Evaluating Probabilistic Ecological Forecasts

Juniper L. Simonis, Ethan P. White, S. K. Morgan Ernest

Submitted to Ecology

**DATA S1**

Software used and written.

*Overview*

Here we provide custom written scripts for use in R (v4.0.3; R Core Team 2020) with runjags (v2.0.4-6; Denwood 2016), coda (v 0.19-4; Plummer et al. 2006), scoringRules (v1.0.1; Jordan et al. 2018, 2020), e1071 (v1.7-4; Meyer et al. 2020), forecast (v8.14; Hyndman et al. 2021), and portalr (v0.3.6; Yenni et al. 2020, Christensen et al. 2019) packages, based on interface to JAGS (Just Another Gibbs Sampler, v4.2.0) (Plummer 2003, Plummer 2016).

They are also available at <https://www.github.com/weecology/forecast_evaluation>/.

**Literature Cited**

Christensen, E. M., G. M. Yenni, H. Ye, J. L. Simonis, E. K. Bledsoe, R. Diaz, S. D. Taylor, E. P. White, and S. K. M. Ernest. 2019. portalr: an R package for summarizing and using the Portal Project Data. *Journal of Open Source Software* **4**(33):1098.

Denwood, M. J. 2016. runjags: an R package providing interface utilities, model templates, parallel computing methods and additional distributions for MCMC models in JAGS. *Journal of Statistical Software* **71**:1-25.

Hyndman R., G. Athanasopoulos, C. Bergmeir, G. Caceres, L. Chhay, M. O'Hara-Wild, F. Petropoulos, S. Razbash, E. Wang, and F. Yasmeen. 2021. forecast: Forecasting functions for time series and linear models. R package v8.14. <https://pkg.robjhyndman.com/forecast/>.

Jordan A., F. Krüger F, and S. Lerch. 2018. Evaluating Probabilistic Forecasts with scoringRules. *arXiv*. arXiv:1709.04743

Jordan, A., F. Krüger, and S. Lerch. 2020. scoringRules: Scoring rules for parametric and simulated distribution forecasts. R package version 1.0.1. https://CRAN.R-project.org/package=scoringRules.

Plummer, M. 2003. JAGS: A program for analysis of Bayesian graphical models using Gibbs sampling. *Proceedings of the 3rd International Workshop on Distributed Statistical Computing,* K. Hornik, F. Leisch, and A. Zeileis, eds. ISSN 1609-395X.

Plummer, M., N. Best, K. Cowles, and K. Vines. 2006. CODA: convergence diagnosis and output analysis for MCMC. *R News* **6**: 7-11.

Plummer, M. 2016. JAGS: Just Another Gibbs Sampler. v4.2.0. https://sourceforge.net/projects/mcmc-jags/files/JAGS/4.x/

R Core Team. 2020. R: A language and environment for statistical computing. v4.0.3. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

Yenni, G. M., H. Ye, E. M. Christensen, J. L. Simonis, E. K. Bledsoe, R. M. Diaz, S. D. Taylor, E. P. White, and S. K. M. Ernest. 2020. portalr: Create useful summaries of the Portal data. R package version 0.3.6. https://CRAN.R-project.org/package=portalr.