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Abstract ID: 3O1

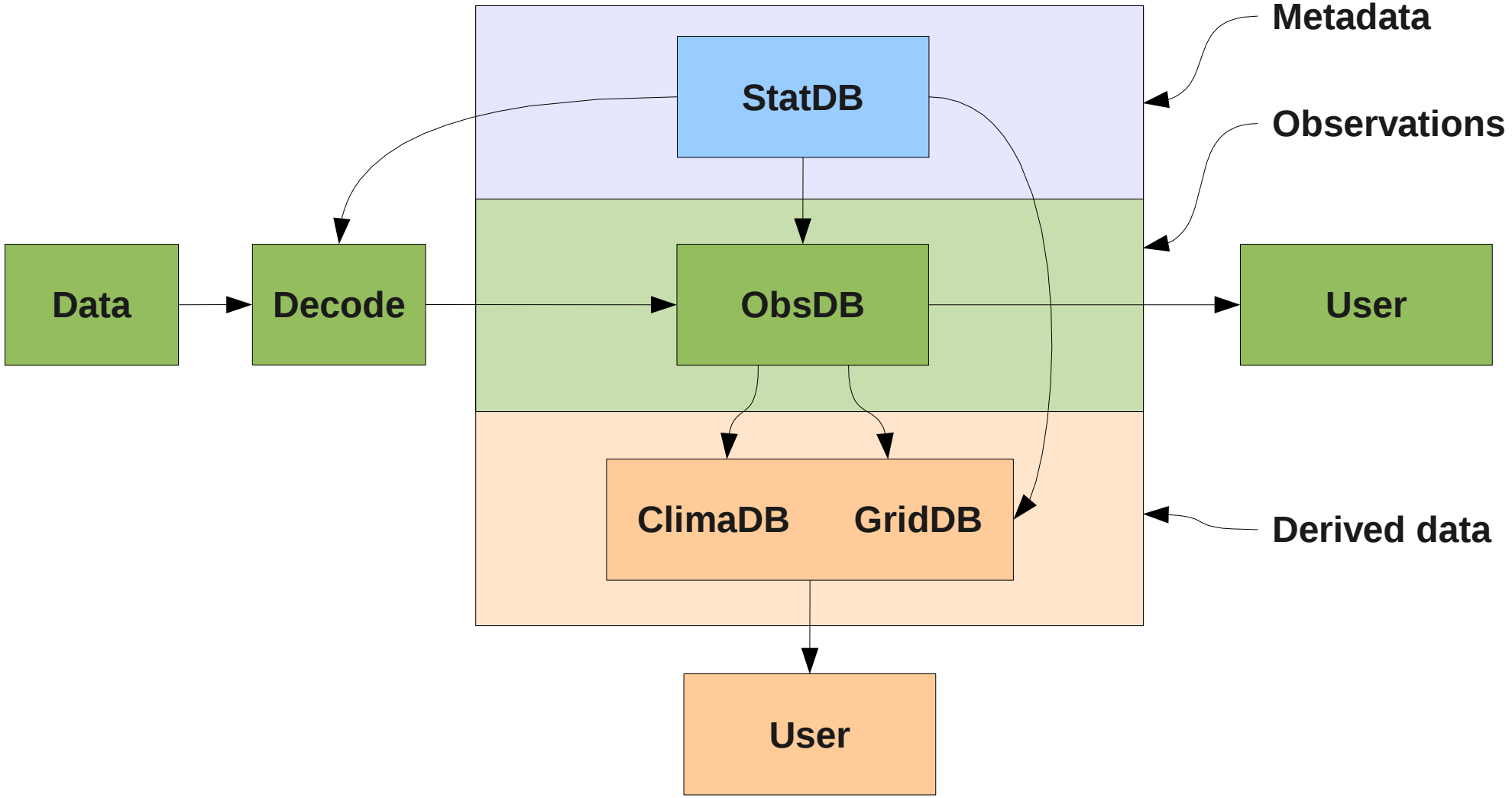
The new observational database at DMI

A single repository for observed meteorological data is a good way to centralize tasks such as data decoding and quality control. And a database is a natural way to implement such a repository. But requirements to the database are multiple: Forecasting systems require high performance and availability, but don't care about old data. Climatologists, on the other hand, want long time series and the ability to augment data with quality levels calculated from data sets extending in time and space.


ObsDB

- The talk I would like to give ...
- The talk I am going to give...

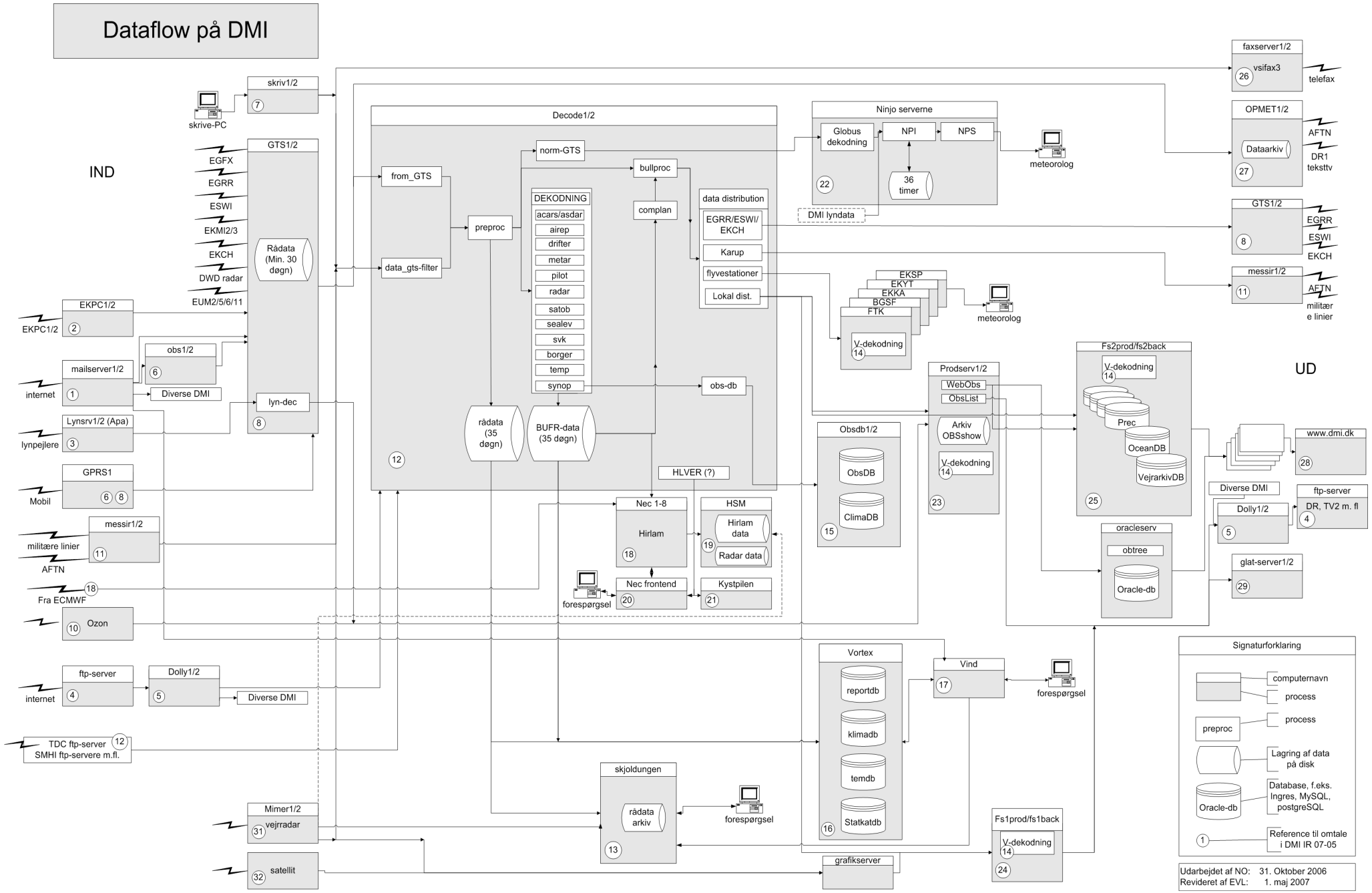
The new databases



Purpose of ObsDB

- Centralize decoding and quality control
- Modernize

Centralize ?

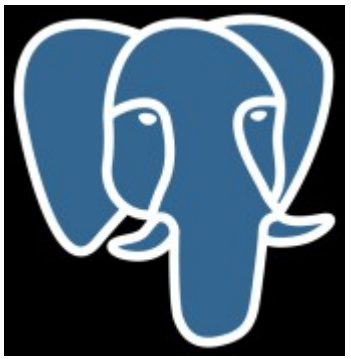

Dataflow på DMI
IND
UD
skrive-PC
skriv1/2
7
GTS1/2
EGFX
EGRR
ESWI
EKMI2/3
EKCH
DWD radar
EUM2/5/6/11
Rådata (Min. 30 døgn)
EKPC1/2
EKPC1/2
2
mailserver1/2
internet
1
obs1/2
6
Diverse DMI
Lynsrv1/2 (Apa)
lynpejlere
3
lyn-dec
8
GPRS1
Mobil
6
8
messir1/2
militære linier
AFTN
11
Fra ECMWF
18
Ozon
10
ftp-server
internet
4
Dolly1/2
5
Diverse DMI
TDC ftp-server
SMHI ftp-servere m.fl.
12
Mimer1/2
31
vejrradar
satellit
32
Decode1/2
from_GTS
data_gts-filter
preproc
norm-GTS
bullproc
complan
DEKODNING
acars/asdar
airep
drifter
metar
pilot
radar
satob
sealev
svk
borger
temp
synop
data distribution
EGRR/ESWI/ EKCH
Karup
flyvestationer
Lokal dist.
obs-db
rådata (35 døgn)
BUFR-data (35 døgn)
12
HLVER (?)
Nec 1-8
Hirlam
18
HSM
Hirlam data
19
Radar data
Nec frontend
20
Kystpilen
21
forespørgsel
Ninjo serverne
Globus dekodning
NPI
NPS
36 timer
22
DMI lyndata
meteorolog
EKSP
EKYT
EKKA
BGSF
FTK
V-dekodning
14
meteorolog
Obsdb1/2
ObsDB
ClimaDB
15
Prodserv1/2
WebObs
ObsList
Arkiv OBSshow
V-dekodning
14
23
Fs2prod/fs2back
V-dekodning
14
Prec
OceanDB
VejrarkivDB
25
oracleserv
obtree
Oracle-db
faxserver1/2
vsifax3
26
telefax
OPMET1/2
Dataarkiv
27
AFTN
DR1
teksttv
GTS1/2
8
EGRR
ESWI
EKCH
messir1/2
11
AFTN
militær
e linier
www.dmi.dk
28
Diverse DMI
Dolly1/2
5
ftp-server
DR, TV2 m. fl
4
glat-server1/2
29
Vortex
reportdb
klimadb
temdb
Statkatdb
16
Vind
17
forespørgsel
skjoldungen
rådata arkiv
13
forespørgsel
grafikserver
Fs1prod/fs1back
V-dekodning
14
24
Signaturforklaring
computernavn
process
preproc
process
Lagring af data på disk
Oracle-db
Database, f.eks. Ingres, MySQL, postgreSQL
1
Reference til omtale i DMI IR 07-05
Udarbejdet af NO: 31. Oktober 2006
Revideret af EVL: 1. maj 2007

Ok, some centralization is propably a good idea :-)

Modernize ?

PostgreSQL

Ingres, developed 1970-1980



PostgreSQL, Ingres fork started 1980

Actively developed:
Last release 8.4.1 from sept. 9, 2009
free :-)

Requirements to ObsDB

- History / data versioning
- Forecasting and presentation systems:
  High performance and availability,
  don't care about old data
- Climatologists: Long time series and the ability to augment data with quality levels

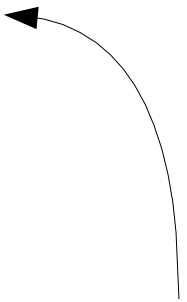
... not easy to meet

ObsDB v1 → ObsDB v2

- Data consistency
- Performance

ObsDB v1 → ObsDB v2

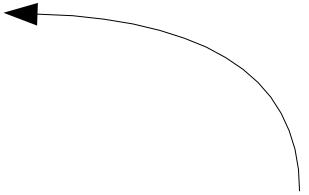
- Data consistency
- Performance



Triggers, rules
and constraints :-)

ObsDB v1 → ObsDB v2

- Data consistency
- Performance



Well ...

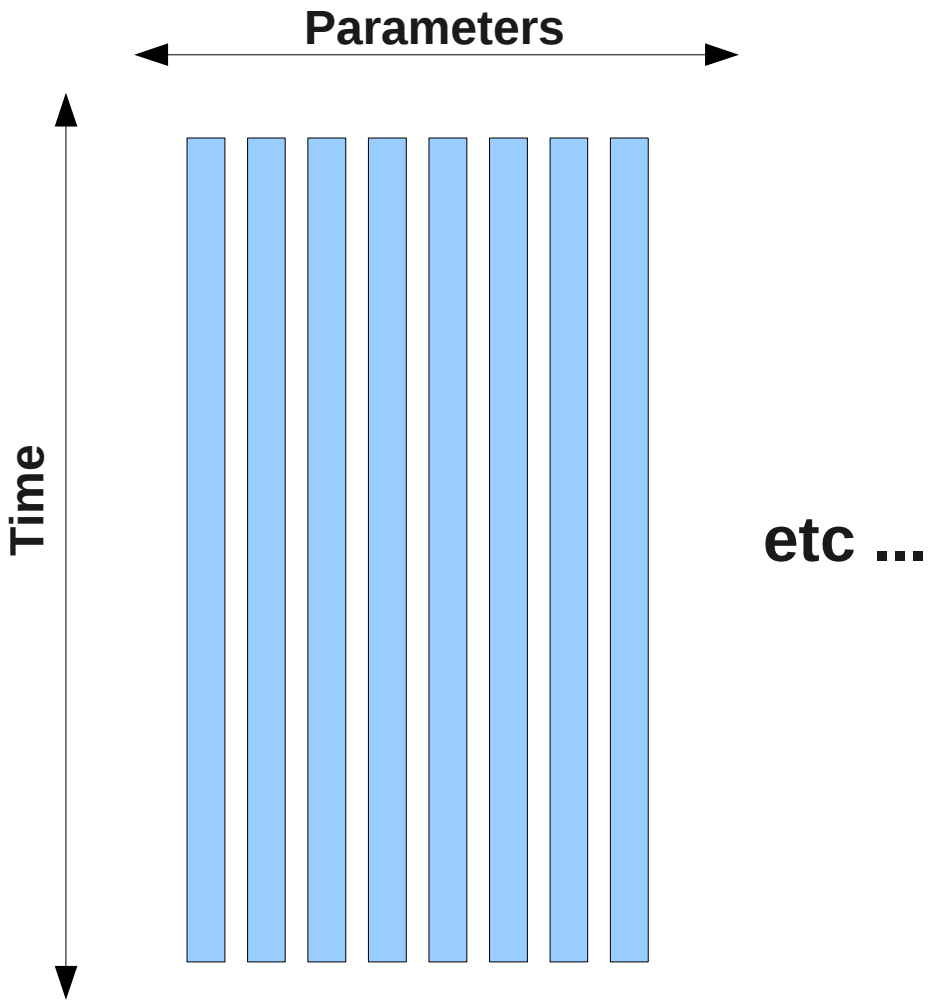
Data tables in ObsDB v1

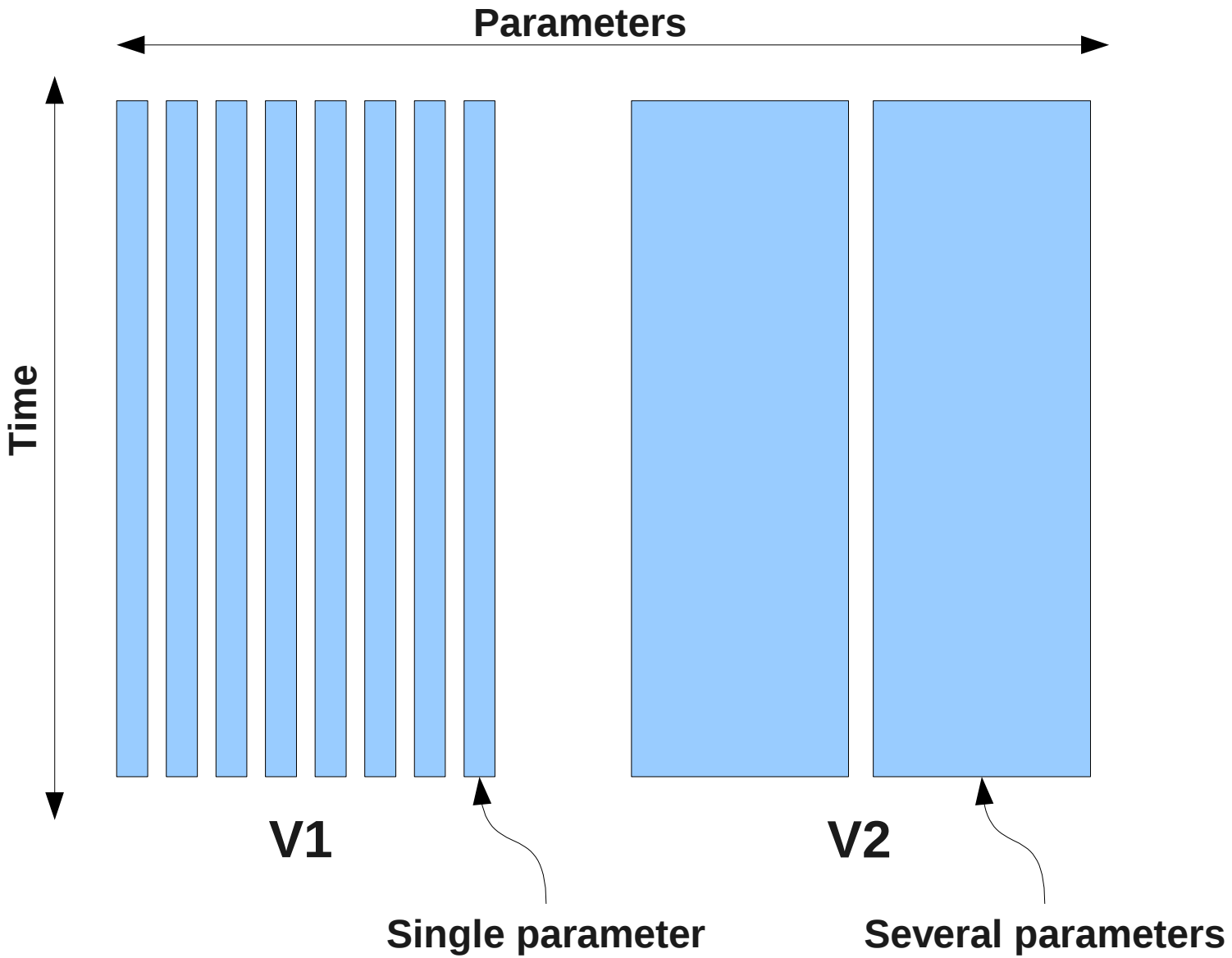
temp_dew	
obsver_id	integer
station_id	integer
timeobs	timestamp
best	bool
orig	bool
temp_dew	real
quality_id	integer

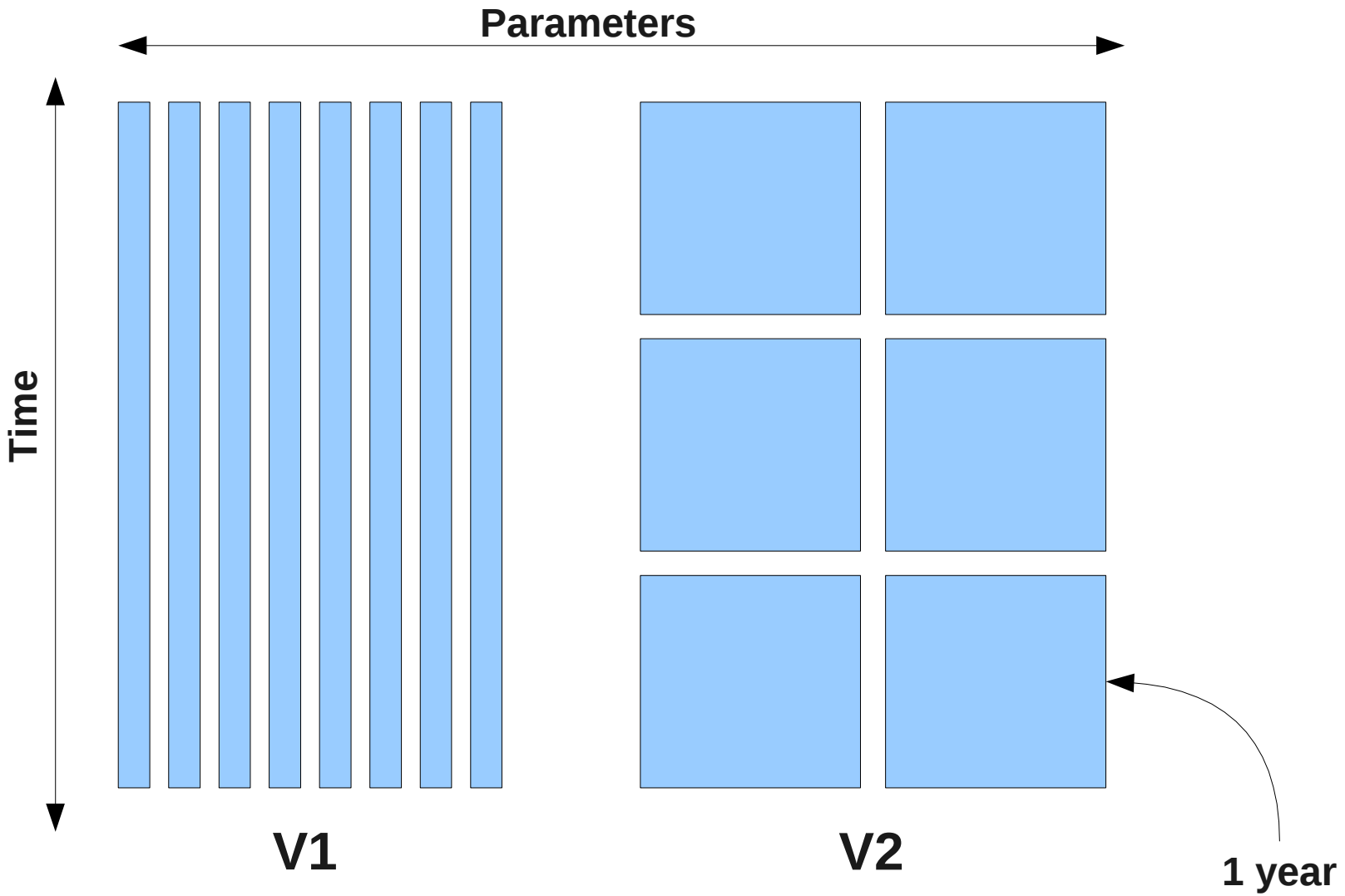
temp_dry	
obsver_id	integer
station_id	integer
timeobs	timestamp
best	bool
orig	bool
temp_dry	real
quality_id	integer

temp_grass	
obsver_id	integer
station_id	integer
timeobs	timestamp
best	bool
orig	bool
temp_grass	real
quality_id	integer

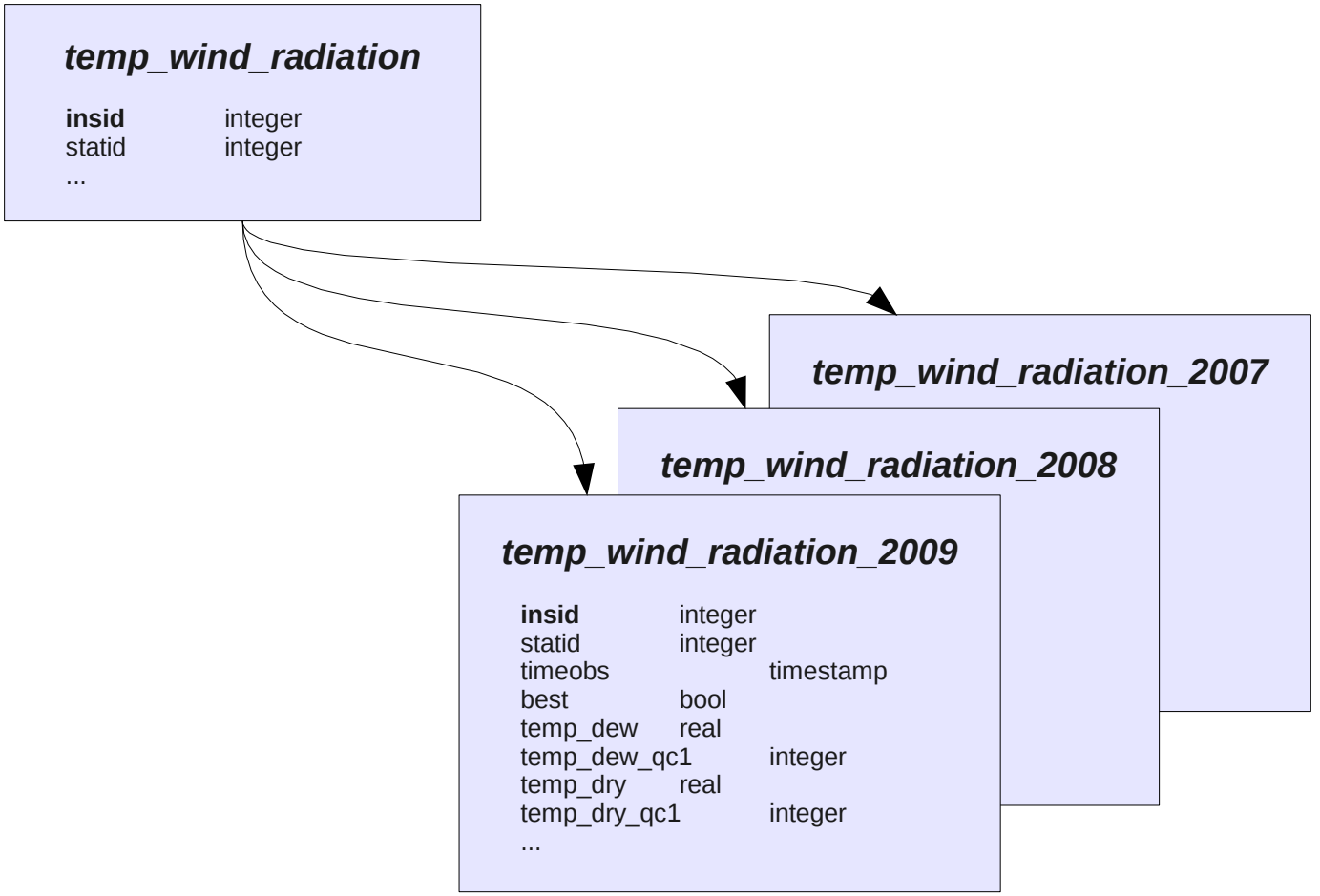
etc...


Parameters
Time
etc ...

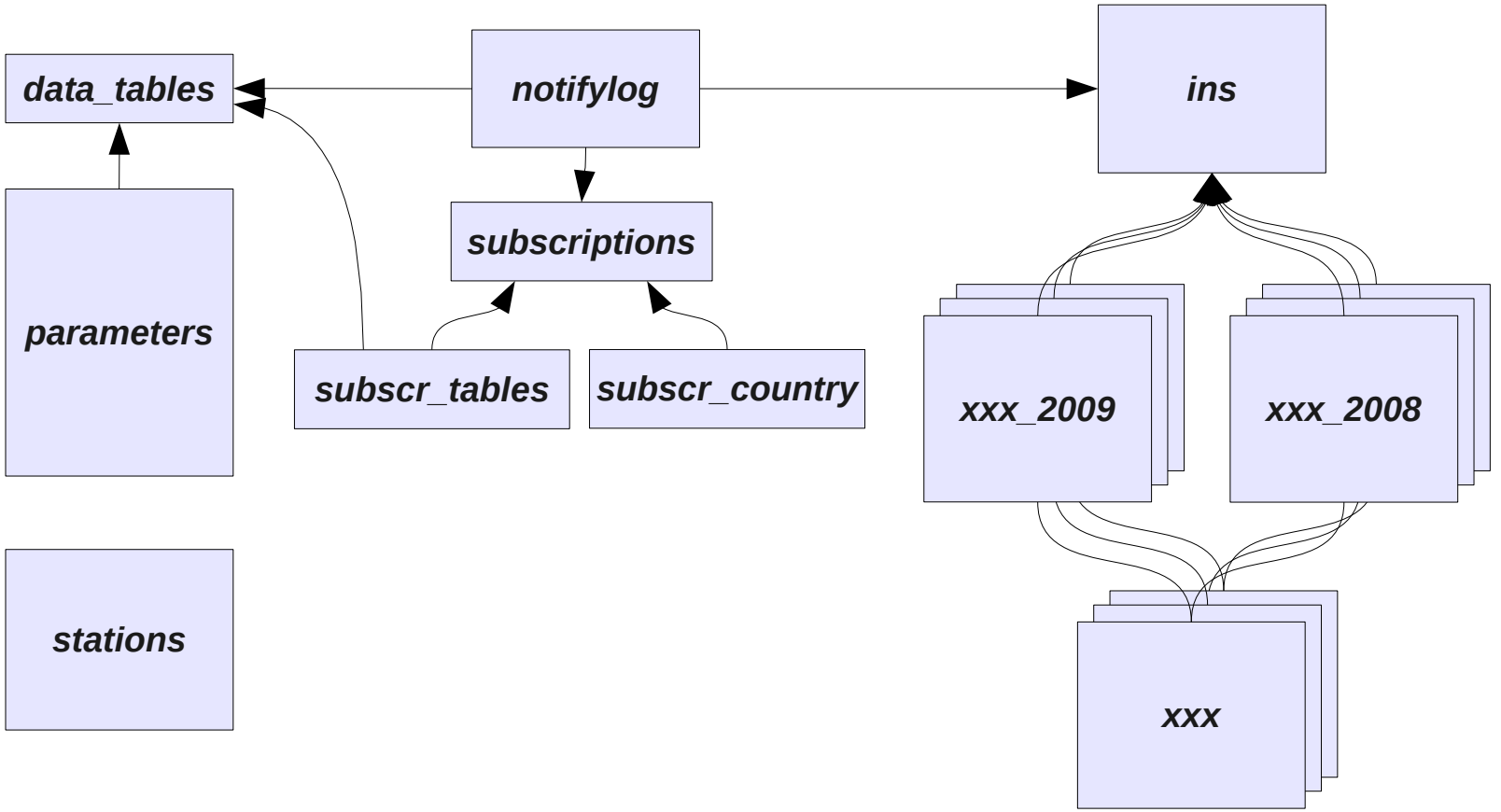

Parameters
Time
V1
V2
Single parameter
Several parameters


Parameters
Time
V1
V2
1 year

Data tables in ObsDB v2



ObsDB v2 overview




The end :-)