README file for the "WFDEI" dataset (version: 18th September 2013)**.**
(This document is available for download at: www.eu-watch.org/data_availability)

Latest news:

18th Sept. 2013:	Years 2010, 2011, 2012 added (see **File updates** for further information).
31st July 2012:	WFDEI initial release.

Content: Eight meteorological variables at 3-hourly time steps, and as daily averages, for the global land surface at 0.5° x 0.5° resolution including Antarctica. WFDEI = "WATCH Forcing Data methodology applied to ERA-Interim data".

Data usage: These data are provided for bona fide research purposes only. No warranty is given as to their suitability for user applications. No liability is accepted by the authors for any errors or omissions in the data or associated information and/or documentation.

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Fair use: If publishing using the WFDEI please cite (full references below):

Authorship: Weedon, G.P., Gomes, S., Balsamo, G., Best, M.J., Bellouin, N., Viterbo, P., 2012.

Methodology:	Weedon et al., 2010; Weedon et al., 2011 and WFDEI announcement paper (in prep. Sept. 2013).	
ERA-Interim basis data:	Dee et al., 2011	
Monthly observations for corrections:	*CRU TS3.1/TS3.21*:	Harris et al., 2013
	GPCCv5/v6:	Schneider et al., 2013

References:

Dee et al. 2011. The ERA-Interim reanalysis: configuration and performance of the data assimilation system. *Q. J. R. Meteorol. Soc.* 137, 553-597.

Harris, I., P.D. Jones, T.J. Osborn and D.H. Lister, 2013. Updated high-resolution grids of monthly climatic observations - the CRU TS3.10 dataset. *Int. J. Climatol.* doi: 10.1002/joc.3711.

Schneider, U., A. Becker, P. Finger, A. Meyer-Christoffer, M. Zuise, B. Rudolf, 2013. GPCC's new land surface precipitation climatology based on quality-controlled in situ data and its role in quantifying the global water cycle. *Theor. Appl. Climatol.* doi:10.1007/s00704-013-0860-x.

Weedon, G.P., Gomes, S., Viterbo, P., Österle, H., Adam, J.C., Bellouin, N., Boucher, O., and Best, M., 2010. The WATCH Forcing Data 1958-2001: a meteorological forcing dataset for land surface- and hydrological models. *WATCH Tech. Rep.* 22, 41p (available at www.eu-watch.org/publications).

Weedon, G.P., Gomes, S., Viterbo, P., Shuttleworth, W.J., Blyth, E., Österle, H., Adam, J.C., Bellouin, N, Boucher, O., and Best, M., 2011. Creation of the WATCH Forcing data and its use to assess global and regional reference crop evaporation over land during the twentieth century. *J. Hydrometerol.* 12, 823-848, doi: 10.1175/2011JHM1369.1.

Access:

a) URL (e.g. for easy checking of directory structure, update dates and file sizes):
ftp://rfdata:forceDATA@ftp.iiasa.ac.at and click on /WATCH_Forcing_Data and /WFDEI

b) ftp downloads of individual files:
ftp.iiasa.ac.at, un=rfdata, pw=forceDATA then: "cwd /WFDEI".

Navigation and additional information:

All WFDEI data files include grid-box centre longitude and latitude (on a regular longitude-latitude 720 x 360 grid). File "WFDEI-elevation.nc" provides full-grid elevation data. For an ascii list of land points only as used in the WFDEI, see file "WFDEI-land-long-lat-height.txt". File "WFDEI-CRU-points-excluded.txt" is an ascii list of the CRU land points excluded from the WFDEI (but included in the WATCH Forcing Data = WFD).

Comparison with WFD:

NB: Since ERA-Interim used 4D-var reanalysis whereas ERA-40 used 3D-var it is inevitable that there will be offsets in some variables and some time steps between the WFDEI and WFD within the overlap interval (1979-2001).

	WFD	**WFDEI**
Coverage:	Full years: 1901-2001 0.5 x 0.5 global land (excluding Antarctica)	Full years: 1979-2012 0.5 x 0.5 global land *including* Antarctica
Basis:	ERA-40	ERA-Interim
Monthly corrections:	CRU TS2.1 GPCCv4	CRU TS3.1/TS3.101/TS3.21 GPCCv5/v6
Format:	Land points only, 3-hourly or 6-hourly and Daily, NetCDF (each file = 1 month)	Full grid (720 x 360), 3-hourly and Daily, NetCDF, gzipped (each file = 1 month)
Number of land points	67,420 (exc. Antarctica) CRU land-sea mask.	67,209 outside Antarctica (NB: 211 CRU points excluded as not genuine) plus 27,533 within Antarctica
3-hourly flux variables:		
LWdown	Average over next 3 hours	Average over previous 3 hours
SWdown	Average over next 3 hours	Average over previous 3 hours
Rainf-GPCC	Average over next 3 hours	Average over previous 3 hours
Snowf-GPCC	Average over next 3 hours	Average over previous 3 hours
Rainf-CRU	Average over next 3 hours	Average over previous 3 hours
Snowf-CRU	Average over next 3 hours	Average over previous 3 hours

(NB: All daily flux files are based on averages of the 3-hourly data for the current day).

File nomenclature and units:

Filenames include year and month e.g. "Tair_WFDEI_200912.nc" refers to 3-hourly Tair data for December 2009, "Rainf_daily_WFDEI_GPCC_197904.nc" refers to daily average Rainf data, created using GPCCv5 corrections (rather than CRU corrections), for April 1979. File naming and units follow the ALMA convention (see www.lmd.jussieu.fr/~polcher/ALMA/).

NB: To convert rainfall or snowfall rates (3 hourly or daily) to accumulated mm from kg/m^2s multiply by 10800 or 86400 (i.e. the number of seconds in 3 hours or 24 hours).

Filename	ALMA name	Variable description	Units (ALMA)
Tair_WFDEI	Tair	2 m instantaneous air temperature	K
Wind_WFDEI	Wind	10 m instantaneous wind speed	m/s
PSurf_WFDEI	PSurf	Instantaneous surface pressure	Pa
Qair_WFDEI	Qair	2 m instantaneous specific humidity	kg/kg
LWdown_WFDEI	LWdown	Long-wave downwards surface radiation flux (average over previous 3 hours)	W/m^2
SWdown_WFDEI	SWdown	Long-wave downwards surface radiation flux (average over previous 3 hours)	W/m^2
Rainf_WFDEI_GPCC	Rainf	Rainfall rate, bias corrected with GPCCv5 data (v6 for 2010) and gauge "catch corrected" (average over previous 3 hours).	kg/m^2s
Snowf_WFDEI_GPCC	Snowf	Snowfall rate, bias corrected with GPCCv5 data (v6 for 2010) and gauge "catch corrected" (average over previous 3 hours).	kg/m^2s
Rainf_WFDEI_CRU	Rainf	Rainfall rate, bias corrected with CRU TS3.101 data (TS3.21 for 2010-2012) and gauge "catch corrected" (average over previous 3 hrs).	kg/m^2s
Snowf_WFDEI_CRU	Snowf	Snowfall rate, bias corrected with CRU TS3.101 data (TS3.21 for 2010-2012) and gauge "catch corrected" (average over previous 3 hrs).	kg/m^2s

File updates:

18th Sept. 2013:

The 1979-2009 WFDEI files are unchanged. NB: Files named Rainf_WFDEI_GPCC and Snowf_WFDEI_GPCC are not yet available for 2011 and 2012 (GPCC updates are running behind CRU updates). Bias correction for 2010-2012 files used CRU TS3.21. GPCC versions of Rainf_WFDEI and Snowf_WFDEI for 2010 used GPCCv6.

Acknowledgements:

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