1. Problem of data assimilation

2. Observation error covariance matrix
   - Computation
   - Impacts

3. Conclusions
Observations error covariance matrix

<table>
<thead>
<tr>
<th>1. Problem of data assimilation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Observation error covariance matrix</td>
</tr>
<tr>
<td>- Computation</td>
</tr>
<tr>
<td>- Impacts</td>
</tr>
<tr>
<td>3. Conclusions</td>
</tr>
</tbody>
</table>
Observations error covariance matrix

ECMWF Seasonal Forecast
Mean 2m temperature anomaly
Forecast start reference: 01/01/07
Ensemble size = 40, climate size = 75

ECMWF Seasonal Forecast
Prob (2m temperature > median)
Forecast start reference: 01/01/07
Ensemble size = 40, climate size = 75

Forecast issue date: 15/01/2007

System 2
AMJ 2007
Shaded areas significant at 10% level
Solid contour at 1% level

Daget Nicolas
Observations error covariance matrix

Orca Grid

SST

Cell fill with cell edges on

C

Daget Nicolas

Minimize \[ J(v) = J_b + J_o \]

Where \[ J_b = \frac{1}{2} (v - v^b)^T B^{-1} (v - v^b) \] Background term

\[ J_o = \frac{1}{2} (y - y^o)^T R^{-1} (y - y^o) \] Observation term

subject to the constraint \[ y = G(v) \]
Observations error covariance matrix

1. Problem of data assimilation

2. Observation error covariance matrix
   - Computation
   - Impacts

3. Conclusions
Observations error covariance matrix

With a non assimilation experiment

With the values of the observations

With the values of the « observations minus background »

→ Obtain the observations error variances
Observations error covariance matrix

Number of temperature observation

Daget Nicolas
Observations error covariance matrix

Temperature standard deviation of observation error

Eckert IV projection centred on 0,00E

Data Min = -0.46, Max = 4.01

Daget Nicolas

Observations error covariance matrix
Observations error covariance matrix
Ensemble SMS suite for OPAVAR

1. PreplFS
2. Xcdp
   - Description of the suite
   - Description of the tasks
3. Conclusions
The new observations error covariances matrix has positive impacts.