GOYDER INSTITUTE FOR WATER RESEARCH MODEL METADATA TEMPLATE

METADATA REQUIRED	DETAILS
Model Name and version	Drain M (South-East South Australia) Statistical Models.
Date of lodgement of Metadata Template. Name of Metadata Provider	April 2015 Matt Gibbs, matthew.gibbs@adelaide.edu.au
Goyder Institute Project Number and Name	**GOYDER INSTITUTE FOR WATER RESEARCH** Project No. E.2.4 Improved Modelling of the Catchments and Drainage Network in the Upper South East for Management Outcomes
Project Team	Matt Gibbs, matthew.gibbs@adelaide.edu.au Greer Humphrey, greer.humphrey@adelaide.edu.au Holger Maier, holger.maier@adelaide.edu.au Graeme Dandy, Graeme.dandy@adelaide.edu.au
Creator/Developer	Above project team
Owner/Contact Person and contact details	Greer Humphrey, greer.humphrey@adelaide.edu.au School of Civil, Environmental and Mining Engineering The University of Adelaide North Terrace, Adelaide, 5005
Model Location	The model and output data have been stored on the network at the Science, Monitoring and Knowledge Unit, Department of Environment Water and Natural Resources (DEWNR) P:\Projects_SW\South_East\Goyder Institute\Project E.2.4 Drain M\ Contact: Matt Gibbs, matt.gibbs@sa.gov.au *Is there a version of the model in active further development?* NO *Where is this active version located?* DEWNR Network listed above.
IP or other permission requirements	*** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *** There are no specific IP or other permission requirements for future users.
Licences associated with model and/or dependencies	*** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *** Data requirements: SILO Climate data - Department of Science, Information Technology, Innovation and the Arts, QLD https://www.longpaddock.qld.gov.au/silo/ POAMA Climate forecast data - Access to experimental data products are available free of charge for trial/research purposes http://poama.bom.gov.au/ Soil Moisture Essential Climate Variable dataset – freely available from the European Organisation for the Exploitation of Meteorological Satellites http://www.eumetsat.int/website/home/Data/Products/Land/index.html

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Confidentiality agreements associated with model and/or dependencies	*Are there any confidentiality agreements associated with the model and/or the dependencies that future users need to be aware of?* NO
Brief outline of model	This model is an Artifical Neural Network statistical model developed to predict flow in the catchments contributing to Drain M in South East, South Australia. A number of models were developed to test the impact of different soil moisture datasets on the model accuracy.
Area/region covered	Drain M, South East of South Australia
Platform and language and version	R 3.0.1 and supporting packages. Python 2.7 for the SILO data.
Dependencies upon: i) other models and/or platforms (including version) and location ii) essential data and data sources and location	Likely to be platform independent. Tested on Windows 7, with minimal Linux testing. Data requirements: SILO Climate data - Department of Science, Information Technology, Innovation and the Arts, QLD https://www.longpaddock.qld.gov.au/silo/ POAMA Climate forecast data - Access to experimental data products are available free of charge for trial/research purposes http://poama.bom.gov.au/ Further details are outlined in Goyder Institute Technical Report 15/34 available at http://goyderinstitute.org/index.php?id=8

METADATA REQUIRED	DETAILS
How was model used	This model was used to predict flow in the catchments contributing to Drain M under different soil moisture input data sets ○ *Parameterisation/Validation (if applicable; provide a brief summary and include time period of calibration/simulation)* *Models were calibrated to the period 1980 – 2011, with the period 2000-2004 held out for model validation.* ○ *Scenarios and outputs from various runs (provide a brief summary and indicate where these are stored)* Outputs are stored on the DEWNR network, as outlined in the model location section. See the report for details on scenarios and outputs. ○ *Assumptions behind model (provide a brief summary and indicate where these are stored)* *See the report for details on model assumptions.* ○ *Limitations of model(provide a brief summary)* *See the report for details on model limitations.* ○ *Peer review process (if applicable)* Reviewed by two external reviewers. ○ *Extensibility of model (can it be run for different time periods)* The model is able to be run for new time periods when new data are available. Further details of all above points are summarised in Goyder Institute Technical Report 15/34 available at http://goyderinstitute.org/index.php?id=8
Specificity of data	*Was data sourced from local field sites or literature* Datasets are summarised in the report Details of data sourced is given under 'Dependencies'
Datasets/data products produced	*Include details of where datasets/products are located and contact details in the storage location* See model location section of location of model outputs
Other Information	

METADATA REQUIRED	DETAILS
Publications (papers and technical reports)	Gibbs, M.S., Humphrey, G.B., Maier, H.R., Dandy, G.C., 2015, Improved Modelling of the Catchments and Drainage Network in the Upper South East for Management Outcomes. Project E.2.4 Final Report, Goyder Institute for Water Research Technical Report Series No. 15/34, Adelaide, South Australia Humphrey, G.B., Galelli, S., Maier, H.R., Castelletti, A., Dandy, G.C. and Gibbs, M.S. (2013). A new evaluation framework for input variable selection algorithms used in environmental modelling. In Piantadosi, J., Anderssen, R.S. and Boland J. (eds) MODSIM2013, 20th International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2013 Humphrey, G.B., Gibbs, M.S., Maier, H.R. and Dandy, G.C. (2013). A comparison of statistical and conceptual models for monthly streamflow forecasting in the Lower South East, South Australia. In Piantadosi, J., Anderssen, R.S. and Boland J. (eds) MODSIM2013, 20th International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2013 Humphrey, G.B., Gibbs, M.S., Dandy, G.C. and Maier, H.R. (2013) Use of remotely sensed and forecast soil moisture data for improving monthly streamflow forecasts. In Piantadosi, J., Anderssen, R.S. and Boland J. (eds) MODSIM2013, 20th International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2013 MODSIM2013 abstracts available at: http://www.mssanz.org.au/modsim2013/abstracts.html Humphrey, G., Galelli, S., Castelletti, A., Maier, H.R., Dandy, G.C., Gibbs, M.S. (2014) A new evaluation framework for input variable selection algorithms used in environmental modelling. In Proceedings of the 7th International Congress on Environmental Modelling & Software, 15-19 June, San Diego, U.S. vol. 3, pp 1623-1630 http://www.iemss.org/sites/iemss2014/papers/Volume_3_iEMSs2014_pp_1214-1816.pdf Galelli, S., Humphrey, G.B., Maier, H.R., Castelletti, A., Dandy, G.C., Gibbs, M.S.(2014) A new evaluation framework for input variable selection algorithms used in environmental modelling, Environmental Modelling and Software 62,33-51 http://ac.els-cdn.com/S1364815214002394/1-s2.0-S1364815214002394-main.pdf?_tid=162bc788-d8f0-11e4-a567-00000aab0f27&acdnat=1427948820_0761fe9d15b8131c2e8fcf696811f284
Collaborations and acknowledgements	Discussions with South East Water Conservation and Drainage Board staff have been essential to the development of these models.
Keywords	South East, statistical, artificial neural network, rainfall-runoff, uncertainty, forecast, Drain M