climate change initiative

→ CLIMATE MODELLING USER GROUP

CCI-CMUG Integration Meeting 2021

Land group
Chair: Deborah Hemming
Rapporteur: Richard Jones

Tuesday 5th October
10:30-12:00 BST
11:30-13:00 CET

cmug cci

Discussion on science highlights - Land

10:40-11:40 BST (11:40-12:40 CET)

- **What are the main science highlights?**
  - What were the key science questions addressed?
  - What CCI data were used?

- **Why do you think these are important?**
  - Who will use the results/outputs?
  - Do they address key policy questions e.g. European Green Deal

- **Do you think there are any gaps in the CMUG land science?**

- **What are the main science highlights?**
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- **LST – airT difference related to soil moisture (assess biome relationships ongoing…)**
  - How does land surface characteristics (SM, biome…) influence land-atmosphere exchanges?
    - Important because this will affect change responses and land surface conditions under future change
  - Do ESMs model these exchanges well?
    - Important because land surface processes are key to understanding impacts and feedbacks on climate

- (Lizzie Good) Uncertainties LST-CCI – well characterised uncertainties that are propagated
(Robert Parker)…getting a good example of how to show uncertainties into ESMValTool as an eg for others to follow
(Robert King)…not so much a problem with including uncertainty metrics it's more that the names need to be standardised as CMOR standard, which is not always clear. Once variables are in ESMValTool it's easy to present these. Documentation is reasonably clear.
Jean-Christophe…uncertainties can be improved by using *in-situ* data e.g. snow variables, need a map of uncertainties
Emilio – fire work, mentioned temporal uncertainty is also important

- (Lizzie Good) Heatwave analyses…was there a plan to use LST for enhancing this work
(Frederique Cheruy) said they don't have plans to do this already.

- (Heather Kay) CCI Biomass not currently included in CMUG (currently short temporal length). There are other biomass datasets that have been used to assess models. Used in countries for reporting carbon accounting. Is producing integrated biomass datasets for users.

- (Jean-Christophe) LAI is really important land ECV, we have operations products from Copernicus but these are quite diverse. (Clement) highlighted an open ITT (ending in ~1 month) regarding a new ECV project on vegetation in order to address gap in LAI/FAPAR work.

- (Gary ?) works on lake CCI – uses multiple CCI data for studying catchment scale relationships, looking to see if the products are consistent at this scale. (Stefan) mentioned timing of lake phytoplankton bloom …would like to use CCI data esp. for using the uncertainties.

Land

- Do you think there are any gaps in the CMUG land science?

- Uncertainties – seems to be a barrier to uptake the use of uncertainties (Lizzie Good)

…would like to understand why uncertainties are not being used

…Rob Parker suggested using these within ESMValTool as an example to guide others

- Heatwave analyses – include LST as additional information for improving heatwave characterisation

…Lizzie suggested using microwave product for LST as it doesn't have cloud contamination. Federique agreed it could be useful.

- (Emilio) – extreme events e.g. fire…also linked with atmosphere ECVs and teleconnections
- (Emilio) - integration of scales e.g. land cover, glaciers, there are very big differences in results at different scales
  - Richard Jones – consider using higher resolution RCMs and land surface models for targeted experiments

- (Jean-Christophe) – LAI important, overarching studies needed (CCI is doing this well)

- (Gary) – More integrated work, using multiple CCI products to address specific questions e.g. catchment scale processes, this will help to reveal gaps. (Stefan) highlighted lake phytoplankton analyses would also like to use CCI data in future (esp. to make use of uncertainty data)…could be good CMUG work in future.

- (Debbie)

- Heather – Is producing more harmonised products for biomass to help users where it's not obvious which datasets to use.

Land group – 2.5 min report back

Deborah Hemming

Science highlights	Relevance / importance	Gaps / future potential
Heatwave analyses	Current discrepancy between reanalyses and observational products, LST could help to resolve this	Use of LST to enhance heatwave assessment
Application of ESMValTool – underpinning all the analyses	Useful tool for analysing multi-model (CMIP) datasets using different obs. Including uncertainties.	Including LST and uncertainty information in ESMValTool…will help is uptake by users also provides an example for use of uncertainties in other ECVs
LAI important ECV for understanding vegetation changes	Not clear which products are most useful in different situations	ITT is currently advertised to generate ECV for climate analyses
Biomass is working on harmonised product	Will support users to uptake biomass data	Discuss with CMUG how to link better in future
Integration across scales, important for understanding the scale relevant for different processes/impacts e.g. fire, land cover, glaciers, lake phytoplankton	Useful for evaluating models at the relevant scale to the process/impact	Targetted experiments (science questions) using models at relevant scales