DMI Report 18-16

Sea Level data 1889 – 2017 from 14 stations in Denmark

Mean, maximum and minimum values calculated on monthly and yearly basis including plots of mean values

Lonny Hansen
Colophon

Serial title
DMI Report 18-16

Title
Sea Level data 1889 – 2017 from 14 stations in Denmark

Subtitle
Mean, maximum and minimum values calculated on monthly and yearly basis including plots of mean values

Author(s)
Lonny Hansen

Responsible institution
Danish Meteorological Institute

Language
English

Keywords
Sea level data

Url
www.dmi.dk

ISSN
1399-1949 (online)

Version
December 2018

Website
www.dmi.dk

Copyright
Danish Meteorological Institute (DMI)
Application and publication of data and plots is only allowed with proper reference and acknowledgment to DMI and the author.

Attached files
month.csv
year.csv

Front page
Map of sea level station
# Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>4</td>
</tr>
<tr>
<td>Resumé</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Data and plots</td>
<td>6</td>
</tr>
<tr>
<td>Hirtshals – 20047</td>
<td>8</td>
</tr>
<tr>
<td>Frederikshavn – 20101</td>
<td>9</td>
</tr>
<tr>
<td>Hanstholm – 20047</td>
<td>10</td>
</tr>
<tr>
<td>Århus – 22331</td>
<td>11</td>
</tr>
<tr>
<td>Fredericia – 23293</td>
<td>12</td>
</tr>
<tr>
<td>Esbjerg – 25149</td>
<td>13</td>
</tr>
<tr>
<td>Fynshav – 26457</td>
<td>14</td>
</tr>
<tr>
<td>Slipshavn – 28234</td>
<td>15</td>
</tr>
<tr>
<td>Korsør – 29393</td>
<td>16</td>
</tr>
<tr>
<td>Hornbæk – 30017</td>
<td>17</td>
</tr>
<tr>
<td>København – 30336</td>
<td>18</td>
</tr>
<tr>
<td>Rødbyhavn – 31573</td>
<td>19</td>
</tr>
<tr>
<td>Gedser – 31616</td>
<td>20</td>
</tr>
<tr>
<td>Tejn – 32048</td>
<td>21</td>
</tr>
<tr>
<td>Attached files</td>
<td>22</td>
</tr>
<tr>
<td>Previous reports</td>
<td>23</td>
</tr>
</tbody>
</table>
Abstract

This report presents means and maximum and minimum values calculated on a monthly and yearly basis from 14 sea level stations with more than 20 years of data.

This report also presents plots of mean values on a monthly and yearly basis from these 14 sea level stations and each plot include trend/year and summarized trend during the timespan.

Resumé

Denne rapport præsenterer middelværdier samt maksimum- og minimums-værdier udregnet på henholdsvis måneds og års basis for 4 vandstandsstationer med mere end 20 års data.

Desuden præsenteres plots af middelværdierne på måneds og års basis fra hver at disse 14 vandstandsstationer og på hvert plot er angivet stigningsgraden pr. år samt den samlede stigning over årene.
Introduction

In the end of the 19.th century DMI established 10 sea level stations scattered along the coast of Denmark. During the 20.th century 5 stations were added and in the 21.st century additional stations were established or transferred from Danish Marine Society Administration, resulting in the present set-up of 33 sea level stations – all fully operational.

Stations with more than 20 years of data are shown in the map below and data from these stations are presented.
Data and plots

Data from Esbjerg, Gedser and Hornbæk are stored in DMI’s database from establishments approximately 1890.

Data from all other stations are stored in DMI’s database from approximately 1970 or from establishment. Fortunately files with mean, maximum and minimum values on a monthly and yearly basis up till approximately 1970 have been maintained, but with no explanation at all and especially with no indication regarding number of observation used for calculations or eliminations.

Until approximately 1970 data were collected on an hourly basis – with timestamp 00:00, 01:00, 02:00 ..... 23:00. Since then data has been collected every 15 minute and later on every 10 minute but for the sake of homogeneity only data with hourly timestamp are used.

Datum
All data are converted to datum = LN, where LN is local zero, which is the originally established mean sea level (MSL) for each station.

Conversion from LN to DVR (Danish Vertical Reference) is outlined for each station.

Data processing
Data are converted to datum with no further processing. No corrections are made due changes in meteorology, oceanography, geology/geodesy and climatology on local, regional or global scale, potential anthropogenic effects on local scale and maybe more important changes in instruments and/or measurement methods, position, harbor construction etc. etc.

Mean is calculated as simple average (arithmetic mean).
Maximum is largest value.
Minimum is smallest value.
Number of observations is the number of observations used for calculations of mean, maximum and minimum.

Units
All measures of the sea level are in cm. and therefore data are presented in cm.

Meta data
Positions as latitude and longitude in ED50 and as coordinates in UTM ED50 are outlined for each station

Presentation
Means with more than 90 % data (number of observations – if available) are plotted on monthly and yearly basis, respectively. Trend/year and summarized trend during the timespan is calculated and included in each plot.
Issues found in the former report and corresponding data
This report is a sequel to and update of former report published on www.dmi.dk:

No. 13-15
Lonny Hansen
Sea level data 1889-2012 from 14 stations in Denmark
Mean, maximum and minimum values calculated on monthly and yearly basis including plots of mean values

Errors found in data and plots in this report have been addressed and revised, if possible: If not, they are described below.

Data 1889++ - high water. Until approximately 1970 registrations of sea level were continuous drawn on paper (wide sheet on a roll), and later read and written manually on datasheets with hourly value. These datasheets reveals gaps in data seen mainly at high water. These gaps might be due to the fact, that the paper had insufficient width. Unfortunately all rolls of paper with original registrations are lost and therefore no further investigation is possible.

Rødbyhavn: Data 1980 - 1985 has been revised due to erroneous values

All stations. Data 2010 - 2012 has been revised due to few erroneous values and new updated levellings.

Esbjerg. Extreme low mean value February 1947. Relevant datasheet has been revisited but there is no indication of errors in these data. Associated roll of paper is lost – see above.
Hirtshals – 20047

Position
From | WGS84 | UTM (m) – ED50
| Latitude | Longitude | Zone | Northing | Easting |
|---------|----------|--------|--------|----------|---------|
| 01-01-1891 | 57° 35,6’ | 9° 57,5’ | 32V | 6384044 | 557410 |
| 18-12-1952 | 57° 35,7’ | 9° 57,8’ | 32V | 6384248 | 557615 |

Monthly mean sea level (MSL) relative to datum
Hirtshals - 20047

Trend = -0.02 cm/year equal to -3.2 cm in 127 years

Yearly mean sea level (MSL) relative to datum
Hirtshals - 20047

Trend = -0.02 cm/year equal to -3.0 cm in 127 years

Datum
DVR - LN

Offset in cm. -1

LN is local zero, which is the originally established mean sea level (MSL) for the station
DVR is Danish Vertical Reference
Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
Frederikshavn – 20101

<table>
<thead>
<tr>
<th>Position From</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Zone</th>
<th>Northing ED50</th>
<th>Easting ED50</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1893</td>
<td>57° 26.0'</td>
<td>10° 33.2'</td>
<td>32V</td>
<td>6366897</td>
<td>593309</td>
</tr>
<tr>
<td>13-06-1957</td>
<td>57° 26.1'</td>
<td>10° 32.6'</td>
<td>32V</td>
<td>6367071</td>
<td>592776</td>
</tr>
<tr>
<td>14-01-1970</td>
<td>57° 26.1'</td>
<td>10° 32.7'</td>
<td>32V</td>
<td>6367088</td>
<td>592839</td>
</tr>
<tr>
<td>02-12-1977</td>
<td>57° 26.2'</td>
<td>10° 33.1'</td>
<td>32V</td>
<td>6367233</td>
<td>593250</td>
</tr>
<tr>
<td>01-10-1987</td>
<td>57° 26.2'</td>
<td>10° 32.9'</td>
<td>32V</td>
<td>6367168</td>
<td>592985</td>
</tr>
<tr>
<td>25-03-2014</td>
<td>57° 26.1'</td>
<td>10° 32.9'</td>
<td>32V</td>
<td>6367157</td>
<td>593004</td>
</tr>
</tbody>
</table>

Monthly mean sea level (MSL) relative to datum
Frederikshavn - 20101

Trend = 0.01 cm/year equal to 1.0 cm in 125 years

Yearly mean sea level (MSL) relative to datum
Frederikshavn - 20101

Trend = 0.01 cm/year equal to 0.7 cm in 125 years

Datum
DVR - LN

Offset in cm. -3

LN is local zero, which is the originally established mean sea level (MSL) for the station
DVR is Danish Vertical Reference
Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
## Hanstholm – 20047

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>UTM (m) – ED50 Zone</th>
<th>UTM (m) – ED50 Northing</th>
<th>UTM (m) – ED50 Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1969</td>
<td>57° 7,3'</td>
<td>8° 36,1'</td>
<td>32V</td>
<td>6331200</td>
<td>475950</td>
</tr>
<tr>
<td>21-09-1989</td>
<td>57° 7,1'</td>
<td>8° 35,7'</td>
<td>32V</td>
<td>6330824</td>
<td>475514</td>
</tr>
<tr>
<td>02-06-2014</td>
<td>57° 7,2'</td>
<td>8° 35,7'</td>
<td>32V</td>
<td>6331028</td>
<td>475587</td>
</tr>
</tbody>
</table>

### Monthly mean sea level (MSL) relative to datum

Hanstholm - 21009

Trend = 0.19 cm/year equal to 9.4 cm in 49 years

### Yearly mean sea level (MSL) relative to datum

Hirtshals - 20047

Trend = -0.02 cm/year equal to -3.0 cm in 127 years

### Datum

Offset in cm. -4

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
Århus – 22331

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>Zone</th>
<th>UTM (m) – ED50 Northing</th>
<th>UTM (m) – ED50 Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1890</td>
<td>56° 9,5’</td>
<td>10° 13’</td>
<td>32V</td>
<td>6224532</td>
<td>575678</td>
</tr>
<tr>
<td>16-06-1938</td>
<td>56° 10,2’</td>
<td>10° 13,4’</td>
<td>32V</td>
<td>6225799</td>
<td>576057</td>
</tr>
<tr>
<td>08-07-1992</td>
<td>56° 8,8’</td>
<td>10° 13,4’</td>
<td>32V</td>
<td>6223284</td>
<td>576039</td>
</tr>
</tbody>
</table>

**Monthly mean sea level (MSL) relative to datum Århus - 22331**

Trend = 0.07 cm/year equals to 8.6 cm in 128 years

**Yearly mean sea level (MSL) relative to datum Århus - 22331**

Trend = 0.07 cm/year equals to 8.9 cm in 128 years

**Datum**

DVR - LN

Offset in cm. -3

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
Fredericia – 23293

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>UTM (m) – ED50 Zone</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1890</td>
<td>55° 33,6'</td>
<td>9° 45,2'</td>
<td>32U</td>
<td>6157593</td>
<td>547587</td>
</tr>
<tr>
<td>14-08-2014</td>
<td>55° 33,6'</td>
<td>9° 45,2'</td>
<td>32U</td>
<td>6157518</td>
<td>547579</td>
</tr>
</tbody>
</table>

Monthly mean sea level (MSL) relative to datum
Fredericia - 23293

Trend = 0.11 cm./year equal to 14.3 cm. in 128 years

Yearly mean sea level (MSL) relative to datum
Fredericia - 23293

Trend = 0.11 cm./year equal to 14.2 cm. in 128 years

<table>
<thead>
<tr>
<th>Datum</th>
<th>DVR - LN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset in cm.</td>
<td>-9</td>
</tr>
</tbody>
</table>

LN is local zero, which is the originally established mean sea level (MSL) for the station
DVR is Danish Vertical Reference
Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
### Esbjerg – 25149

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>UTM (m) – ED50 Zone</th>
<th>UTM (m) – ED50 Northing</th>
<th>UTM (m) – ED50 Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1889</td>
<td>55° 27,6'</td>
<td>8° 26,4'</td>
<td>32U</td>
<td>6146350</td>
<td>464650</td>
</tr>
</tbody>
</table>

#### Monthly mean sea level (MSL) relative to datum

**Esbjerg - 25149**

- Trend = 0.13 cm./year equal to 16.3 cm. in 129 years

#### Yearly mean sea level (MSL) relative to datum

**Esbjerg - 25149**

- Trend = 0.13 cm./year equal to 16.1 cm. in 129 years

#### Datum

**DVR - LN**

---

**Offset in cm.**

-11

LN is local zero, which is the originally established mean sea level (MSL) for the station.

DVR is Danish Vertical Reference.

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
# Fynshav – 26457

<table>
<thead>
<tr>
<th>Position From</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Zone</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1970</td>
<td>54° 59,7’</td>
<td>9° 59,1’</td>
<td>32U</td>
<td>6094855</td>
<td>563096</td>
</tr>
<tr>
<td>29-10-1991</td>
<td>54° 59,7’</td>
<td>9° 59,1’</td>
<td>32U</td>
<td>6094848</td>
<td>563106</td>
</tr>
<tr>
<td>29-09-2010</td>
<td>54° 59,7’</td>
<td>9° 59,1’</td>
<td>32U</td>
<td>6094818</td>
<td>563138</td>
</tr>
</tbody>
</table>

## Monthly mean sea level (MSL) relative to datum

Fynshav - 26457

Trend = 0.21 cm/year equals 10.2 cm in 48 years

## Yearly mean sea level (MSL) relative to datum

Fynshav - 26457

Trend = 0.20 cm/year equals 9.7 cm in 48 years

### Datum

<table>
<thead>
<tr>
<th>DVR - LN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset in cm.</td>
</tr>
</tbody>
</table>

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
### Slipshavn – 28234

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50</th>
<th>UTM (m) – ED50</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>Latitude</td>
<td>Longitude</td>
</tr>
<tr>
<td>01-01-1890</td>
<td>55° 17.3'</td>
<td>10° 49.6'</td>
</tr>
<tr>
<td>18-11-1996</td>
<td>55° 17.3'</td>
<td>10° 49.6'</td>
</tr>
</tbody>
</table>

---

**Monthly mean sea level (MSL) relative to datum**

**Slipshavn – 28234**

![Graph showing monthly mean sea level](image)

**Trend** = 0.10 cm/year equals 13.3 cm in 128 years

---

**Yearly mean sea level (MSL) relative to datum**

**Slipshavn – 28234**

![Graph showing yearly mean sea level](image)

**Trend** = 0.11 cm/year equals 13.5 cm in 128 years

---

**Datum**

DVR - LN

**Offset in cm.**

-7

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
## Korsør – 29393

<table>
<thead>
<tr>
<th>From</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Zone</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1890</td>
<td>55° 19,8'</td>
<td>11° 8,6'</td>
<td>32U</td>
<td>6133865</td>
<td>636005</td>
</tr>
<tr>
<td>01-08-1924</td>
<td>55° 20,1'</td>
<td>11° 8,3'</td>
<td>32U</td>
<td>6134412</td>
<td>635754</td>
</tr>
<tr>
<td>16-10-1991</td>
<td>55° 20,1'</td>
<td>11° 8,3'</td>
<td>32U</td>
<td>6134411</td>
<td>635755</td>
</tr>
<tr>
<td>12-10-2000</td>
<td>55° 19,9'</td>
<td>11° 8,5'</td>
<td>32U</td>
<td>6133974</td>
<td>635890</td>
</tr>
<tr>
<td>13-05-2014</td>
<td>55° 19,8'</td>
<td>11° 8,5'</td>
<td>32U</td>
<td>6133883</td>
<td>635977</td>
</tr>
</tbody>
</table>

---

**Monthly mean sea level (MSL) relative to datum**

**Korsør - 29393**

Trend = 0.08 cm/year equal to 10.8 cm in 128 years

---

**Yearly mean sea level (MSL) relative to datum**

**Korsør - 29393**

Trend = 0.08 cm/year equal to 10.8 cm in 128 years

---

**Datum**

- **DVR - LN**

Offset in cm. -6

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
### Hornbæk – 30017

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>UTM (m) – ED50 Zone</th>
<th>UTM (m) – ED50 Northing</th>
<th>UTM (m) – ED50 Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1891</td>
<td>56° 5,6'</td>
<td>12° 27,4'</td>
<td>33V</td>
<td>6219602</td>
<td>341894</td>
</tr>
<tr>
<td>24-04-1959</td>
<td>56° 5,6'</td>
<td>12° 27,4'</td>
<td>33V</td>
<td>6219588</td>
<td>341879</td>
</tr>
</tbody>
</table>

#### Monthly mean sea level (MSL) relative to datum

**Hornbæk - 30017**

Trend = 0.04 cm./year equal to 5.5 cm. in 127 years

#### Yearly mean sea level (MSL) relative to datum

**Hornbæk - 30017**

Trend = 0.05 cm./year equal to 6.1 cm. in 127 years

#### Datum

**DVR - LN**

Offset in cm. -2

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
København – 30336

<table>
<thead>
<tr>
<th>Date</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Zone</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1989</td>
<td>55° 41,4'</td>
<td>12° 36'</td>
<td>33U</td>
<td>6174345</td>
<td>349160</td>
</tr>
<tr>
<td>01-01-1985</td>
<td>55° 41,4'</td>
<td>12° 36'</td>
<td>33U</td>
<td>6174327</td>
<td>349154</td>
</tr>
<tr>
<td>24-06-1999</td>
<td>55° 42,3'</td>
<td>12° 35,9'</td>
<td>33U</td>
<td>6175974</td>
<td>349185</td>
</tr>
<tr>
<td>06-04-2001</td>
<td>55° 42,3'</td>
<td>12° 35,9'</td>
<td>33U</td>
<td>6175994</td>
<td>349197</td>
</tr>
<tr>
<td>19-01-2011</td>
<td>55° 42,3'</td>
<td>12° 35,9'</td>
<td>33U</td>
<td>6175981</td>
<td>349194</td>
</tr>
</tbody>
</table>

Monthly mean sea level (MSL) relative to datum
KBH - 30336

Trend = 0.05 cm/year equal to 7.0 cm in 129 years

Yearly mean sea level (MSL) relative to datum
København - 30336

Trend = 0.06 cm/year equal to 8.1 cm in 129 years

Datum
DVR - LN
Offset in cm.
0

LN is local zero, which is the originally established mean sea level (MSL) for the station
DVR is Danish Vertical Reference
Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
Rødbyhavn – 31573

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 From</th>
<th>UTM (m) – ED50</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1955</td>
<td>54° 39,3'</td>
<td>32U 6059150</td>
</tr>
<tr>
<td>39-04-2014</td>
<td>54° 39,4'</td>
<td>32U 6059262</td>
</tr>
</tbody>
</table>

Monthly mean sea level (MSL) relative to datum

Rødbyhavn - 31573

Trend = 0.14 cm/year equal to 8.7 cm in 63 years

Yearly mean sea level (MSL) relative to datum

Rødbyhavn - 31573

Trend = 0.14 cm/year equal to 8.7 cm in 63 years

Datum

DVR - LN

Offset in cm. -6

LN is local zero, which is the originally established mean sea level (MSL) for the station
DVR is Danish Vertical Reference
Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset
### Gedser – 31616

<table>
<thead>
<tr>
<th>Position From</th>
<th>ED50 Latitude</th>
<th>ED50 Longitude</th>
<th>Zone</th>
<th>UTM (m) – ED50 Northing</th>
<th>UTM (m) – ED50 Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1892</td>
<td>54° 34,3'</td>
<td>11° 55,4'</td>
<td>32U</td>
<td>6051340</td>
<td>689090</td>
</tr>
<tr>
<td>23-11-2001</td>
<td>54° 34,3'</td>
<td>11° 55,5'</td>
<td>32U</td>
<td>6051317</td>
<td>689115</td>
</tr>
</tbody>
</table>

---

**Monthly mean sea level (MSL) relative to datum**

Gedser - 31616

![Monthly mean sea level graph]

**Trend** = 0.12 cm/year equal to 14.7 cm in 126 years

---

**Yearly mean sea level (MSL) relative to datum**

Gedser - 31616

![Yearly mean sea level graph]

**Trend** = 0.12 cm/year equal to 15.0 cm in 126 years

---

**Datum**

<table>
<thead>
<tr>
<th>DVR - LN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset in cm.</td>
</tr>
</tbody>
</table>

LN is local zero, which is the originally established mean sea level (MSL) for the station

DVR is Danish Vertical Reference

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset

---
### Tejn – 32048

<table>
<thead>
<tr>
<th>Position From</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Zone</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-01-1993</td>
<td>55° 14,9'</td>
<td>14° 50,2'</td>
<td>33U</td>
<td>6122711</td>
<td>489692</td>
</tr>
</tbody>
</table>

#### Monthly mean sea level (MSL) relative to datum

**Tejn - 32048**

Trend = 0.17 cm/year equal to 4.2 cm in 25 years

#### Yearly mean sea level (MSL) relative to datum

**Tejn - 32048**

Trend = 0.18 cm/year equal to 4.6 cm in 25 years

---

**Datum**

<table>
<thead>
<tr>
<th>DVR - LN</th>
</tr>
</thead>
</table>

Offset in cm. -8

LN is local zero, which is the originally established mean sea level (MSL) for the station.

DVR is Danish Vertical Reference.

Conversion from sea level (LN) to sea level (DVR): sea level (DVR) = sea level (LN) + offset.
### Attached files

Attached files are named `month.csv` and `year.csv`. The files are semicolon-separated with header-information in line 1 to 3 and data from line 4 and onwards as described below.

#### month.csv

<table>
<thead>
<tr>
<th>Column</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>......</th>
<th>98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station2</td>
<td>Name of station2</td>
<td>......</td>
<td>Name of station14</td>
</tr>
<tr>
<td>Line 2</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station2</td>
<td>DMI number of station2</td>
<td>......</td>
<td></td>
</tr>
<tr>
<td>Line 3</td>
<td>Year</td>
<td>Month</td>
<td>Mean</td>
<td>Maximum</td>
<td>Minimum</td>
<td>NOO</td>
<td>Mean for plot</td>
<td>Year</td>
<td>......</td>
<td>Mean for plot</td>
</tr>
<tr>
<td>Data Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1551</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### year.csv

<table>
<thead>
<tr>
<th>Column</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>......</th>
<th>84</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station1</td>
<td>Name of station2</td>
<td>Name of station2</td>
<td>......</td>
</tr>
<tr>
<td>Line 2</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station1</td>
<td>DMI number of station2</td>
<td>DMI number of station2</td>
<td>......</td>
</tr>
<tr>
<td>Line 3</td>
<td>Year</td>
<td>Mean</td>
<td>Maximum</td>
<td>Minimum</td>
<td>NOO</td>
<td>Mean for plot</td>
<td>Year</td>
<td>......</td>
<td>Mean for plot</td>
</tr>
<tr>
<td>Data Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>132</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“NOO” is number of observations for actual month and year, respectively. “Mean for plot” is average calculated only if number of observations >= 90 %. Missing values indicate no data.
Previous reports

Previous reports from the Danish Meteorological Institute can be found on:
http://www.dmi.dk/