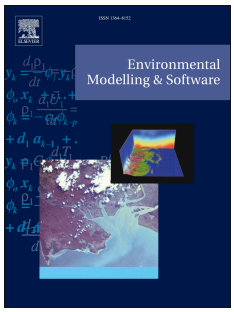
# Accepted Manuscript

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PII: S1364-8152(17)31177-5

DOI: 10.1016/j.envsoft.2018.07.021

Reference: ENSO 4264

To appear in: *Environmental Modelling and Software*

Received Date: 6 November 2017

Revised Date: 14 June 2018

Accepted Date: 30 July 2018

Please cite this article as: Callaghan, D.P., Baldock, T.E., Shabani, B., Mumby, P.J., Communicating physics-based wave model predictions of coral reefs using Bayesian belief networks, *Environmental Modelling and Software* (2018), doi: 10.1016/j.envsoft.2018.07.021.

# Communicating physics-based wave model predictions of coral reefs using Bayesian Belief Networks

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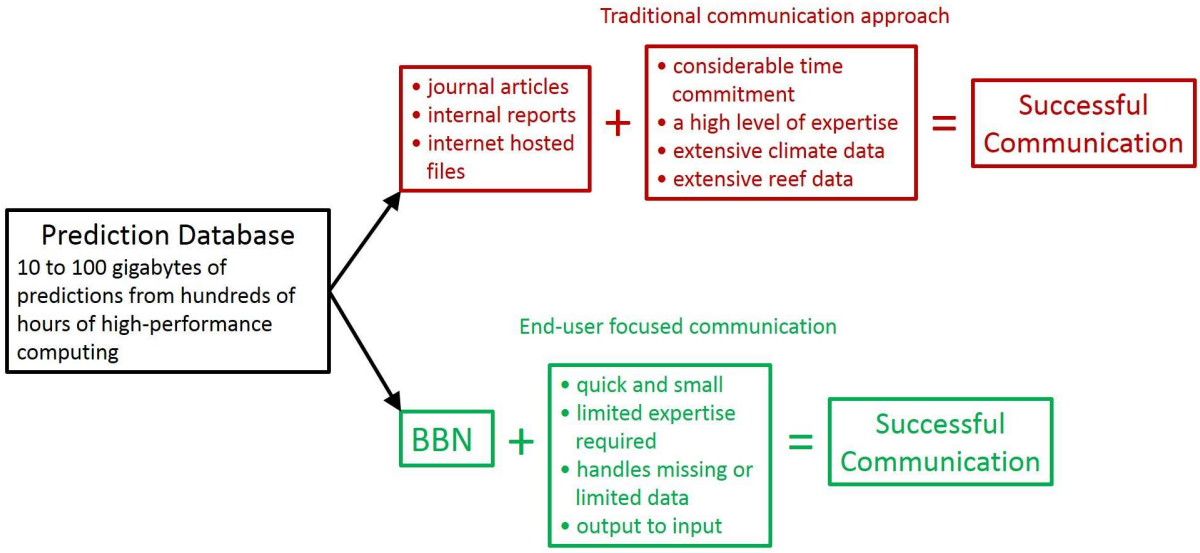
## Abstract

The use of physics-based wave propagation predictions requires a considerable time commitment, a high level of expertise and extensive climate and reef data that are not always available when undertaking planning for management of coasts and coral reef ecosystems. Bayesian belief networks (BBNs) have at least three attributes that make them an excellent choice to communicate physics-based wave model predictions. First, BBNs subsume thousands of predictions to provide probabilistic outcomes. Second, by using prior probabilities, a practitioner can still obtain predictions of wave outcomes even when their knowledge of input parameters is incomplete. Third, BBNs can propagate evidence from outputs to inputs, which can be used to identify input conditions that are most likely to deliver a chosen outcome. These three attributes are tested and found to hold for a BBN developed for this purpose.

## Graphical Abstract




## Highlights

- A database of predicted wave conditions can be clearly communicated with a BBN