# Use of EPS products at Météo-France

- **Building of the Millau viaduct**
- **The Prestige shipwreck**
- **Tropical cylone tracks**

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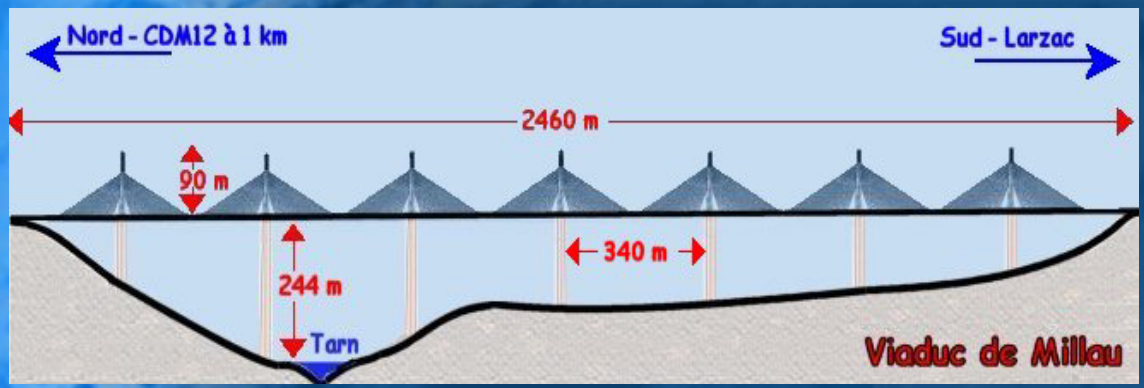
# Building of the Millau viaduct




- Height : 244 m
- Length : 2460 m
- from january 2002 to january 2005

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# Building of the Millau viaduct

Very short-range constraint :

| | |
|---|---|
| <46km/h | No problem |
| 46-72 km/h | The crane driver finishes the current task and stops |
| >72 km/h | The crane driver stops immediatly |

**For the long term planification, need of medium-range products :**

**Wind speed probabilities with thresholds 40 km/h, 70 km/h, 100 km/h**

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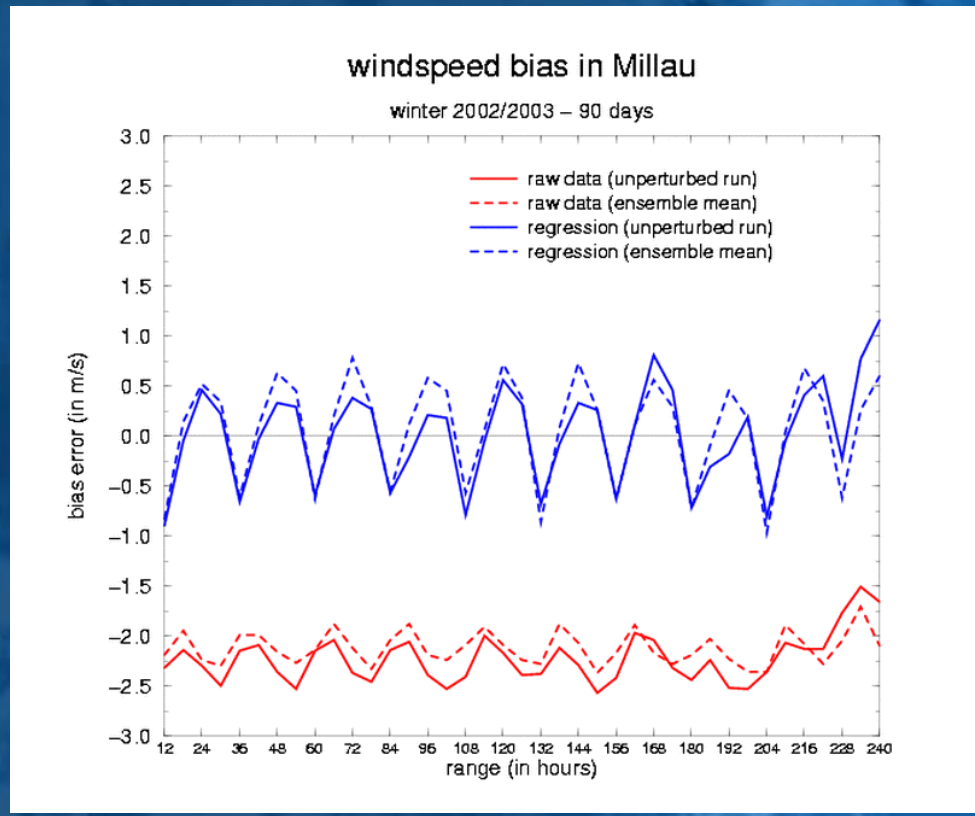
# The EPS statistical adaptation

- **Multiple linear regression**
- **One year learning on the control run**

**The bias is corrected**

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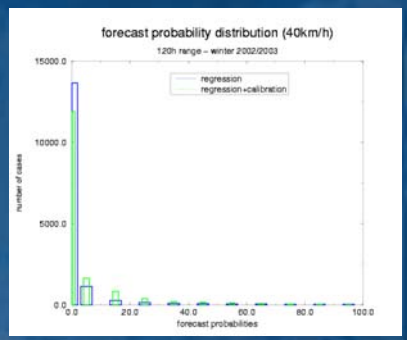
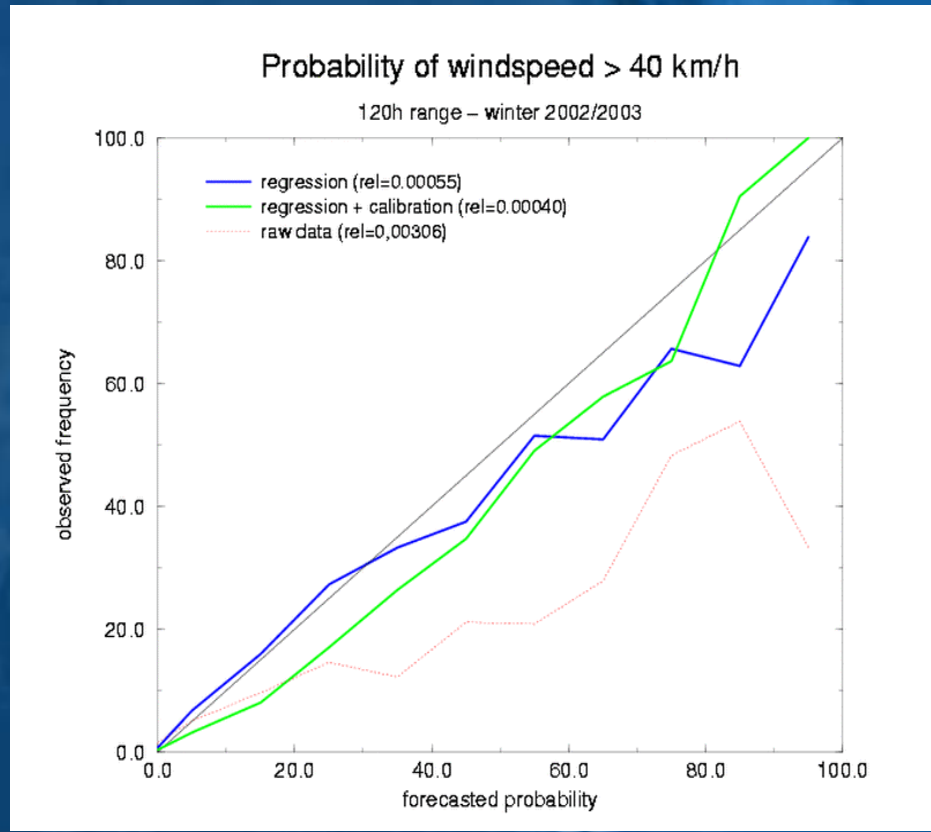
# Calibration of the distribution

- Based on rank histograms
- All the stations are mixed
- the last 40 past days arre taken into account

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# The final product

Available on a web server :

| | J+4 01/11/03 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 01h loc | 01h loc | 01h loc | 07h loc | 07h loc | 07h loc | 13h loc | 13h loc | 13h loc | 19h loc | 19h loc | 19h loc |
| Direction | 296 | 296 | 296 | 306 | 306 | 306 | 300 | 300 | 300 | 302 | 302 | 302 |
| Vitesse | 40 | 70 | 100 | 40 | 70 | 100 | 40 | 70 | 100 | 40 | 70 | 100 |
| Probabilité dépassement de seuils en % | 14 | 0 | 0 | 12 | 0 | 0 | 35 | 0 | 0 | 12 | 0 | 0 |

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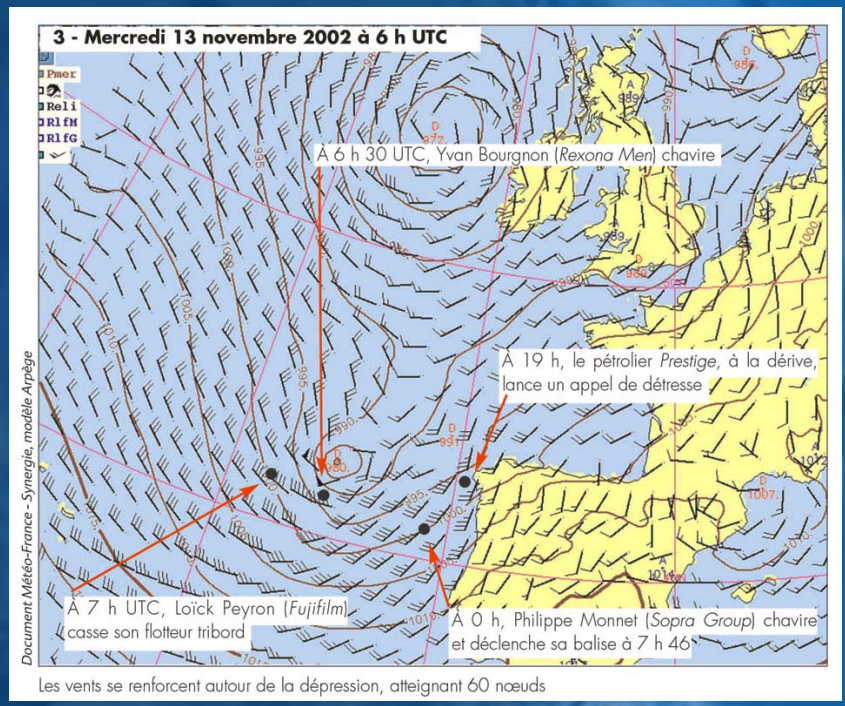
# The Prestige shipwreck




- May-day from the Prestige at 14h50 on 13 november 2002
- First oil leaks at 17h
- 77000 tons of heavy fuel in the tanker

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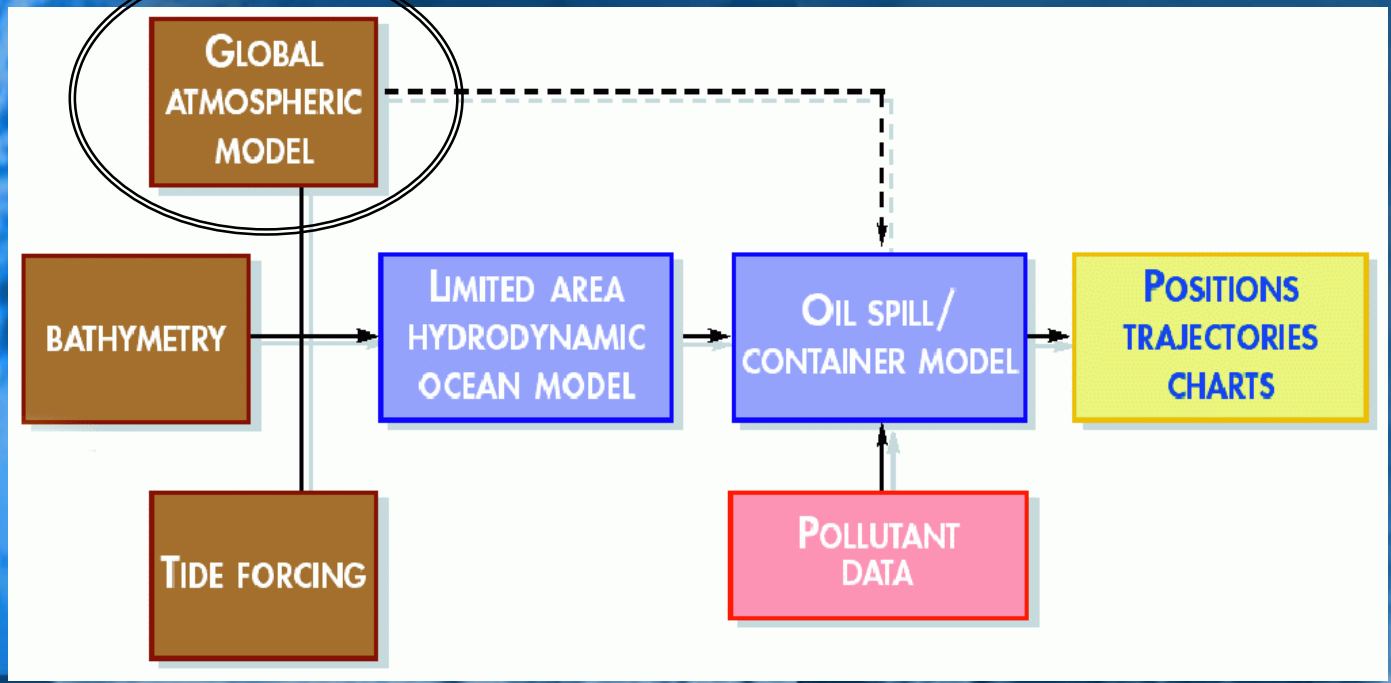
# The pollutant drift model : MOTHY

- 10m wind
- Sea level pressure

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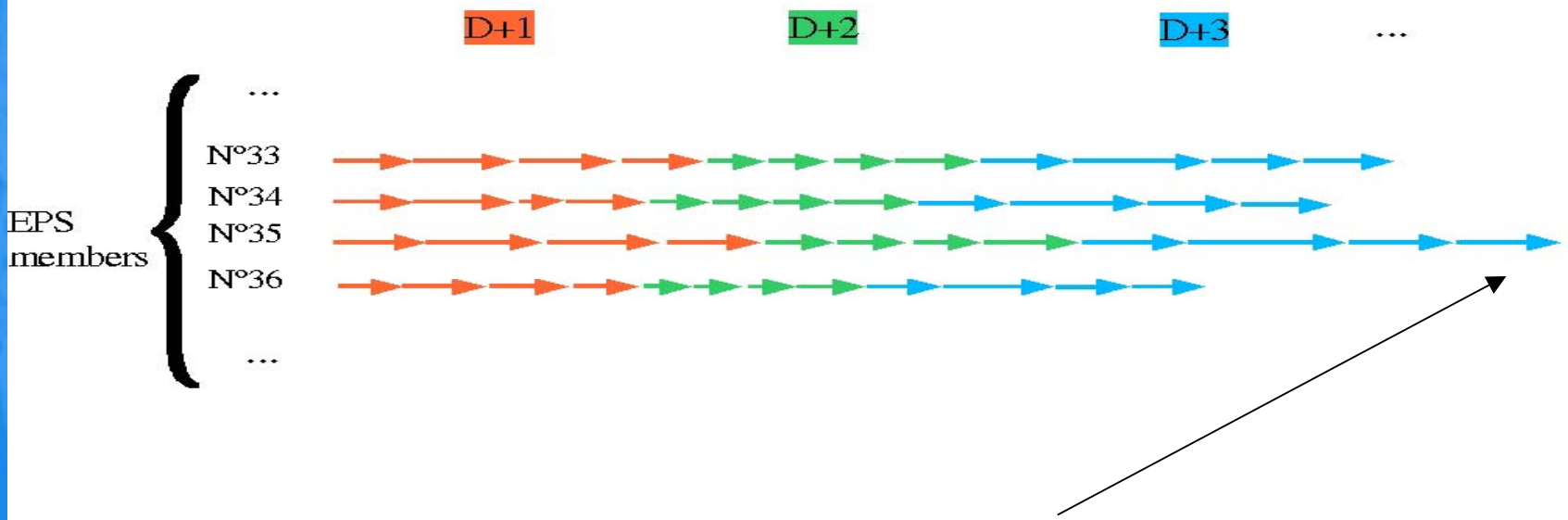
# The worst scenario

Which EPS member shall we choose ?




Maximum of cumulative wind speed along a direction

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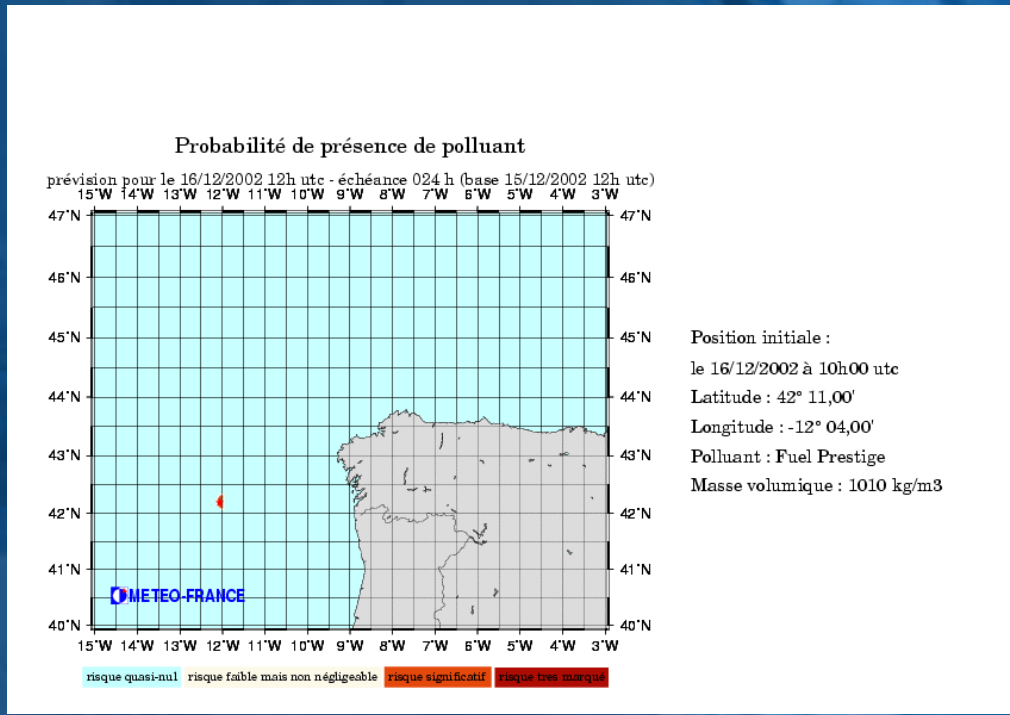
# The probabilistic point of view

51 EPS members

51 MOTHY runs

probabilities

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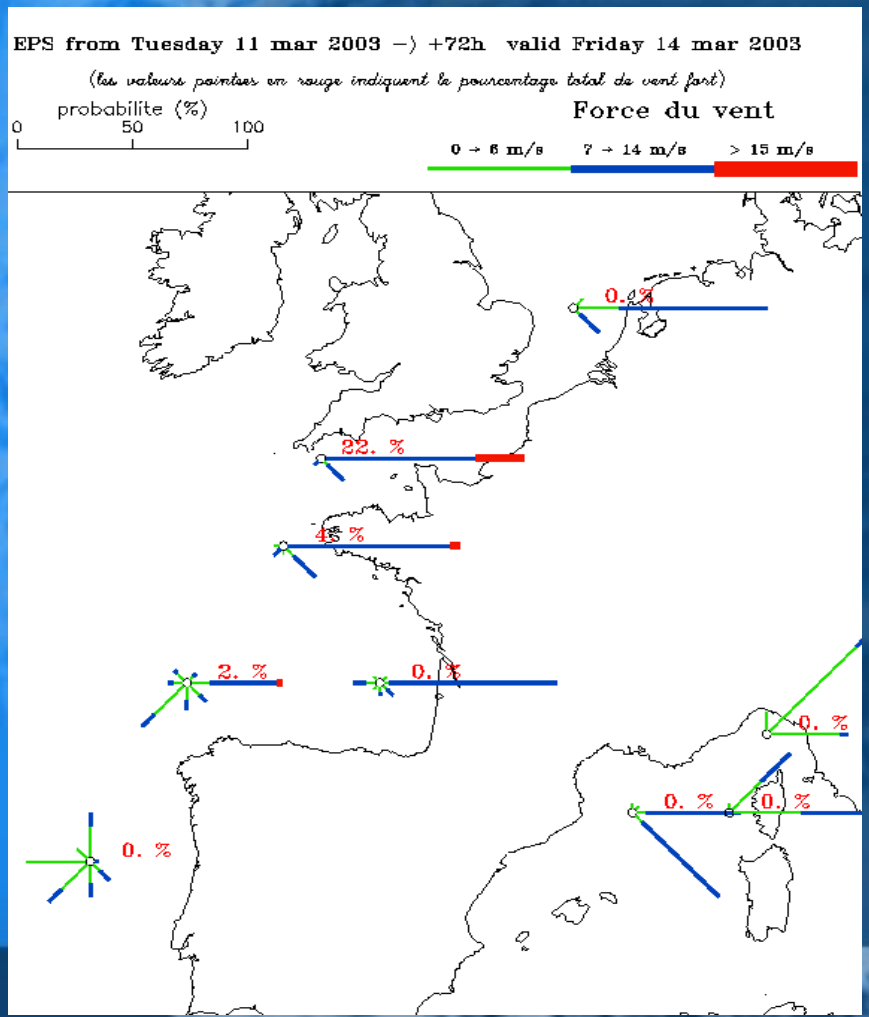
# The atmospheric forecasts remain crucial




Probabilistic wind charts

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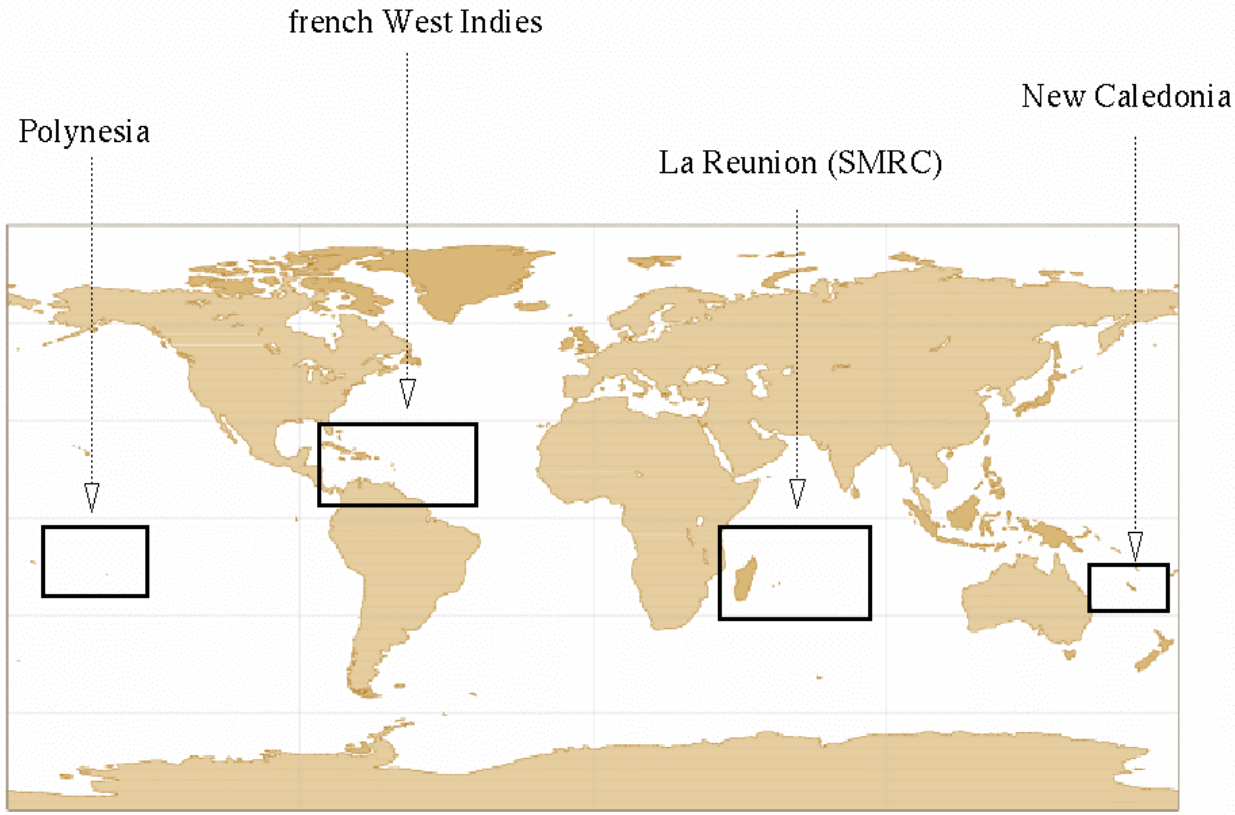
# French tropical centres

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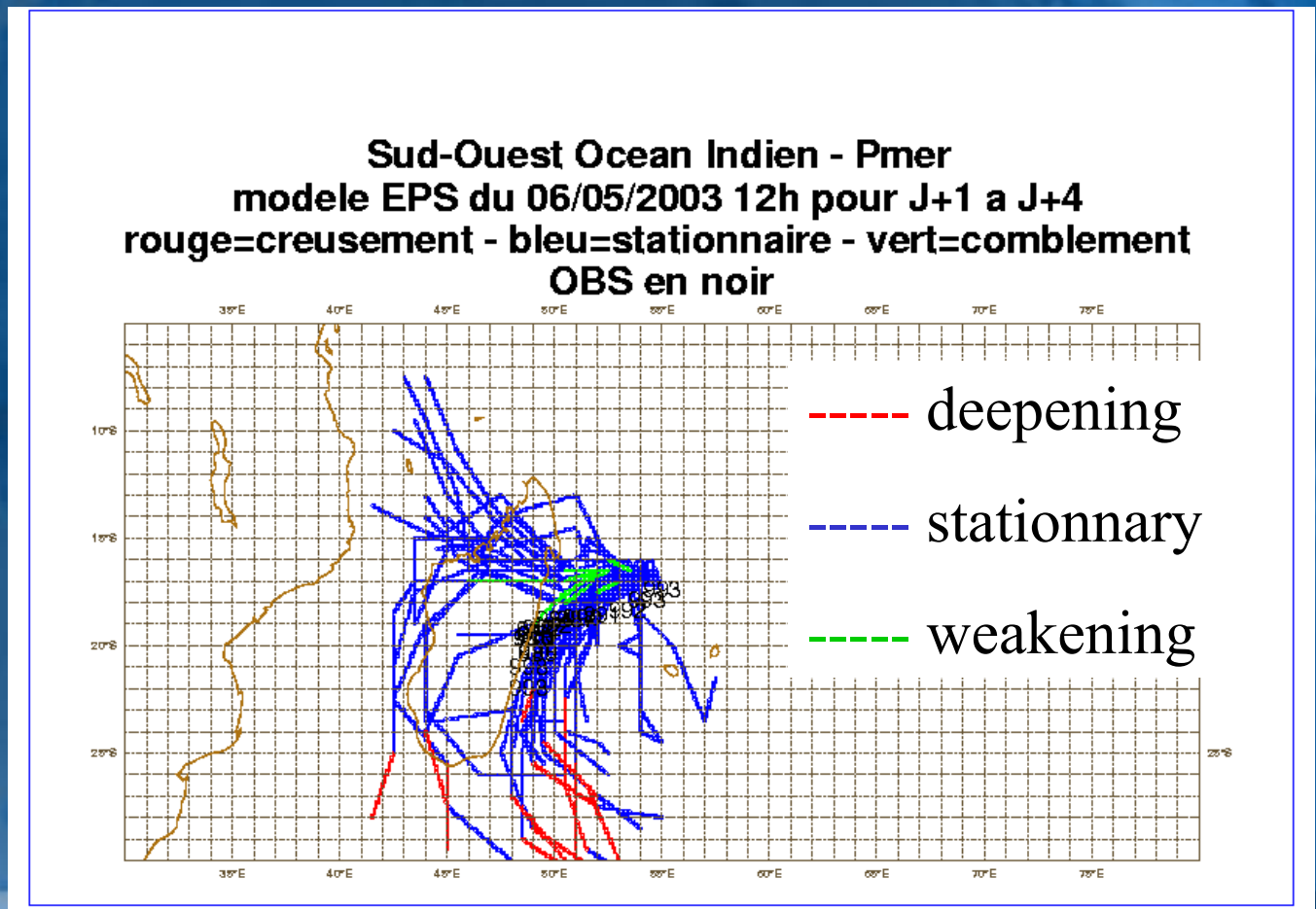
# Trajectories and intensity

Tropical cyclone MANOU

Indian Ocean

May 2003

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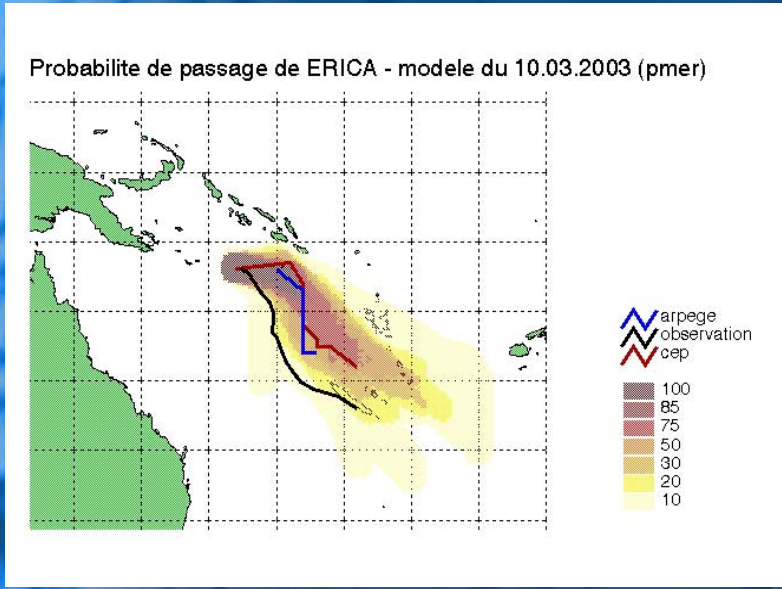
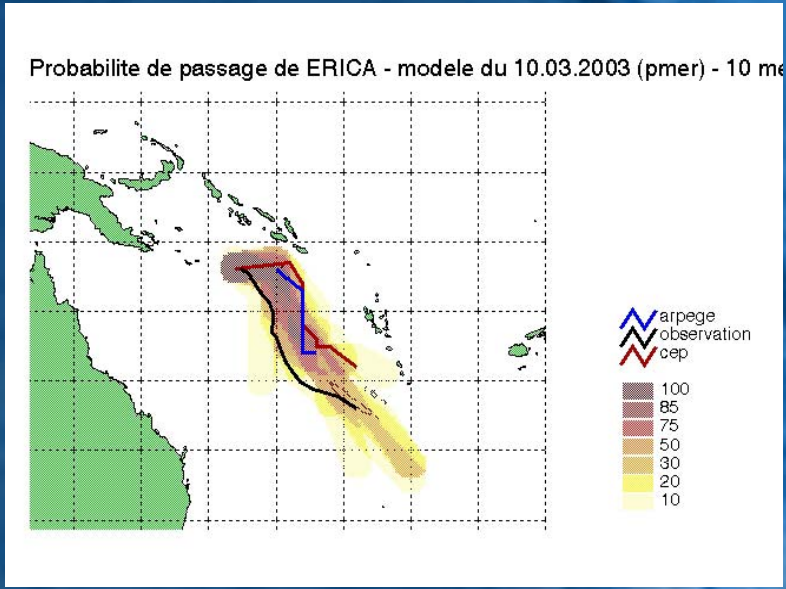
# Strike-probabilities




Full ensemble




10-best member ensemble

Tropical cyclone ERICA, New Caledonia, march 2003

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# Cyclogenesis

Running tracker without any starting observation

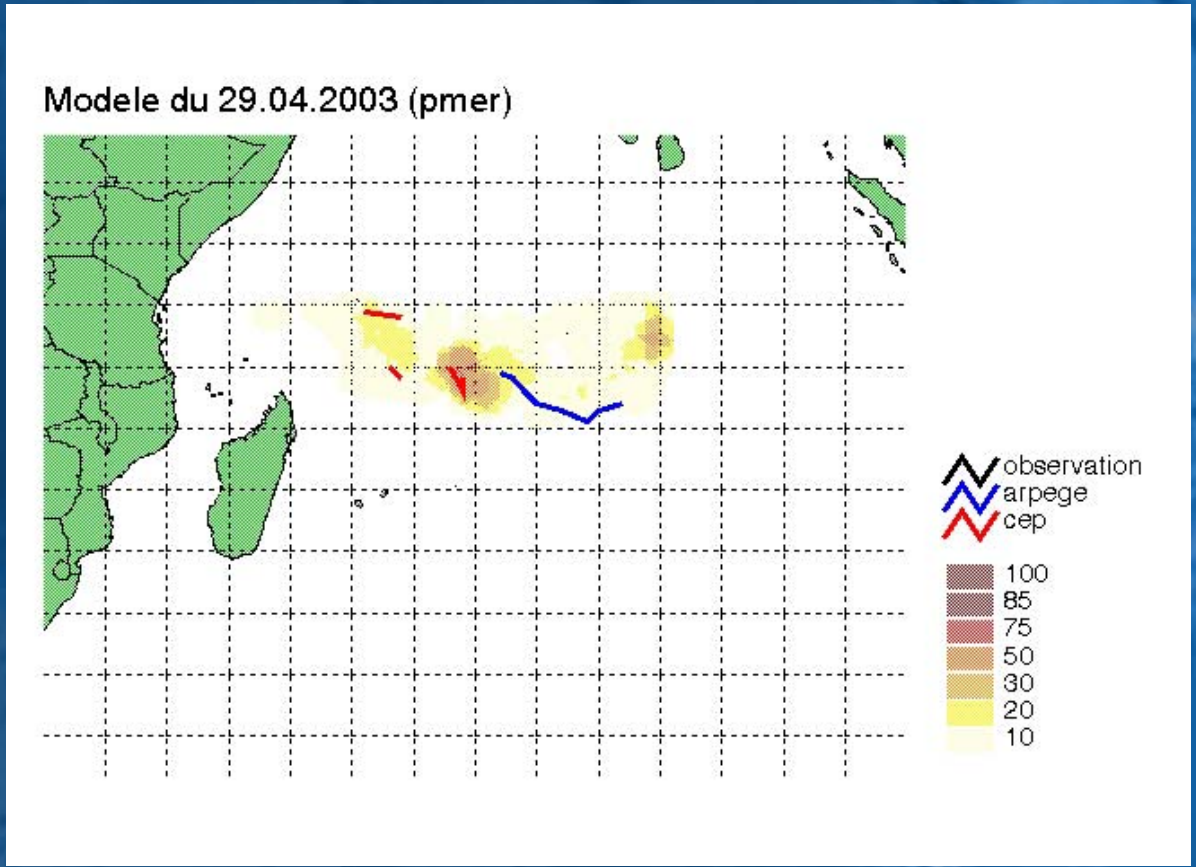
MSLP threshold

=

1015 hPa

Indian Ocean

29/04/2003 EPS

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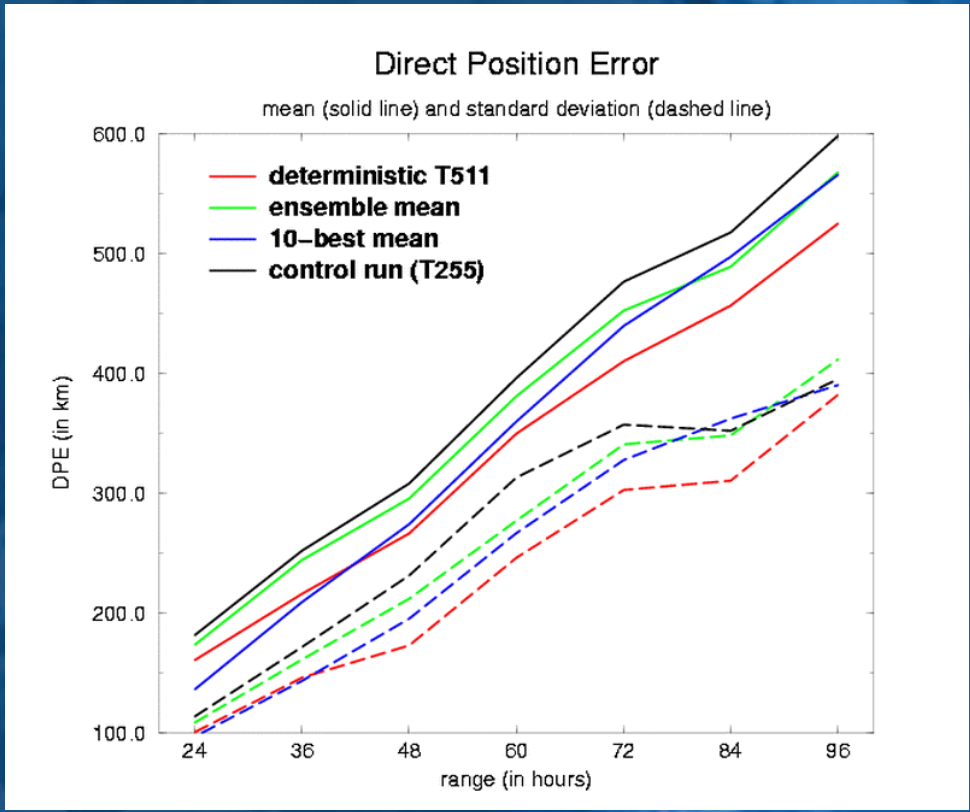
# Verification over french areas : Direct Position Error

2002 season on northern hemisphere

2002-2003 season on southern hemisphere

| range | 24h | 48h | 72h | 96h |
|---|---|---|---|---|
| Sample size | **66** | **65** | **58** | **46** |

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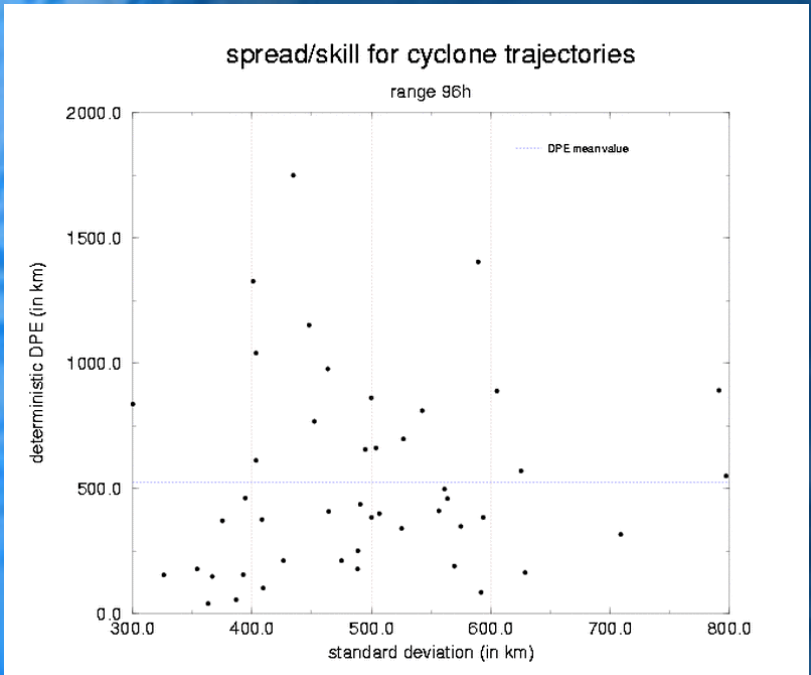
# Verification : spread/skill relationship




96h range

| Stdev (in km) | < 400 | 400-500 | 500-600 | > 600 |
|---|---|---|---|---|
| Number of cases | **9** | **18** | **13** | **6** |
| % of good forecast | **89** | **50** | **54** | **33** |

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# Forecaster's assessment : cyclogenesis

- **2002-2003 season in the Indian Ocean**
- **Total of 190 days but :**
  **In this table, only the days when no cyclone is present in the ananlysis are taken into account**

| Probability classes | 10 | 30 | 50 | 75 | 100 | total |
|---|---|---|---|---|---|---|
| No depression in the 4 following days | 1 | 13 | 26 | 47 | 10 | 97 |
| Genesis of depression | | | 3 | 13 | 5 | 21 |
| total | 1 | 13 | 29 | 60 | 15 | 118 |

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# Use of EPS products at Météo-France

*Many thanks to you and …*

- Building of the Millau viaduct : **Serge Farges**
- The Prestige sank : **Pierre Daniel, Patrick Josse**
- Tropical cylone tracks : **Antoine Lasserre-Bigorry, Vinciane Unger, the forecasters from La Reunion**

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