

Subsurface Salinity

ESSENTIAL CLIMATE VARIABLE (ECV)
FACTSHEET



GLOBAL CLIMATE
OBSERVING SYSTEM
KEEPING WATCH OVER OUR CLIMATE



ECV IN BRIEF

Domain: Ocean
Subdomain: Physical
Scientific Area: Hydrosphere
Products: Interior Salinity



Subsurface Salinity

The global sub-surface salinity observing system is vital for closure of the global hydrological cycle, estimates of oceanic evaporation and precipitation, and the halosteric component of sea level change. Subsurface salinity observations are required to calculate in situ density and ocean freshwater transports, respectively, and coincident subsurface observations of salinity, temperature and pressure provide an estimate of the ocean geostrophic velocity. In addition, subsurface salinity is used to derive large-scale gridded climate products including ocean velocity, mixed-layer depth, density stratification, sea level and indirect subsurface ocean mixing used in many weather and climate applications.

ECV Product¹

PRODUCT	DEFINITION	REQUIREMENTS				
		FREQ.	RESOLUTION	REQUIRED MEASUREMENT UNCERTAINTY	STABILITY	STANDARDS/ REFERENCES
INTERIOR SALINITY	Salinity of seawater with depth - Salinity is unitless, and is expressed with the suffix psu (practical salinity unit, PSS-78).	Hourly to monthly	1-10km	0.01psu	Not specified	See EOVS Specification Sheet at www.goosocia.org/eov

¹ Current Products and Requirements as in the Implementation Plan 2016 (GCOS-200). GCOS is reviewing and will update the requirements until 2022. More information on: gcos.wmo.int and climatedata.wmo.int.



Data Sources²

- ▶ The Global Temperature and Salinity Profile Programme (GTSP)
https://www.nodc.noaa.gov/GTSP/access_data/index.html
- ▶ World Ocean Database, National Center for Environmental Information (NCEI)
<https://www.nodc.noaa.gov/OC5/SELECT/dbsearch/dbsearch.html>
- ▶ Coriolis
<http://www.coriolis.eu.org>

Global Zonally Averaged Salinity

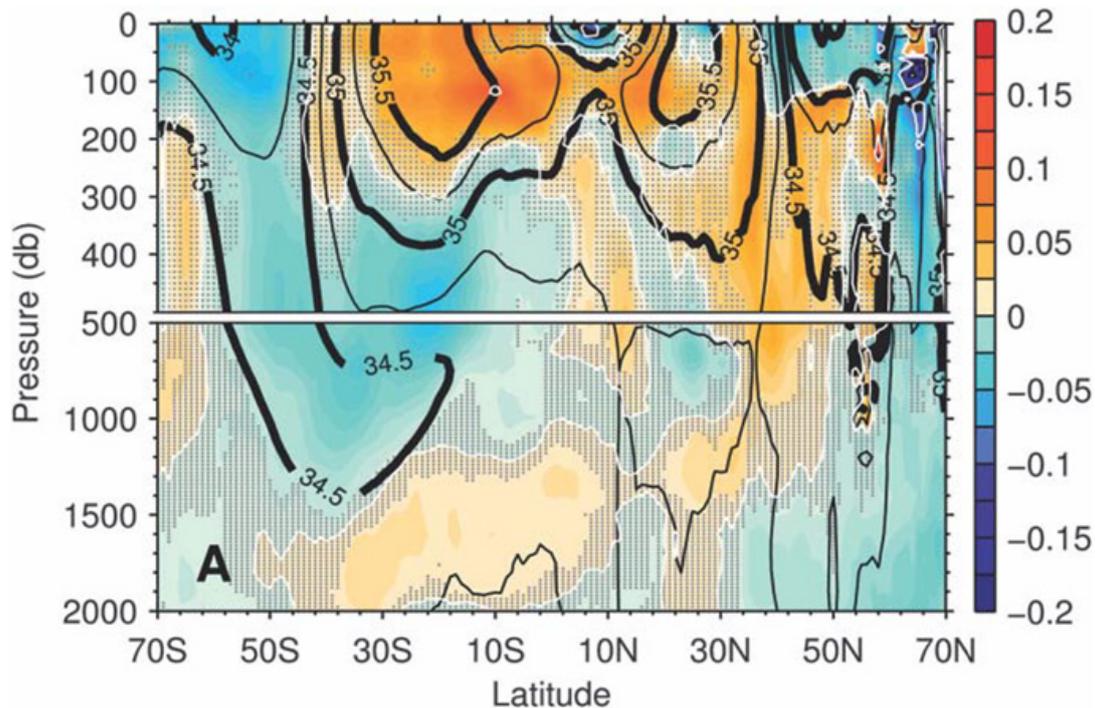


Figure: Global zonally averaged linear salinity trends [psu/50 yr] (color) with mean salinity [psu] (black contours).

Source: Durack and Wijffels (2010) 50 year trends in Global Ocean Salinities and their relationship to broad-scale warming. *Journal of Climate*. <https://doi.org/10.1175/2010JCLI3377.1>

² 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.