### Tidal models comparison: TPXO72 versus GOT4V7

<table>
<thead>
<tr>
<th>Study variable</th>
<th>TPXO72 Tidal Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference variable</td>
<td>GOT4V7 Tidal Model</td>
</tr>
<tr>
<td>Missions</td>
<td>Envisat (en), Jason-1 (j1)</td>
</tr>
<tr>
<td>Period</td>
<td>[19007, 22280]</td>
</tr>
</tbody>
</table>

Creation date: 2011/09/09

### Contents

- **Study overview** 3
- A001 4
- A002 6
- A004 10
- A101 12
- A102 14
- A103 16
- A104 20
- A201 24
- A202 32
- A203 36
- A204 48
- A205 54
- A207 62
- A208 64
<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A209</td>
<td>66</td>
</tr>
<tr>
<td>B201</td>
<td>70</td>
</tr>
<tr>
<td>B202</td>
<td>73</td>
</tr>
</tbody>
</table>
Study overview

In this study, the tide model TPXO7.2 has been compared to the model GOT 4.7 for high latitudes (>50N).

The TPXO7.2 tide model is produced by Egbert et al., 2002; (see http://volkov.oce.orst.edu/tides/global.html). This model takes into account tide gauges data along the Russian coast. As this model does not include any load tide data, load tide effects from the FES2004 model had been used. The model GOT is described in Ray, R. (1999) : "A global ocean tide model from Topex/Poseidon altimetry: GOT 99.2." NASA Tech Memo 209478: 58 pages.

The impact of using these both tidal models on the SSH calculation has been analyzed for Envisat and Jason-1 missions.

- for Jason-1: from January 2002 (cycle 1) to December 2010 (Cycle 330)
- for Envisat: from September 2002 (cycle 10) to October 2010 (Cycle 93)

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.

---

![Graph showing the mean and standard deviation of TPX072 - GOT4V7 from 2006 to 2010.]
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 A002.a (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.

---

**Mean of TPXO72 – GOT4V7**

Mission en, cycles 9 to 94

**Mean (cm)**

-2 -0.6667 0.6667 2

**Standard deviation of TPXO72 – GOT4V7**

Mission en, cycles 9 to 94

**Standard deviation (cm)**

0 6.67 13.33 20
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.

Mission en, cycles 9 to 94

Mean of TPXO72 - GOT4V7

Standard deviation of TPXO72 - GOT4V7
Diagnostic A002_a (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 A002.b (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.

![Mission j1, cycles 1 to 330](image1.png)

Mean of TPXO72 - GOT4V7

![Mission j1, cycles 1 to 330](image2.png)

Standard deviation of TPXO72 - GOT4V7
**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.

![Graph of mean and standard deviation vs coastal distance](image)

**Mean of TPX072 - GOT4V7**

Mean en, cycles 9 to 94

- Mean = -0.3066
- StdDev = 0.07464

**Coastal Distance (km)**

**Standard deviation of TPX072 - GOT4V7**

Mean en, cycles 9 to 94

- Mean = 10.79

**Coastal Distance (km)**
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 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 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).
**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).
**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).
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_b (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).
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_b (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 A104.a (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).

**VAR(SSH with TPXO72) – VAR(SSH with GOT4V7)**

Mission en, cycles 9 to 94

SSH crossovers: difference of variances (cm^2)
### Diagnostic A104.b (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).

![Mission en, cycles 9 to 94](image)

R(SSH with TPXO72) - VAR(SSH with GOT4V7)
**Diagnostic A104_a (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).

**VAR(SSH with TPXO72) – VAR(SSH with GOT4V7)**

Mission j1, cycles 1 to 330

SSH crossovers: difference of variances (cm^2)
Diagnostic A104_b (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).

**Mission j1, cycles 1 to 330**

R(SSH with TPXO72) - VAR(SSH with GOT4V7)
**Diagnostic A201_a (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.

![Graph showing temporal evolution of SLA](image)

- **Global MSL**
- **Mission en, cycles 9 to 94**

- **SLA with TPX072**
  - Slope = -2.89 mm/yr [L.S.R. = 0.527]

- **SLA with GOT4V7**
  - Slope = -3.08 mm/yr [L.S.R. = 0.512]
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.
**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.
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 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.

![Graph of Global MSL](image)

Global MSL 
Mission j1, cycles 1 to 330

- SLA with TPX072
  - Slope = 0.959 mm/yr [L.S.R. = 0.291]
- SLA with GOT4V7
  - Slope = 1.01 mm/yr [L.S.R. = 0.278]
**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 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 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 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.
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.

![Graph showing differences in SLA over time](image1)

![Graph showing differences in SLA over cycles](image2)
**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.

---

Diagnosis of the difference between temporal evolution of Sea Level Anomaly (SLA) calculated from statistics derived from diagnostic A201 (mean, variance) using 2 different components in the SLA calculation. This figure shows the differences over cycles 1 to 330.
**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.

![Graph](image1.png)

![Graph](image2.png)
**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.
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.
**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.
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 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 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 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).

---

**SLA with TPXO72 trends – SLA with GOT4V7 trends**

**Mission en, cycles 9 to 94**

---

**Trends (mm/yr):**

-1  0.3333  0.3333  1
**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).

---

**Mission en, cycles 9 to 94**

![Map of SLA differences](image)  
*with TPXO72 trends - SLA with GOT4V7 trends*
**Diagnostic A204_c (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).

---

**SLA with TPXO72 trends – SLA with GOT4V7 trends : even pass numbers**

Mission en, cycles 9 to 94

![SLA with TPXO72 trends – SLA with GOT4V7 trends : even pass numbers](image1)

**Trends (mm/yr)**

-1  -0.3333  0.3333  1

**SLA with TPXO72 trends – SLA with GOT4V7 trends : odd pass numbers**

Mission en, cycles 9 to 94

![SLA with TPXO72 trends – SLA with GOT4V7 trends : odd pass numbers](image2)

**Trends (mm/yr)**

-1  -0.3333  0.3333  1
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 TPXO72 trends – SLA with GOT4V7 trends
Mission j1, cycles 1 to 330

Trends (mm/yr)
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).

Mission j1, cycles 1 to 330

\( \text{with TPXO72 trends - SLA with GOT4V7 trends} \)
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 TPXO72 trends – SLA with GOT4V7 trends: even pass numbers
Mission j1, cycles 1 to 330

SLA with TPXO72 trends – SLA with GOT4V7 trends: odd pass numbers
Mission j1, cycles 1 to 330
**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 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).

---

Mission en, cycles 9 to 94

-6 -4 -2 0 2 4 6 cm

$\Delta$72 amplitude - SLA with GOT4V7 amplitude (annual signal)

Mission en, cycles 9 to 94

-180 -120 -60 0 60 120 180 (degree)

PX07 phase - SLA with GOT4V7 phase (annual signal)
**Diagnostic A205_c (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).

\[ \text{Amplitude (cm)} \]

SLA with TPXO72 phase – SLA with GOT4V7 phase : semi–annual signal

Mission en, cycles 9 to 94

\[ \text{Phase (degree)} \]

-151.0324 -64.8173 21.3979 107.613
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 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).
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 A205_c (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 A205_d (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

![Maps showing differences between SLA (2)]
**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 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 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.

![Graph showing the differences of SLA variances versus coastal distance](image_url)

VAR(SLA with TPXO72) - VAR(SLA with GOT4V7)  
Mission en, cycles 9 to 94

Mean = 30.64
**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.

![Graph showing coastal distance vs. difference of variances](image)

**Mission:** J1, cycles 1 to 330

**Mean:** 28.43 cm²
## Diagnostic A209_a (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.

### Diagram
![VAR(SLA with TPX072) – VAR(SLA with GOT4V7)](image)

Mission en, cycles 9 to 94

**Difference of variances (cm^2)**

-20  
-6.667  
6.667  
20
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.
**Diagnostic A209_a (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.

---

### Diagnostic Type: Global internal analyses

**VAR(SLA with TPXO72) – VAR(SLA with GOT4V7)**

Mission j1, cycles 1 to 330

![Map of difference variances (cm^2)](image-url)
Diagnostic A209_b (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.

Mission j1, cycles 1 to 330

\[ \Delta R(\text{SLA with TPXO72}) - \text{VAR}(\text{SLA with GOT4V7}) \]
**Diagnostic B201_a**

**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 long 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.
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 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.
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.
**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.
**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.