# EVOLUTION OF GLOBAL SNOW COVER

Analysis of 23 Years of DLR's Global SnowPack and Latest Processor Developments

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# Why Daily Gap-Free Snow Coverage?





#### KEEPING WATCH OVER OUR CLIMATE The Global Climate Observing System

#### ECV Products and Requirements for Snow

These products and requirements reflect the Implementation Plan 2016 (GCOS-200). GCOS is reviewing and will update the requirements until 2022. More information on: gcos.wmo.int.

PRODUCT	DEFINITION	FREQ.	RES.	REQUIRED MEASUREMENT UNCERTAINTY	STABILITY	STANDARDS/ REFERENCES
Area covered by snow	Snow cover refers to the area of land covered by snow at a given time	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

https://gcos.wmo.int/en/essential-climate-variables/snow/ecv-requirements

# **DLR's Global Snow Pack – The Data Base**



8,000,000

4,000,000

-4,000,000

000'000

# **DLR's Global Snow Pack – Data Gaps**



**GSP** Cloud-Free Daily

Daily MOD10A1/MYD10A1 Combined



## **DLR's Global Snow Pack – The Product**





### **Pixel based Trend Analysis**





### **Basin Selection for Trend Analysis**





# **Basin Based Trend Analysis**









### **Basin Based Trend Analysis November**





### **Development of the Nelson River Basin**



https://earthobservatory.nasa.gov/images/14 9822/red-river-flooding-is-worst-in-a-decade

#### nelson SCE monthly 2001 - 2023







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### Sierra\_Nevada SCE monthly 2001 - 2023







# What's next?

### **VIIRS** Integration





### Operational NRT Products ULR North America Europe Asia



### Validation with Landsat





