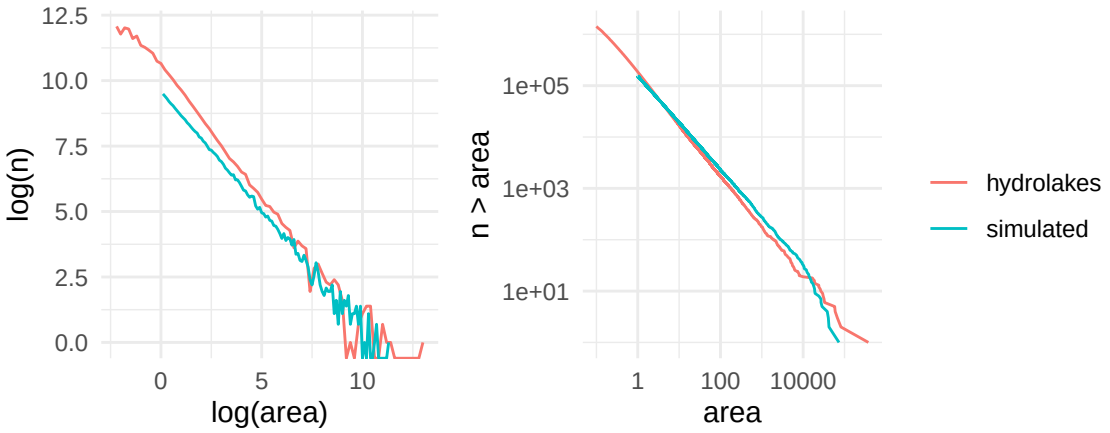


Figure 1: Realization of a Pareto (A) probability density function and (B) complementary cumulative distribution function compared against equivalent calculations on the HydroLAKES dataset.

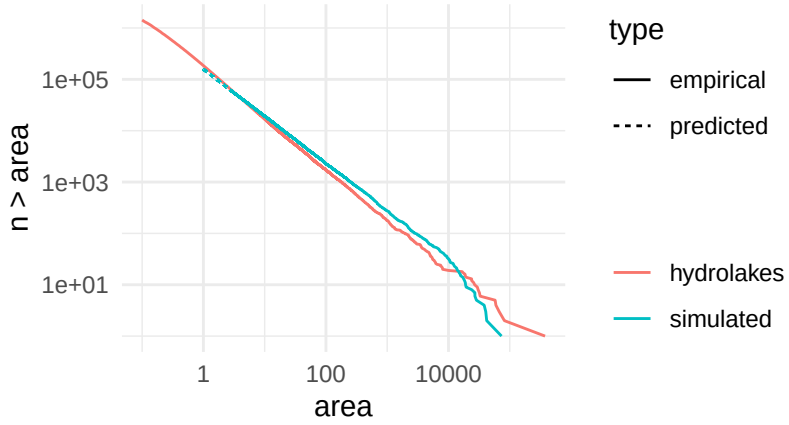


Figure 2: Censored lake area edf (solid line) and transformed cdf estimate (dashed line) compared against the HydroLAKES dataset.

```
data {
  int<lower=0> N;
  real x[N];
}
parameters {
  real<lower=0> alpha;
  real<lower=0> theta;
}
model {
  real lpa[N];

  theta ~ gamma(1, 3);
  alpha ~ gamma(1, 3);

  for (i in 1:N) {
    lpa[i] = pareto_lpdf(x[i] | theta, alpha);
  }

  target += sum(lpa);
}
```

Figure 3: Stan model code

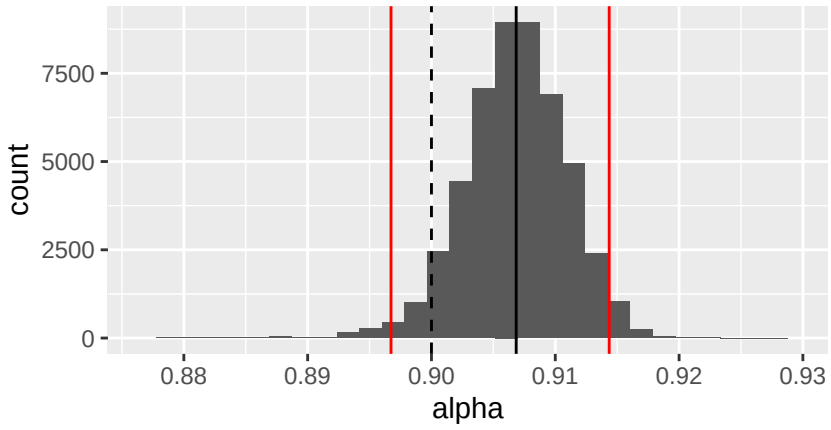


Figure 4: Median (black line) and central 95 percent interval estimates of alpha (red lines). Here the 'true' alpha is 0.9 and is marked with a dashed line.

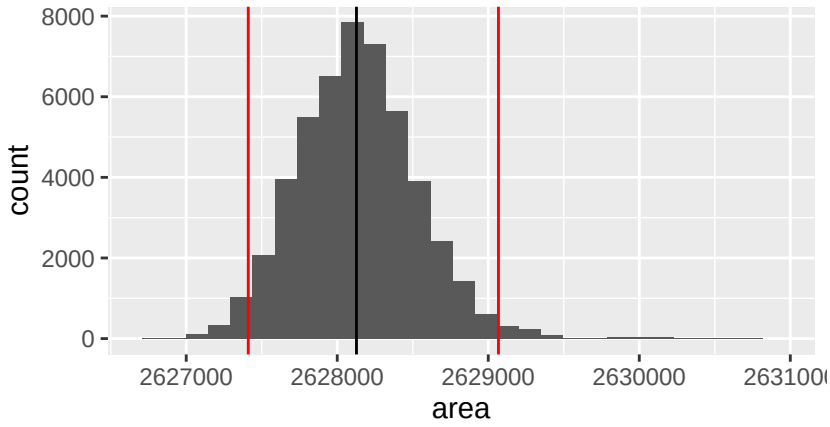


Figure 5: Median (black line) and central 95 percent interval estimates of total lake area (red lines). Here the true total lake area is marked with a dashed vertical line.