ONE COUNTRY, DIFFERENT WATER REALITIES

Why regional monitoring matters for Australian agriculture

Australia is not facing one single water story. Water availability varies considerably across regions, influencing agricultural production in different ways.

Different regions. Different conditions. A shared need for consistent information

Recent national crop outlooks illustrate this clearly. Australian cotton lint production is forecast to fall in 2025–26, reflecting both lower planted area and lower yields. Variable water availability and rainfall across eastern Australia have contributed to this outlook, while conditions differ considerably between regions. In New South Wales, for example, southern cropping regions experienced drier conditions and below-average water availability, while northern areas including the Gwydir, Namoi and Macquarie Valley benefited from above-average water availability.

Across Australia, water availability, rainfall, irrigation allocations, and production outlooks can vary markedly from one valley, catchment, or irrigation system to another. This regional variability is one of the defining characteristics of Australian agriculture.

This variability can also be observed in irrigation patterns. The map below illustrates irrigation frequency across agricultural areas in eastern Australia, showing the number of seasons in which irrigation was detected. The detailed views highlight how irrigation frequency can vary substantially between fields and agricultural regions.

For irrigated agriculture, these differences matter.

IRRIGATION	MARKETS	YIELD	REPORTING	PLANTING
Irrigation strategies and timing	Water market decisions	Crop yield expectations	Sustainability monitoring and reporting	Planting decisions

In some regions, reduced water availability may limit planting or increase pressure on irrigation decisions. In others, conditions may remain more favourable. This makes monitoring at both regional and field scale increasingly valuable.

Regional differences become visible from space

The map below illustrates irrigation frequency across agricultural areas in eastern Australia, expressed as the number of seasons in which irrigation was detected. The detailed views highlight how irrigation frequency can vary substantially between fields and agricultural regions.

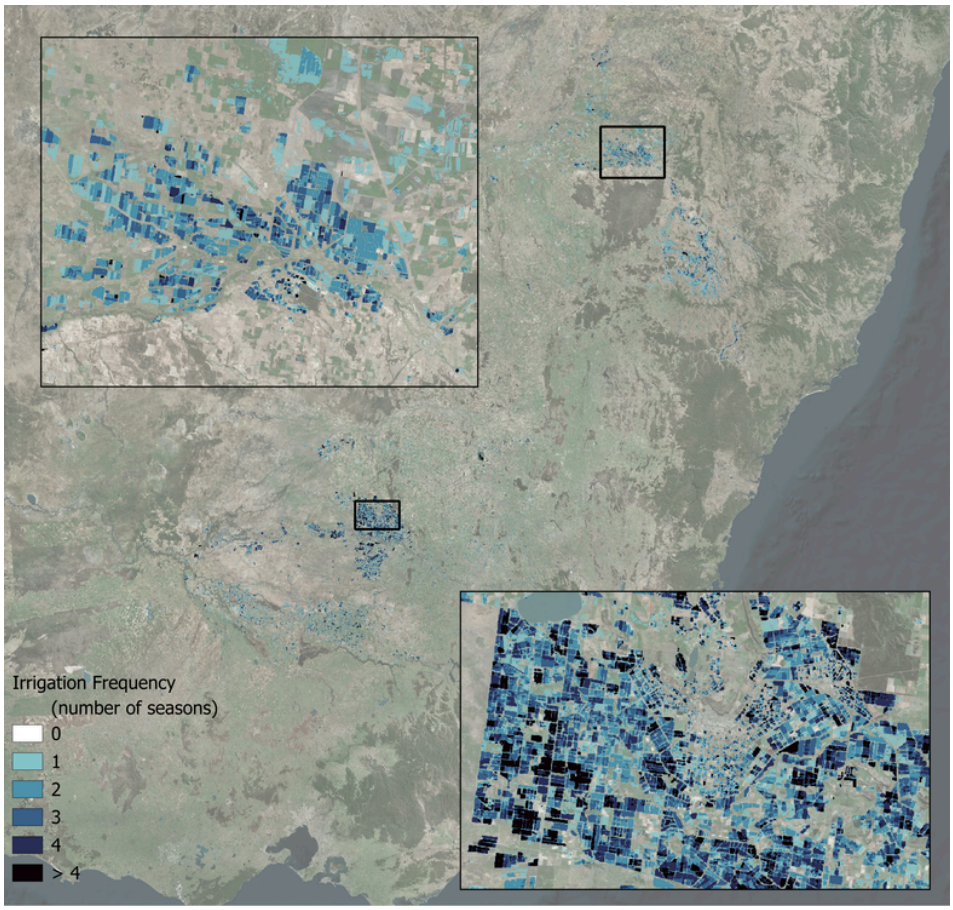

Figure 1. Irrigation frequency across agricultural areas in eastern Australia from 2018 to June 2024, expressed as the number of seasons in which irrigation was detected. Darker areas indicate fields where irrigation was detected more frequently. Source: Terramira / REINFORM.

Regional context shows the broader water picture; field-level observations reveal how irrigation patterns differ within and between agricultural areas.

Why consistent monitoring matters

Traditional data sources remain critical, but information can be fragmented across regions and difficult to compare consistently over time. Earth Observation complements these sources with repeated, scalable and spatially consistent observations across large agricultural areas.

REGIONAL VISIBILITY
See spatial differences across agricultural areas

REPEATABLE MONITORING
Observe conditions consistently across seasons

COMPARABLE INDICATORS
Support benchmarking using common methods

WATER-SMART DECISIONS
Turn monitoring into practical information

From variability to actionable insight

By combining Copernicus Earth Observation data, meteorological information, hydrological modelling and locally calibrated datasets, WaterSENSE | REINFORM is working to support more transparent and consistent monitoring of water use and water productivity across Australian agricultural systems.

Benchmarking becomes particularly valuable when comparisons can be made using consistent methods across regions and seasons. Earth Observation can contribute to this common framework, helping water productivity to be assessed under different climatic, agricultural and management conditions.

Understanding regional variability is important for growers, irrigation operators, industry bodies, water managers and policymakers. It is not enough to know that water conditions are changing. The real value lies in understanding where changes are occurring, how conditions differ between regions, how agricultural systems are responding and how water use and productivity can be monitored consistently over time.

This is where scalable Earth Observation-based approaches can play an important role. Copernicus observations provide a consistent EO foundation that can be combined with other data sources and modelling to build a more detailed picture across fields, irrigation areas and regions.

COPERNICUS EO	METEOROLOGY	HYDROLOGICAL MODELLING	LOCAL DATA

Water-smart agriculture starts with reliable information - and reliable information needs to reflect regional differences.

Interested in learning more?

If you work in agriculture, irrigation, water management, sustainability or Earth Observation, we would be pleased to connect. WaterSENSE | REINFORM works with stakeholders to explore practical applications of Earth Observation-based water monitoring, benchmarking and decision-support services.

Get in touch with the WaterSENSE team or follow the project on LinkedIn to stay updated on the latest developments.

Sources and additional information

- ABARES - Australian Crop Report, March 2026:
  https://www.agriculture.gov.au/abares/research-topics/agricultural-outlook/australian-crop-report/march-2026
- NSW Water Allocation Dashboard:
  https://www.water.dcceew.nsw.gov.au/our-work/allocations-and-availability/allocations/allocations-dashboard
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