## Wet Troposphere atmospheric corrections comparison: GPD V1.1 versus ERA

<table>
<thead>
<tr>
<th>Study variable</th>
<th>GPD_V2.0</th>
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<tr>
<td>Reference variable</td>
<td>ERA</td>
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<td>Missions</td>
<td>Topex-Posedon (tp), Jason-1 (j1), Jason-2 (j2), ERS-1 (e1), ERS-2 (e2), Envisat (en)</td>
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<td>Period</td>
<td>[15636, 23810]</td>
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Diagnostic A002 (mission e1)

**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 (mission e2)

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.

![Mean of GPD_V2.0 - ERA](image1)

Mean = 0.2254
Slope = -0.229 mm/yr

![Standard deviation of GPD_V2.0 - ERA](image2)

Mean = 1.657

**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.
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Diagnostic A002 (mission j2)

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

**Input data**: Along track altimetric components

**Description**: The temporal evolution of global statistics (mean, variance, slope) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated from a cyclic way (altimeter repetivity, daily, weekly, monthly). These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.
**Diagnostic A002 (mission tp)**

**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 A003 (mission e1)

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

Input data: Along track altimetric components

Description: The map of global statistics (mean, standard deviation) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated over a given period which is the longer as possible to have obtain reliable statically results. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.
Diagnostic A003 (mission e2)

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 statistically results. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.
Diagnostic A003 (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 A003 (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 A003 (mission j2)

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

Input data: Along track altimetric components

Description: The map of global statistics (mean, standard deviation) of differences between 2 different standards of a same altimetric component (sea surface height correction, altimeter parameter, orbit) are calculated over a given period which is the longer as possible to have obtain reliable statically results. These statistics are calculated from 1 Hz altimetric measurements after removing spurious sea level measurements.
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**Diagnostic A004_a (mission e1)**

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

**Input data**: Along track altimetric components

**Description**: The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated for all the periods, but it can be focused on a dedicated period.
Diagnostic A004_b (mission e1)

Name: Periodogram derived from temporal evolution of altimetric component differences

Input data: Along track altimetric components

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

![Periodogram of the mean of GPD_V2.0 - ERA (period = [0, 1 year])](image1)

![Periodogram of the standard deviation of GPD_V2.0 - ERA (period = [0, 1 year])](image2)
Name: Periodogram derived from temporal evolution of altimetric component differences

Input data: Along track altimetric components

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Diagnostic A004_b (mission e2)

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**Input data**: Along track altimetric components

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**Input data** : Along track altimetric components

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Diagnostic A004_b (mission j1)

Name: Periodogram derived from temporal evolution of altimetric component differences

Input data: Along track altimetric components

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**Diagnostic A004_a (mission j2)**

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

**Input data**: Along track altimetric components

**Description**: The periodogram derived from temporal and global altimetric component differences is calculated from cycle by cycle monitoring of altimetric component differences (derived from diagnostic A001). It is calculated from the mean or the variance differences. The Periodogram can be calculated for all the periods, but it can be focused on a dedicated period.
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**Diagnostic A004_a (mission tp)**

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

**Input data**: Along track altimetric components

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Diagnostic A004.b (mission tp)

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

**Input data**: Along track altimetric components

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