Climate Modelling User Group [CMUG]

Deliverable D2.3c

Technical note providing feedback to the CCI ECV teams

Centres providing input: Meteo-France

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Deliverable D5.3.5

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Deliverable D5.3.5 Technical note providing feedback to the CCI ECV teams

1. Summary

This technical note provides feedback to the CCI ECV teams that contributed data used in the studies of CMUG WP5.3 (see Section 2). Specifically, these datasets are LandCover_cci (Section 3.1), Snow_cci (Section 3.2), LandSurfaceTemperature_cci (Section 3.3) and SoilMoisture_cci (Section 3.4). Our feedback focuses on the three topics: data availability, data format and data preprocessing.

2. Overview of CMUG WP5.3 studies

The main aim of CMUG WP5.3 is to assess the integration of LandCover_cci data in the Interactions between Soil, Biosphere, Atmosphere (ISBA) land surface model of Météo-France. The impact of the integration of LandCover_cci is evaluated using simulated snow water equivalent (SWE), land surface temperature (LST), and soil moisture (SM). The corresponding Snow_cci, LandSurfaceTemperature_cci and SoilMoisture_cci products are used to benchmark the two simulations (with and without LandCover_cci data).

Within WP5.3.1, three numerical experiments were performed over Eurasia for the 2010-2022 time period, using the ISBA model with different land cover maps in the ECOCLIMAP tool within the SURFEX modelling platform (Masson et al., 2013) that includes ISBA: (1) pre-existing land cover, (2) LandCover_cci v1.6.1 2008-2012, (3) LandCover_cci v2.0.7 1992-2015. In WP5.3.2, CCI data are used to assess the impact of the integration of LandCover_cci in ISBA. This work is currently being summarized in Rojas-Munoz et al. (in prep.).

3. Feedback to CCI ECV teams

Summary

We did not experience any issues when downloading or processing the publicly available land cover, snow, land surface temperature and soil moisture data, which are well documented. However, the LST CCI team recommended using version 4 of the MODIS product, which was only available to beta users. We did so, but the provided link was neither as straightforward nor as well documented as the public repositories. As we are working with a beta version of the product, we cannot guarantee that it will actually be made available to all users.

3.1 Feedback to LandCover_cci

Data availability
LandCover_cci v1.6.1 2008-2012, and v2.0.7 1992-2015 were downloaded via the firefox browser from the http://maps.elie.ucl.ac.be/CCI/viewer/download.php web page.

Data format
The provided data format (netCDF) was adequate for our needs and could be effectively utilized for data processing and analysis.

Data preprocessing
The LandCover_cci data were integrated into the new ECOCLIMAP-SG tool (Calvet and Champeaux, 2022) within the SURFEX modelling platform (https://opensource.umr-cnrm.fr/projects/ecoclimap-sg/wiki).

3.2 Feedback to Snow_cci

Data availability
We accessed the data via the firefox browser and downloaded them from the CCI web site (CEDA Archive catalogue, https://data.ceda.ac.uk/), with *wget*. The SWE CCI L3c v3.1 product at a spatial resolution of 0.10° x 0.10° was downloaded.

Data format
The provided data format (netCDF) was adequate for our needs and could be effectively utilized for data processing and analysis.

Data preprocessing
The SWE product was regridded to 0.25° x 0.25°.

3.3 Feedback to LandSurfaceTemperature_cci

Data availability
We accessed the data via the firefox browser and downloaded them from a dedicated web page only available to beta users, with *wget*. The MODIS LST CCI v4 products at a spatial resolution of 0.05° x 0.05° (AQUA_MODIS_L3C_0.05 and TERRA_MODIS_L3C_0.05) were downloaded.

Data format
The provided data format (netCDF) was adequate for our needs and could be effectively utilized for data processing and analysis.

Data preprocessing
The LST products were regridded to 0.25° x 0.25° for both daytime and nighttime (10:00 and 22:00 local time, respectively).

3.4 Feedback to SoilMoisture_cci

Data availability
We accessed the data via the firefox browser and downloaded them from the CCI web site (CEDA Archive catalogue, https://data.ceda.ac.uk/) with *wget*. The SM CCI v8.1 combined product at a spatial resolution of 0.25° x 0.25° was downloaded.

Data format
The provided data format (netCDF) was adequate for our needs and could be effectively utilized for data processing and analysis.

Data preprocessing
No processing was done as the SWE product was already at 0.25° x 0.25°.

4. References

Calvet, J.-C. and Champeaux J.-L.: L'apport de la télédétection spatiale à la modélisation des surfaces continentales, La Météorologie, 108, 52–58, https://doi.org/10.37053/lameteorologie-2020-0016, 2020.

Masson, V., Le Moigne, P., Martin, E., Faroux, S., Alias, A., Alkama, R., Belamari, S., Barbu, A., Boone, A., Bouyssel, F., Brousseau, P., Brun, E., Calvet, J.-C., Carrer, D., Decharme, B., Delire, C., Donier, S., Essaouini, K., Gibelin, A.-L., Giordani, H., Habets, F., Jidane, M., Kerdraon, G., Kourzeneva, E., Lafaysse, M., Lafont, S., Lebeaupin Brossier, C., Lemonsu, A., Mahfouf, J.-F., Marguinaud, P., Mokhtari, M., Morin, S., Pigeon, G., Salgado, R., Seity, Y., Taillefer, F., Tanguy, G., Tulet, P., Vincendon, B., Vionnet, V., and Voldoire, A.: The SURFEXv7.2 land and ocean surface platform for coupled or offline simulation of earth surface variables and fluxes, Geosci. Model Dev., 6, 929–960, https://doi.org/10.5194/gmd-6-929-2013, 2013.