# Recent developments in field modification

## E Carroll, Met Office

- The forecast process
- Human contribution
- Grid editing with examples

## Forecast process



## Adding value

- Correct for shortfalls in model formulation – e.g. parameterisation, resolution.
- Spot errors and extrapolate forwards
- Take into account uncertainties and alternative possibilities, e.g. scope for severe weather.
- Presentation of the forecast to the customer, general or specialised.

How will this change in a scenario of increasing NWP accuracy and continued pressure to cut costs?

How can we quantify and monitor the contribution of the value?



## A new approach

- Last few years NWP grids have been edited by Chief and Deputy Chief forecasters.
- Modifications via potential vorticity (Carroll, 1997)
- PV conservation and invertibility
- Modified grids used to generate graphical guidance products.

0200 14/10/02



T+36 VT 1200 15/10/02



Modified T+36 VT 1200 15/10/02

T+36 VT 1200 15/10/02



Modified T+36 VT 1200 15/10/02
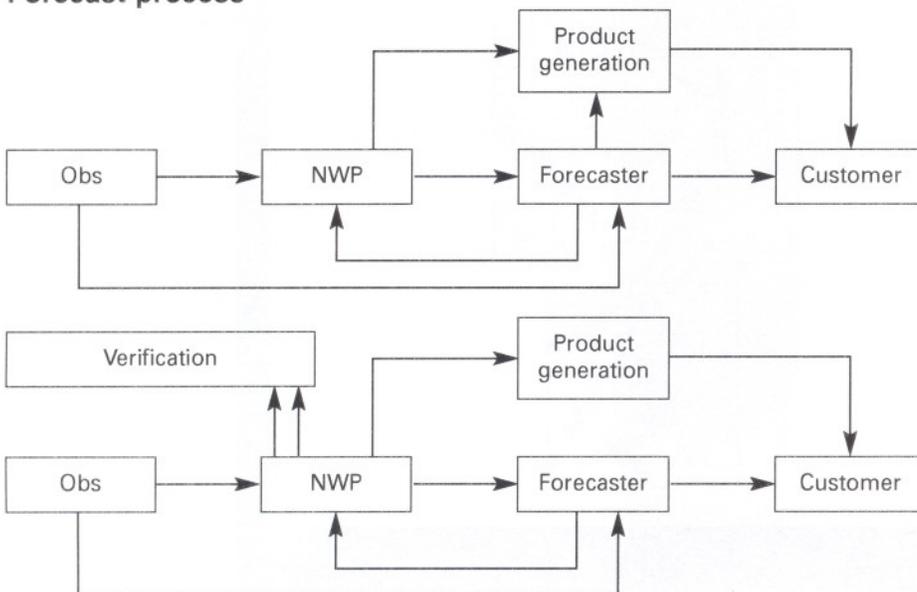


T+36 VT 1200 15/10/02

Analysis DT 1200 15/10/02

## Forecast process



## New system

- New system PV based with many extra tools for editing sensible weather (Carroll, Davies)
- Meso, GM or mix on 22 km grid
- Gph, wind and temps on std levels
- High, medium and low cloud including fog
- Precipitation (dynamic, convective, rain, snow)••Fortran/ GKS application running on Horace

## Future plans

- Trial provision of modified fields as input to site-specific model
- Numerical data dissemination
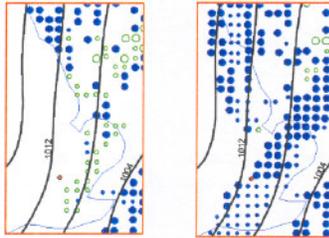- Population of databases for downstream use – 'Change once, use many'.

30 January 2003 snow
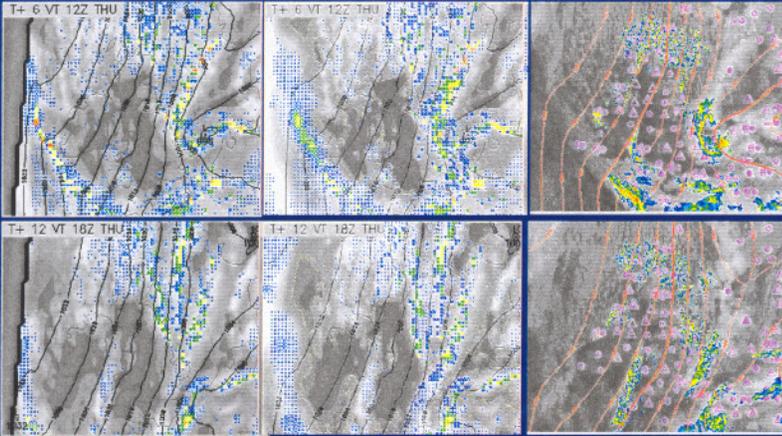


T+12 VT 1800 30 Jan 2003
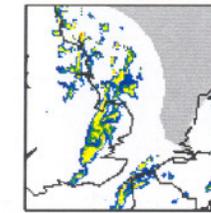
Harpenden, 31 January 2003

## Preliminary verification 11 Dec – 4 Mar

- Improvements primarily in the more hazardous elements -snow and heavy rain
- Snow HR significantly higher for modified (9-12 hour lead time gain), with slightly lower FAR
- Modified forecast worse for lighter rain, better for low cloud

## The future

- In x years central forecasters will play a largely monitoring role
- Staged transition to automation via semi-automation, continuously monitoring value added
- Direct presentation will continue to be important.