



Model output to weather forecasts: the need to address the known unknowns

Using ECMWF Forecasts meeting 2022

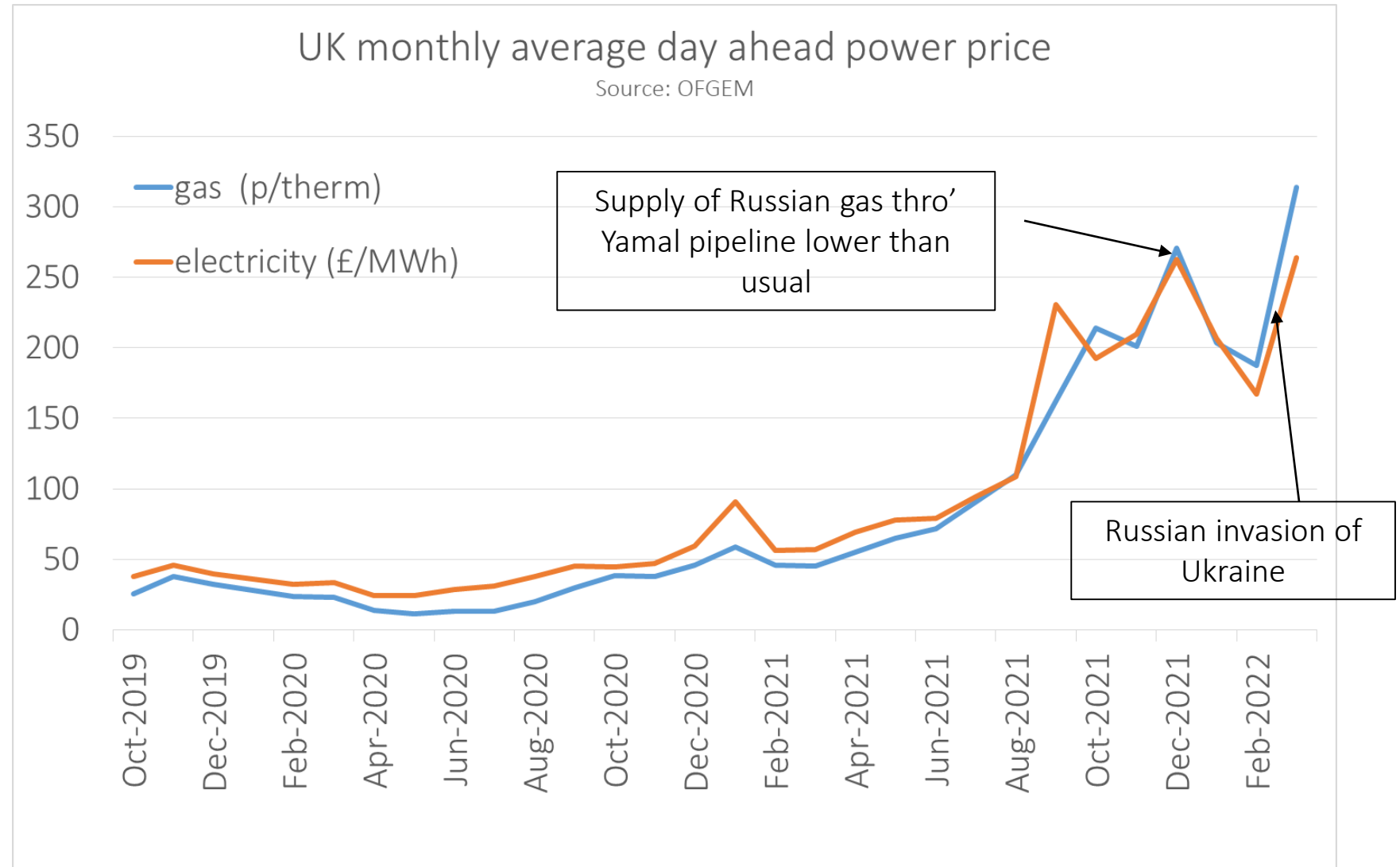
Isla Finney

June 8th 2022

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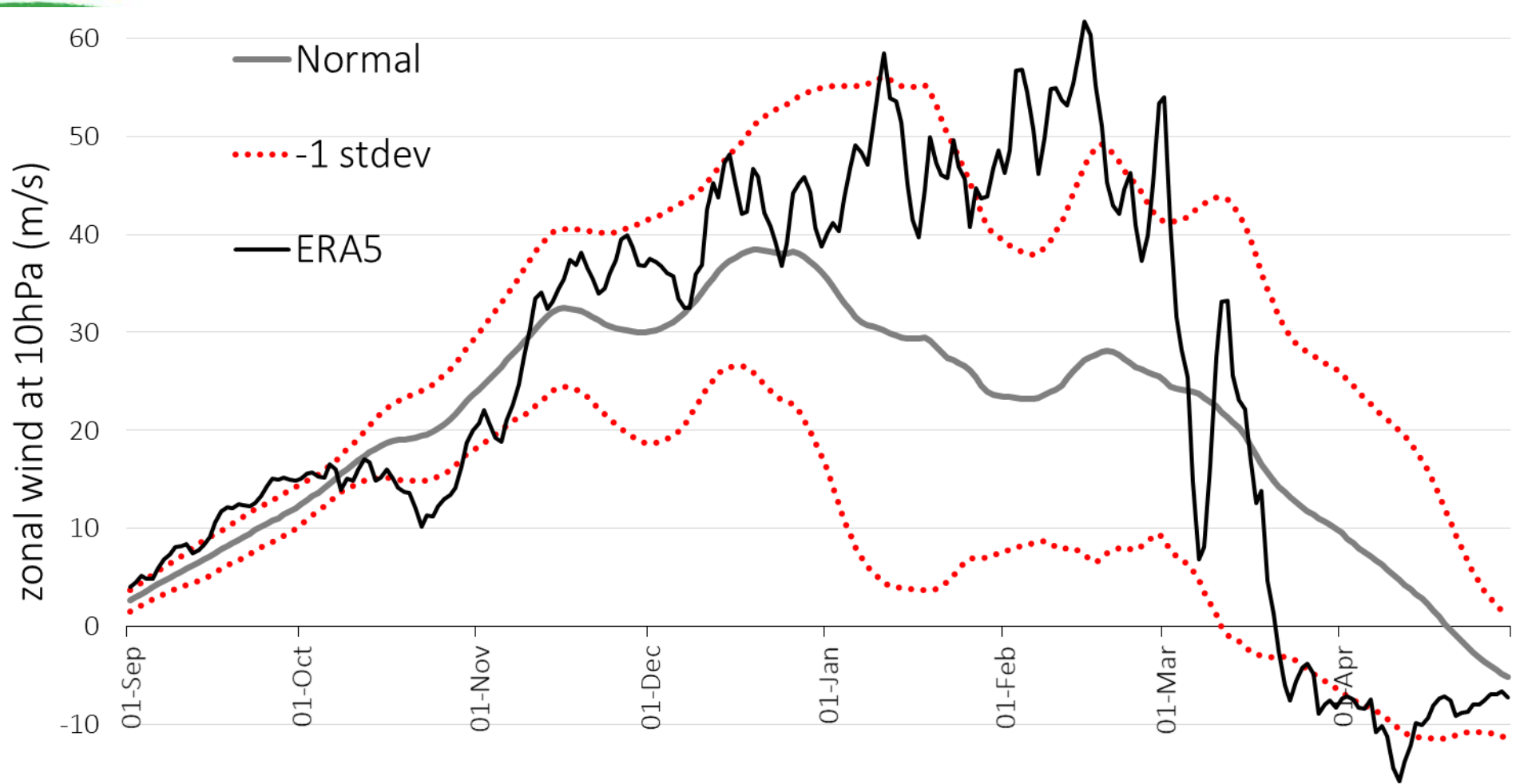
UK energy prices



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Stratospheric zonal wind

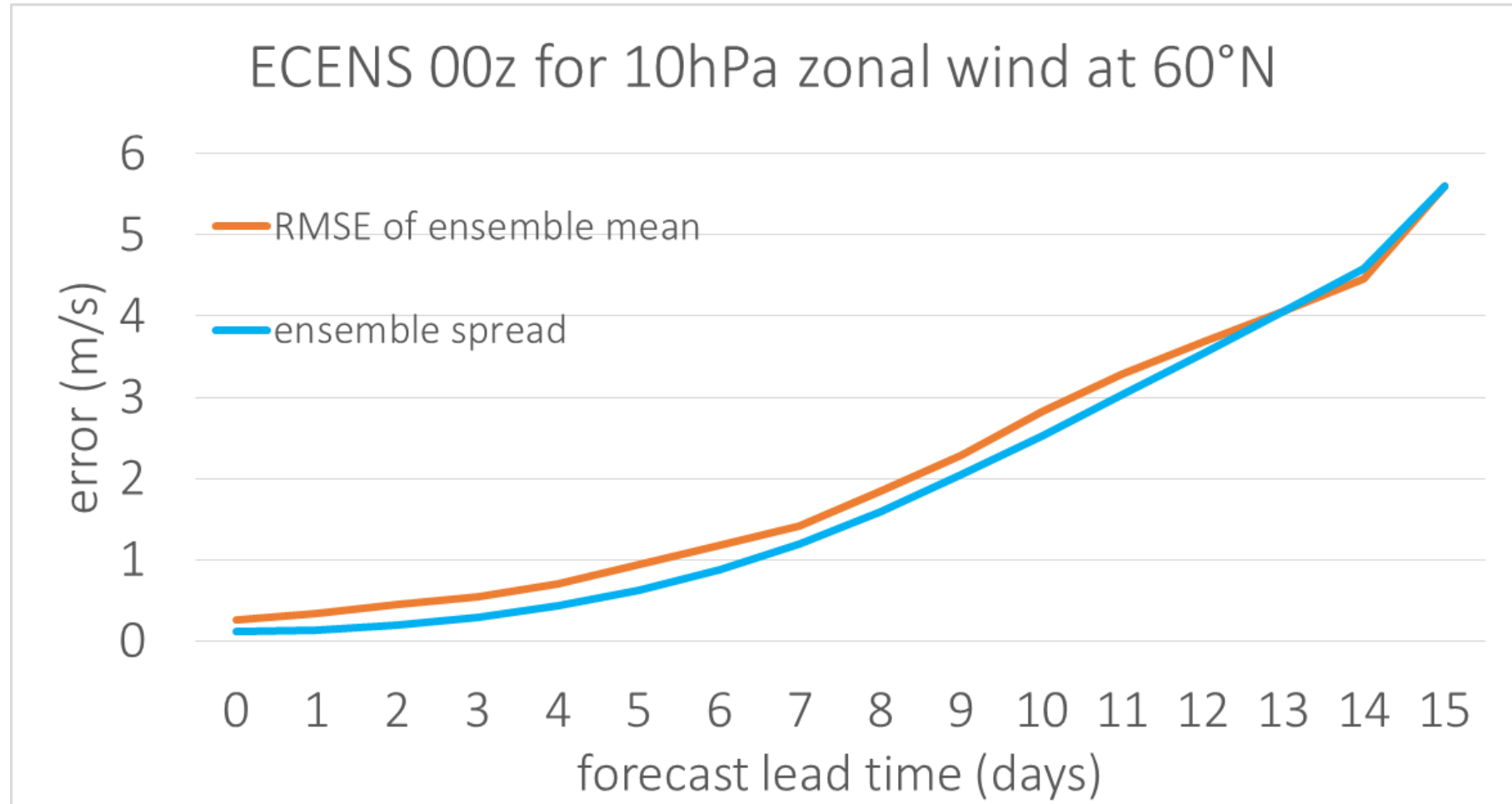


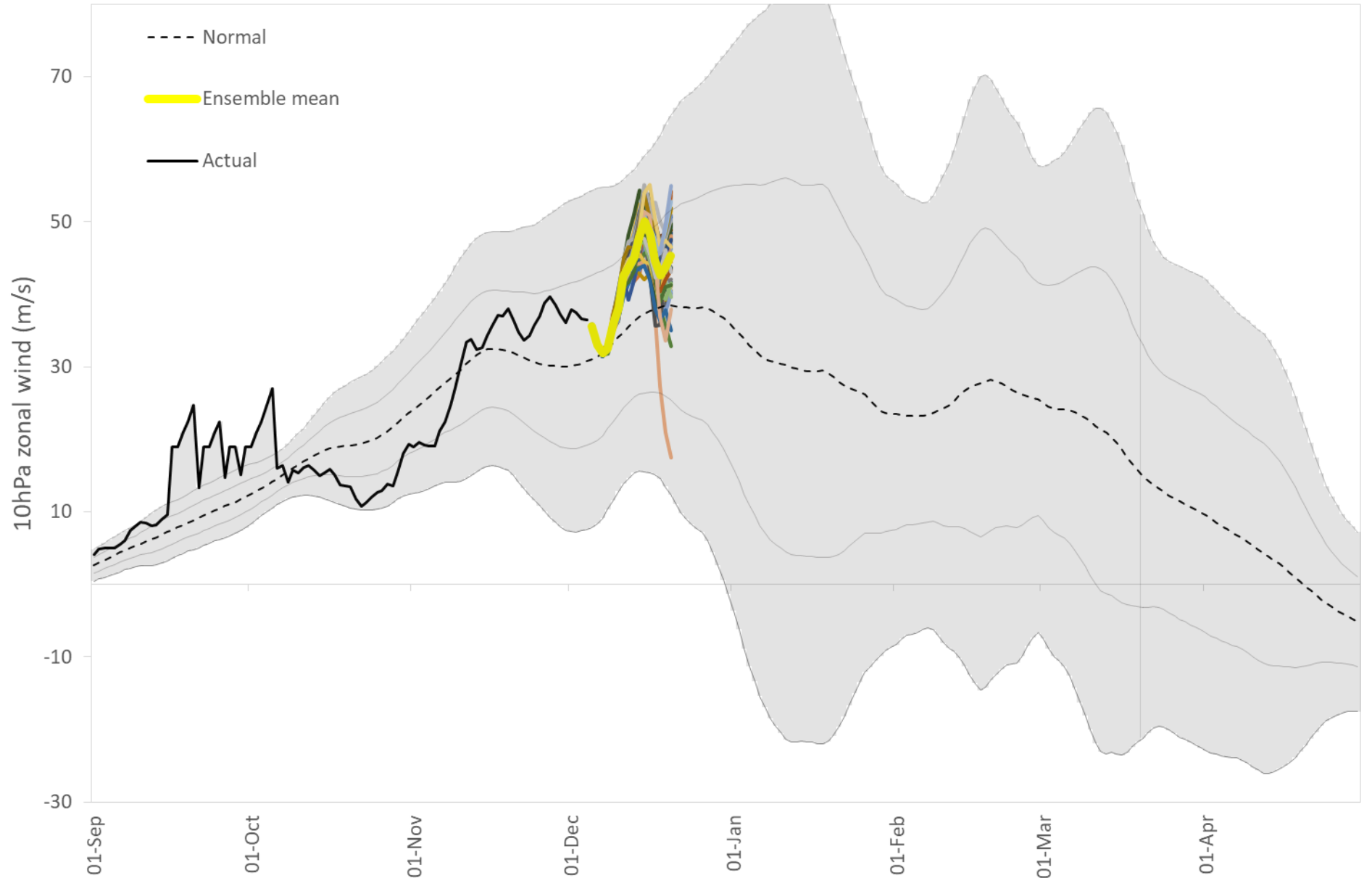
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Error vs spread good

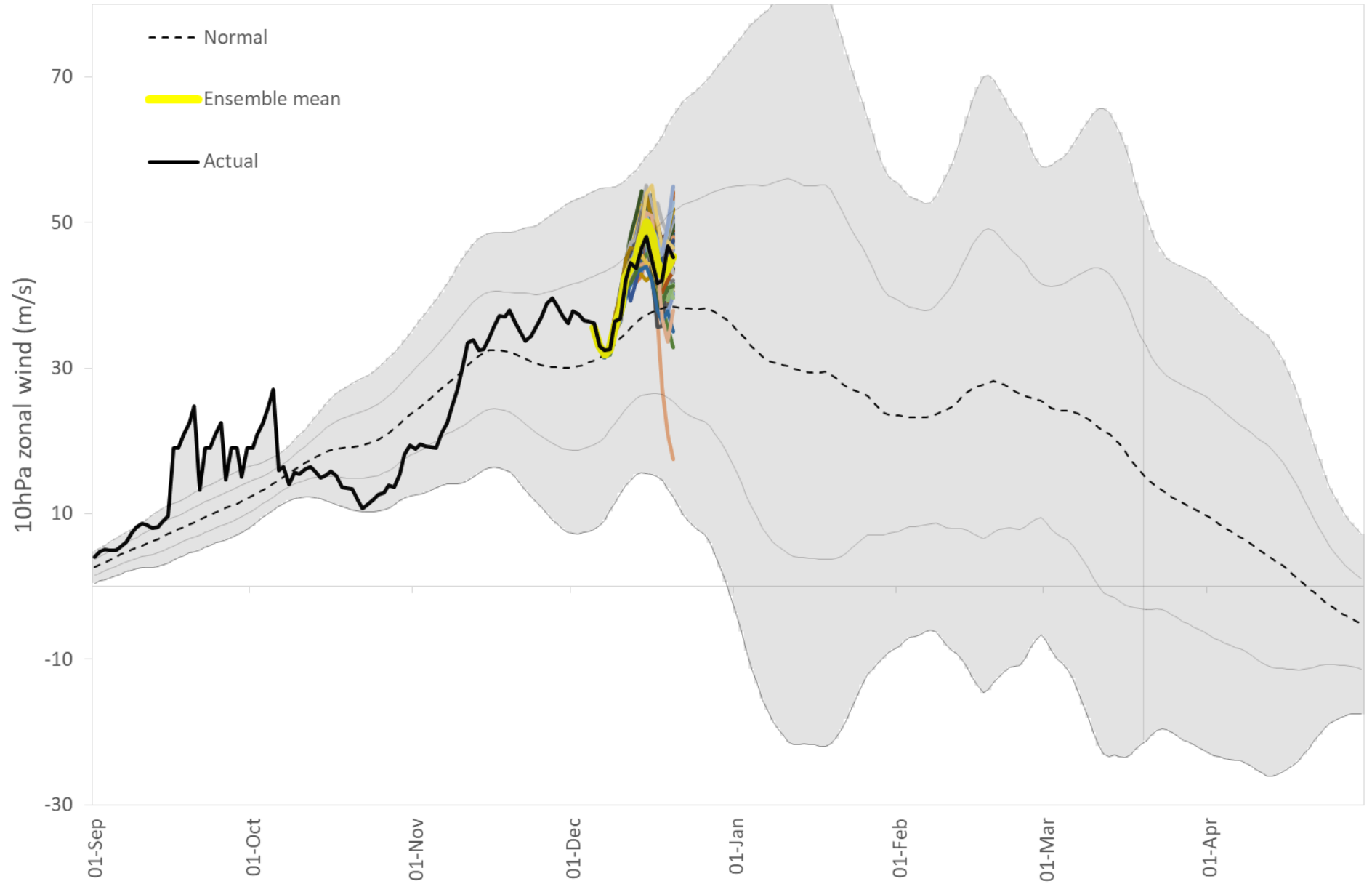




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Source of raw data from which chart is derived: ECMWF



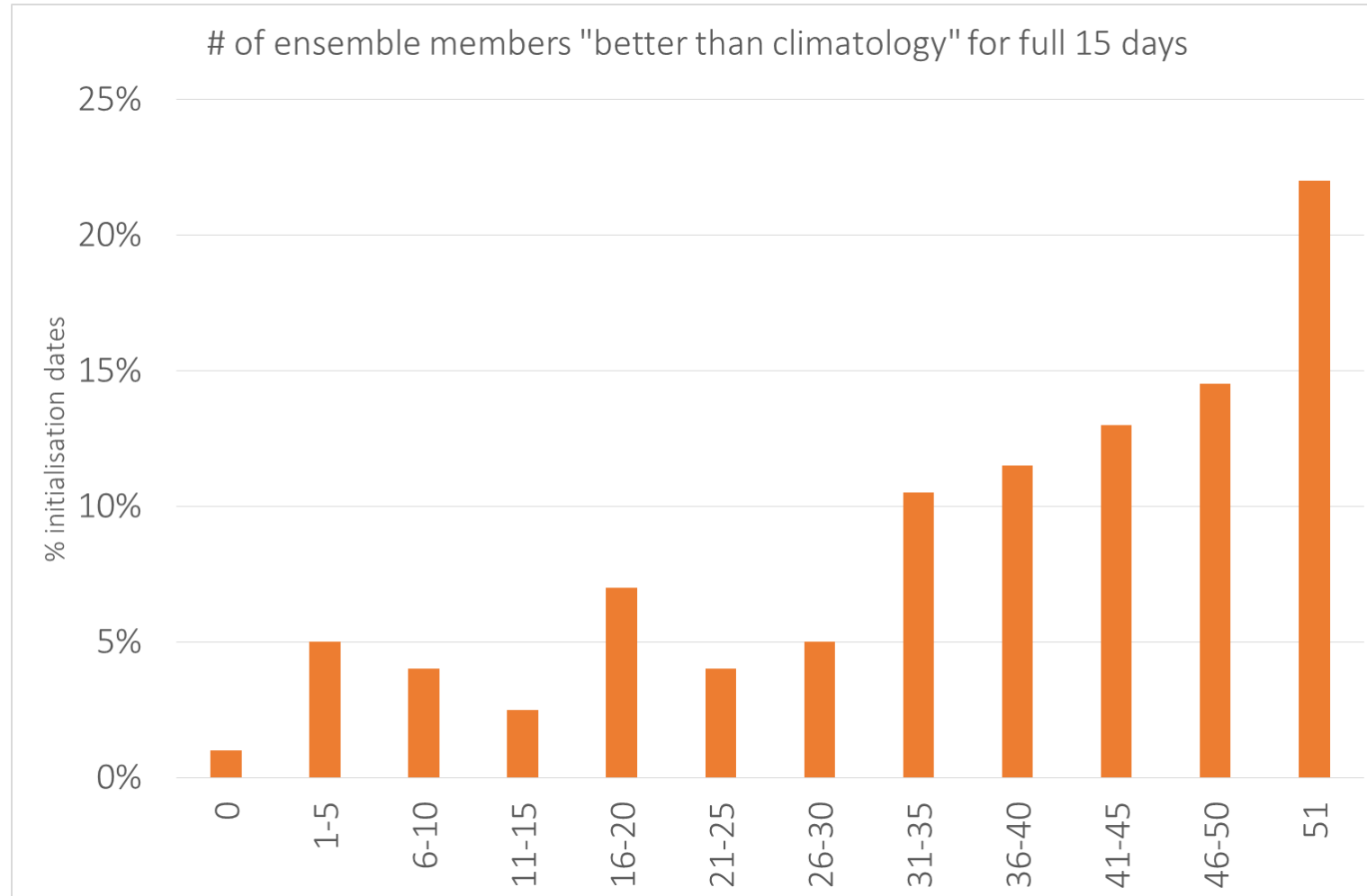
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Source of raw data from which chart is derived: ECMWF



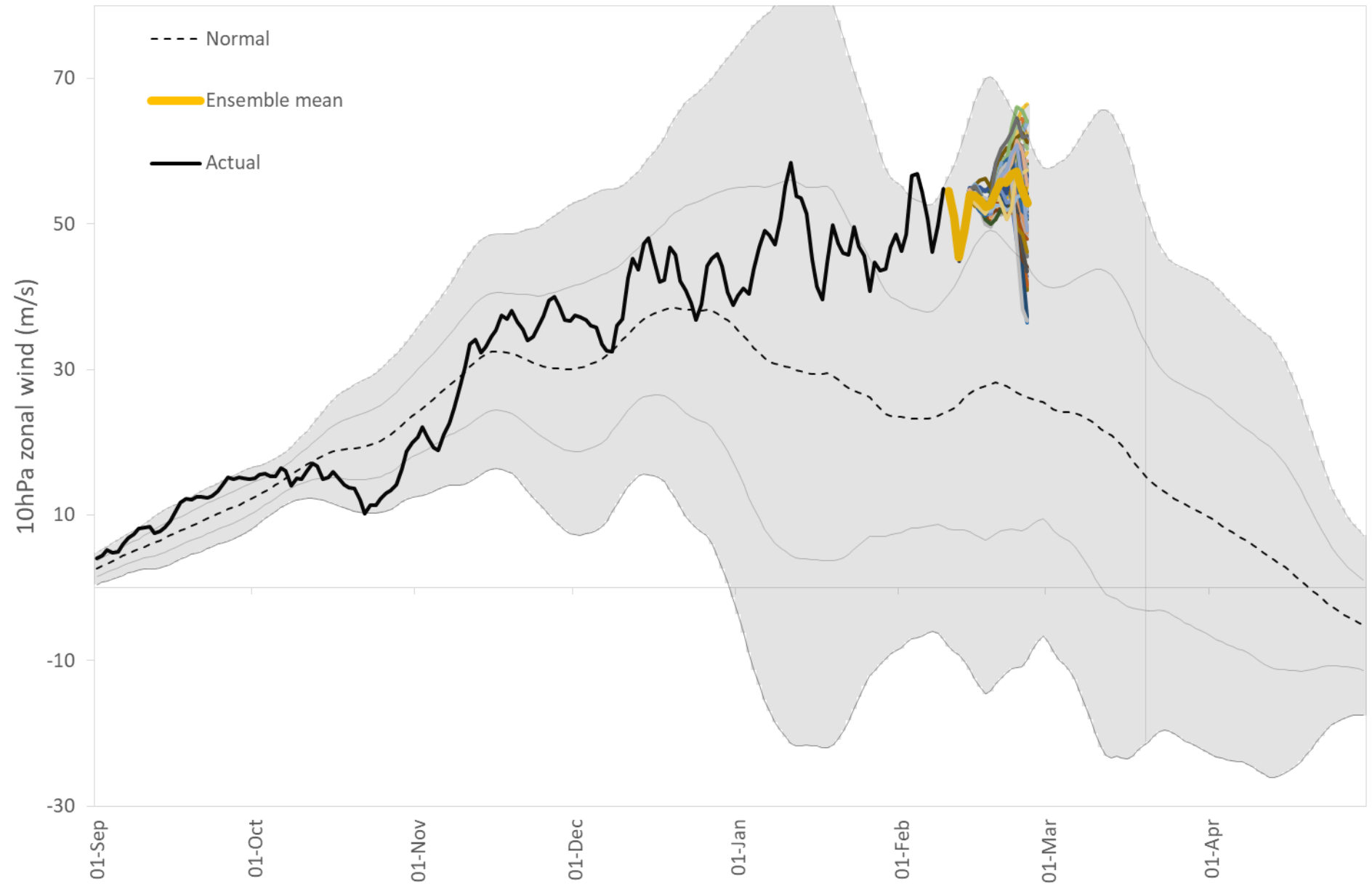
Some very good forecasts



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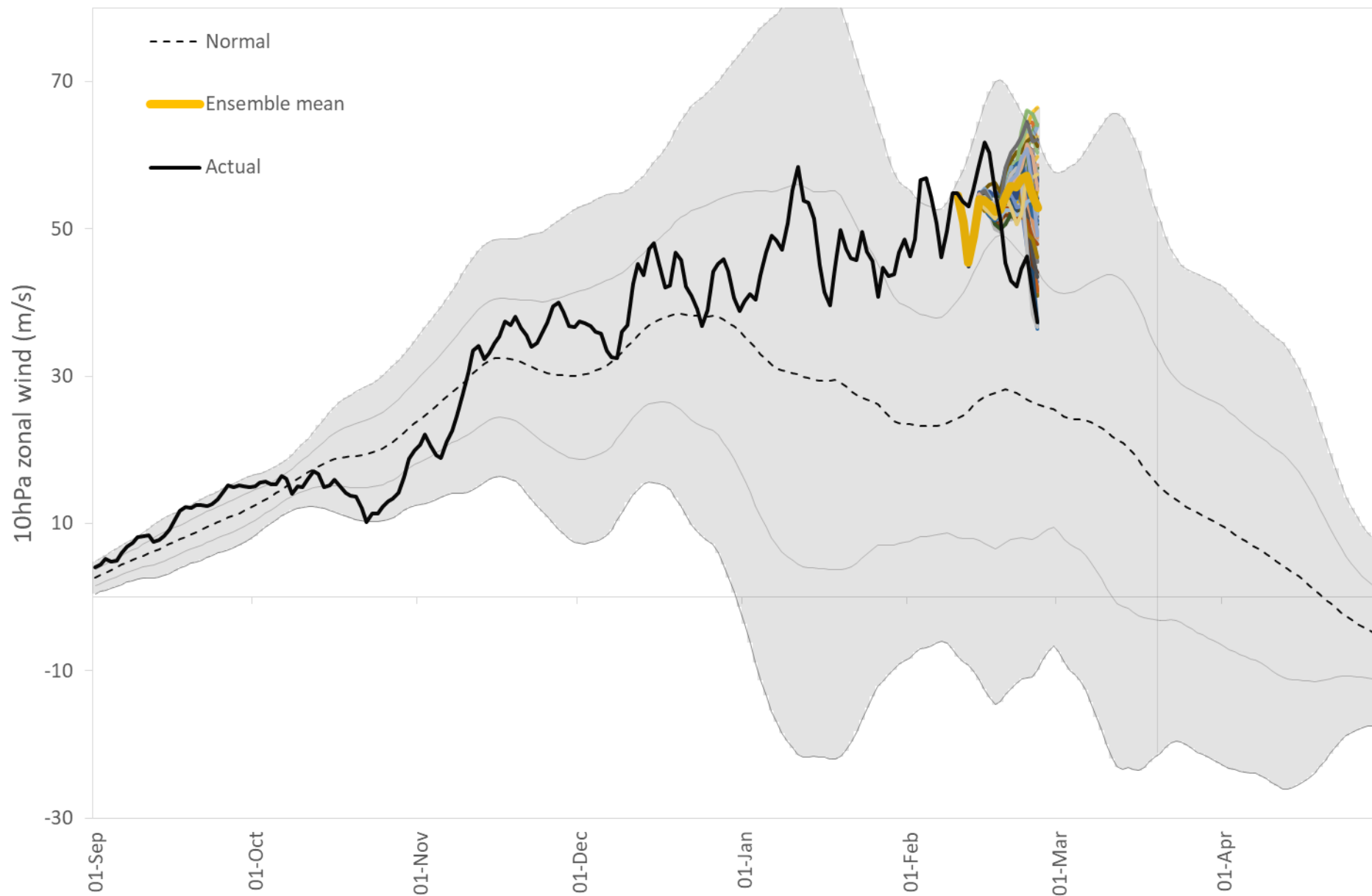
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Source of raw data from which chart is derived: ECMWF



but some cases of
model error vs initial
condition error



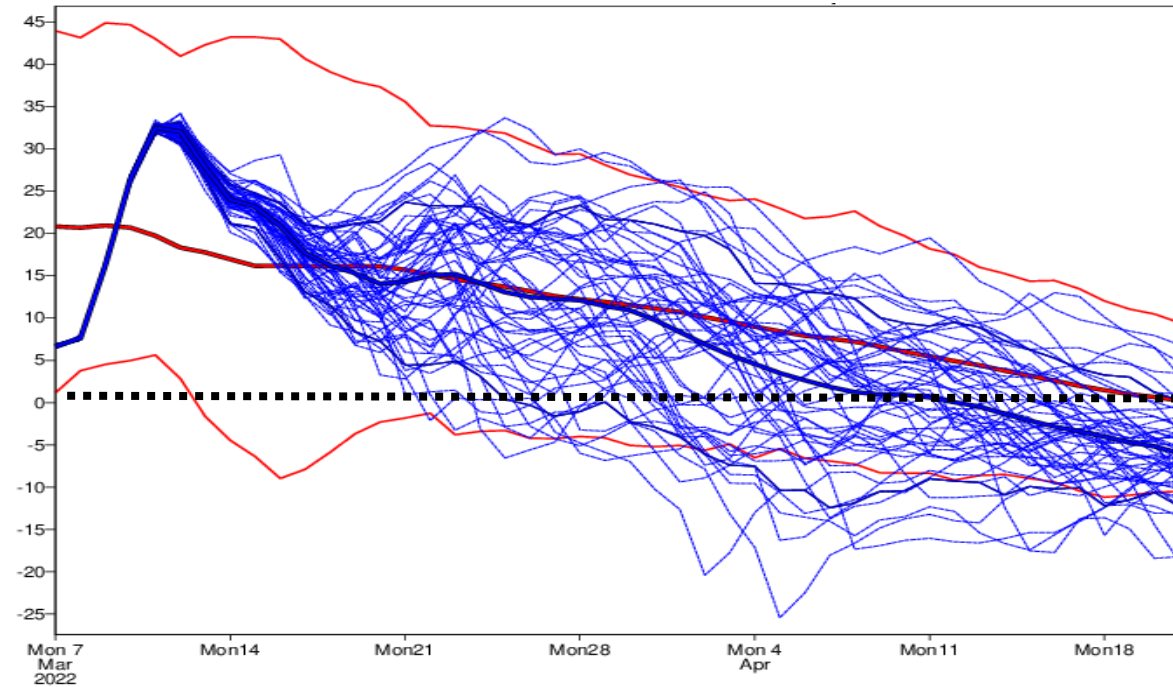
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Source of raw data from which chart is derived: ECMWF



EC extended-range forecast, from ECMWF website



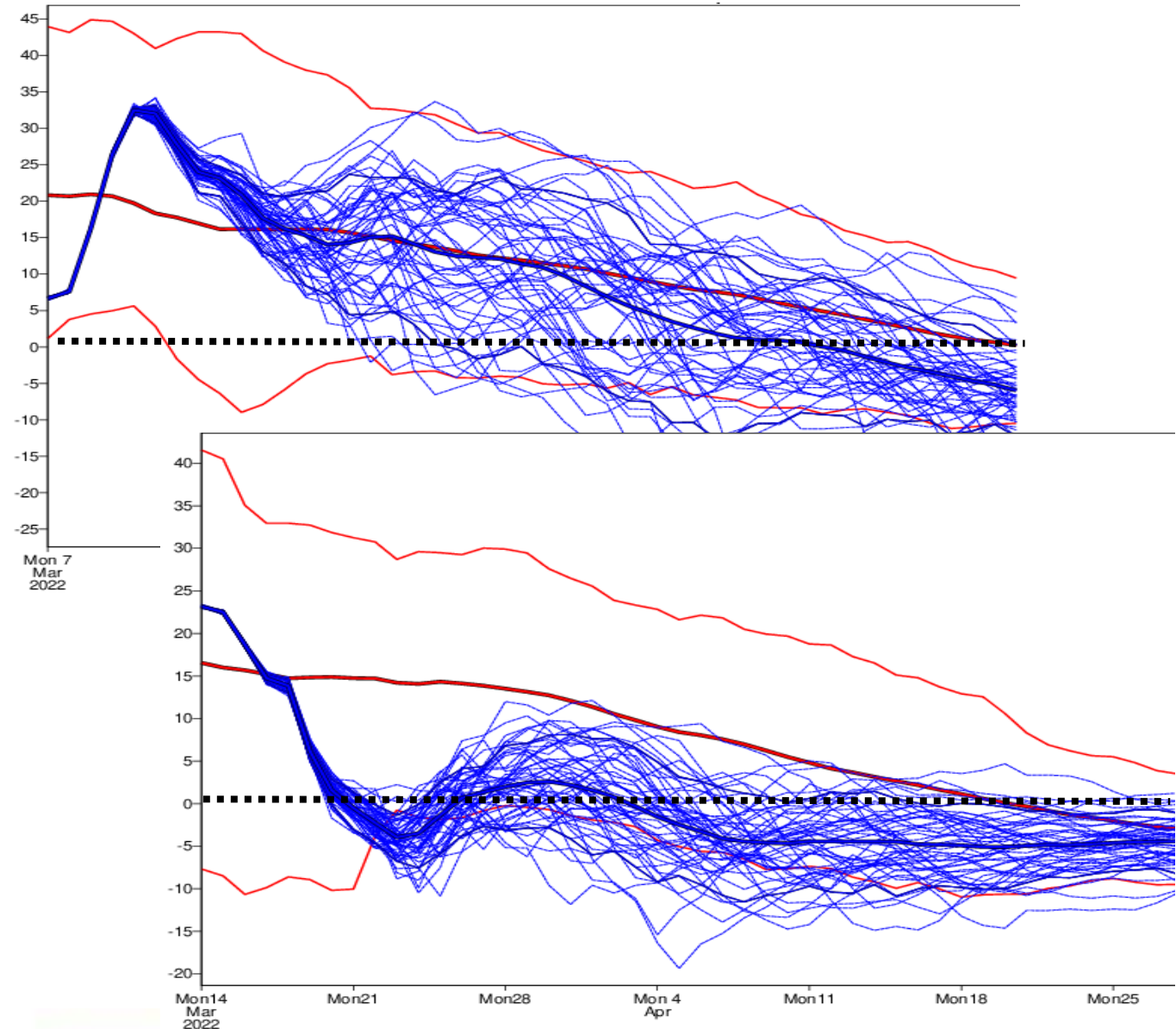
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Source: ECMWF

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EC extended-range forecast, from ECMWF website



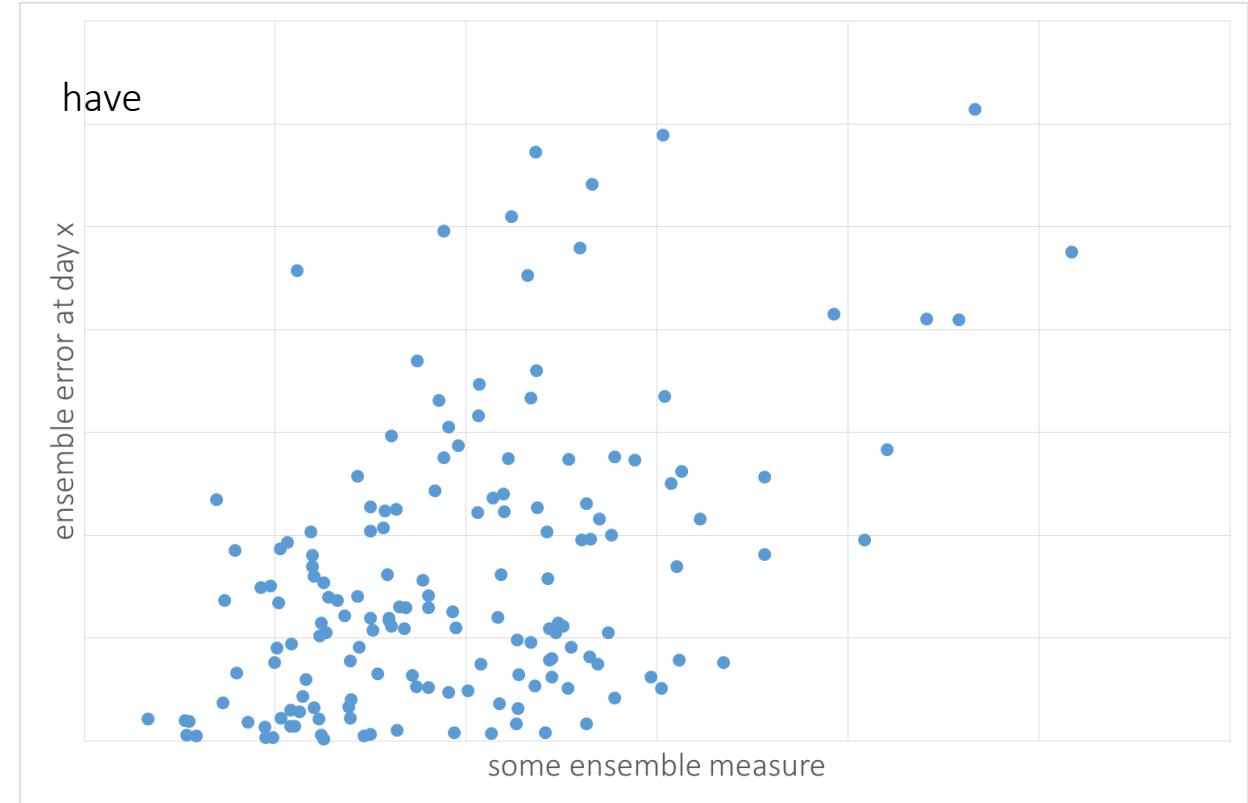
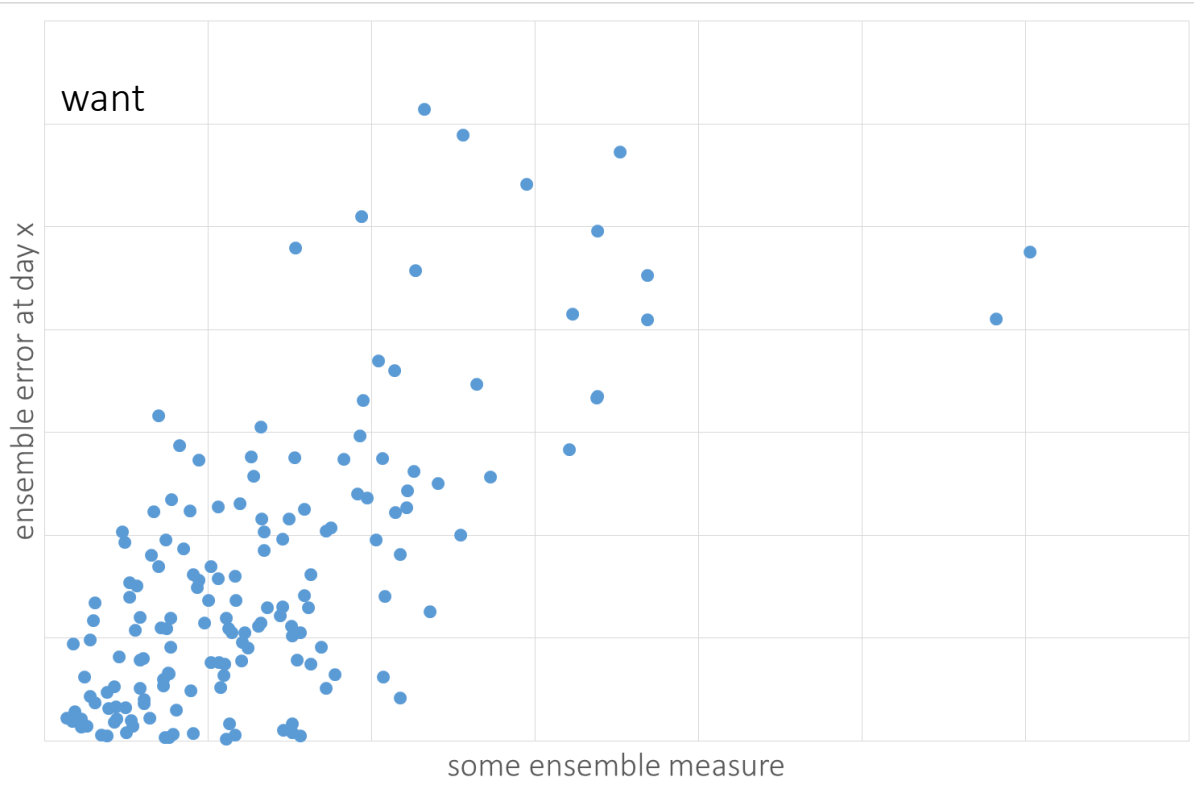
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Source: ECMWF



Model error limits ensembles



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Source of raw data from which chart is derived: ECMWF

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Role of forecaster

Including

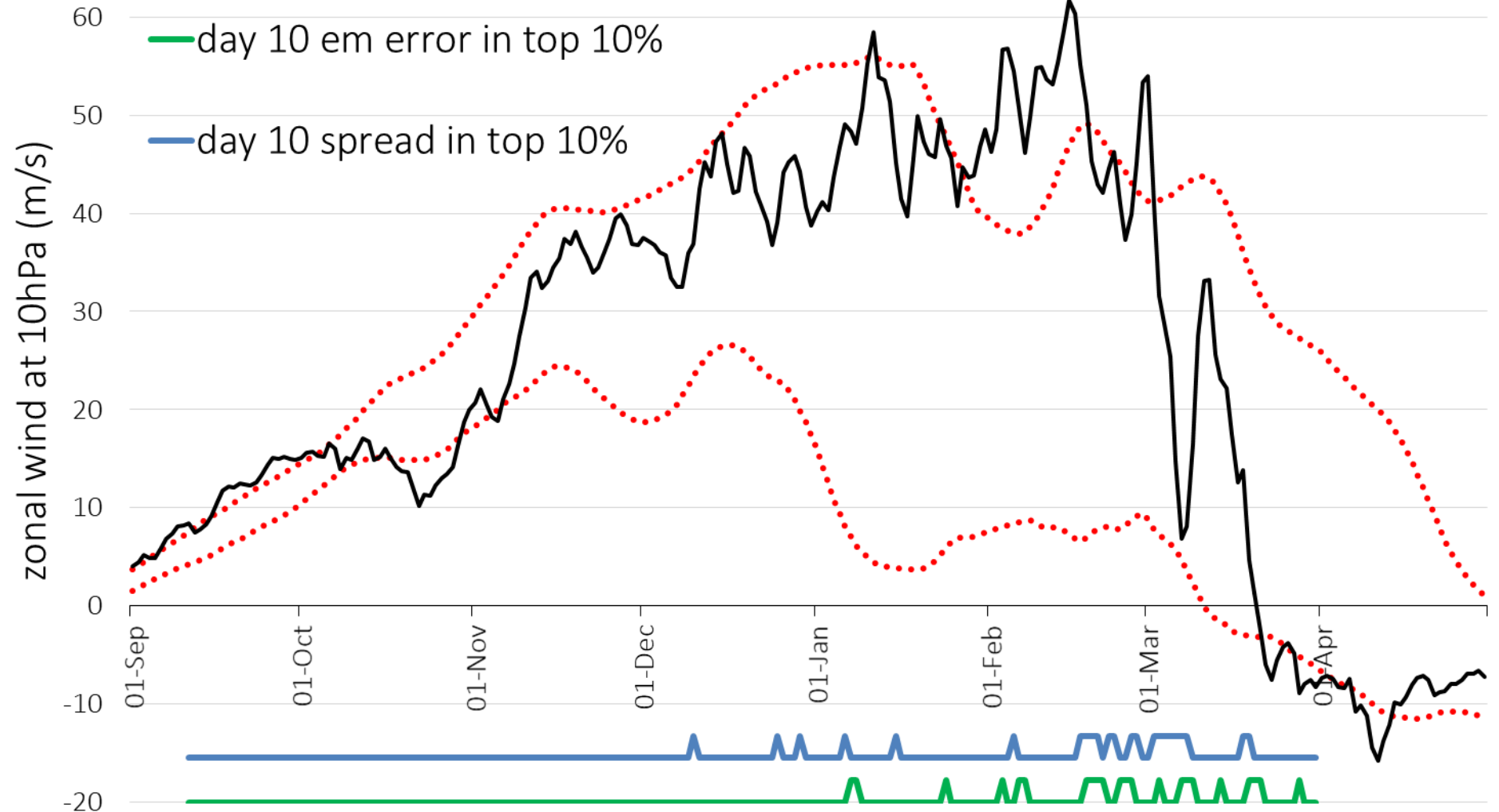
- knowledge of model biases
- inter-model comparison
- awareness of which weather patterns model struggles with
- awareness of extreme events that are likely to impact forecast

⇒ Interpretation of model output into weather forecast

Often knowing forecast confidence (or lack thereof) is valuable

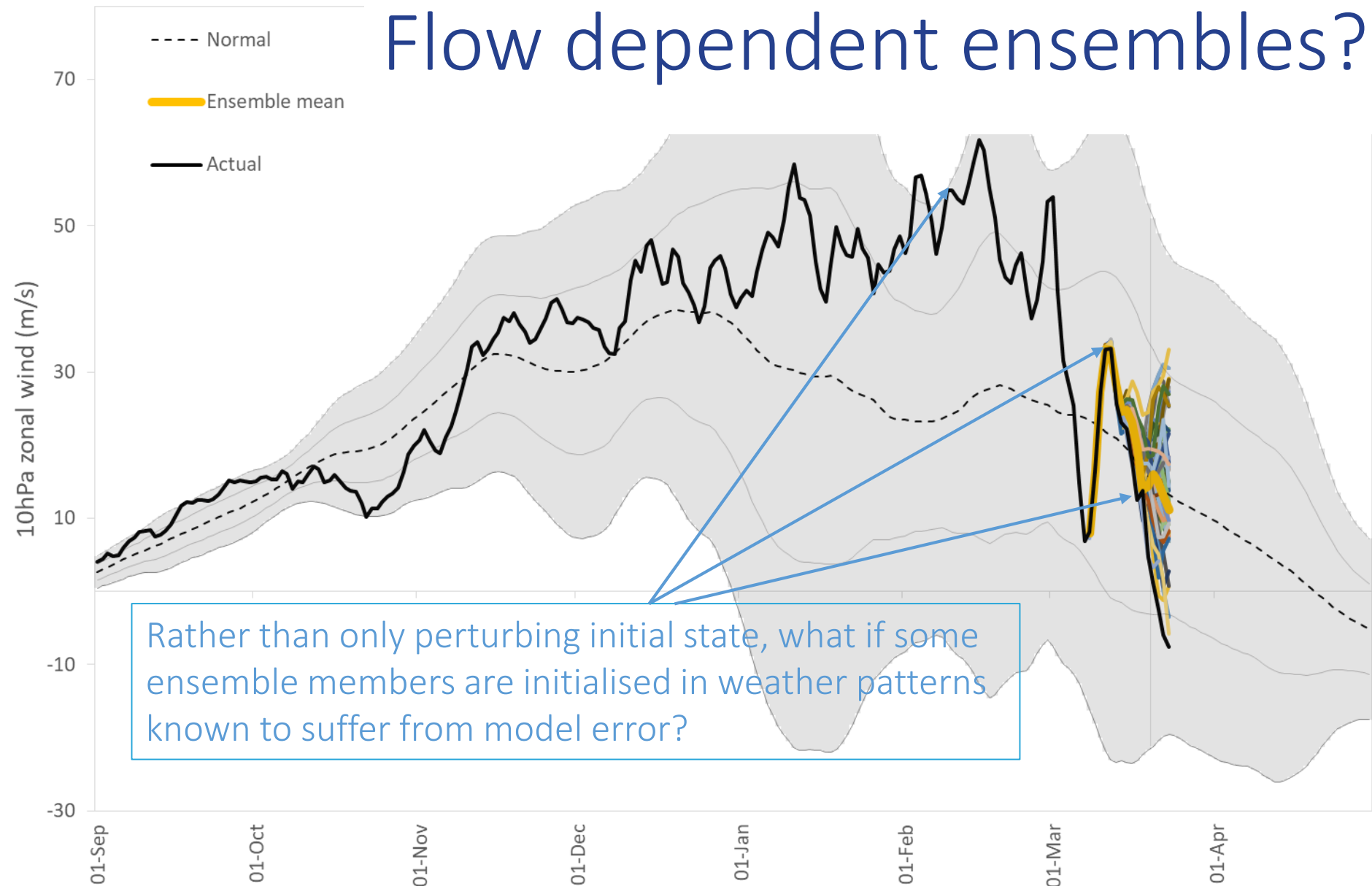


Flow dependent accuracy





Flow dependent ensembles?



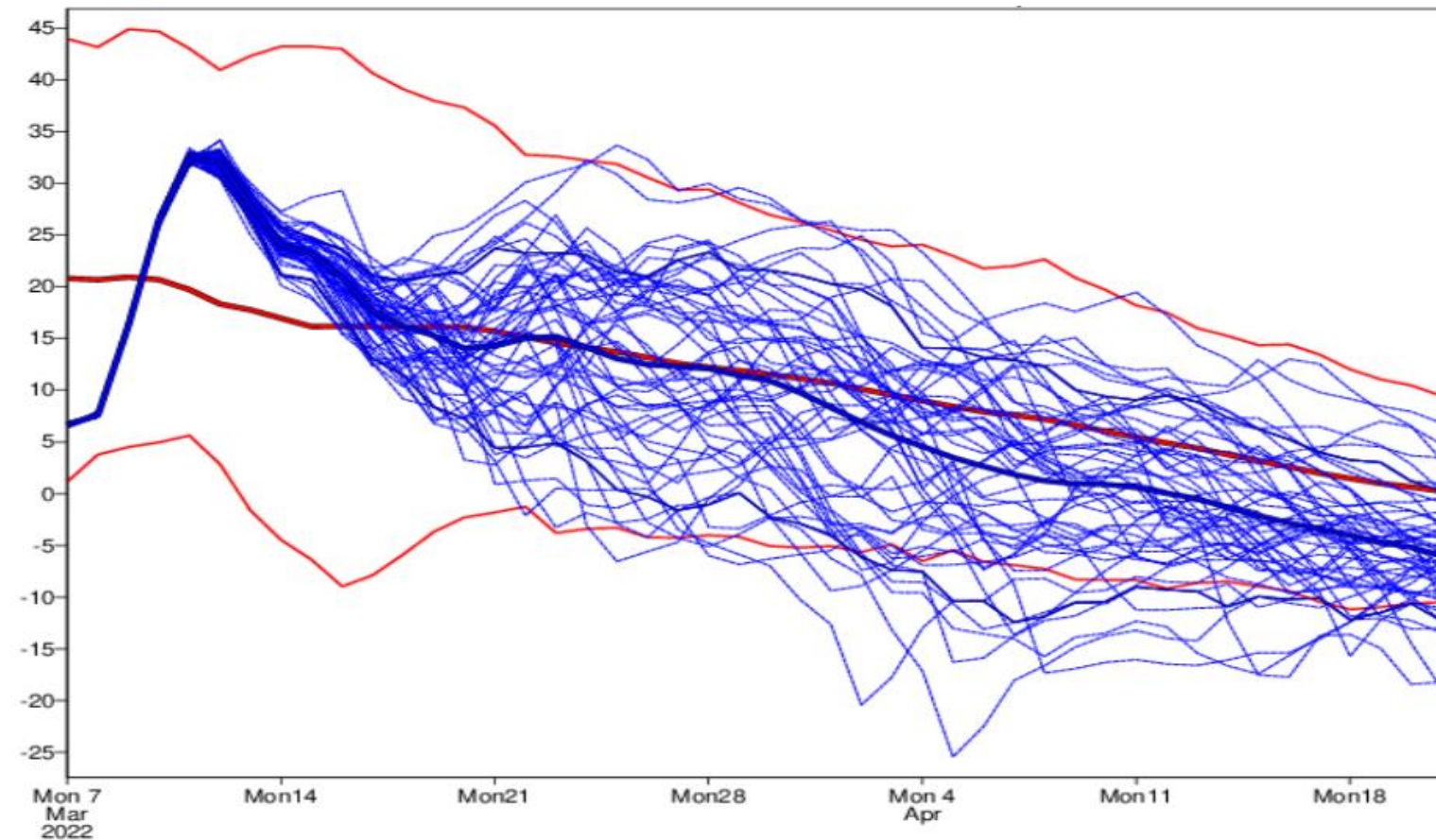
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Until then...



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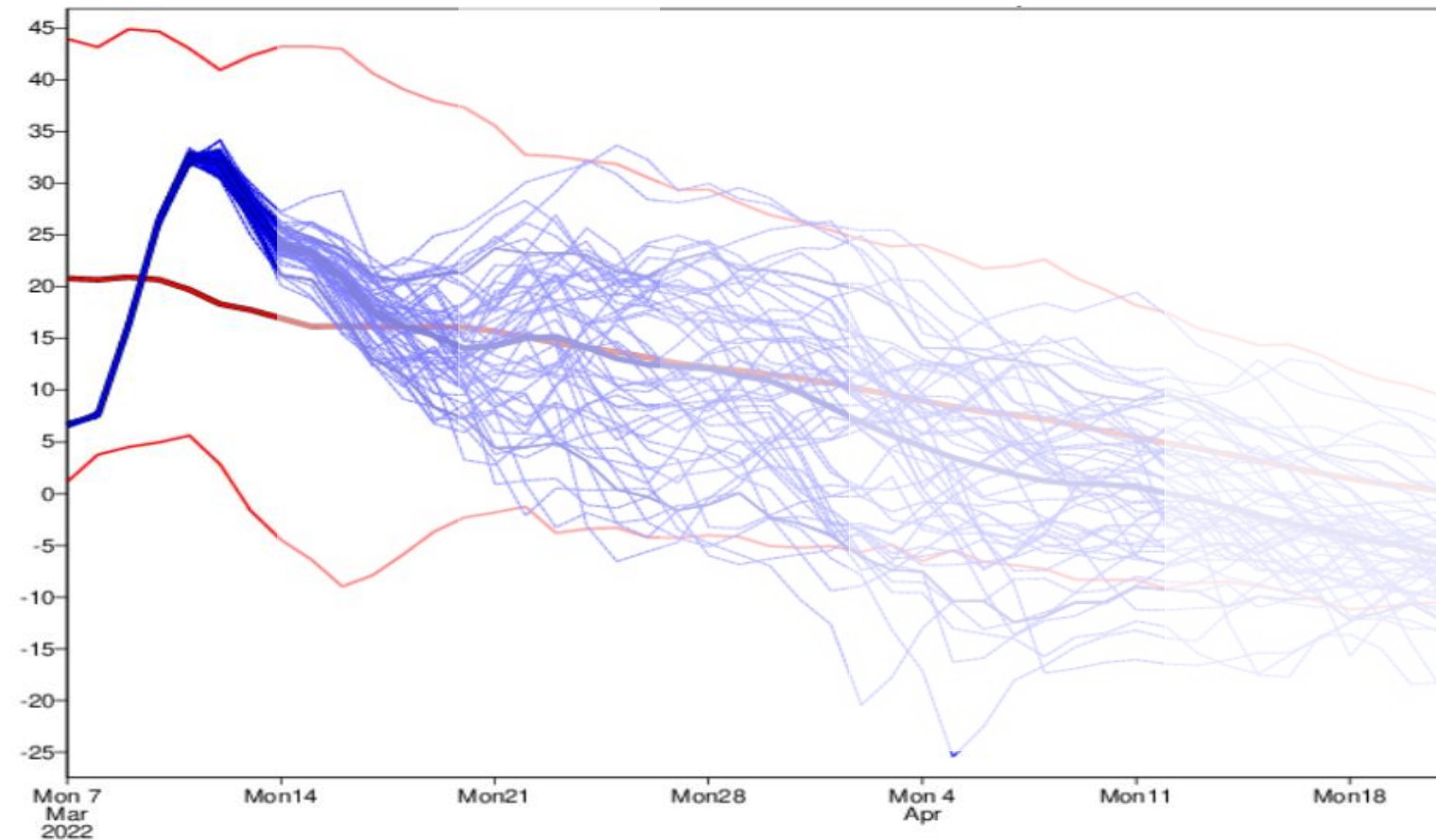


Source: ECMWF

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Or with some skill information?



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Summary

- Ensemble forecasts are helpful
and sometimes (often?) flag uncertainty
but not always
- ↑ number of members, ↑ number frequency both some help
- Can we use ensembles to explore model error (beyond SPPT)?
- Model output can contain more information & excited to see ideas presented here on how to achieve that
- A weather forecast is made using model output, but is so much more!



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