

Name of dataset or data source:

Inundation Maps for NSW Inland Floodplain Wetlands

Custodian of the dataset or data source:

ED Science (E&H)

Description:

Under the NSW DPIE-EES Environmental Water Management Program the distribution and extent of inundation is monitored in large inland floodplain wetland assets which are targeted for environmental flow delivery and located in the NSW portion of the Murray-Darling Basin: Gwydir wetlands, Lowbidgee floodplain, Lower Lachlan wetlands, Macquarie Marshes, Barmah-Millewa Forest and Narran Lakes (since 2022-2023). Inundation maps are derived from image observations sourced from the satellite data sources of Landsat (30m pixel) and Sentinel-2 (10m pixel) for the period July 2014-June 2019. Image observations are automatically downloaded by NSW DPIE from the USGS (United States Geological Survey's Earth Explorer website (<http://earthexplorer.usgs.gov>)) and the Copernicus Sentinel Open Access Hub (<https://scihub.copernicus.eu/dhus/#/home>) as orthorectified images. NSW DPIE process these images to standardised surface reflectance (Flood et al. 2013). Image observations with high cloud coverage (>50%) are not considered because they cannot be processed. The inundation mapping procedure is a modified version of Thomas et al. (2015) which is a method to map inundation in vegetated floodplain wetlands using an integrated spectral response to water and vigorous vegetation. From each satellite image observation NSW DPIE-EES automatically generates a water index (Fisher et al. 2016) and the NDVI vegetation index. These indices are used to allocate inundated pixels to classes of open water, mixed water and vegetation, and dense vegetation cover that was inundated (Thomas et al. 2015). A process of pixel recoding is conducted to produce each inundation map. First all inundation classes are merged and allocated a value of one (1) whilst all other pixels are allocated a value of zero (0). Second, ancillary data is then used to identify irrigation infrastructure to do two things: locate inundated pixels within off-river storages (ORS) by recoding to a value of (2) and to remove cropped areas that have similar spectral properties to wetland vegetation by coding the pixels to a value of zero (0). Third, for observation dates affected by cloud shadow, which is often incorrectly detected as water, pixels are manually reclassified as cloud shadow by recoding them to a value of three (3). The final inundation classes are inundated (1), off-river storages with water (ors) (2), cloud shadow (3), and not inundated (0). Final inundation maps are clipped to the inland floodplain wetland boundaries.

The naming format of the files are: Wetland_date_sensor_inundation1_ors2_cloud3.tif or Wetland_path_date_sensor_inundation1_ors2_cloud3.tif

Wetland: bm = Barmah Millewa floodplain gw = Gwydir floodplain lachlan = Lachlan floodplain lo = Lowbidgee floodplain mm = Macquarie Marshes floodplain

Path: Specific to the Lachlan Date: Satellite image date processed Sensor: Sensor type- I7 (Landsat7; I8 (Landsat 8); s2 (Sentinel2) Inundation1: Inundated ors2: Off-River Storage with water cloud3: Cloud shadow (in filename if present)

References: Fisher, A., Flood, N. and Danaher, T. (2016). Comparing Landsat water index methods for automated water classification in eastern Australia. *Remote Sensing of Environment*, 175, 167-182.

Flood, N., Danaher, T., Gill, T., & Gillingham, S. (2013). An

operational scheme for deriving standardised surface reflectance from Landsat TM/ETM+ and SPOT HRG imagery for eastern Australia. Remote Sensing, 5, 83-109.

Thomas, R. F., Kingsford, R. T., Lu, Y., Cox, S. J., Sims, N. C. and Hunter, S. J., (2015). Mapping inundation in the heterogeneous floodplain wetlands of the Macquarie Marshes, using Landsat Thematic Mapper. Journal of Hydrology 524, 194-213.

Data quality rating:

- ★Institutional Environment - 5
- ★Accuracy - 5
- ★Coherence - 5
- ☆Interpretability - 3
- ☆Accessibility - 2

INSTITUTIONAL ENVIRONMENT

Excellent



- ✓ Does the information have the potential to enhance services or service delivery?
- ✓ The data aligns with the Data Quality Framework, including:
 - Legislation
 - Policies
 - Information Asset Governance
 - Standards
 - Data Management Plans
- ✓ The following governance roles and responsibilities for this asset are clearly assigned:
 - Information Asset Owner
 - Information Asset Custodian
 - Information Steward
- ✓ Data collection is authorised by law, regulation or agreement
- ✓ The Custodial agency has no commercial interest or conflict of interest in the data

ACCURACY

Excellent



- ✓ Data has been subject to a data assurance process (for example: Checking for errors at each stage of data collection and processing, or verifying data entry and making corrections if necessary.)
- ✓ Data is revised and the revision is published if errors are identified
- ✓ There are no known gaps in the data or if there are gaps (for example: non-responses, missing records, data not collected), they have been identified in caveats attached to the dataset.
- ✓ No changes have been made or other factors identified (for example: weighting, rounding, de-identification of data, changes or flaws in data collection or verification methods) that could affect the validity of the data; or any changes/factors have been identified in caveats attached to the asset.
- ✓ The data collection met the objectives of the primary user. The data correctly represents what it was designed to measure, monitor or report.

COHERENCE

Excellent



- ✓ Standard definitions, common concepts, classifications and data recording practices have been used.

- ✓ Elements within the data can be meaningfully compared.
- ✓ This data is generally consistent with similar or related data sources from the same discipline
- ✓ The data can be analysed over time (for example, there have not been any significant changes in the way items are defined, classified or counted over time).
- ✓ The data does not form part of a collection or, if it is the latest in a series of data releases, there have not been any changes in methodology or external impacts since the last data release.

INTERPRETABILITY

Good



- ✓ Information is available about the primary data sources and methods of data collection (e.g. instruments, forms, instructions).
- ✓ Information is available to explain concepts, help users correctly interpret the data and understand how it can be used
- ✓ Information is available to explain ambiguous or technical terms used in the data

- ✗ A data dictionary is available to explain the meaning of data elements, their origin, format and relationships
- ✗ Information is available to help users evaluate the accuracy of the data and any level of error

- i Find out more about the data dictionary from the Custodian (contact details below).
- i Find out more about the primary data sources and methods of data collection from the Custodian (contact details below).
- i Find out more about concepts used in this dataset and how to understand or interpret the data from the Custodian (contact details below).
- i Find out more about ambiguous or technical terms used in the data from the Custodian (contact details below).

ACCESSIBILITY

Fair



- ✓ Data is available in machine-processable, structured form (e.g. CSV format instead of an image scan of a table)
- ✓ Data is available in a non-proprietary format (e.g. CSV, XML)

- ✗ Data is available online with an open licence
- ✗ Data is described using open standards (e.g. RDF, SPARQL) and persistent identifiers (URIs or DOIs)
- ✗ Data is linked to other data, to provide context (e.g. employee ID is linked to employee name or species name is linked to genus)

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For more information about this dataset or data source, contact:

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131555

Understanding the Data Quality Statement

The data quality statement aims to help you understand how a particular dataset could be used and whether it can be compared with other, similar datasets. It provides a description of the characteristics of the data to help you decide whether the data will be fit for your specific purpose.

The Data Quality statement is prepared by the data custodian (provider of the dataset), using a questionnaire that has been developed in accordance with the NSW Government Standard for Data Quality Reporting.

About the quality rating:

The reporting questionnaire asks five questions for each of these data quality dimensions:

- Institutional Environment
- Accuracy
- Coherence
- Interpretability
- Accessibility

For each question: "yes" = 1 point; "no" = 0 points

The number of points determines the Quality Level for each dimension (high, medium, low).

Only dimensions with four or five points receive a star.

Points	Quality Level	Star / No Star
0	Poor	No Star
1	Poor	No Star
2	Fair	No Star
3	Good	No Star
4	Very Good	Star
5	Excellent	Star

Evaluating data quality

Quality relates to the data's "fitness for purpose". Users can make different assessments about the data quality of the same data, depending on their "purpose" or the way they plan to use the data.

The following questions may help you evaluate data quality for your requirements. This list is not exhaustive. Generate your own questions to assess data quality according to your specific needs and environment.

- What was the primary purpose or aim for collecting the data?
- How well does the coverage (and exclusions) match your needs?
- How useful are these data at small levels of geography?
- Does the population presented by the data match your needs?
- To what extent does the method of data collection seem appropriate for the information being gathered?

- Have standard classifications (eg industry or occupation classifications) been used in the collection of the data? If not, why?
Does this affect the ability to compare or bring together data from different sources?
- Have rates and percentages been calculated consistently throughout the data?
- Is there a time difference between your reference period, and the reference period of the data?
- What is the gap of time between the reference period (when the data were collected) and the release date of the data?
- Will there be subsequent surveys or data collection exercises for this topic?
- Are there likely to be updates or revisions to the data after official release?