



Australian Government



Model improvement program for MDBA hydrological models

Responding to Action 2 of the
Murray–Darling Basin
Water Compliance Review

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GPO Box 1801, Canberra ACT 2601
engagement@mdba.gov.au



1800 230 067
mdba.gov.au

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Acknowledgement of the Traditional Owners of the Murray–Darling Basin

The Murray–Darling Basin Authority pays respect to the Traditional Owners and their Nations of the Murray–Darling Basin. We acknowledge their deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

The guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues is very much valued and appreciated.

Aboriginal people should be aware that this publication may contain images, names or quotations of deceased persons.

Hydrological Model Improvement Program

The MDBA develops and uses hydrologic models to inform policy, Basin Plan compliance activities, management and operations of rivers in the Murray–Darling Basin.

The MDBA’s continuous improvement program ensures these models are updated regularly to better respond to the increasingly complex job of managing rivers.

The Murray–Darling Basin Water Compliance Review (2017) recommended the MDBA publish an improvement program for hydrological models by 30 June 2018. The improvement program includes:

- a. Source Murray Model
- b. The Integrated Modelling Framework
- c. Hydrodynamic models

Source Murray Model improvement program

The MDBA has committed to adopt a new daily modelling platform, Source, for the River Murray and Lower Darling River system. Source is a new modelling platform developed by the company eWater in partnership with the Australian Government and state water management agencies.

The MDBA first configured a Source model of the River Murray and Lower Darling in 2015. Since then the MDBA has continually refined the model with the help and advice of Basin state governments. In coming years, the model will continue to be developed to support Basin Plan implementation.

The model now represents the demand and delivery of water for the environment more clearly on a daily basis.

Aside from these improvements, the model will also be configured to undertake existing modelling activities that help operate and manage the river system (Figure 1). These include state water accounting, salinity management and responsive management of salt interception schemes (SIS), daily river operations and calculating the annual sustainable diversion limit for the River Murray.

The MDBA will work closely with eWater and Basin state governments to improve the functionality of Source so it meets Australian water management requirements into the future.

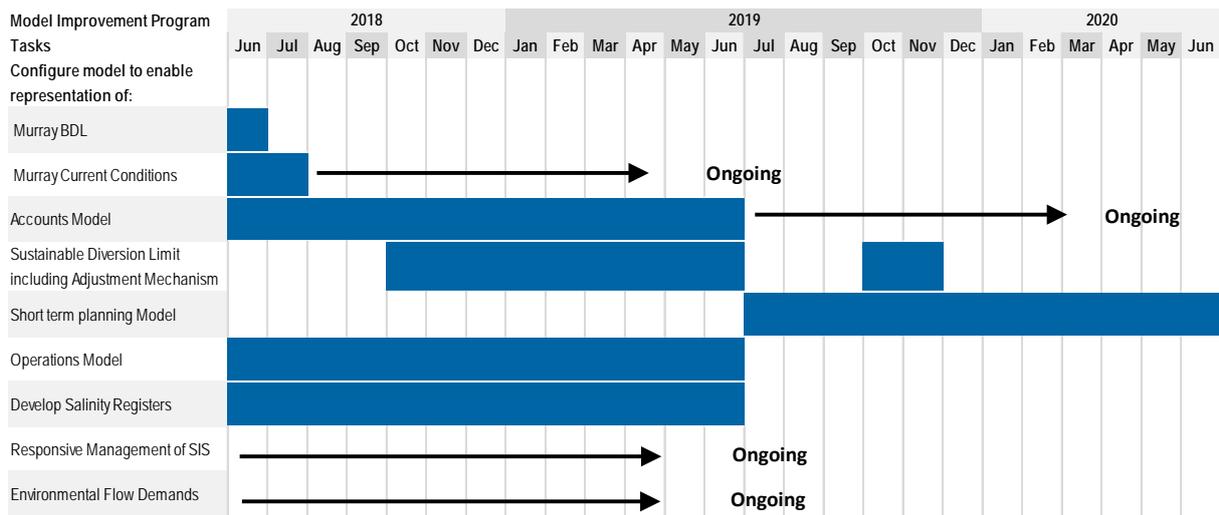


Figure 1. Model improvement program for adoption of Source for the River Murray system

The Integrated River System Modelling Framework improvement program

The Integrated River System Modelling Framework (IRSMF) is the tool that allows for the virtual ‘stitching together’ of individual valley-based surface water models to allow the development and testing of scenarios for the whole Basin to assess system-wide responses to policy or natural changes.

The MDBA is currently undertaking a business analysis on the capacity of the framework to meet future modelling requirements, and to identify if any improvements are necessary to enhance its efficiency. The MDBA will implement the recommendations from the business analysis in coming years based on priority (Figure 2).

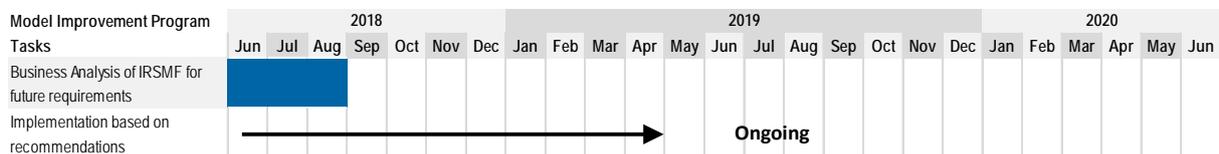


Figure 2. Model improvement program for the Integrated River System Model Framework

Hydrodynamic modelling improvement program

Each year the MDBA collaborates with the Australian Government and state environmental water managers to prepare Basin-wide annual environmental watering priorities. The purpose of the annual priorities is to help water managers make decisions about delivering environmental water and guide better outcomes at the Basin scale.

The hydrodynamic models developed by the MDBA represent the surface water flow dynamics in rivers and floodplains covering the environmental icon sites along the River Murray. The hydrodynamic modelling takes into account recent seasonal conditions, past outcomes of watering actions, likely water availability and each state’s watering priorities to inform decision making. The models are continuously improved as additional data becomes available and as part of routine annual tasks, including during the planning and watering phases (Figure 3).

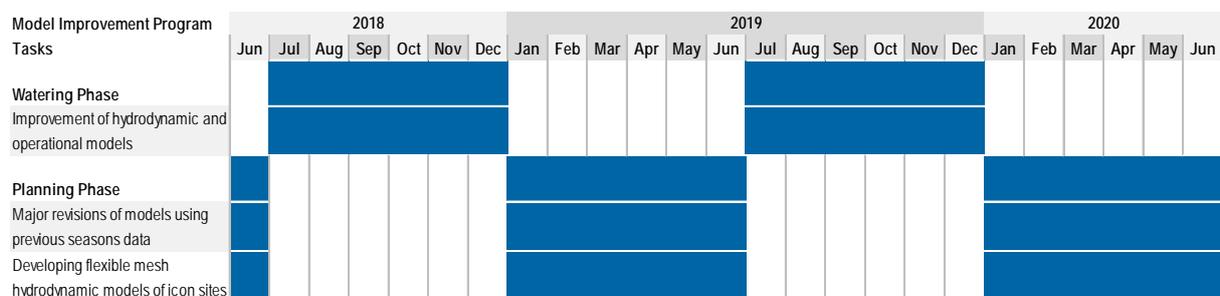


Figure 3. Model improvement program for hydrodynamic models

Office locations
Adelaide
Albury-Wodonga
Canberra
Toowoomba

 mdba.gov.au

 1800 230 067

 engagement@mdba.gov.au