ECONOMIC VALUE OF FORECASTS

Given a particular forecast, a user either does or does not take action (eg, protects its crop against frost) *Mylne & Harrison, 1999*

OBSERVATION \ FORECAST	YES	NO
YES	H(its) ***Mitigated Loss***	M(isses) ***Loss***
NO	F(alse alarms) ***Cost***	C(orrect rejections) ***No Cost***

$$\text{Mean Expense}_{fc} = hML + mL + fC$$

$$\text{Mean Expense}_{perf} = oML$$

$$ME_{cl} = min[oL,\ oML + (1-o)C]$$

$$\text{Value} = \frac{ME_{cl} - ME_{fc}}{ME_{cl} - ME_{perf}}$$

o=climatological frequency

Use 10 climatologically equally likely bins to define events

Hi–res control forecast: If MRF control falls in a given climate bin, forecast is YES and NO otherwise

Lo–res ensemble forecast: Probabilities converted to a categorical fcst given the probability exceeds a certain threshold. Eg., all 30% or higher probabilities count as YES. Among different threshold probabilities one can select the one that results in largest economic value.

Results: For majority of users ensemble is more useful

Question: Is it because MRF is dichotomous, while ensemble provides full probability distribution?