

→ CLIMATE CHANGE INITIATIVE

Land Cover CCI Newsletter

Issue n. 6 | October 2014

First official release of the CCI land cover products

The CCI Land Cover team is proud to announce the release of its 5 key products: (i) 3 global land cover maps at 300m corresponding to the 1998-2002, 2003-2007 and 2008-2012 epochs, (ii) 3 global land cover seasonality products describing the vegetation greenness, the snow and the burned areas occurrence along the year, (iii) a global map of open permanent water bodies at 300m, (iv) the full archive (2003-2012) of MERIS time series processed in 7-day composites and (v) a user tool for re-projecting, re-sampling and converting the products into climate model inputs.

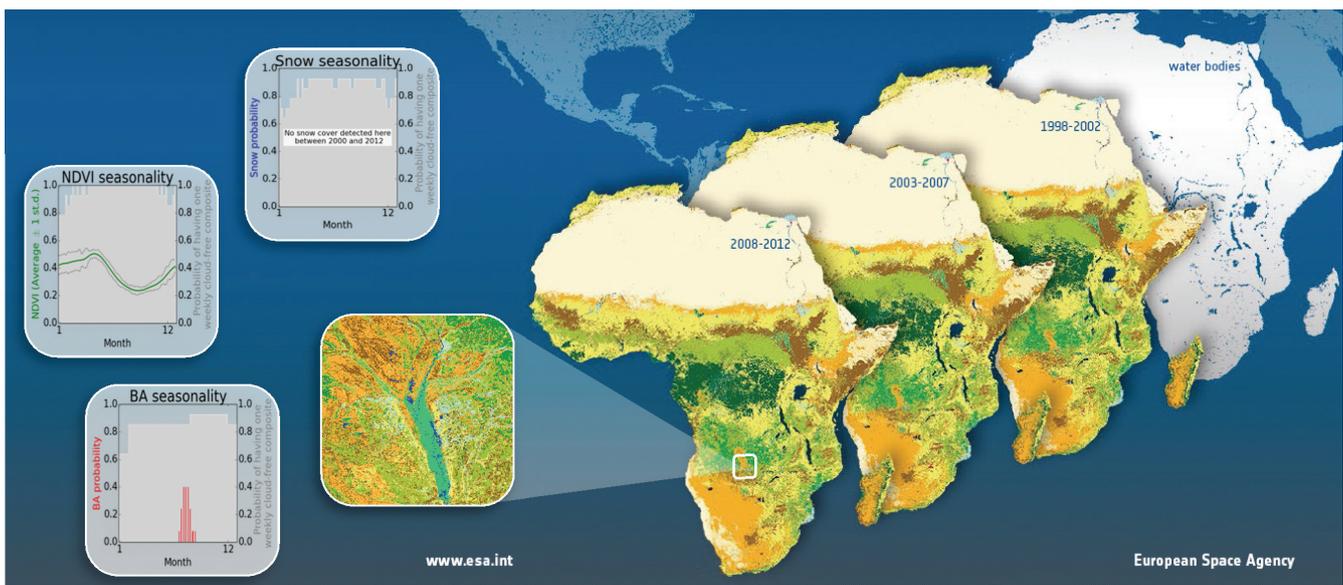


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Visualize and download the CCI Land Cover Climate Research Data Package online at <http://maps.elie.ucl.ac.be/CCI/viewer>

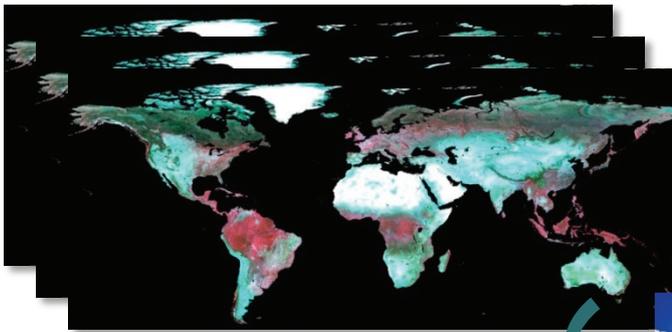
Multiyear global land cover mapping at 300m and characterization for climate modelling





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A new generation of satellite-derived global land cover products



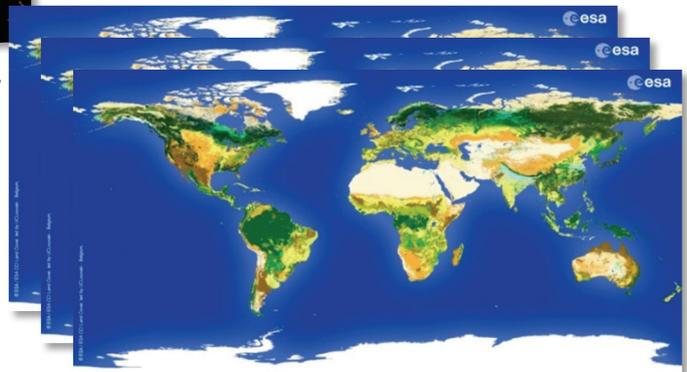
CCI Land Cover multi-year and multi-sensor processing

→ 3 global land cover maps at 300m for 1998-2002, 2003-2007 and 2008-2012 with 22 classes based on the Land Cover Classification System

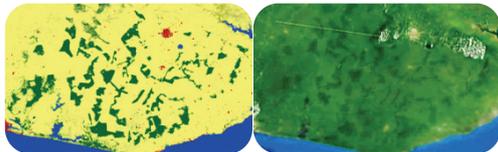
Maps were produced using a multi-year and multi-sensor strategy (full archives of MERIS 300m and 1000m, SPOT-Vegetation 1000m) in order to exploit all the observations and maximize product consistency over the whole 15-y period (1998 - 2012).

→ 7-day composites time series of MERIS Full and Reduced Resolution for the whole archive (2003-2012)

Time series of 13 surface reflectance channels at 300m and 1000m obtained after radiometric calibration, geometric correction, pixel identification, atmospheric correction with aerosol retrieval.



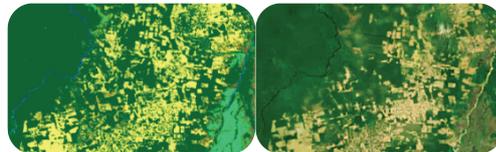
Zoom on forest patterns in West Africa



CCI Land Cover map 2010

Google Earth

Zoom on deforestation patterns in the Amazon basin



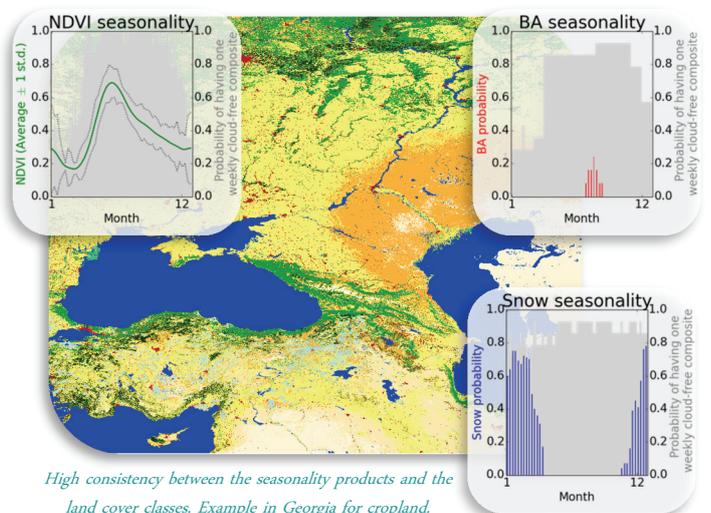
CCI Land Cover map 2010

Google Earth

→ 3 global land cover seasonality products about the vegetation greenness, the snow and the burned areas on a 7-day basis

Consistent climatological time series reflecting along the year, on a per pixel and weekly basis, the average dynamics and the inter-annual variability of the vegetation greenness (NDVI), the snow cover and the burned areas for 1998-2012.

Product	Spatial resolution
NDVI	1000m
Snow	500m
Burned Areas	500m



High consistency between the seasonality products and the land cover classes. Example in Georgia for cropland.



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→ Global map of open permanent water bodies at 300m spatial resolution derived from the full ENVISAT-ASAR dataset between 2005 and 2010

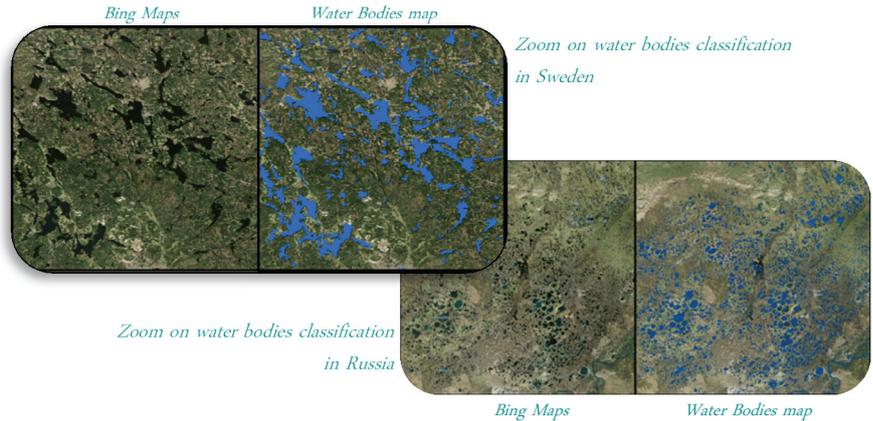
Water bodies classification using very dense acquisitions (ASAR Wide Swath Mode with local gap fillers from Image Mode and Global Monitoring Mode) for the interpretation of multi-temporal SAR metrics and auxiliary datasets.

→ User tool for climate modeling community



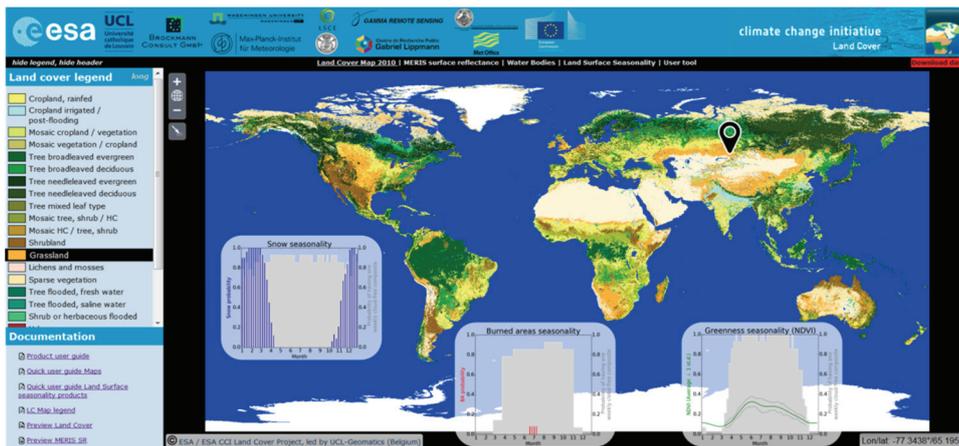
Tool allowing fitting land cover products to climate models by sub-setting,

re-projecting and re-sampling and by converting land cover classes into Plant Functional Types according to default or user-defined cross-walking tables.



Freely and easily visualize and download this CCI Land Cover Climate Research Data Package online

<http://maps.elie.ucl.ac.be/CCI/viewer>



Land Cover Maps

3-epoch series of global land cover maps at 300m spatial resolution, where each epoch covers a 5-year period (2008-2012, 2003-2007, 1998-2002).

- 2008-2012 epoch (tif, zc) - 2.8Go
- 2003-2007 epoch (tif, zc) - 2.8Go
- 1998-2002 epoch (tif, zc) - 1.8Go
- 2008-2012 epoch (netcdf) - 2.8Go
- 2003-2007 epoch (netcdf) - 2.8Go
- 1998-2002 epoch (netcdf) - 1.1Go
- Legend (csv)

Vegetation greenness

The NDVI product describes globally the yearly reference dynamic of the vegetation greenness characterizing the 1999-2012 period. It is derived from 1km SPOT-VEGETATION (VGT) data.

- Vegetation part 1 (tif, zc) - 17.1Go
- Vegetation part 2 (tif, zc) - 11.4Go
- Vegetation cell (netcdf, zc) - 26Go

Snow occurrence

The snow product presents the frequency at which snow has been detected along the year, based on observations over the 2000-2012 period. Data originate from the MODIS/Terra Snow Cover Sd L3 Global 500m SIN Grid Product (MOD10A2).

- Snow (tif, zc) - 7.8Go
- Snow (netcdf, zc) - 7.9Go

Meris Surface Reflectance

The surface reflectance (SR) products consist of MERIS global time series covering the 2003-2012 period. The spectral content encompasses the 13 surface reflectance channels - the atmospheric bands 11 and 15 being removed - and the spatial resolution is of 300 m for the FR and 1000 m for the SR.

Given the amount and size of the MERIS surface reflectance archive (10 To), data transfer will be made, on request, through your own disks. Please contact contact@esa-landcover-cci.org

Water Bodies

Static map of stable open water bodies at 300m spatial resolution resulting from a land/water classification based on Envisat ASAR, SR1M-SWBD and MERIS data. The water pixels of this map correspond to the class "Water Bodies" of the CCI-LC Maps.

- Water Bodies (tif, zc) - 517Mo

User tool

Dedicated user tool for sub-setting, re-projecting and re-sampling the CCI-LC maps and seasonality products in a way which is suitable to each climate model. This tool also allows converting the LCs legend to user-specific PFTs.

- User tool (jar, zip) - 31Mo

Burned areas occurrence

The burned areas product presents the frequency at which burned areas have been detected along the year, based on observations over the 2000-2012 period. Data currently originate from the GFCDv3 dataset.

- Burned-Areas (tif, zc) - 4.8Go
- Burned-Areas (netcdf, zc) - 5.1Go



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The ESA Climate Change Initiative

In 2010, the Global Climate Observing System listed 50 Essential Climate Variables (ECVs). In response, the European Space Agency (ESA) launched its Climate Change Initiative (CCI) to provide a comprehensive and timely response to the need for long-term satellite-based products in the climate domain. Through individual projects, the ESA CCI focuses on 14 ECVs, amongst which the Land Cover.

3 more years for a CCI Land Cover Phase 2

The second phase (2014-2016) of the CCI Land Cover project will aim to:

- improve the Phase 1 (2011-2014) achievements in terms of products, systems and validation;
- cover the 1980s, 1990s and the 2013-2016 periods with AVHRR, Sentinel-3 and Proba-V;
- demonstrate the feasibility of a higher resolution global land cover product by generating a 10-20m land cover map, over Africa, using Sentinel-2 supplemented by Landsat 8 datasets;
- extend the climate impact assessment of a better land surface description for climate modelling.

The ESA CCI Land Cover team led by the Université catholique de Louvain (BE) includes Brockmann-Consult (DE), Gamma RS (CH), Wageningen University (NL), University of Jena (DE), University of Pavia (IT), Public Research Centre - Gabriel Lippmann (LU), Joint Research Centre (EU), and as climate modelers, the Laboratoire des sciences du climat et l'environnement (FR), the Met Office Hadley Centre (UK), and the Max Planck Institute for Meteorology (DE).



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