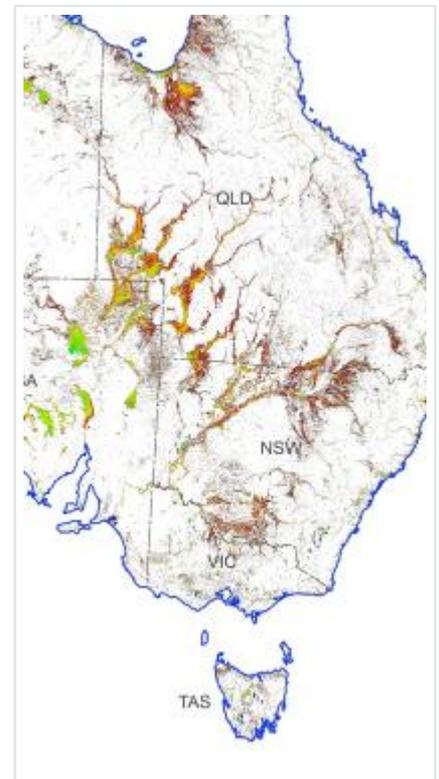


# DEA Water Observations Statistics (Landsat) DEPRECATED

**Water Observations from Space Statistics  
25m 2.1.5 - This product is deprecated and  
will be removed on 14th February 2022**



## Version

2.1.5

## Product ID

wofs\_summary, wofs\_annual\_summary,  
wofs\_apr\_oct\_summary, wofs\_nov\_mar\_summary

## Program

Digital Earth Australia

## Collection

Geoscience Australia Landsat Collection 2 (deprecated)

## Resource type

Derivative

## Published Date

12/03/2018

View the [original metadata page](#) for the most up-to-date information on this product.

## Basics

### Background

This is one of the Water Observations from Space suite of products, which gives summaries of how often surface water was observed by the Landsat satellites for various periods (per year, per season and for the period from 1986 to the present).

WO-STATS is created from the WO\_25\_2.1.5 product and provides information on how many times the Landsat satellites were able to clearly see an area, how many times those observations were wet, and what that means for the percentage of time that water was observed in the landscape.

## What this product offers

This product consists of the following datasets:

- **Clear Count:** how many times an area could be clearly seen (ie. not affected by clouds, shadows or other satellite observation problems)
- **Wet Count:** how many times water was detected in observations that were clear
- **Water Summary:** what percentage of clear observations were detected as wet (ie. the ration of wet to clear as a percentage)

As no confidence filtering is applied to this product, it is affected by noise where misclassifications have occurred in the WOfS water classifications, and can be difficult to interpret on its own. The confidence layer and filtered summary are contained in the WO-FILT-STATS product, which provides a noise-reduced view of the water summary.

WO-STATS is available in multiple forms, depending on the length of time over which the statistics are calculated. At present the following are available:

- **WO-STATS:** statistics calculated from the full depth of time series (1986 to present)
- **WO-STATS-ANNUAL:** statistics calculated from each calendar year (1986 to present)
- **WO-STATS-NOV-MAR:** statistics calculated yearly from November to March (1986 to present)
- **WO-STATS-APR-OCT:** statistics calculated yearly from April to October (1986 to present)

## Applications

- Helps understand where flooding may have occurred in the past, to inform emergency management and risk assessment.
- Provides an indication of the permanence of surface water in the Australian landscape by showing where water is observed rarely in comparison to where it is often observed, informing water management and mapping.
- Can assist with wetland analyses, water connectivity and surface-ground water relationships.
- The annual product provides information on how surface water changes per year across Australia, and is useful for drought analysis.
- The seasonal product is useful for understanding the differences in water availability between the summer and winter periods across Australia.

## Related products

- [DEA Water Observations \(Landsat\) DEPRECATED](#)
- [DEA Water Observations Filtered Statistics \(Landsat\) DEPRECATED](#)

## Publications

Mueller, N., Lewis, A., Roberts, D., Ring, S., Melrose, R., Sixsmith, J., Lymburner, L., McIntyre, A., Tan, P., Curnow, S., & Ip, A. (2016). Water observations from space: Mapping surface water from 25 years of Landsat imagery across Australia. *Remote Sensing of Environment*, 174, 341–352. <https://doi.org/10.1016/j.rse.2015.11.003>

# Access

## Data access

<b>Link to data</b>	<a href="#">AWS</a>
<b>Link to maps</b>	<a href="#">DEA Maps</a>
<b>Web services</b>	<a href="#">OWS</a>
<b>eCat record</b>	<a href="#">121074</a>
<b>Product ID</b>	wofs_summary, wofs_annual_summary, wofs_apr_oct_summary, wofs_nov_mar_summary
<b>CMI RESTful node ID</b>	143
<b>NCI project code</b>	fk4
<b>Access constraints</b>	WO_STATS_2.1.5 is available under CC-BY 4.0. The code for WOfS and its derivatives is available through GitHub under Apache 2.0 Open licensing.
<b>Security classification</b>	Unclassified
<b>Update frequency</b>	periodic

## Access notes

### DEA Maps

To view and access the data interactively:

- 1) Visit [DEA Maps](#).
- 2) Click 'Add data'.
- 3) Select 'Surface water' > 'Water Observations from Space'.
- 4) Select which products you would like to display and click 'Add to the map'.

# Details

## Technical information

As no confidence filtering is applied to this product, it is affected by noise where misclassifications have occurred in the WOfS water classifications, and hence can be difficult to interpret on its own. The confidence layer and filtered summary are contained in the WO-Fil-STATS product, which provide a noise-reduced view of the water summary.

WO-STATS is available in multiple forms, depending on the length of time over which the statistics are calculated. At present the following are available:

- WO-STATS: statistics calculated from the full depth of time series (1986 to present)
- WO-STATS-ANNUAL: statistics calculated from each calendar year (1986 to present)
- WO-STATS-NOV-MAR: statistics calculated yearly from November to March (1986 to present)
- WO-STATS-APR-OCT: statistics calculated yearly from April to October (1986 to present)

In previous versions of WOfS, the basic water classifications, statistical summaries and confidence products were contained within one product with several datasets. As of version 2.1.5, WOfS is split into three products: Water Observation Feature Layers (WO\_25\_2.1.5), Summary Statistics (WO-STATS\_25\_2.1.5), and Filtered Summary Statistics (WO-Fil-STATS\_25\_2.1.5).

## Accuracy and limitations

Please refer to the SR-N\_25\_2.0.0 Product Description (GA, 2013) for the accuracy and limitations of the atmospheric, BRDF and topographic shading processing sequence. Please refer to Mueller et al. 2016 for details on the accuracy and limitations of WOfS and WOfS-STATS.

WO-STATS provides a summary of water classification results from the WOfS product for all of Australia. As WOfS cannot perfectly filter out misclassifications due to clouds, cloud shadows and issues to do with satellite sensor problems (such as the Landsat 7 SLC-Off failure), the summary also contains these misclassifications. In general misclassifications occur in the very low frequency observations and so can cause a misrepresentation of flooded areas. Misclassifications can also be caused by the presence of vegetation covering the water or within the water.

## Relevant websites

- [Geoscience Australia Water Observations from Space](#)

## References

Mueller, N., Lewis, A., Roberts, D., Ring, S., Melrose, R., Sixsmith, J., Lymburner, L., McIntyre, A., Tan, P., Curnow, S., & Ip, A. (2016). Water observations from space: Mapping surface water from 25 years of Landsat imagery across Australia. *Remote Sensing of Environment*, 174, 341–352. <https://doi.org/10.1016/j.rse.2015.11.003>

# Processing

## Lineage

This product is created from the WOfS water classification (Water Observations 2 (Landsat)). Every pixel location in WO\_25\_2.1.5 is analysed statistically to derive the count of clear observations, the count of clear-wet observations and then calculate the percentage of clear observations that were also wet. This provides a 'normalised' water frequency product for all of Australia.

## Processing steps

- [Water Observation from Space \(WOfS\) - statistics](#)

## Major algorithms

- [Water Observations from Space Detection Algorithm 1.2](#)

## Schema / spatial extent

### DEA Albers Raster Schema

<b>Update frequency</b>	asNeeded
<b>Temporal extent</b>	1986-08-16 00:00:00 – 2017-07-31 23:59:59
<b>Min. longitude</b>	-1943830.00
<b>Max. longitude</b>	2170690.00
<b>Min. latitude</b>	-1119030.00
<b>Max. latitude</b>	-4856630.00
<b>Coordinate reference system</b>	Australian Albers / GDA94 (EPSG: 3577)
<b>Cell size X</b>	25.00
<b>Cell size Y</b>	25.00

# Media

# Credits

## Owner

Commonwealth of Australia (Geoscience Australia)

## Principal contributors

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## Subject matter experts

Norman Mueller

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