



Australian Government
Geoscience Australia



Digital Earth
AUSTRALIA

Analysis Ready to Account Ready

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Things to consider

What do we need from environmental SDG indicators?

“To measure the change that we achieve”

Coverage: Can the indicator be measured globally?

Transparency: Is the method clear and able to be repeated?

Relevance: Is it measuring important aspects of the SDG?

Simplicity: Do all countries have the capability and capacity to deliver?

Cost: Can all countries afford to monitor this indicator?

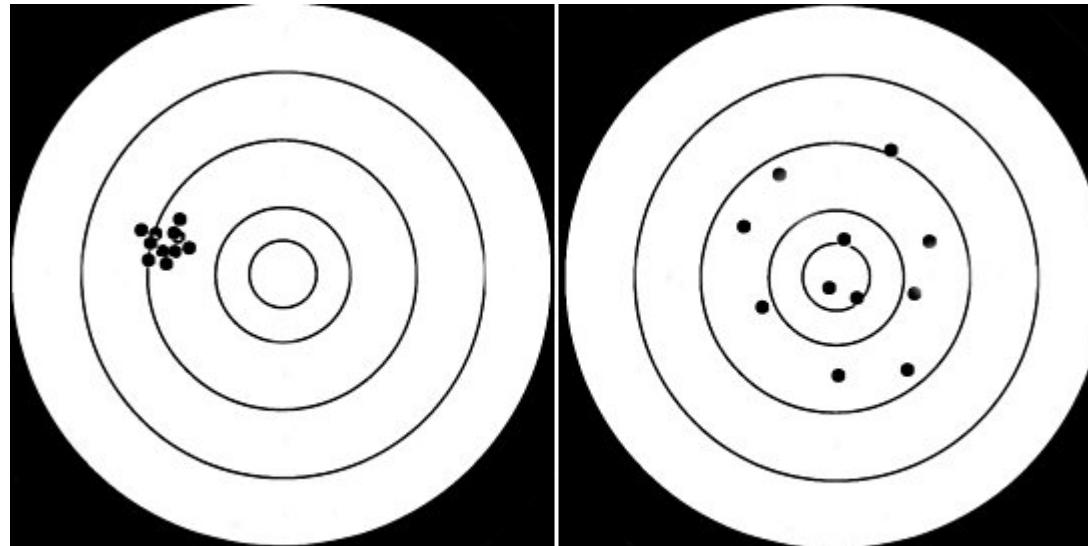
Clarity: Do people understand the measure and how it relates to the SDGs?

Precision vs Accuracy: Which is more important?

Robustness: Is the measure resistant to manipulation?

Power/Sensitivity: Will you be able to detect a change in the SDG?

Precision vs Accuracy



Precise and Inaccurate

Accurate and Imprecise

Houston University

Improving resolution does not necessarily improve accuracy.
Measurement and analysis needs to be fit for purpose.

Robustness: Can it be manipulated?

SDG 6.3.2: Proportion of bodies of water with good ambient water quality

Proposes using UN GEMS data
11 sites for all of Australia!
Monthly monitoring (at best)
Australia well resourced to
report up through UN process
Developing countries?

Example:

6 good, 5 bad 54%:46%

Add 4 good sites: 66%:34%

20% improvement in Australian WQ..!



Digital Earth Australia - A quick bit of background

Digital Earth Australia exploits the Australian archive of Landsat and Sentinel-2 satellite data and related spatial data to provide an analysis platform for geoscience information.

The EO data in DEA is corrected to be consistent across Australia to an Analysis Ready Data (ARD) standard, incorporating spatial, radiometric and atmospheric corrections to provide surface reflectance measurements.

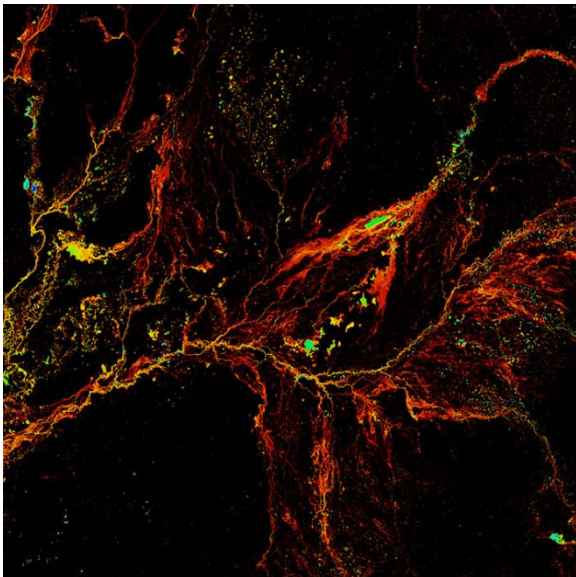
The consistency of the data enables algorithms to be run in a systematic, automated way, resulting in continental-scale products that inform us about the state of the environment and its change over time.

We aim to provide products that are open, consistent and useful.

“All models are wrong, but some are useful.” – George Box, statistician.

Example continental-scale products

Water Observations from Space

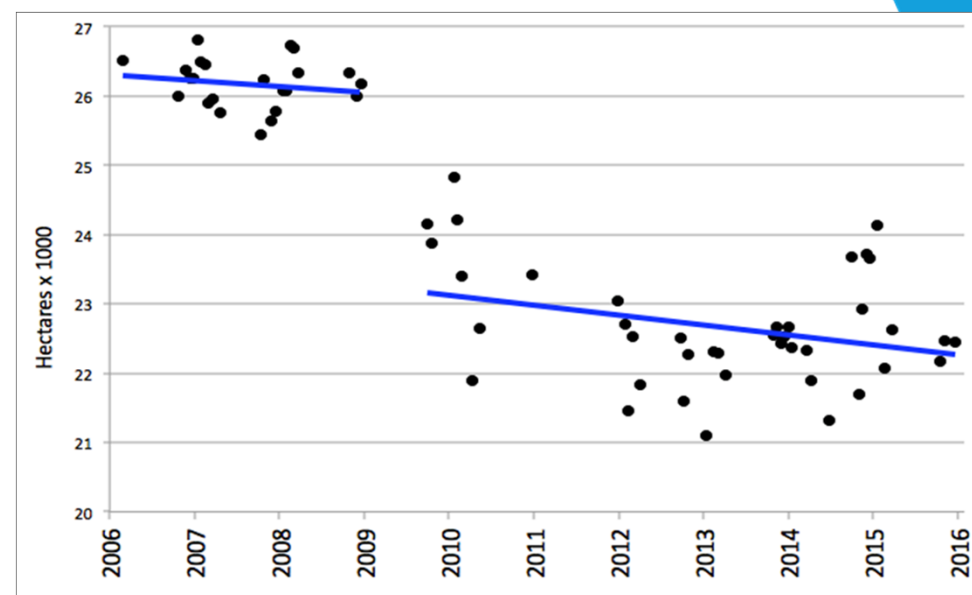
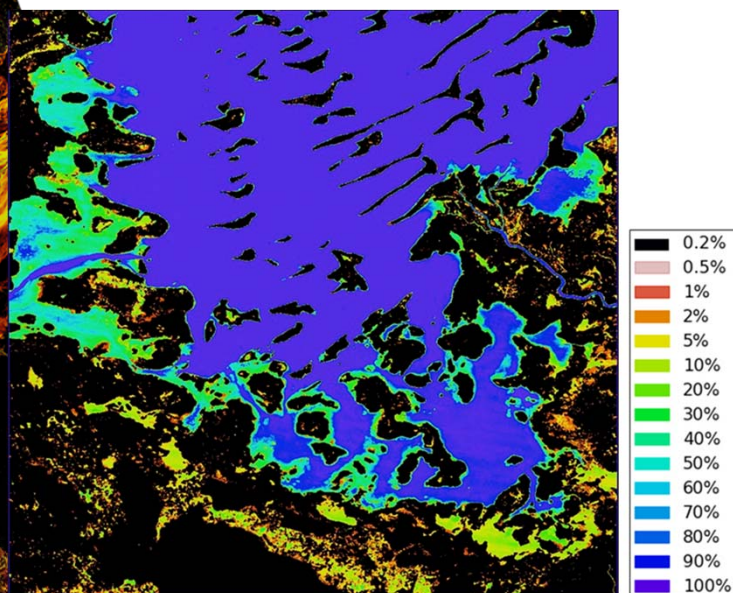


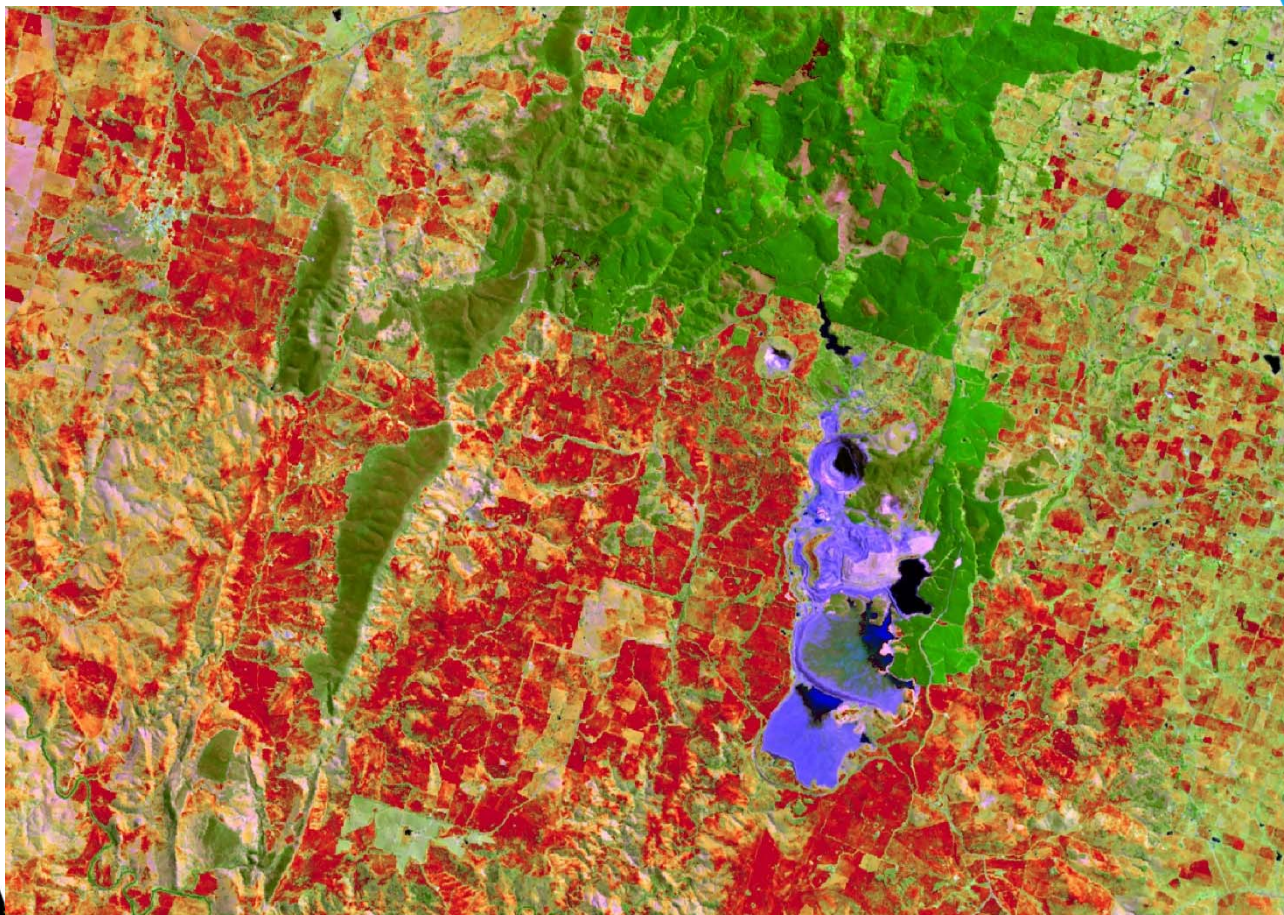
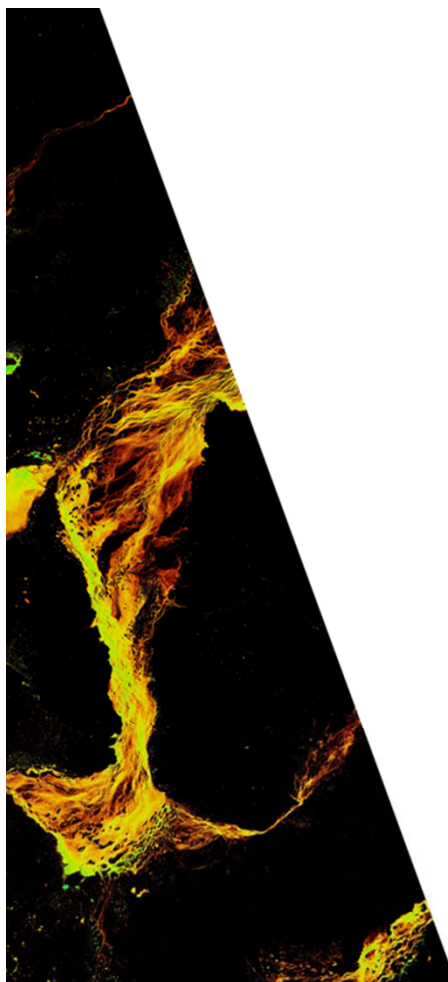
Intertidal Extent Map



Each product drawn from the 30 year time series of Landsat EO data.

Water Observations from Space: Lake Chad





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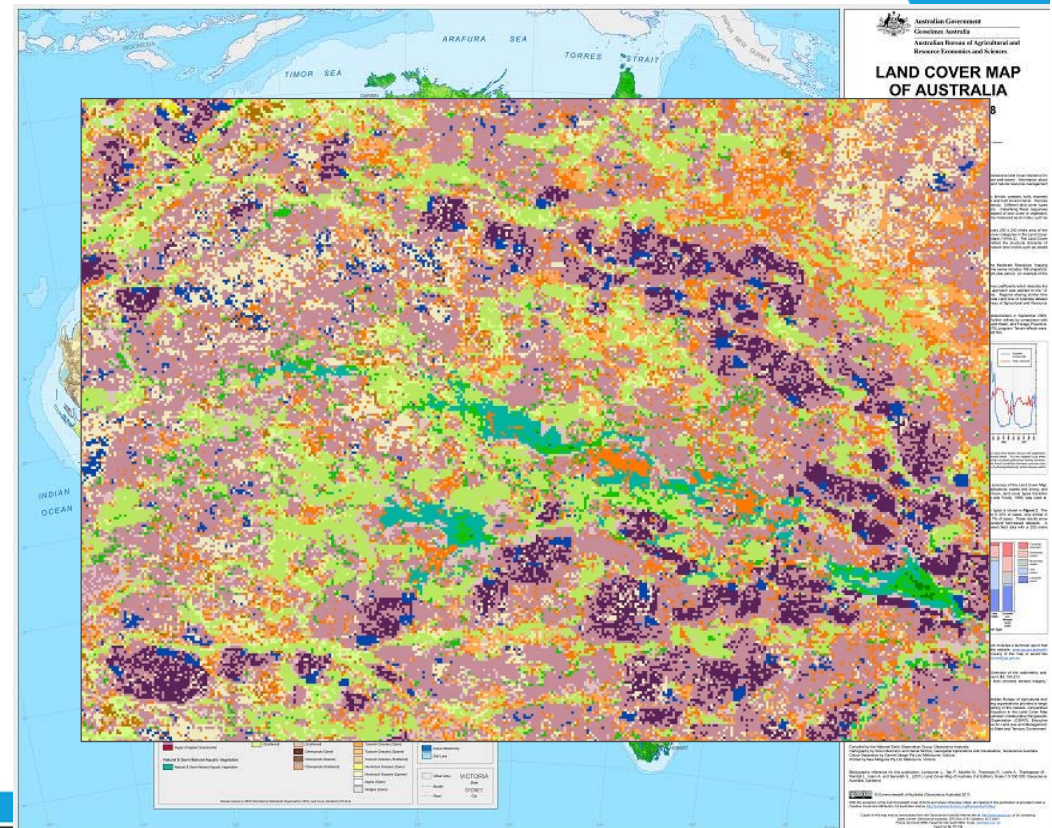


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Issues with continental classifications

The Dynamic Land Cover Map of Australia was an attempt to provide a national, consistent land cover map, based on the time series of MODIS vegetation index data.

In practice the spatial resolution and limiting the measurement variables to just vegetation greenness provides a limited result.



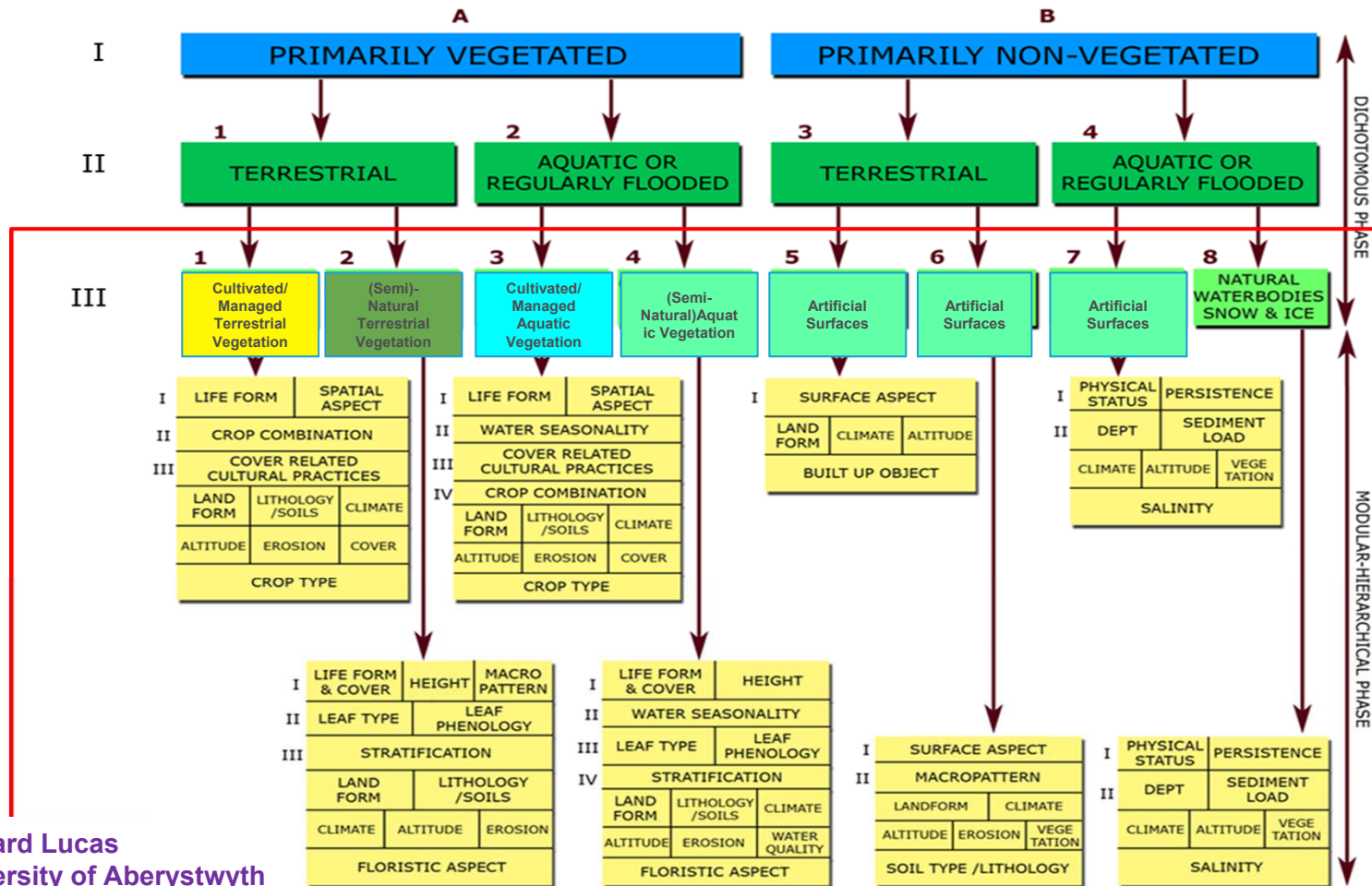
How can we do a better land cover product?

The issues of Australian national land cover for national reporting often emerge from the different needs being served by the different existing land cover products in each jurisdiction.

The different land covers often do not merge into a genuine national coverage and have areas of little or no data.

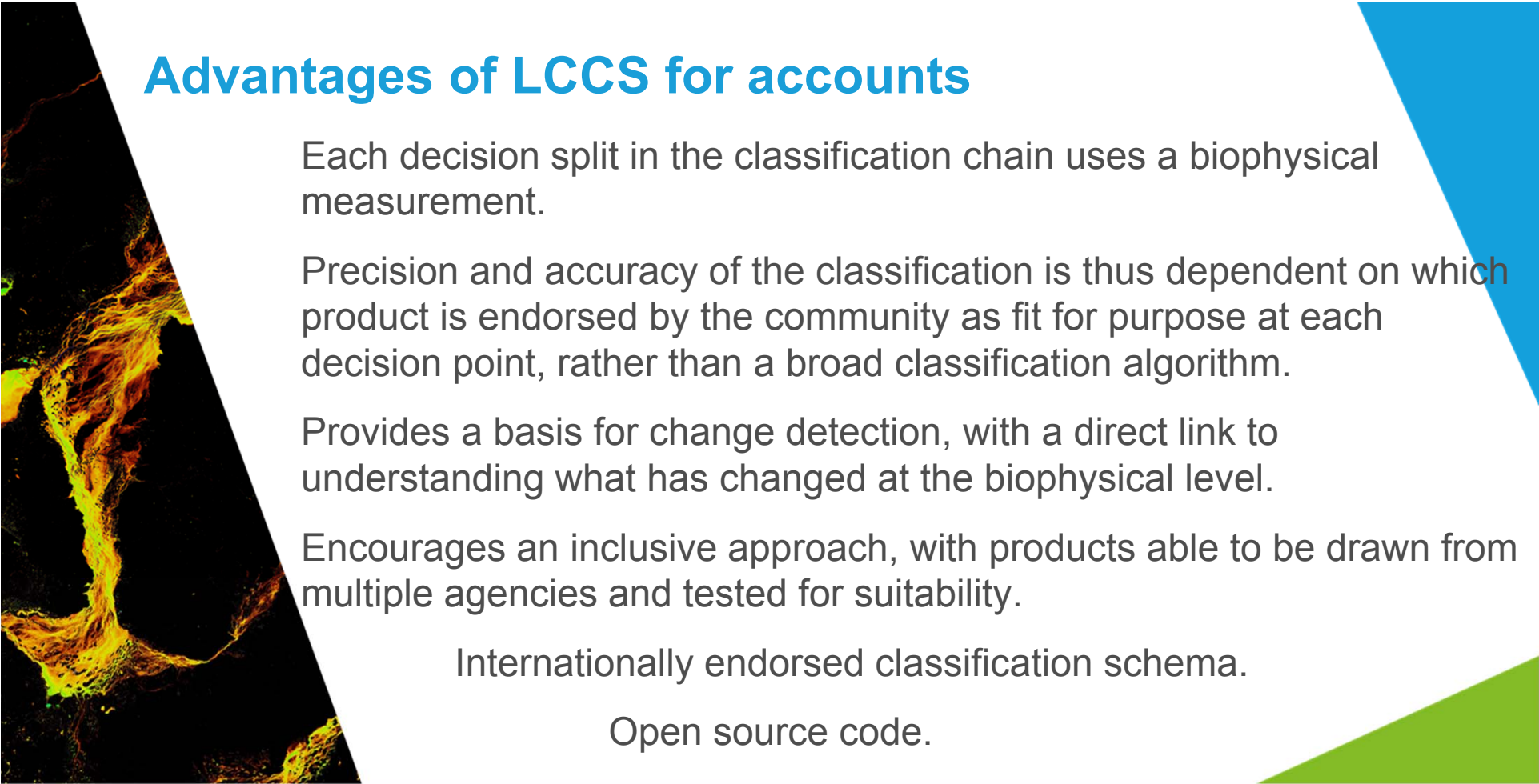
Propose the use of an overall framework that allows the different land cover scales to be compatible enough to be translated from the local to the national scale, and which can be populated with biophysical variable measurements.

UN – FAO LAND COVER CLASSIFICATION SYSTEM: LCCS-2



EODHaM
1st stage

EODHaM
2nd stage



Advantages of LCCS for accounts

Each decision split in the classification chain uses a biophysical measurement.

Precision and accuracy of the classification is thus dependent on which product is endorsed by the community as fit for purpose at each decision point, rather than a broad classification algorithm.

Provides a basis for change detection, with a direct link to understanding what has changed at the biophysical level.

Encourages an inclusive approach, with products able to be drawn from multiple agencies and tested for suitability.

Internationally endorsed classification schema.

Open source code.



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Questions?

Further Information

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