Evaporation from Land

ESSENTIAL CLIMATE VARIABLE (ECV)
FACTSHEET

GLOBAL CLIMATE OBSERVING SYSTEM
KEEPING WATCH OVER OUR CLIMATE

ECV IN BRIEF

Domain: Terrestrial
Subdomain: Hydrology
Scientific Area: Hydrosphere
ECV Stewards: Diego Miralles
Products: Latent heat flux
Sensible heat flux[1]

Evaporation from Land

Terrestrial evaporation is an important process in the global water cycle. It acts like an air conditioner for the surface, as it absorbs radiation (latent heat) that otherwise would be used to warm up the atmosphere (sensible heat). At the same time, water vapour acts as a greenhouse gas by trapping radiation in the lower atmosphere. Evaporation acts as a climate change diagnostic, being very sensitive to changes in atmospheric composition and the Earth's radiation balance. Moreover, it plays a crucial role in dampening the intensification of drought and heatwave events, it is a pivotal variable for agriculture that determines the needs for irrigation, and it constrains human water management.

ECV Product

PRODUCT	DEFINITION	REQUIREMENTS				
		FREQUENCY	RESOLUTION	REQUIRED MEASUREMENT UNCERTAINTY	STABILITY	STANDARDS/ REFERENCES
Latent heat flux	The terrestrial surface latent heat flux refers to the transfer of heat from land to atmosphere that is associated with evaporation, i.e. with the vaporisation of liquid water (transpiration, soil evaporation, or interception loss), and sublimation of ice and snow.	Sub-daily, latency of less than 1 month	Threshold 25km, goal 1km	<10%	Better than 1%	
Sensible heat flux[1]	The terrestrial surface sensible heat flux refers to the transfer of heat that is caused by the difference in temperature between land and atmosphere.	Sub-daily, latency of less than 1 month	Threshold 25km, goal 1km	<10%	Better than 1%	

[1]Sensible heat fluxes are not evaporation but have been included for consistency with the way ocean fluxes have been treated and for completing the energy cycle.

Data Sources[3]

- FLUXCOM|
  http://www.fluxcom.org
- Global Land Evaporation Amsterdam Model (GLEAM)
  https://www.gleam.eu
- MOD16
  https://ladsweb.modaps.eosdis.nasa.gov/search/order/2/MOD16A2--6
- Penman–Monteith–Leuning (PML)
  https://data.csiro.au/dap/landingpage?pid=csiro:17375&v=2&d=true
- Priestley–Taylor, Jet Propulsion Laboratory (PT-JPL)
  http://www.landflux.org/Data.php
- REANALYSES.ORG (Inventory for Reanalysis)
  http://reanalyses.org

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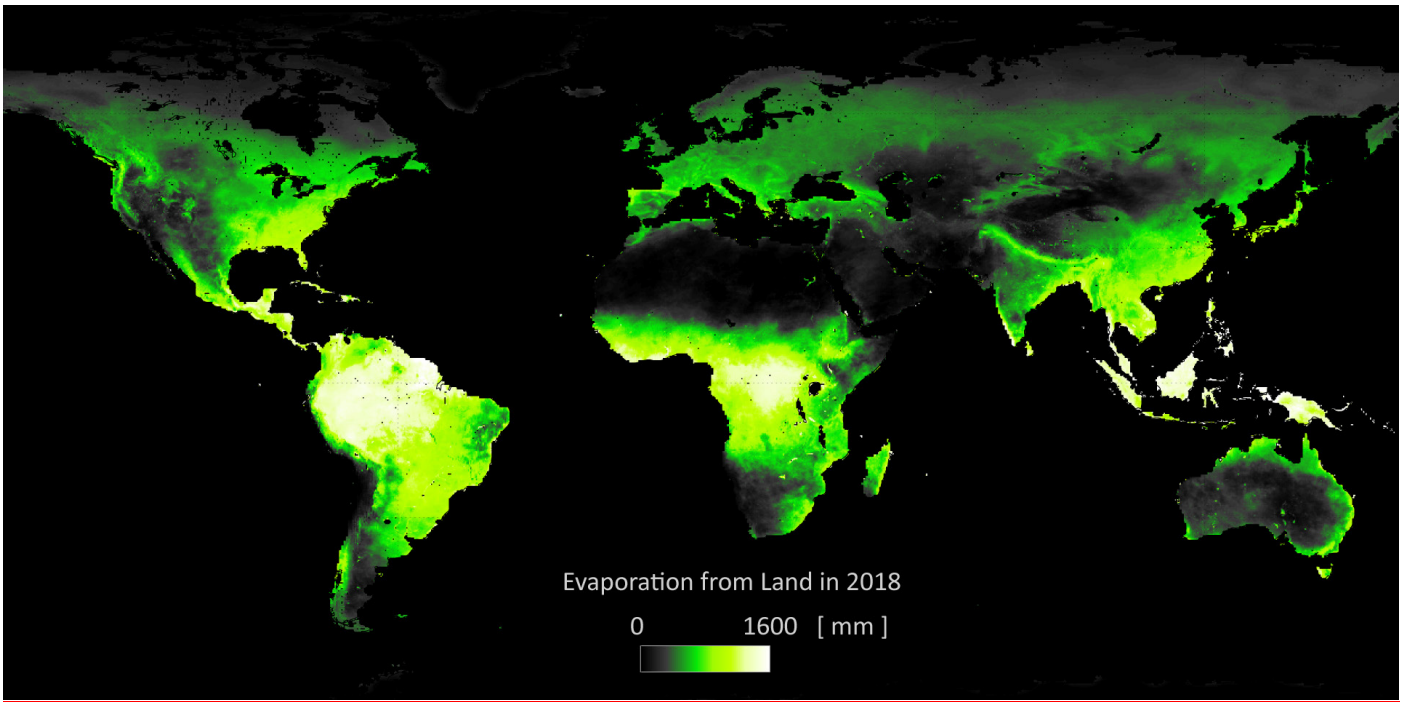

Figure: Global Map of Evaporation from Land in 2018.

Data source: The figure is based on data from the Global Land Evaporation Amsterdam Model (GLEAM)(https://www.gleam.eu/#datasets).

[3] This list provides sources for openly accessible data sets with worldwide coverage for which metadata is available. It is curated by the respective GCOS ECV Steward(s). The list does not claim to be complete. Anyone with a suitable dataset who would like it to be added to this list should contact GCOS.