A brief description of reforecasts

What are reforecasts

- **Real-time ensemble forecasts** can be calibrated using historical sets of *reforecasts* (also known as *hindcasts*)
- **Reforecasts** are forecasts run using the **same *model version*** as the real-time forecast for a number of ***past dates***

The way to produce reforecasts is not unique

- **Different centres** or models use **different configurations** for the implementation of its reforecast system. At the moment the following **2 configurations** are used:

1. *fixed* **configuration**:
   - In this case reforecasts for **all past dates** are produced **once** during the lifetime of a given **model version**.
   - For every **new version** of the model, a **new set** of reforecasts is produced.

2. *on-the-fly* **configuration**:
   - In this case reforecasts are produced at the **same time** as the real-time forecasts.
   - **Each** reforecast refers to **a real-time** forecast.

Main Concepts

Realtime Date

- It is the **date** of the real-time ensemble forecast to be calibrated.
- If the purpose of the reforecasts is to create a model climatology, then the date of the real-time ensemble forecast is not relevant.
- In the *MARS system* this is expressed with the keyword ***"date"***.

Model Version Date

- It is the **version of the model** used to produce the reforecasts.
- Because the version of the model is **time-stamped** with a date, the term ***"Model Version Date"*** is used instead.
- It is very important that the **version of the model** used to produce the **reforecasts** AND the **version of the model** used to produce the **real-time forecast** are the **same.** One CANNOT calibrate a real-time forecast with reforecast that has been produced by a different version of the model.
- In the *MARS system*, this is expressed with the keyword ***"date"***.

Hindcast Date

- It refers to a start date for any of the **past dates** of the reforecast.
- In the MARS system, this is expressed with the keyword ***"hdate"***.

Examples

reforecast configuration	centre	realtime date	model version date	hindcast dates	reforecast length	reforecast frequency	number of hindcast dates available for a model version date
on-the-fly	ECMWF	20150406	date=201504 01	hdate=19940401/19950401/../20130401/20140401	past 20 years	2/week	21
fixed	CMA	20150406	date=201405 01	hdate=19940101/19940102/.../20141230/20141231	1994-2014	daily	365*21=7665
fixed	BoM	20150406	date=201401 01	hdate=19810101/19810106/19810111/19810116/19810121 /19810126/../ 20131201/20131206/20131211/20131216/20131221/20131226	1981-2013	6/month	6*12*33=2376