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**Identifier**

[doi:10.5676/DWD\\_EMIR/V002](https://doi.org/10.5676/DWD_EMIR/V002)

**identifierType**

DOI

**Creator**

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**Title**

Total column water vapour from the Microwave Radiometer (MWR) instruments onboard ERS-1, ERS-2, and ENVISAT Version 1.1

**Publisher**

Deutscher Wetterdienst (DWD)

**PublicationYear**

2018

**Subject**

551 Geology, hydrology, meteorology

**subjectScheme**

Dewey Decimal Classification (DDC)

**contributerType**

Funder

**contributerName**

European Space Agency (ESA)

**Date**

1992-10-23/2012-04-08

**dateType**

Available

**ResourceType**

Research Data

**resourceTypeGeneral**

Dataset

**Size**

Level-2 orbital data have a size of typically 2.0 MB and comprise 1 day of data. Level-3 monthly means encompass the full time series and amount to 57.6 MB at  $2^\circ \times 2^\circ$  and 25.6 MB at  $3^\circ \times 3^\circ$  resolution.

**Format**

NetCDF CF-1.6

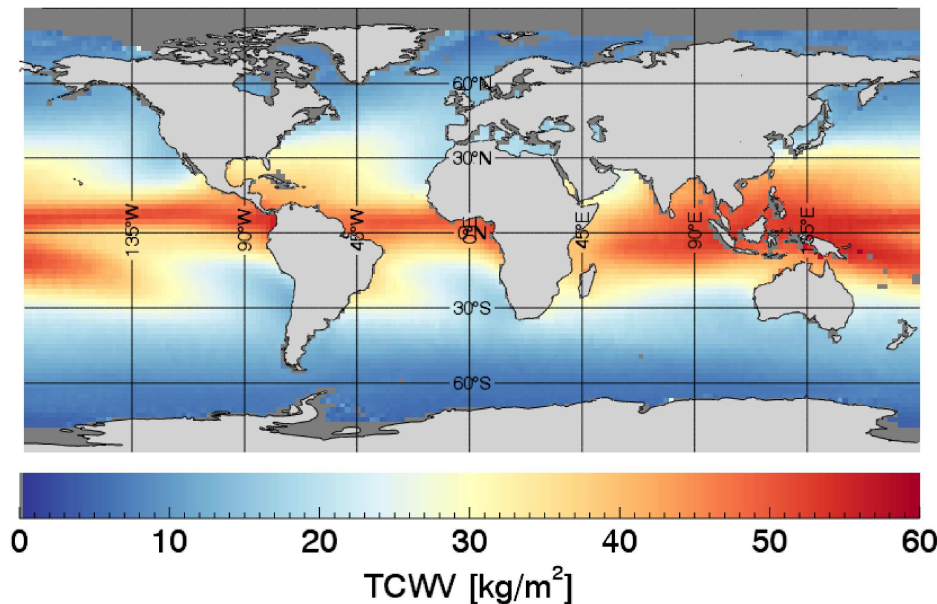
**Version**

EMiR Version 1.1

## Description

### MWR Total Column Water Vapor Climatology

1992-2012 ERS-1/ERS-2/ENVISAT



The Microwave Radiometer (MWR) flown on-board Envisat, ERS-1, and ERS-2 has provided a time series of global microwave observations over a period of nearly 21 years between 1991 and 2012. A successor instrument with very similar characteristics will be carried on-board the Sentinel-3 suite of satellites, which will extend the availability of the MWR observations from early 2016 well into the mid-2020s and possibly beyond.

Unlike methods relying on infrared or visible/near-infrared techniques, microwave observations allow for accurate retrievals of total column water vapour (TCWV) and liquid water path (LWP) also under cloudy conditions. In order to improve the quality and usefulness of MWR observations, the European Space Agency (ESA) has commissioned the project "*ERS/Envisat MWR Recalibration and Water Vapour Thematic Data Record Generation*" (EMiR) as part of their Long-Term Data Preservation (LTDP) activities. In this context, fully re- and inter-calibrated data records of MWR brightness temperatures and derived TCWV have been generated. In support of ocean altimetry, the wet tropospheric delay has been additionally calculated from the EMiR TCWV and ERA-Interim atmospheric fields.

The current EMiR version 1.1 improves on the previous version 1.0 by providing additional geophysical fields, such as the prior TCWV and solar zenith angle, as well as error estimates and further ancillary data to support user-specific quality assurance procedures.

The differences between EMiR versions 1.0 and this updated version 1.1 are outlined in more detail in the EMIR Data record Version 1.1 [Product Description](#).

The EMiR dataset is provided for individual orbits at MWR's native spatial resolution of typically 20 km (Level-2) as well in a gridded form for monthly mean values in spatial resolutions of  $2^\circ \times 2^\circ$  and  $3^\circ \times 3^\circ$  (Level 3).

#### descriptionType

Abstract

#### geoLocationPlace

The EMiR dataset is available for the global ice-free ocean.

#### Known issues

- ERS-1 data between prior to 1992/10/23 have not been used for the generation of the EMiR dataset since the altimeter time tag is not available for this period.
- There are a number of observation gaps in the EMiR dataset, the longest one between 1993/12/21 and 1994/04/09 (ERS-1). The full list of missing data is given in this document [LINK](#)
- Closer than ca. 50 km to the coastline, the product quality is reduced due to land contamination.
- Product quality is also reduced in the presence of heavy precipitation.

### **Data access**

- Level 2, swath-based data:  
[https://public.satproj.klima.dwd.de/data/ESA\\_EMIR/EMIR\\_MWR\\_full\\_newset\\_v1.1/Level2/](https://public.satproj.klima.dwd.de/data/ESA_EMIR/EMIR_MWR_full_newset_v1.1/Level2/)
- Level 3, monthly mean values at  $2^\circ \times 2^\circ$  and  $3^\circ \times 3^\circ$ :  
[https://public.satproj.klima.dwd.de/data/ESA\\_EMIR/EMIR\\_MWR\\_full\\_newset\\_v1.1/Level3/](https://public.satproj.klima.dwd.de/data/ESA_EMIR/EMIR_MWR_full_newset_v1.1/Level3/)

### **Disclaimer**

The EMiR dataset was assembled as a service to the atmospheric and oceanic research community. No warranties to the correctness and accuracy of the information therein can be made.

### **Cite this work**

The EMiR dataset should be cited as follows: Bennartz, R., M. Stengel, M. Schröder, R. Hollmann, B. Picard, and F. Fell (2016): Total column water vapour from the Microwave Radiometer (MWR) instruments onboard ERS-1, ERS-2, and ENVISAT, [doi:10.5676/DWD\\_EMIR/V002](https://doi.org/10.5676/DWD_EMIR/V002).

### **Data Protection Policy**

<https://www.dwd.de/EN/service/dataprotection/dataprotection.html>