



$$\text{relErr} = \frac{(\bar{m} - \bar{o})}{\bar{o}}$$

Transform to 0-1,  
and positive

$$\text{mErr} = 1.0 - \min(1.0, \text{abs}(\text{relErr}))$$

$$\text{mErr} = 1.0 - \min(1.0, \text{abs}(\text{relErr}) / \max(\text{abs}(\text{relErr})))$$

Combining

$$\text{cperf} = \text{mErr} * \max(\text{NSE}, 0)$$

$$\text{cperf} = 0.75 * \text{mErr} * 0.25 * \max(\text{NSE}, 0)$$



```
#' cper
#'  
#' Compute a performance measure (0-1) between observation and model  
#' based on both NSE and relative error  
#' @param m model estimates  
#' @param o observations  
#' @param weight.nse weighting to give NSE metric  
#' @param weight.relerr weighting to give relative error metric  
#' @return combined 0-1 performance measure  
  
cper = function(m,o,weight.nse=0.5, weight.relerr=0.5) {  
  
nse = nse(m,o)  
mnse = max(nse,0)  
  
rel.err = relerr(m,o)  
merr = 1.0-min(1.0, abs(rel.err)/max(abs(rel.err)))  
  
combined = weight.nse*mnse + weight.relerr*merr  
  
return(combined)  
}
```