



## Slope of the Green-up Period 2017-present (raster 10 m), Europe, yearly, Sept. 2021

The Slope of the green-up period (Left Slope, LSLOPE), one of the Vegetation Phenology and Productivity (VPP) parameters, is a product of the pan-European High Resolution Vegetation Phenology and Productivity (HR-VPP) component of the Copernicus Land Monitoring Service (CLMS).

The slope of the green-up period (LSLOPE) expresses the rate of change in the values of the Plant Phenology Index (PPI) at the day when the vegetation growing season starts.

The Plant Phenology Index (PPI) is a physically based vegetation index, developed for improving the monitoring of the vegetation growth cycle. The PPI index values, with 5-day satellite revisit cycle, are first used in a function fitting to derive the PPI Seasonal Trajectories, which is a filtered time series with regular 10-day time step. From these Seasonal Trajectories, a suite of 13 Vegetation Phenology and Productivity (VPP) parameters are then computed and provided, for up to two seasons each year. The green-up period slope is one of the 13 parameters. The full list is available in the table 3 of the Product User Manual <https://land.copernicus.eu/en/technical-library/product-user-manual-of-seasonal-trajectories/@@download/file>

A complementary quality indicator (QFLAG) provides a confidence level, that is described in table 4 of the same manual.

The LSLOPE dataset is made available as raster files with 10 x 10m resolution, in UTM/WGS84 projection corresponding to the Sentinel-2 tiling grid, for those tiles that cover the EEA38 countries and the United Kingdom and for two seasons in each year from 2017 onwards. It is updated in the first quarter of each year.

### Simple

<b>Date (Publication)</b>	2021-09-02				
<b>Date (Creation)</b>	2021-09-02				
<b>Edition</b>	01.01				
<b>Citation identifier</b>	copernicus_r_utm-wgs84_10_m_hrpp-vpp-lslope_p_2017-now_v01_r01				
<b>Code</b>	<a href="https://doi.org/10.2909/ecba54a6-bdc3-429e-8474-d8dcd0f20971">10.2909/ecba54a6-bdc3-429e-8474-d8dcd0f20971</a>				
<b>Point of contact</b>	<b>Organisation name</b>	<b>Individual name</b>	<b>Electronic mail address</b>	<b>Website</b>	<b>Role</b>
	European Commission			<a href="https://commission.europa.eu">https://commission.europa.eu</a>	Owner
	Copernicus Land Monitoring Service		copernicus@eea.europa.eu	<a href="https://land.copernicus.eu">https://land.copernicus.eu</a>	Custodian
	European Environment Agency		sdi@eea.europa.eu	<a href="http://www.eea.europa.eu">http://www.eea.europa.eu</a>	Publisher
	Copernicus Land Monitoring Service helpdesk		copernicus@eea.europa.eu	<a href="https://land.copernicus.eu/en/contact-service-helpdesk">https://land.copernicus.eu/en/contact-service-helpdesk</a>	Point of contact
<b>Maintenance and update frequency</b>	Annually				
<b>GEMET - INSPIRE themes, version 1.0</b>	<ul style="list-style-type: none"> <li>• <a href="#">Environmental monitoring facilities</a></li> <li>• <a href="#">Habitats and biotopes</a></li> <li>• <a href="#">Orthoimagery</a></li> </ul>				
<b>Keywords</b>					
<b>Keywords</b>					
<b>GEMET</b>	<ul style="list-style-type: none"> <li>• productivity</li> <li>• index</li> <li>• plant production</li> </ul>				

	<ul style="list-style-type: none"> <li>land</li> <li>plant ecology</li> <li>vegetation</li> <li>remote sensing</li> </ul>
<b>Spatial scope</b>	<ul style="list-style-type: none"> <li>European</li> </ul>
<b>Temporal resolution</b>	<ul style="list-style-type: none"> <li>Annually</li> </ul>
<b>Continents, countries, sea regions of the world.</b>	<ul style="list-style-type: none"> <li>EEA38 (from 2020)</li> <li>United Kingdom</li> </ul>
<b>Access constraints</b>	Other restrictions
<b>Other constraints</b>	<a href="#">no limitations to public access</a>
<b>Use constraints</b>	Other restrictions
<b>Other constraints</b>	<p>The Copernicus component is governed by Regulation (EU) No 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU. Within the Copernicus component, a portfolio of land monitoring activities has been delegated by the European Union to the European Environment Agency (EEA) and the DG Joint Research Centre of the European Commission.</p> <p>The Copernicus land monitoring products and services are made available on a principle of full, open and free access, as established by the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013.</p> <p>Free, full and open access to the products and services of the Copernicus Land Monitoring Service is made on the conditions that:</p> <ol style="list-style-type: none"> <li>When distributing or communicating Copernicus Land Monitoring Service products and services (data, software scripts, web services, user and methodological documentation and similar) to the public, users shall inform the public of the source of these products and services.</li> <li>Where the Copernicus Land Monitoring Service products and services have been adapted or modified by the user, the user shall clearly state this.</li> <li>Users shall make sure not to convey the impression to the public that the user's activities are officially endorsed by the European Union.</li> </ol>
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<b>Association Type</b>	Cross reference
<b>Spatial representation type</b>	Grid
<b>Distance</b>	10 m
<b>Language of dataset</b>	English

Character set

UTF8

Topic category

- Environment
- Imagery base maps earth cover
- Climatology, meteorology, atmosphere



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OnLine resource	<table border="0"> <thead> <tr> <th>Protocol</th> <th>Linkage</th> </tr> </thead> <tbody> <tr> <td>WWW: LINK-1.0- http--link</td> <td><a href="https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC">https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC</a></td> </tr> <tr> <td>WWW: LINK-1.0- http--link</td> <td><a href="https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC">https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC</a></td> </tr> <tr> <td>OGC:WMTS</td> <td><a href="https://phenology.vgt.vito.be/wmts?request=GetCapabilities">https://phenology.vgt.vito.be/wmts?request=GetCapabilities</a></td> </tr> <tr> <td>OGC:WMTS</td> <td><a href="https://phenology.vgt.vito.be/wmts?request=GetCapabilities">https://phenology.vgt.vito.be/wmts?request=GetCapabilities</a></td> </tr> <tr> <td></td> <td><a href="https://land.copernicus.eu/en/technical-library/hr-vpp-data-access-manual/@_@download/file">https://land.copernicus.eu/en/technical-library/hr-vpp-data-access-manual/@_@download/file</a></td> </tr> </tbody> </table>	Protocol	Linkage	WWW: LINK-1.0- http--link	<a href="https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC">https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC</a>	WWW: LINK-1.0- http--link	<a href="https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC">https://www.wekeo.eu/data?view=viewer&amp;t=1562219742857&amp;z=0&amp;center=13.08408%2C48.33915&amp;zoom=12.34&amp;layers=W3siaWQiOiJjMSIsInJlcGxhY2VtZW50Q29sb3JNYXBjZC16bnVsbCwibGF5ZXJJZC16IkVPOkVFQTPpEQVQ6QC</a>	OGC:WMTS	<a href="https://phenology.vgt.vito.be/wmts?request=GetCapabilities">https://phenology.vgt.vito.be/wmts?request=GetCapabilities</a>	OGC:WMTS	<a href="https://phenology.vgt.vito.be/wmts?request=GetCapabilities">https://phenology.vgt.vito.be/wmts?request=GetCapabilities</a>		<a href="https://land.copernicus.eu/en/technical-library/hr-vpp-data-access-manual/@_@download/file">https://land.copernicus.eu/en/technical-library/hr-vpp-data-access-manual/@_@download/file</a>
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<b>Hierarchy level</b>	Dataset
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## Conformance result

<b>Title</b>	Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services
<b>Date (Publication)</b>	2010-12-08
<b>Explanation</b>	See the referenced specification

<b>Statement</b>	<p>Vegetation Phenology and Productivity parameters (VPP) are based on Plant Phenology Index (PPI) seasonal trajectories and are yearly produced for two seasons using the Timesat software. One of the parameters is the slope of the green-up period (Left Slope - LSLOPE), that expresses the rate of PPI value change at the day when the growing season starts. The date and PPI value for the season start are available as well.</p> <p>The latest validation results are described in the validation report at <a href="https://land.copernicus.eu/en/technical-library/validation-report-of-seasonal-trajectories-vpp-parameters/@_@download/file">https://land.copernicus.eu/en/technical-library/validation-report-of-seasonal-trajectories-vpp-parameters/@_@download/file</a>.</p>
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<b>Source</b>	<ul style="list-style-type: none"> <li><a href="#">High Resolution Vegetation Phenology and Productivity: PPI Seasonal Trajectories (raster 10m) version 1 revision 1, Sep. 2021</a></li> </ul>
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## Metadata

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<b>Character set</b>	UTF8
<b>Hierarchy level</b>	Dataset
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<b>Metadata standard version</b>	1.0
<b>Metadata author</b>	Electronic

Organisation name

Individual name

mail address

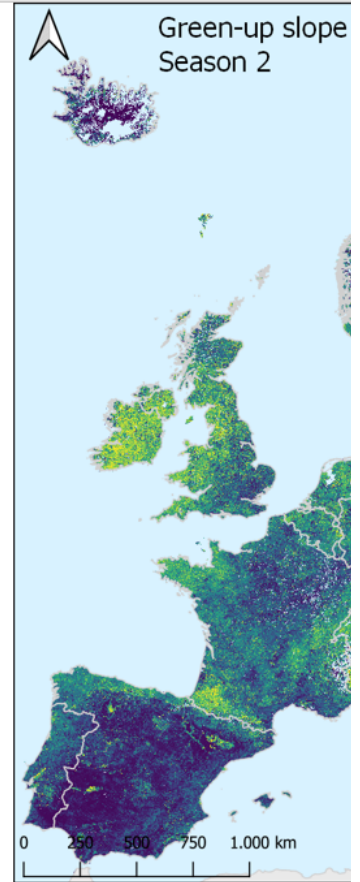
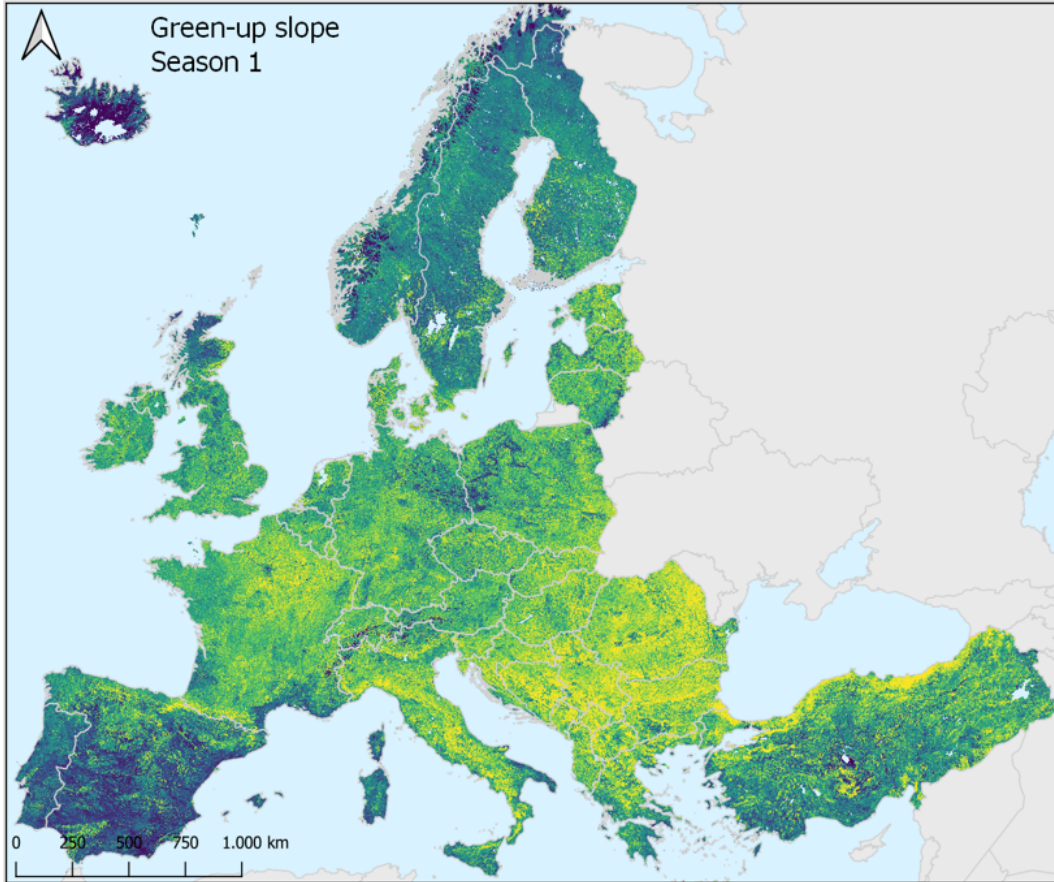
Website Role

European Environment Agency

sdi@eea.europa.eu

Point of contact

## Overviews



Provided by

