Australian Government

Geoscience Australia

Water Observations from Space Statistics 25m 2.1.5

Product Description

eCat: # 81568

doi: Water Observations from Space article in Remote Sensing of Environment

Unclassified

Product Description: Summary Description

	Sheet A.1 Definition and usage
Product Name	Water Observations from Space Statistics 25m 2.1.5
Title	WO-STATS_25_2.1.5
Product Overview	Water Observations from Space Statistics (WO_STATS_2.1.5) is a set of gridded datasets derived from the WOfS dataset. WO_STATS provides three statistical summaries of the WOfS dataset per specified time period: 1. the number of clear satellite observations for the period; 2. the number of clear satellite observations in which water was detected; 3. the percentage of clear observations in which water was detected. The available time periods are: • all time (1986 to present) • annual (each year from 1986 to latest available full year) • yearly November to March (from 1986 to latest available period) • yearly April to October (from 1986 to latest available period)
Product Features	WO_STATS delivers statistics of the WOfS data in cumulative "summaries" that combine all water observations over specified time periods into gridded datasets. Each Water Observation Feature Layer (WOFL) in WOfS provides information for each pixel, defining whether an observation was clear and dry, clear and wet or masked due to the presence of clouds, shadows or technical issues with the observation. WO_STATS provides basic statistical summaries of the observation of each pixel through time period specified. Three statistics are calculated and delivered as individual datasets: 1. Total number of clear observations for the pixel, is a count per pixel of the number of observations that were clear and either wet or dry for the time period. 2. Total number of wet observation for the pixel, is a count per pixel of the number of observations that were clear and wet for the time period. 3. Summary, is the ratio of clear wet observations to clear wet or dry observation, expressed as a percentage. The available time periods are: • all time (1986 to present) • annual (each year from 1986 to latest available full year)
Product Versions	2.1.5
Product Background	The WOfS product is a key component of the National Flood Risk Information Portal (NFRIP), developed by GA. The objective of Water Observations from Space is to analyse GA's historic archive of satellite imagery to derive water observations, to help understand where flooding may have occurred in the past. The collection of many hundred thousand WOFLs that make up WOfS are too cumbersome to display easily. WO_STATS provides the mechanism to present and deliver WOfS in a more easily digestible form, and provides understanding of water in the landscape. WO-STATS is created from the WOfS water classification (WO_25_2.1.5). 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.
Potential Applications	The primary purpose of the WOfS and WO-STATS products is to help understand where flooding may have occurred in the past. This has application in emergency management and risk assessment. The product has many secondary uses. For example the products provide 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. This has application in water management and mapping. The products have also been used for wetland analyses, water connectivity and surface-ground water relationships.
Expected Lifespan	
Images	

B Specification

	Sheet B.1 Provenance and Algorithms
Data Sources	1. WO_25_2.1.5
Major Algorithms	1. Water Observations from Space Detection Algorithm 1.2
Processing Sequence	1. Water Observation from Space - statistics
Validation of Underlying Algorithms	The quality of WOfS-STATS is verified by visual inspection, to find instances of processing failure or issues relating to upstream data quality issues. Any detected issues are related to the DEA Pipeline and Core teams for checking and rectification.
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.

C Availability

	Sheet C.1 Licencing and Access
Support	Supported
Licencing	CC BY Attribution 4.0 International License
Search Tool	
Preview Facility	
Ordering and Distribution	Commonwealth of Australia (Geoscience Australia)

References:

- WOfS v1.5 (previous version): Geocat #81568