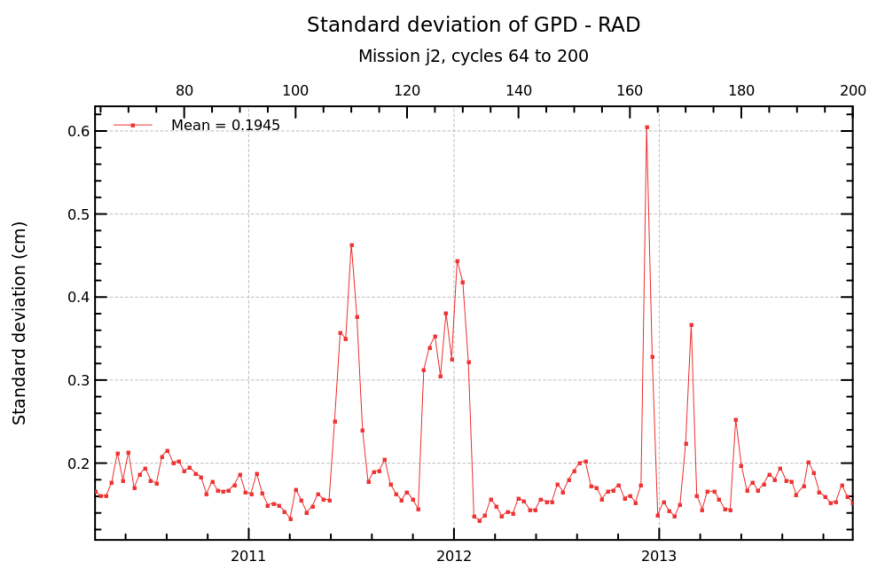
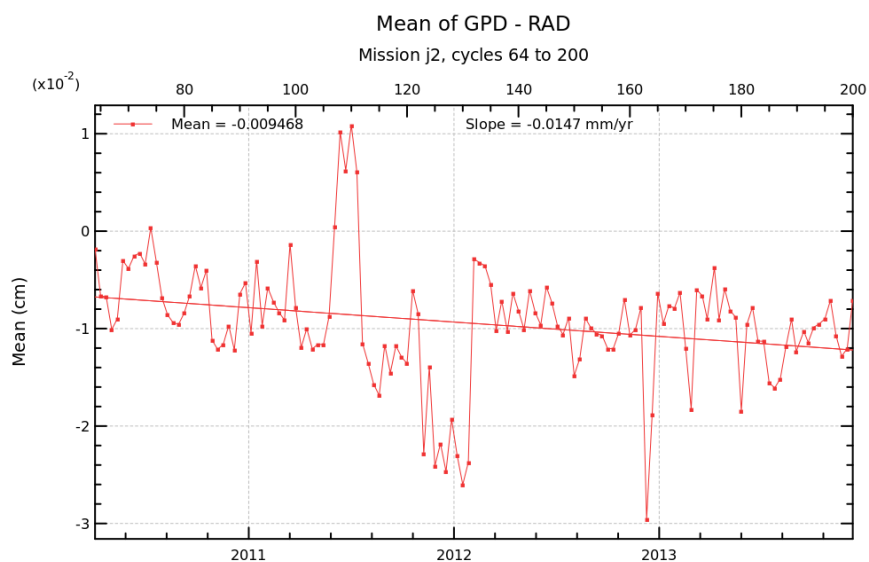
## Diagnostic A001 (mission j2)

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

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Diagnostic type : Mono-mission analyses

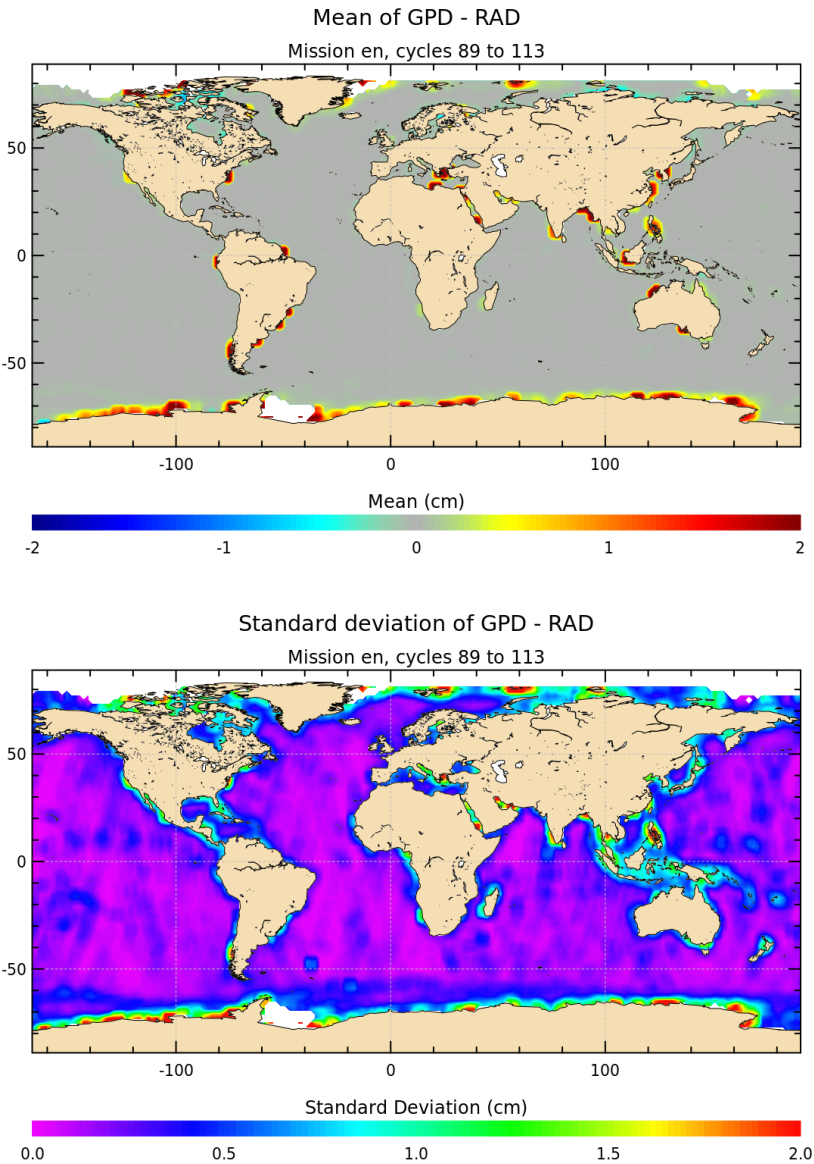


Diagnostic A002 (mission en)

**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.



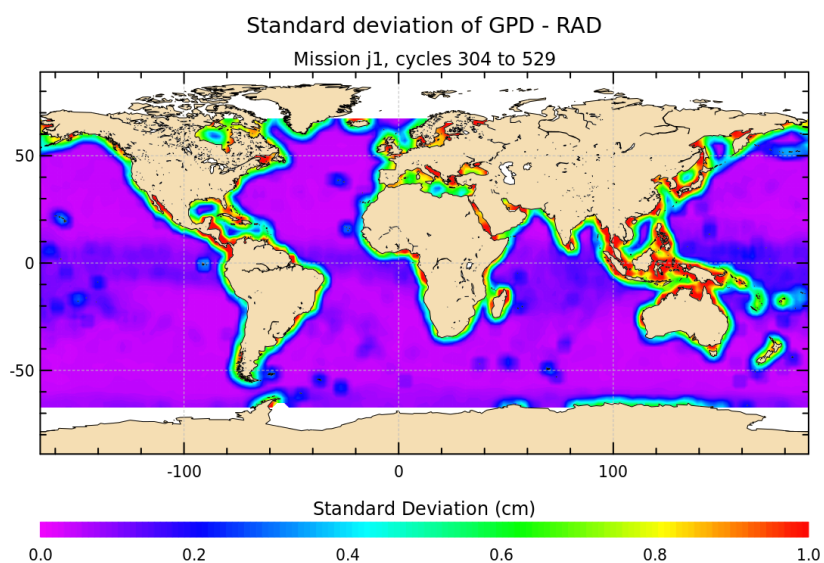
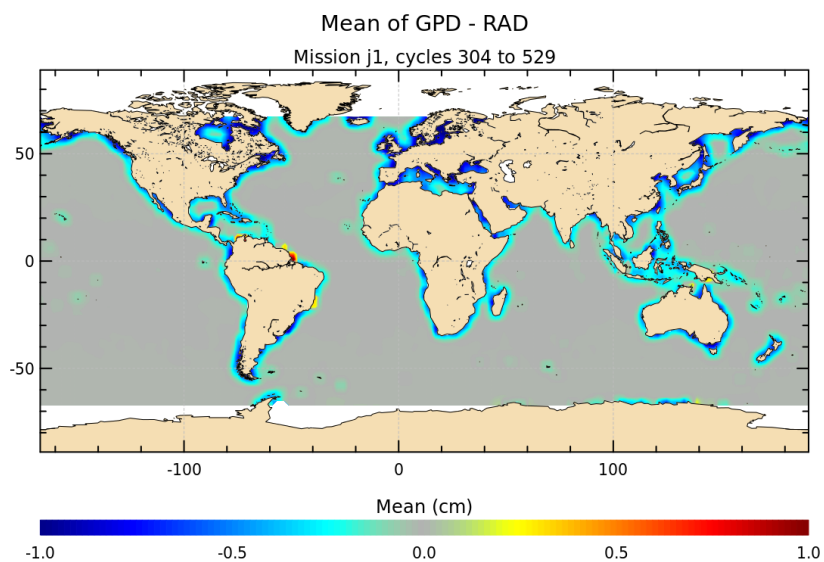
## Diagnostic A002 (mission j1)

**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 : Mono-mission analyses



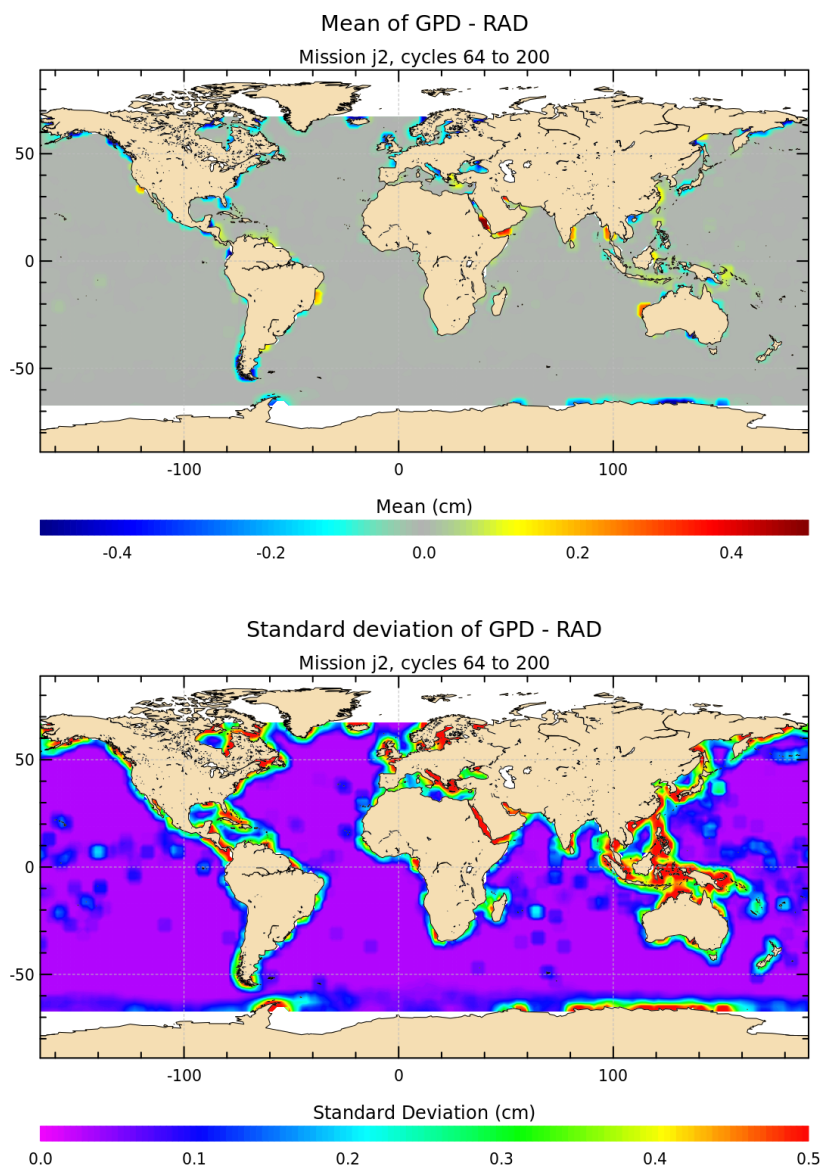
## Diagnostic A002 (mission j2)

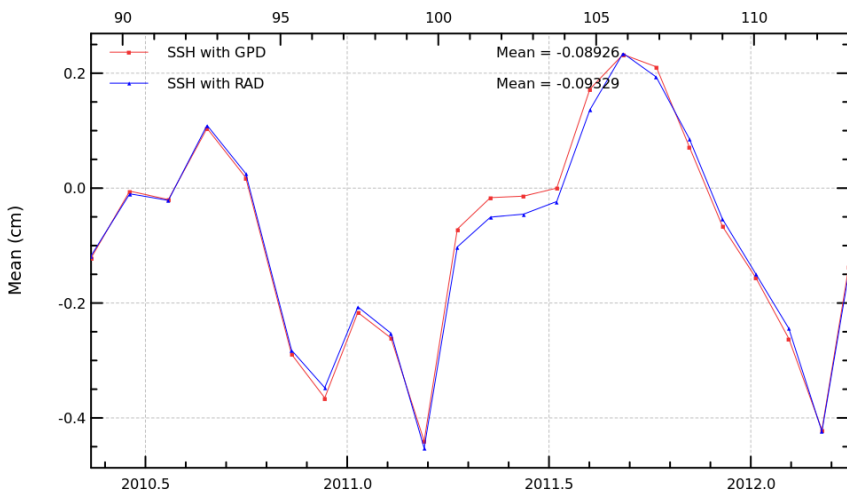
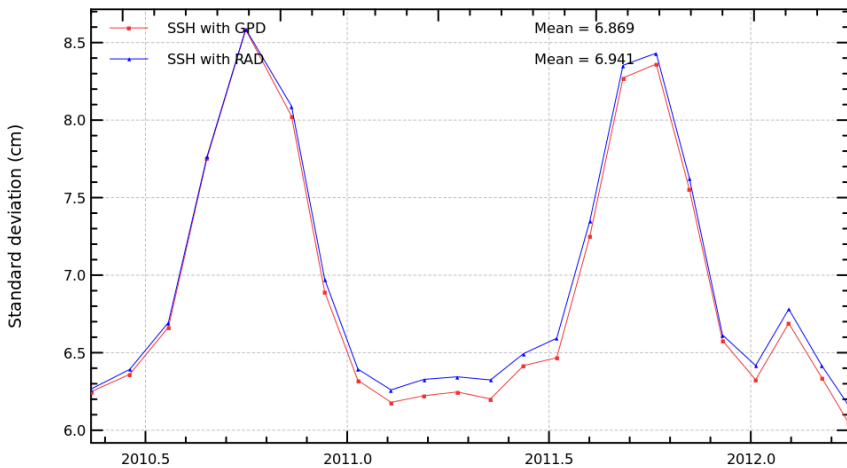
**Name :** Map of differences between both altimetric components over all the period

**Input data :** Along track altimetric components

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Diagnostic type : Mono-mission analyses



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Input data : Sea Surface Height (SSH) crossovers																																																	
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<div><div><div>Mean of SSH crossovers</div><div>Mission en, cycles 89 to 113</div><table><caption>Estimated data for Mean of SSH crossovers</caption><tr><th>Mission Cycle</th><th>SSH with GPD (cm)</th><th>SSH with RAD (cm)</th></tr><tr><td>89</td><td>-0.10</td><td>-0.10</td></tr><tr><td>93</td><td>0.10</td><td>0.10</td></tr><tr><td>97</td><td>-0.30</td><td>-0.30</td></tr><tr><td>101</td><td>-0.45</td><td>-0.45</td></tr><tr><td>105</td><td>-0.05</td><td>-0.05</td></tr><tr><td>109</td><td>-0.15</td><td>-0.15</td></tr><tr><td>113</td><td>-0.15</td><td>-0.15</td></tr></table></div><div><div><div>Standard deviations of SSH crossovers</div><div>Mission en, cycles 89 to 113</div><table><caption>Estimated data for Standard deviations of SSH crossovers</caption><tr><th>Mission Cycle</th><th>SSH with GPD (cm)</th><th>SSH with RAD (cm)</th></tr><tr><td>89</td><td>6.3</td><td>6.3</td></tr><tr><td>93</td><td>8.5</td><td>8.5</td></tr><tr><td>97</td><td>6.4</td><td>6.4</td></tr><tr><td>101</td><td>6.2</td><td>6.2</td></tr><tr><td>105</td><td>6.5</td><td>6.5</td></tr><tr><td>109</td><td>8.4</td><td>8.4</td></tr><tr><td>113</td><td>6.2</td><td>6.2</td></tr></table></div></div></div>		Mission Cycle	SSH with GPD (cm)	SSH with RAD (cm)	89	-0.10	-0.10	93	0.10	0.10	97	-0.30	-0.30	101	-0.45	-0.45	105	-0.05	-0.05	109	-0.15	-0.15	113	-0.15	-0.15	Mission Cycle	SSH with GPD (cm)	SSH with RAD (cm)	89	6.3	6.3	93	8.5	8.5	97	6.4	6.4	101	6.2	6.2	105	6.5	6.5	109	8.4	8.4	113	6.2	6.2
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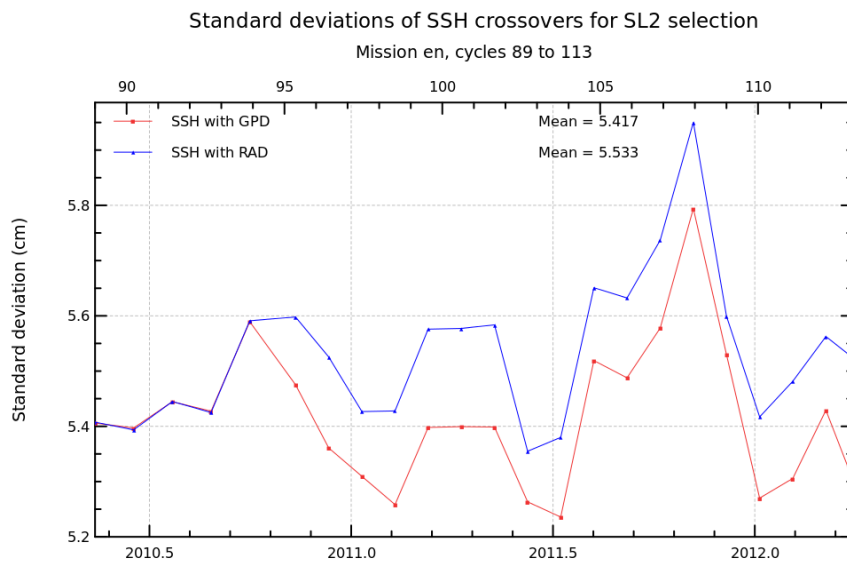
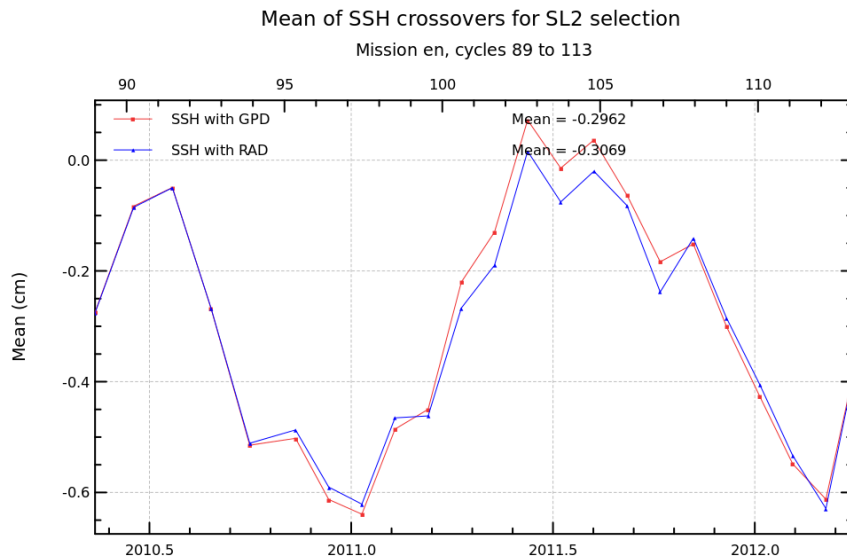
## Diagnostic A101\_b (mission en)

**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 : Mono-mission analyses



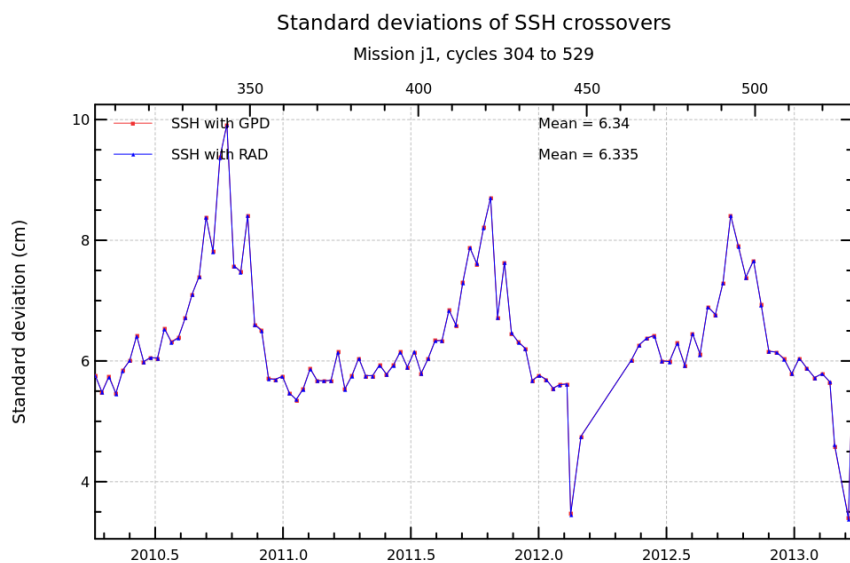
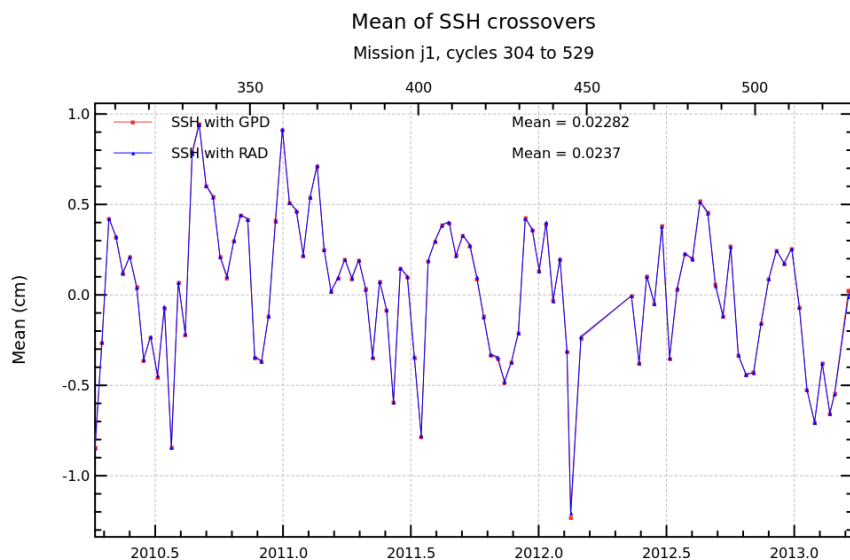
## Diagnostic A101\_a (mission j1)

**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 : Mono-mission analyses



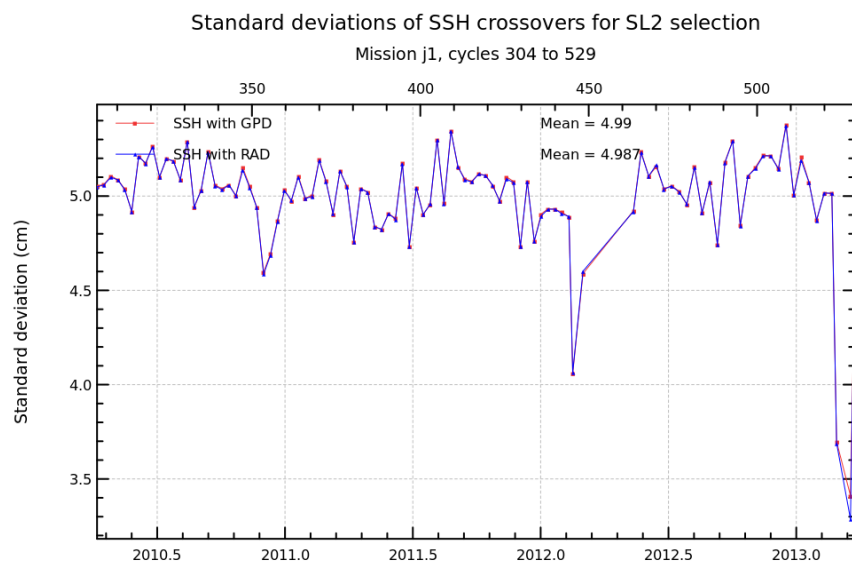
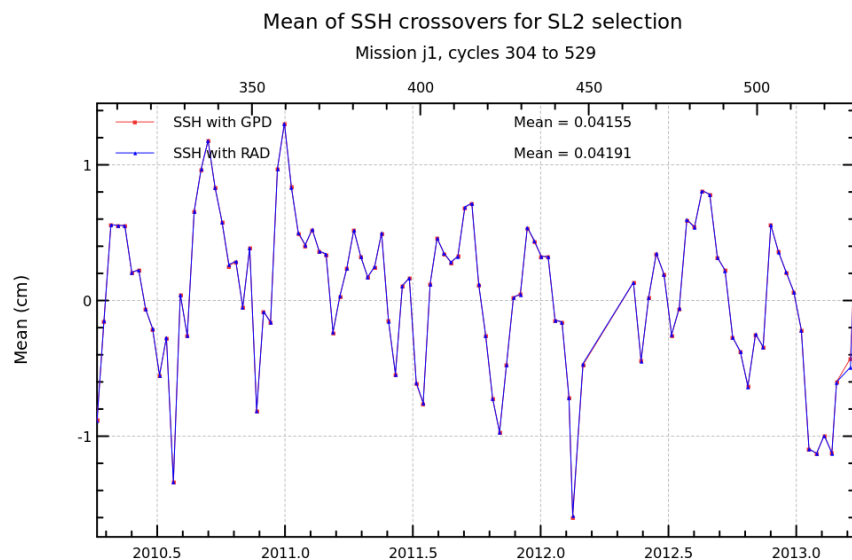
## Diagnostic A101\_b (mission j1)

**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 : Mono-mission analyses



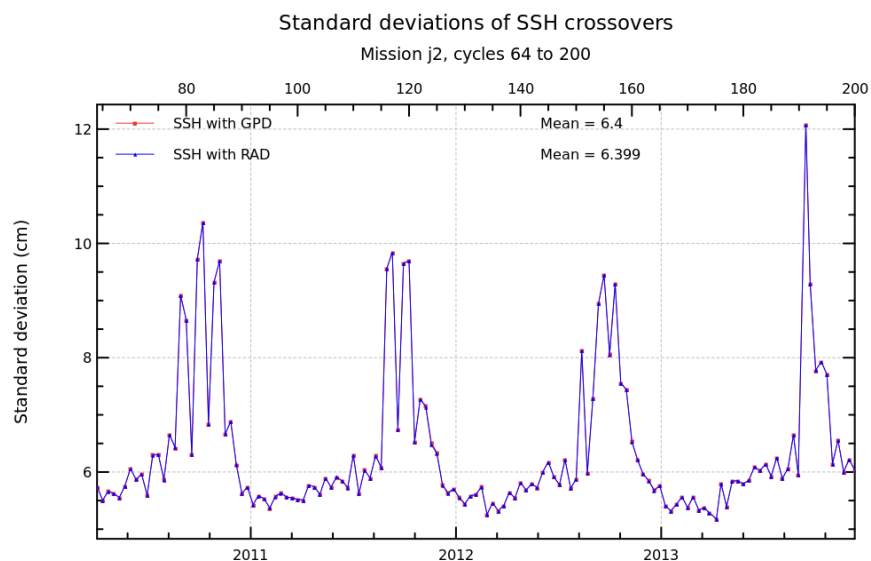
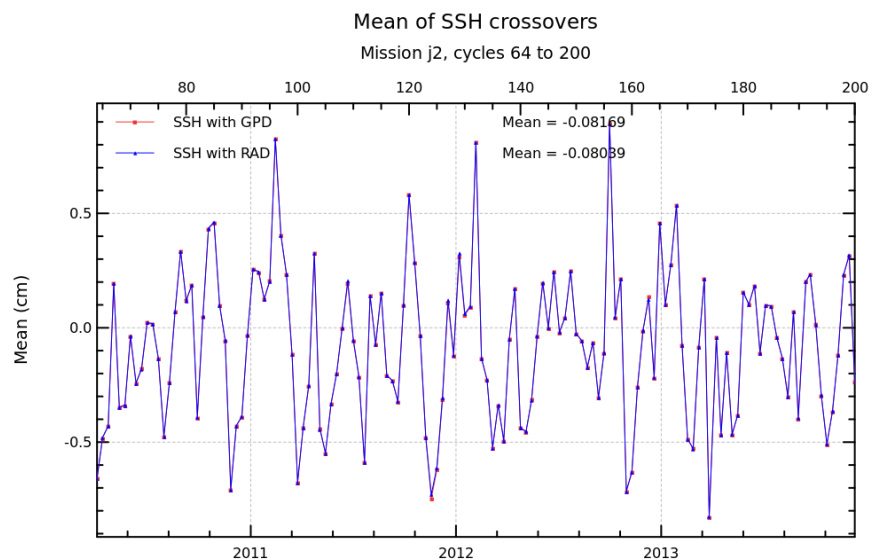
## Diagnostic A101\_a (mission j2)

**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



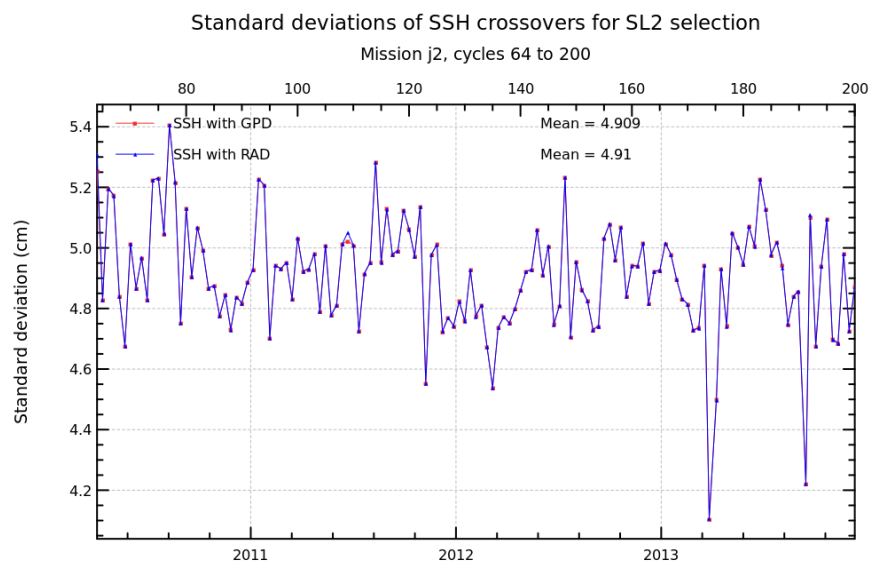
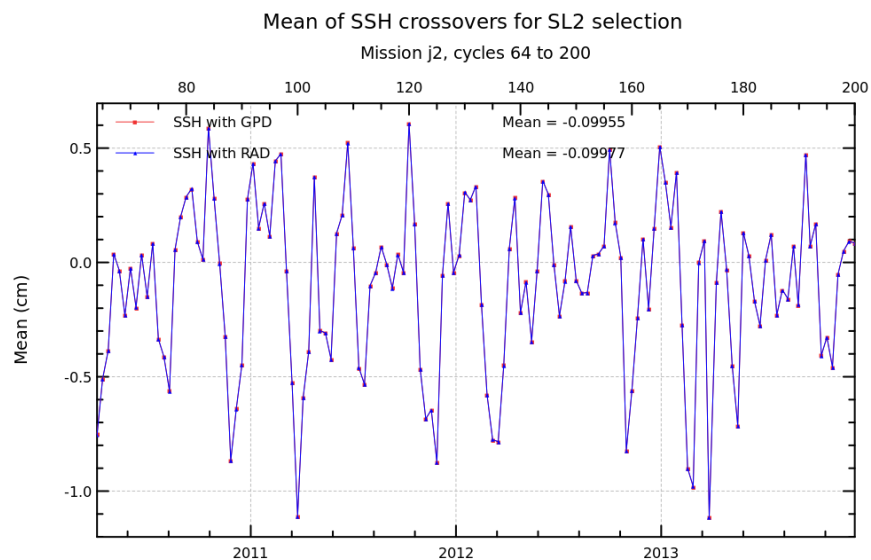
## Diagnostic A101\_b (mission j2)

**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



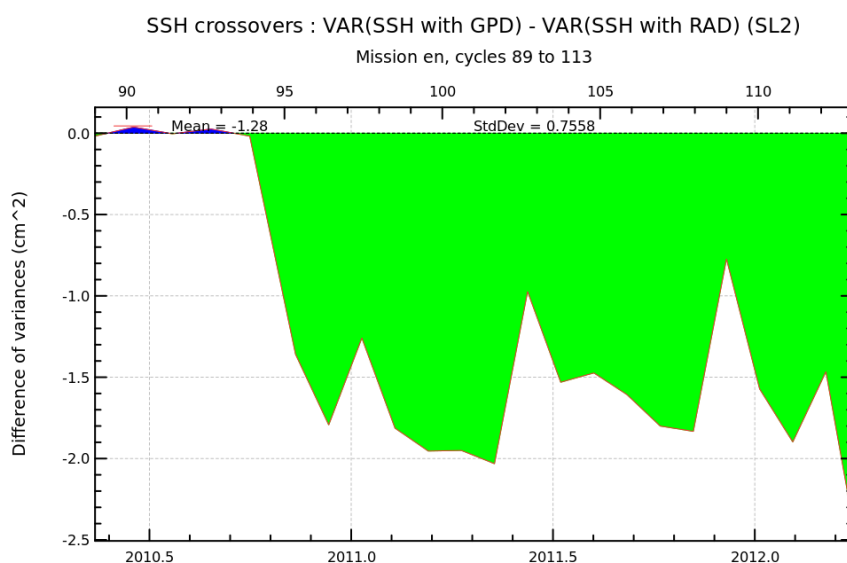
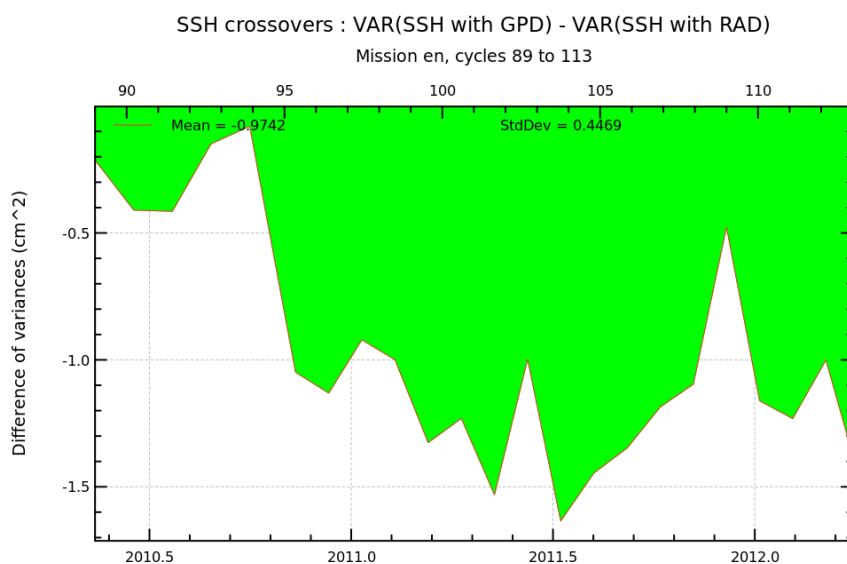
**Diagnostic A102 (mission en)**

**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 : Mono-mission analyses



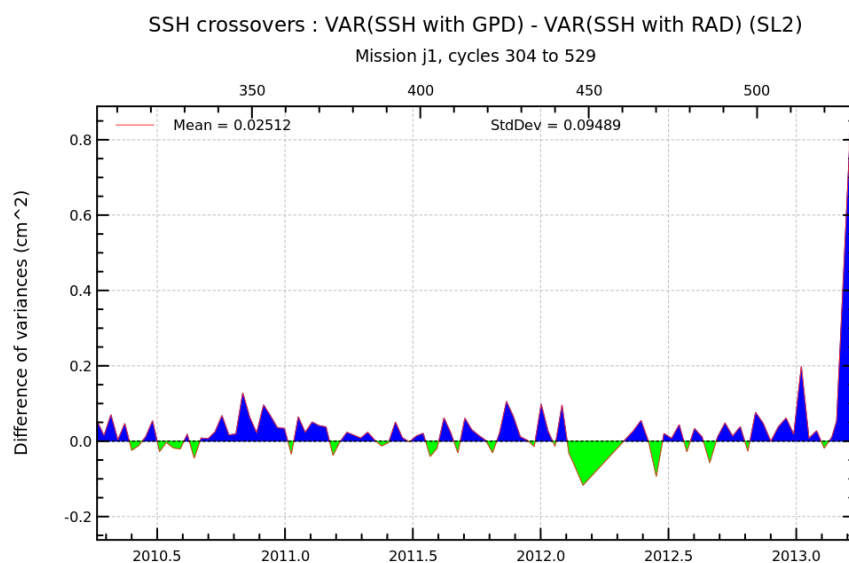
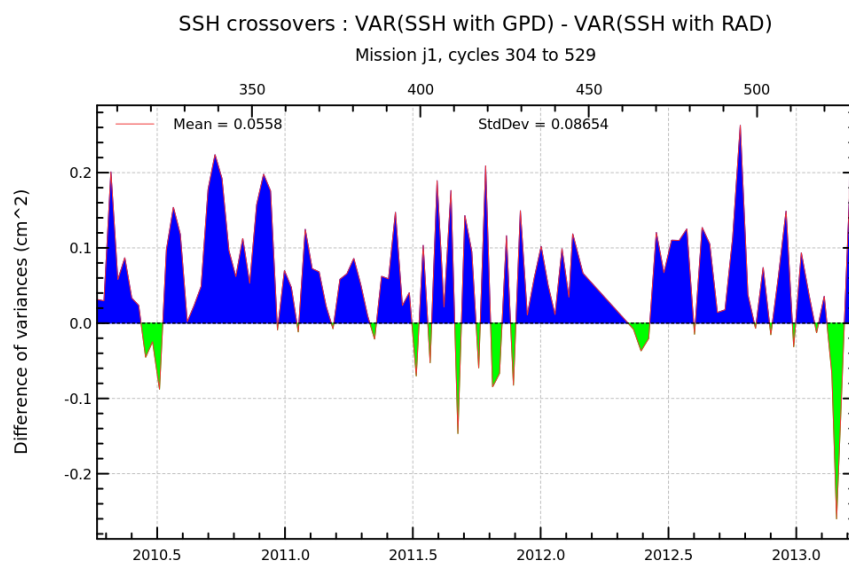
## Diagnostic A102 (mission j1)

**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 : Mono-mission analyses



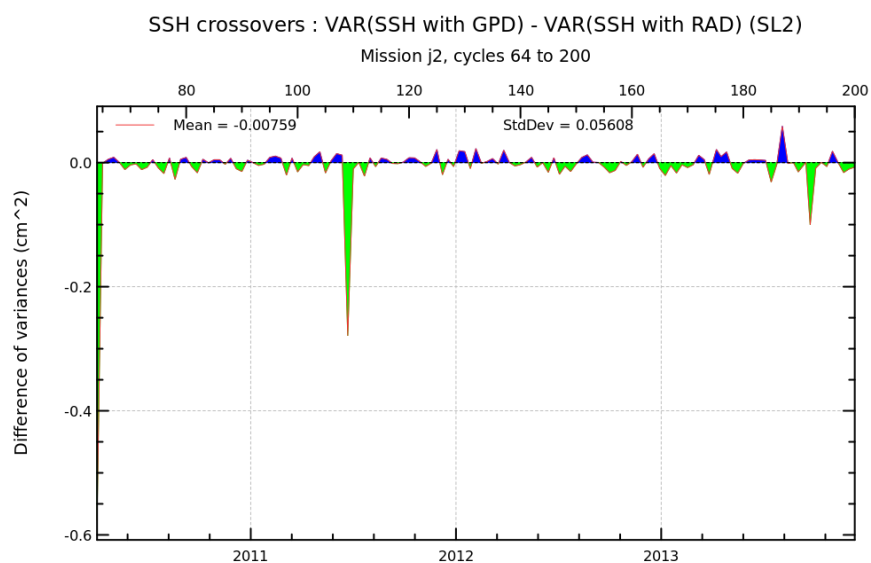
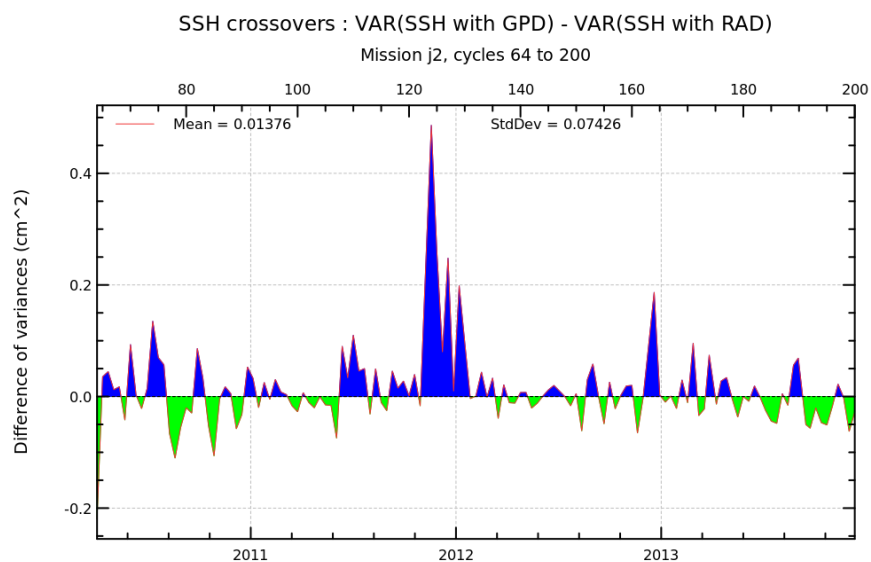
## Diagnostic A102 (mission j2)

**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





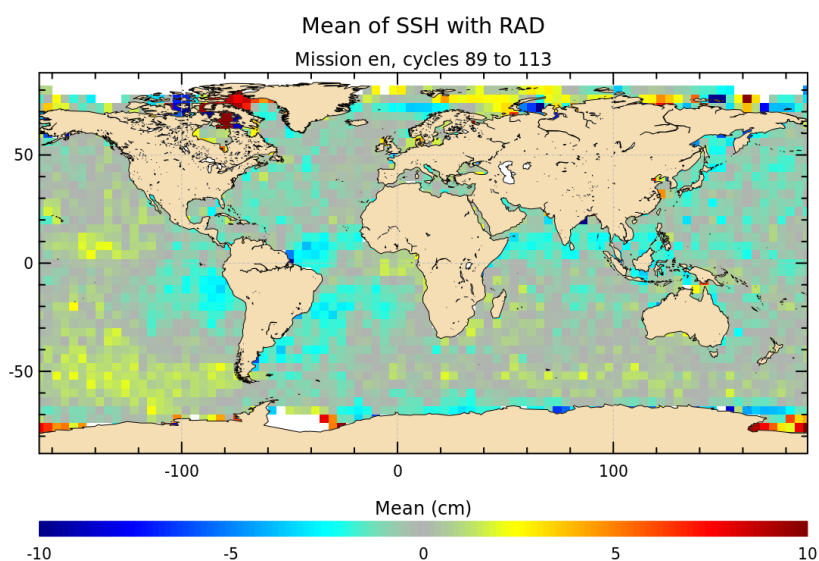
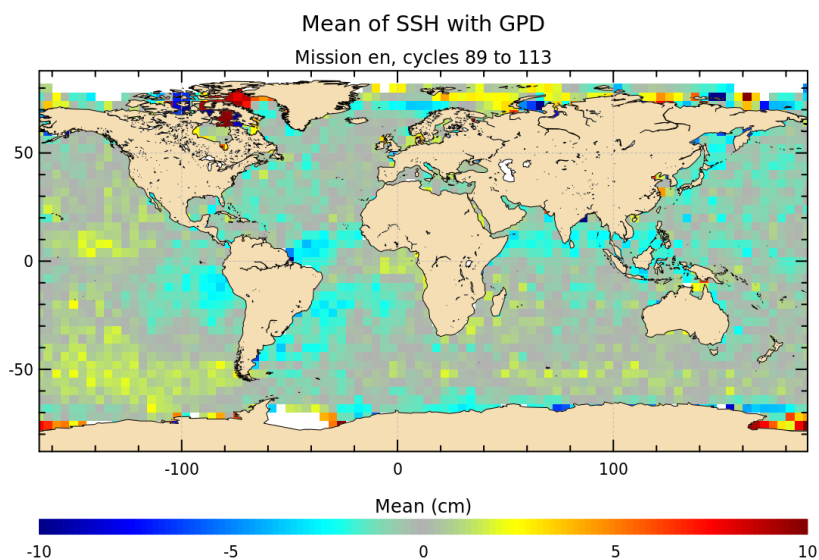
**Diagnostic A103 (mission en)**

**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 type : Mono-mission analyses



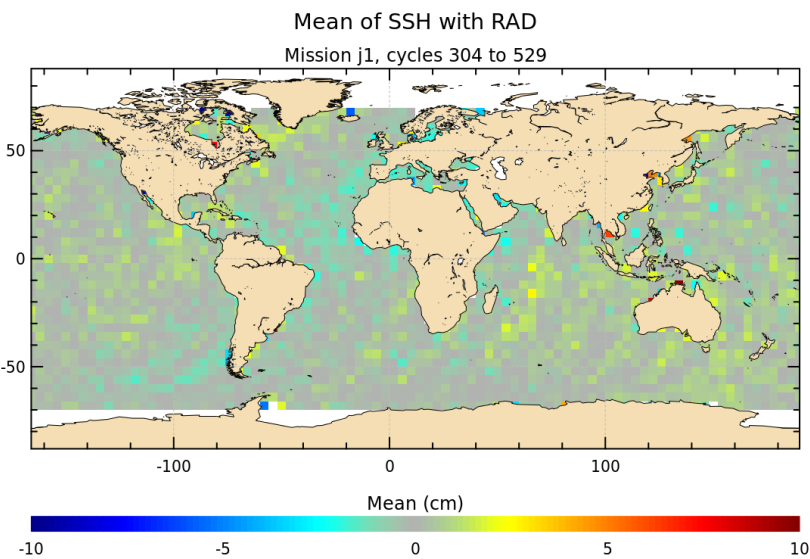
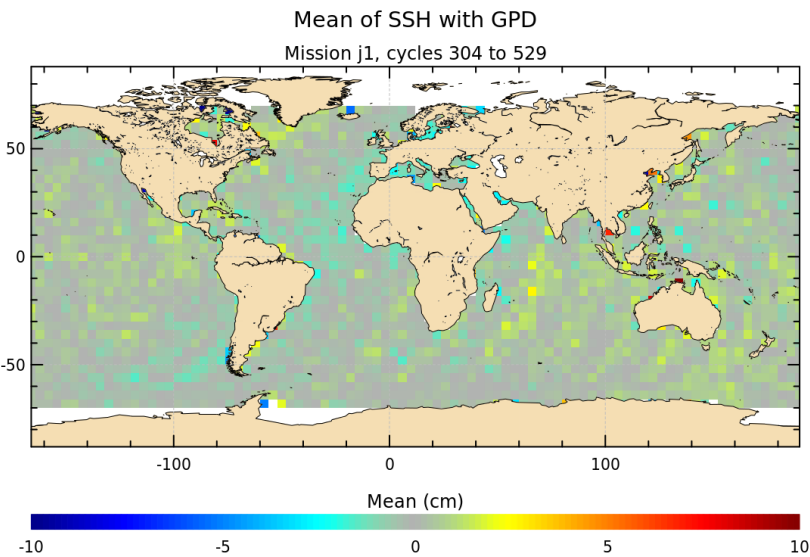
## Diagnostic A103 (mission j1)

**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 : Mono-mission analyses



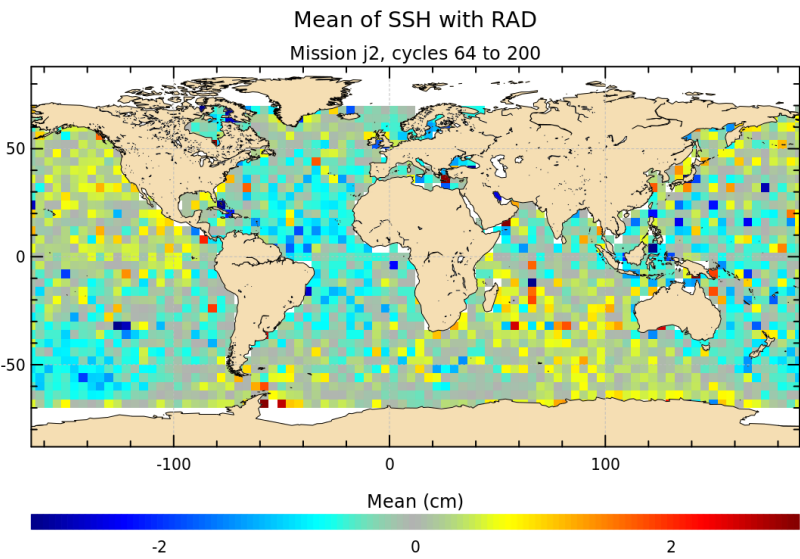
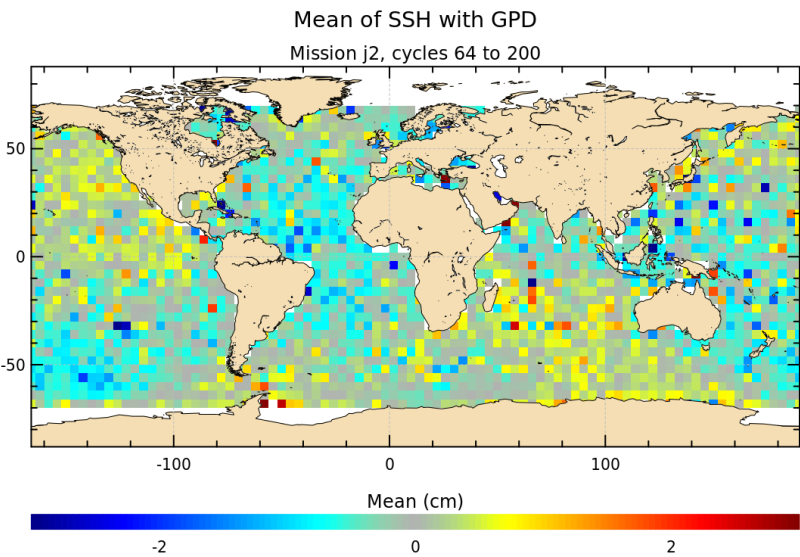
## Diagnostic A103 (mission j2)

**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



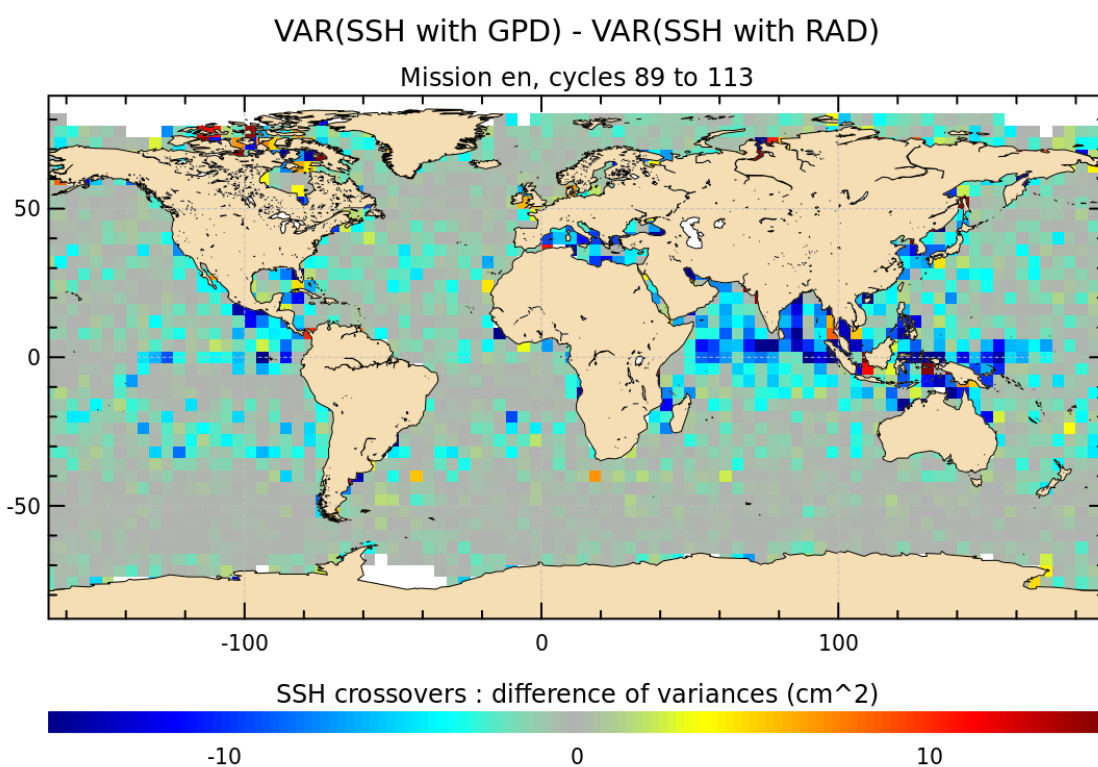
## Diagnostic A104 (mission en)

**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).

### Diagnostic type : Mono-mission analyses



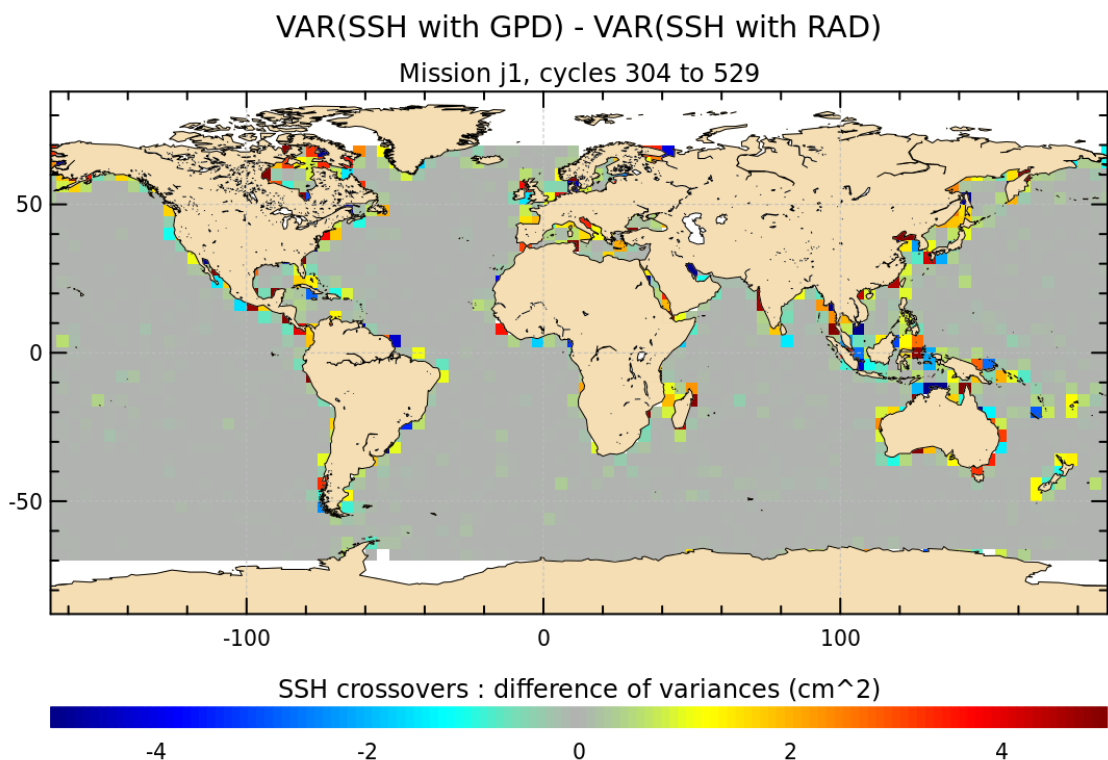
## Diagnostic A104 (mission j1)

**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 : Mono-mission analyses



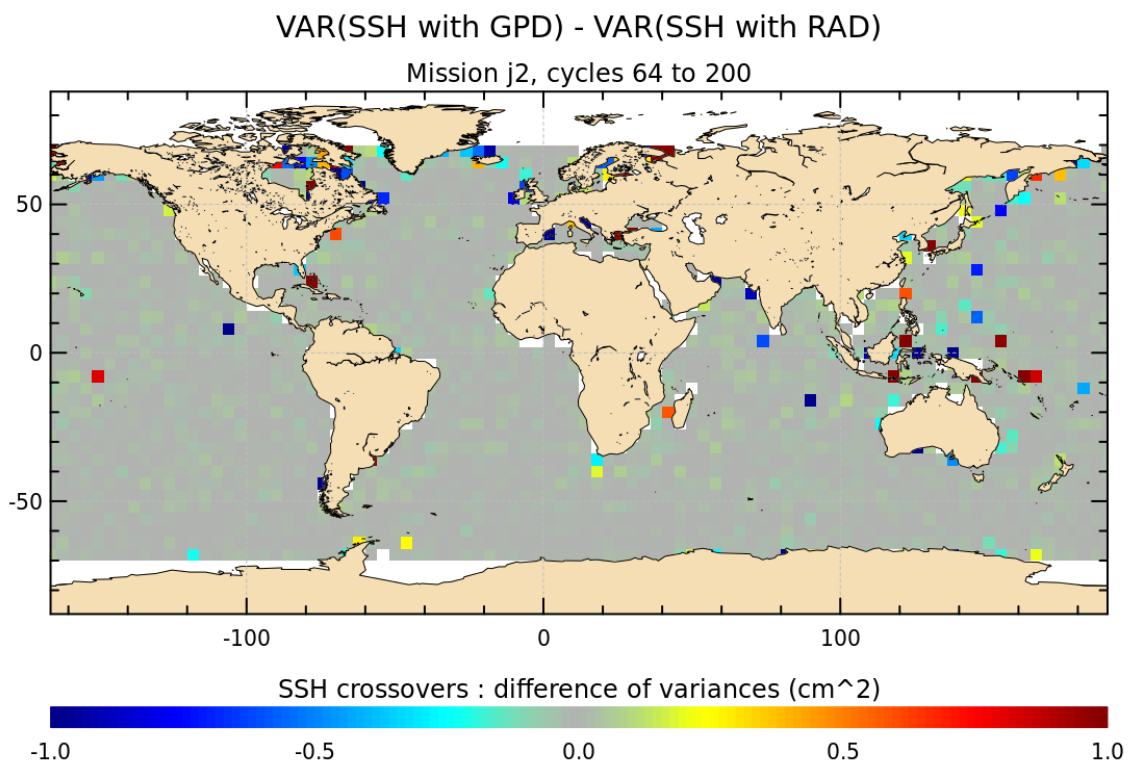
## Diagnostic A104 (mission j2)

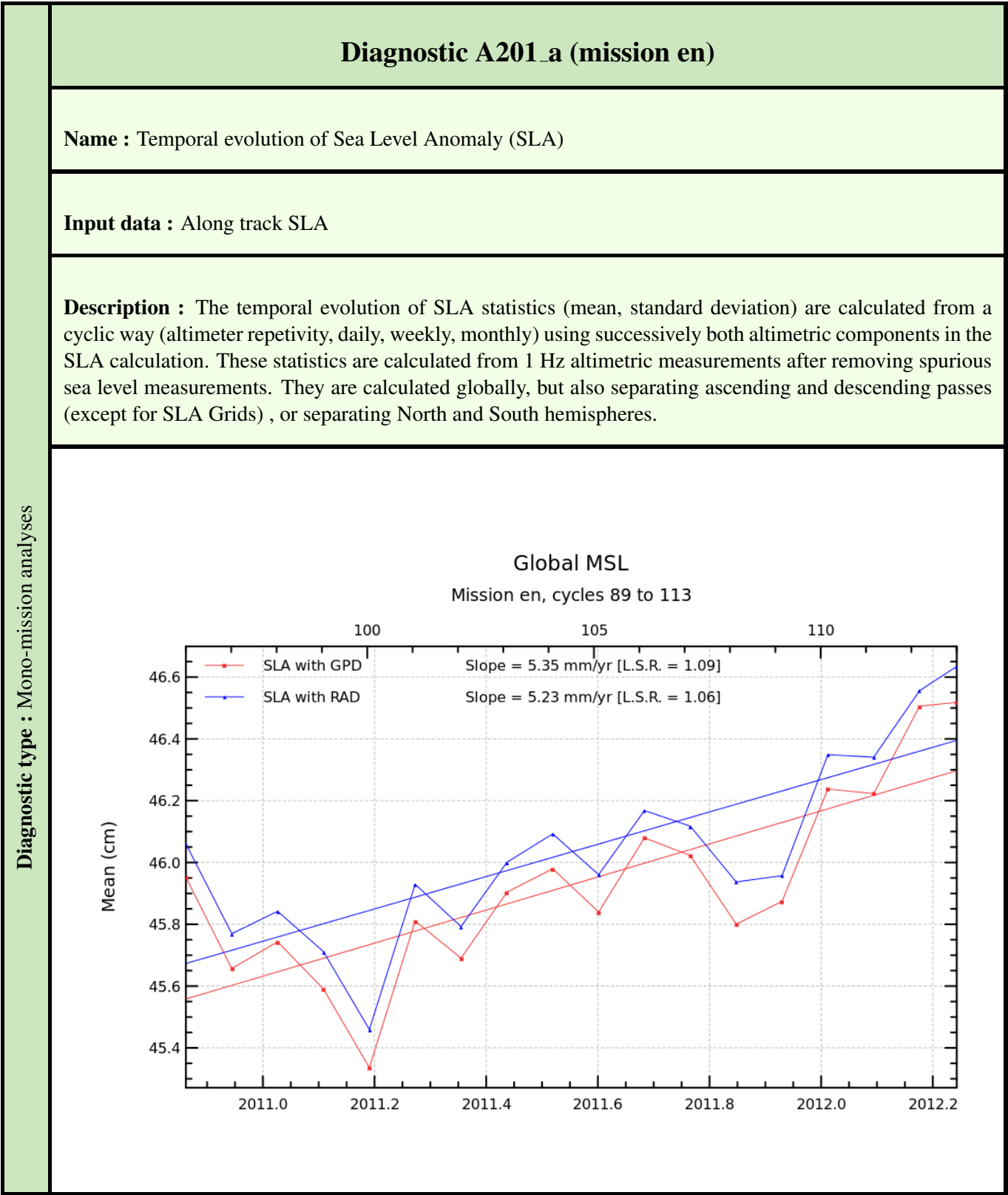
**Name :** Differences between maps of SSH crossovers

**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).

Diagnostic type : Mono-mission analyses





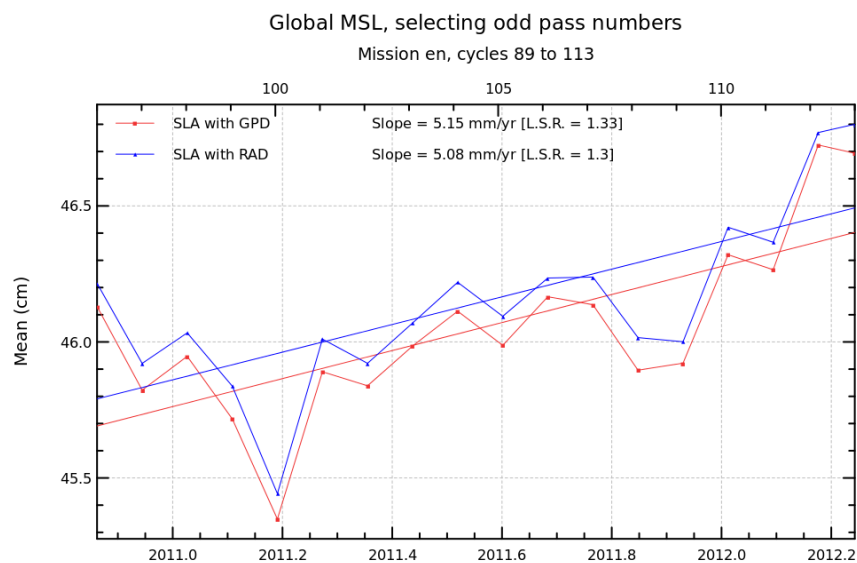
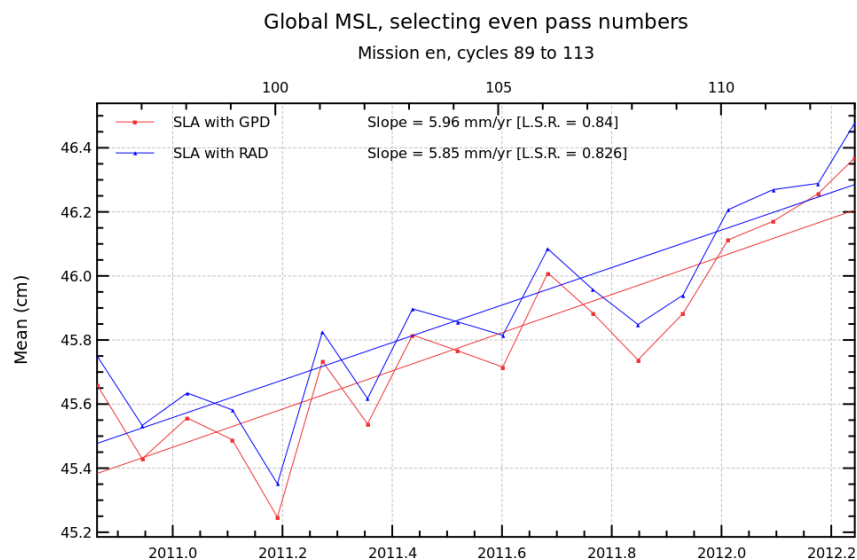
## Diagnostic A201\_b (mission en)

**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 : Mono-mission analyses





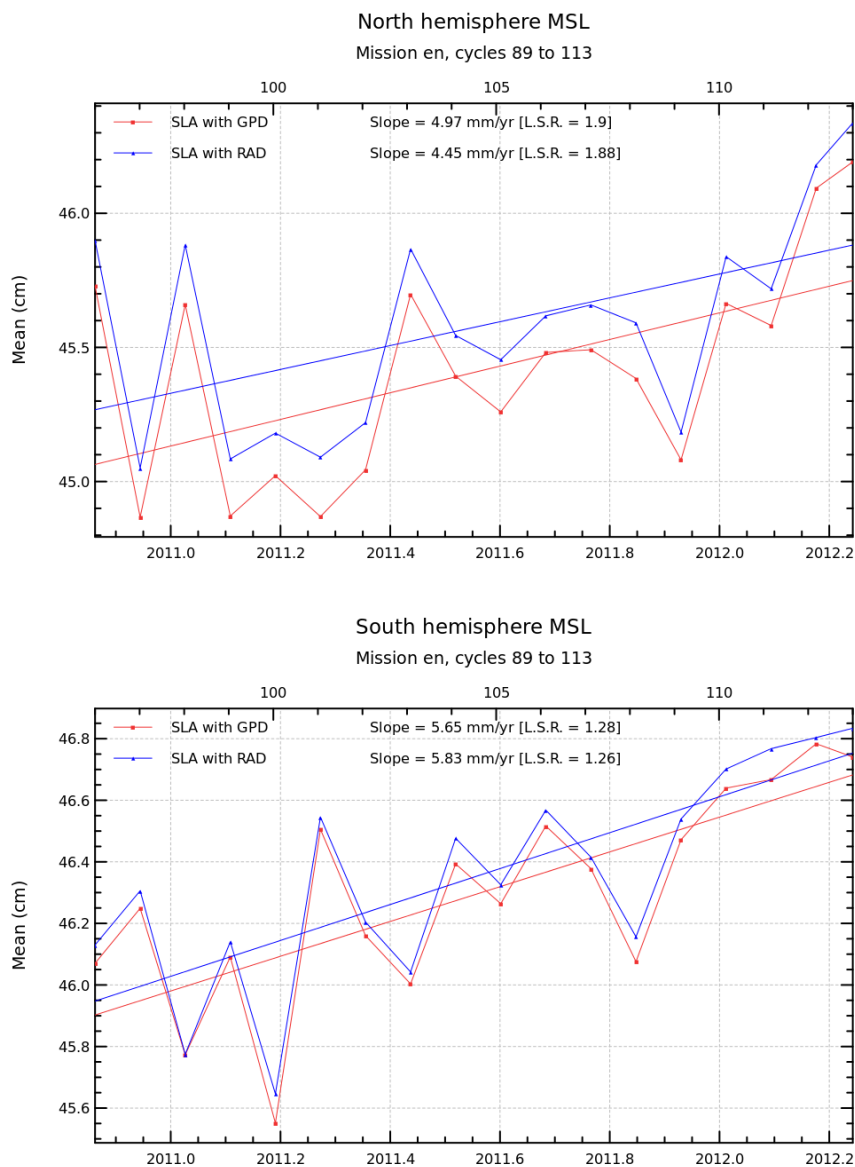
## Diagnostic A201\_c (mission en)

**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 : Mono-mission analyses



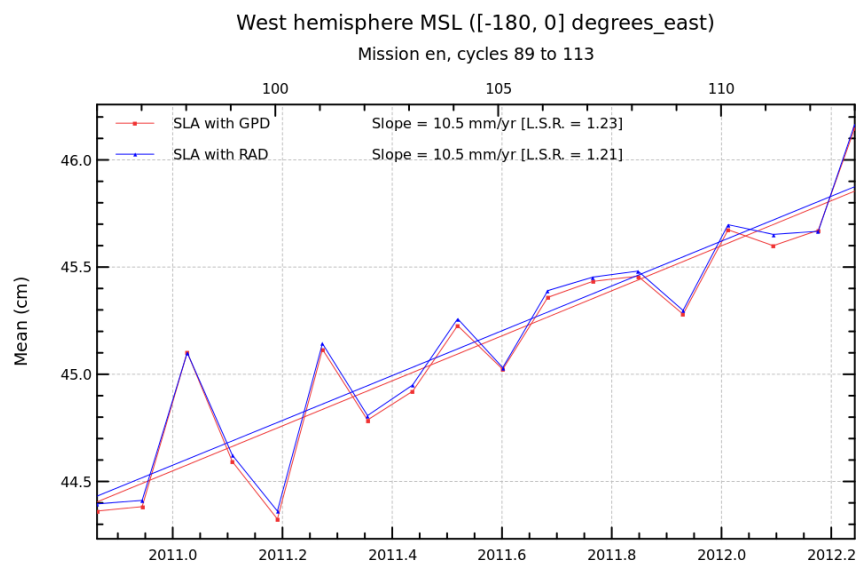
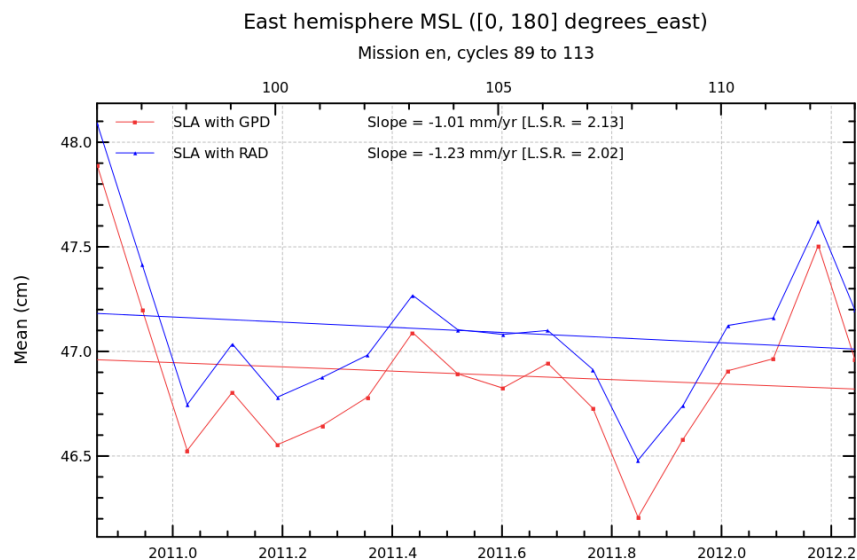
## Diagnostic A201\_d (mission en)

**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 : Mono-mission analyses



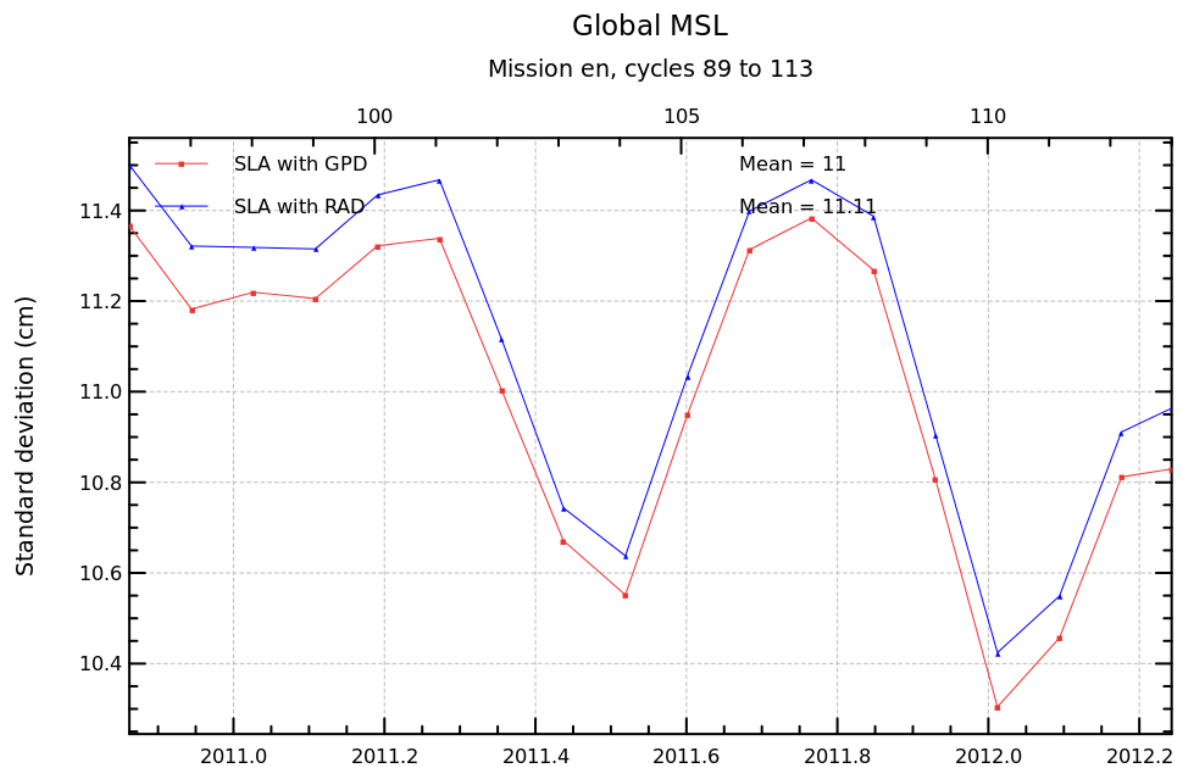
## Diagnostic A201\_e (mission en)

**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 : Mono-mission analyses



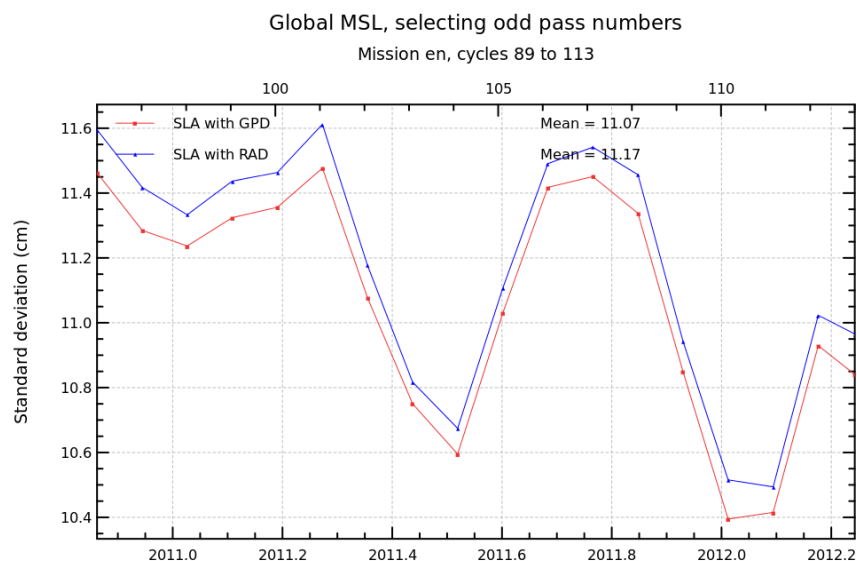
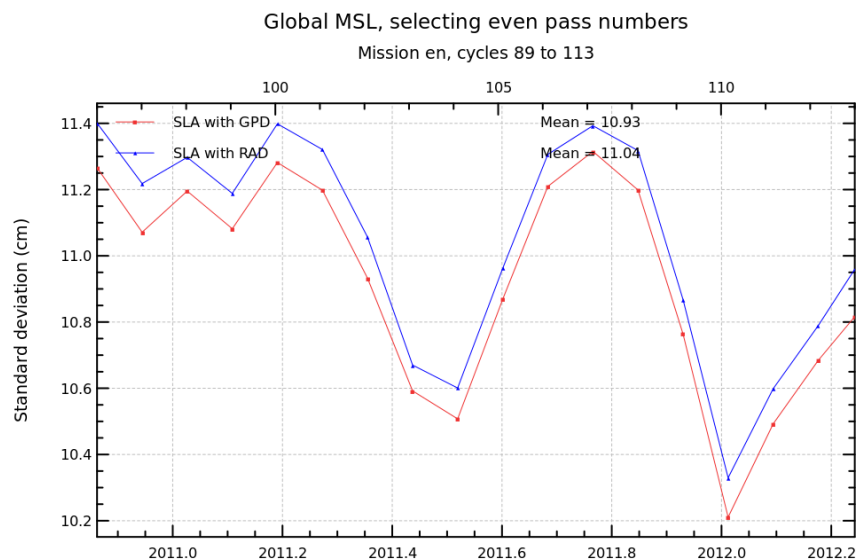
## Diagnostic A201\_f (mission en)

**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 : Mono-mission analyses



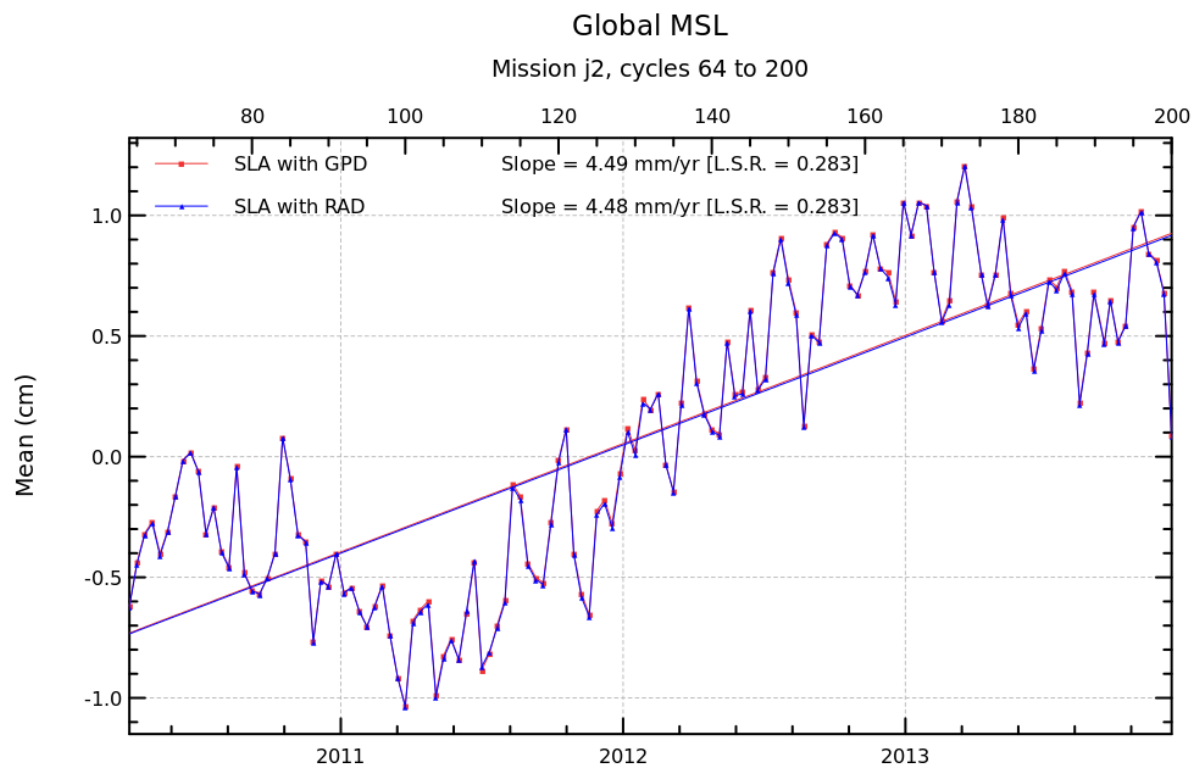
## Diagnostic A201\_a (mission j2)

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

Diagnostic type : Mono-mission analyses



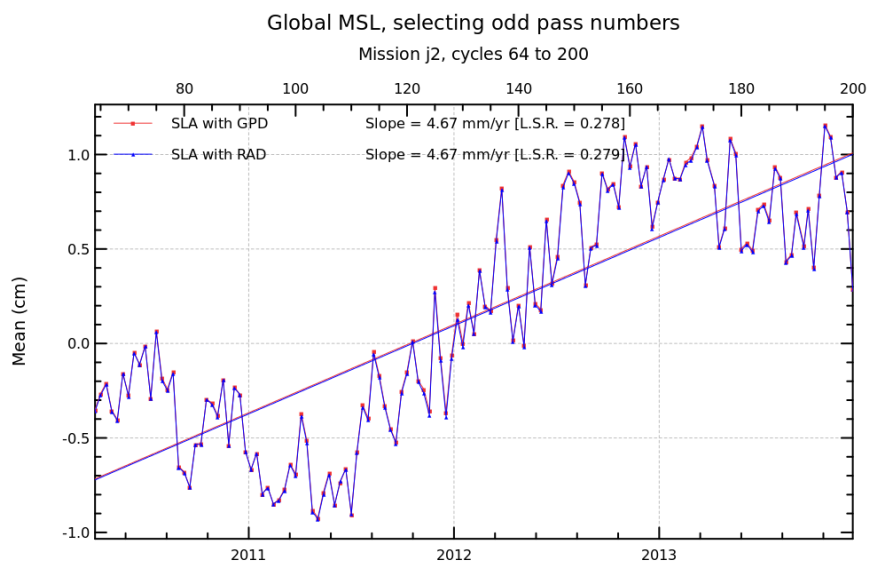
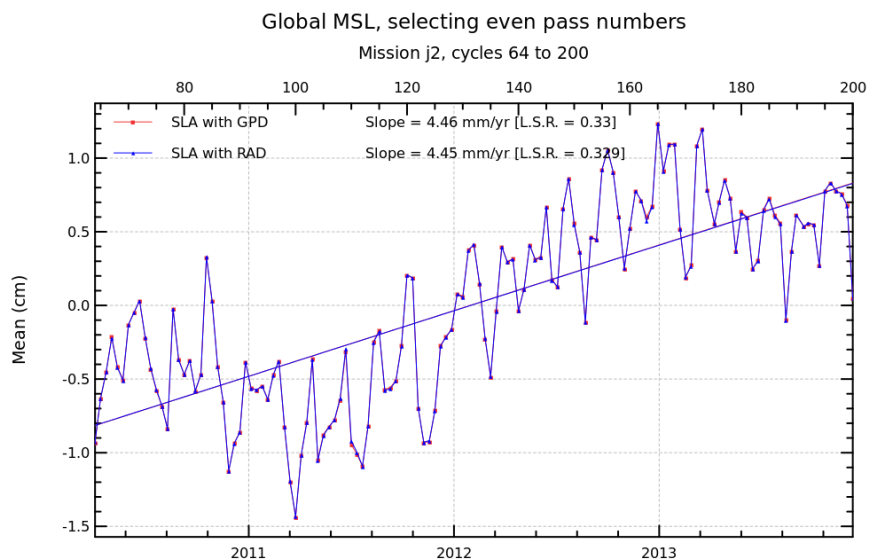
## Diagnostic A201\_b (mission j2)

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

Diagnostic type : Mono-mission analyses



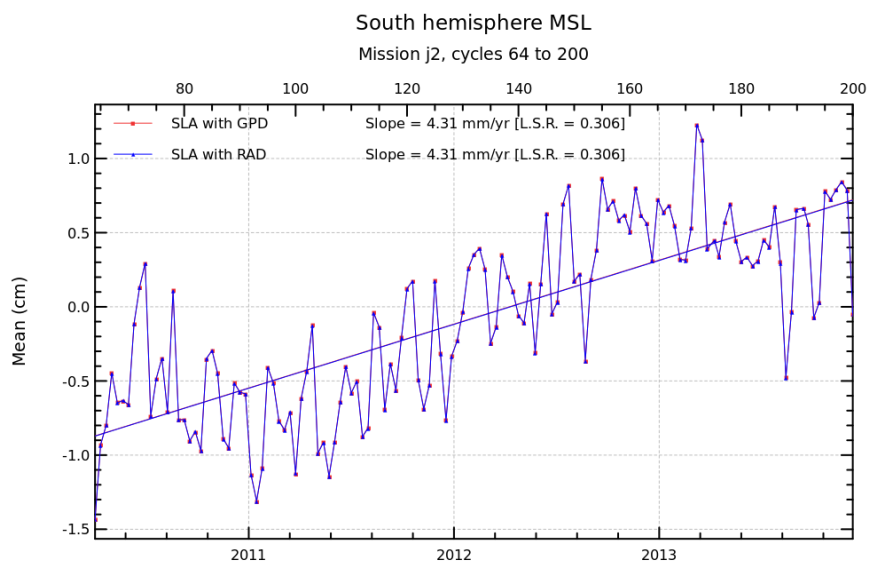
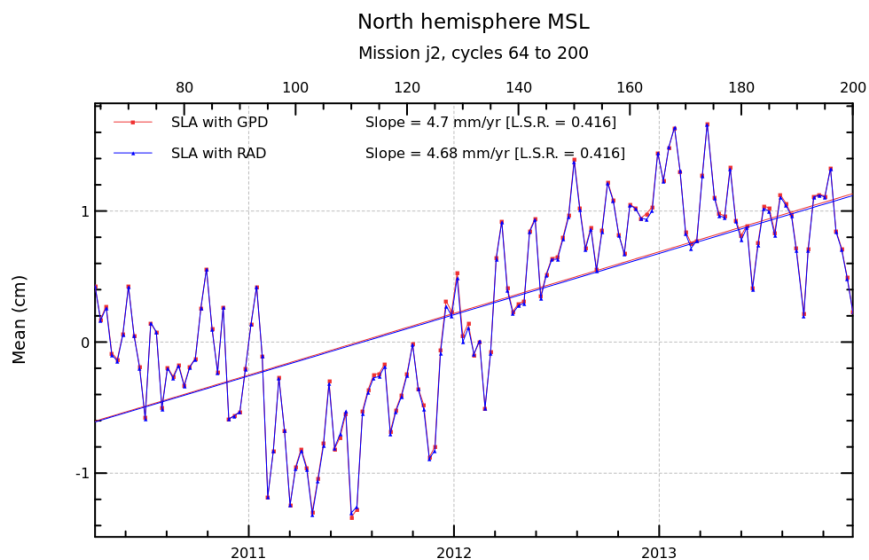
## Diagnostic A201\_c (mission j2)

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

Diagnostic type : Mono-mission analyses



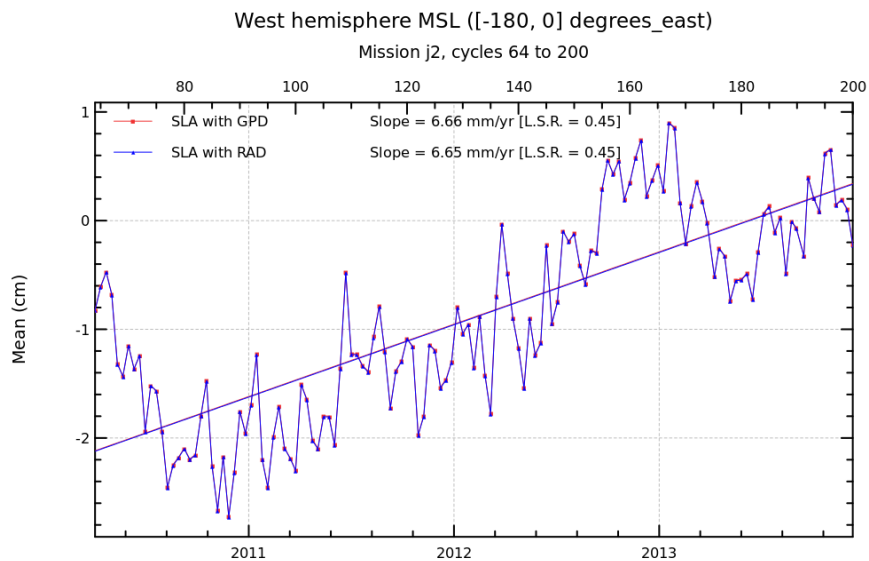
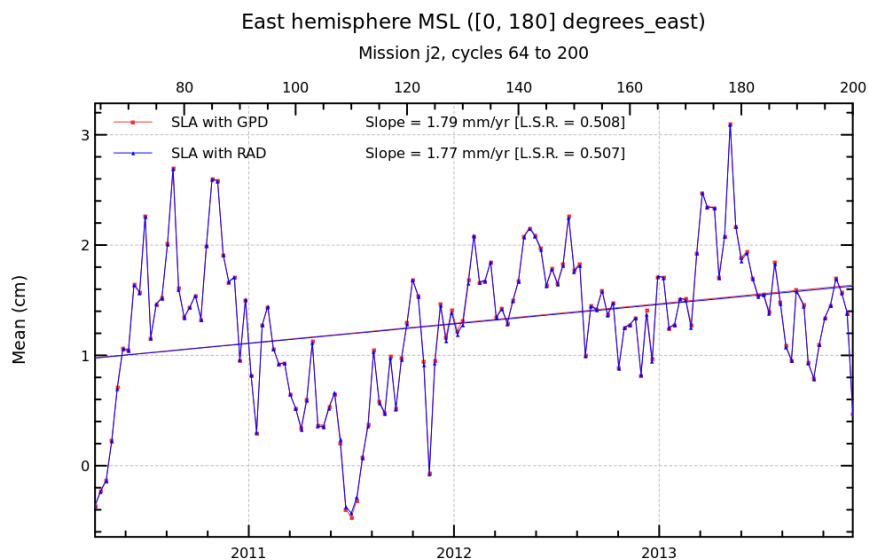
## Diagnostic A201\_d (mission j2)

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

Diagnostic type : Mono-mission analyses





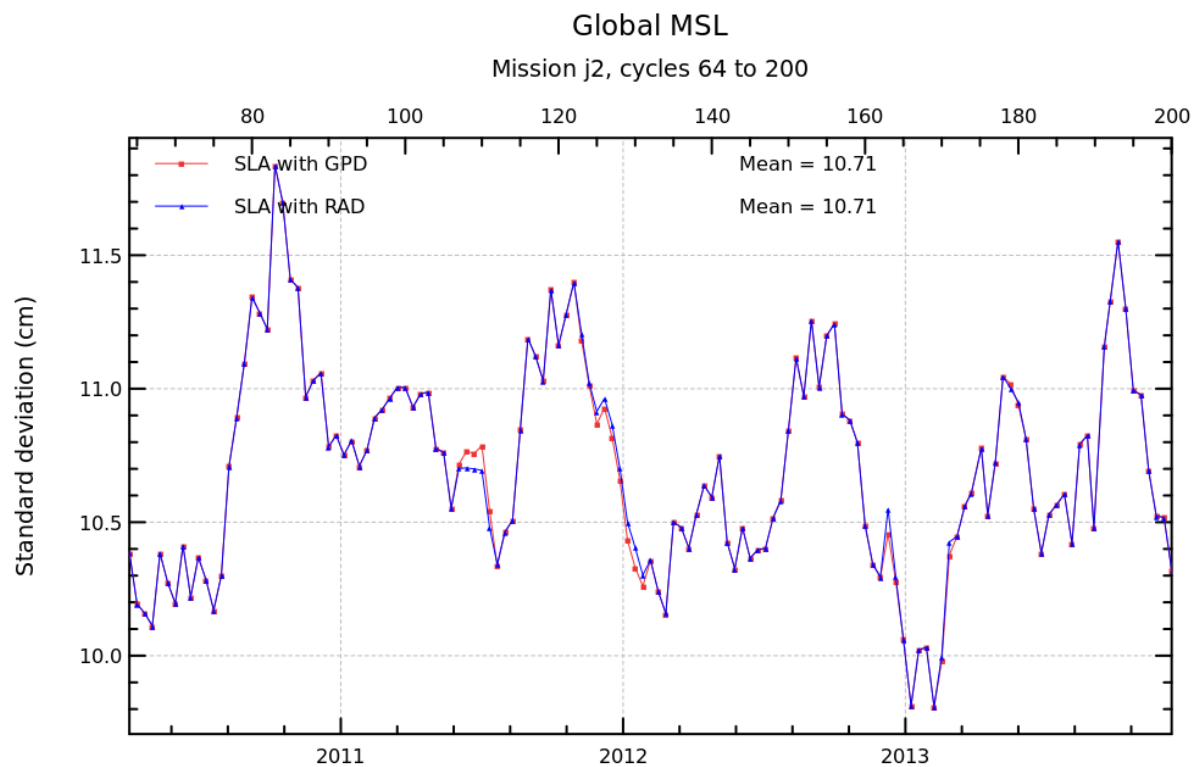
## Diagnostic A201\_e (mission j2)

**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 repetitivity, 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 : Mono-mission analyses



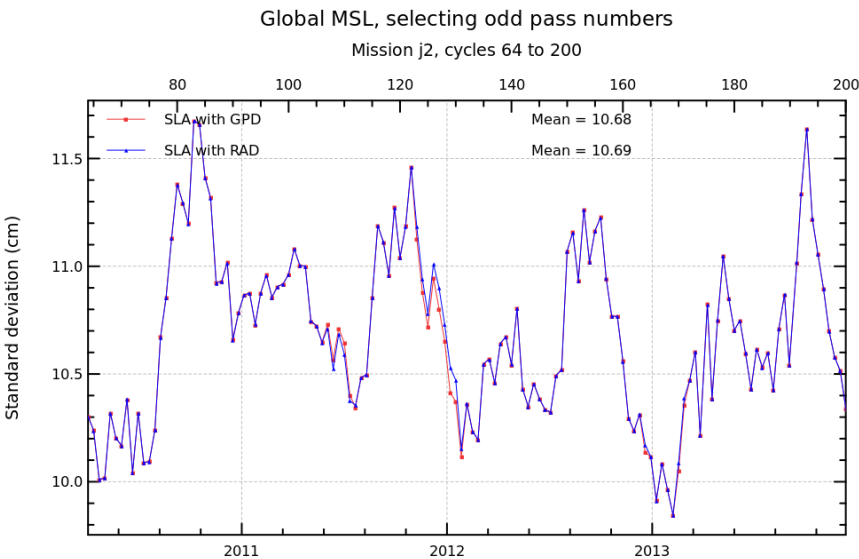
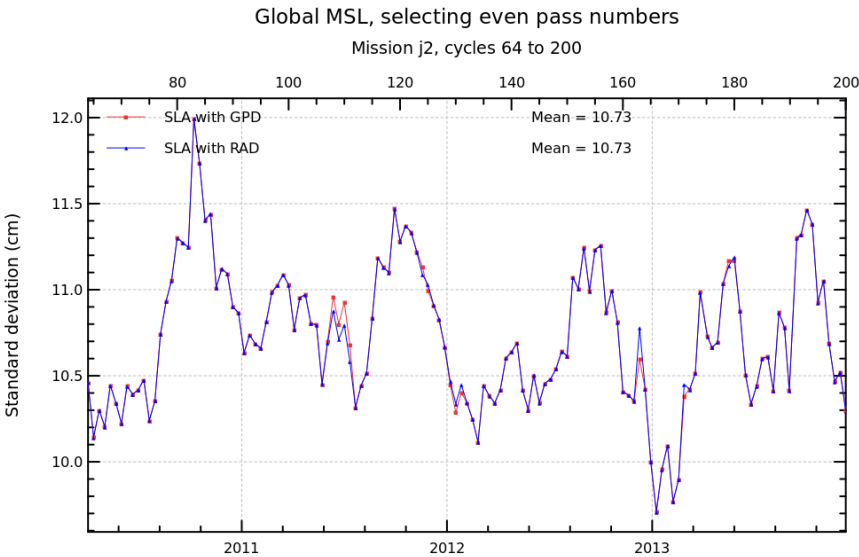
## Diagnostic A201\_f (mission j2)

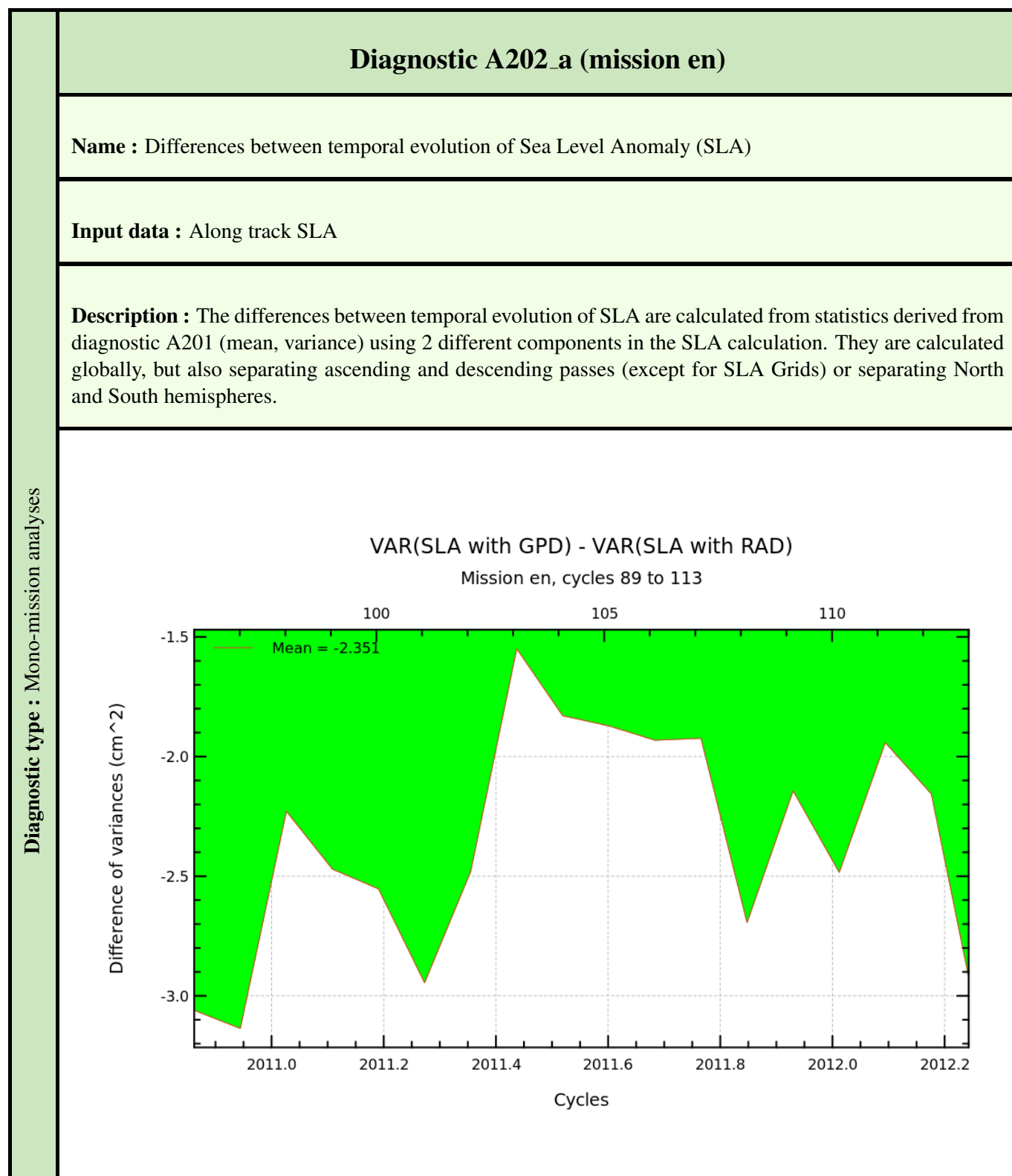
**Name :** Temporal evolution of Sea Level Anomaly (SLA)

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

Diagnostic type : Mono-mission analyses





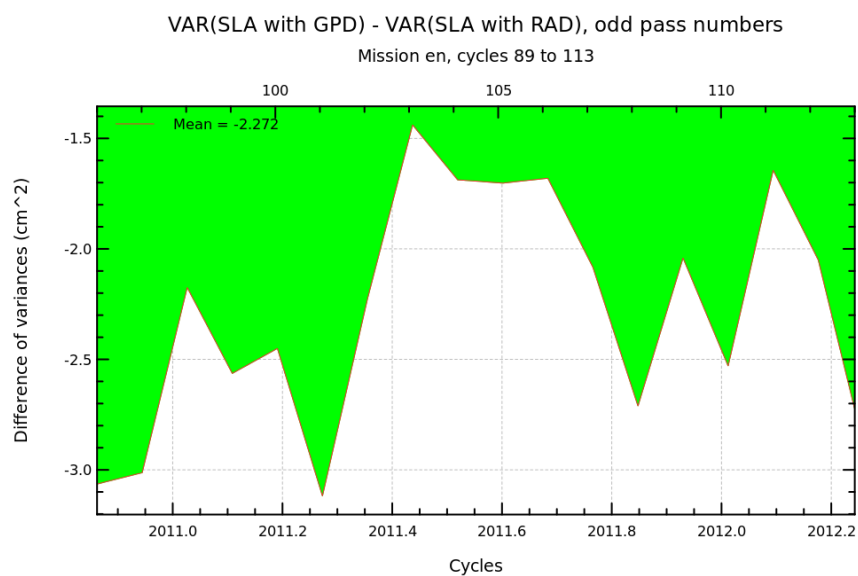
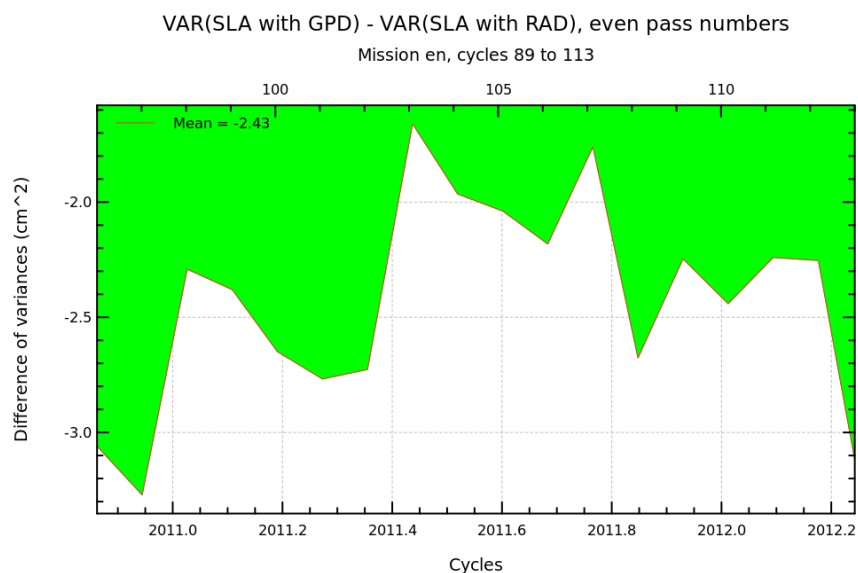
## Diagnostic A202\_b (mission en)

**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 : Mono-mission analyses



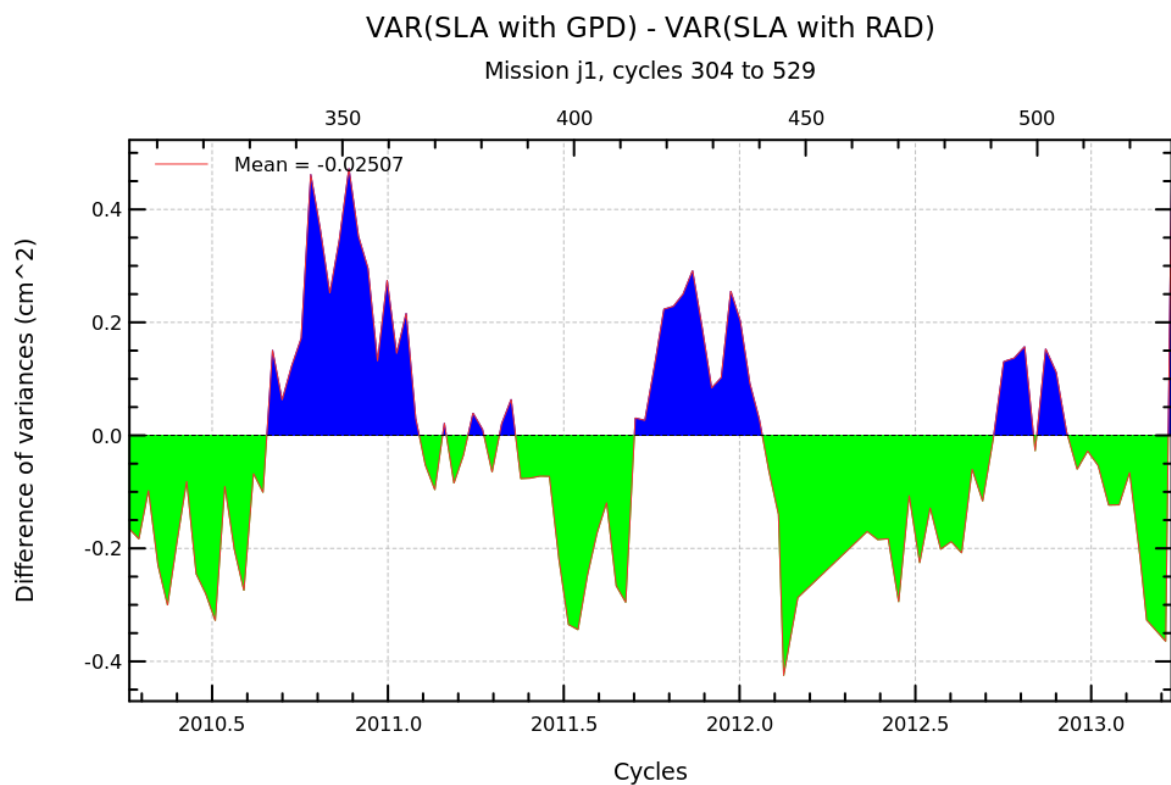
## Diagnostic A202\_a (mission j1)

**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 type : Mono-mission analyses



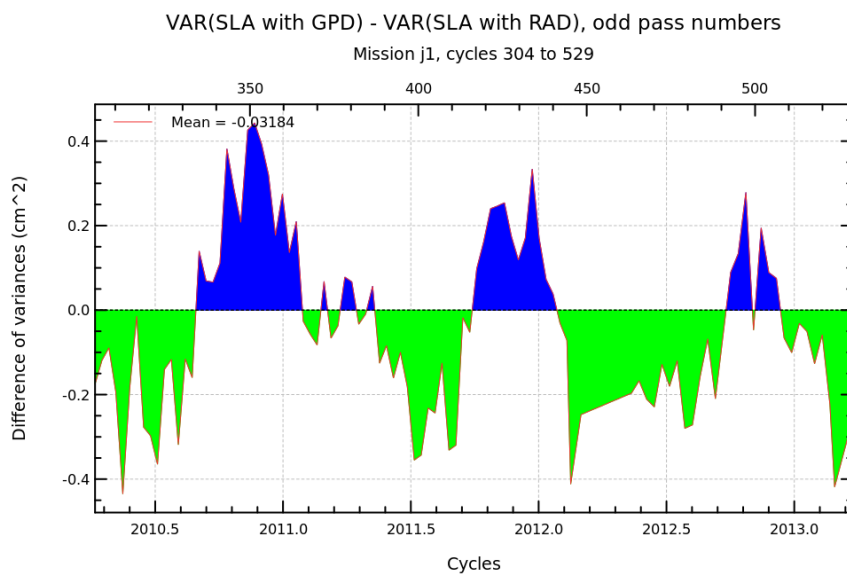
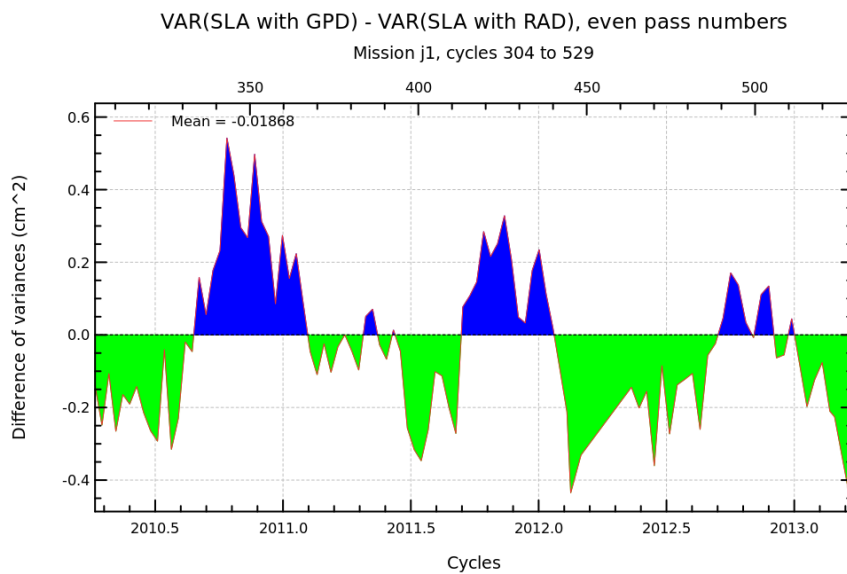
## Diagnostic A202\_b (mission j1)

**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 : Mono-mission analyses



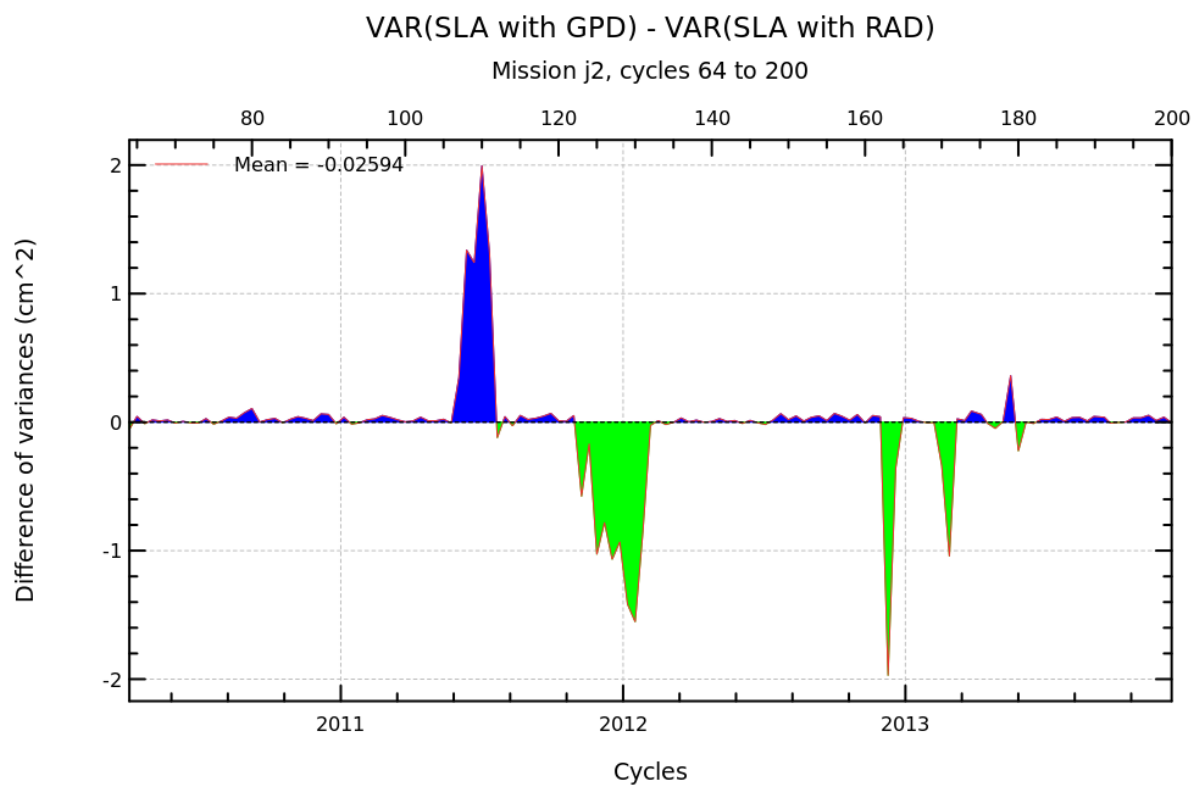
## Diagnostic A202\_a (mission j2)

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

Diagnostic type : Mono-mission analyses



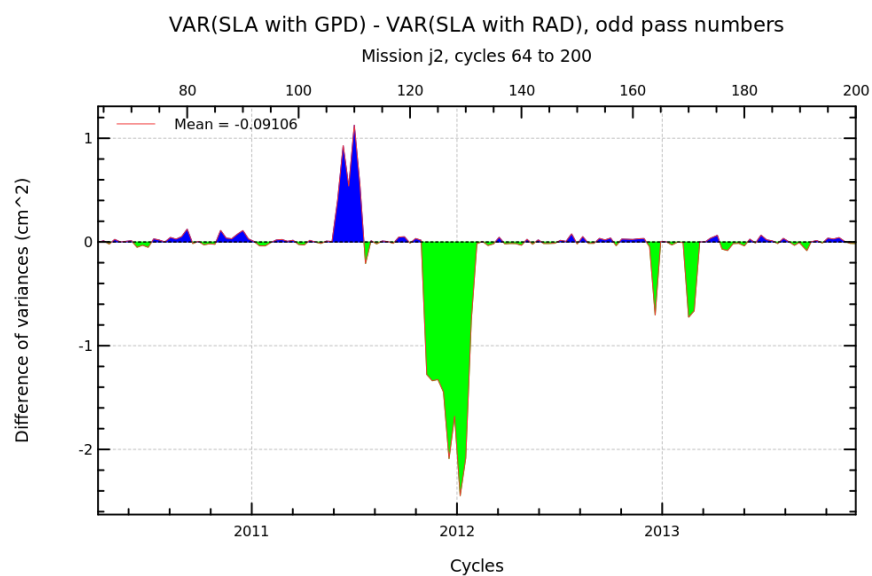
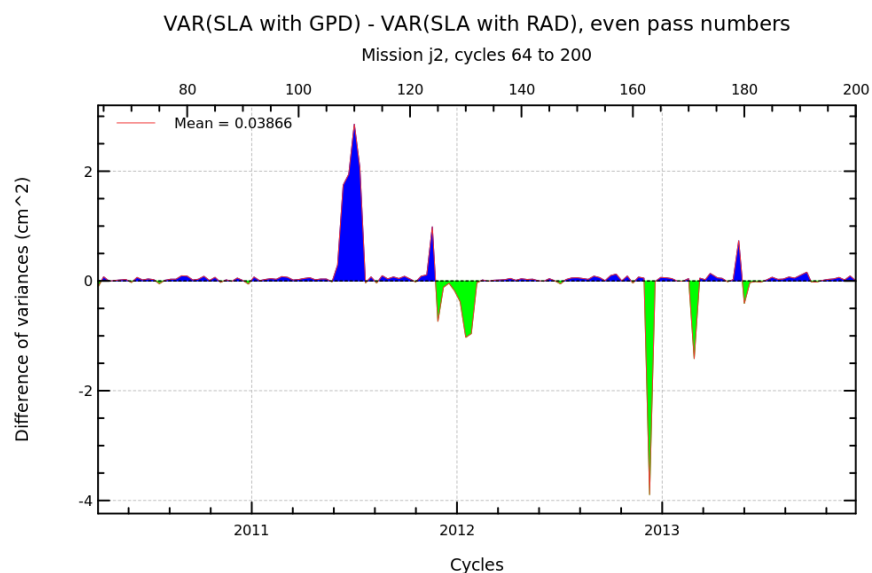
## Diagnostic A202\_b (mission j2)

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

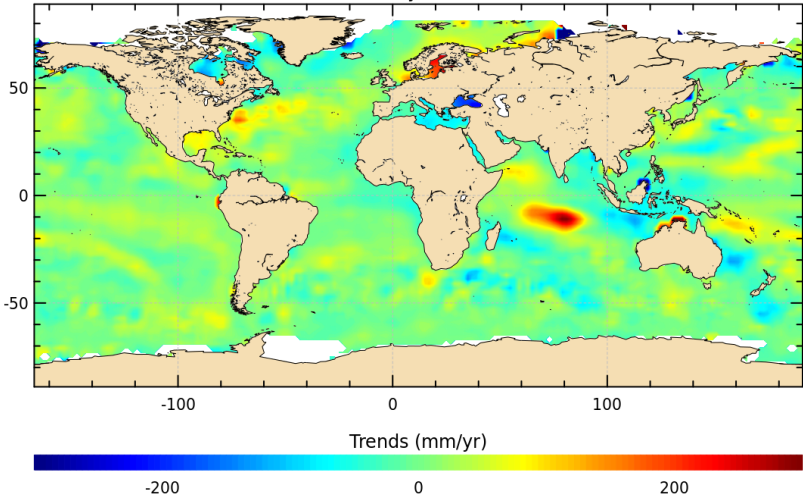
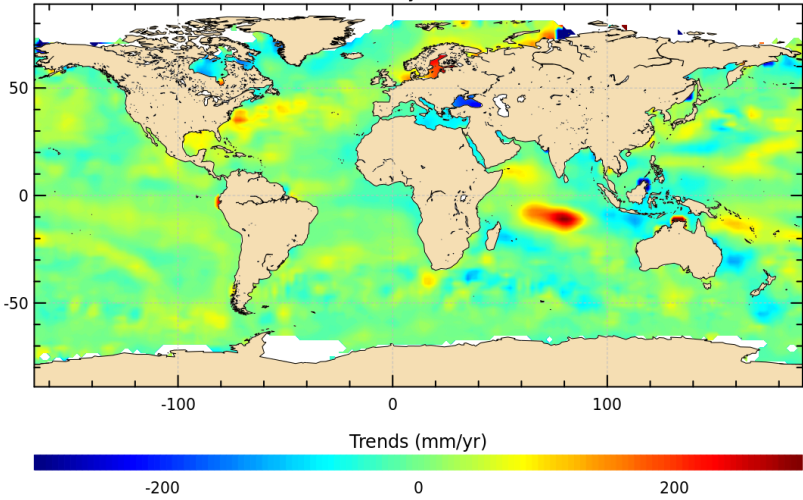
**Input data :** Along track SLA

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

Diagnostic type : Mono-mission analyses





Diagnostic type : Mono-mission 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 GPD trends Mission en, cycles 89 to 113</div>  <div>SLA with RAD trends Mission en, cycles 89 to 113</div> 	

## Diagnostic A203\_b (mission en)

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

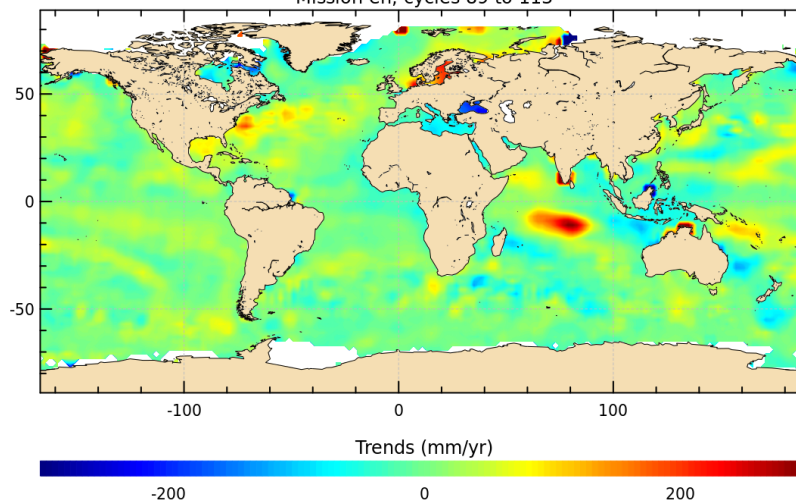
**Input data :** Along track SLA

**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 : Mono-mission analyses

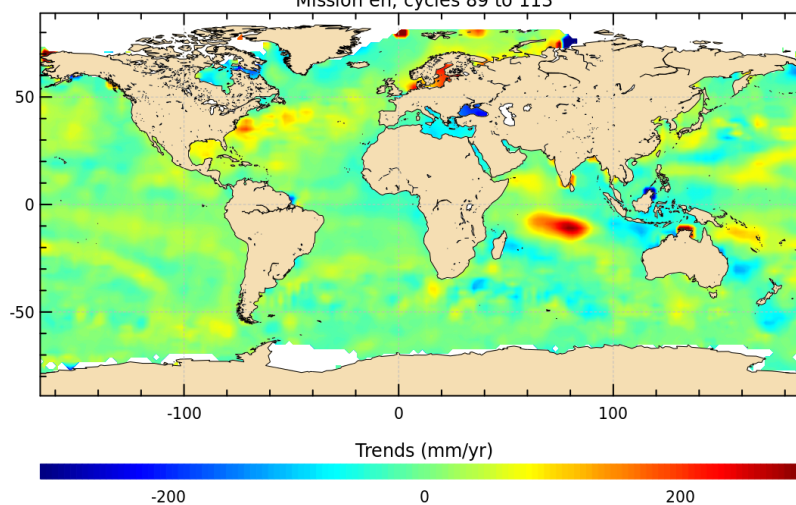
SLA with GPD trends : even pass numbers

Mission en, cycles 89 to 113



SLA with RAD trends : even pass numbers

Mission en, cycles 89 to 113



## Diagnostic A203\_c (mission en)

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

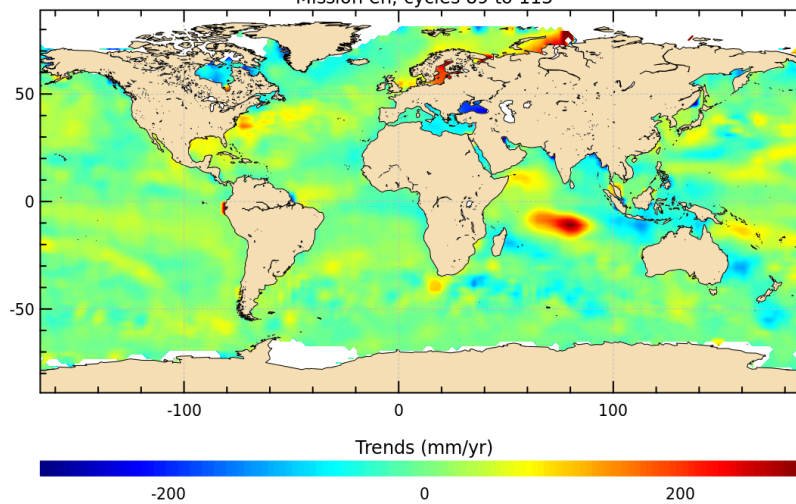
**Input data :** Along track SLA

**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 : Mono-mission analyses

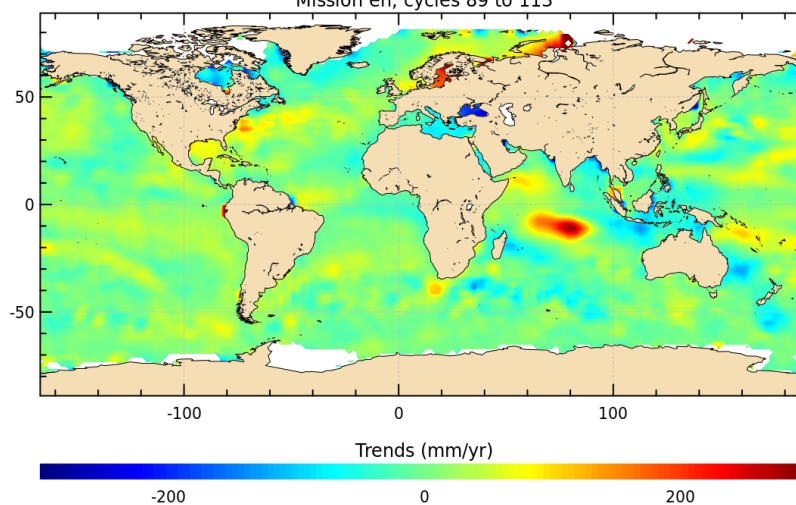
SLA with GPD trends : odd pass numbers

Mission en, cycles 89 to 113



SLA with RAD trends : odd pass numbers

Mission en, cycles 89 to 113



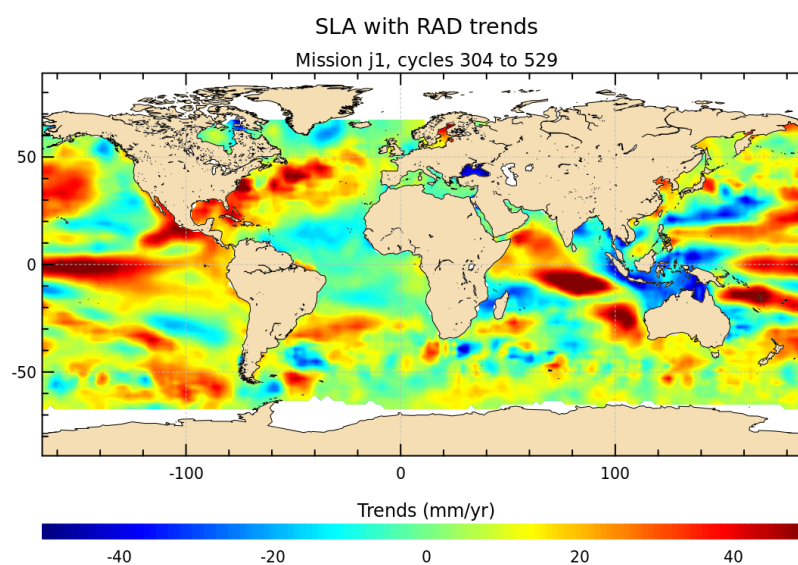
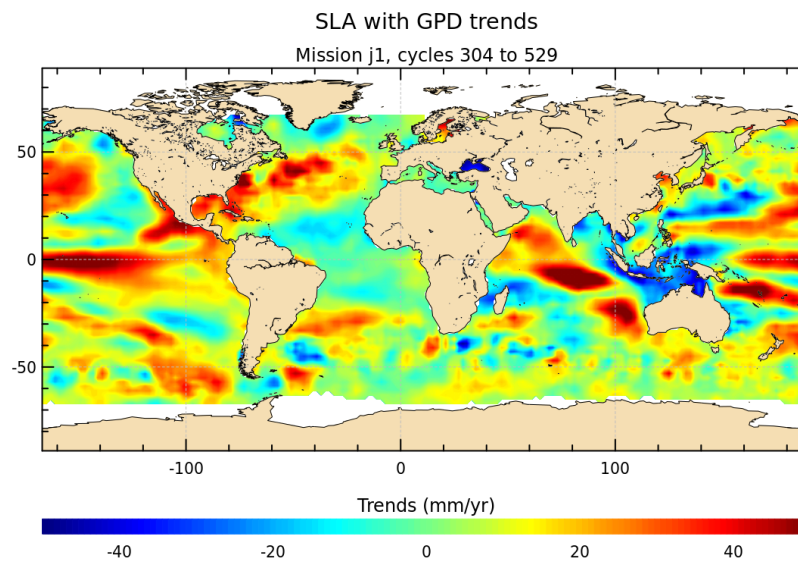
## Diagnostic A203\_a (mission j1)

**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 : Mono-mission analyses





## Diagnostic A203\_b (mission j1)

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

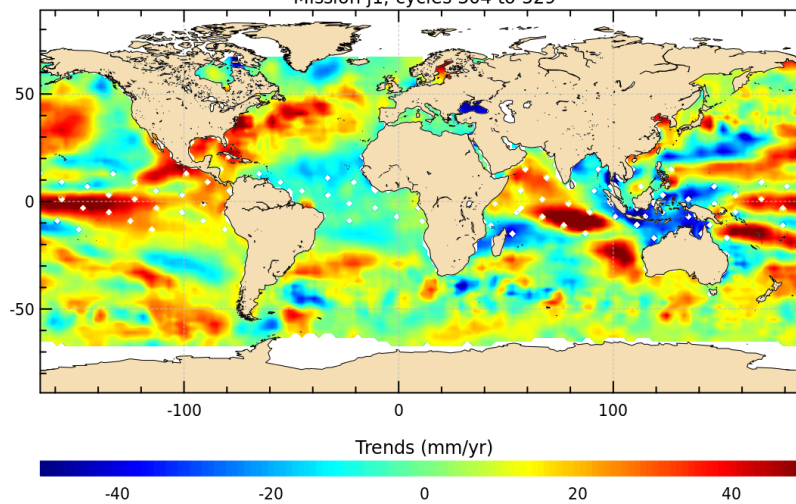
**Input data :** Along track SLA

**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 : Mono-mission analyses

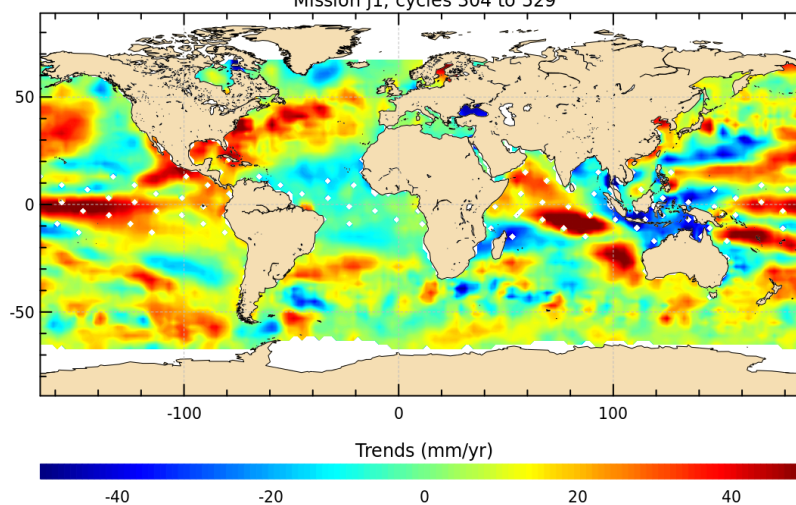
SLA with GPD trends : even pass numbers

Mission j1, cycles 304 to 529



SLA with RAD trends : even pass numbers

Mission j1, cycles 304 to 529



## Diagnostic A203\_c (mission j1)

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

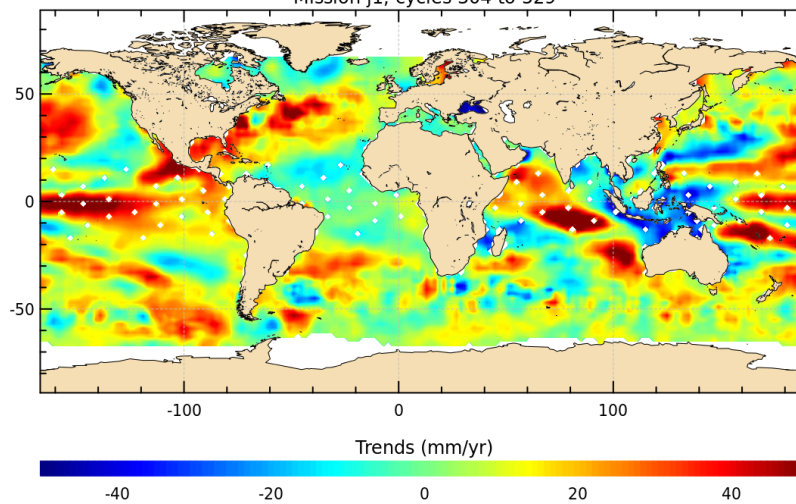
**Input data :** Along track SLA

**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 : Mono-mission analyses

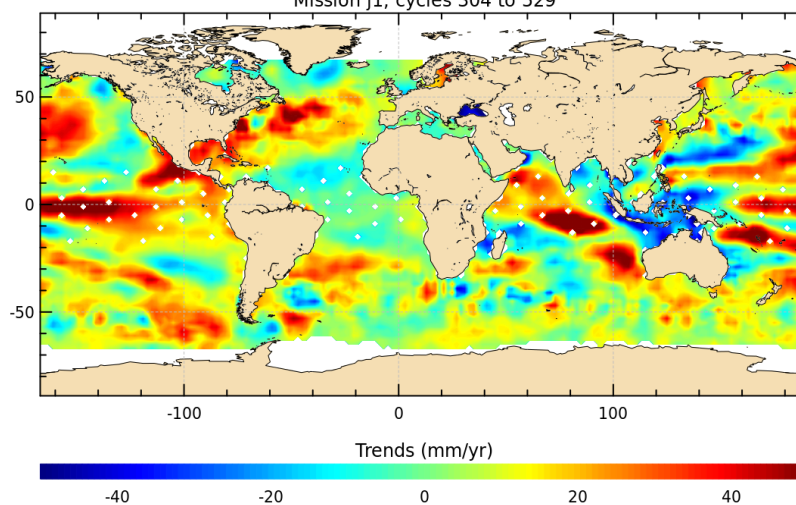
SLA with GPD trends : odd pass numbers

Mission j1, cycles 304 to 529



SLA with RAD trends : odd pass numbers

Mission j1, cycles 304 to 529



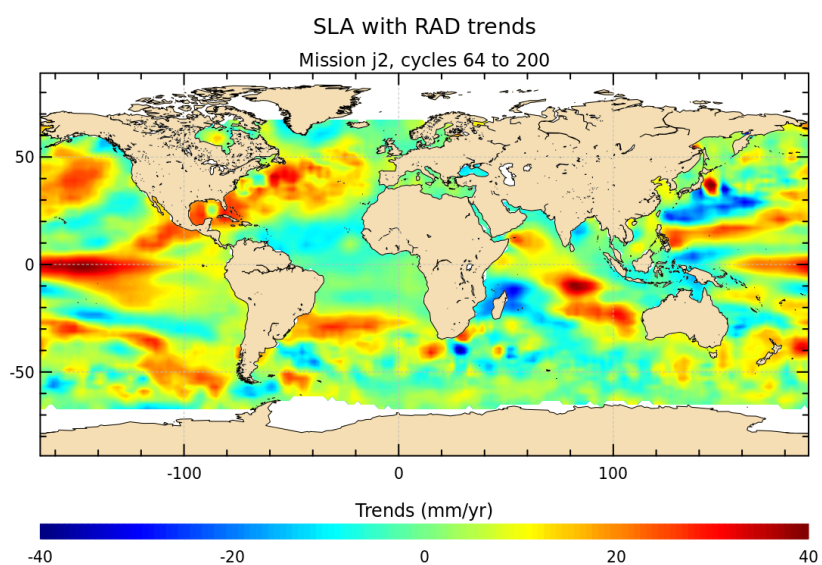
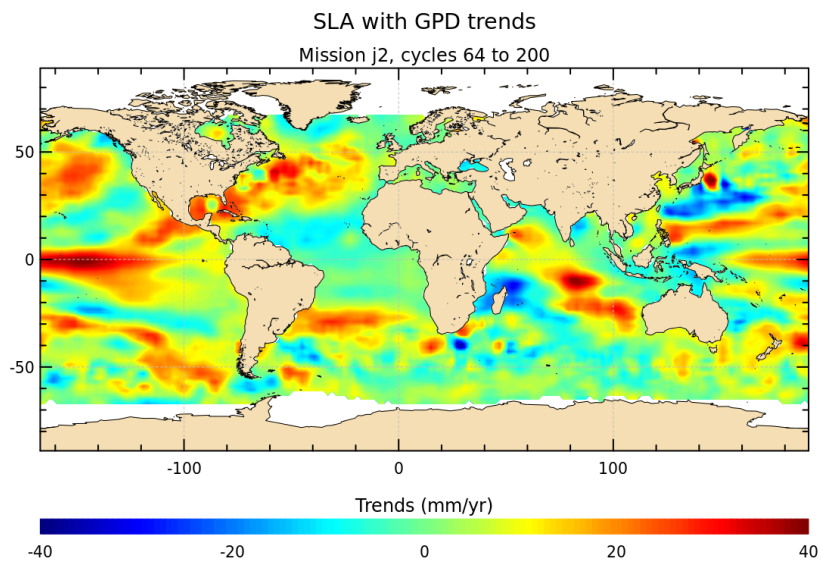
## Diagnostic A203\_a (mission j2)

**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.

Diagnostic type : Mono-mission analyses



## Diagnostic A203\_b (mission j2)

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

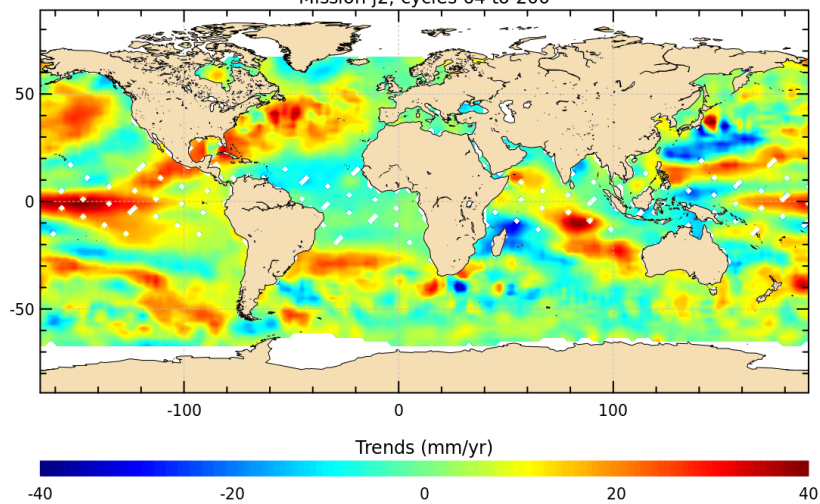
**Input data :** Along track SLA

**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

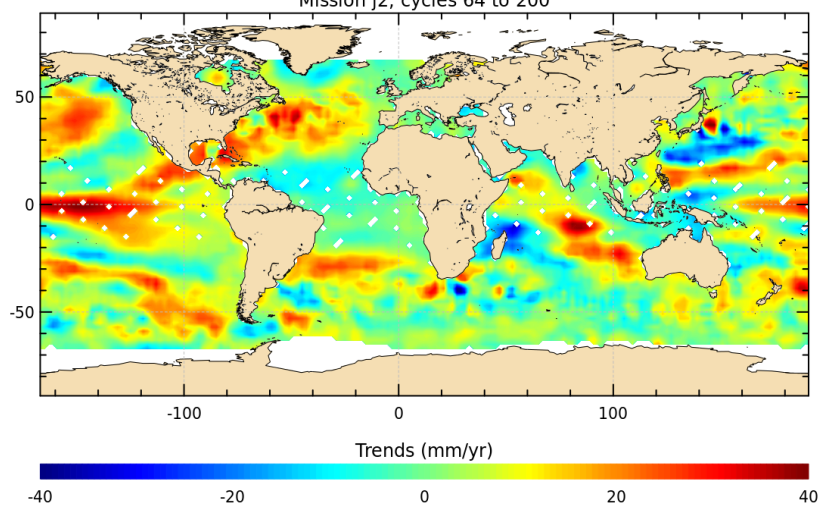
SLA with GPD trends : even pass numbers

Mission j2, cycles 64 to 200



SLA with RAD trends : even pass numbers

Mission j2, cycles 64 to 200





## Diagnostic A203\_c (mission j2)

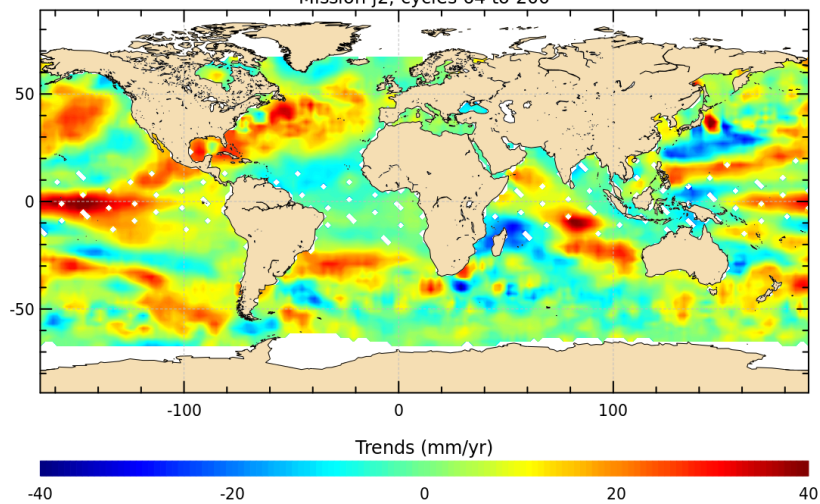
**Name :** Map of Sea Level Anomaly (SLA) over all the period

**Input data :** Along track SLA

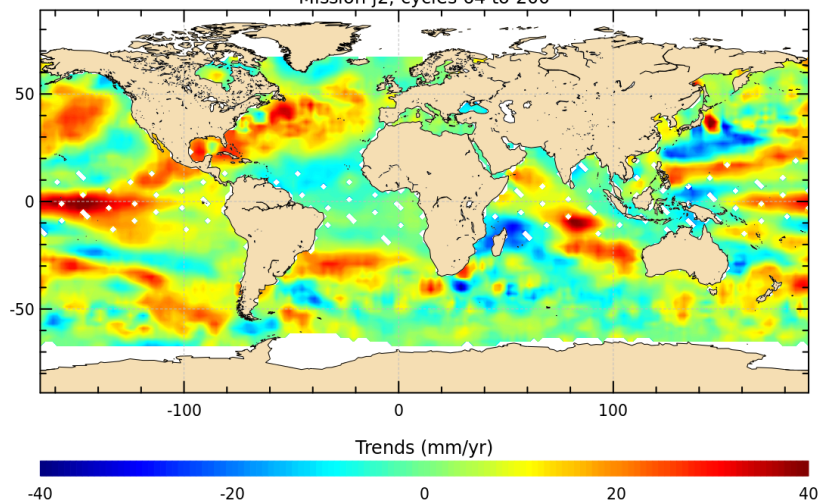
**Description :** The map of global statistics (mean, standard deviation) of SLA are calculated using successively both altimetric components in the SLA calculation over a large period. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.

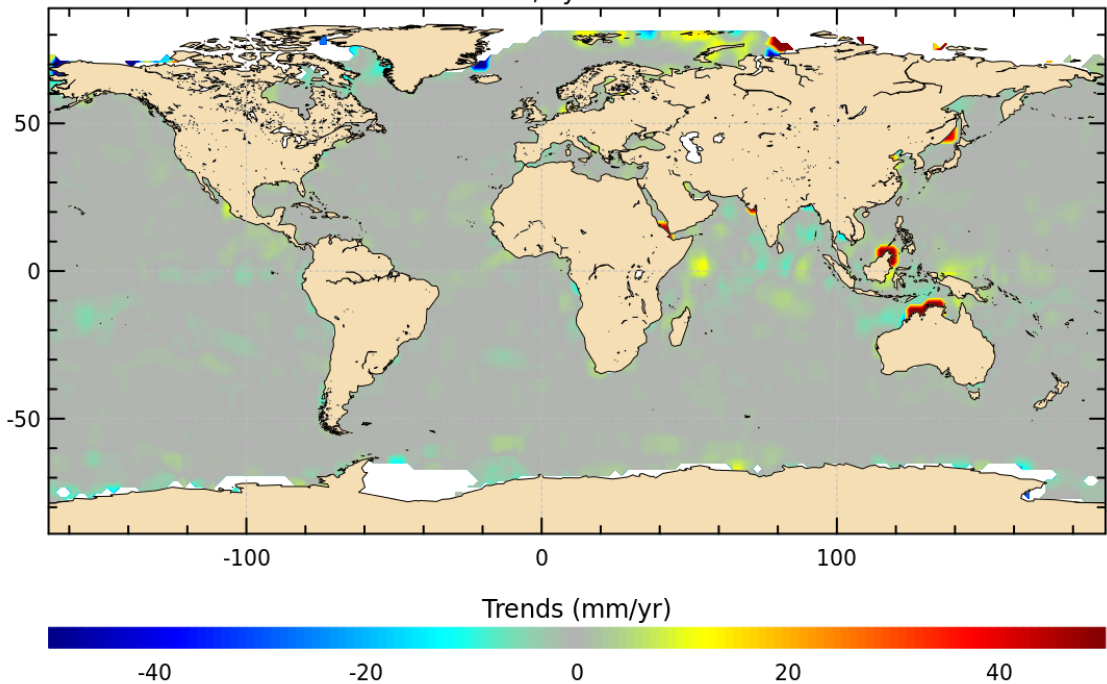
Diagnostic type : Mono-mission analyses

SLA with GPD trends : odd pass numbers  
Mission j2, cycles 64 to 200



SLA with RAD trends : odd pass numbers  
Mission j2, cycles 64 to 200



Diagnostic type : Mono-mission analyses	<b>Diagnostic A204 a (mission en)</b>
	<b>Name :</b> Differences between maps of SLA trends
	<b>Input data :</b> Along track SLA
	<b>Description :</b> 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>SLA with GPD trends - SLA with RAD trends Mission en, cycles 89 to 113</p>  <p>The figure is a global map showing the difference in Sea Level Anomaly (SLA) trends between two methods: GPD (Global Positioning System/DGPS) and RAD (Radar Altimetry). The map covers the entire globe, with landmasses in light beige and oceans in grey. The color scale at the bottom, labeled 'Trends (mm/yr)', ranges from -40 (dark blue) to 40 (dark red), with intermediate values at -20, 0, and 20. The map shows significant positive trends (red/orange) in the Indian Ocean, particularly around Australia and Southeast Asia, and in the North Atlantic. Negative trends (blue) are visible in the Southern Ocean and parts of the Pacific. The map is titled 'SLA with GPD trends - SLA with RAD trends' and 'Mission en, cycles 89 to 113'. The y-axis is labeled with 50, 0, and -50, and the x-axis with -100, 0, and 100.</p>

## Diagnostic A204\_b (mission en)

**Name :** Differences between maps of SLA trends

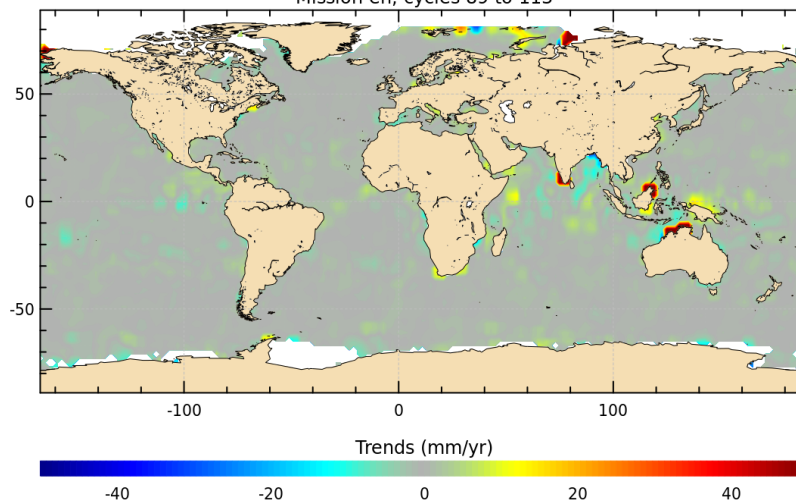
**Input data :** Along track SLA

**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

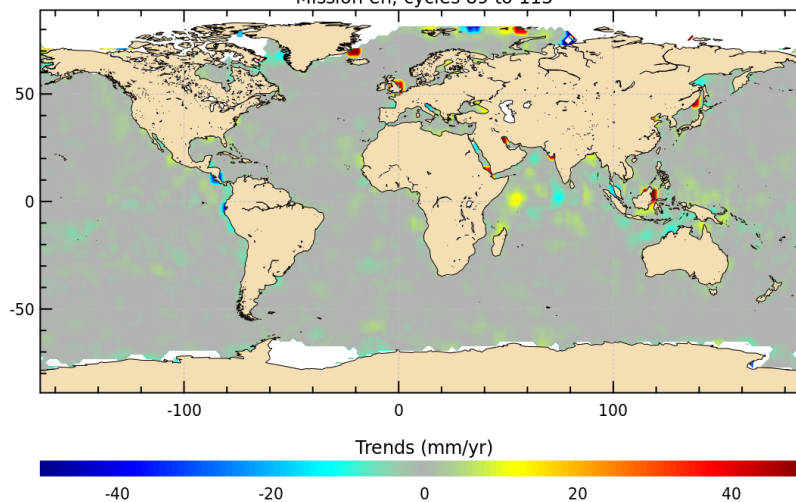
SLA with GPD trends - SLA with RAD trends : even pass numbers

Mission en, cycles 89 to 113



SLA with GPD trends - SLA with RAD trends : odd pass numbers

Mission en, cycles 89 to 113



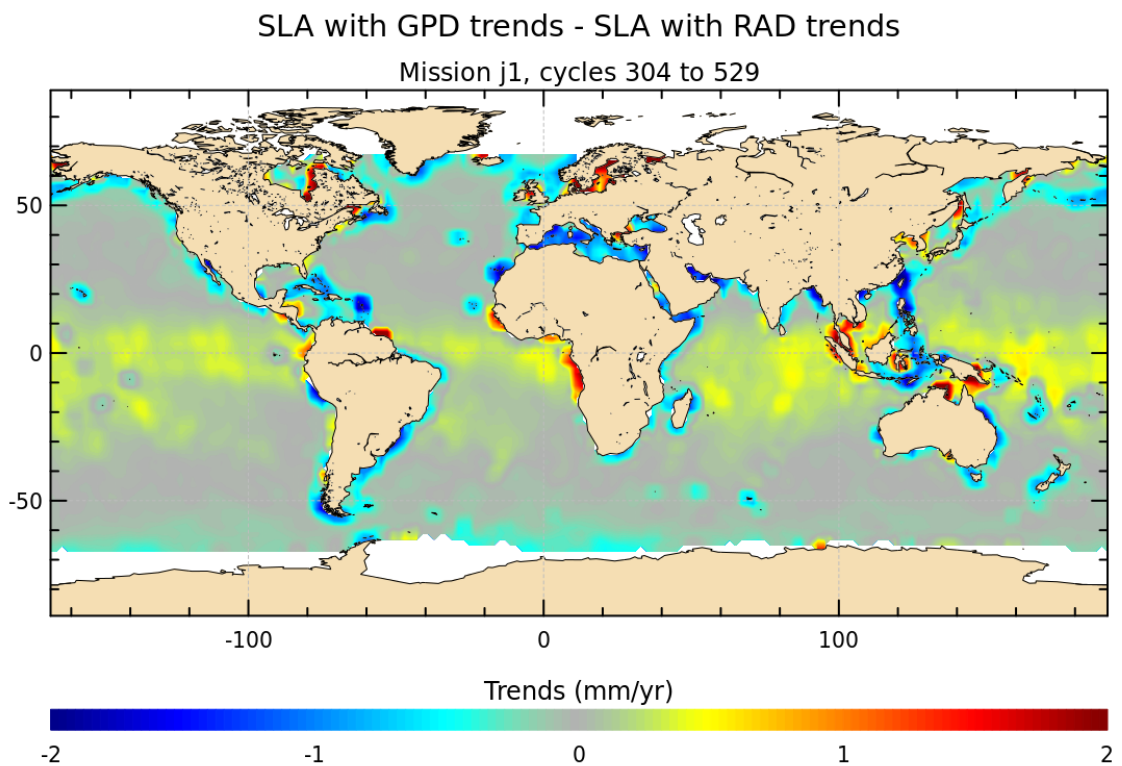
## Diagnostic A204\_a (mission j1)

**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



## Diagnostic A204\_b (mission j1)

**Name :** Differences between maps of SLA trends

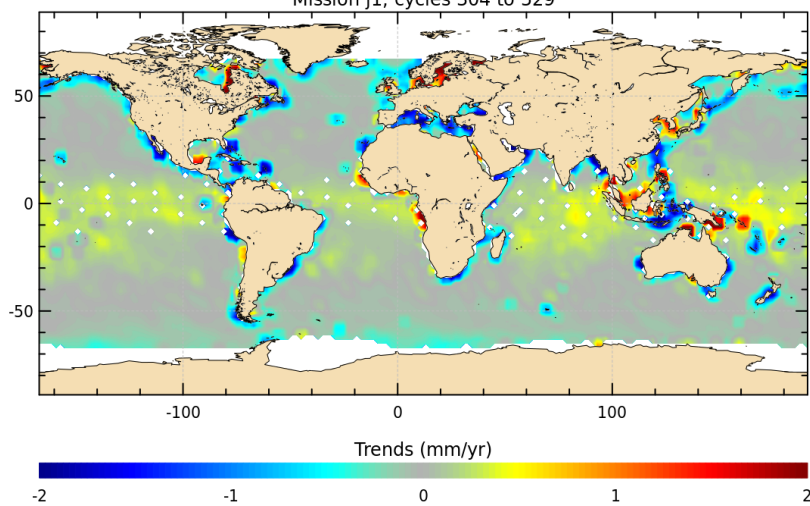
**Input data :** Along track SLA

**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

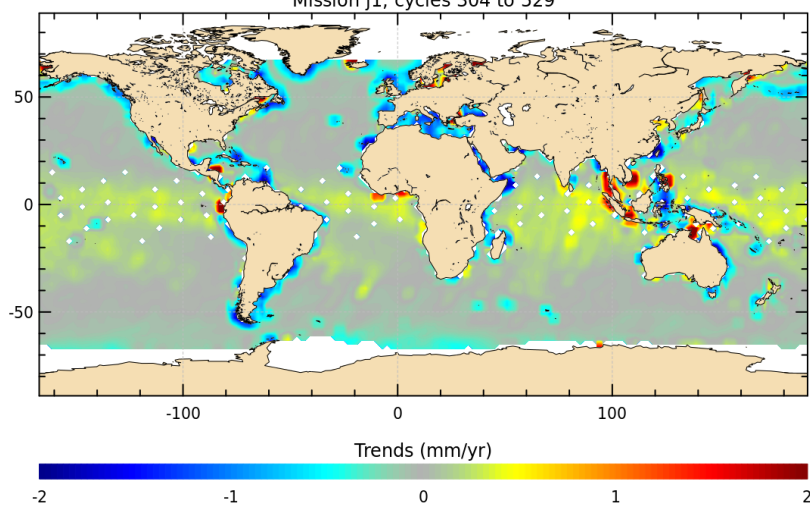
SLA with GPD trends - SLA with RAD trends : even pass numbers

Mission j1, cycles 304 to 529



SLA with GPD trends - SLA with RAD trends : odd pass numbers

Mission j1, cycles 304 to 529





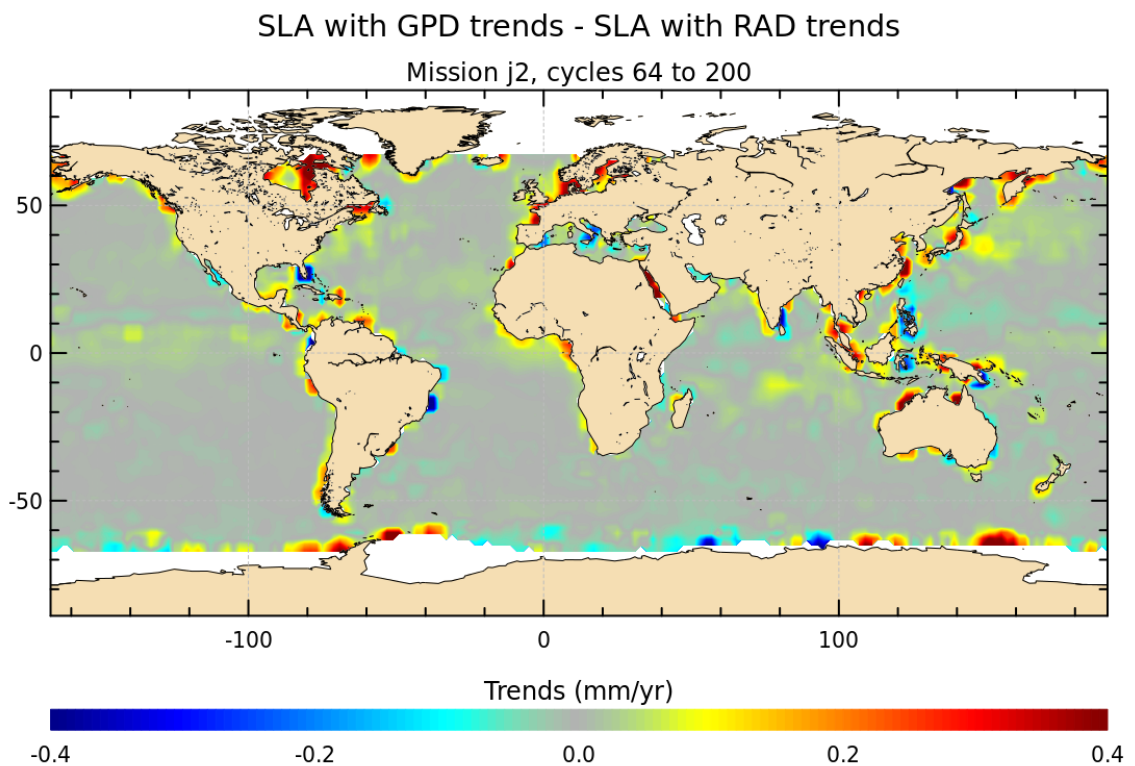
## Diagnostic A204\_a (mission j2)

**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).

Diagnostic type : Mono-mission analyses



## Diagnostic A204\_b (mission j2)

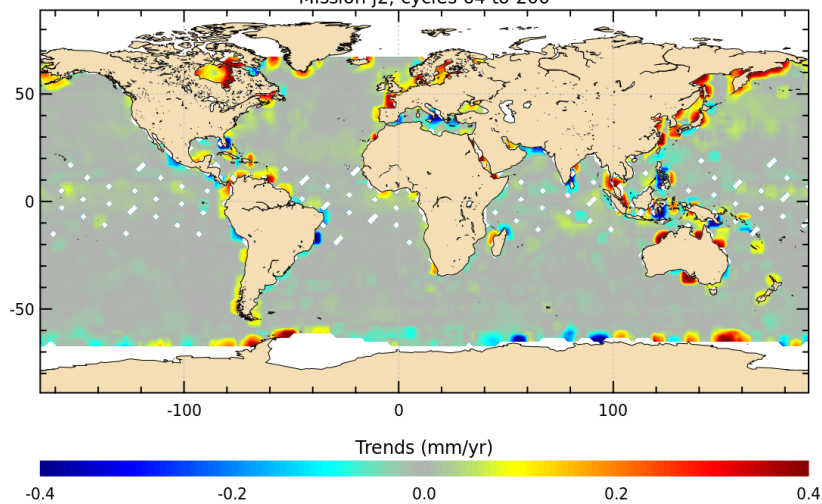
**Name :** Differences between maps of SLA trends

**Input data :** Along track SLA

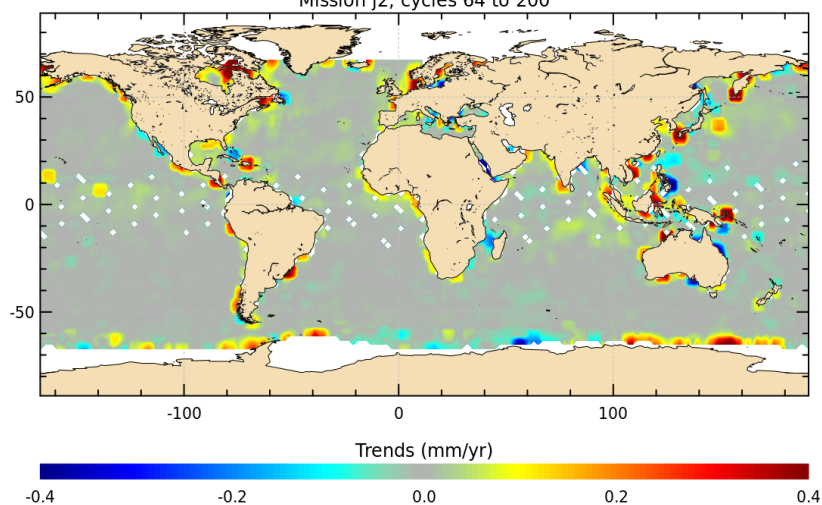
**Description :** The difference of SLA maps (mean, standard deviation, slope) is calculated from maps derived from diagnostic A203 using successively both altimetric components in the SLA calculation over a given period. This can be done globally, or separating in ascending and descending passes (except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

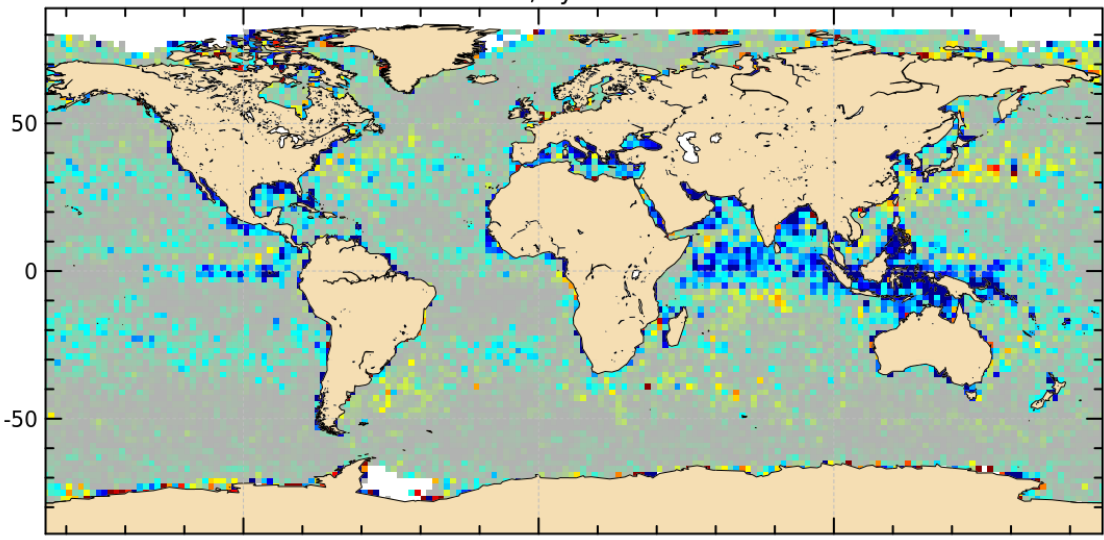
Diagnostic type : Mono-mission analyses

SLA with GPD trends - SLA with RAD trends : even pass numbers  
Mission j2, cycles 64 to 200



SLA with GPD trends - SLA with RAD trends : odd pass numbers  
Mission j2, cycles 64 to 200



Diagnostic type : Mono-mission analyses	Diagnostic A209 (mission en)	
	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 GPD) - VAR(SLA with RAD)</div> <div>Mission en, cycles 89 to 113</div>  <div>Difference of variances (cm<sup>2</sup>)</div> <div>-100                      0                      100</div> <div>-10                      0                      10</div>	



## Diagnostic A209 (mission j1)

**Name :** Differences between maps of SLA variance

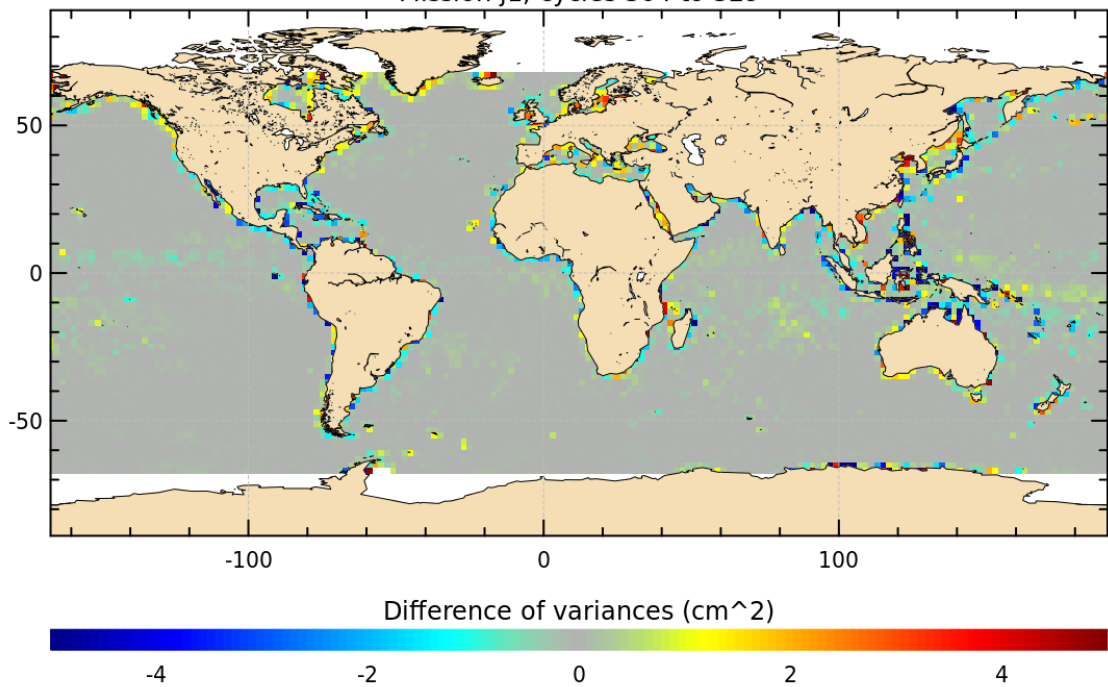
**Input data :** Along track SLA

**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.

Diagnostic type : Mono-mission analyses

VAR(SLA with GPD) - VAR(SLA with RAD)

Mission j1, cycles 304 to 529



## 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.

Diagnostic type : Mono-mission analyses

VAR(SLA with GPD) - VAR(SLA with RAD)

Mission j2, cycles 64 to 200

