

## Snow

### ESSENTIAL CLIMATE VARIABLE (ECV) FACTSHEET



**GLOBAL CLIMATE  
OBSERVING SYSTEM**  
KEEPING WATCH OVER OUR CLIMATE



#### ECV IN BRIEF

**Domain:** Terrestrial  
**Subdomain:** Cryosphere  
**Scientific Area:** Snow and Ice  
**ECV Stewards:** Huilin Li  
**Products:** Area covered by snow;  
 Snow depth;  
 Snow water equivalent



#### Snow

Snow refers to forms of ice crystals that precipitate from the atmosphere (usually from clouds) and undergo changes on the Earth's surface. Snow cover on the ground plays a significant role in the climate system due to its high albedo, heat insulation and contribution to soil moisture and runoff, thus an important variable in monitoring climate change.

#### ECV Product<sup>1</sup>

PRODUCT	DEFINITION	REQUIREMENTS				
		FREQ.	RES.	REQUIRED MEASUREMENT UNCERTAINTY	STABILITY	STANDARDS/ REFERENCES
<b>Area covered by snow</b>	<b>Snow cover refers to the area of land covered by snow at a given time</b>	Daily	1km (100m in complex terrain)	5% (maximum error of omission and commission in snow area); location accuracy better than 1/3 IFOV with target IFOV 100 m in areas of complex terrain, 1 km elsewhere	4% (maximum error of omission and commission in snow area); location accuracy better than 1/3 IFOV with target IFOV 100 m in areas of complex terrain, 1 km elsewhere	WMO (2008c) IGOS (2007), IACS/UNESCO, 2009
<b>Snow depth</b>	<b>Snow depth is the perpendicular distance between snowpack surface and the underlying ground.</b>	Daily	1km (100m in complex terrain)	10mm	10mm	WMO (2008c) IGOS (2007), IACS/UNESCO, 2009
<b>Snow water equivalent</b>	<b>It is depth of water that result from the snowpack melting in a unit of area.</b>	Daily	1km	10mm	10mm	

<sup>1</sup> 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](http://gcos.wmo.int) and [climatedata.wmo.int](http://climatedata.wmo.int).



## Data Sources<sup>2</sup>

- ▶ National Snow & Ice Data Center  
<http://nsidc.org/data/>
- ▶ Copernicus GMES Service Snow and Land Ice  
<http://www.cryoland.eu/>
- ▶ Satellite ECV Inventory by the CEOS/CGMS Working Group on Climate (WGClimate)  
<http://climatemonitoring.info/ecvinventory>

## Change in Snow Cover Extend

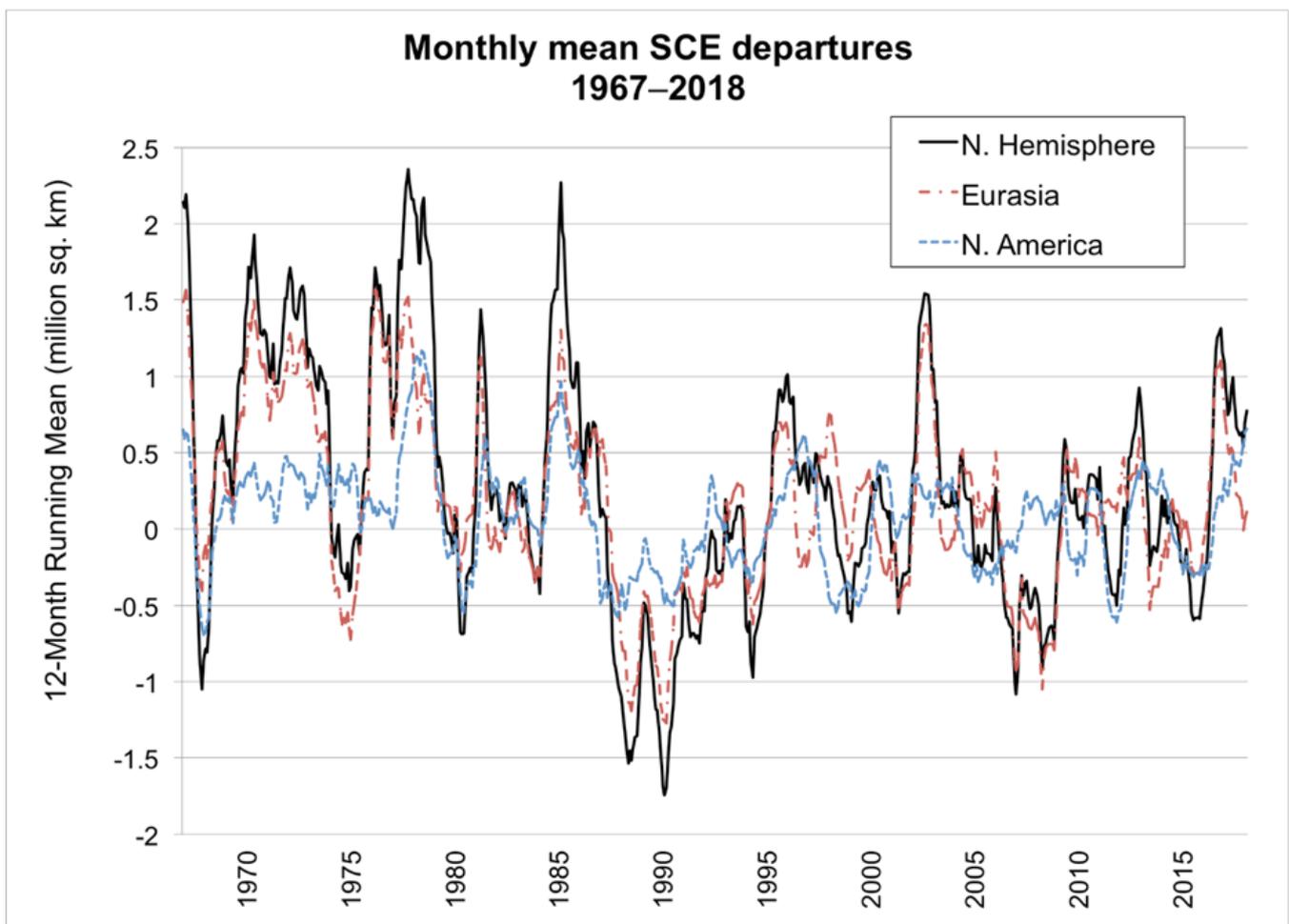


Figure: 12-month running anomalies of monthly snow extent are plotted on the 7th month using values from November 1966 to December 2018.

Source : Global Snow Lab,, [https://climate.rutgers.edu/snowcover/chart\\_anom.php?ui\\_set=0&ui\\_region=nhland&ui\\_month=1](https://climate.rutgers.edu/snowcover/chart_anom.php?ui_set=0&ui_region=nhland&ui_month=1)

<sup>2</sup> 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.



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