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# **BayesCMD Documentation**

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BayesCMD is a package intended to expand the capabilities of the Brain/Circulation Modelling (BCMD) framework. It introduces the ability to obtain posterior distributions for model parameters by using Approximate Bayesian Computation (ABC).



## 1.1 Running the BCMD Model

The BCMD model can be run in a number of ways, both using the command lines and the WeBCMD interface. Over time, both the BayesCMD package and the WeBCMD package are expected to merge. As a result, the BCMD model class has been designed to allow flexibility and compatibility with both the current BayesCMD framework and the WeBCMD framework.

### 1.1.1 bcmd\_model

## 1.2 Input Creation

Input files are required by the BCMD model. A special class has been created that will create a correctly formatted input file for a variety of use cases.

### 1.2.1 input\_creation

Create input files for use with a BCMD model.

Input files are needed in order to set model parameters and provide driving inputs.





The *abc* subpackage is used to handle the Approximate Bayesian Computation (ABC) specific components of BayesCMD. This includes running the model multiple times in a batch process, calculating distances between datasets and generating priors for parameters.

### 2.1 Distances



## CHAPTER 3

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jsonParsing

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Here you will find a number of useful functions that are used throughout the general BayesCMD package.

### 4.1 Utility Functions

Miscellaneous utility functions used throughout BayesCMD.

This module contains a number of utility functions that are used throughout the different BayesCMD subpackages.

`bayescmd.util.findBaseDir(basename, max_depth=5, verbose=False)`

Get relative path to a BASEDIR. :param basename: Name of the basedir to path to :type basename: str

**Returns** Relative path to base directory.

**Return type** StringIO

`bayescmd.util.round_sig(x, sig=1)`

Round a value to N sig fig.

**Parameters**

- **x** (*float*) – Value to round
- **sig** (*int*, *optional*) – Number of sig figs, default is 1

**Returns** Rounded value

**Return type** float

### 4.2 Processing Results



## CHAPTER 5

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### Indices and tables

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## B

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