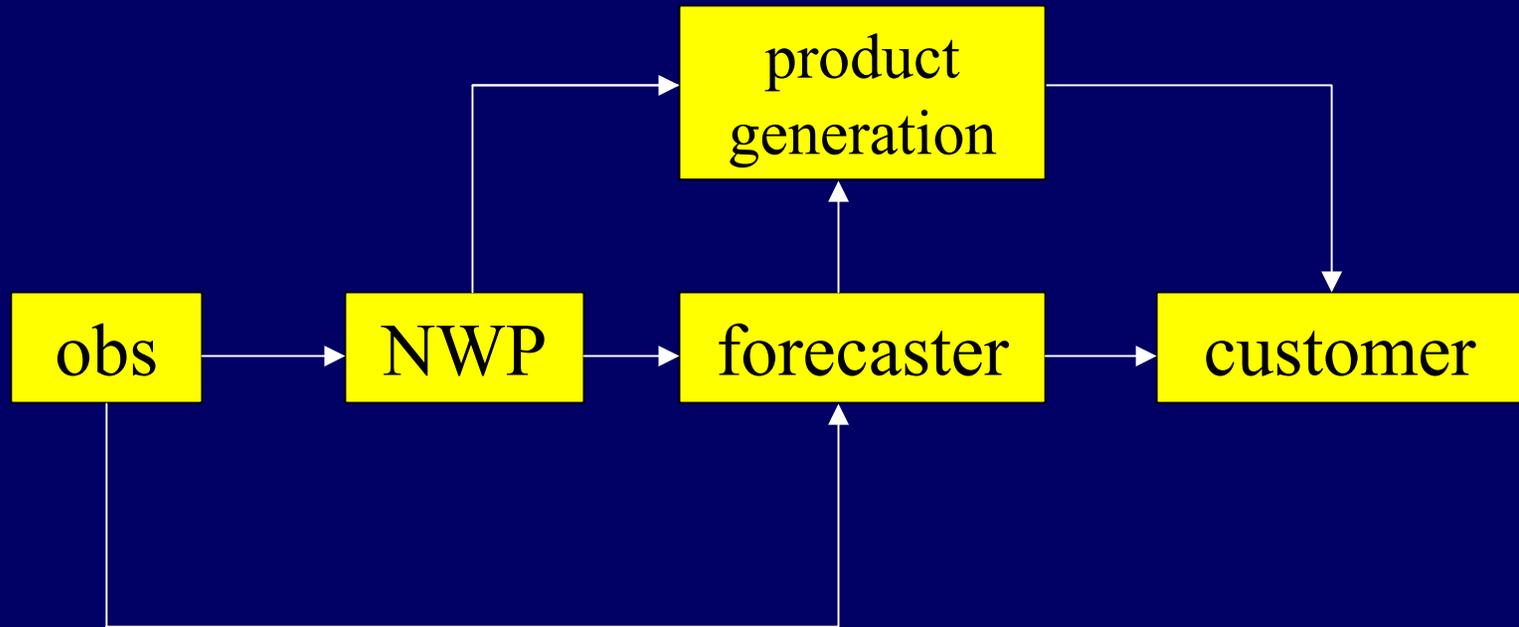


Recent developments in field modification

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.

Adding value

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?

Guidance from NMC Bracknell

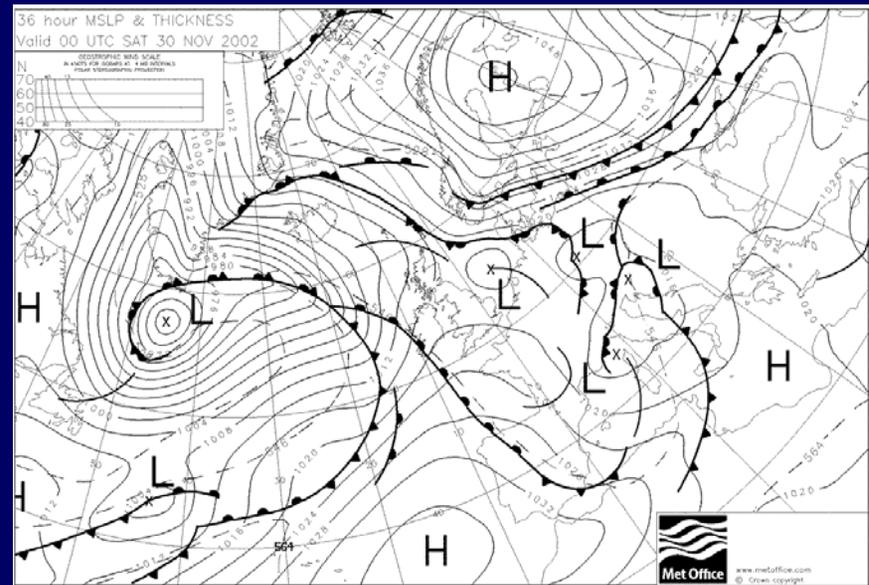
- Traditional guidance - text, synoptic charts.

AXXX01 EGRR 281500
MODEL ASSESSMENT AND EMPHASIS
ISSUED 281500

1. CHANGES IN EMPHASIS FOR PERIOD OF GUIDANCE
NIL SIG.

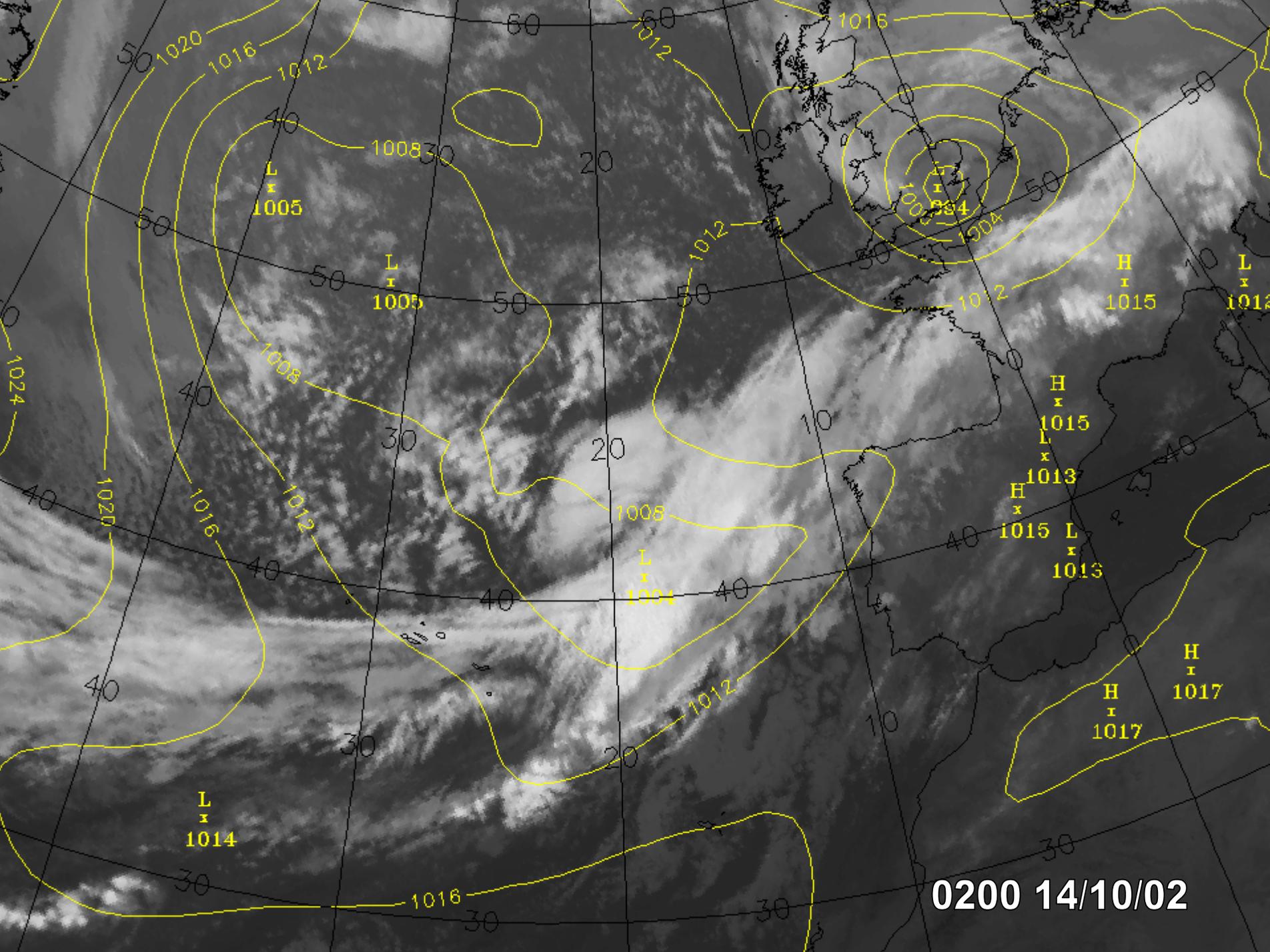
2. HEADLINE SUMMARY

ALL AREAS WILL HAVE SUNNY/CLEAR SPELLS AND SHOWERS, SOME WILL BE HEAVY, WITH HAIL AND THUNDER. SHOWERS MOSTLY CONFINED TO SOUTHERN AND WESTERN AREAS AND ON TROUGHS AS THEY MOVE EAST - LOCALLY PROLONGED. TONIGHT A FRAGMENTED BAND OF CLOUD AND SHOWERY RAIN WILL MOVE NORTHEAST TO LIE APPROX W SCOTLAND TO MANCHESTER TO EAST ANGLIA BY MID MORNING, CLEARER WEATHER WITH MORE SCATTERED SHOWERS FOLLOWING. STILL HEAVY/THUNDERY IN THE SOUTHWEST. MUCH OF NORTHERN ENGLAND AND EVENTUALLY SCOTLAND, APART FROM THE FAR NE, WILL BECOME MOSTLY DRY WITH CLEAR SPELLS OVERNIGHT, ALLOWING PATCHY MIST AND FOG TO DEVELOP. SHOWERS CONTINUING OVER FAR NE SCOTLAND, BECOMING FREQUENT/PROLONGED OVER SHETLAND. DURING TOMORROW FURTHER SHOWERS AFFECTING SCOTLAND, MAINLY THE WEST WHERE THEY COULD BE OCNL HEAVY. CLOUD AND PATCHY RAIN FROM MERSEYSIDE THROUGH TO SE ENGLAND WILL SLOWLY DIE OUT FROM THE WEST IN LINE WITH MESO. FRESH/STRONG WINDS AROUND COASTAL AREAS SLOWLY EASING



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.



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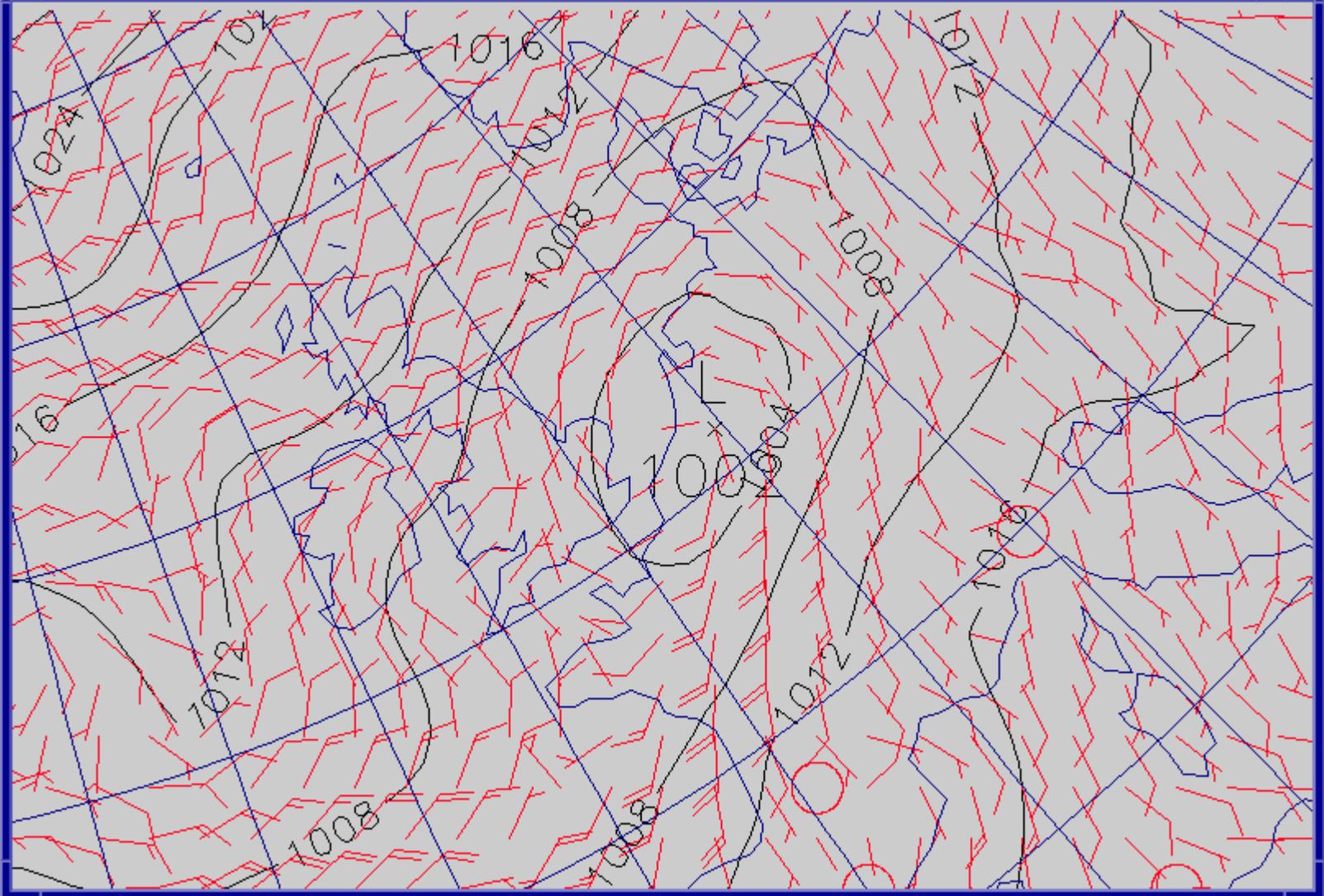
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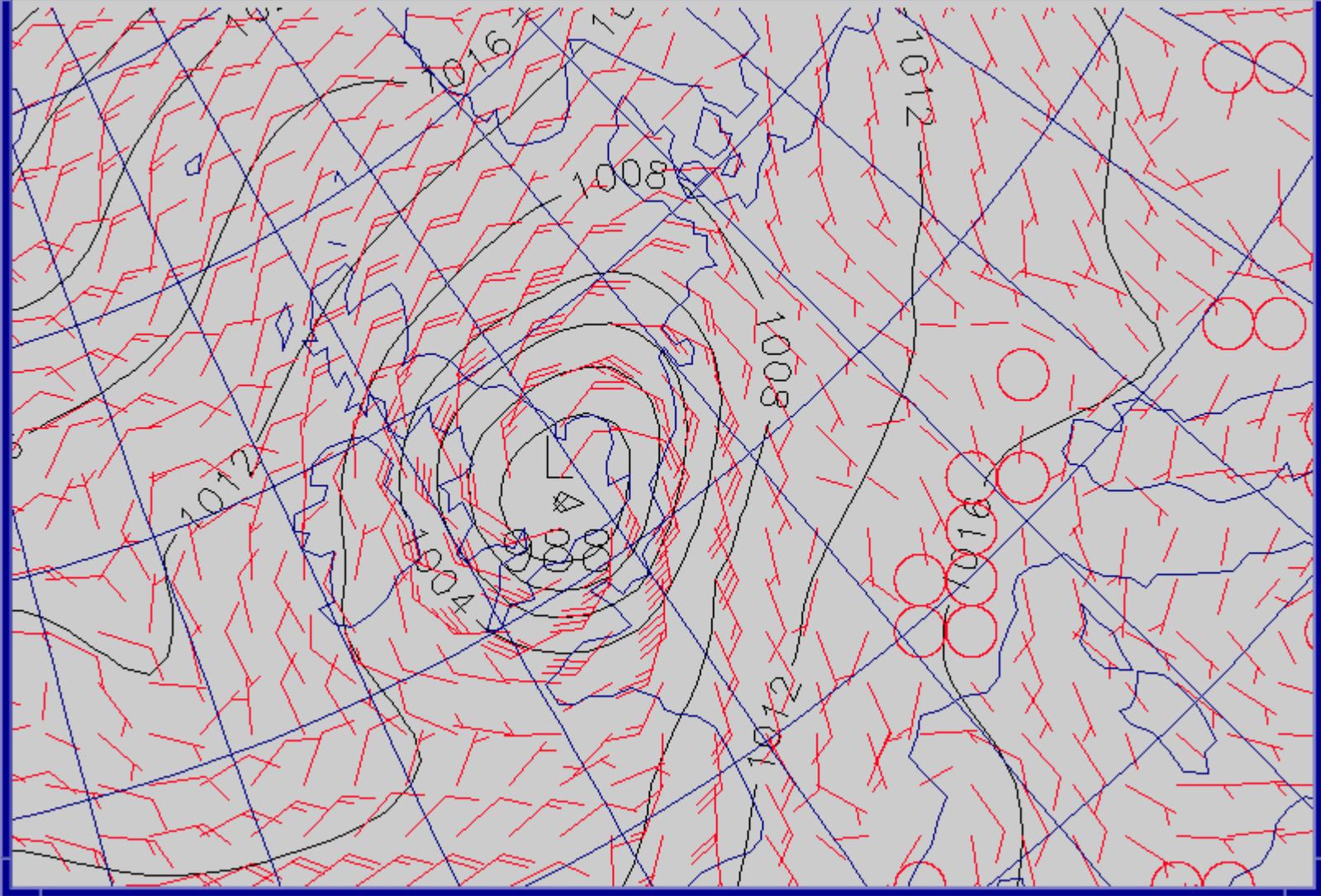
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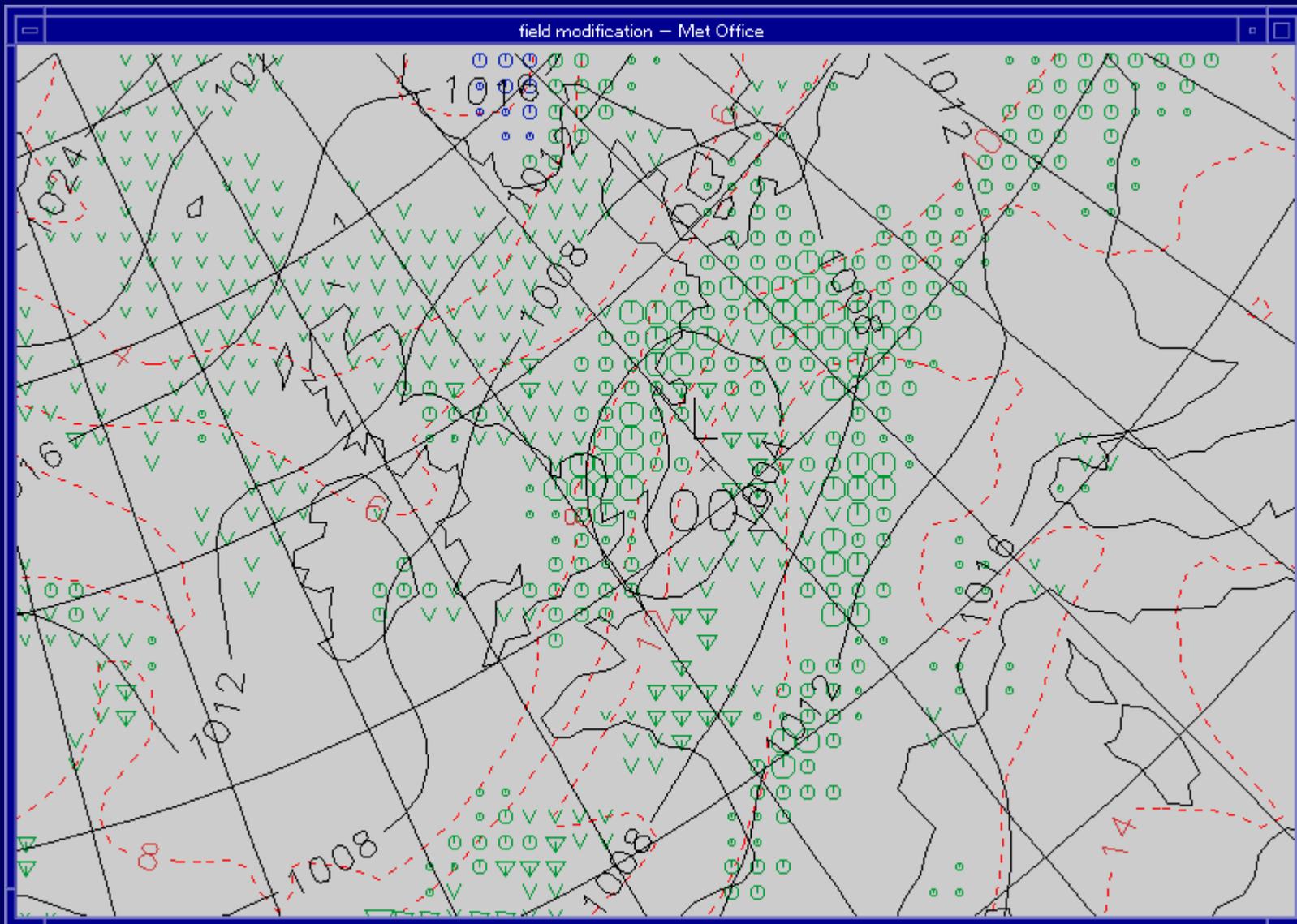
0200 14/10/02



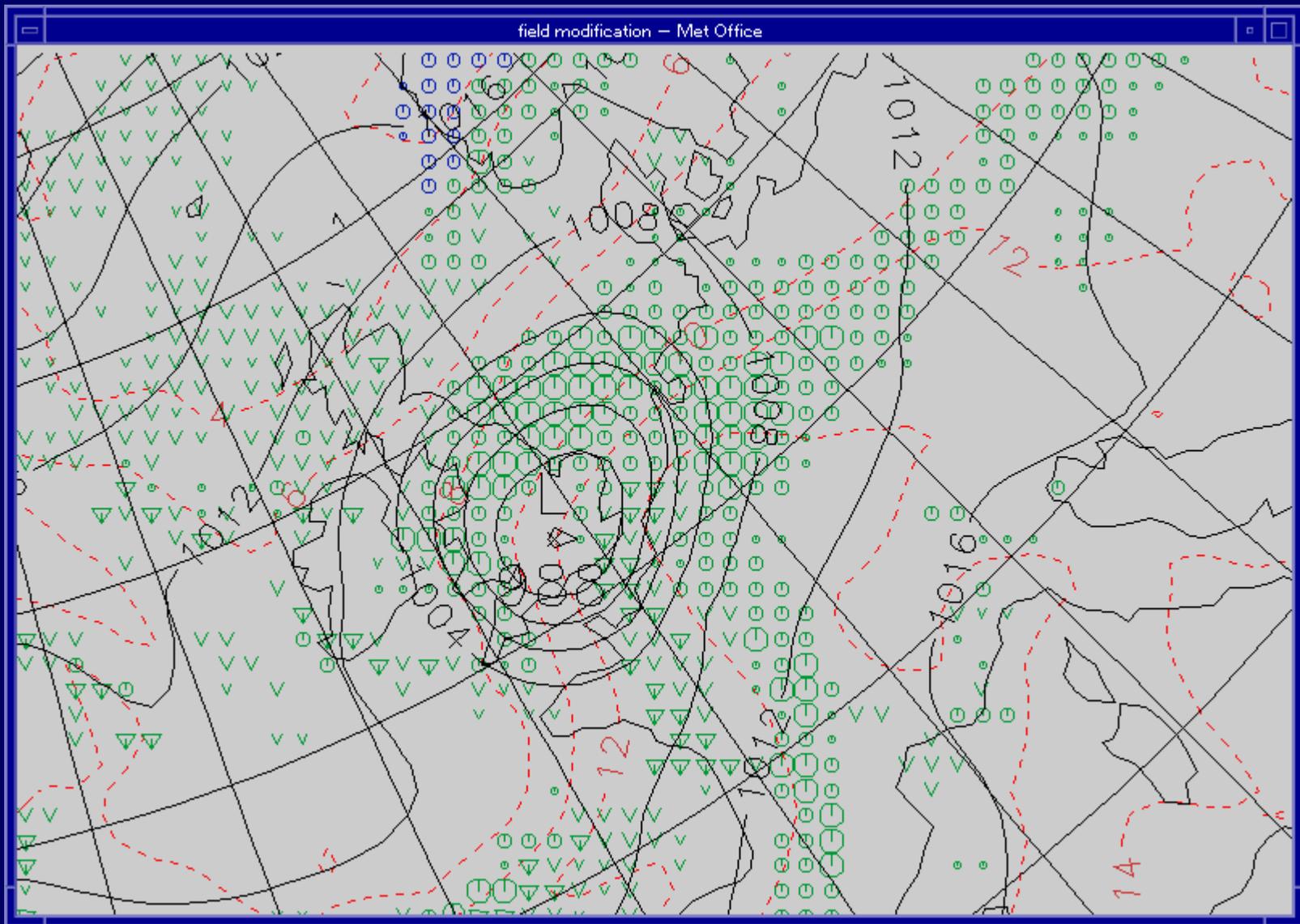
T+36 VT 1200 15/10/02



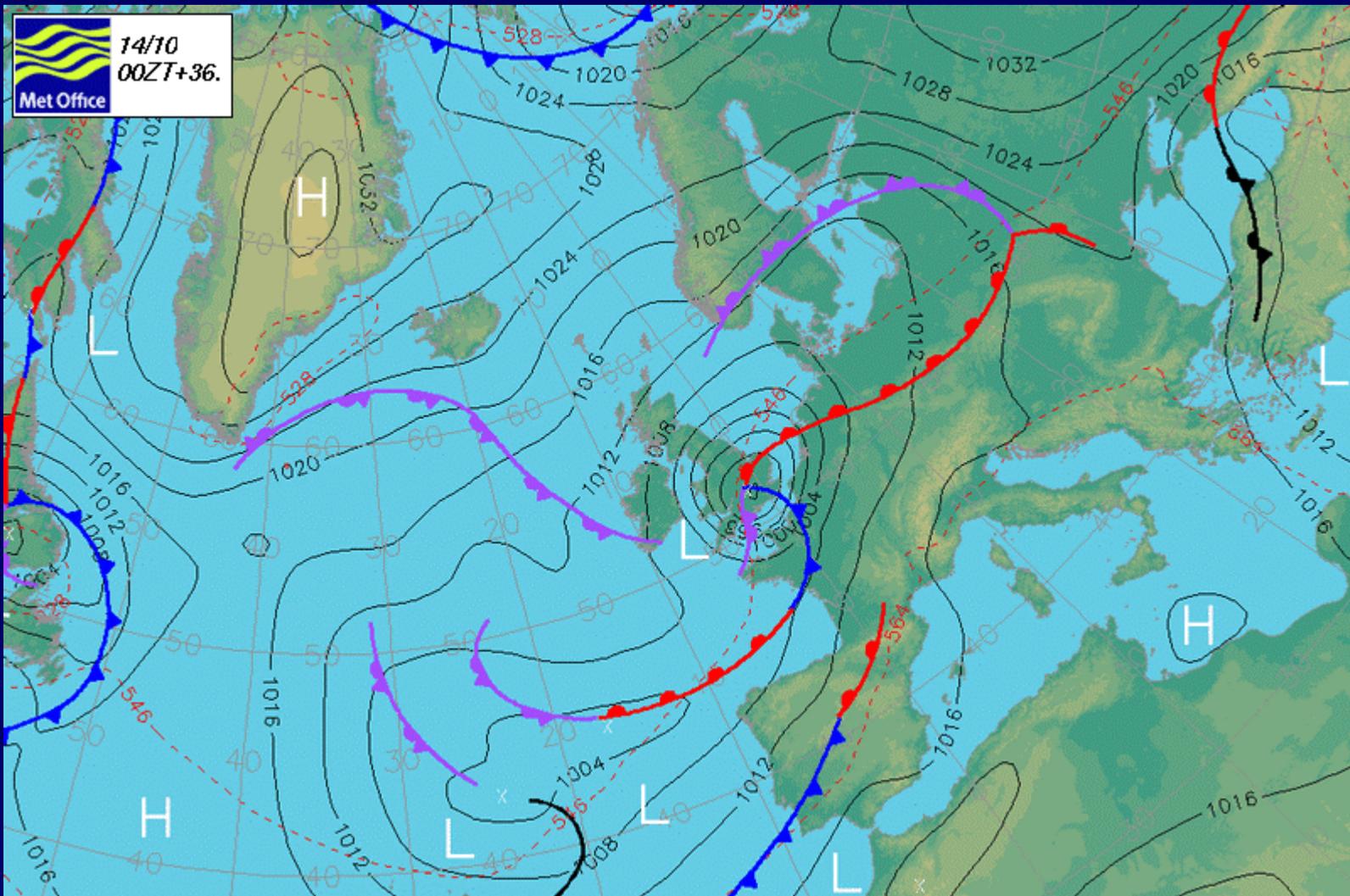
Modified T+36 VT 1200 15/10/02



T+36 VT 1200 15/10/02

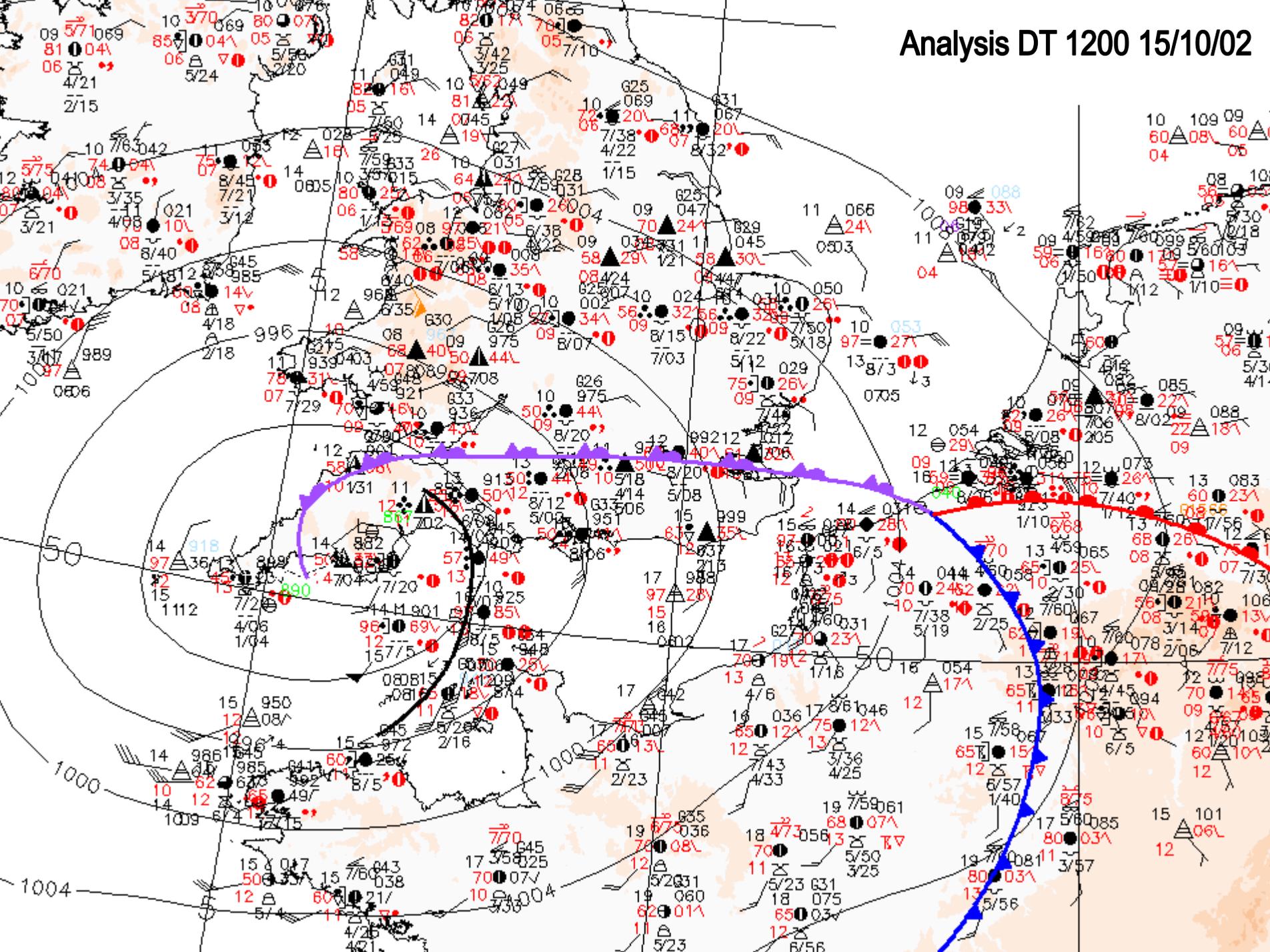


Modified T+36 VT 1200 15/10/02

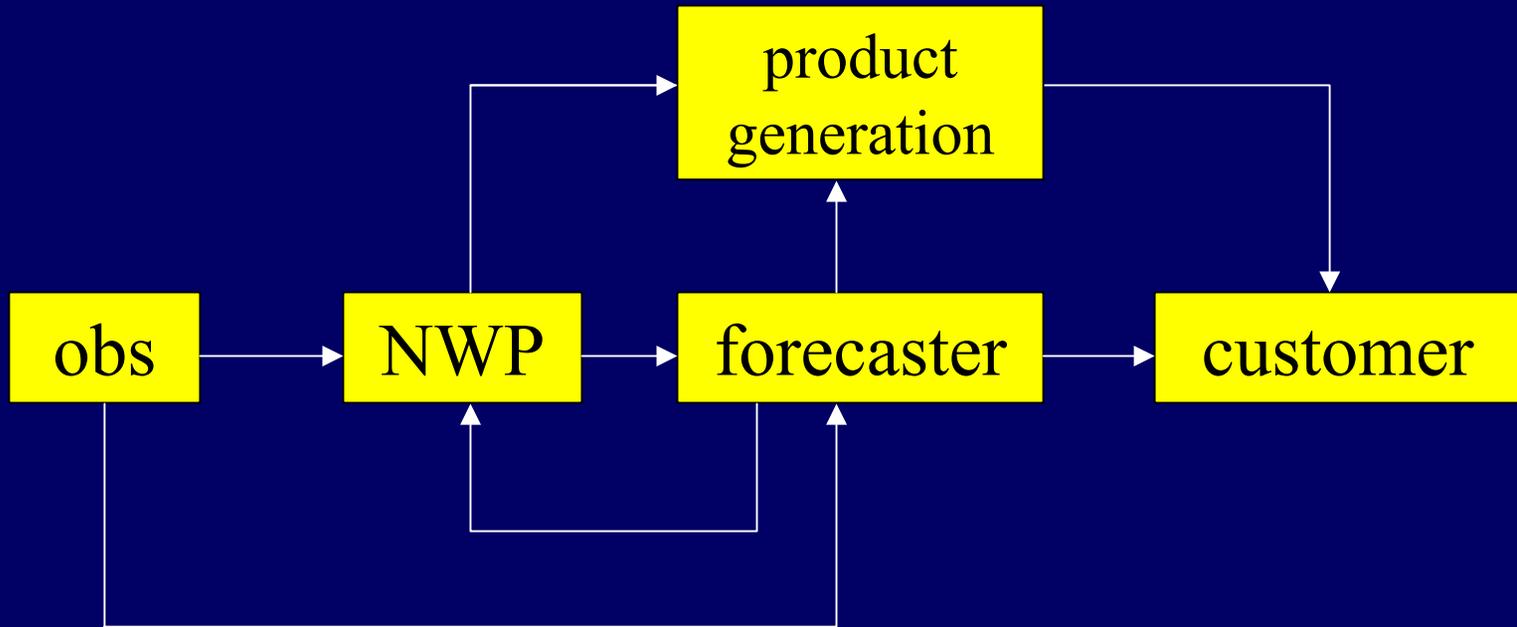


T+36 VT 1200 15/10/02

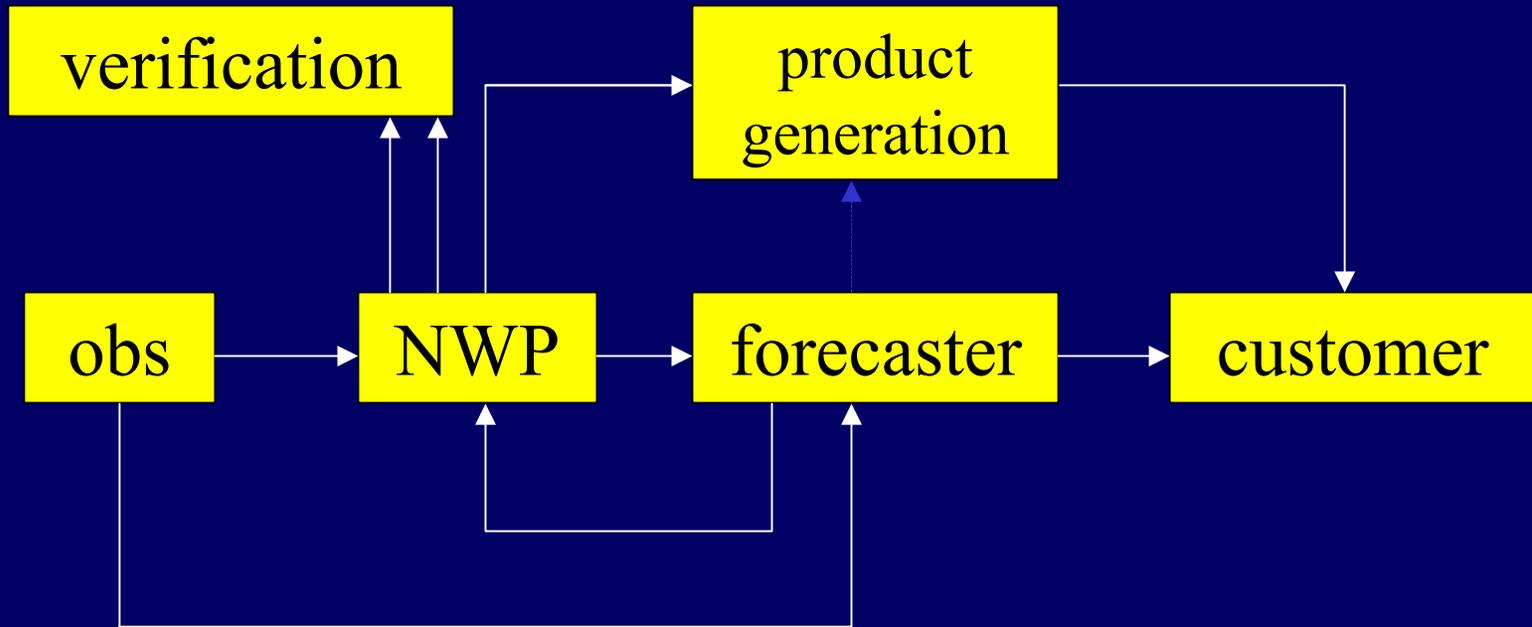
Analysis DT 1200 15/10/02



Forecast process



Forecast process



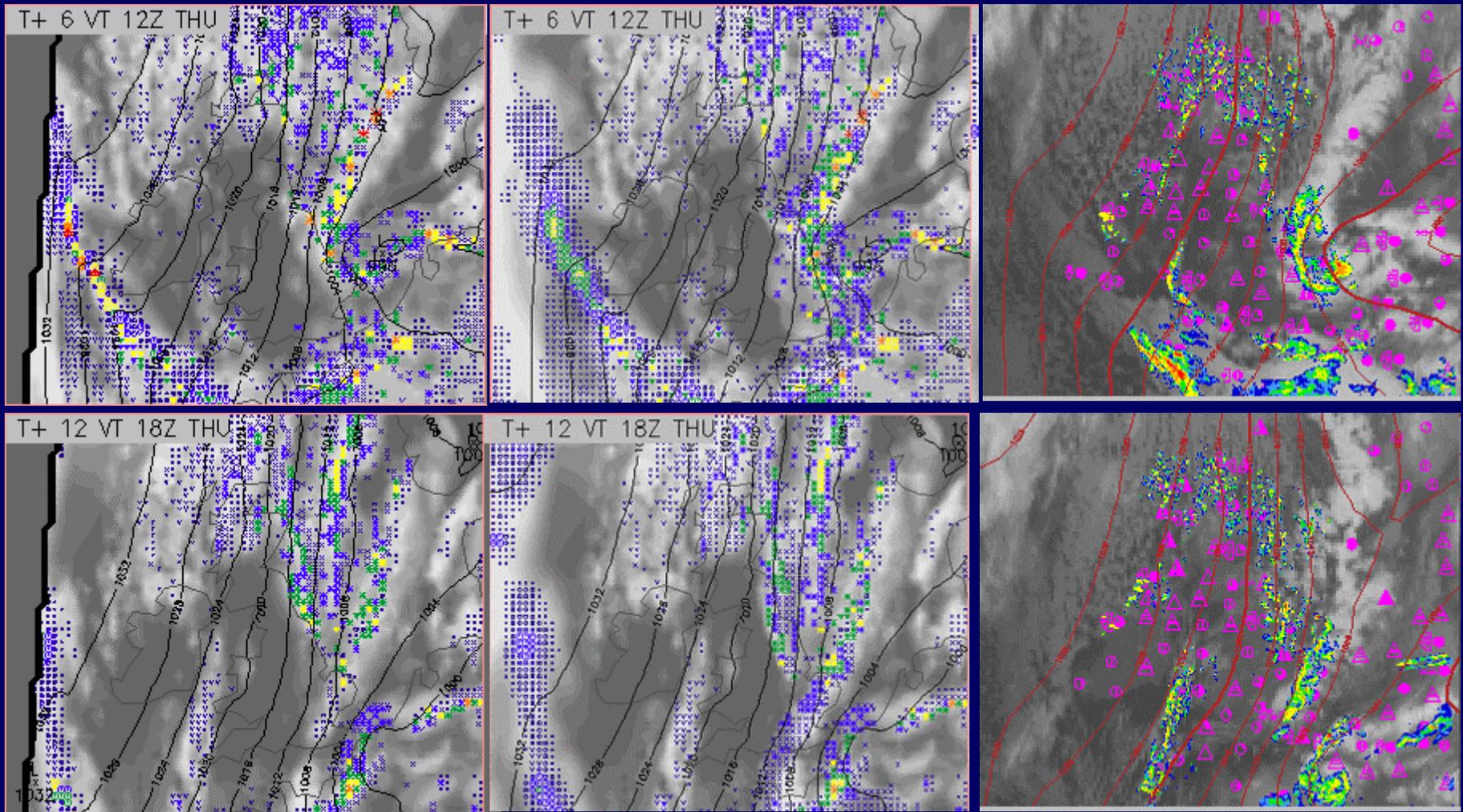
New system

- 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

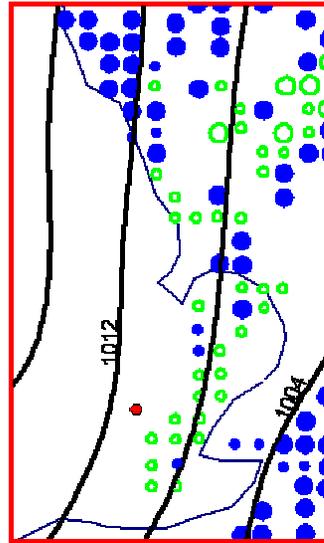
Future plans

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

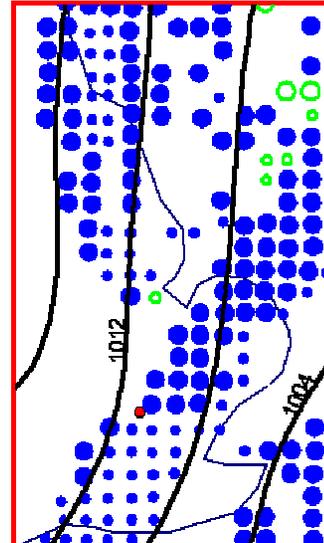
30 January 2003 snow



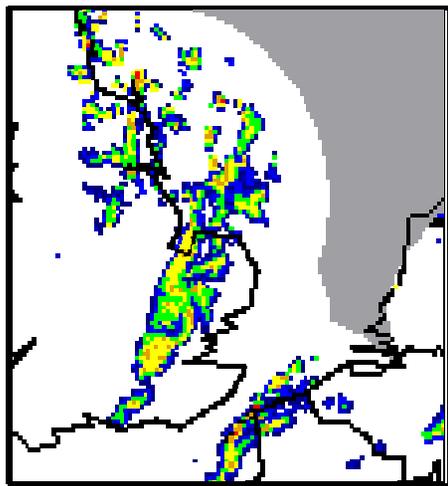
T+12 VT 1800 30 Jan 2003



Raw



Modified



Radar



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.

