BIOLOGICAL ASSESSMENT OF WATER QUALITY: DELIVERY OF A NATIONAL SYSTEM IN AUSTRALIA

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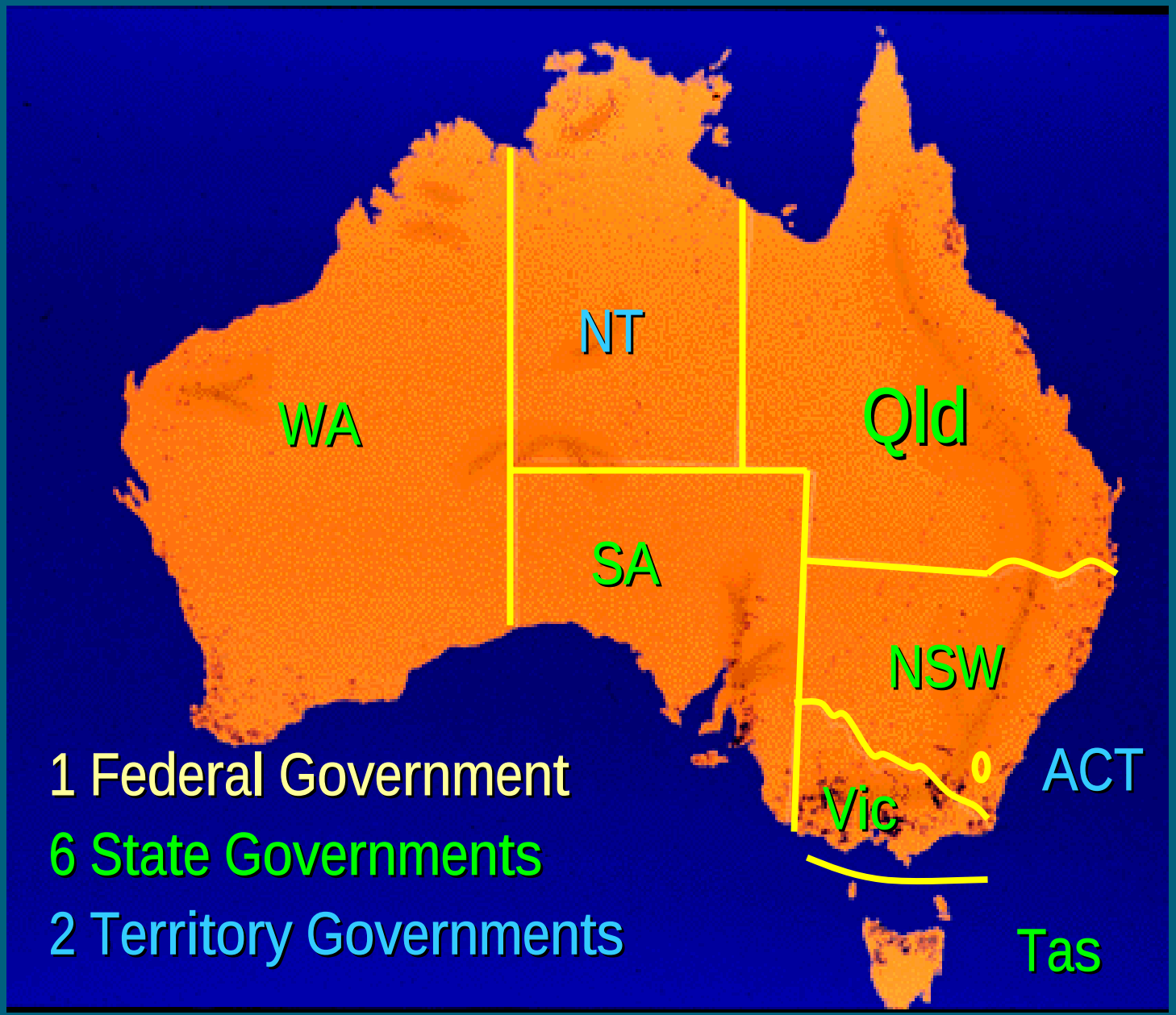
Don’t mess with my rivers!

National River Health Program

Why the Program?

The 1200 km Darling River Blue-Green algal bloom in 1991 brought the health of the nation's rivers to prominence.

Australian Governments

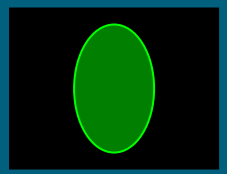


“Resolving Key Issues”

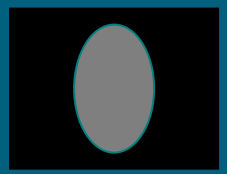
Temporal variability in macroinvertebrate community composition

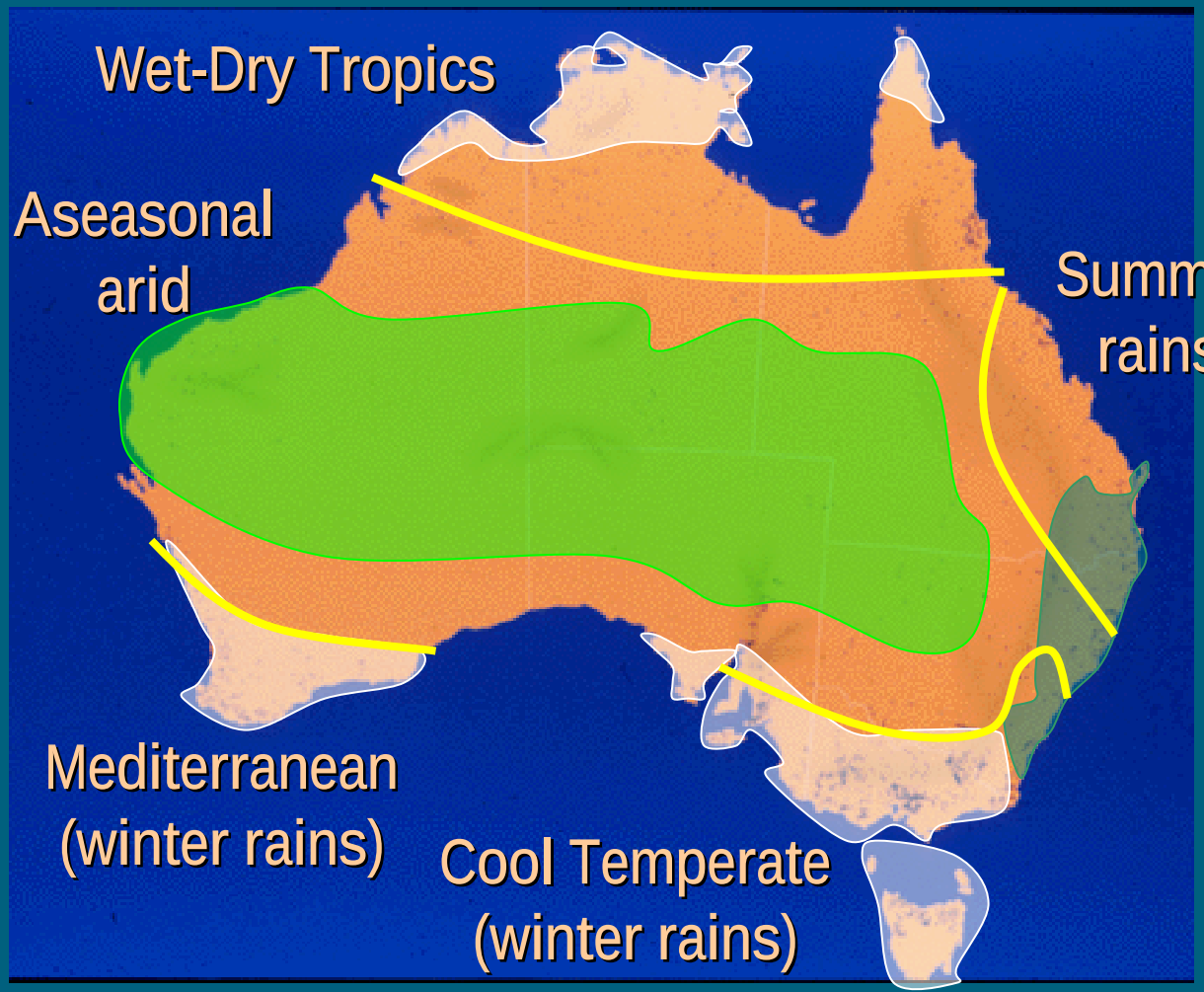
Rainfall variability

High➔Extreme



Low➔Moderate





“Resolving Key Issues”

Interpretable outputs for water resource managers

Regional Workshops and surveys

O/E Number of taxa

O/E of SIGNAL scores

(SIGNAL = Australian analogue of BMWP or SASS)

Bands
A, B, C, D

(where A is > or < 80% of reference site O/E values)

AUSRIVAS - Australian River Assessment System

- Nationally standardized system
- Some regionalization for climatic ranges but standard outputs
- Easy to use and interpret outputs
- Central management and access control
- **Aim**: **To demonstrate how the science behind biological monitoring has been packaged and delivered for easy use**

AUSRIVAS: components

METHODS

- Standardized methods for sampling and data analysis
- Happy alliance between feds, states & researchers

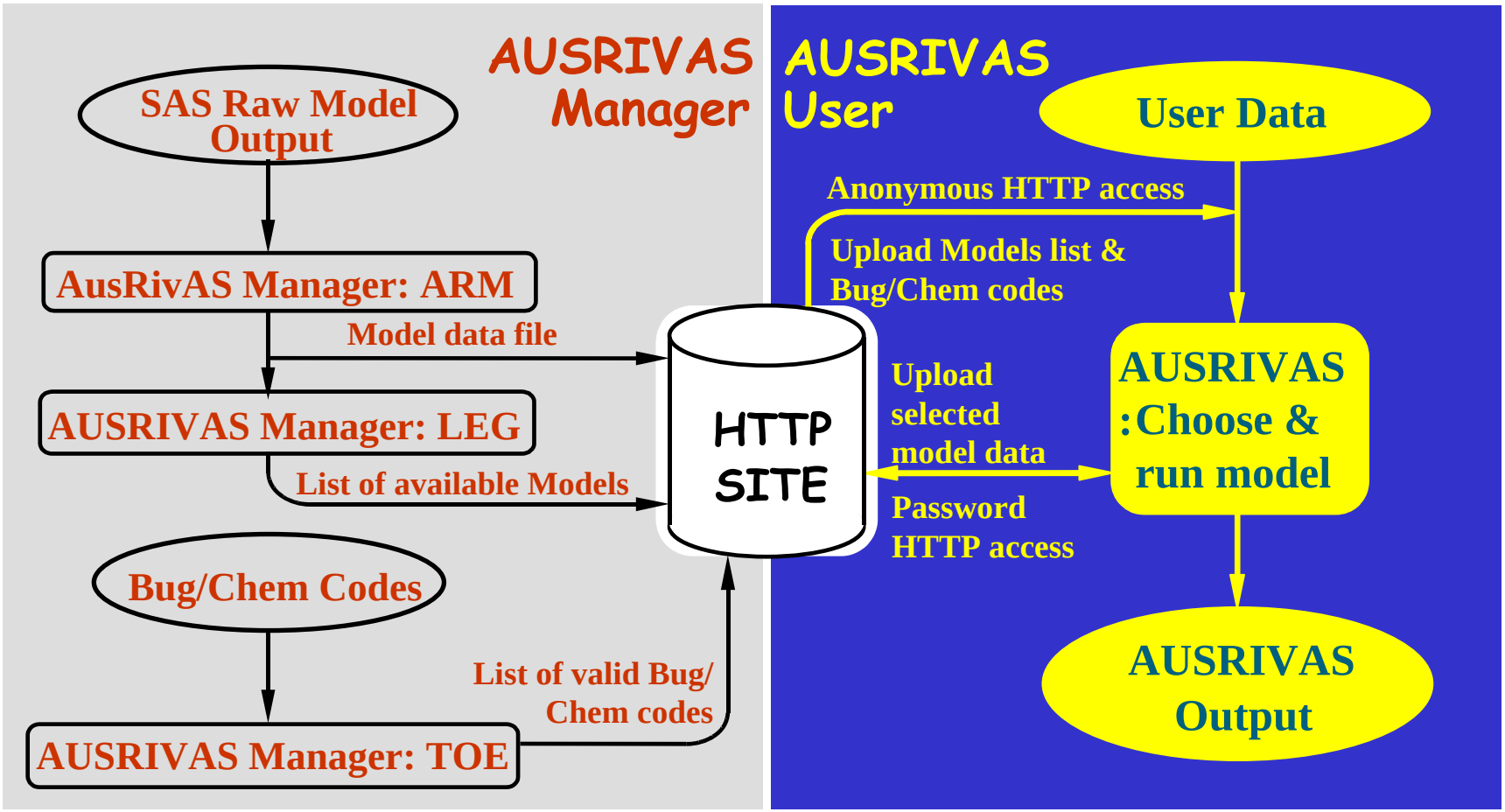
SOFTWARE

- Internet based and managed with access to models password controlled
- Central management and control over access

MODELS

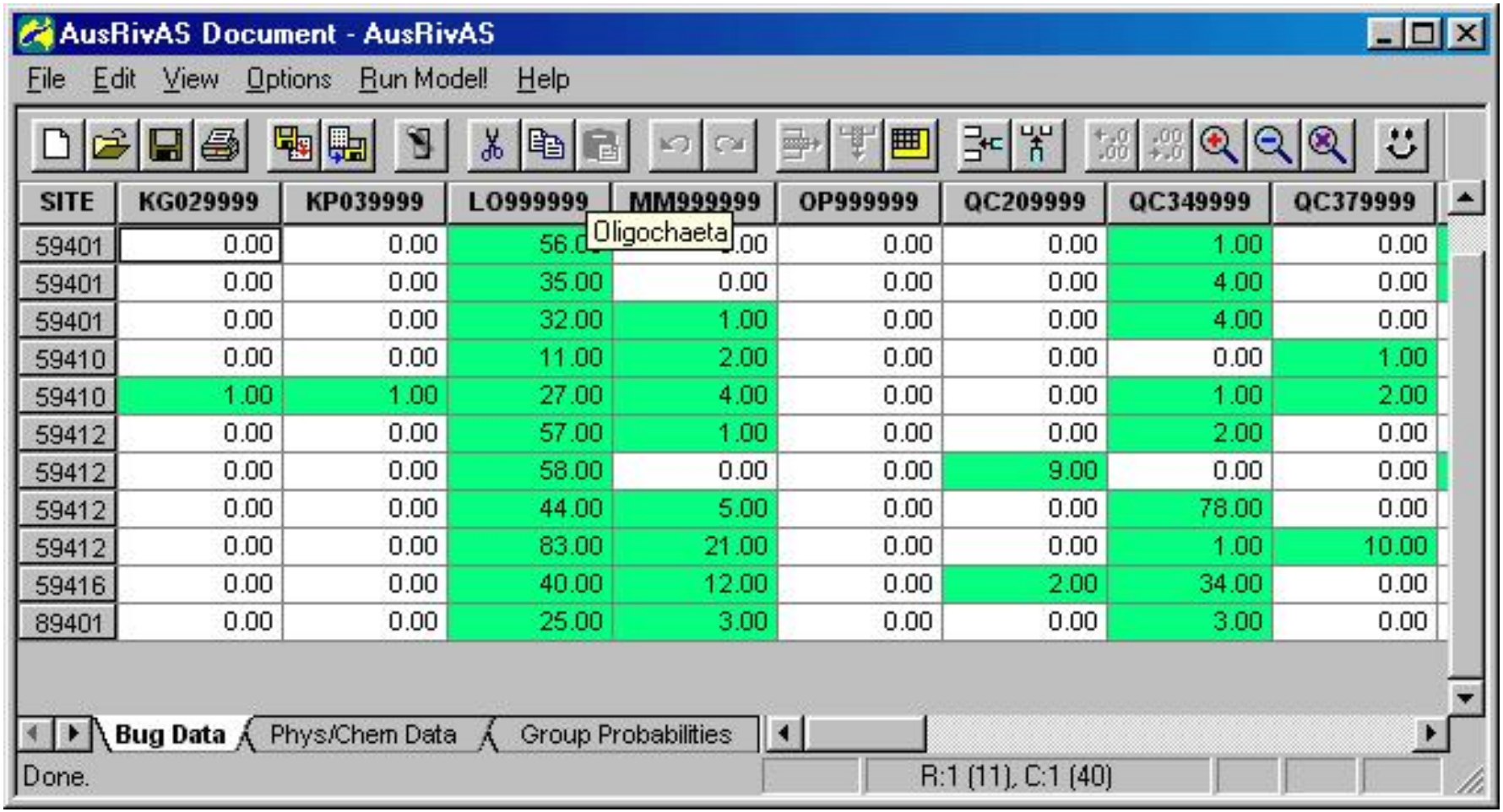
- >50 covering all of Australia - small derived data sets - final steps in analysis with client data

AUSRIVAS: How does it work?



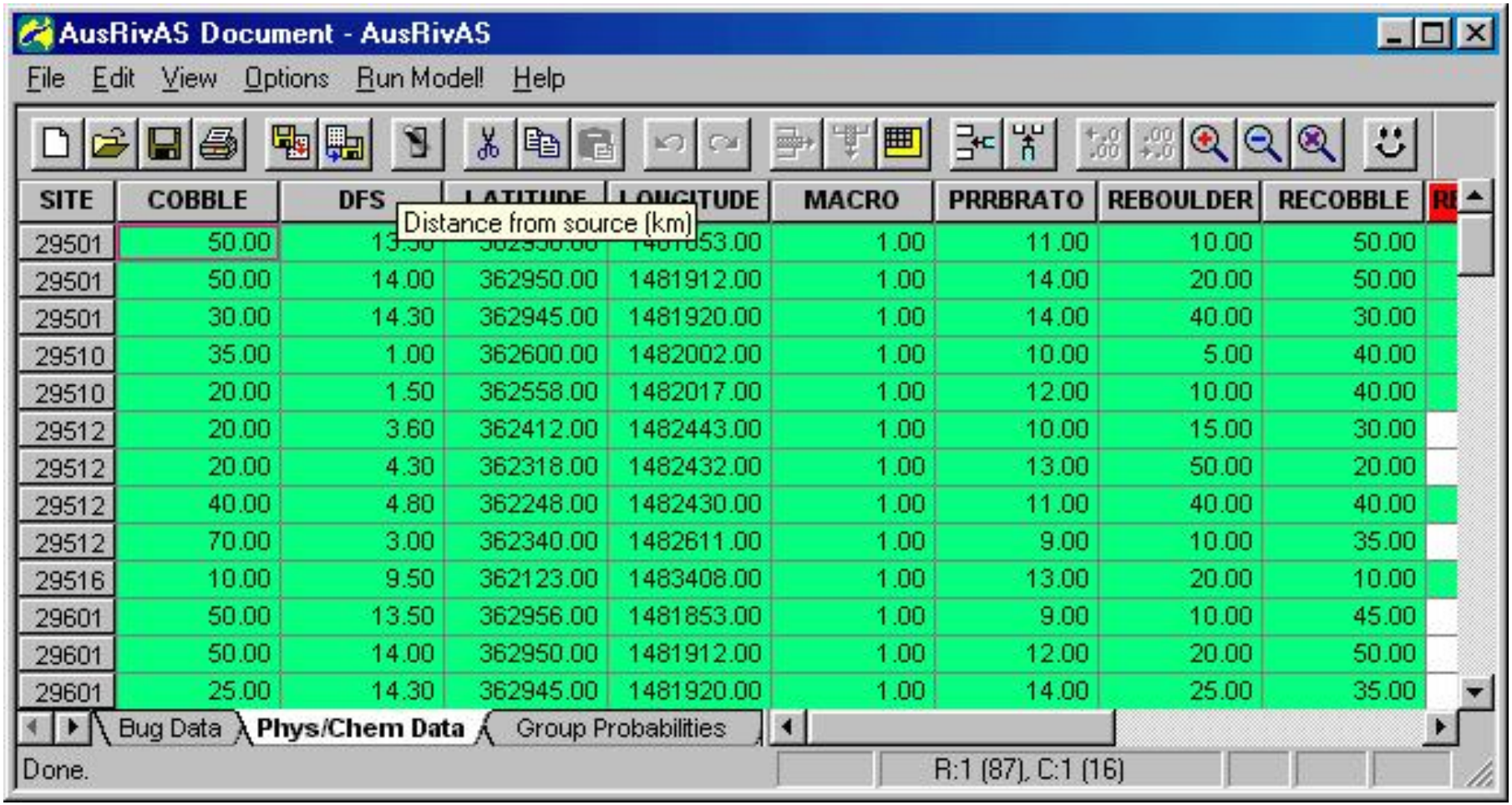
National River Health Program

AUSRIVAS: Bug data input



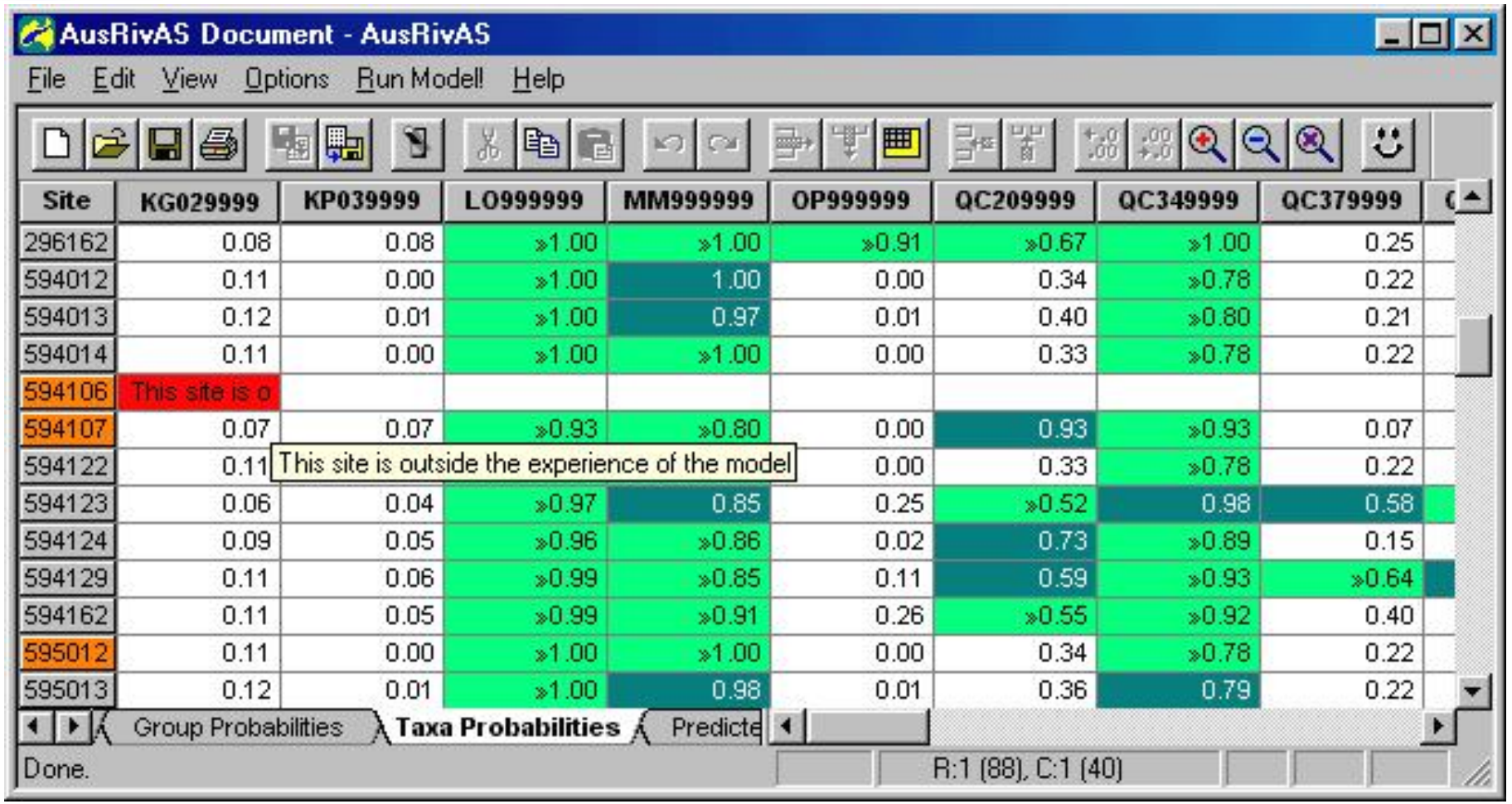
SITE	KG029999	KP039999	LO999999	MM999999	OP999999	QC209999	QC349999	QC379999
59401	0.00	0.00	56.00	.00	0.00	0.00	1.00	0.00
59401	0.00	0.00	35.00	0.00	0.00	0.00	4.00	0.00
59401	0.00	0.00	32.00	1.00	0.00	0.00	4.00	0.00
59410	0.00	0.00	11.00	2.00	0.00	0.00	0.00	1.00
59410	1.00	1.00	27.00	4.00	0.00	0.00	1.00	2.00
59412	0.00	0.00	57.00	1.00	0.00	0.00	2.00	0.00
59412	0.00	0.00	58.00	0.00	0.00	9.00	0.00	0.00
59412	0.00	0.00	44.00	5.00	0.00	0.00	78.00	0.00
59412	0.00	0.00	83.00	21.00	0.00	0.00	1.00	10.00
59416	0.00	0.00	40.00	12.00	0.00	2.00	34.00	0.00
89401	0.00	0.00	25.00	3.00	0.00	0.00	3.00	0.00

AUSRIVAS: Phys/chem data input



SITE	COBBLE	DFS	LATITUDE	LONGITUDE	MACRO	PRRBRATO	REBOULDER	RECOBBLE
29501	50.00	13.50	362956.00	1481853.00	1.00	11.00	10.00	50.00
29501	50.00	14.00	362950.00	1481912.00	1.00	14.00	20.00	50.00
29501	30.00	14.30	362945.00	1481920.00	1.00	14.00	40.00	30.00
29510	35.00	1.00	362600.00	1482002.00	1.00	10.00	5.00	40.00
29510	20.00	1.50	362558.00	1482017.00	1.00	12.00	10.00	40.00
29512	20.00	3.60	362412.00	1482443.00	1.00	10.00	15.00	30.00
29512	20.00	4.30	362318.00	1482432.00	1.00	13.00	50.00	20.00
29512	40.00	4.80	362248.00	1482430.00	1.00	11.00	40.00	40.00
29512	70.00	3.00	362340.00	1482611.00	1.00	9.00	10.00	35.00
29516	10.00	9.50	362123.00	1483408.00	1.00	13.00	20.00	10.00
29601	50.00	13.50	362956.00	1481853.00	1.00	9.00	10.00	45.00
29601	50.00	14.00	362950.00	1481912.00	1.00	12.00	20.00	50.00
29601	25.00	14.30	362945.00	1481920.00	1.00	14.00	25.00	35.00

AUSRIVAS: Outputs - taxa



AUSRIVAS: Outputs - predictions

AUSRIVAS: Advantages

- Standard method with nationally comparable results
- Updates to software and models available immediately
- Standardized methods approved for adoption by NATA & included in National WQ guidelines
- Utilitarian platform to run complex analyses
- Web site with troubleshooting and advice
- Wide range of registered users
- Manual with video clips included, training & accreditation

Adoption & implementation of AUSRIVAS

- AUSRIVAS formally adopted as a national indicator for State of the Environment Reporting at Federal and State levels in 1997-8
- AUSRIVAS being incorporated into new National Water Quality Guidelines in 1998/9
- AUSRIVAS being progressively adopted into state licensing and catchment management legislation

Conclusion

- AUSRIVAS program and manual available via the Internet. Science packaged easy use. http://ausrivas.canberra.edu.au/ausrivas
- Models by habitat, season & regions if necessary
- Ultimately many users - agencies, Waterwatch, consultants etc.
- Flexible management and up-dating needs
- Updates easily done and immediately available
- Troubleshooting and advice available
- Widely adopted in legislation & management