How to start with data assimilation?

Accounting available systems in ALADIN and HIRLAM consortia

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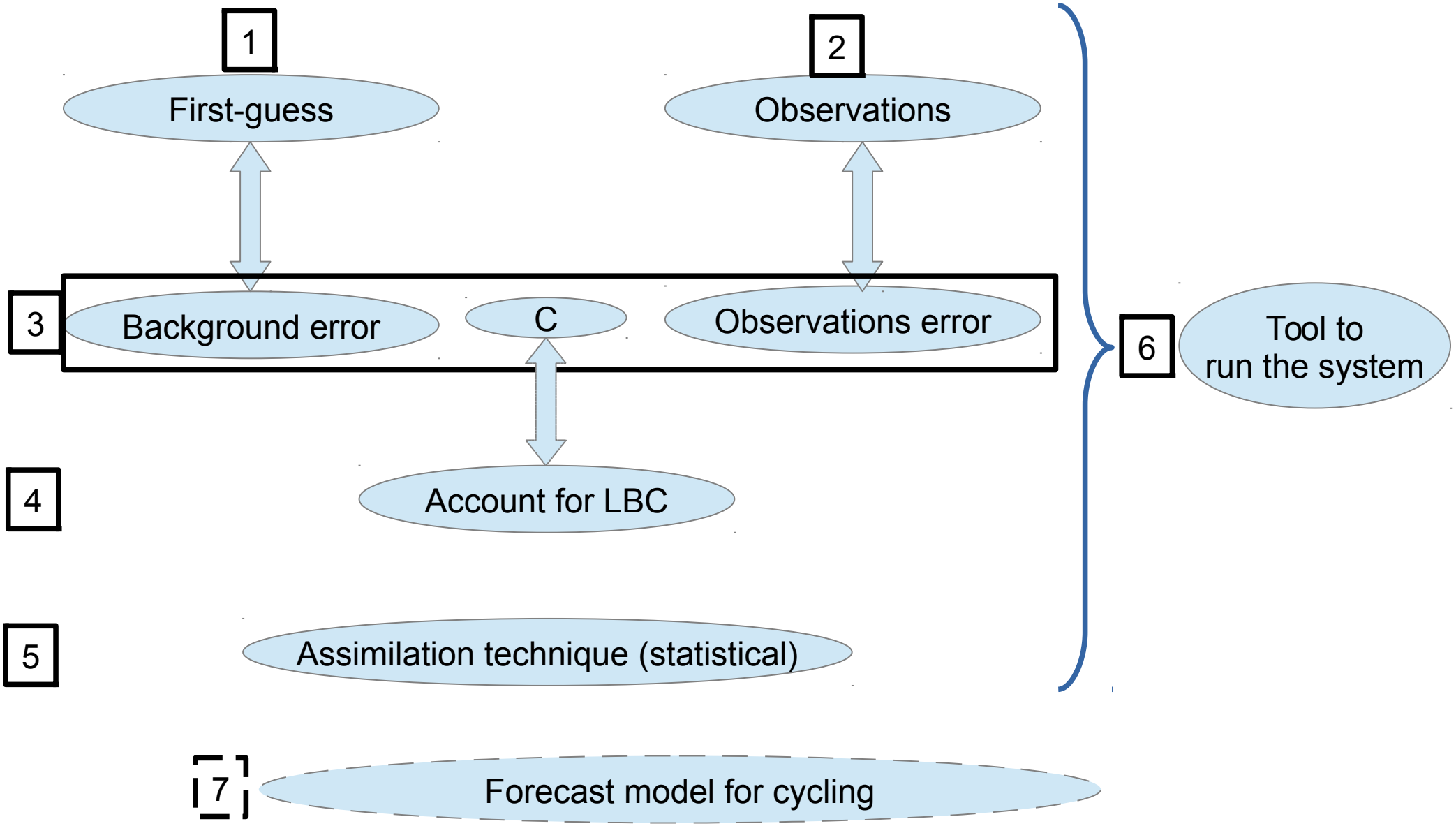
What do we need to do DA in NWP



What do we have?

➔ (1: first-guess) is produced by (7), so we have it: AROME, ALADIN, ALARO;

➔ (2: observations) are one of the difficulties (see later);

➔ (3: background (B), observation (R) and large-scale errors) B can be computed, but we can also have interpolated B to start. Not real obstacle to get started with DA;

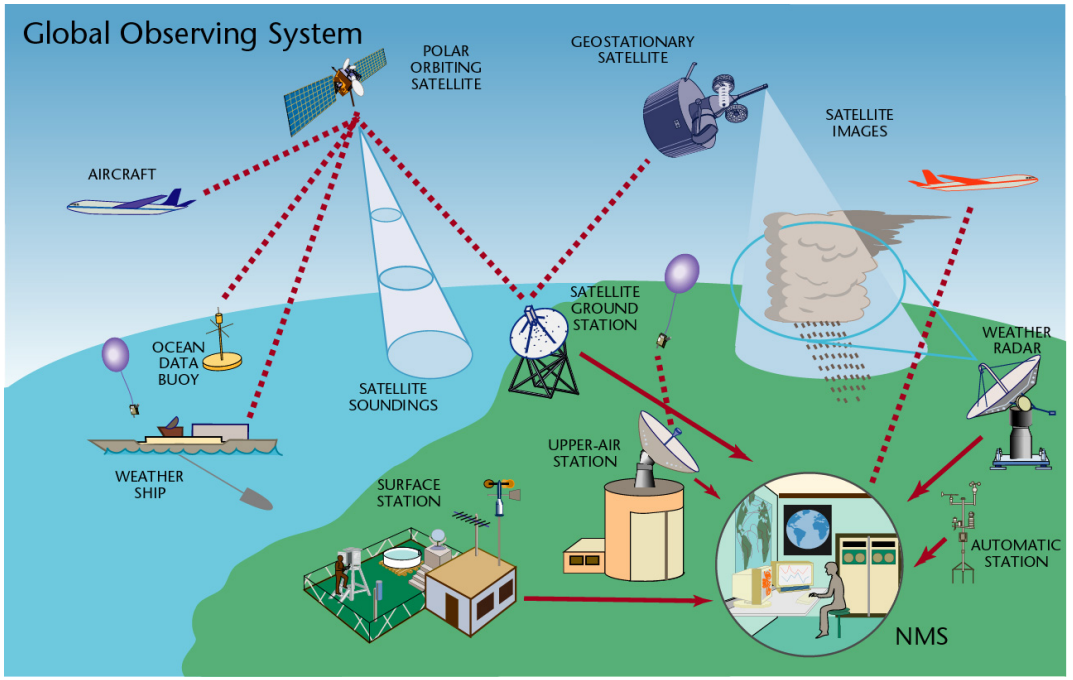
➔ (4: accounting for large-scale information) some think this is important, some think it can be source of problem (see talk on DA algorithmic).
→ Let agree that we start without this part of the system;

➔ (5: assimilation scheme) 3D-VAR for upper air and OI for surface;

➔ (6: environment/tool to run the DA system) shell script system, (m)SMS, ECFlow;

➔ (7: forecast model and HPC) given to all.

2: observations. Why so complex?



Source: www.wmo.int

Real time available data:

Networks

Observations arrive through

- **GTS (Global Telecommunication System) in ASCII or BUFR format**
- **Direct Sat. Reception – (HRPT Station)**
- **Special TCP/IP lines**
- **Internet FTP in some cases**

Providers

- **All WMO countries for most of the observations types**
- **Space agencies for Satellite observations (Eumetsat, ESA, NESDIS, NASA, DMSP)**
- **NMS for the local national data**

To organize and receive different types of data from different sources and in different formats

→ needs staff and expertise, which is not always given to all centres

2: observations. What are the possible solutions?

➔ Cooperate with centre(s), where **DA is in operational;**

➔ Use to OPLACE database (see Máté's presentation).

6: environment tool to run the DA system

➔ I can suggest only one solution: The Harmonie DA scheduling systems: both mSMS and ECFlow are easy to handle and to implement.
→ Harmonie system have research and operational regimes.