

Study and short name	Variables studied	Record period and resolution	Data source	Region	Notes
Gaffen & Ross (1999) (GR)	RH and T (observed), q , e and T_{dw} (derived)	1961-1995, hourly, 188 station and 8 region averages	National Weather Service surface airways data from the National Solar Radiation Data Base (NSRDB) and National Climatic Data Center (NCDC).	US	<ul style="list-style-type: none"> - QC – rejection of physically unreasonable data (if T or $T_{dw} < -70$ or > 60 ° C, if $T_{dw} > T$, if $RH < 0$ or > 100 %) and stations with significant gaps - homogeneity checked – effects of known instrument changes found not to be significant - non-parametric trend fitted with resistance to outliers - significance tested
Robinson (2000) (ROB)	T_{dw} (observed)	1951-1992, 3 hourly, 178 stations	National Weather Service surface airways data from the NCDC.	US	<ul style="list-style-type: none"> - QC – rejection of extreme and internally inconsistent data and stations with > 4 yrs of missing data - homogeneity checked – stations with a suspected abrupt discontinuity are removed - linear trends fitted
van Wijngaarden & Vincent (2005) (VWV)	RH (observed)	1953-2003, hourly, 75 stations	Airport data from the National Climate Data and Information Archive of the Meteorological Service (NCDIAMS) of Canada.	Canada	<ul style="list-style-type: none"> - QC – rejection of stations with less than 40 yrs of data or > 1 % missing data (5 % for Arctic stations) - homogeneity checked – a simultaneous discontinuity appears in a number of stations and so trend fitting attempts to account for this - linear trend fitted - significance tested
Kaiser (2000) (KAI)	RH and e (observed)	1954-1996, 6 hourly, 196 stations	China Meteorological Administration data from the US Department of Energy Carbon Dioxide Information Analysis Center (CDIAC) and the Hahn & Warren (1999) dataset.	China	<ul style="list-style-type: none"> - homogeneity checked – stations with a suspected abrupt discontinuity are removed - linear trend fitted - significance tested

Table 1.2: Key studies of surface humidity. Continued on next two pages. QC stands for quality control.

Study and short name	Variables studied	Record period and resolution	Data source	Region	Notes
Wang & Gaffen (2001) (WG)	T and RH (observed), q , T_{dw} and e (derived)	1951-1994, 6 hourly, 196 stations	China Meteorological Administration data from the US Department of Energy CDIAC.	China	<ul style="list-style-type: none"> - QC – rejection of data outlying 3σ - homogeneity checked – adjustments made to stations that change location - non-parametric trend fitted with resistance to outliers - significance tested
Schönwiese & Rapp (1997); Schönwiese <i>et al.</i> (1994); IPCC (Folland <i>et al.</i> , 2001b) (SSR)	e (observed)	1961-1990, monthly, 55 stations interpolated to 3° by 3° grids	Data from the: National Centers for Atmospheric Research (NCAR); US Department of Energy CDIAC; Goddard Institute of Space Studies (GISS); Monthly Climatic Data for the World (MCDW) collected by the World Meteorological Organisation (WMO); publications from National Weather Services; and private collections.	Europe (15° W - 50° E, 35° - 72° N)	<ul style="list-style-type: none"> - QC – rejection of stations with > 3 yr gaps and evident errors corrected - linear trends fitted - significance tested
New <i>et al.</i> (2000); IPCC (Folland <i>et al.</i> , 2001b) (NEW)	e and RH (observed), e (derived at monthly resolution)	1975-1995, monthly, 5940 stations interpolated to 0.5° by 0.5° grids	70 sources including: National Meteorological Agencies; monthly CLIMAT reports; Climate Research Unit (CRU) data; Centro Internacional de Agricultura Tropical (CIAT) and the Food and Agricultural Organisation (FAO).	Global (land only)	<ul style="list-style-type: none"> - QC – rejection of data that: breaches extreme thresholds; does not conform to the seasonal cycle; and is inconsistent with other variables - trend fitted - significance tested

Table 1.2: Key studies of surface humidity. Continued from previous page and continued on next two page. QC stands for quality control.

Study and short name	Variables studied	Record period and resolution	Data source	Region	Notes
Dai (2006) (DAI)	T_{dw} (observed), RH and q (derived at 3 hourly resolution)	1975-2005, monthly, 15 000 weather stations gridded to 1° by 1° grids and ship data gridded to 4° by 5° grids	DS464.0 data from NCAR and ICOADS and ICOADS real-time data from the National Oceanic and Atmospheric Administration (NOAA)	Global (land and marine)	- QC - rejection of observations where T or $T_{dw} < -80$ or > 60 °C; $RH < 0$ or > 100 %; $q < 0$ or > 99 g kg ⁻¹ ; or where any variable exceeds 4.5 σ from the 1° by 1° grid-box mean - linear trend fitted - significance tested
Ishii <i>et al.</i> (2005) (ISSM)	T_{dw} (observed – or primary data reported)	1901-2001, monthly, ship, buoy and marine platform data gridded to 1° by 1° grids	Marine data from: the Kobe Collection; ICOADS release 2; a buoy dataset compiled by the Marine Environment Data Service (MEDS) of Canada; and weather reports from the Global Telecommunications System (GTS).	Global (marine only)	- QC – rejection of data that: lies outside the normal range for each latitude band or ocean basin; is internally inconsistent; fails ship track, position and date checks; or if the callsign or ship ID is blacklisted - homogeneity checked – all observations are compared with neighbours and rejected if not suitably consistent
Worley <i>et al.</i> (2003), http://dss.ucar.edu/datasets/ds540.1/ (WOR)	q (observed – or primary data reported), RH (derived)	1800-2005 for 2° by 2° grids, 1960-2005 for 1° by 1° grids, monthly, ship, buoy and marine platform data	ICOADS Release 2.3	Global (marine only)	- QC – rejection of data that: exceeds 3.5 σ from a smoothed median; is internally inconsistent; or fails a ship position check

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