



ECV IN BRIEF

- Domain:** Terrestrial
- Subdomain:** Biogeochemical
- Scientific Area:** Energy
- ECV Stewards:** Nadine Gobron
- Products:**
 - Maps of directional hemispherical reflectance (DHR) albedo for adaptation
 - Maps of bi-hemispherical reflectance (BHR) albedo for adaptation
 - Maps of DHR albedo for modelling
 - Maps of BHR albedo for modelling



The land surface albedo is the ratio of the radiant flux reflected from Earth's surface to the incident flux. It is a key forcing parameter controlling the partitioning of radiative energy between the atmospheric and surface. In the case of vegetation, a reference surface is typically defined at or near the top of the canopy and must be specified explicitly. Surface albedo depends on natural variations, highly variable in space and time as a result of terrestrial properties changes, and with illumination conditions and human activities and is a sensitive indicator of environmental vulnerability.

ECV Product¹

PRODUCT	DEFINITION	REQUIREMENTS				
		FREQUENCY	RESOLUTION	REQUIRED MEASUREMENT UNCERTAINTY	STABILITY	STANDARDS/ REFERENCES
Maps of directional hemispherical reflectance (DHR) albedo for adaptation	Albedo without diffuse irradiance component.	Daily	50m	max(5%; 0.0025)	max(1%; 0.001)	
Maps of bi-hemispherical reflectance (BHR) albedo for adaptation	Albedo with isotropic illumination only (white-sky)		50m	max(5%; 0.0025)	max(1%; 0.001)	

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.

Maps of DHR albedo for modelling	Albedo without diffuse irradiance component.	Daily	200/500m	max(5%; 0.0025)	max(1%; 0.001)	
Maps of BHR albedo for modelling	Albedo with isotropic illumination only (white-sky)		200/500m	max(5%; 0.0025)	max(1%; 0.001)	

Data Sources²

- ▶ MODIS Collection 6 surface albedo
<https://modis.gsfc.nasa.gov/data/dataproduct/mod43.php>
- ▶ Copernicus Climate Change Service (C3S) data store
<https://cds.climate.copernicus.eu#!/home>
- ▶ Satellite ECV Inventory by the CEOS/CGMS Working Group on Climate (WGClimate)
<http://climatemonitoring.info/ecvinventory>

Albedo Trend 2000 to 2018

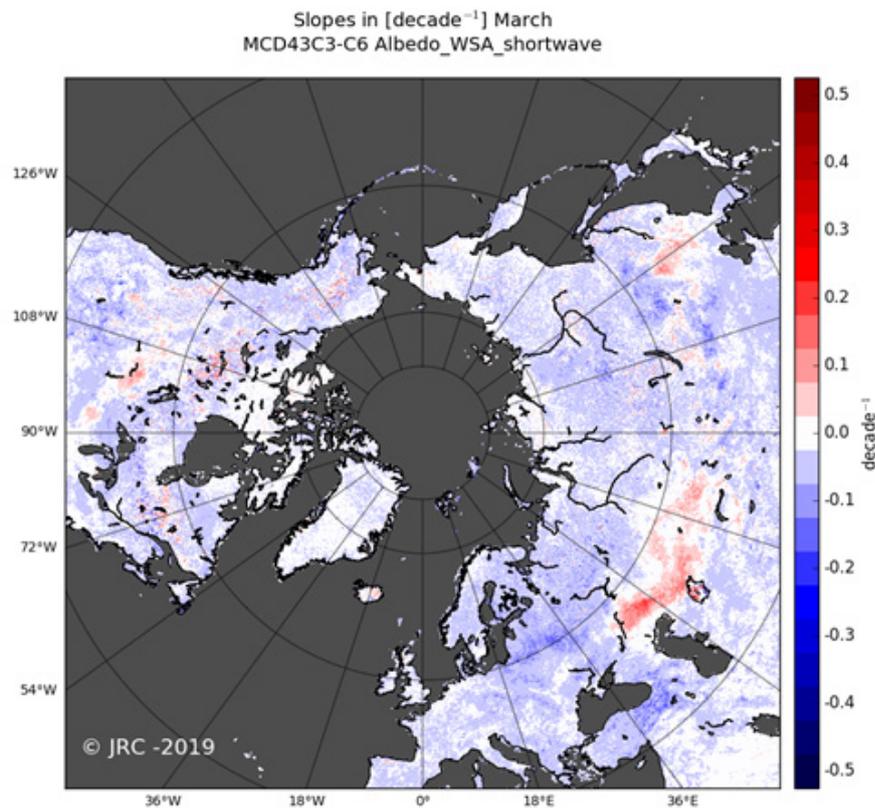


Figure: Trend of Albedo in March from 2000 to 2018. Significant slopes in [$\% \text{ year}^{-1}$] MCD43C3 (WSA-Shortwave).

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.