GEWEX Merged Product and GEWEX Integrated Product

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Products

The GEWEX Merged products puts these into a common file with common grids. The GEWEX Integrated product ensures full physical consistency between inputs. They both contain:

* Global Precipitation Climatology Project (GPCP)
* Int'l Satellite Cloud Climatology Project (ISCCP)
* Surface Radiation Budget (SRB)
* Sea Flux
* Land Flux (currently 3 potential products for LH)

GPCP Status

* Obtained from Bob Adler/David Bolvin
* Version 2.3 downloaded July 2016
* Data period: 1 Jan 2007 – 31 Dec 2007
* Precipitation rate (mm hr^{-1}) and Probability of precipitation (%)
* 1°, 3-hourly equal-angle grid

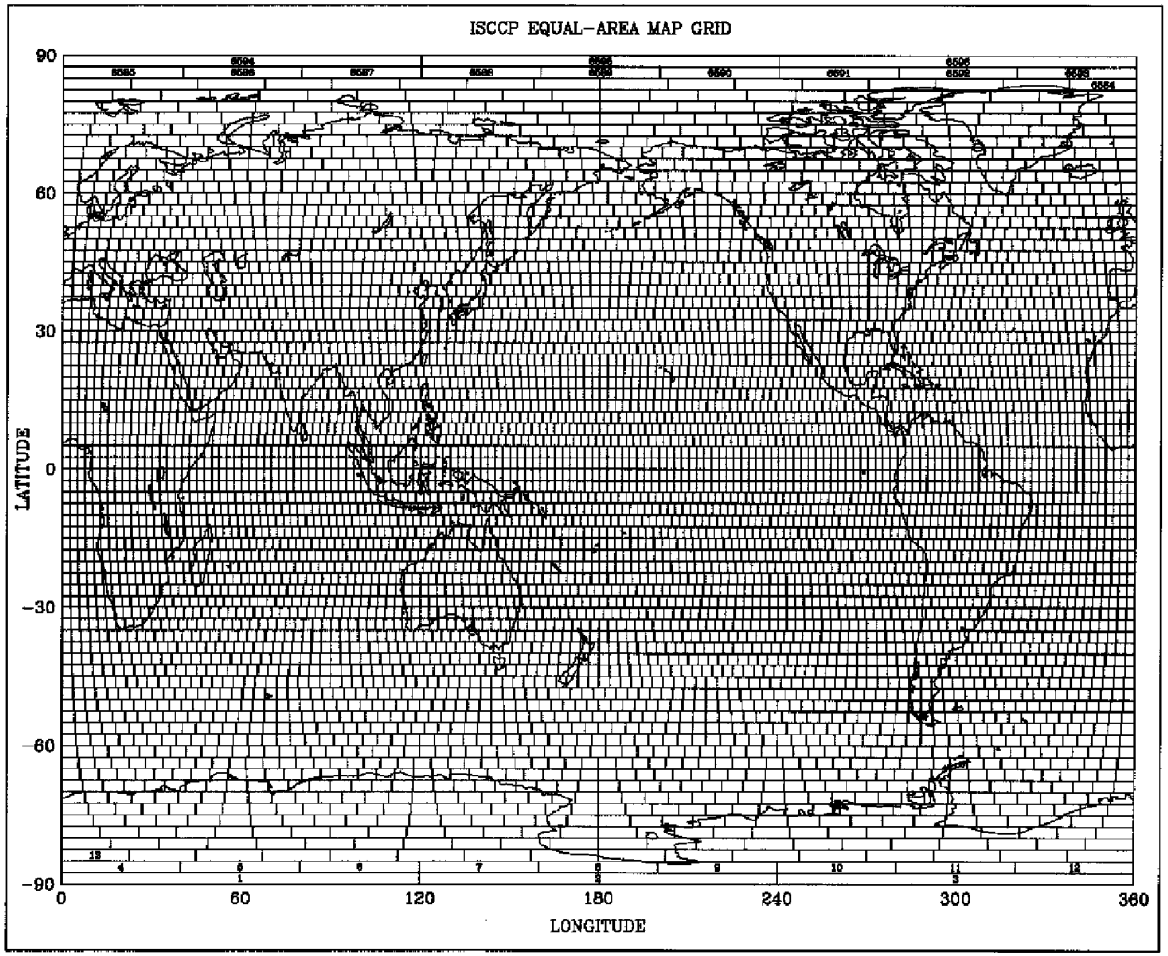
ISCCP

* Obtained from Bill Rossow
* ISCCP H-series Gridded Global downloaded April 2014
* Data period: 1 Jan 2007 – 31 Dec 2007
* 1°, 3-hourly equal-area grid

ISCCP variables

* Satellite code number
* Cell origin code
* Number of missing GMTs in gap
* Number of missing days in gap
* Number of missing weeks in gap
* Fill type code
* Scene identification
* Snow/ice cover
* Inversion occurrance
* Cosine of satellite angle
* Cosine of solar zenith angle
* Relative azimuth angle
* Total number of pixels
* Number of cloudy pixels
* Number of IR-cloudy pixels
* Number of IR-only-cloudy pixels
* Number of VIS-only-cloudy pixels
* Number of VIS/IR-marginally-cloudy pixels
* Number of IR-marginally-cloudy pixels
* Number of VIS-marginally-cloudy pixels
* Number of pixels with IR long term statistics (8<ICSLOG<17)
* Ratio of IR-clear pixels colder than clrsky to number warmer than clrsky (ITHR=3 / ITHR=1,2)
* Ratio of VIS-clear pixels brighter than clrsky to number darker than clrsky (VTHR=3 / VTHR=1,2)
* Number of IR cloudy pixels in each PC level
* Number of cloudy pixels in each PC/TAU level
* Number of cloudy pixels for cloud types
* Mean PC for cloudy pixels
* Mean PC for IR-cloudy pixels
* Mean PC for IR-only-cloudy pixels
* Mean PC for VIS-only-cloudy pixels
* Mean PC for IR-marginally-cloudy pixels
* Mean PC for VIS/IR-marginally-cloudy pixels
* Sigma-PC for IR-cloudy pixels
* Mean TC for cloudy pixels
* Mean TC for IR-cloudy pixels
* Mean TC for IR-only-cloudy pixels
* Mean TC for VIS-only-cloudy pixels
* Mean TC for IR-marginally-cloudy pixels
* Mean TC for VIS-marginally-cloudy pixels
* Mean TC for VIS/IR-marginally-cloudy pixels
* Sigma-TC for IR-cloudy pixels
* Mean TAU for cloudy pixels
* Mean TAU for IR-cloudy pixels
* Mean TAU for IR-only-cloudy pixels
* Mean TAU for VIS-only-cloudy pixels
* Mean TAU for IR-marginally-cloudy pixels
* Mean TAU for VIS-marginally-cloudy pixels
* Mean TAU for VIS/IR-marginally-cloudy pixels
* Sigma-TAU for IR-cloudy pixels
* Mean WP for cloudy pixels
* Mean WP for IR-cloudy pixels
* Mean WP for IR-only-cloudy pixels
* Mean WP for VIS-only-cloudy pixels
* Mean WP for IR-marginally-cloudy pixels
* Mean WP for VIS-marginally-cloudy pixels
* Mean WP for VIS/IR-marginally-cloudy pixels
* Sigma-WP for IR-cloudy pixels
* PC means for IR PC distribution levels
* TC means for IR PC distribution levels
* PC means for cloud types
* TC means for cloud types
* TAU means for cloud types
* WP means for cloud types
* Mean TS from clear sky composite
* Mean TS for clear pixels
* Mean TS for IR-clear pixels
* Mean TS for VIS-clear pixels
* Sigma-TS for IR-clear pixels
* Mean RS from clear sky composite
* Mean RS for clear pixels
* Mean RS for IR-clear pixels
* Mean RS for VIS-clear pixels
* Sigma-RS for IR-clear pixels
* Mean IR brightness temperature for IR-cloudy pixels
* Sigma-IR brightness temperature for IR-cloudy pixels
* Mean IR brightness temperature for VIS-cloudy pixels
* Mean IR brightness temperature for VIS/IR-cloudy pixels
* Mean IR brightness temperature for IR-clear pixels
* Sigma-IR brightness temperature for IR-clear pixels
* Mean IR brightness temperature for VIS-clear pixels
* Mean IR brightness temperature for VIS/IR-clear pixels
* Mean IR brightness temperature from clear sky composite
* Mean VIS scaled radiance for VIS/IR-cloudy pixels
* Sigma-VIS scaled radiance for VIS/IR-cloudy pixels
* Mean VIS scaled radiance for IR-cloudy pixels
* Mean VIS scaled radiance for VIS-cloudy pixels
* Mean VIS scaled radiance for VIS/IR-clear pixels
* Sigma-VIS scaled radiance for VIS/IR-clear pixels
* Mean VIS scaled radiance for IR-clear pixels
* Mean VIS scaled radiance for VIS-clear pixels
* Mean VIS scaled radiance from clear sky composite
* Origin code for NNHIRS
* Origin code for SWOOSH
* Near-surface air temperature (2 meters)
* Atmospheric temperature profile
* Maximum temperature
* Tropopause temperature
* Surface pressure
* Pressure at max temperature
* Pressure at tropopause
* Near-surface relative humidity
* Relative humidity profile
* Relative humidity at max temperature
* Relative humidity at tropopause
* Ozone abundance

The equal area grid



Aerosols

* Obtained from Stefan Kinne
  ftp://ftp-projects.zmaw.de/aerocom/climatology/MACv2_2015/MACv2_20_mine/TIME/
* Downloaded Nov 2016
* Data period: 1850– 2100
* 1°, monthly equal-area grid
* Spectral resolution for CCNY, GISS, Moskau, Kinne, RRTM, LarcC
* AOD, SSA and ASY

Surface Radiation Budget

* Obtained from Paul Stackhouse/Colleen Mikovitz
* Release 4_beta
* Downloaded Jul 2016
* Data period: 1 Jan 2007 – 31 Dec 2007
* 1°, 3-hourly equal-angle grid
* Long wave and short wave fluxes (W m^{-2})

Surface Radiation Budget

Clear Sky Upwelling Longwave Flux at TOA (W m^2)
Pristine Sky Upwelling Longwave Flux at TOA (W m^2)
All Sky Upwelling Longwave Flux at TOA (W m^2)
Clear Sky Upwelling Longwave Flux at Surface (W m^2)
Clear Sky Downwelling Longwave Flux at Surface (W m^2)
All Sky Upwelling Longwave Flux at Surface (W m^2)
All Sky Downwelling Longwave Flux at Surface (W m^2)
Pristine Sky Downwelling Longwave Flux at Surface (W m^2)
All-Sky Shortwave TOA Downward Flux (W m^2)
All-Sky Shortwave TOA Upward Flux (W m^2)
All-Sky Shortwave Surface Downward Flux (W m^2)
All-Sky Shortwave Surface Upward Flux (W m^2)
Clear-Sky Shortwave TOA Upward Flux (W m^2)
Clear-Sky Shortwave Surface Downward Flux (W m^2)
Clear-Sky Shortwave Surface Upward Flux (W m^2)
Surface Downwelling Photosynthetic Radiative Flux in air (W m^2)
Cloud Fraction
Solar Zenith Angle
Average Solar Zenith Angle

SeaFlux Status

* Obtained from Carol-Anne Clayson
* www.seaflux.org
* Downloaded Aug 2012
* Data period: 1 Jan 1998 – 31 Dec 2007
* 0.25°, 3-hourly equal-angle grid
* Latent heat flux(W m^{-2}), Sensible heat flux (W m^{-2}), Near-surface temperature (°C), Near-surface specific humidity (g kg^{-1}), Wind speed (m s^{-1}), SST (hourly, °C), Diurnal SST (daily, °C)

LandFlux – Sensible Heat Flux

* Obtained from Eric Wood/Amanda Siemann
* Downloaded Jul 2016
* Data period: 1 Jan 1979– 31 Dec 2009
* 0.5°, 3-hourly equal-angle grid
* Sensible heat flux (W m^{-2})

LandFlux – Latent Heat Fluxes

* Obtained from Matt McCabe/Bruno Aragon Solorio
* Downloaded Jul 2016
* Data period: 1 Jan 1984 – 31 Dec 2007
* 0.5°, 3-hourly equal-angle grid
* Latent heat of evaporation (W m^{-2}) from 3 methodologies: Priestly-Taylor-JPL, Penman-Monteith-Mu and Global Land Evaporation: the Amsterdam Methodology

LandFlux – Latent Heat Fluxes

* Latent heat of evaporation – total (W m^{-2})
* Latent heat of evaporation – vegetation(W m^{-2})
* Latent heat of evaporation – soil components (W m^{-2})
* Latent heat of evaporation – canopy interception (W m^{-2})

ERA-5 and MERRA-2

* 3-D Water vapour/vapor?
* 3-D Wind speed and direction?
* Water vapor transport – across grid interfaces?
* Heat transport – across grid interfaces?
* GDAP fields (cloud, precip, radiation etc.)?

To Do

* Finalize list of inputs. 11/30
* Isolate parent file (common stuff) from ISCCP 11/30
* Regrid all products to 1°, 3-hourly equal-area grid 3/17
* Work on a flow chart showing interdependencies among products. Discussed briefly in Xiamen. 3/17
* Select variables for "user" merged dataset 11/30

  First guess: Time, grid #, sfc_type, TOA:SWup, TOA:LWup, SFC:SWdown, Sfc:LWdown, Sfc:SWup, Sfc:LWup, cloud optical thickness, aerosol optical depth, LH, SH, Precip.
* Write out a year of products & verify with providers 6/17
* Stage and write a GEWEX newsletter article. 9/17